DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/10/2016 2:12:53 PM**
Digestion:
Prep End Date: 11/10/16 5:07PM

Prep Batch **77861** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia** Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		10.22	10	1.000	1 of 1	
1611028-19A	Soil		10.12	10	1.000	1 of 1	
1611028-20A	Soil		10.92	10	1.000	1 of 1	
1611028-21A	Soil		10.18	10	1.000	1 of 1	
1611028-22A	Soil		10.40	10	1.000	1 of 1	
1611028-23A	Soil		10.08	10	1.000	1 of 1	
1611028-24A	Soil		10.62	10	1.000	1 of 1	
1611028-25A	Soil		10.45	10	1.000	1 of 1	
1611044-01A	Soil		10.76	10	1.000	of 3	
1611044-01AMS	Soil		10.07	10	1.000	of	
1611044-01AMSD	Soil		10.15	10	1.000	of	
1611044-02A	Soil		10.87	10	1.000	1 of 1	
1611044-03A	Soil		10.10	10	1.000	1 of 1	
1611044-04A	Soil		10.73	10	1.000	1 of 1	
1611044-05A	Soil		10.47	10	1.000	1 of 1	
1611044-06A	Soil		10.04	10	1.000	1 of 1	
1611044-07A	Soil		10.53	10	1.000	1 of 1	
1611044-08A	Soil		10.07	10	1.000	1 of 1	
1611044-09A	Soil		10.30	10	1.000	1 of 1	
1611044-10A	Soil		10.69	10	1.000	1 of 1	
1611044-11A	Soil		10.74	10	1.000	1 of 1	
1611044-12A	Soil		10.80	10	1.000	1 of 1	
LCS-77861	Soil		10	10	1.000	of	
MB-77861	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 2:41:43 PM, 11/14/2016

11/10/16

11/10/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-15A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-16A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-17A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-18A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-19A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-20A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-21A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-22A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-23A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-24A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-25A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 2:42:02 PM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/4/2016 10:00:00 AM**
Digestion: **Start: 11/4/2016 10:20:00 AM / Stop: 11/9/2016 9:00:00 AM**
Prep End Date: **11/9/2016 1:00:00 PM**

Prep Batch **77804** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

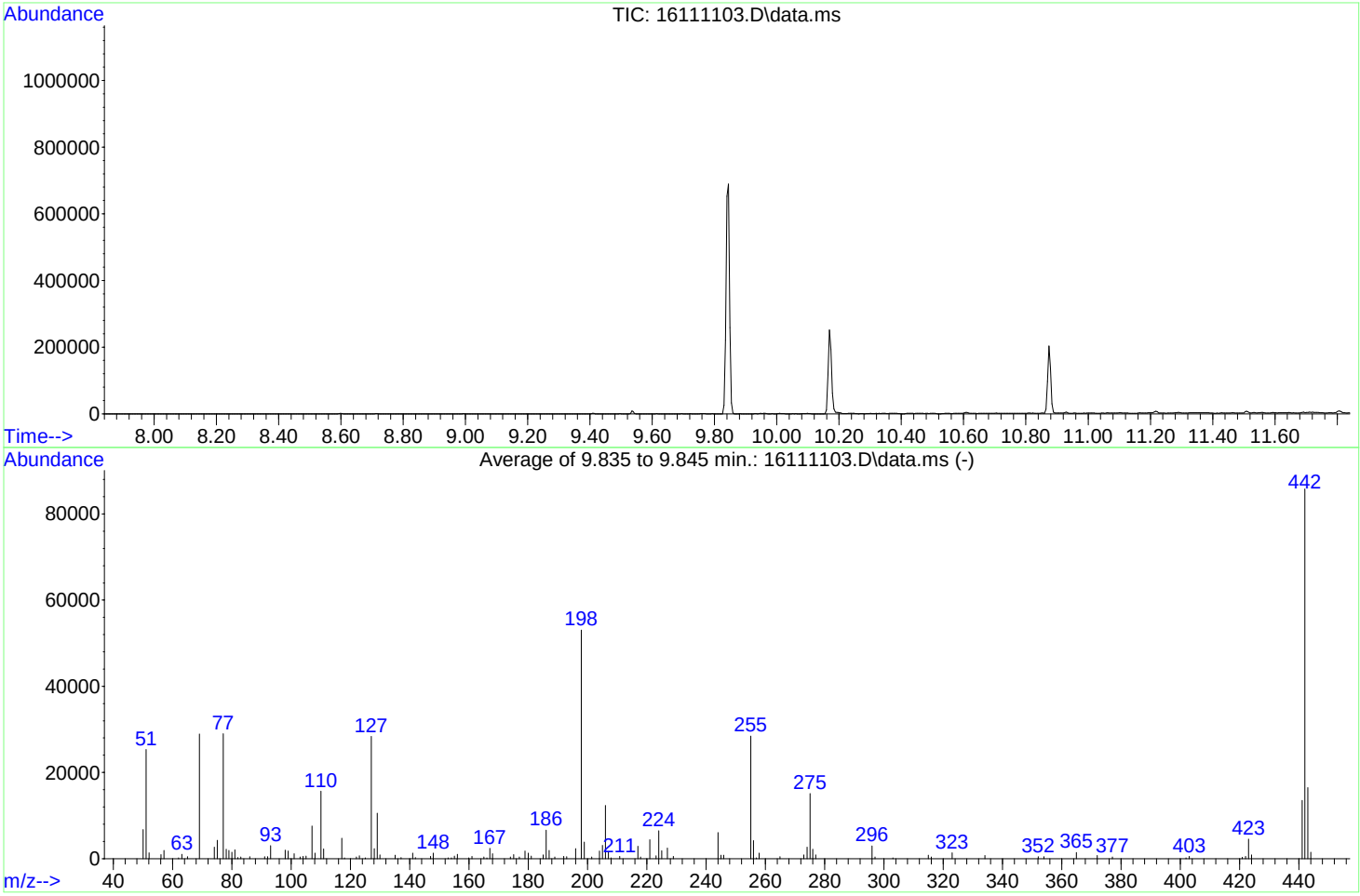
Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-01A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1611044-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-03A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-04A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-06A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-07A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-08A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-09A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-10A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-11A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-12A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 2:42:00 PM, 11/14/2016

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111103.D
Acq On : 11 Nov 2016 9:05 am
Operator :
Sample : DFTPP-161111
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 797, 798, 799; Background Corrected with Scan 793

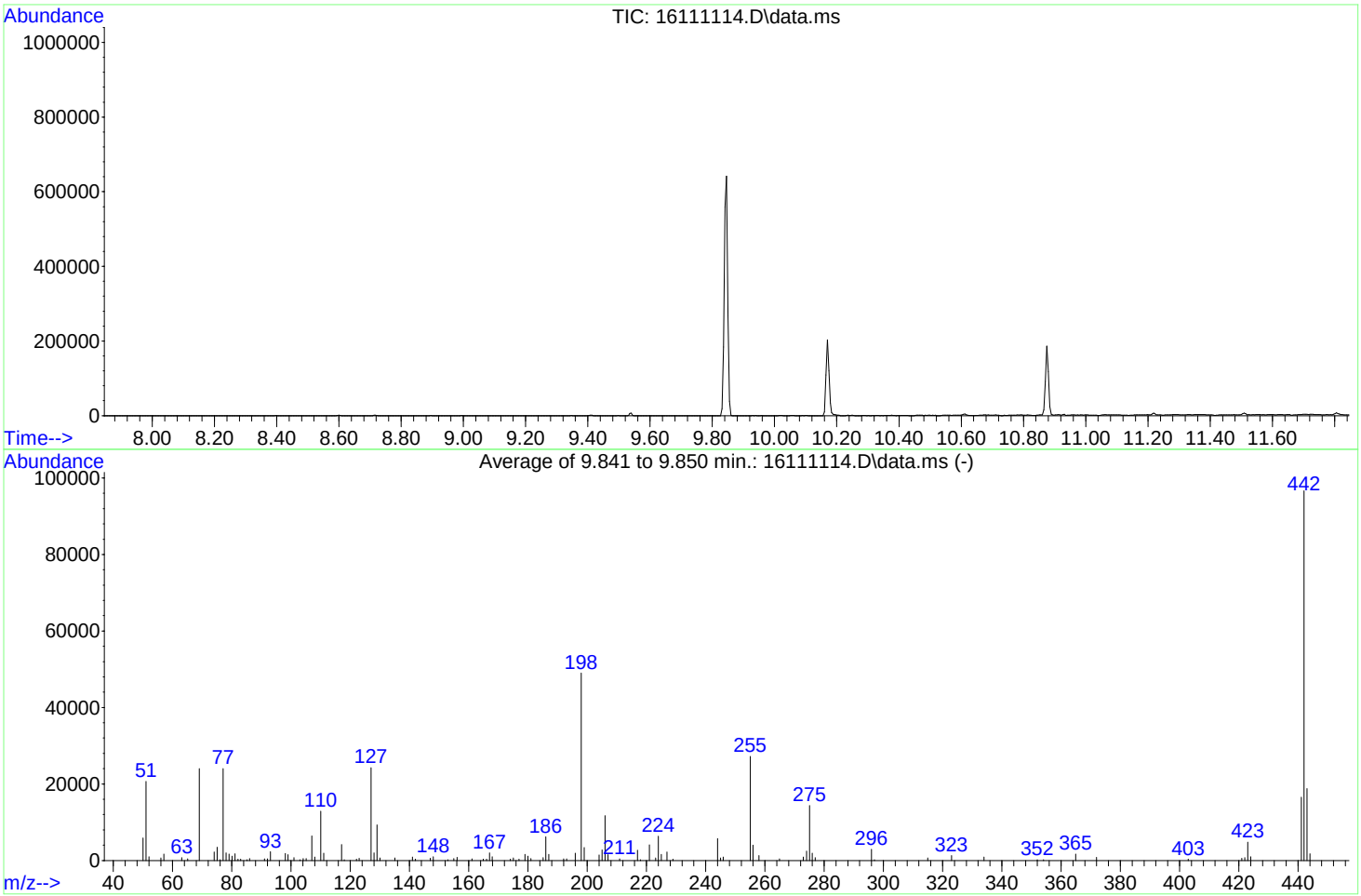
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	47.7	25301	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	54.6	28944	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	53.5	28372	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	53045	PASS
199	198	5	9	7.2	3808	PASS
275	198	10	60	28.5	15101	PASS
365	198	1	200	2.7	1442	PASS
441	442	0.01	24	15.7	13501	PASS
442	198	50	400	161.8	85832	PASS
443	442	15	24	19.2	16470	PASS

REVIEWED BY
By Janice Whitt at 2:42:05 PM, 11/14/2016

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111114.D
Acq On : 11 Nov 2016 2:23 pm
Operator :
Sample : DFTPP2-161111
Misc : TUNE
ALS Vial : 12 Sample Multiplier: 10

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 798, 799, 800; Background Corrected with Scan 793

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	42.2	20671	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	49.0	23984	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	49.5	24224	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	48978	PASS
199	198	5	9	7.0	3422	PASS
275	198	10	60	29.4	14387	PASS
365	198	1	200	3.4	1675	PASS
441	442	0.01	24	17.2	16584	PASS
442	198	50	400	197.4	96685	PASS
443	442	15	24	19.5	18807	PASS

REVIEWED BY
By Janice Whitt at 2:42:08 PM, 11/14/2016

Manual Integrations Tracking Form - DoD QSM 4.2 Requirement

Instrument ID: GCMS#8 **Data Folder: GCMS8_161111A**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611044-08A	Benzo(k)fluoranthene – integrated wrong peak.			

***Manually Integrated = MI**

Don Winston

11-11-16

Analyst **Date**

Janice Whitt 11/14/2016

2nd Level Review **Date**

MI_GCMS8

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111104.D
Acq On : 11 Nov 2016 9:34 am
Operator :
Sample : ICV-161111
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 13:25:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

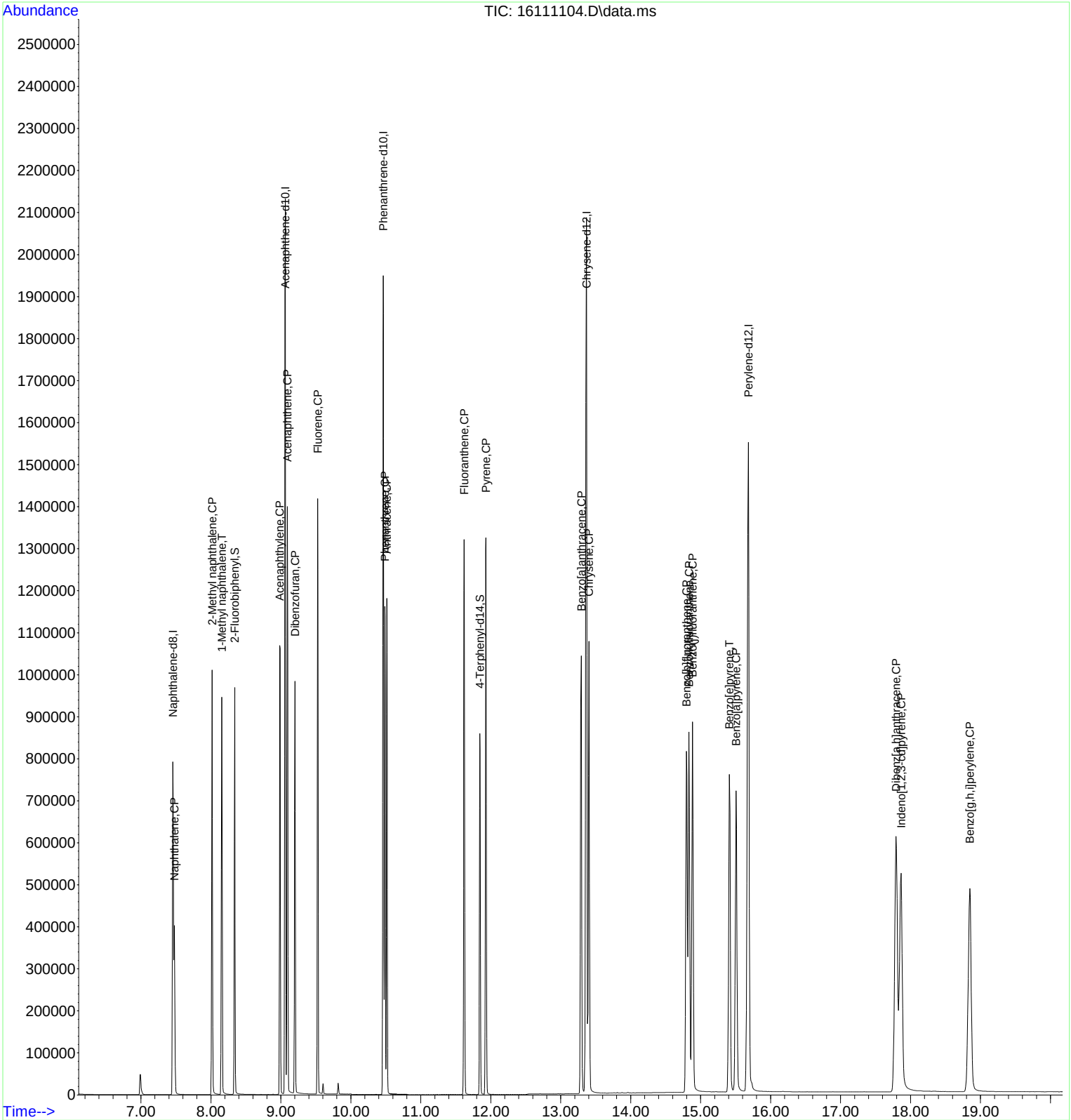
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.455	136	735208	4000.00	ug/kg	84
5) Acenaphthene-d10	9.063	164	817682	4000.00	ug/kg	103
11) Phenanthrene-d10	10.463	188	1474370	4000.00	ug/kg	104
17) Chrysene-d12	13.367	240	1752009	4000.00	ug/kg	105
20) Perylene-d12	15.682	264	1864814	4000.00	ug/kg	106
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	547595	2061.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.55%			
16) 4-Terphenyl-d14	11.844	244	596505	2104.82	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 52.62%			
Target Compounds						Qvalue
2) Naphthalene	7.478	128	286195	2004.48	ug/kg	100
3) 2-Methyl naphthalene	8.016	142	398707	2523.45	ug/kg	94
4) 1-Methyl naphthalene	8.155	142	362189	2539.05	ug/kg	95
6) Dibenzofuran	9.201	168	614051	2066.22	ug/kg	100
8) Acenaphthylene	8.984	152	702379	2060.32	ug/kg	100
9) Acenaphthene	9.092	154	403415	2042.77	ug/kg	100
10) Fluorene	9.525	166	504646	2040.17	ug/kg	97
12) Phenanthrene	10.486	178	678298	1958.31	ug/kg	99
13) Anthracene	10.516	178	681584	1932.94	ug/kg	100
14) Fluoranthene	11.620	202	786616	1920.92	ug/kg	100
15) Pyrene	11.931	202	800686	1904.43	ug/kg	100
18) Benzo[a]anthracene	13.294	228	843617	2044.79	ug/kg	100
19) Chrysene	13.404	228	769182	2056.41	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	957057	2057.02	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	825572	1963.09	ug/kg	99
23) Benzo(j)fluoranthene	14.883	252	850220	2055.32	ug/kg	99
24) Benzo[e]pyrene	15.411	252	852826	2044.93	ug/kg	99
25) Benzo[a]pyrene	15.506	252	856590	2010.30	ug/kg	99
26) Dibenz[a,h]anthracene	17.791	278	890854	2033.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.865	276	857699	2006.92	ug/kg	100
28) Benzo[g,h,i]perylene	18.846	276	922565	2038.30	ug/kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111104.D
Acq On : 11 Nov 2016 9:34 am
Operator :
Sample : ICV-161111
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

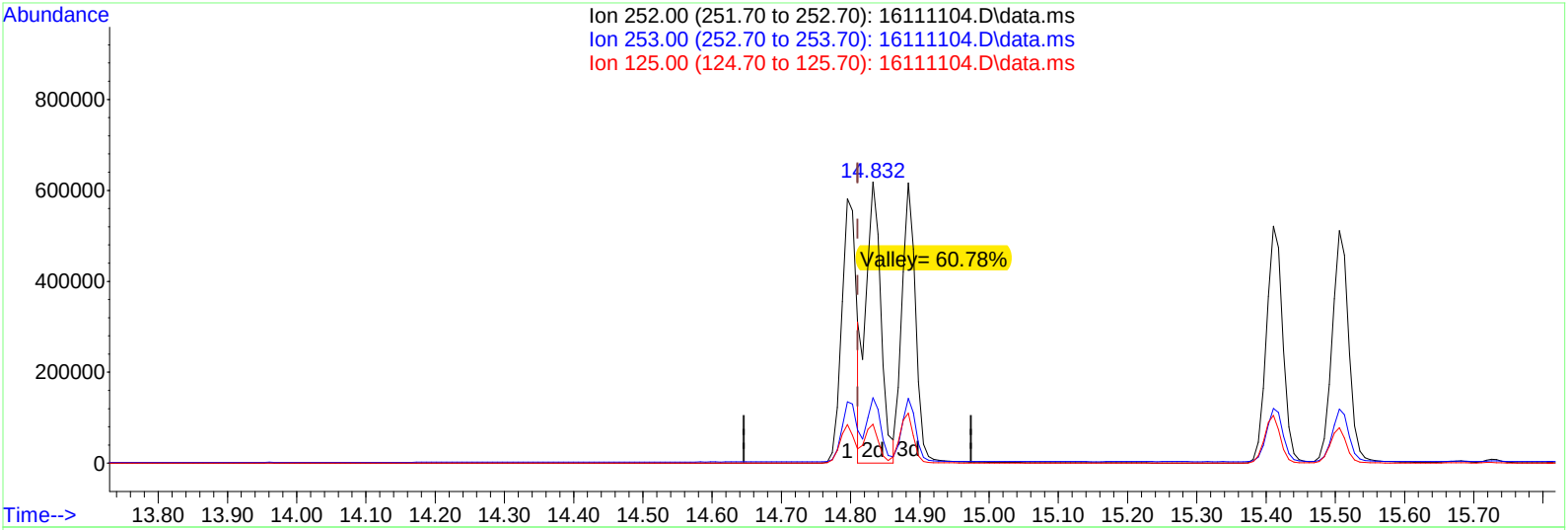
Quant Time: Nov 14 13:25:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

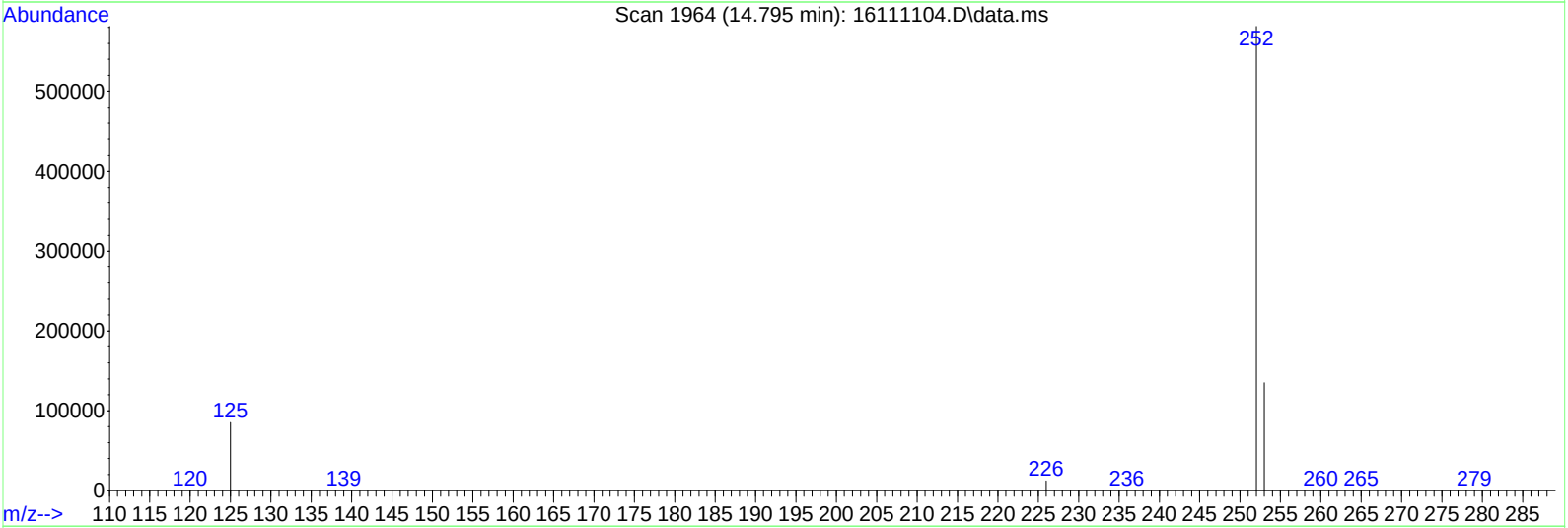


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111104.D
Acq On : 11 Nov 2016 9:34 am
Operator :
Sample : ICV-161111
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 13:25:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration





TIC: 16111104.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.795min (-0.015) 2057.02ug/kg

response 957057

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.72
125.00	12.90	14.65
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111105.D
Acq On : 11 Nov 2016 10:03 am
Operator :
Sample : LCS-77861
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 13:25:31 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1219971	4000.00	ug/kg	139
5) Acenaphthene-d10	9.062	164	792087	4000.00	ug/kg	100
11) Phenanthrene-d10	10.463	188	1459415	4000.00	ug/kg	103
17) Chrysene-d12	13.366	240	1723011	4000.00	ug/kg	103
20) Perylene-d12	15.681	264	1827848	4000.00	ug/kg	104

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	203127	789.53	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.74%#			
16) 4-Terphenyl-d14	11.844	244	229512	818.15	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.45%#			

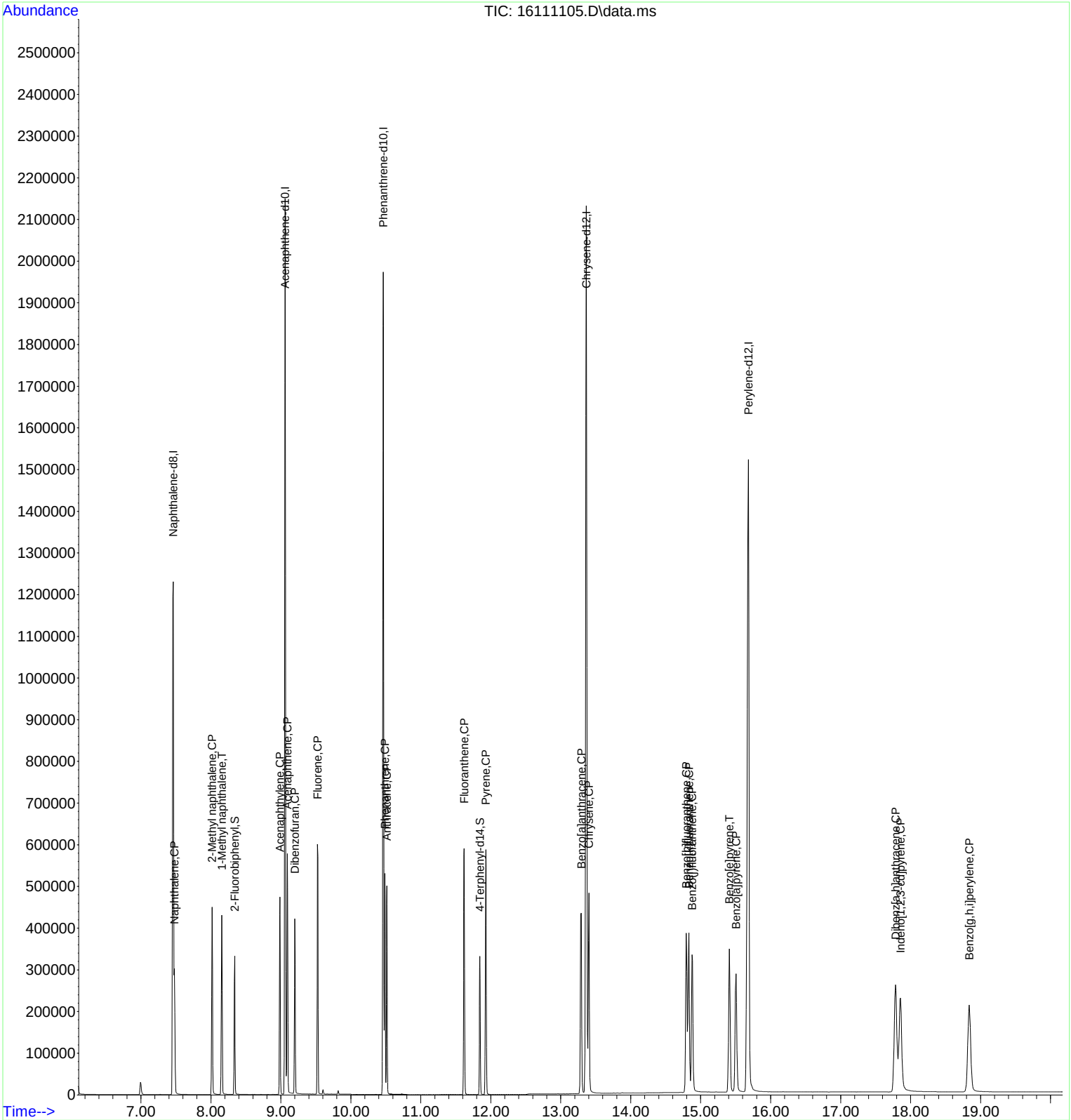
Target Compounds						Qvalue
2) Naphthalene	7.479	128	202963	856.68	ug/kg	99
3) 2-Methyl naphthalene	8.016	142	180566	688.71	ug/kg	95
4) 1-Methyl naphthalene	8.155	142	162483	686.44	ug/kg	95
6) Dibenzofuran	9.199	168	259457	901.26	ug/kg	99
8) Acenaphthylene	8.988	152	295898	896.02	ug/kg	98
9) Acenaphthene	9.091	154	169044	883.64	ug/kg	98
10) Fluorene	9.528	166	219239	914.97	ug/kg	97
12) Phenanthrene	10.486	178	302939	883.57	ug/kg	99
13) Anthracene	10.514	178	282041	808.05	ug/kg	99
14) Fluoranthene	11.620	202	353165	871.27	ug/kg	98
15) Pyrene	11.929	202	357380	858.74	ug/kg	99
18) Benzo[a]anthracene	13.293	228	372269	917.51	ug/kg	99
19) Chrysene	13.403	228	348466	947.30	ug/kg	99
21) Benzo[b]fluoranthene	14.794	252	388636	852.19	ug/kg	99
22) Benzo[k]fluoranthene	14.831	252	385293	934.70	ug/kg	100
23) Benzo(j)fluoranthene	14.875	252	352306	868.89	ug/kg	96
24) Benzo[e]pyrene	15.410	252	372437	911.10	ug/kg	97
25) Benzo[a]pyrene	15.505	252	351050	840.53	ug/kg	99
26) Dibenz[a,h]anthracene	17.783	278	379694	884.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.856	276	368152	878.86	ug/kg	100
28) Benzo[g,h,i]perylene	18.838	276	396295	893.28	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111105.D
Acq On : 11 Nov 2016 10:03 am
Operator :
Sample : LCS-77861
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 13:25:31 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111106.D
Acq On : 11 Nov 2016 10:32 am
Operator :
Sample : MB-77861
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 13:25:34 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1133312	4000.00	ug/kg	129
5) Acenaphthene-d10	9.062	164	787777	4000.00	ug/kg	100
11) Phenanthrene-d10	10.464	188	1417304	4000.00	ug/kg	100
17) Chrysene-d12	13.366	240	1693815	4000.00	ug/kg	101
20) Perylene-d12	15.681	264	1802523	4000.00	ug/kg	102

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	213680	835.09	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.88%#			
16) 4-Terphenyl-d14	11.842	244	252739	927.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 23.19%#			

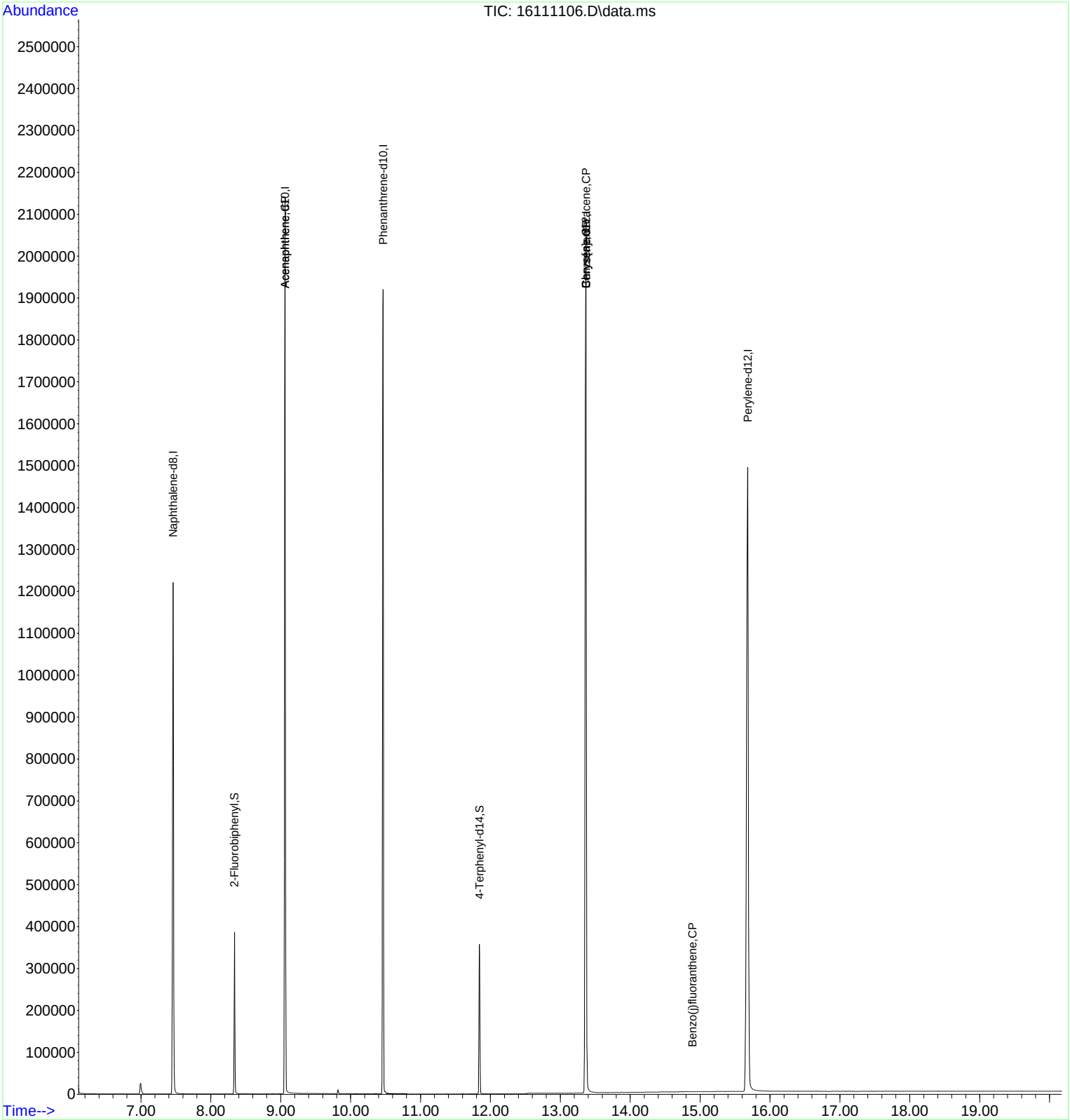
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2991	15.72	ug/kg#	11
18) Benzo[a]anthracene	13.366	228	4438	11.13	ug/kg	72
19) Chrysene	13.366	228	4450	12.31	ug/kg	68
23) Benzo(j)fluoranthene	14.882	252	57	0.14	ug/kg#	60

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111106.D
Acq On : 11 Nov 2016 10:32 am
Operator :
Sample : MB-77861
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 13:25:34 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111107.D
Acq On : 11 Nov 2016 11:01 am
Operator :
Sample : 1611028-18A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: ~~1~~ 10X

Quant Time: Nov 14 13:32:48 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

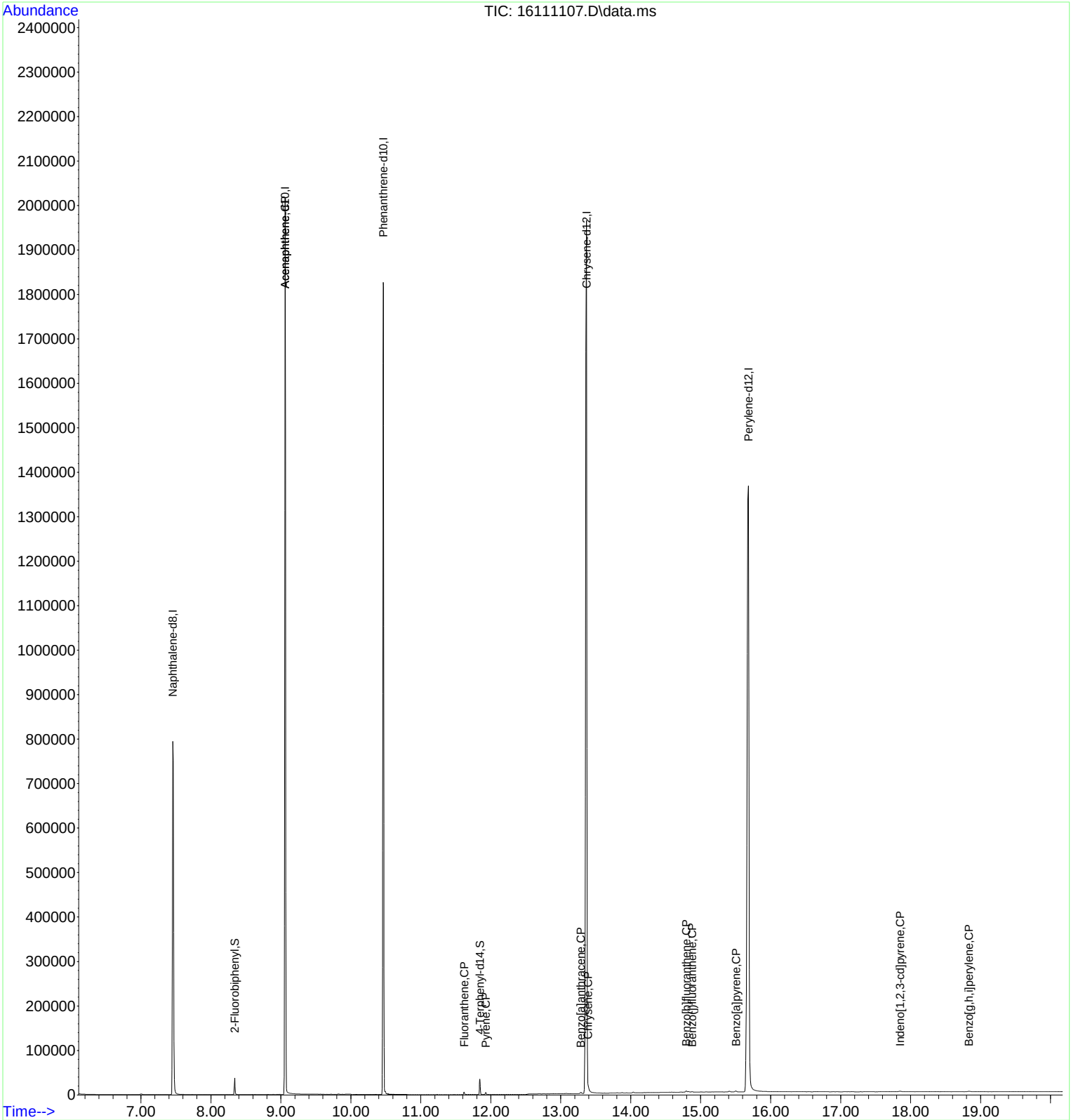
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.455	136	815264	4000.00	ug/kg	93
5) Acenaphthene-d10	9.061	164	745499	4000.00	ug/kg	94
11) Phenanthrene-d10	10.465	188	1339488	4000.00	ug/kg	95
17) Chrysene-d12	13.367	240	1637886	4000.00	ug/kg	98
20) Perylene-d12	15.681	264	1719172	4000.00	ug/kg	98
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	21598	89.20	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.23%#			
16) 4-Terphenyl-d14	11.844	244	24483	95.09	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.38%#			
Target Compounds						Qvalue
9) Acenaphthene	9.061	154	2799	~~15.55~~	~~ug/kg#~~	~~11~~
14) Fluoranthene	11.620	202	3346	8.99	ug/kg	96
15) Pyrene	11.928	202	3089	8.09	ug/kg	99
18) Benzo[a]anthracene	13.286	228	2157	5.59	ug/kg	99
19) Chrysene	13.396	228	2182	6.24	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	2754	6.42	ug/kg	97
23) Benzo(j)fluoranthene	14.876	252	1178	3.09	ug/kg	89
25) Benzo[a]pyrene	15.505	252	2622	6.67	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	2065	5.24	ug/kg	99
28) Benzo[g,h,i]perylene	18.831	276	2142	5.13	ug/kg	97

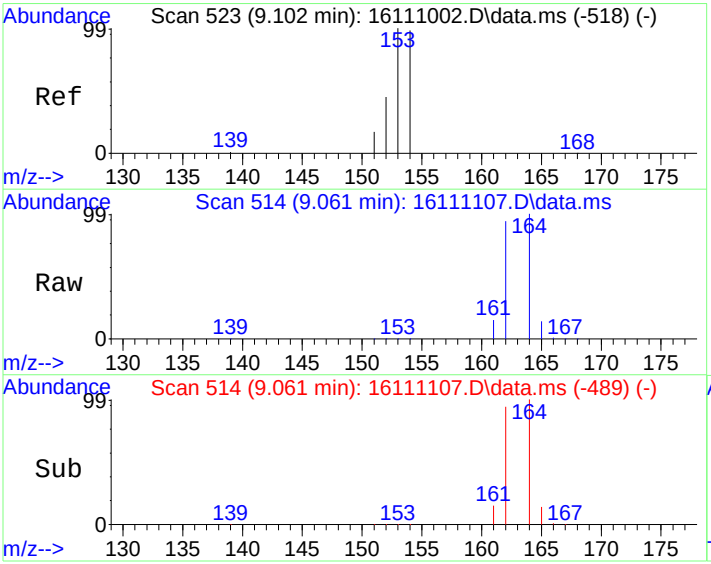
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111107.D
Acq On : 11 Nov 2016 11:01 am
Operator :
Sample : 1611028-18A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: ~~1~~ 10X

Quant Time: Nov 14 13:32:48 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

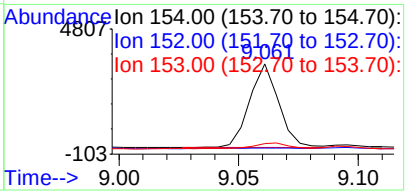


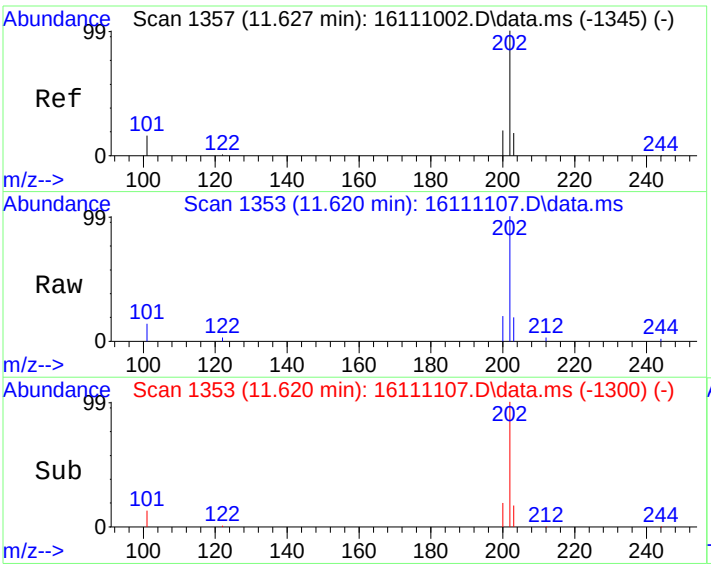


#9
Acenaphthene
Concen: 15.55 ug/kg
RT: 9.061 min Scan# 514
Delta R.T. -0.040 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:154 Resp: 2799

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	5.9	76.8	136.8#

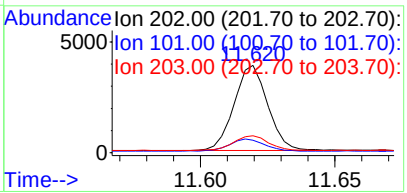


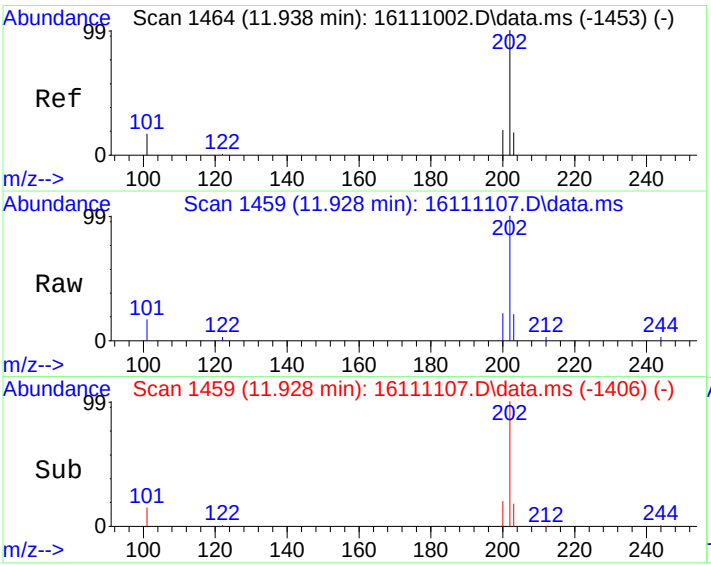


#14
Fluoranthene
Concen: 8.99 ug/kg
RT: 11.620 min Scan# 1353
Delta R.T. -0.006 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:202 Resp: 3346

Ion	Ratio	Lower	Upper
202	100		
101	12.8	0.0	45.8
203	17.3	0.0	48.2

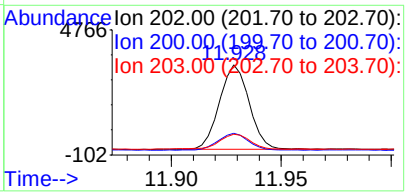


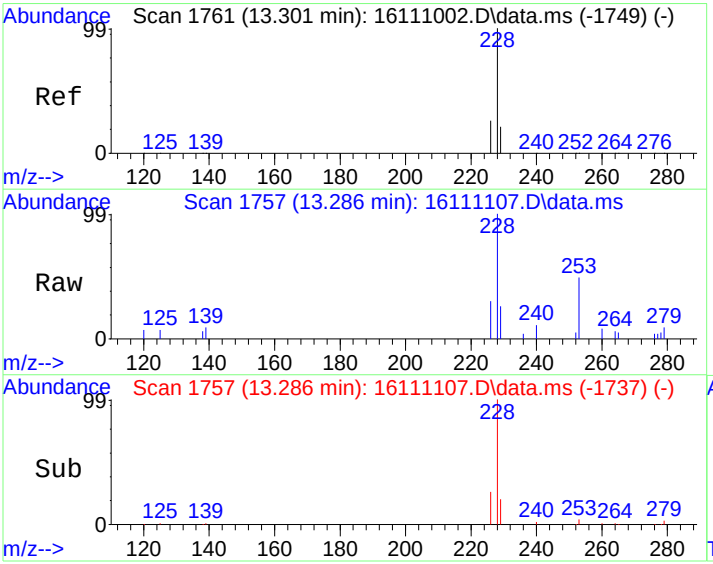


#15
Pyrene
Concen: 8.09 ug/kg
RT: 11.928 min Scan# 1459
Delta R.T. -0.010 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:202 Resp: 3089

Ion	Ratio	Lower	Upper
202	100		
200	19.9	0.0	50.3
203	17.7	0.0	48.2

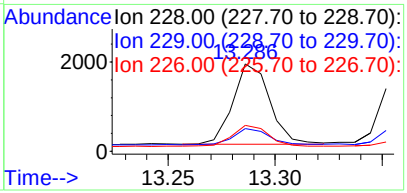


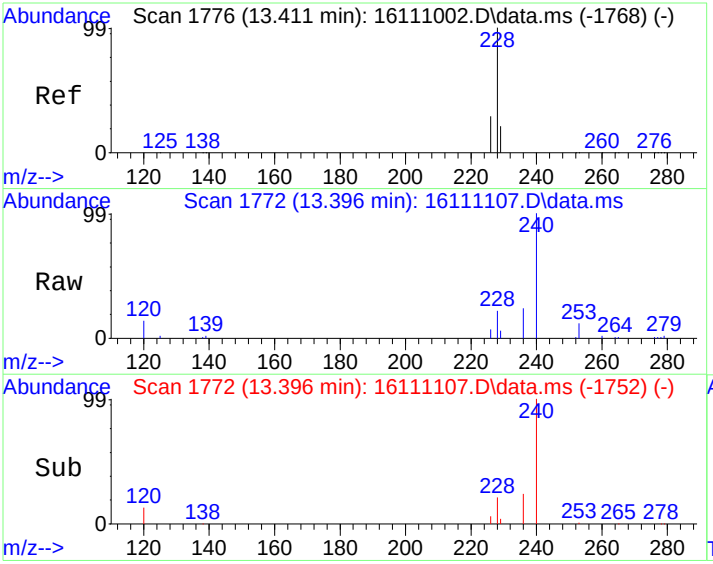


#18
Benzo[a]anthracene
Concen: 5.59 ug/kg
RT: 13.286 min Scan# 1757
Delta R.T. -0.015 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:228 Resp: 2157

Ion	Ratio	Lower	Upper
228	100		
229	20.2	0.0	50.8
226	25.8	0.0	55.5

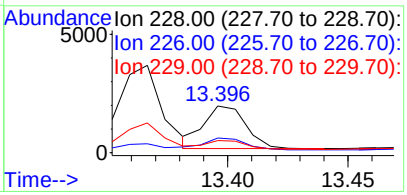


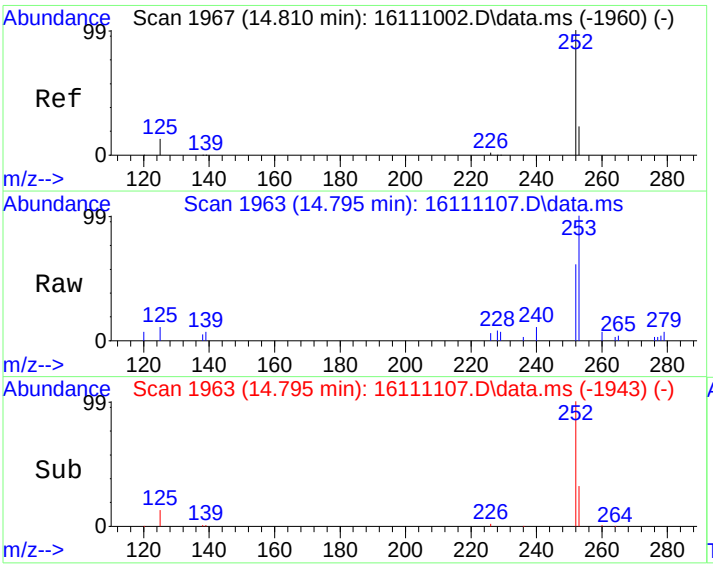


#19
Chrysene
Concen: 6.24 ug/kg
RT: 13.396 min Scan# 1772
Delta R.T. -0.015 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:228 Resp: 2182

Ion	Ratio	Lower	Upper
228	100		
226	28.4	0.0	58.7
229	20.7	0.0	50.4

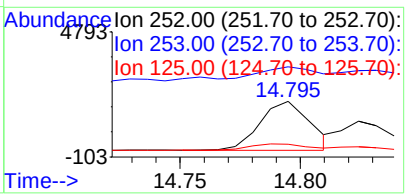


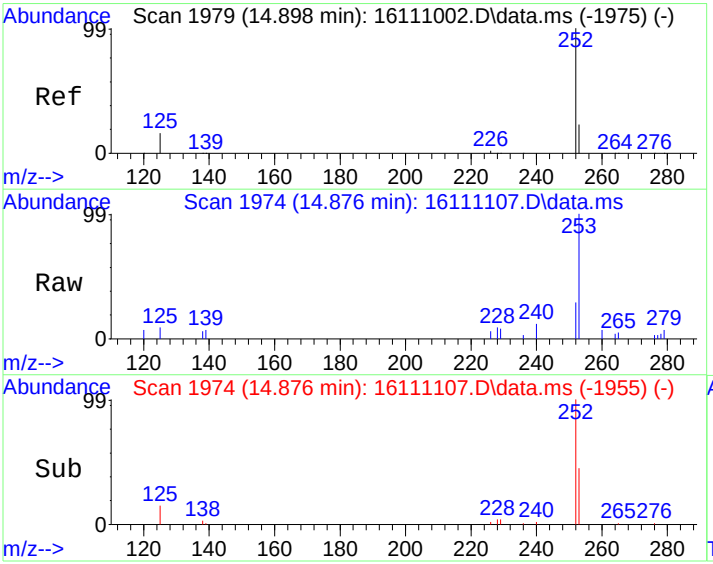


#21
Benzo[b]fluoranthene
Concen: 6.42 ug/kg
RT: 14.795 min Scan# 1963
Delta R.T. -0.015 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:252 Resp: 2754

Ion	Ratio	Lower	Upper
252	100		
253	24.1	0.0	52.7
125	11.6	0.0	42.9

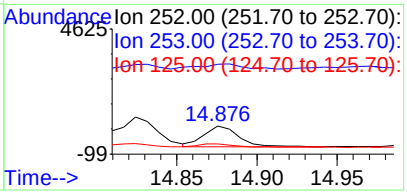


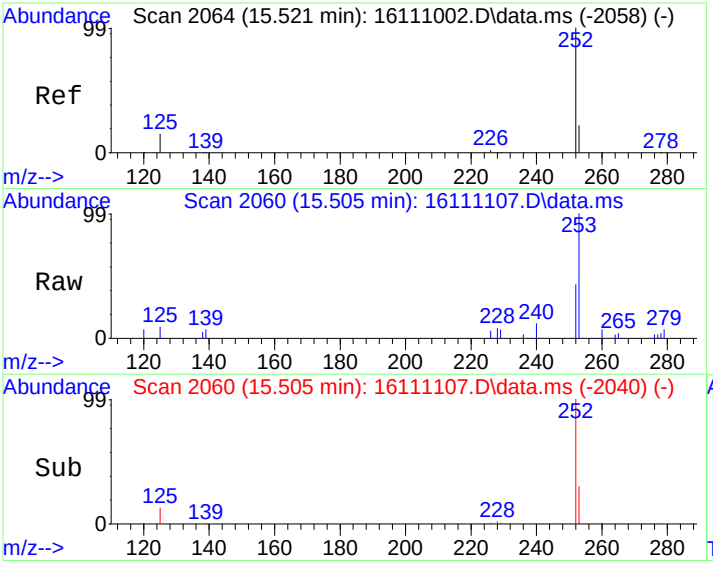


#23
Benzo(j)fluoranthene
Concen: 3.09 ug/kg
RT: 14.876 min Scan# 1974
Delta R.T. -0.022 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:252 Resp: 1178

Ion	Ratio	Lower	Upper
252	100		
253	13.8	2.7	42.7
125	15.7	0.0	36.4

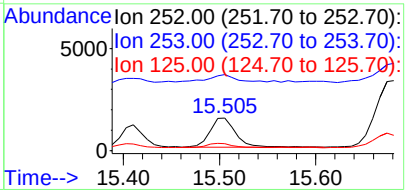


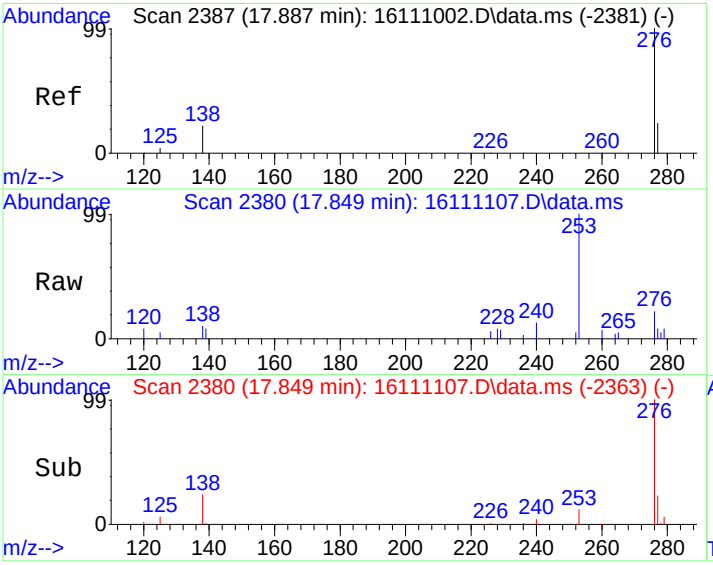


#25
Benzo[a]pyrene
Concen: 6.67 ug/kg
RT: 15.505 min Scan# 2060
Delta R.T. -0.015 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:252 Resp: 2622

Ion	Ratio	Lower	Upper
252	100		
253	23.5	2.7	42.7
125	13.5	0.0	33.9

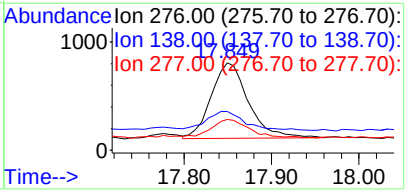


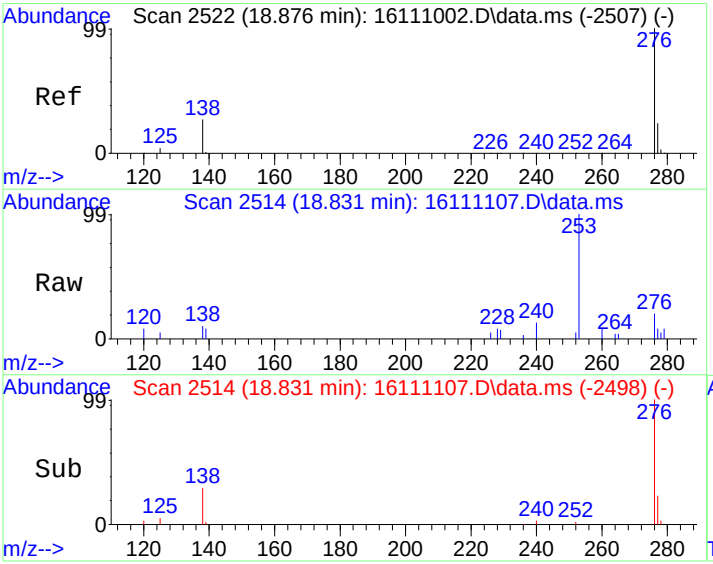


#27
Indeno[1,2,3-cd]pyrene
Concen: 5.24 ug/kg
RT: 17.849 min Scan# 2380
Delta R.T. -0.037 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:276 Resp: 2065

Ion	Ratio	Lower	Upper
276	100		
138	24.1	4.4	44.4
277	23.2	4.4	44.4

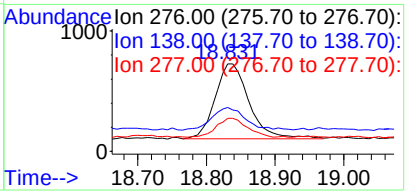




#28
Benzo[g,h,i]perylene
Concen: 5.13 ug/kg
RT: 18.831 min Scan# 2514
Delta R.T. -0.044 min
Lab File: 16111107.D
Acq: 11 Nov 2016 11:01 am

Tgt Ion:276 Resp: 2142

Ion	Ratio	Lower	Upper
276	100		
138	30.4	7.7	47.7
277	24.6	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111108.D
Acq On : 11 Nov 2016 11:29 am
Operator :
Sample : 1611028-19A
Misc : SAMP
ALS Vial : 6 Sample Multiplier: 10

Quant Time: Nov 14 13:32:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	801144	4000.00	ug/kg	91
5) Acenaphthene-d10	9.063	164	742617	4000.00	ug/kg	94
11) Phenanthrene-d10	10.463	188	1307433	4000.00	ug/kg	93
17) Chrysene-d12	13.366	240	1578299	4000.00	ug/kg	94
20) Perylene-d12	15.681	264	1645532	4000.00	ug/kg	93

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.337	172	22195	92.02	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.30%#			
16) 4-Terphenyl-d14	11.844	244	24036	95.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.39%#			

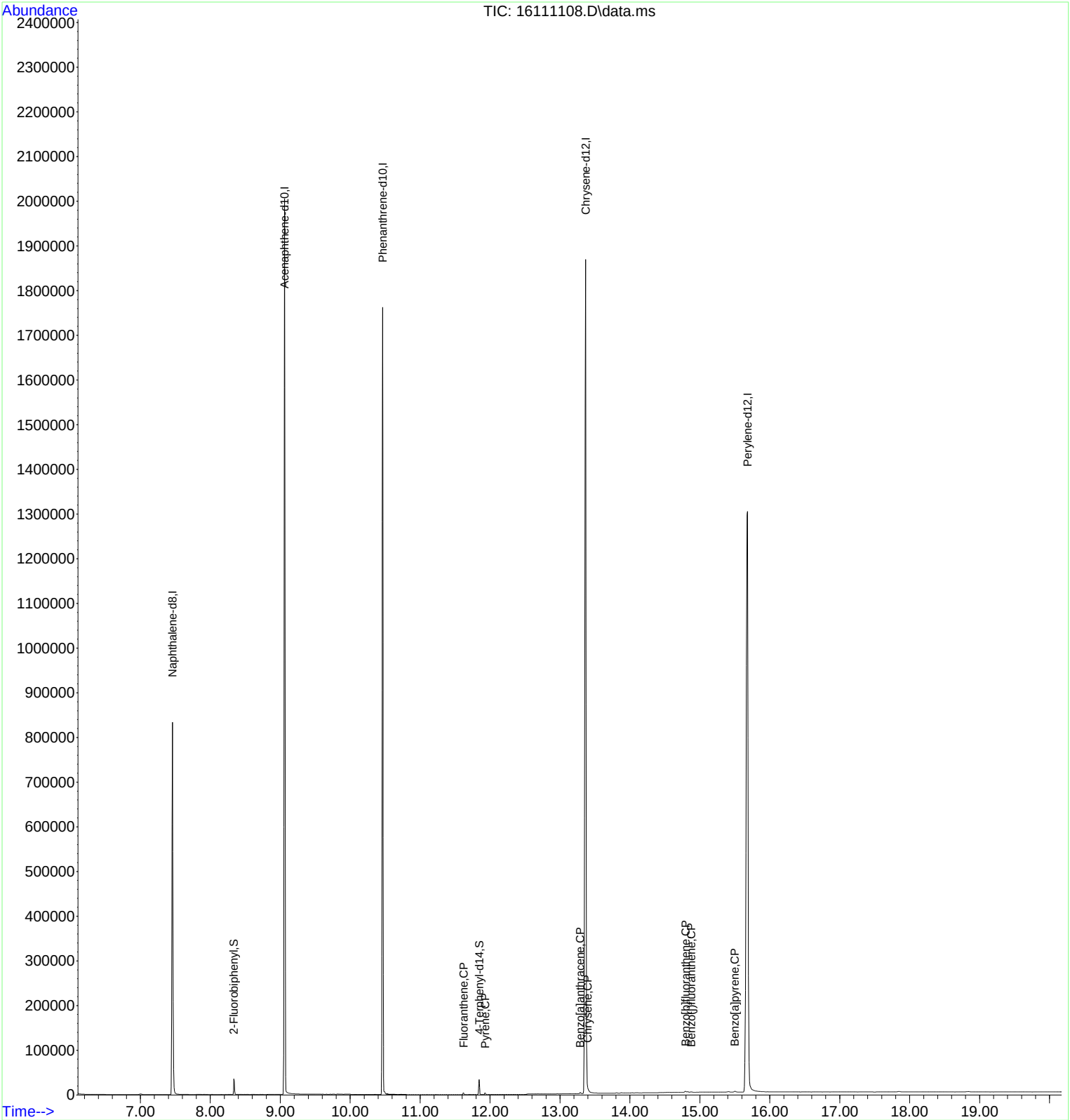
Target Compounds						Qvalue
14) Fluoranthene	11.620	202	2577	7.10	ug/kg	98
15) Pyrene	11.929	202	2476	6.64	ug/kg	99
18) Benzo[a]anthracene	13.286	228	2024	5.45	ug/kg	97
19) Chrysene	13.403	228	2064	6.13	ug/kg	98
21) Benzo[b]fluoranthene	14.795	252	2384	5.81	ug/kg	96
23) Benzo(j)fluoranthene	14.875	252	1089	2.98	ug/kg	95
25) Benzo[a]pyrene	15.505	252	2425	6.45	ug/kg	90

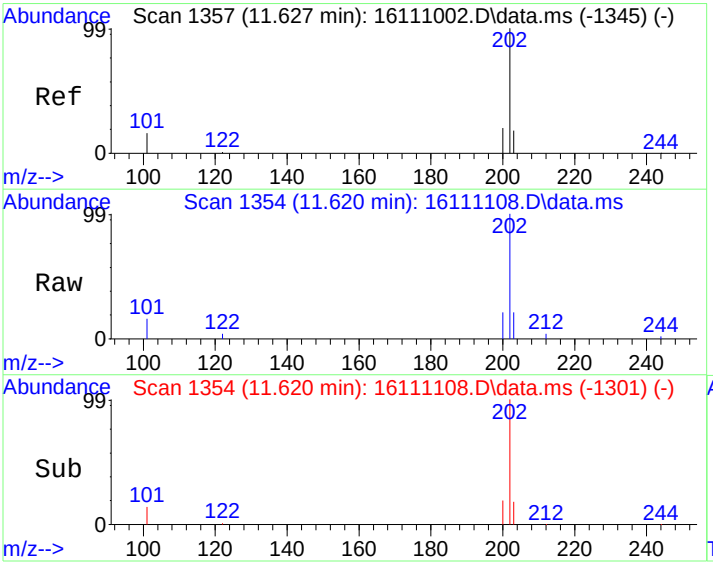
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111108.D
Acq On : 11 Nov 2016 11:29 am
Operator :
Sample : 1611028-19A
Misc : SAMP
ALS Vial : 6 Sample Multiplier: 10

Quant Time: Nov 14 13:32:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

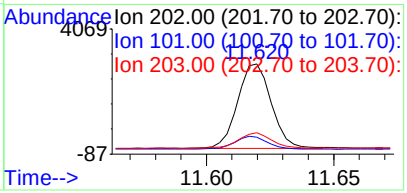


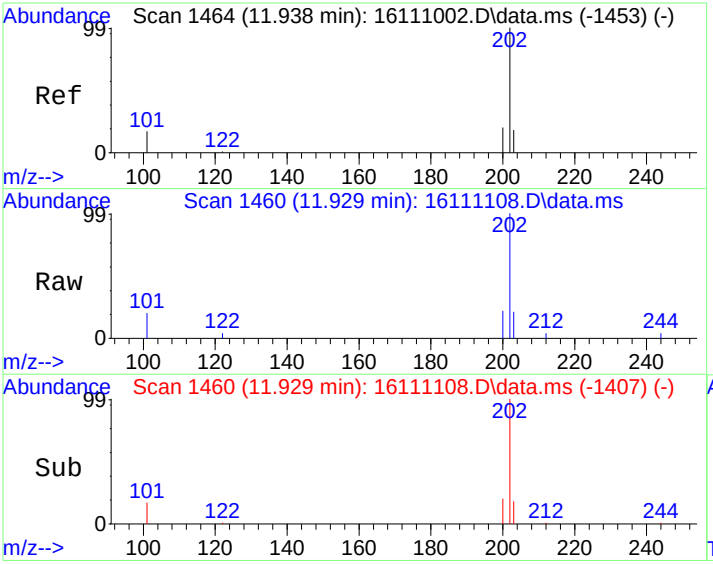


#14
Fluoranthene
Concen: 7.10 ug/kg
RT: 11.620 min Scan# 1354
Delta R.T. -0.006 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:202 Resp: 2577

Ion	Ratio	Lower	Upper
202	100		
101	14.2	0.0	45.8
203	18.4	0.0	48.2

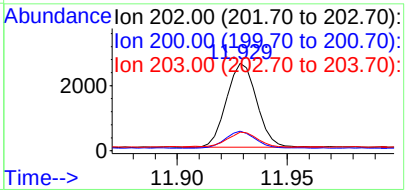


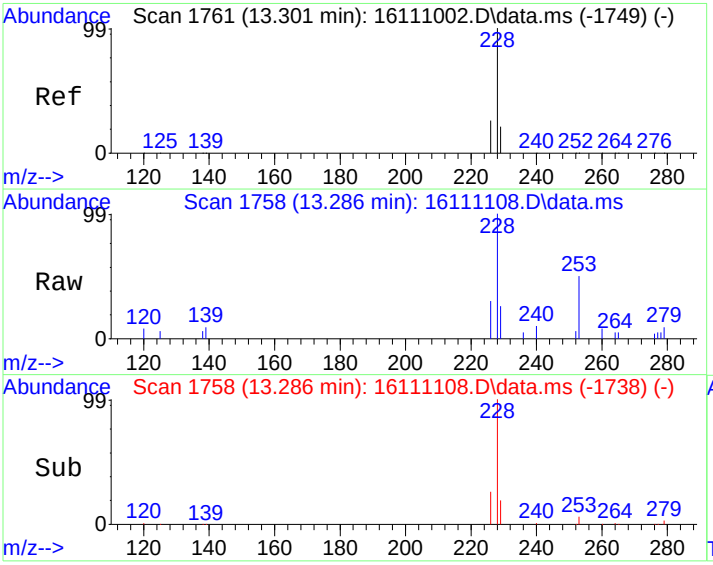


#15
Pyrene
Concen: 6.64 ug/kg
RT: 11.929 min Scan# 1460
Delta R.T. -0.009 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:202 Resp: 2476

Ion	Ratio	Lower	Upper
202	100		
200	20.0	0.0	50.3
203	17.5	0.0	48.2

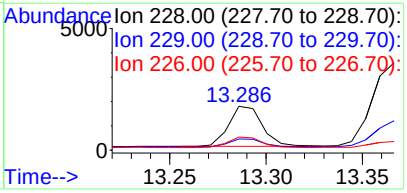


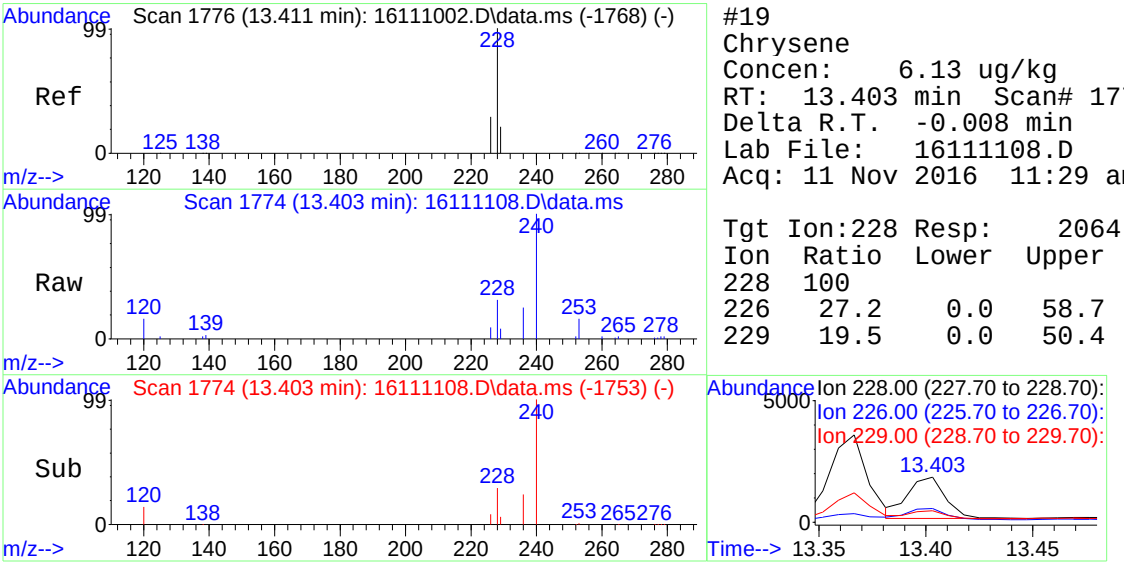


#18
Benzo[a]anthracene
Concen: 5.45 ug/kg
RT: 13.286 min Scan# 1758
Delta R.T. -0.015 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:228 Resp: 2024

Ion	Ratio	Lower	Upper
228	100		
229	19.5	0.0	50.8
226	27.0	0.0	55.5

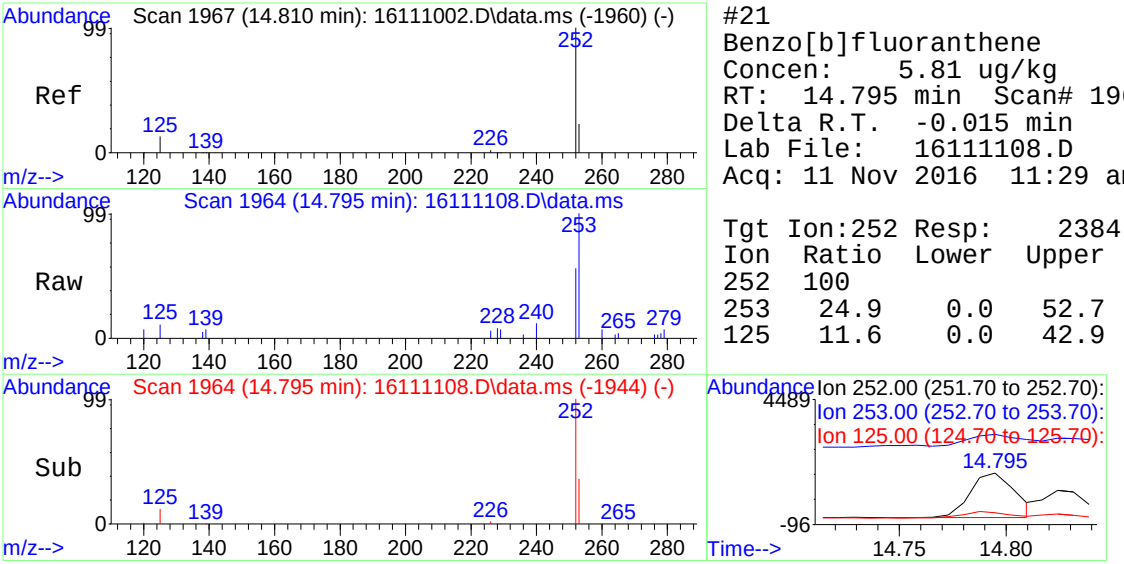




#19
Chrysene
Concen: 6.13 ug/kg
RT: 13.403 min Scan# 1774
Delta R.T. -0.008 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:228 Resp: 2064

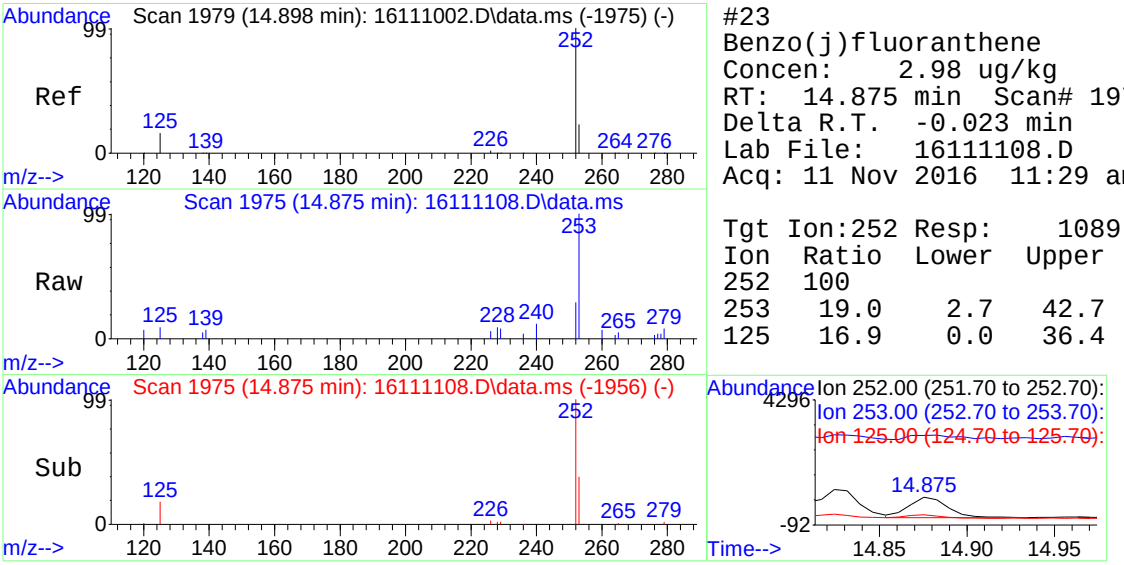
Ion	Ratio	Lower	Upper
228	100		
226	27.2	0.0	58.7
229	19.5	0.0	50.4



#21
Benzo[b]fluoranthene
Concen: 5.81 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:252 Resp: 2384

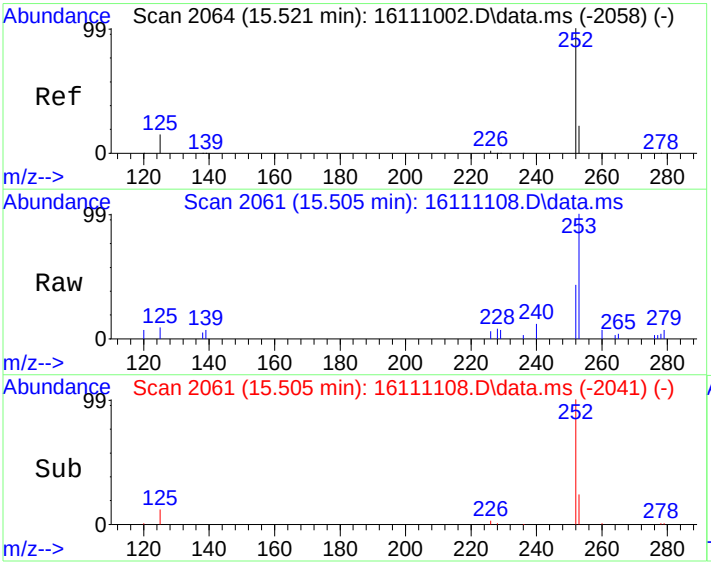
Ion	Ratio	Lower	Upper
252	100		
253	24.9	0.0	52.7
125	11.6	0.0	42.9



#23
Benzo(j)fluoranthene
Concen: 2.98 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:252 Resp: 1089

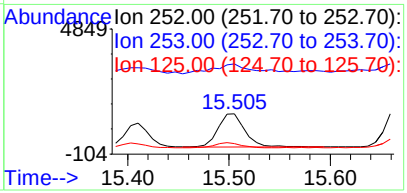
Ion	Ratio	Lower	Upper
252	100		
253	19.0	2.7	42.7
125	16.9	0.0	36.4



#25
Benzo[a]pyrene
Concen: 6.45 ug/kg
RT: 15.505 min Scan# 2061
Delta R.T. -0.015 min
Lab File: 16111108.D
Acq: 11 Nov 2016 11:29 am

Tgt Ion:252 Resp: 2425

Ion	Ratio	Lower	Upper
252	100		
253	29.5	2.7	42.7
125	12.7	0.0	33.9



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111109.D
Acq On : 11 Nov 2016 11:59 am
Operator :
Sample : 1611028-20A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: Nov 14 13:33:00 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.456	136	845602	4000.00	ug/kg	96
5) Acenaphthene-d10	9.062	164	762163	4000.00	ug/kg	96
11) Phenanthrene-d10	10.465	188	1328345	4000.00	ug/kg	94
17) Chrysene-d12	13.366	240	1601936	4000.00	ug/kg	96
20) Perylene-d12	15.681	264	1654206	4000.00	ug/kg	94

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.341	172	22668	91.57	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.29%#			
16) 4-Terphenyl-d14	11.846	244	25192	98.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.47%#			

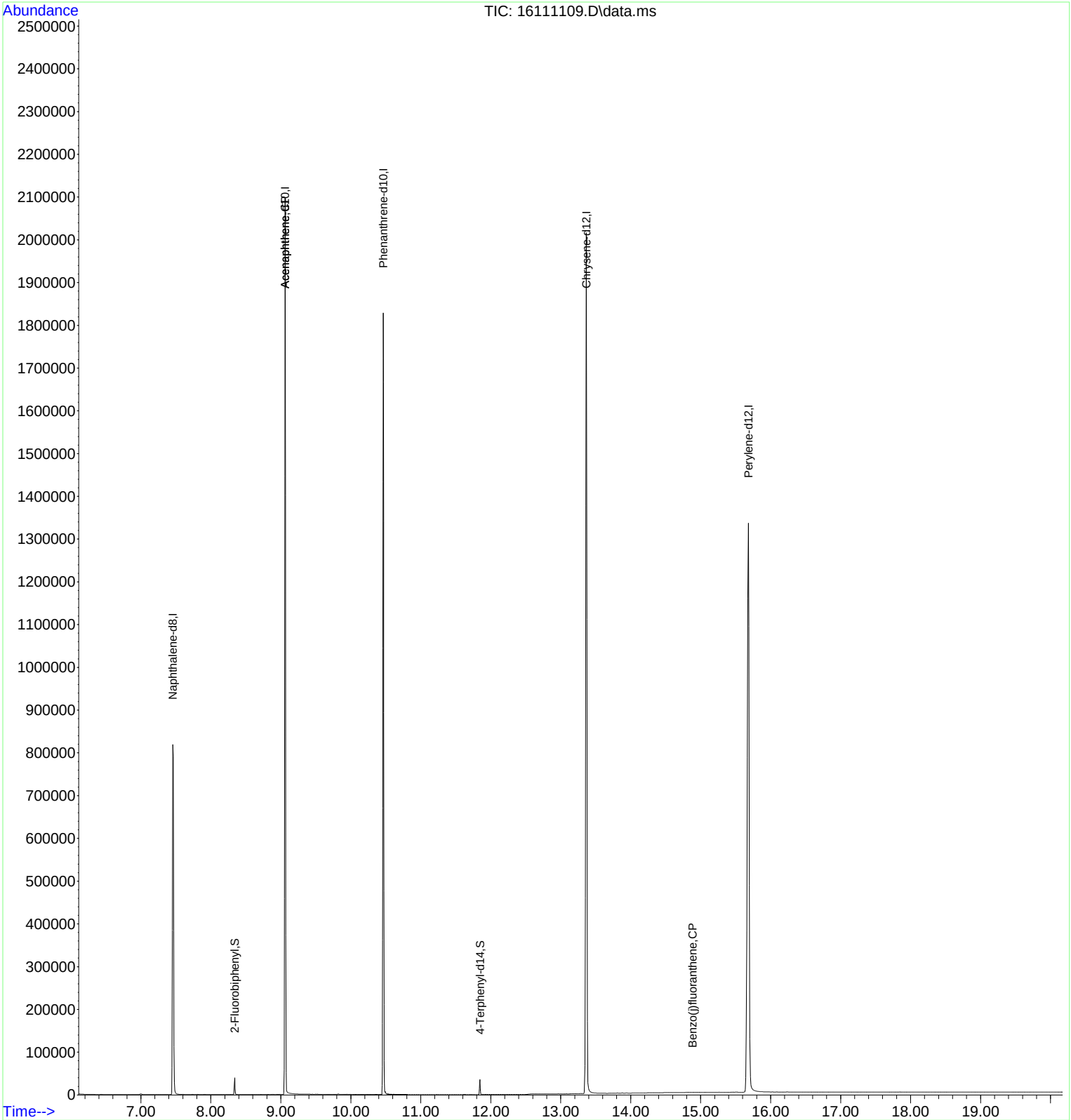
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2841	15.43	ug/kg#	11
23) Benzo(j)fluoranthene	14.875	252	94	0.26	ug/kg	93

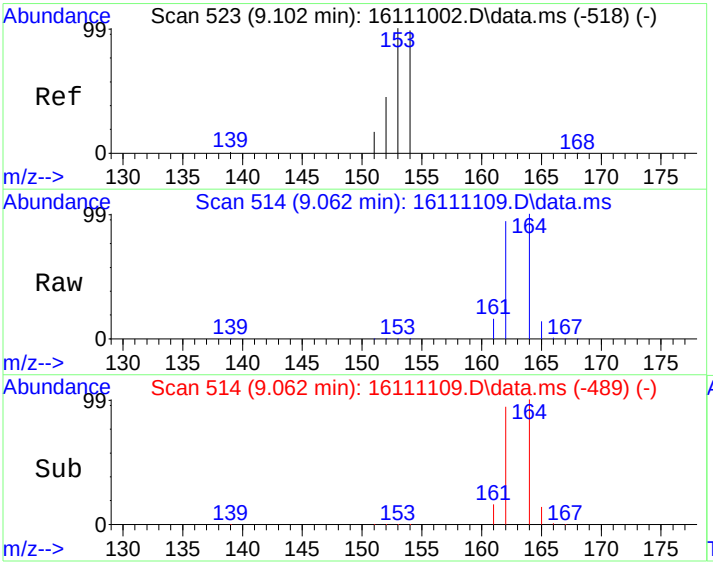
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111109.D
Acq On : 11 Nov 2016 11:59 am
Operator :
Sample : 1611028-20A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: Nov 14 13:33:00 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

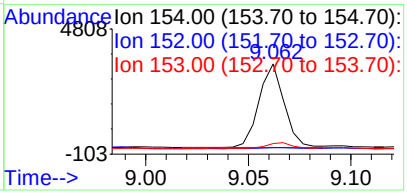


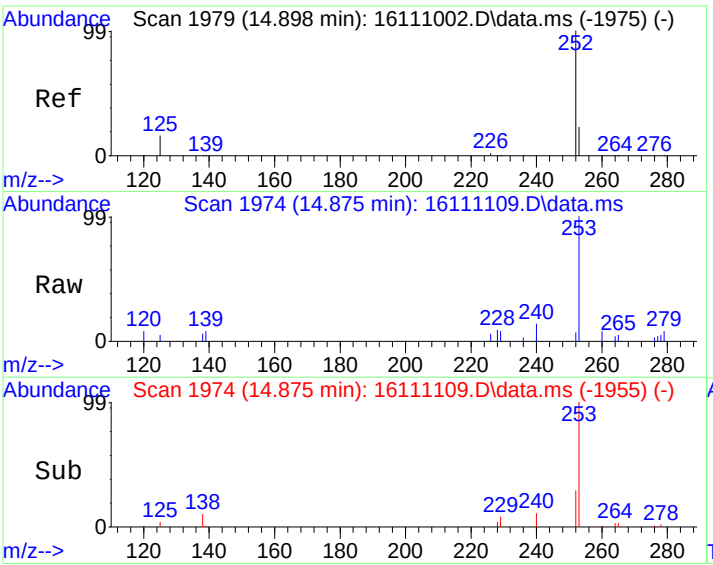


#9
Acenaphthene
Concen: 15.43 ug/kg
RT: 9.062 min Scan# 514
Delta R.T. -0.039 min
Lab File: 16111109.D
Acq: 11 Nov 2016 11:59 am

Tgt Ion:154 Resp: 2841

Ion	Ratio	Lower	Upper
154	100		
152	0.9	20.7	80.7#
153	6.2	76.8	136.8#

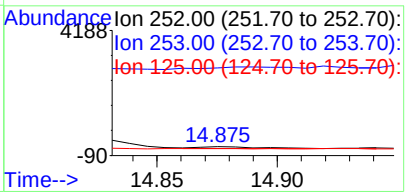




#23
Benzo(j)fluoranthene
Concen: 0.26 ug/kg
RT: 14.875 min Scan# 1974
Delta R.T. -0.023 min
Lab File: 16111109.D
Acq: 11 Nov 2016 11:59 am

Tgt Ion:252 Resp: 94

Ion	Ratio	Lower	Upper
252	100		
253	19.4	2.7	42.7
125	12.9	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111110.D
Acq On : 11 Nov 2016 12:28 pm
Operator :
Sample : 1611028-21A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: Nov 14 13:33:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	883987	4000.00	ug/kg	100
5) Acenaphthene-d10	9.063	164	751049	4000.00	ug/kg	95
11) Phenanthrene-d10	10.465	188	1334298	4000.00	ug/kg	95
17) Chrysene-d12	13.366	240	1593307	4000.00	ug/kg	95
20) Perylene-d12	15.681	264	1671878	4000.00	ug/kg	95

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	22657	92.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.32%#			
16) 4-Terphenyl-d14	11.844	244	25188	98.21	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.46%#			

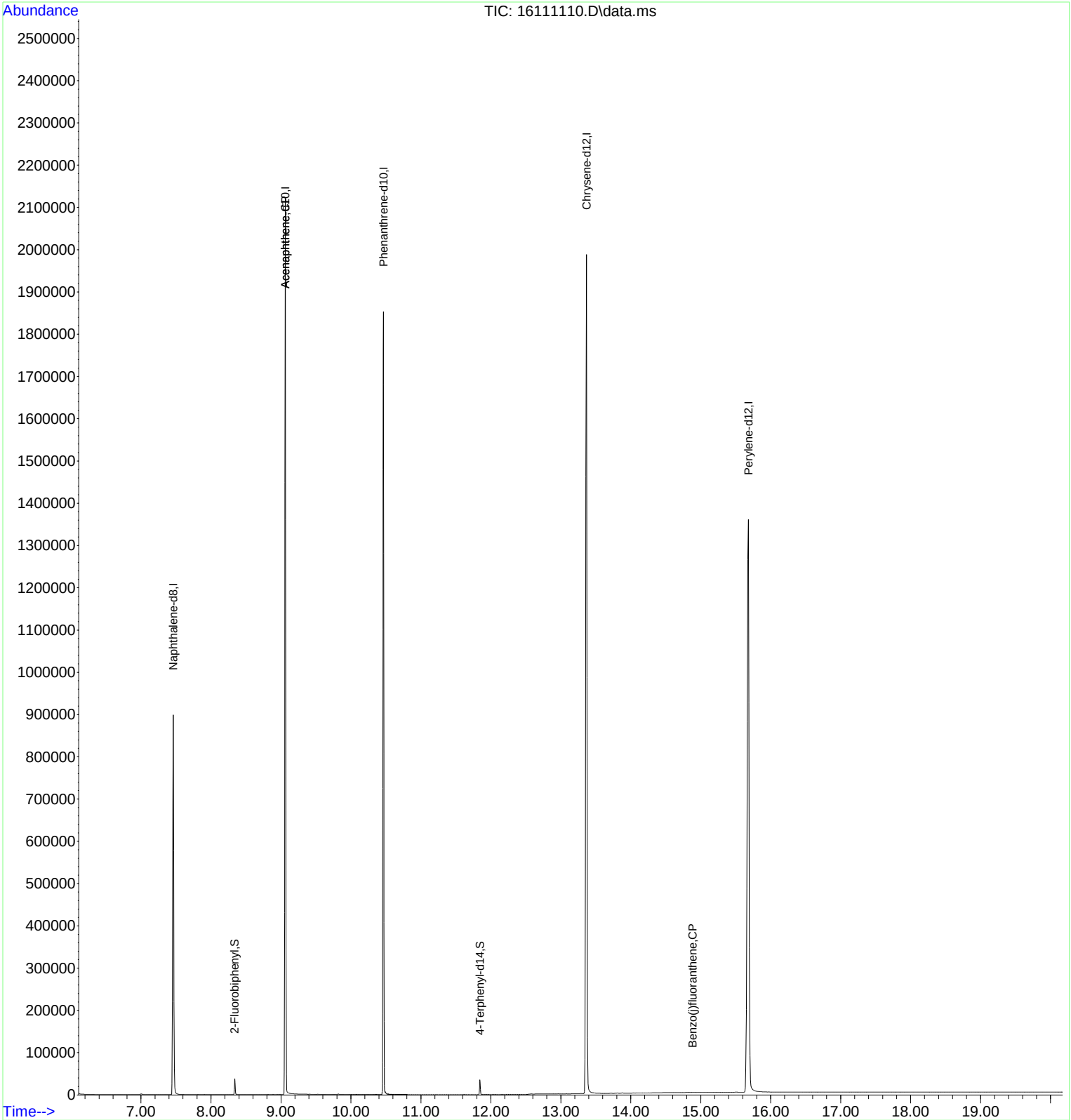
Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2810	15.49	ug/kg#	11
23) Benzo(j)fluoranthene	14.875	252	57	0.15	ug/kg#	56

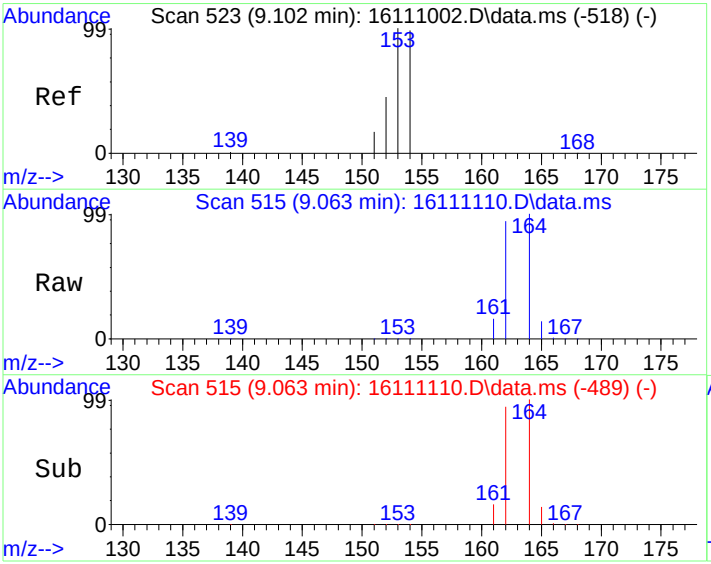
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111110.D
Acq On : 11 Nov 2016 12:28 pm
Operator :
Sample : 1611028-21A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: Nov 14 13:33:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

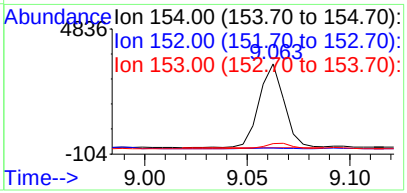


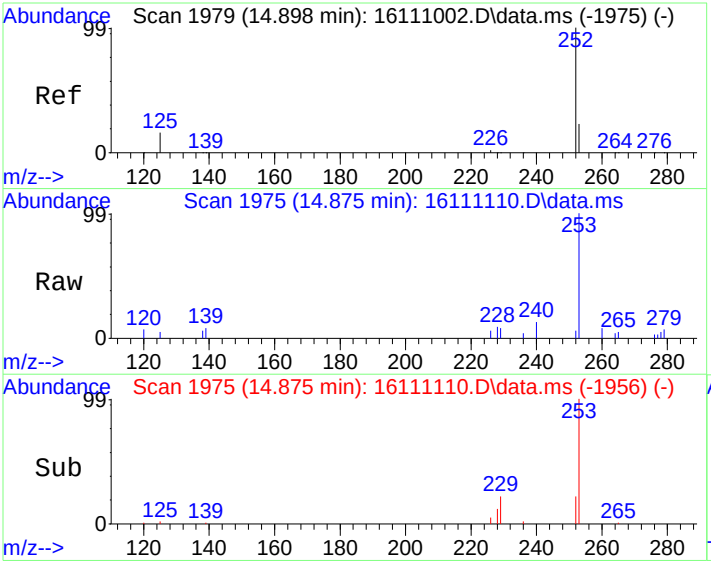


#9
Acenaphthene
Concen: 15.49 ug/kg
RT: 9.063 min Scan# 515
Delta R.T. -0.038 min
Lab File: 16111110.D
Acq: 11 Nov 2016 12:28 pm

Tgt Ion:154 Resp: 2810

Ion	Ratio	Lower	Upper
154	100		
152	0.9	20.7	80.7#
153	6.3	76.8	136.8#

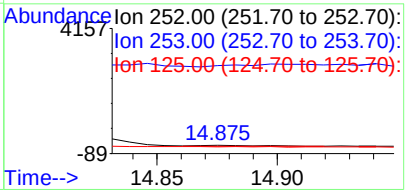




#23
Benzo(j)fluoranthene
Concen: 0.15 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111110.D
Acq: 11 Nov 2016 12:28 pm

Tgt Ion:252 Resp: 57

Ion	Ratio	Lower	Upper
252	100		
253	56.3	2.7	42.7#
125	12.5	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111111.D
Acq On : 11 Nov 2016 12:56 pm
Operator :
Sample : 1611028-22A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: Nov 14 13:33:08 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	892398	4000.00	ug/kg	101
5) Acenaphthene-d10	9.061	164	773961	4000.00	ug/kg	98
11) Phenanthrene-d10	10.465	188	1362360	4000.00	ug/kg	96
17) Chrysene-d12	13.367	240	1620739	4000.00	ug/kg	97
20) Perylene-d12	15.681	264	1685049	4000.00	ug/kg	96

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	22471	89.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.23%#			
16) 4-Terphenyl-d14	11.844	244	24808	94.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.37%#			

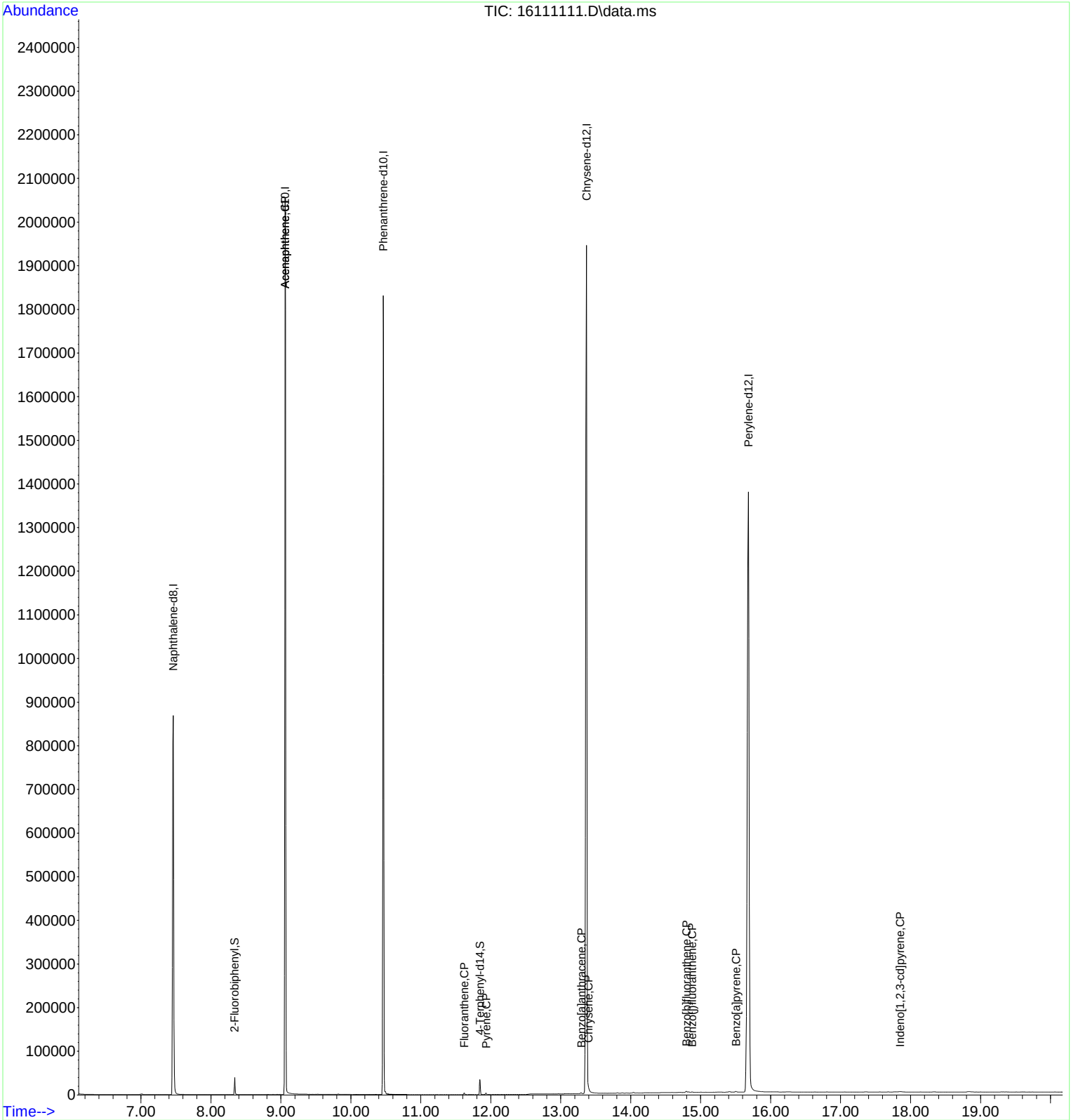
Target Compounds						Qvalue
9) Acenaphthene	9.061	154	2864	15.32	ug/kg#	11
14) Fluoranthene	11.620	202	2684	7.09	ug/kg	98
15) Pyrene	11.932	202	2573	6.62	ug/kg	99
18) Benzo[a]anthracene	13.294	228	1932	5.06	ug/kg	96
19) Chrysene	13.403	228	1994	5.76	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	2741	6.52	ug/kg	94
23) Benzo(j)fluoranthene	14.876	252	995	2.66	ug/kg	97
25) Benzo[a]pyrene	15.506	252	2361	6.13	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.850	276	2019	5.23	ug/kg	99

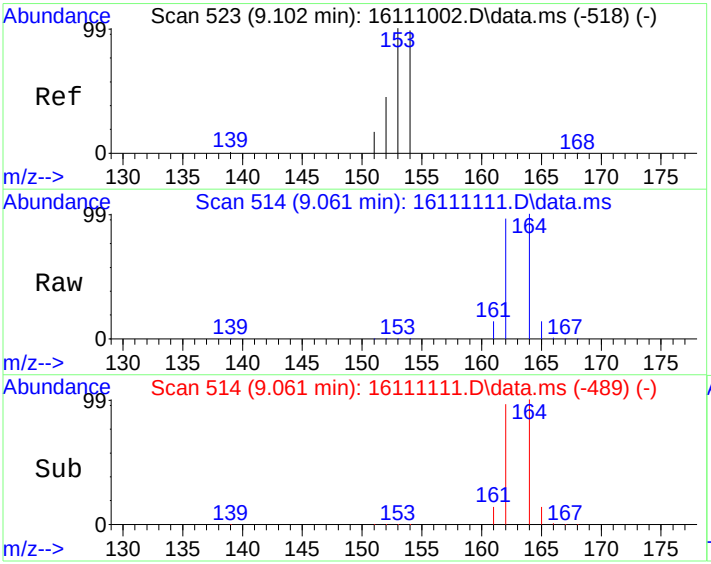
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111111.D
Acq On : 11 Nov 2016 12:56 pm
Operator :
Sample : 1611028-22A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: Nov 14 13:33:08 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

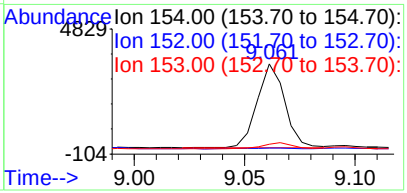


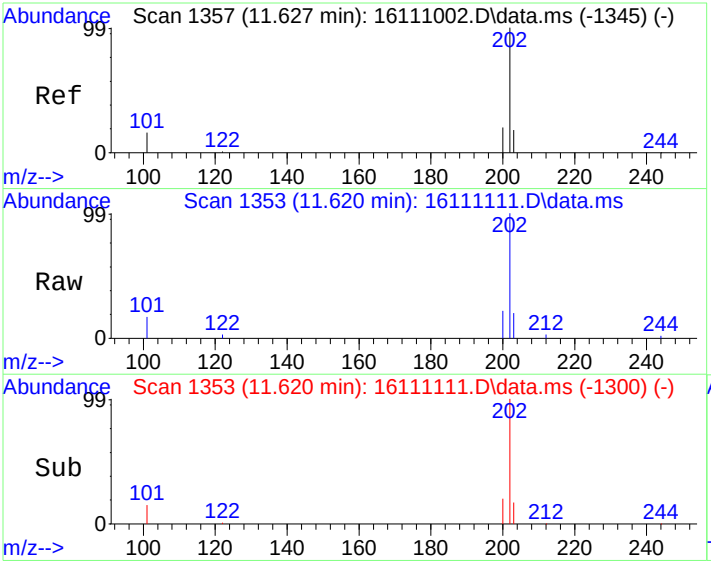


#9
Acenaphthene
Concen: 15.32 ug/kg
RT: 9.061 min Scan# 514
Delta R.T. -0.040 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:154 Resp: 2864

Ion	Ratio	Lower	Upper
154	100		
152	1.1	20.7	80.7#
153	5.4	76.8	136.8#

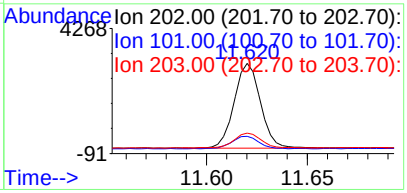


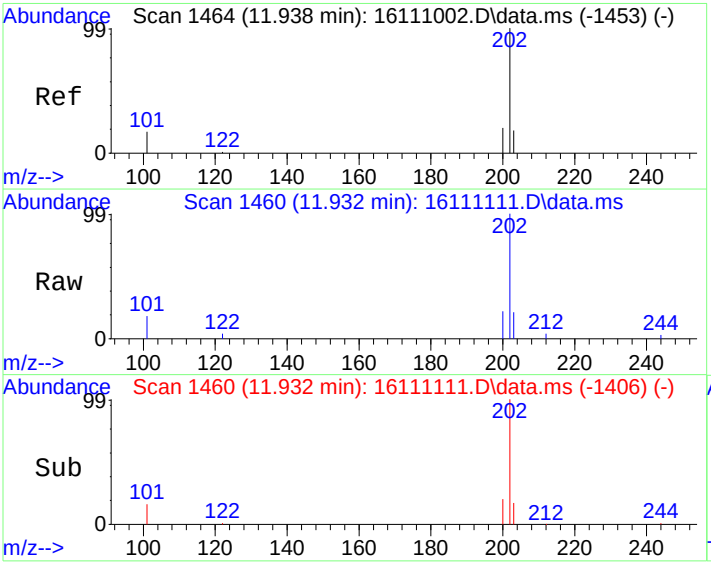


#14
Fluoranthene
Concen: 7.09 ug/kg
RT: 11.620 min Scan# 1353
Delta R.T. -0.006 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:202 Resp: 2684

Ion	Ratio	Lower	Upper
202	100		
101	14.9	0.0	45.8
203	17.4	0.0	48.2

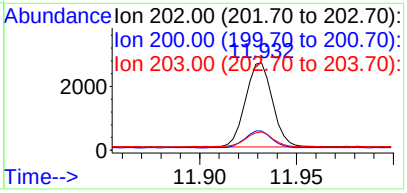


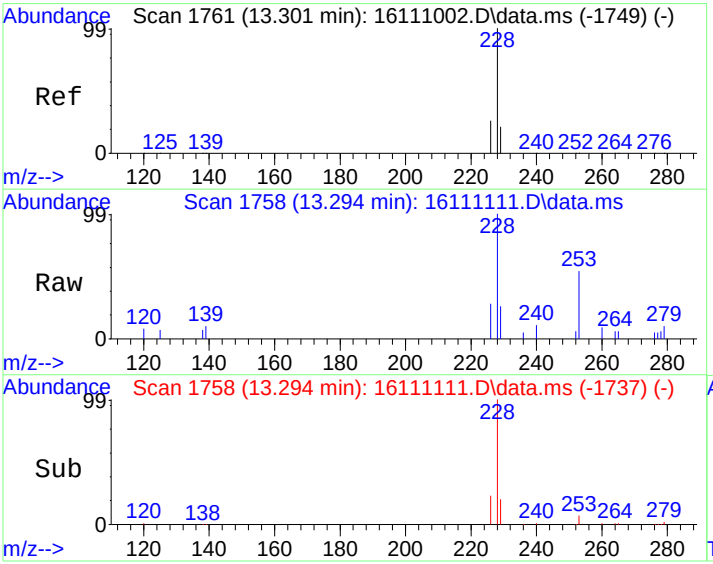


#15
Pyrene
Concen: 6.62 ug/kg
RT: 11.932 min Scan# 1460
Delta R.T. -0.006 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:202 Resp: 2573

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	50.3
203	17.7	0.0	48.2

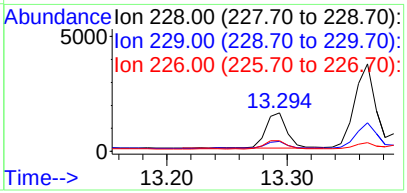


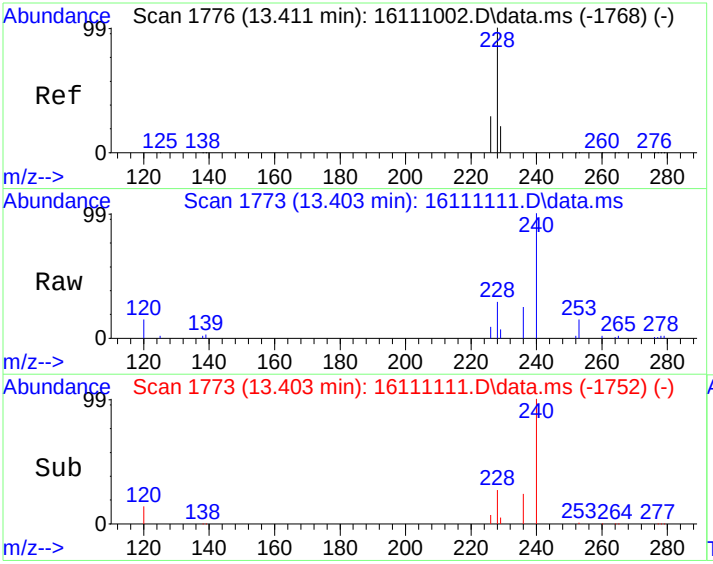


#18
Benzo[a]anthracene
Concen: 5.06 ug/kg
RT: 13.294 min Scan# 1758
Delta R.T. -0.008 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:228 Resp: 1932

Ion	Ratio	Lower	Upper
228	100		
229	19.8	0.0	50.8
226	23.1	0.0	55.5

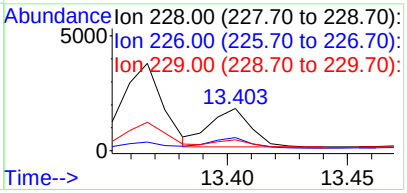


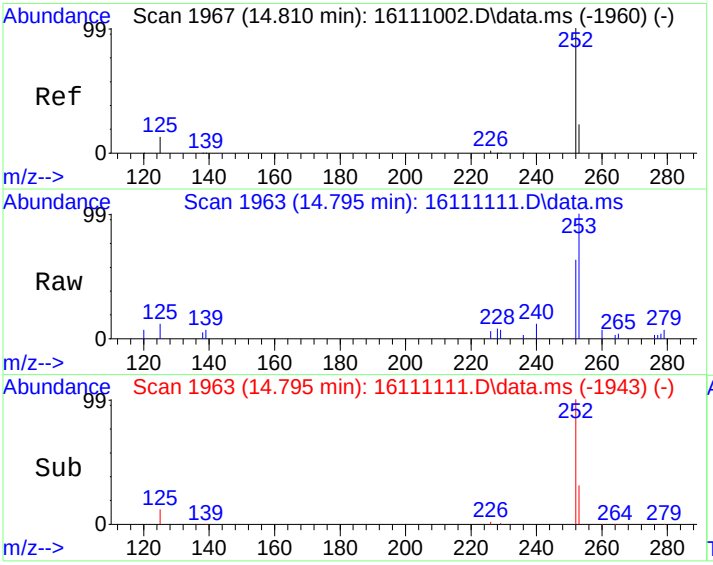


#19
Chrysene
Concen: 5.76 ug/kg
RT: 13.403 min Scan# 1773
Delta R.T. -0.008 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:228 Resp: 1994

Ion	Ratio	Lower	Upper
228	100		
226	27.4	0.0	58.7
229	20.4	0.0	50.4

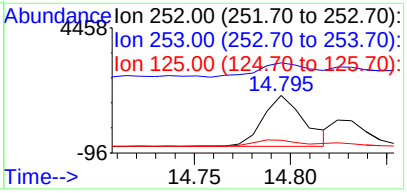


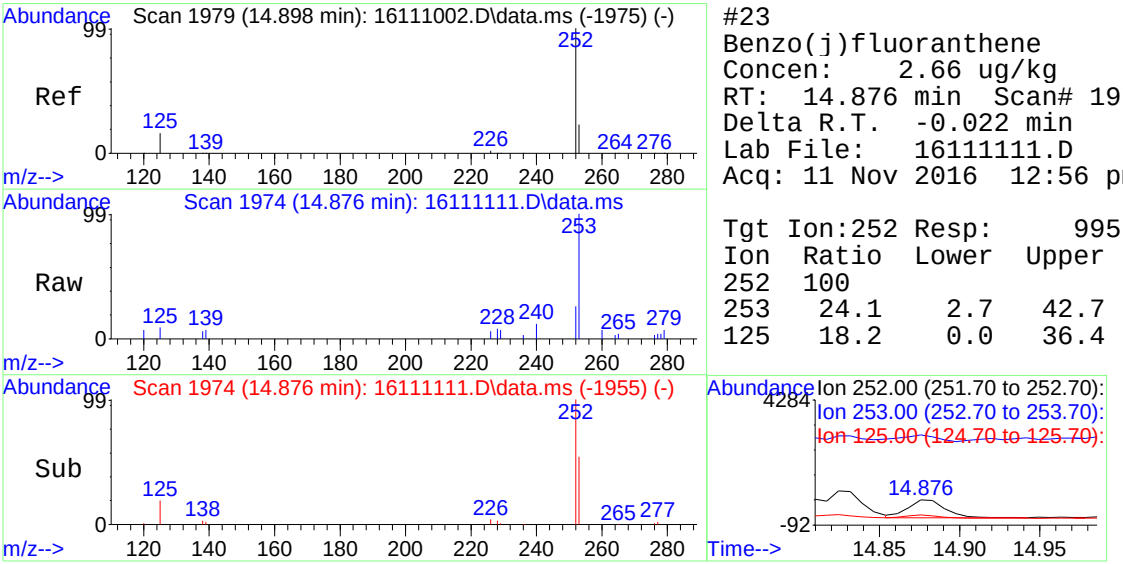


#21
Benzo[b]fluoranthene
Concen: 6.52 ug/kg
RT: 14.795 min Scan# 1963
Delta R.T. -0.015 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:252 Resp: 2741

Ion	Ratio	Lower	Upper
252	100		
253	26.3	0.0	52.7
125	11.9	0.0	42.9

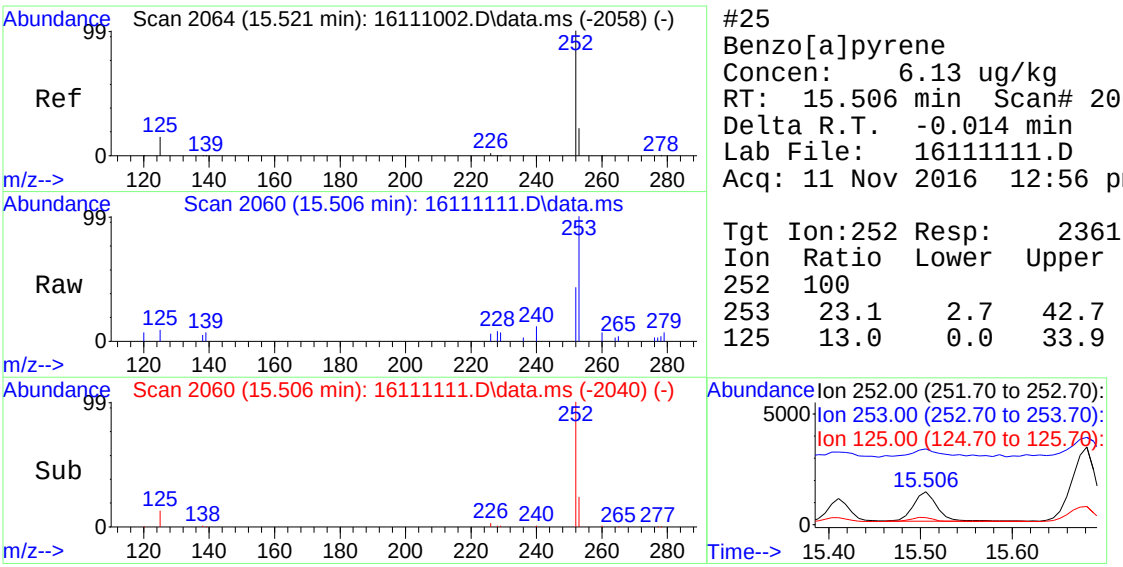




#23
Benzo(j)fluoranthene
Concen: 2.66 ug/kg
RT: 14.876 min Scan# 1974
Delta R.T. -0.022 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:252 Resp: 995

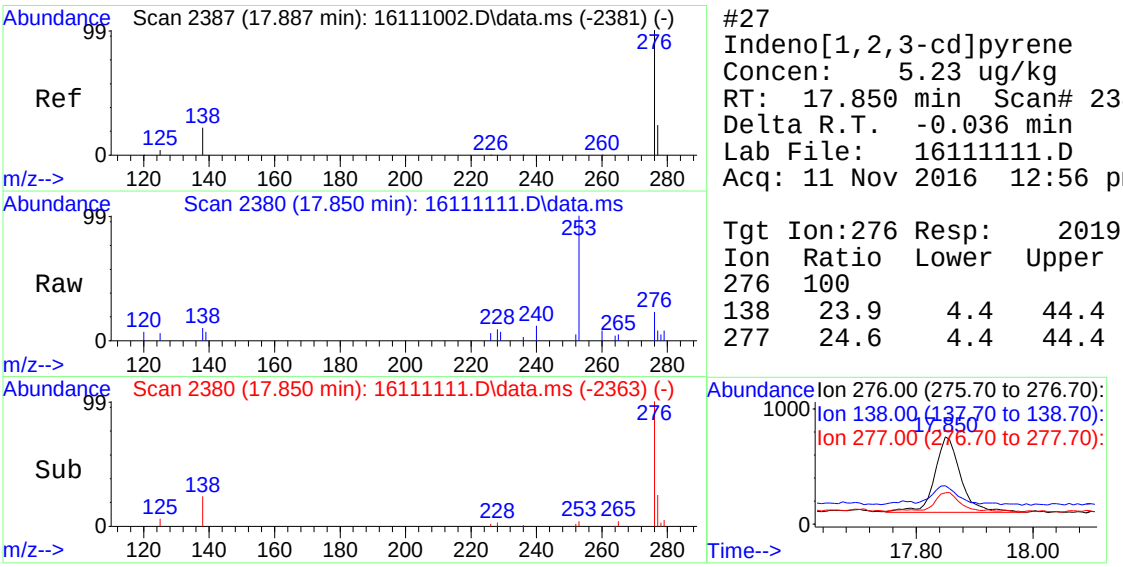
Ion	Ratio	Lower	Upper
252	100		
253	24.1	2.7	42.7
125	18.2	0.0	36.4



#25
Benzo[a]pyrene
Concen: 6.13 ug/kg
RT: 15.506 min Scan# 2060
Delta R.T. -0.014 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:252 Resp: 2361

Ion	Ratio	Lower	Upper
252	100		
253	23.1	2.7	42.7
125	13.0	0.0	33.9



#27
Indeno[1,2,3-cd]pyrene
Concen: 5.23 ug/kg
RT: 17.850 min Scan# 2380
Delta R.T. -0.036 min
Lab File: 16111111.D
Acq: 11 Nov 2016 12:56 pm

Tgt Ion:276 Resp: 2019

Ion	Ratio	Lower	Upper
276	100		
138	23.9	4.4	44.4
277	24.6	4.4	44.4

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111112.D
Acq On : 11 Nov 2016 1:25 pm
Operator :
Sample : 1611028-23A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: Nov 14 13:33:14 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	881610	4000.00	ug/kg	100
5) Acenaphthene-d10	9.062	164	769535	4000.00	ug/kg	97
11) Phenanthrene-d10	10.465	188	1350016	4000.00	ug/kg	96
17) Chrysene-d12	13.366	240	1617166	4000.00	ug/kg	97
20) Perylene-d12	15.681	264	1692813	4000.00	ug/kg	96

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	21746	87.00	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.17%#			
16) 4-Terphenyl-d14	11.844	244	24545	94.59	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.36%#			

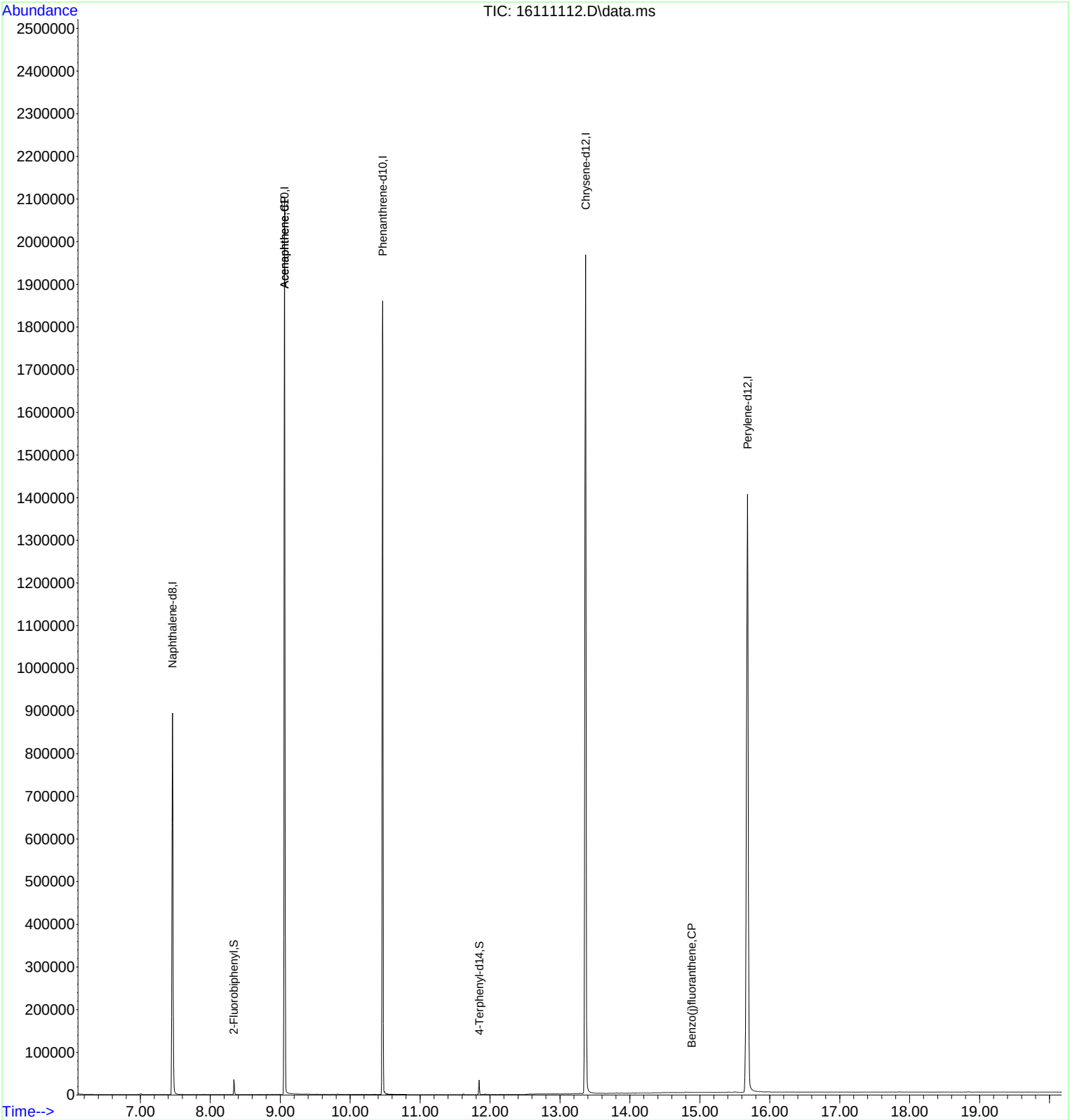
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2862	15.40	ug/kg#	11
23) Benzo(j)fluoranthene	14.882	252	419	1.12	ug/kg	93

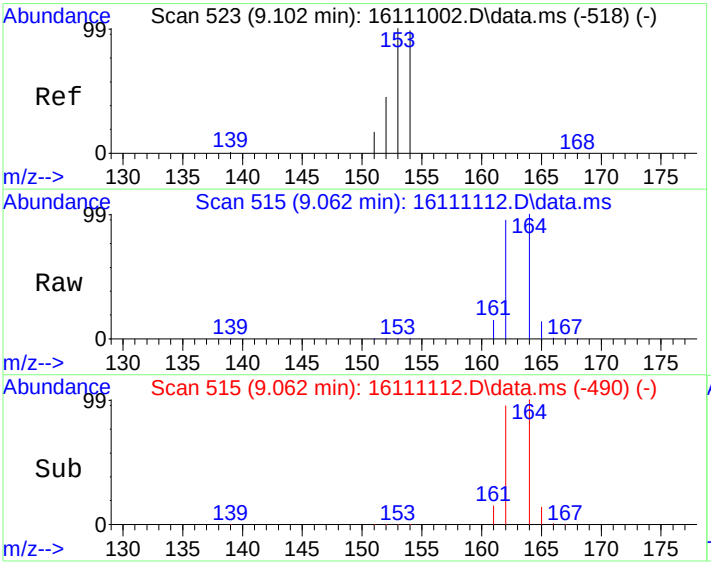
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111112.D
Acq On : 11 Nov 2016 1:25 pm
Operator :
Sample : 1611028-23A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: Nov 14 13:33:14 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

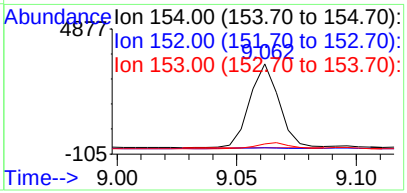


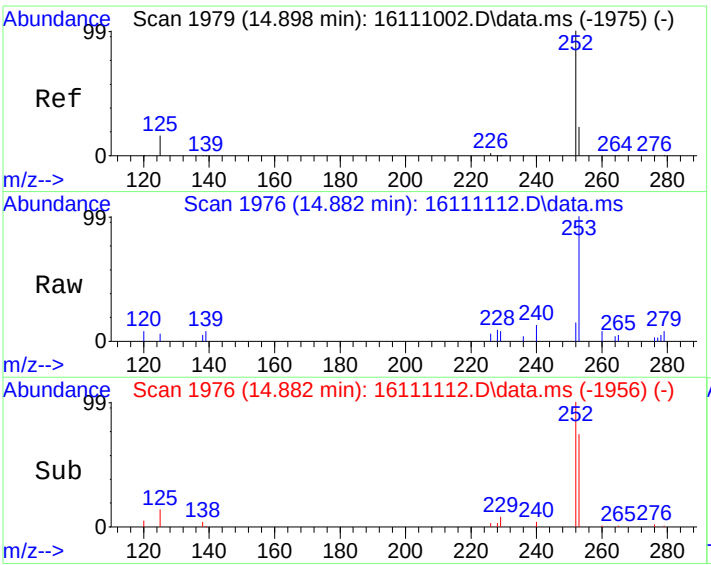


#9
Acenaphthene
Concen: 15.40 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111112.D
Acq: 11 Nov 2016 1:25 pm

Tgt Ion:154 Resp: 2862

Ion	Ratio	Lower	Upper
154	100		
152	0.9	20.7	80.7#
153	5.8	76.8	136.8#

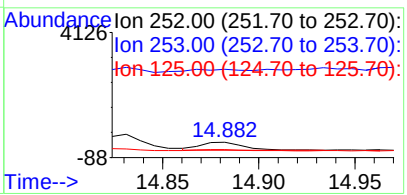




#23
Benzo(j)fluoranthene
Concen: 1.12 ug/kg
RT: 14.882 min Scan# 1976
Delta R.T. -0.016 min
Lab File: 16111112.D
Acq: 11 Nov 2016 1:25 pm

Tgt Ion:252 Resp: 419

Ion	Ratio	Lower	Upper
252	100		
253	25.9	2.7	42.7
125	12.9	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111113.D
Acq On : 11 Nov 2016 1:54 pm
Operator :
Sample : 1611028-24A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: Nov 14 13:33:18 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	909223	4000.00	ug/kg	103
5) Acenaphthene-d10	9.062	164	736599	4000.00	ug/kg	93
11) Phenanthrene-d10	10.465	188	1294472	4000.00	ug/kg	92
17) Chrysene-d12	13.366	240	1564751	4000.00	ug/kg	94
20) Perylene-d12	15.681	264	1628969	4000.00	ug/kg	92

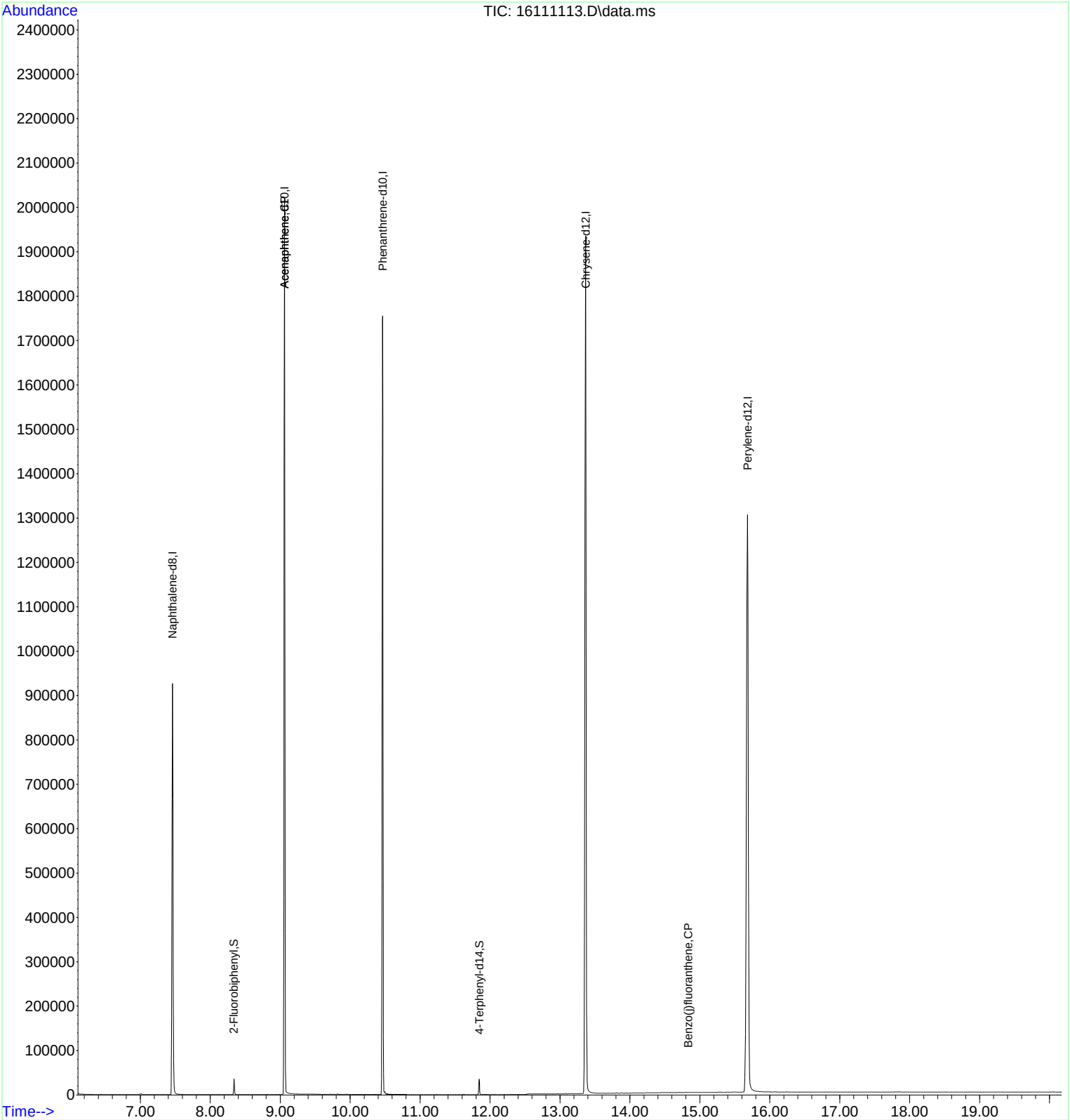
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	21668	90.57	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.26%#			
16) 4-Terphenyl-d14	11.844	244	24626	98.97	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.47%#			

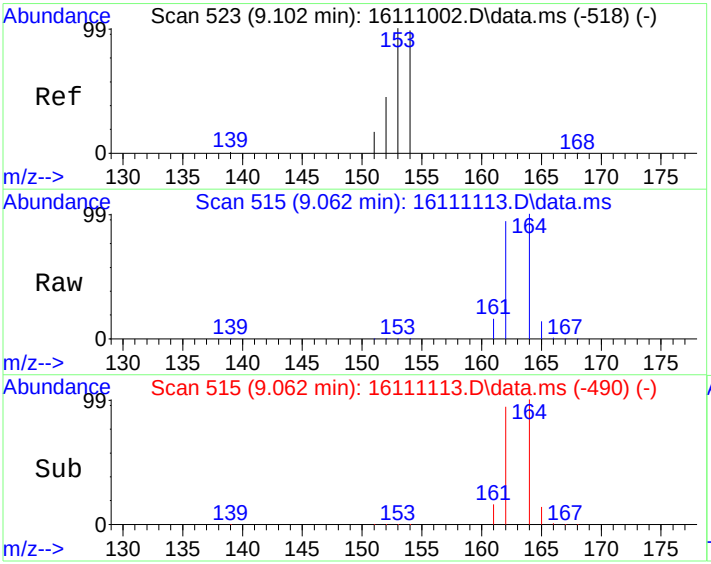
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2702	15.19	ug/kg#	11
23) Benzo(j)fluoranthene	14.831	252	312	0.86	ug/kg	82

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111113.D
Acq On : 11 Nov 2016 1:54 pm
Operator :
Sample : 1611028-24A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: Nov 14 13:33:18 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

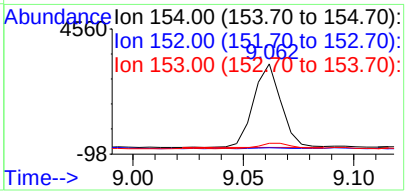


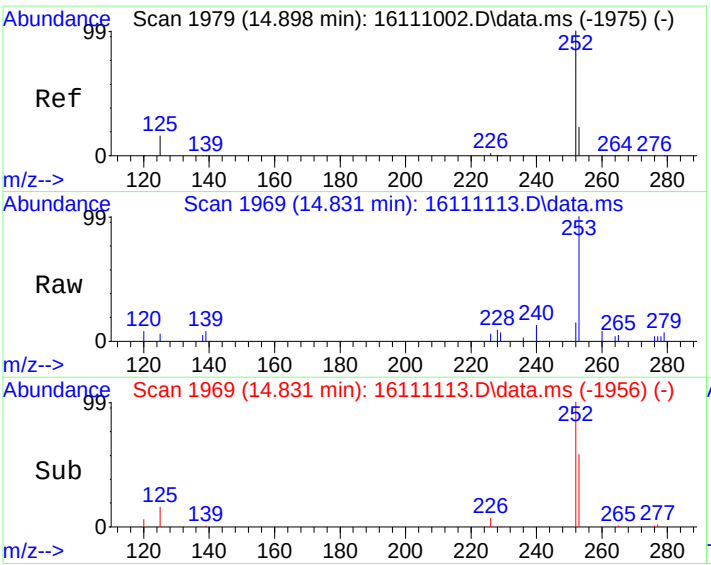


#9
Acenaphthene
Concen: 15.19 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111113.D
Acq: 11 Nov 2016 1:54 pm

Tgt Ion:154 Resp: 2702

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	6.1	76.8	136.8#

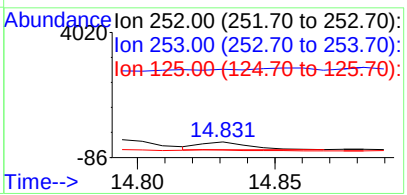




#23
Benzo(j)fluoranthene
Concen: 0.86 ug/kg
RT: 14.831 min Scan# 1969
Delta R.T. -0.067 min
Lab File: 16111113.D
Acq: 11 Nov 2016 1:54 pm

Tgt Ion:252 Resp: 312

Ion	Ratio	Lower	Upper
252	100		
253	9.8	2.7	42.7
125	14.1	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111115.D
Acq On : 11 Nov 2016 2:52 pm
Operator :
Sample : ICV2-161111
Misc : ICV
ALS Vial : 13 Sample Multiplier: ~~10~~ 1X

Quant Time: Nov 14 13:25:37 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

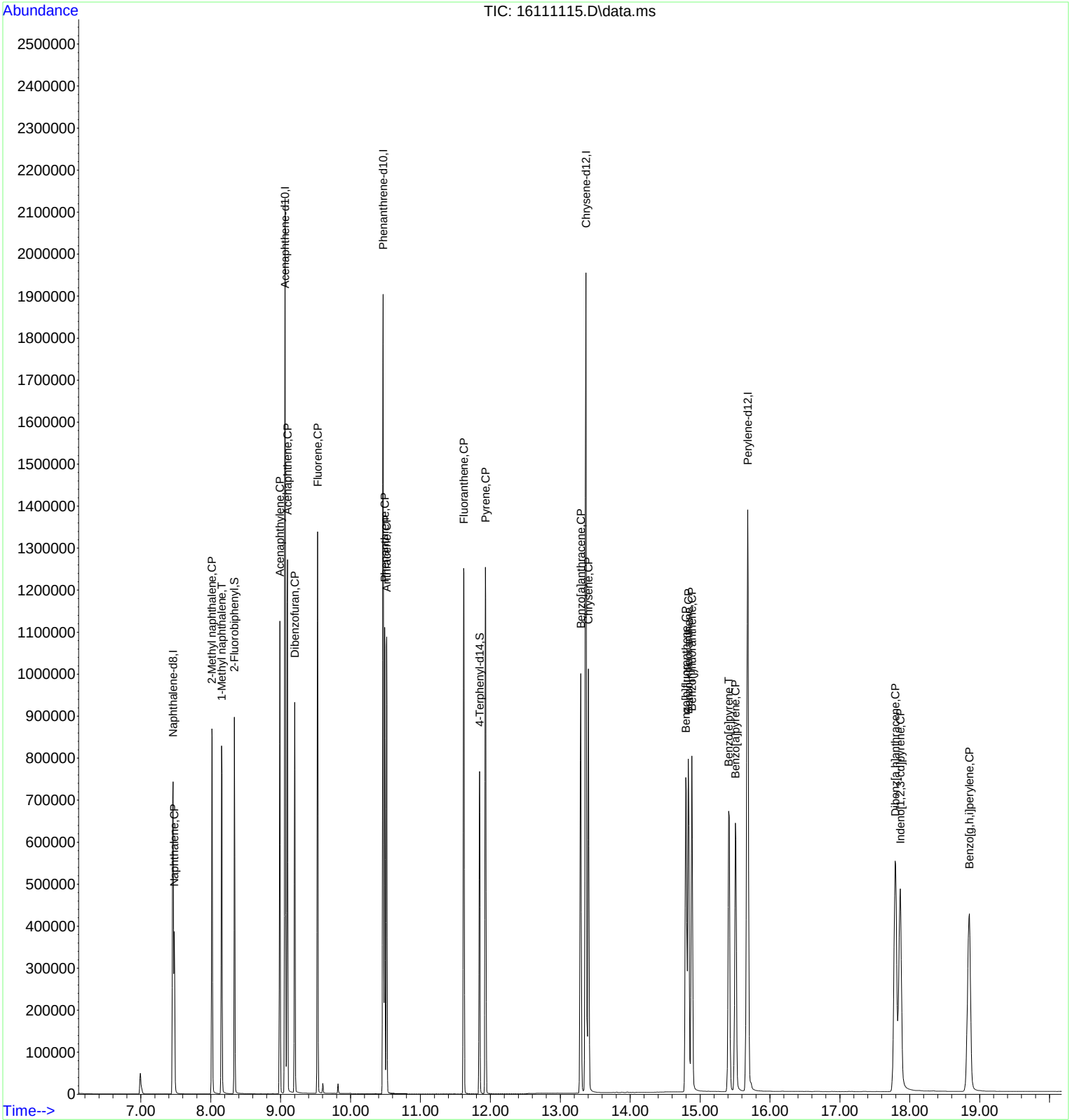
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	718113	4000.00	ug/kg	82
5) Acenaphthene-d10	9.062	164	771094	4000.00	ug/kg	97
11) Phenanthrene-d10	10.465	188	1393318	4000.00	ug/kg	99
17) Chrysene-d12	13.367	240	1593924	4000.00	ug/kg	95
20) Perylene-d12	15.682	264	1714288	4000.00	ug/kg	97
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	512635	2046.80	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.17%			
16) 4-Terphenyl-d14	11.845	244	545844	2038.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 50.95%			
Target Compounds						Qvalue
2) Naphthalene	7.477	128	281441	2018.11	ug/kg	99
3) 2-Methyl naphthalene	8.021	142	382374	2477.69	ug/kg	97
4) 1-Methyl naphthalene	8.159	142	346028	2483.51	ug/kg	96
6) Dibenzofuran	9.200	168	576464	2056.94	ug/kg	100
8) Acenaphthylene	8.989	152	654516	2035.92	ug/kg	99
9) Acenaphthene	9.097	154	384202	2063.02	ug/kg	95
10) Fluorene	9.529	166	474801	2035.48	ug/kg	98
12) Phenanthrene	10.488	178	635001	1939.95	ug/kg	99
13) Anthracene	10.517	178	636877	1911.22	ug/kg	100
14) Fluoranthene	11.621	202	723082	1868.48	ug/kg	99
15) Pyrene	11.930	202	739163	1860.37	ug/kg	100
18) Benzo[a]anthracene	13.294	228	777067	2070.29	ug/kg	100
19) Chrysene	13.403	228	723312	2125.57	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	869881	2033.82	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	750857	1942.20	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	776011	2040.64	ug/kg	98
24) Benzo[e]pyrene	15.418	252	781679	2038.91	ug/kg	96
25) Benzo[a]pyrene	15.506	252	781057	1993.99	ug/kg	98
26) Dibenz[a,h]anthracene	17.799	278	804820	1997.97	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.864	276	783716	1994.83	ug/kg	99
28) Benzo[g,h,i]perylene	18.853	276	832215	2000.13	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111115.D
Acq On : 11 Nov 2016 2:52 pm
Operator :
Sample : ICV2-161111
Misc : ICV
ALS Vial : 13 Sample Multiplier: ~~10~~ 1X

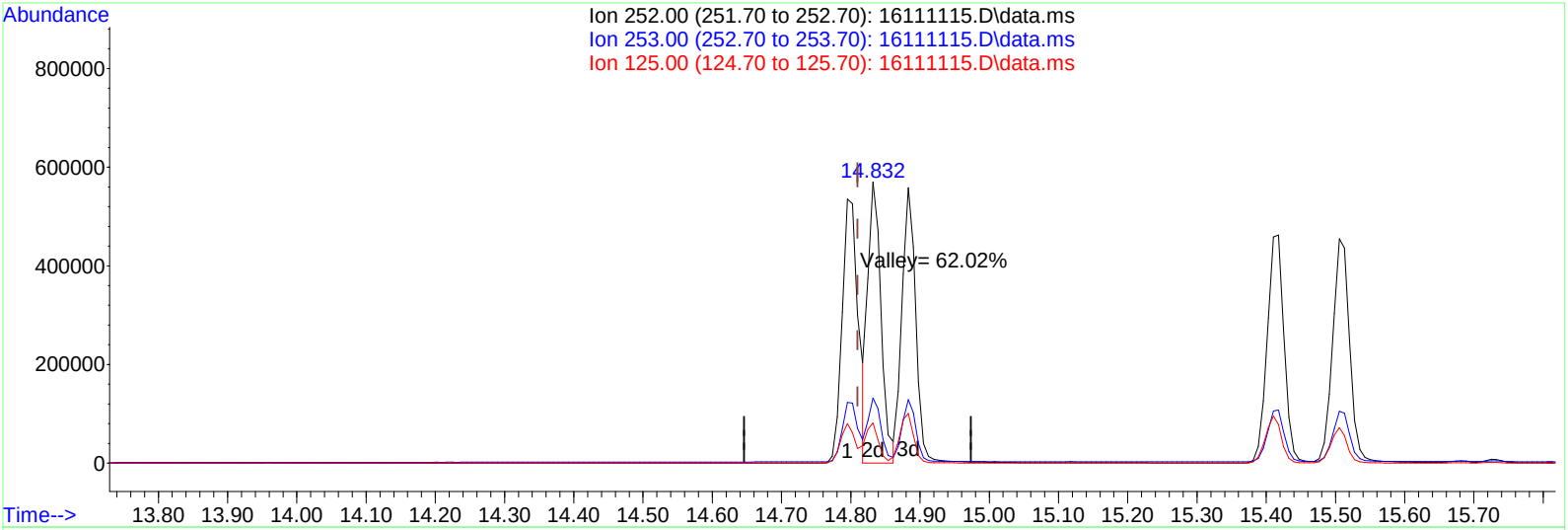
Quant Time: Nov 14 13:25:37 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

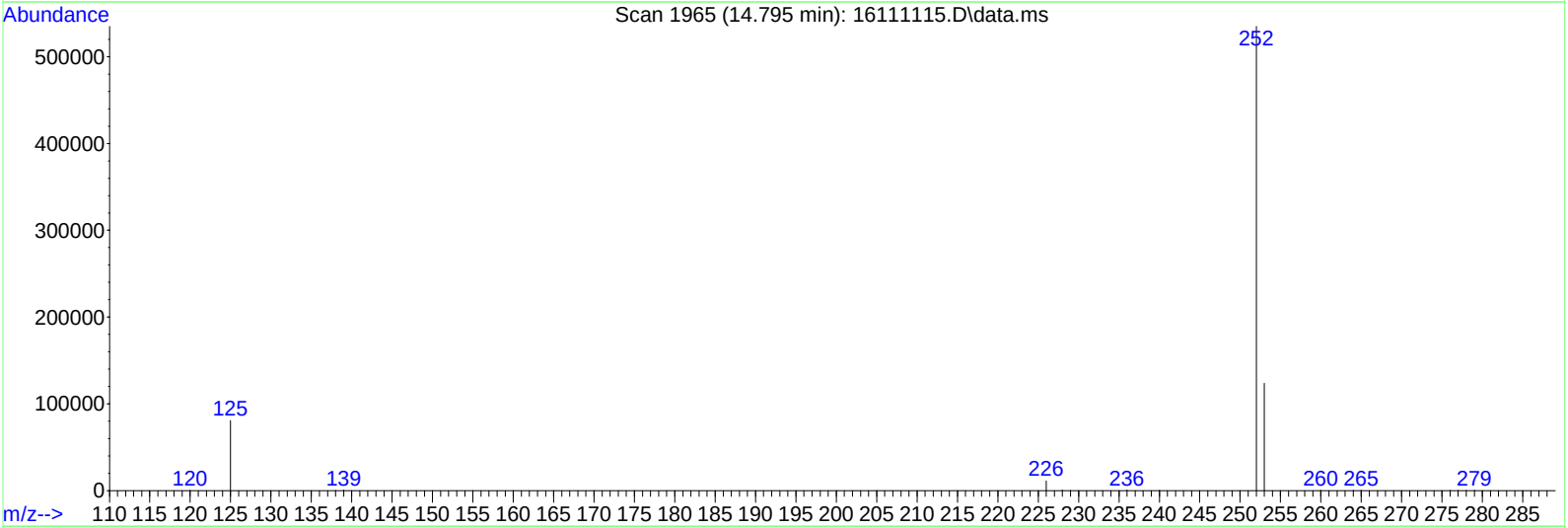


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111115.D
Acq On : 11 Nov 2016 2:52 pm
Operator :
Sample : ICV2-161111
Misc : ICV
ALS Vial : 13 Sample Multiplier: 10

Quant Time: Nov 14 13:25:37 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration





TIC: 16111115.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.795min (-0.015) 2033.82ug/kg

response 869881

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.59
125.00	12.90	15.03
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111116.D
Acq On : 11 Nov 2016 3:25 pm
Operator :
Sample : SB-161111
Misc : SBLK
ALS Vial : 14 Sample Multiplier: ~~10~~ 1X

Quant Time: Nov 14 13:25:40 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.465	136	1105843	4000.00	ug/kg	126
5) Acenaphthene-d10	9.066	164	700387	4000.00	ug/kg	89
11) Phenanthrene-d10	10.467	188	1223001	4000.00	ug/kg	87
17) Chrysene-d12	13.367	240	1459752	4000.00	ug/kg	87
20) Perylene-d12	15.682	264	1527363	4000.00	ug/kg	87

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	21	0.09	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.00%#			
16) 4-Terphenyl-d14	11.847	244	110	0.47	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.01%#			

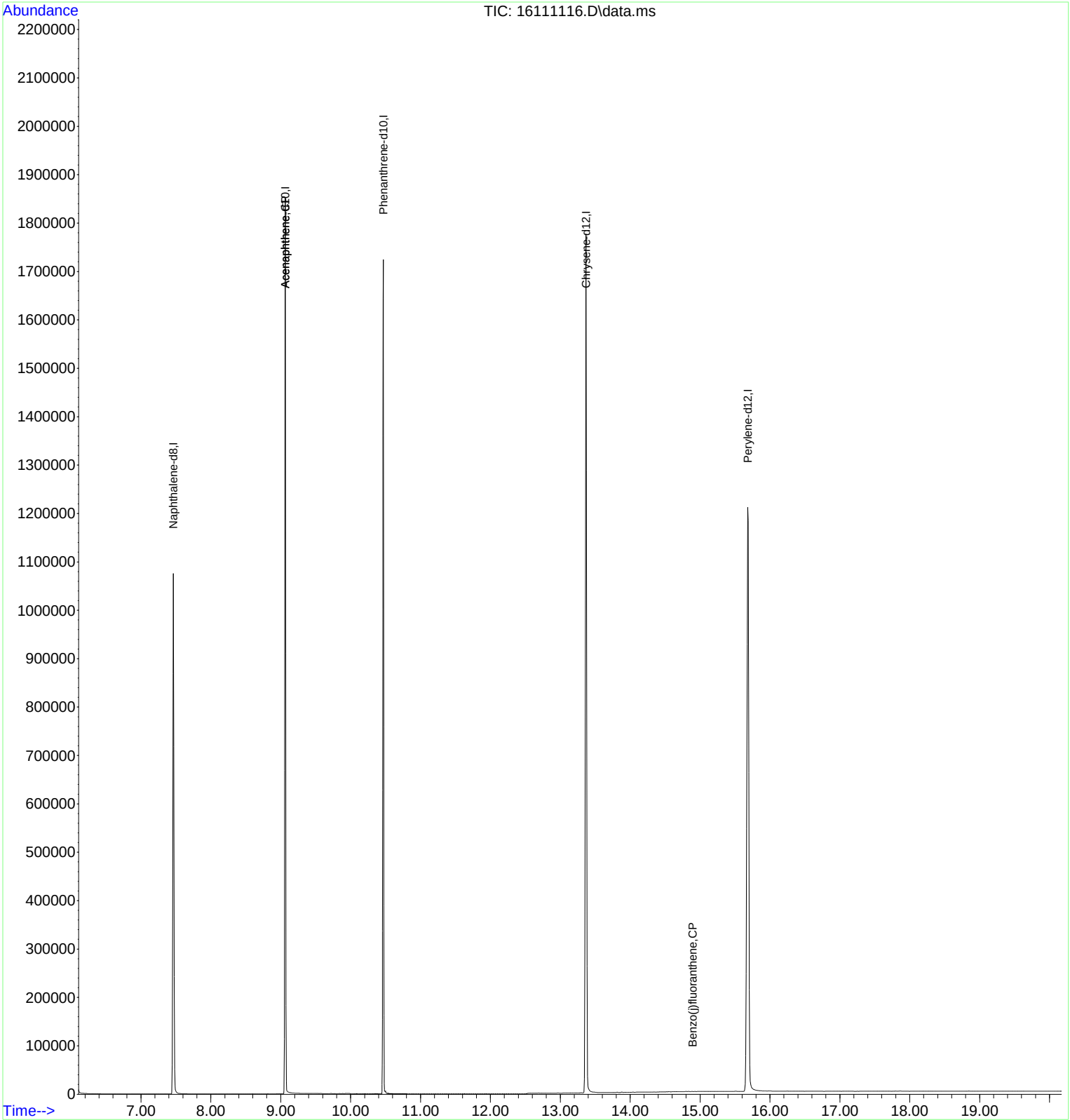
Target Compounds						Qvalue
9) Acenaphthene	9.066	154	2677	~~15.83~~	~~ug/kg#~~	~~13~~
23) Benzo(j)fluoranthene	14.883	252	109	0.32	ug/kg#	12

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111116.D
Acq On : 11 Nov 2016 3:25 pm
Operator :
Sample : SB-161111
Misc : SBLK
ALS Vial : 14 Sample Multiplier: ~~10~~ 1X

Quant Time: Nov 14 13:25:40 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111117.D
Acq On : 11 Nov 2016 3:54 pm
Operator :
Sample : 1611028-25A
Misc : SAMP
ALS Vial : 15 Sample Multiplier: 10

Quant Time: Nov 14 13:33:22 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	850515	4000.00	ug/kg	97
5) Acenaphthene-d10	9.062	164	696905	4000.00	ug/kg	88
11) Phenanthrene-d10	10.466	188	1252773	4000.00	ug/kg	89
17) Chrysene-d12	13.366	240	1486329	4000.00	ug/kg	89
20) Perylene-d12	15.681	264	1555560	4000.00	ug/kg	88

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	22175	97.96	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.45%#			
16) 4-Terphenyl-d14	11.844	244	24943	103.58	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.59%#			

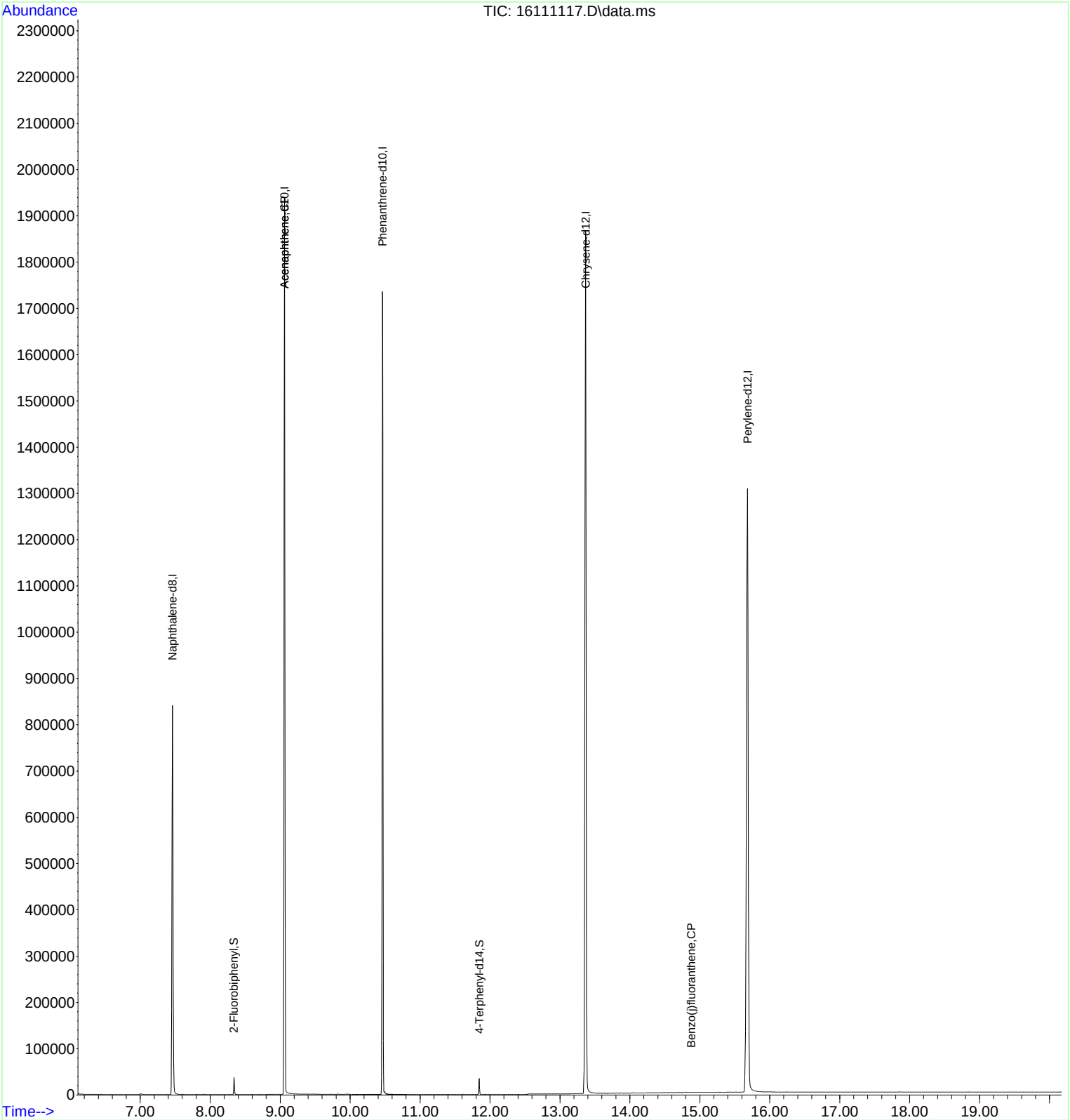
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2616	15.54	ug/kg#	11
23) Benzo(j)fluoranthene	14.875	252	127	0.37	ug/kg#	1

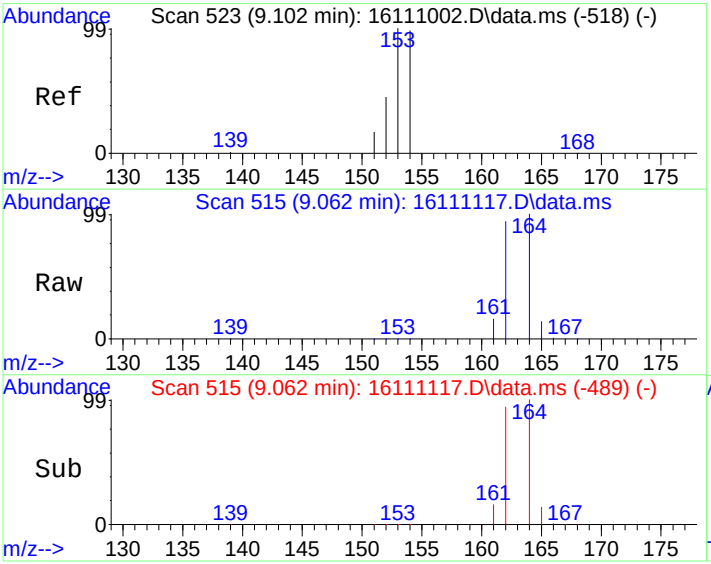
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111117.D
Acq On : 11 Nov 2016 3:54 pm
Operator :
Sample : 1611028-25A
Misc : SAMP
ALS Vial : 15 Sample Multiplier: 10

Quant Time: Nov 14 13:33:22 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

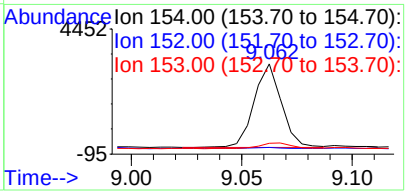


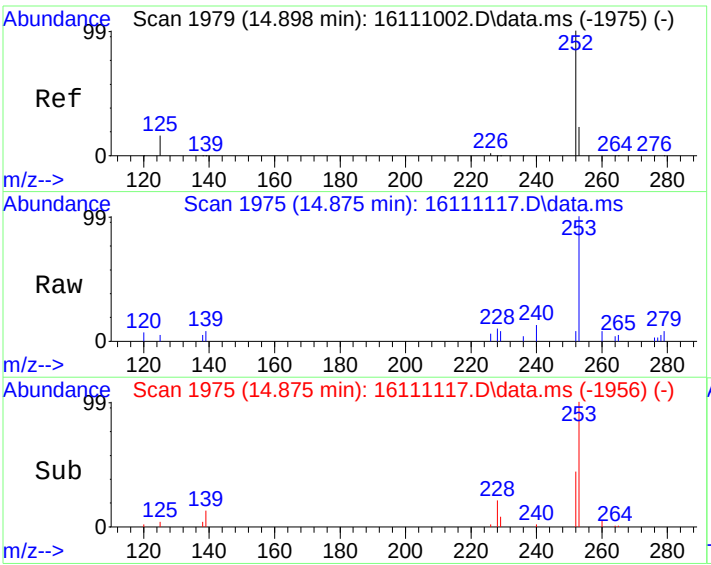


#9
Acenaphthene
Concen: 15.54 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111117.D
Acq: 11 Nov 2016 3:54 pm

Tgt Ion:154 Resp: 2616

Ion	Ratio	Lower	Upper
154	100		
152	1.2	20.7	80.7#
153	6.3	76.8	136.8#

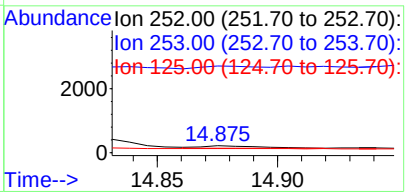




#23
Benzo(j)fluoranthene
Concen: 0.37 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111117.D
Acq: 11 Nov 2016 3:54 pm

Tgt Ion:252 Resp: 127

Ion	Ratio	Lower	Upper
252	100		
253	116.0	2.7	42.7#
125	4.0	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111130.D
Acq On : 11 Nov 2016 10:07 pm
Operator :
Sample : 1611044-01AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 13:25:43 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.462	136	1130077	4000.00	ug/kg	128
5) Acenaphthene-d10	9.062	164	670863	4000.00	ug/kg	85
11) Phenanthrene-d10	10.462	188	1181690	4000.00	ug/kg	84
17) Chrysene-d12	13.366	240	1373106	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1417050	4000.00	ug/kg	80

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	19768	90.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.27%#			
16) 4-Terphenyl-d14	11.842	244	21036	92.61	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.32%#			

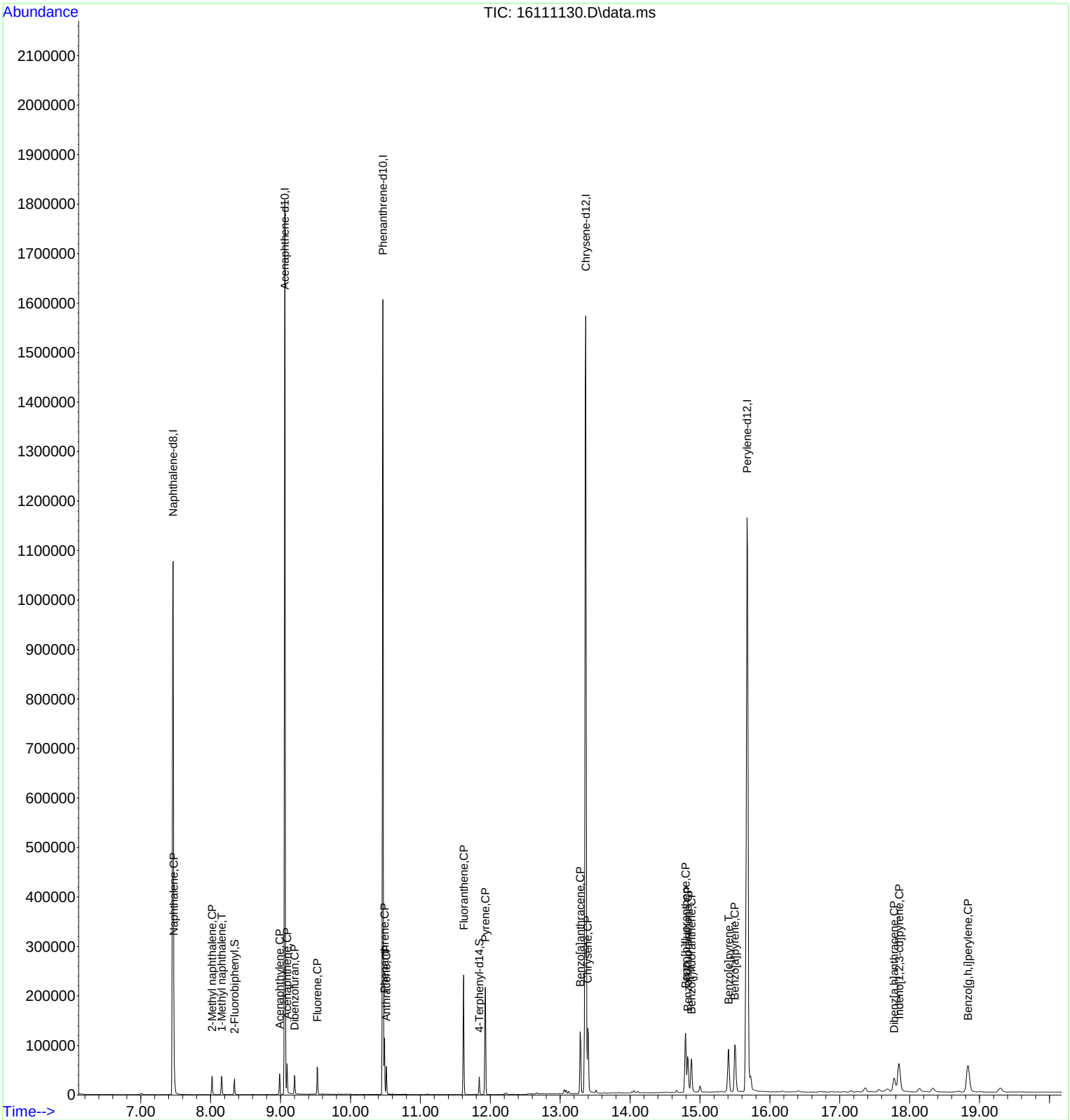
Target Compounds						Qvalue
2) Naphthalene	7.479	128	20227	92.17	ug/kg	99
3) 2-Methyl naphthalene	8.023	142	16105	66.31	ug/kg	96
4) 1-Methyl naphthalene	8.155	142	14800	67.50	ug/kg	91
6) Dibenzofuran	9.199	168	23753	97.42	ug/kg	97
8) Acenaphthylene	8.988	152	25853	92.43	ug/kg	97
9) Acenaphthene	9.091	154	16345	100.88	ug/kg	97
10) Fluorene	9.523	166	20018	98.64	ug/kg	94
12) Phenanthrene	10.485	178	63616	229.15	ug/kg	98
13) Anthracene	10.513	178	32952	116.60	ug/kg	98
14) Fluoranthene	11.618	202	139661	425.52	ug/kg	98
15) Pyrene	11.927	202	128666	381.83	ug/kg	99
18) Benzo[a]anthracene	13.286	228	96691	299.04	ug/kg	98
19) Chrysene	13.396	228	111181	379.27	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	124946	353.41	ug/kg	97
22) Benzo[k]fluoranthene	14.824	252	74751	233.91	ug/kg	92
23) Benzo(j)fluoranthene	14.875	252	67143	213.60	ug/kg	98
24) Benzo[e]pyrene	15.410	252	99508	314.00	ug/kg	95
25) Benzo[a]pyrene	15.498	252	121060	373.89	ug/kg	97
26) Dibenz[a,h]anthracene	17.776	278	43584	130.89	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	98867	304.44	ug/kg	98
28) Benzo[g,h,i]perylene	18.838	276	107633	312.94	ug/kg	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111130.D
Acq On : 11 Nov 2016 10:07 pm
Operator :
Sample : 1611044-01AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 13:25:43 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111131.D
Acq On : 11 Nov 2016 10:36 pm
Operator :
Sample : 1611044-01AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 13:25:46 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	956890	4000.00	ug/kg	109
5) Acenaphthene-d10	9.062	164	673440	4000.00	ug/kg	85
11) Phenanthrene-d10	10.463	188	1192905	4000.00	ug/kg	84
17) Chrysene-d12	13.359	240	1370228	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1423668	4000.00	ug/kg	81

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	19917	91.05	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.28%#			
16) 4-Terphenyl-d14	11.841	244	26180	114.17	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.85%#			

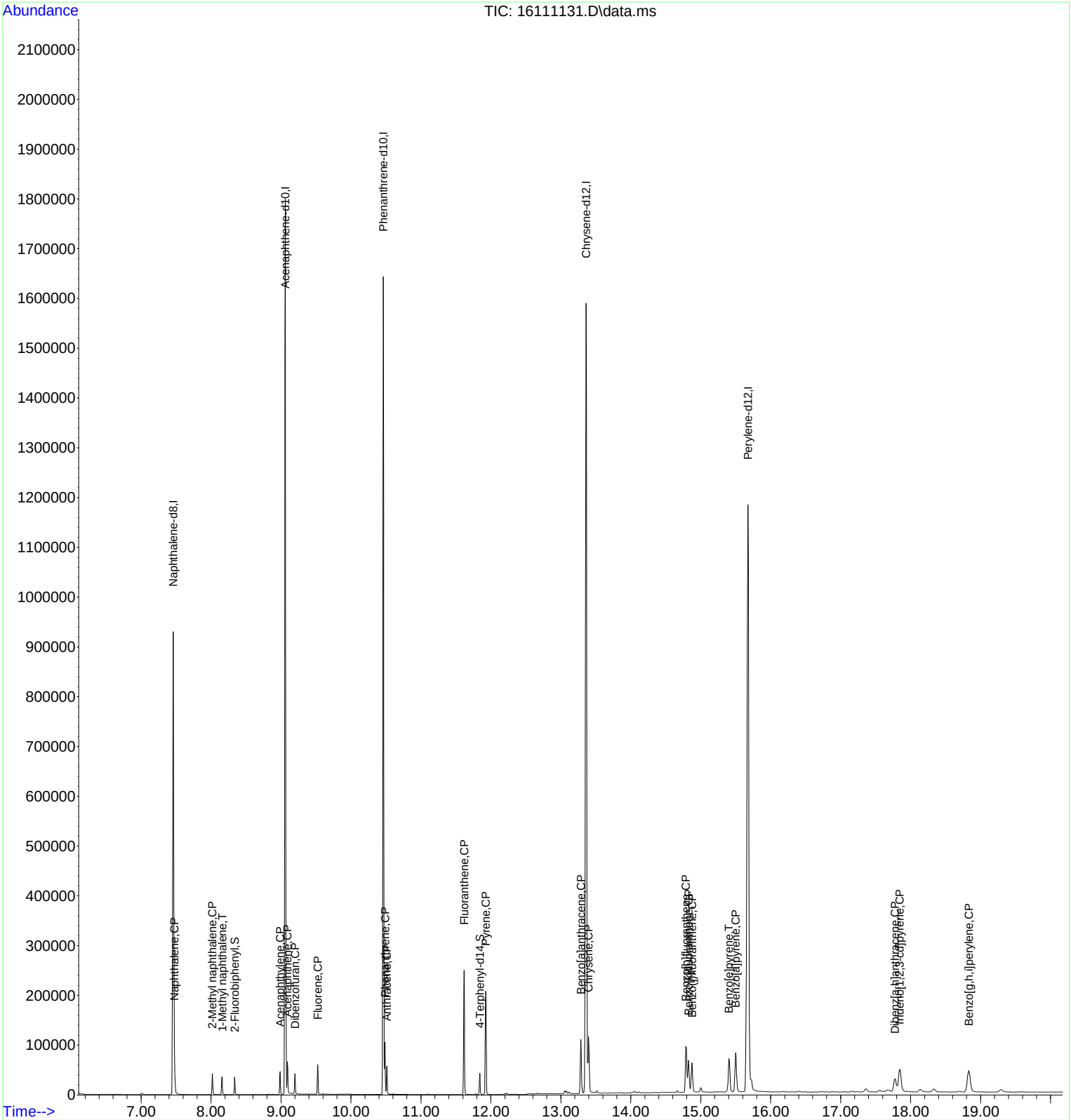
Target Compounds						Qvalue
2) Naphthalene	7.482	128	18386	98.94	ug/kg	99
3) 2-Methyl naphthalene	8.020	142	17404	84.63	ug/kg	98
4) 1-Methyl naphthalene	8.158	142	16006	86.21	ug/kg	98
6) Dibenzofuran	9.199	168	25187	102.90	ug/kg	98
8) Acenaphthylene	8.988	152	27906	99.39	ug/kg	97
9) Acenaphthene	9.091	154	17297	106.35	ug/kg	97
10) Fluorene	9.523	166	21101	103.58	ug/kg	95
12) Phenanthrene	10.486	178	56233	200.66	ug/kg	98
13) Anthracene	10.513	178	32583	114.21	ug/kg	98
14) Fluoranthene	11.617	202	140947	425.40	ug/kg	98
15) Pyrene	11.925	202	128562	377.93	ug/kg	99
18) Benzo[a]anthracene	13.286	228	81554	252.75	ug/kg	99
19) Chrysene	13.396	228	89310	305.30	ug/kg	99
21) Benzo[b]fluoranthene	14.788	252	101369	285.39	ug/kg	98
22) Benzo[k]fluoranthene	14.824	252	61821	192.55	ug/kg	94
23) Benzo(j)fluoranthene	14.876	252	56658	179.41	ug/kg	99
24) Benzo[e]pyrene	15.403	252	78589	246.84	ug/kg	98
25) Benzo[a]pyrene	15.498	252	94625	290.88	ug/kg	98
26) Dibenz[a,h]anthracene	17.776	278	40727	121.74	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	78095	239.36	ug/kg	98
28) Benzo[g,h,i]perylene	18.831	276	84356	244.13	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111131.D
Acq On : 11 Nov 2016 10:36 pm
Operator :
Sample : 1611044-01AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 13:25:46 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111132.D
Acq On : 11 Nov 2016 11:05 pm
Operator :
Sample : CCV1-161114
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

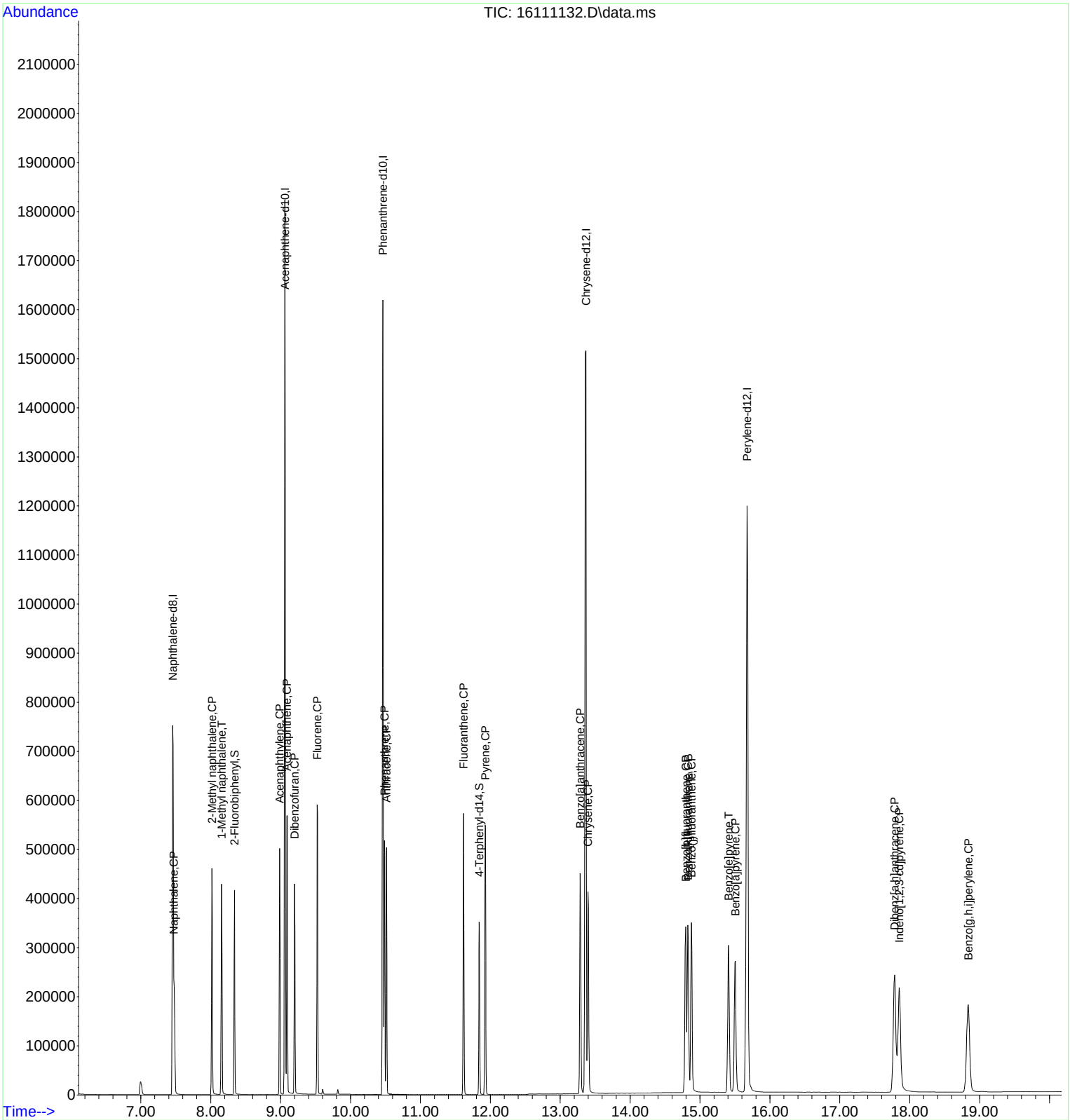
Quant Time: Nov 14 13:25:49 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.455	136	777817	4000.00	ug/kg	88
5) Acenaphthene-d10	9.061	164	670309	4000.00	ug/kg	85
11) Phenanthrene-d10	10.462	188	1195706	4000.00	ug/kg	85
17) Chrysene-d12	13.367	240	1364946	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1420546	4000.00	ug/kg	81
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	235192	1080.24	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.01%#			
16) 4-Terphenyl-d14	11.841	244	247608	1077.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 26.93%#			
Target Compounds						Qvalue
2) Naphthalene	7.478	128	158209	1047.38	ug/kg	99
3) 2-Methyl naphthalene	8.016	142	184453	1103.47	ug/kg	91
4) 1-Methyl naphthalene	8.155	142	164527	1090.20	ug/kg	93
6) Dibenzofuran	9.199	168	261406	1072.99	ug/kg	99
8) Acenaphthylene	8.987	152	301367	1078.37	ug/kg	99
9) Acenaphthene	9.095	154	174507	1077.93	ug/kg	95
10) Fluorene	9.528	166	216464	1067.51	ug/kg	97
12) Phenanthrene	10.486	178	290107	1032.76	ug/kg	100
13) Anthracene	10.513	178	286902	1003.26	ug/kg	99
14) Fluoranthene	11.617	202	328893	990.33	ug/kg	98
15) Pyrene	11.929	202	330170	968.33	ug/kg	99
18) Benzo[a]anthracene	13.286	228	343982	1070.19	ug/kg	99
19) Chrysene	13.396	228	322309	1106.05	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	366642	1034.48	ug/kg	99
22) Benzo[k]fluoranthene	14.824	252	344863	1076.49	ug/kg	97
23) Benzo(j)fluoranthene	14.876	252	343458	1089.94	ug/kg	97
24) Benzo[e]pyrene	15.410	252	339394	1068.32	ug/kg	96
25) Benzo[a]pyrene	15.506	252	337678	1040.33	ug/kg	98
26) Dibenz[a,h]anthracene	17.784	278	344178	1031.10	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.850	276	338958	1041.17	ug/kg	99
28) Benzo[g,h,i]perylene	18.839	276	358164	1038.80	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111132.D
Acq On : 11 Nov 2016 11:05 pm
Operator :
Sample : CCV1-161114
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 13:25:49 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



GCMS8
Calibration Curve
For

DHL Work Order
1611028

CAL ID: 707

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #8 **Calibration File Name:** PP161021.CAL

Target Concentration	Solvent Amount mL	Standard Preparation Stocks and Surrogate (µL/mL)	Final Volume mL
5 ppb	0.999	0.001 mL of 5000 ppb	1
10 ppb	0.998	0.002 mL of 5000 ppb	1
50 ppb	0.990	0.01 mL of 5000 ppb	1
100 ppb	0.980	0.02 mL of 5000 ppb	1
500 ppb	0.900	0.10 mL of 5000 ppb	1
1000 ppb	0.800	0.20 mL of 5000 ppb	1
2000 ppb	0.600	0.40 mL of 5000 ppb	1
5000 ppb	----	PAHCAL161020	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV161005-1	1
SSCV 2500 ppb	----	PAHSSCV161020-2	1

Standards Used for the Calibration Curve

1 uL Internal Standard SV160510-5 spiked in all.

Primary Stock STDs	DHL Standard ID	Second Source (SS) Stock STDs	DHL Standard ID
5 PPM (5000 PPB) PAH CAL STD	**PAHCAL161020**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV161005-1**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV161020-2**

Review Item	Acceptance Criteria	Yes	No	N/A	2nd Level Review
1. Are all standards within expiration dates?	Primary Stocks = 1 year Intermediate Standards = 6 months	X			
2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)**	Manual Integration Tracking Form			X	
3. Does the tune and resolution check meet criteria?	Benzo(b) / Benzo(k)phenanthrene Valley > 50% See Tune Eval Report	X			X
4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15%	%RSD < 15% COD ≥ 0.990	X			
5. Has the low point been reprocessed under the new ICAL curve and meets criteria?	70-130% recovery	X			
6. Has the SSCV been analyzed and meets criteria?	80-120% recovery	X			

Analyst: Dustin Bey Karyn Lane Date: 11/01/2016

Second-Level Review: Date: 11/02/2016

CAL 2 is the reporting limit for PAH - all analytes meet the ± 30% acceptance criteria.

Response Factor Report GCMS #8

Method Path : C:\msdchem\1\METHODS\
Method File : PP161021.M
Title : PAH Calibration
Last Update : Tue Nov 01 15:45:22 2016
Response Via : Initial Calibration

Calibration Files
1 =16102106.D 2 =16102107.D 3 =16102108.D 4 =16102109.D 5 =16102110.D 6 =16102111.D 7 =16102112.D
8 =16102113.D

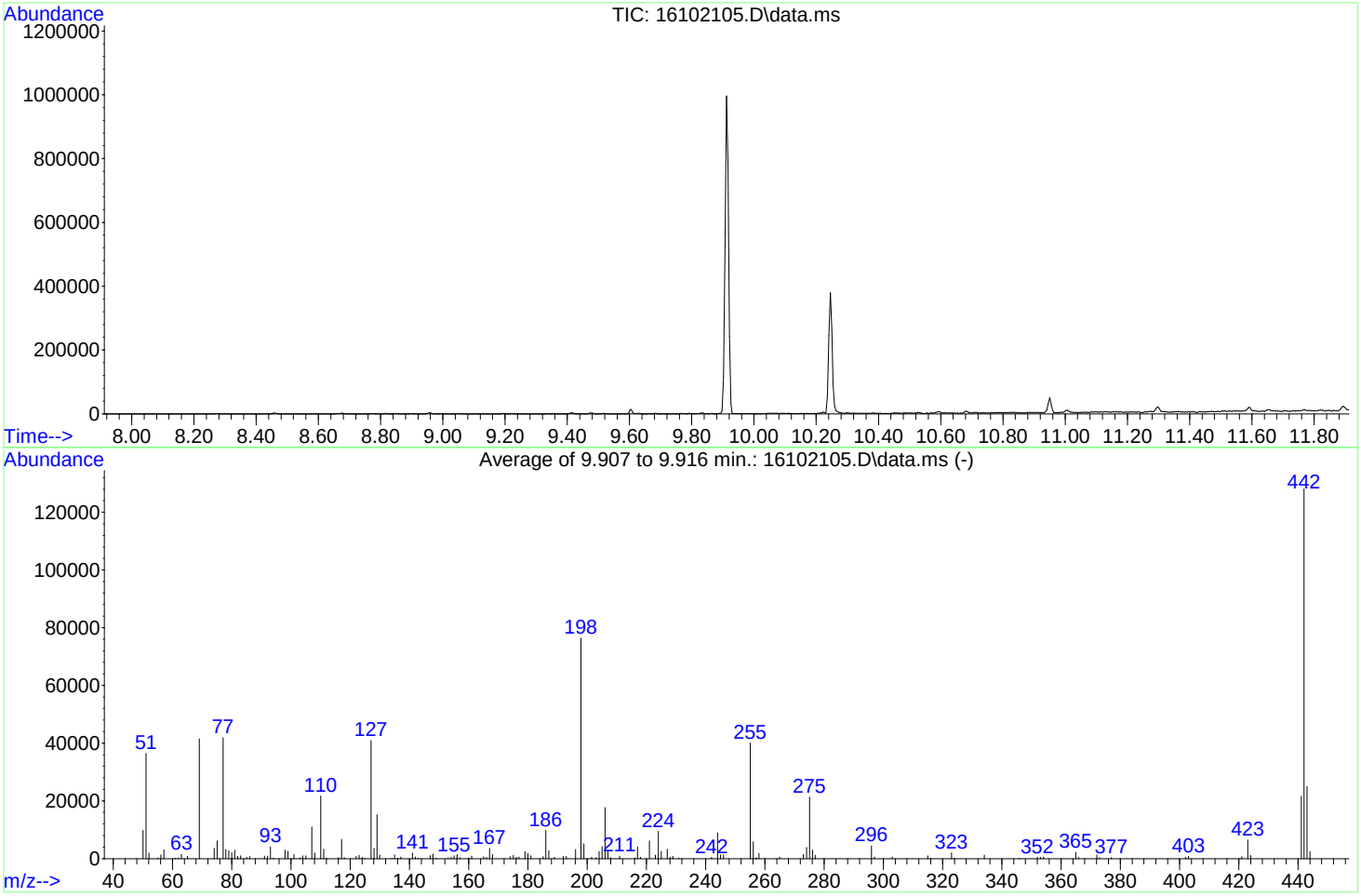
		Compound	1	2	3	4	5	6	7	8	Avg	%RSD	Fit	RSD/CF	Constant	Linear	Quad
1)	I	Naphthalene-d8	----------ISTD----------														
2)	CP	Naphthalene	0.915	0.744	0.777	0.767	0.765	0.755	0.751	0.740	0.777	7.38	A	0.0738	0.0000	0.7768	0.0000
3)	CP	2-Methyl napht...	0.837	0.783	0.874	0.922	0.909	0.878	0.874	0.801	0.860	5.71	A	0.0571	0.0000	0.8596	0.0000
4)	T	1-Methyl napht...	0.751	0.694	0.790	0.833	0.824	0.793	0.794	0.729	0.776	6.15	A	0.0615	0.0000	0.7761	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.606	1.389	1.511	1.446	1.498	1.451	1.404	1.326	1.454	5.90#	A	0.0590	0.0000	1.4538	0.0000
7)	S	2-Fluorobiphenyl	1.359	1.235	1.372	1.286	1.349	1.307	1.278	1.207	1.299	4.56	A	0.0456	0.0000	1.2992	0.0000
8)	CP	Acenaphthylene	1.785	1.538	1.704	1.762	1.718	1.673	1.622	1.540	1.668	5.63	A	0.0563	0.0000	1.6677	0.0000
9)	CP	Acenaphthene	1.013	0.906	0.995	1.016	0.979	0.963	0.951	0.906	0.966	4.48	A	0.0448	0.0000	0.9661	0.0000
10)	CP	Fluorene	1.344	1.132	1.241	1.298	1.242	1.193	1.147	1.083	1.210	7.24	A	0.0724	0.0000	1.2100	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	1.140	0.934	0.939	0.976	0.927	0.913	0.872	0.817	0.940	10.01	A	0.1001	0.0000	0.9397	0.0000
13)	CP	Anthracene	1.140	0.930	0.979	1.014	0.949	0.932	0.885	0.824	0.957	9.81	A	0.0981	0.0000	0.9567	0.0000
14)	CP	Fluoranthene	1.405	1.125	1.124	1.169	1.083	1.055	1.007	0.921	1.111	12.76	A	0.1276	0.0000	1.1110	0.0000
15)	CP	Pyrene	1.499	1.172	1.154	1.191	1.089	1.069	1.015	0.935	1.141	14.75	A	0.1475	0.0000	1.1406	0.0000
16)	S	4-Terphenyl-d14	0.867	0.761	0.806	0.766	0.782	0.772	0.727	0.670	0.769	7.41	A	0.0741	0.0000	0.7689	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...	1.078	0.899	0.950	0.988	0.942	0.923	0.906	0.849	0.942	7.26	A	0.0726	0.0000	0.9419	0.0000
19)	CP	Chrysene	0.922	0.817	0.848	0.902	0.877	0.850	0.843	0.772	0.854	5.54	A	0.0554	0.0000	0.8540	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	1.110	0.971	1.051	1.000	1.027	0.978	0.939	0.908	0.998	6.44	A	0.0644	0.0000	0.9980	0.0000
22)	CP	Benzo[k]fluora...	0.994	0.846	0.901	1.001	0.881	0.889	0.868	0.837	0.902	6.93	A	0.0693	0.0000	0.9021	0.0000
23)	CP	Benzo(j)fluora...	0.968	0.834	0.920	0.894	0.897	0.893	0.861	0.832	0.887	5.10	A	0.0510	0.0000	0.8873	0.0000
24)	T	Benzo[e]pyrene	0.989	0.860	0.923	0.866	0.911	0.892	0.871	0.844	0.895	5.22	A	0.0522	0.0000	0.8946	0.0000
25)	CP	Benzo[a]pyrene	1.018	0.864	0.933	0.967	0.911	0.894	0.875	0.851	0.914	6.18	A	0.0618	0.0000	0.9140	0.0000
26)	CP	Dibenz[a,h]ant...	1.008	0.910	0.933	0.978	0.942	0.925	0.914	0.909	0.940	3.80	A	0.0380	0.0000	0.9399	0.0000
27)	CP	Indeno[1,2,3-c...	0.983	0.867	0.932	0.964	0.920	0.909	0.887	0.871	0.917	4.59	A	0.0459	0.0000	0.9167	0.0000
28)	CP	Benzo[g,h,i]pe...	1.079	0.913	0.973	1.019	0.971	0.949	0.941	0.923	0.971	5.63	A	0.0563	0.0000	0.9709	0.0000

(#) = Out of Range

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102105.D
Acq On : 21 Oct 2016 3:47 pm
Operator :
Sample : DFTPP-161021
Misc : TUNE
ALS Vial : 2 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 812, 813, 814; Background Corrected with Scan 807

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	47.7	36437	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	54.4	41533	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	53.6	40938	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	76370	PASS
199	198	5	9	6.8	5158	PASS
275	198	10	60	27.9	21292	PASS
365	198	1	200	3.0	2258	PASS
441	442	0.01	24	16.9	21604	PASS
442	198	50	400	167.8	128112	PASS
443	442	15	24	19.5	25022	PASS

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102106.D
Acq On : 21 Oct 2016 4:15 pm
Operator :
Sample : CAL1 (5 ppb)
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 15:56:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	1007734	4000.00	ug/kg	114
5) Acenaphthene-d10	9.120	164	836003	4000.00	ug/kg	106
11) Phenanthrene-d10	10.532	188	1505356	4000.00	ug/kg	107
17) Chrysene-d12	13.462	240	1840981	4000.00	ug/kg	110
20) Perylene-d12	15.828	264	1946884	4000.00	ug/kg	111

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.396	172	1420	5.23	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.13%#			
16) 4-Terphenyl-d14	11.926	244	1632	5.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.14%#			

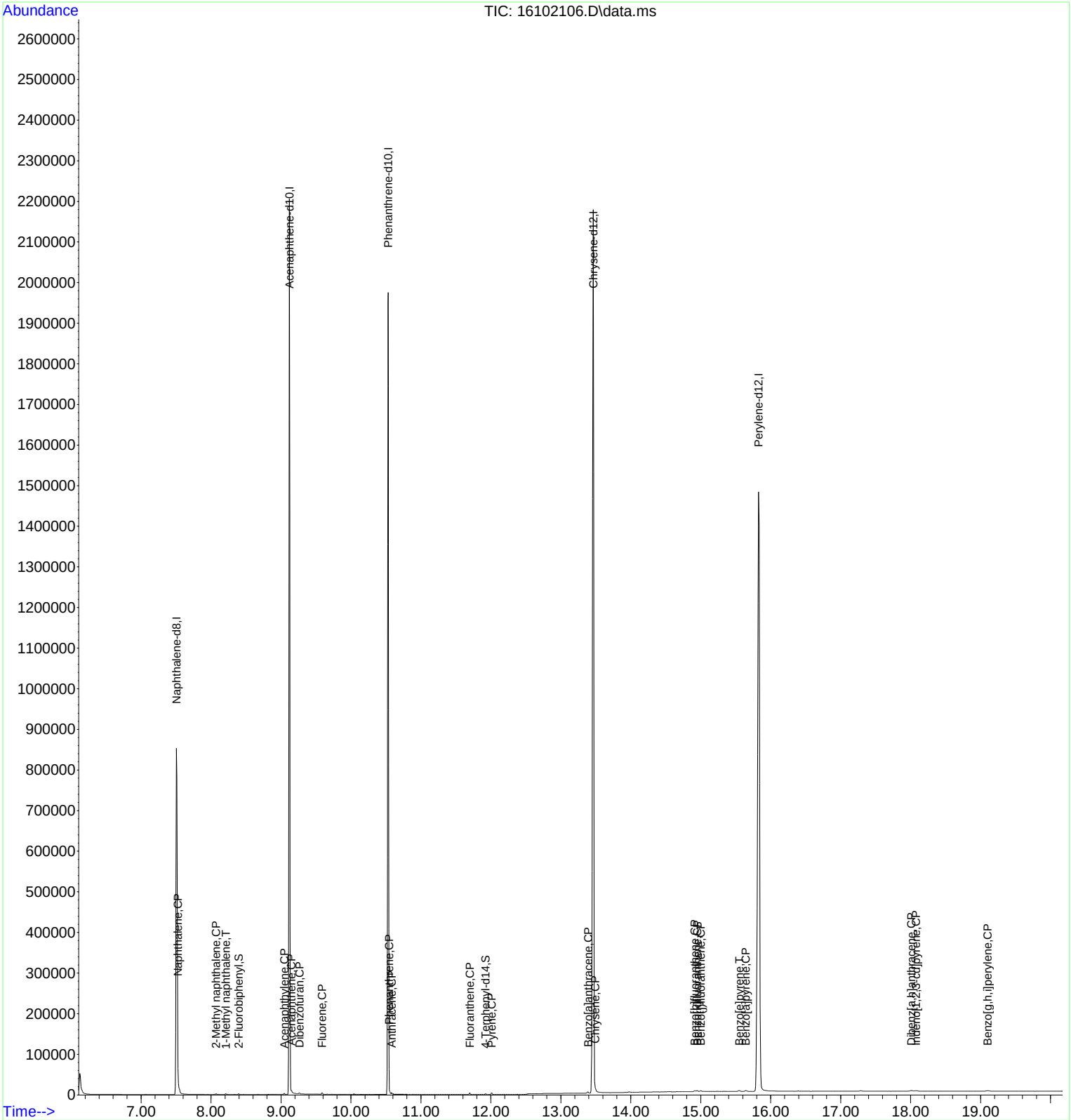
Target Compounds						Qvalue
2) Naphthalene	7.529	128	1153	5.89	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	1054	4.87	ug/kg	94
4) 1-Methyl naphthalene	8.211	142	946	4.84	ug/kg	99
6) Dibenzofuran	9.263	168	1678	5.52	ug/kg	88
8) Acenaphthylene	9.047	152	1865	5.35	ug/kg	97
9) Acenaphthene	9.155	154	1059	5.24	ug/kg	97
10) Fluorene	9.587	166	1404	5.55	ug/kg	95
12) Phenanthrene	10.553	178	2145	6.07	ug/kg	98
13) Anthracene	10.583	178	2146	5.96	ug/kg	96
14) Fluoranthene	11.698	202	2643	6.32	ug/kg	98
15) Pyrene	12.010	202	2821	6.57	ug/kg	99
18) Benzo[a]anthracene	13.389	228	2480	5.72	ug/kg	99
19) Chrysene	13.499	228	2121	5.40	ug/kg	96
21) Benzo[b]fluoranthene	14.920	252	2702	5.56	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	2420	5.51	ug/kg	95
23) Benzo(j)fluoranthene	15.000	252	2356	5.46	ug/kg	95
24) Benzo[e]pyrene	15.550	252	2408	5.53	ug/kg	97
25) Benzo[a]pyrene	15.645	252	2477	5.57	ug/kg	97
26) Dibenz[a,h]anthracene	18.011	278	2454	5.36	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	18.084	276	2393	5.36	ug/kg	98
28) Benzo[g,h,i]perylene	19.102	276	2625	5.56	ug/kg	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102106.D
Acq On : 21 Oct 2016 4:15 pm
Operator :
Sample : CAL1 (5 ppb)
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 15:56:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102107.D
Acq On : 21 Oct 2016 4:43 pm
Operator :
Sample : CAL2 (10 ppb)
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Reprocessed low point.

Quant Time: Nov 01 15:56:47 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

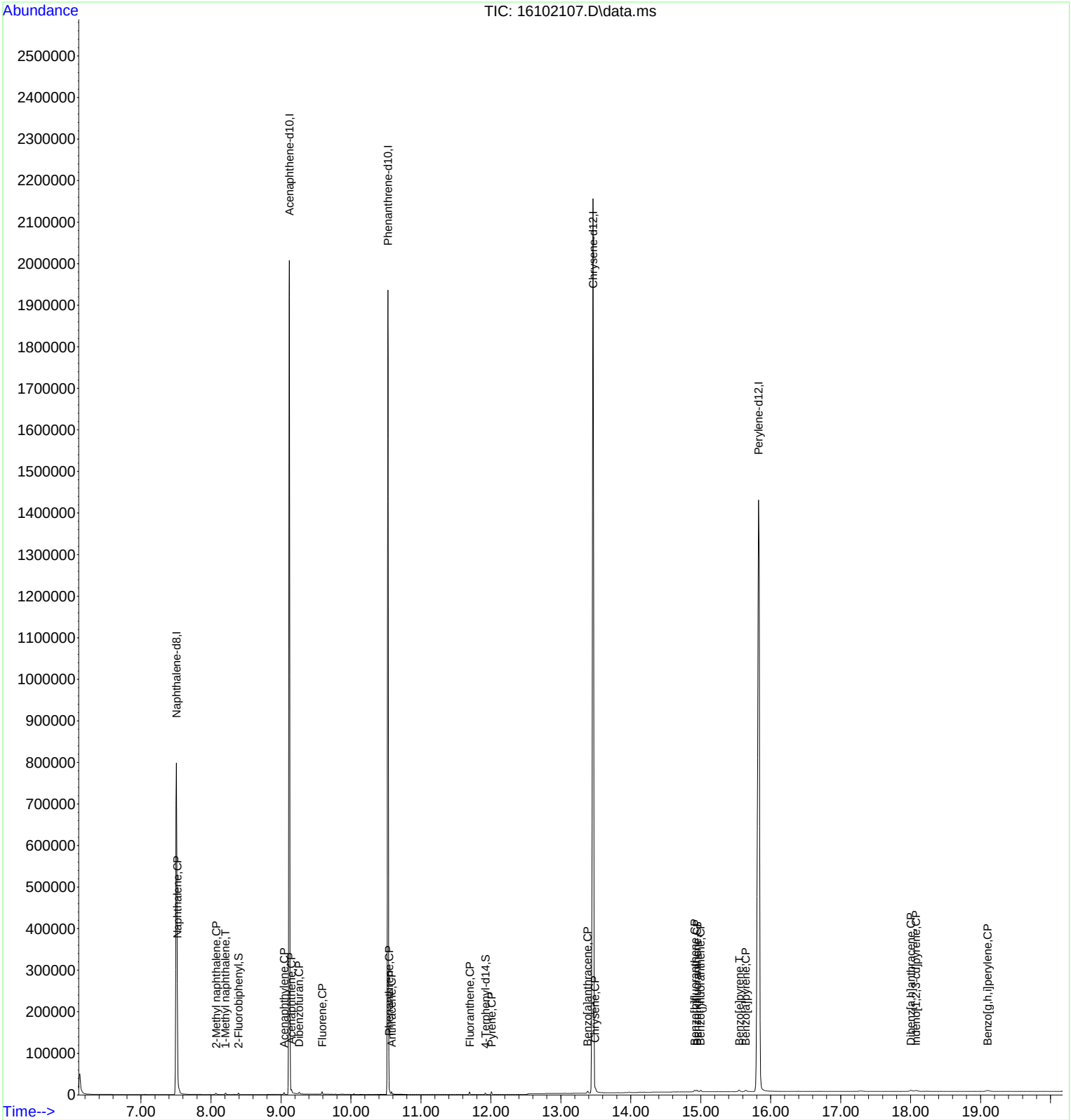
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	937897	4000.00	ug/kg	107
5) Acenaphthene-d10	9.121	164	819436	4000.00	ug/kg	104
11) Phenanthrene-d10	10.530	188	1470089	4000.00	ug/kg	104
17) Chrysene-d12	13.462	240	1782452	4000.00	ug/kg	107
20) Perylene-d12	15.828	264	1849102	4000.00	ug/kg	105
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	2530	9.51	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.24%#			
16) 4-Terphenyl-d14	11.924	244	2796	9.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.25%#			
Target Compounds						Qvalue
2) Naphthalene	7.524	128	1744	9.58	ug/kg	99
3) 2-Methyl naphthalene	8.073	142	1836	9.11	ug/kg	99
4) 1-Methyl naphthalene	8.212	142	1627	8.94	ug/kg	98
6) Dibenzofuran	9.264	168	2845	9.55	ug/kg	96
8) Acenaphthylene	9.043	152	3150	9.22	ug/kg	98
9) Acenaphthene	9.151	154	1857	9.38	ug/kg	99
10) Fluorene	9.588	166	2320	9.36	ug/kg	96
12) Phenanthrene	10.553	178	3433	9.94	ug/kg	98
13) Anthracene	10.580	178	3419	9.72	ug/kg	98
14) Fluoranthene	11.696	202	4133	10.12	ug/kg	97
15) Pyrene	12.008	202	4309	10.28	ug/kg	99
18) Benzo[a]anthracene	13.381	228	4007	9.55	ug/kg	97
19) Chrysene	13.498	228	3641	9.57	ug/kg	98
21) Benzo[b]fluoranthene	14.912	252	4488	9.73	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	3910	9.38	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	3855	9.40	ug/kg	95
24) Benzo[e]pyrene	15.549	252	3974	9.61	ug/kg	97
25) Benzo[a]pyrene	15.644	252	3994	9.45	ug/kg	96
26) Dibenz[a,h]anthracene	18.010	278	4207	9.68	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	18.076	276	4008	9.46	ug/kg	95
28) Benzo[g,h,i]perylene	19.102	276	4221	9.41	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102107.D
Acq On : 21 Oct 2016 4:43 pm
Operator :
Sample : CAL2 (10 ppb)
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 01 15:56:47 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102108.D
Acq On : 21 Oct 2016 5:12 pm
Operator :
Sample : CAL3 (50 ppb)
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 01 15:56:52 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	907873	4000.00	ug/kg	103
5) Acenaphthene-d10	9.120	164	805692	4000.00	ug/kg	102
11) Phenanthrene-d10	10.530	188	1436293	4000.00	ug/kg	102
17) Chrysene-d12	13.462	240	1731298	4000.00	ug/kg	104
20) Perylene-d12	15.828	264	1793721	4000.00	ug/kg	102

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.395	172	13819	52.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.32%#			
16) 4-Terphenyl-d14	11.923	244	14463	52.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.31%#			

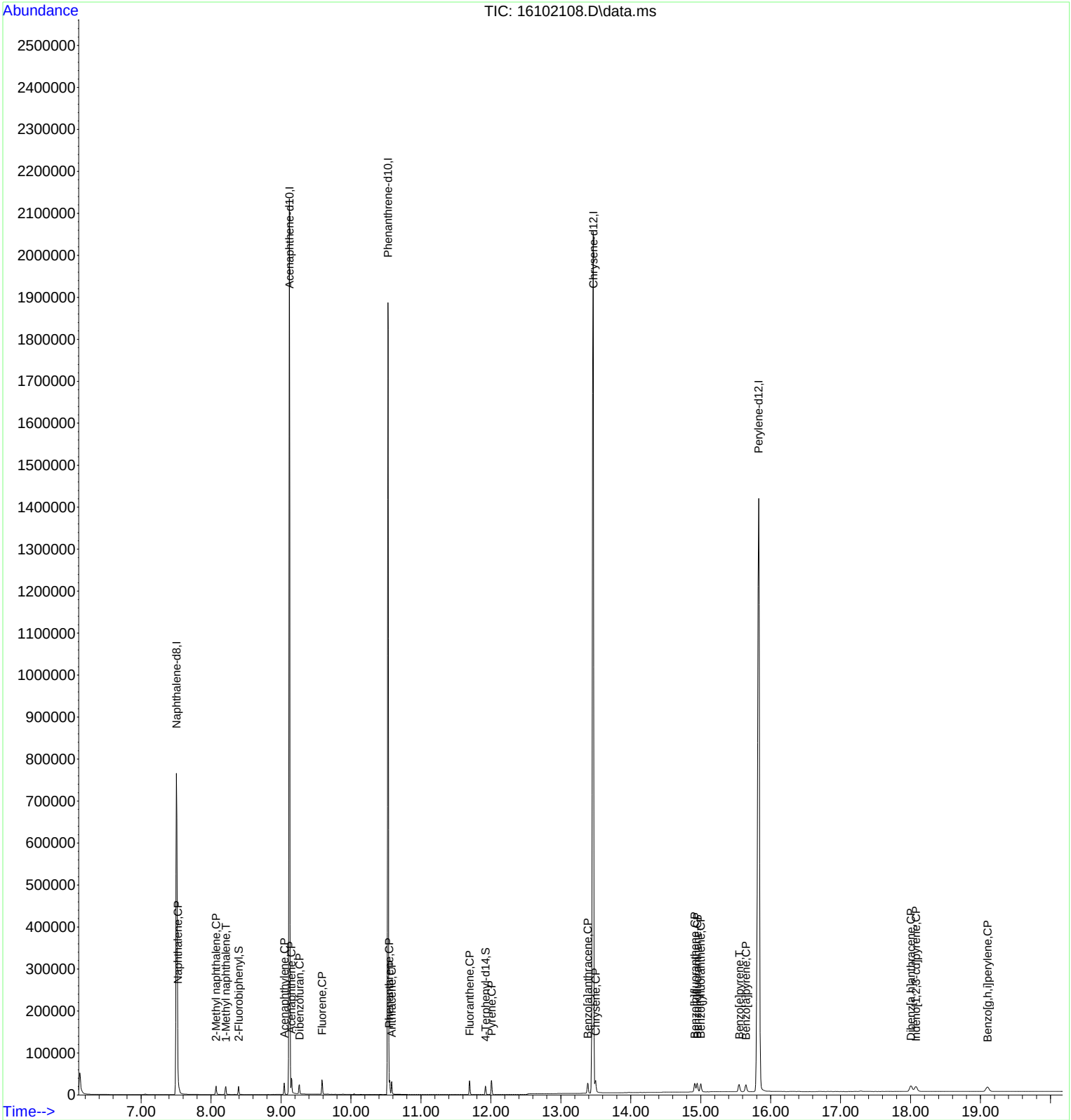
Target Compounds						Qvalue
2) Naphthalene	7.528	128	8818	50.01	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	9924	50.86	ug/kg	97
4) 1-Methyl naphthalene	8.210	142	8968	50.91	ug/kg	98
6) Dibenzofuran	9.263	168	15217	51.97	ug/kg	98
8) Acenaphthylene	9.047	152	17161	51.09	ug/kg	98
9) Acenaphthene	9.150	154	10017	51.48	ug/kg	98
10) Fluorene	9.587	166	12497	51.27	ug/kg	96
12) Phenanthrene	10.553	178	16863	49.98	ug/kg	98
13) Anthracene	10.582	178	17569	51.15	ug/kg	98
14) Fluoranthene	11.695	202	20181	50.59	ug/kg	98
15) Pyrene	12.010	202	20726	50.60	ug/kg	98
18) Benzo[a]anthracene	13.382	228	20559	50.43	ug/kg	98
19) Chrysene	13.499	228	18358	49.67	ug/kg	98
21) Benzo[b]fluoranthene	14.913	252	23556	52.64	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	20200	49.94	ug/kg	99
23) Benzo(j)fluoranthene	15.000	252	20621	51.82	ug/kg	97
24) Benzo[e]pyrene	15.550	252	20694	51.59	ug/kg	96
25) Benzo[a]pyrene	15.645	252	20917	51.04	ug/kg	98
26) Dibenz[a,h]anthracene	18.004	278	20925	49.65	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	18.077	276	20889	50.82	ug/kg	99
28) Benzo[g,h,i]perylene	19.102	276	21809	50.09	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102108.D
Acq On : 21 Oct 2016 5:12 pm
Operator :
Sample : CAL3 (50 ppb)
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 01 15:56:52 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102109.D
Acq On : 21 Oct 2016 5:39 pm
Operator :
Sample : CAL4 (100 ppb)
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 01 15:56:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

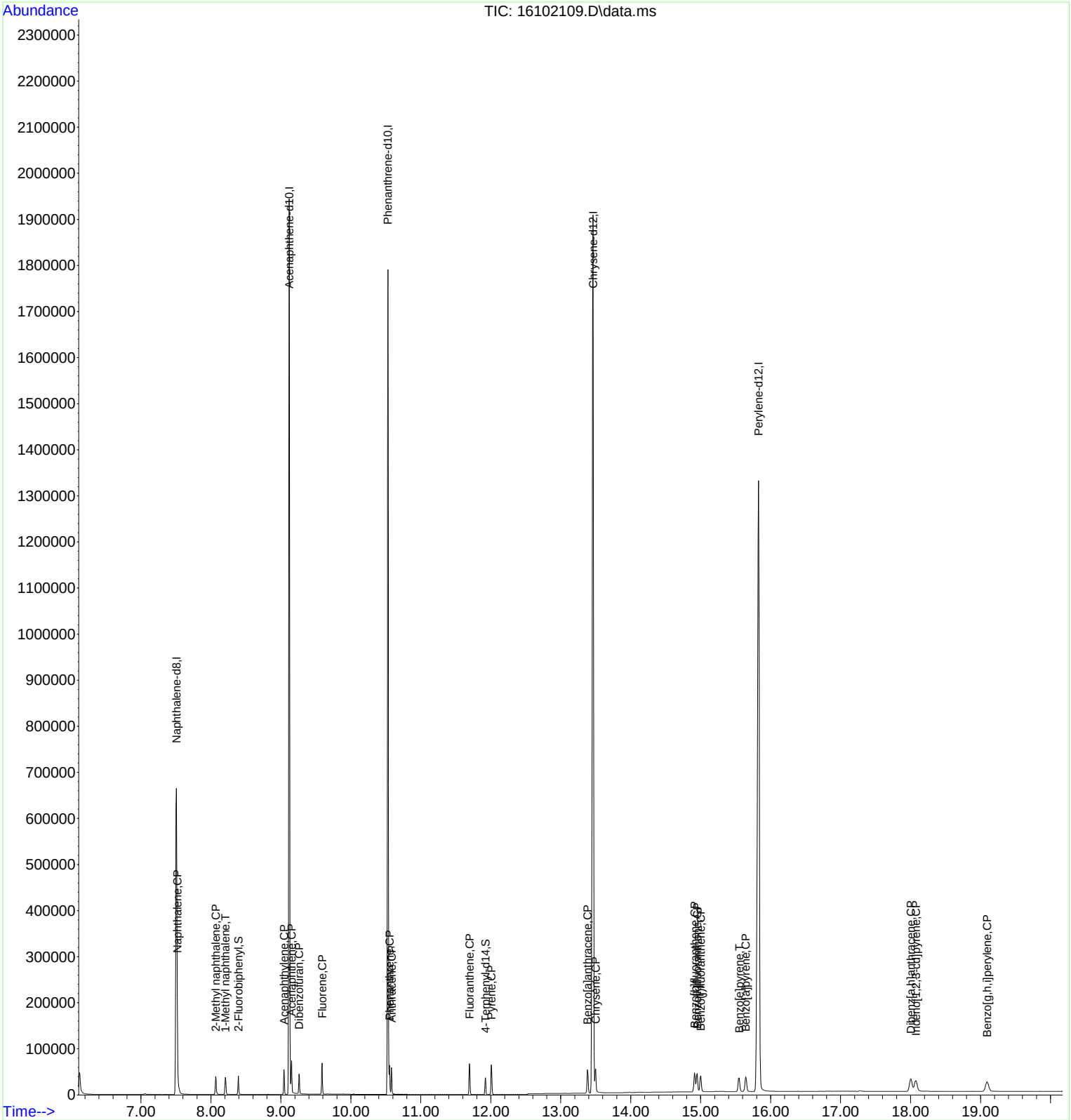
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.507	136	814464	4000.00	ug/kg	93
5) Acenaphthene-d10	9.117	164	764275	4000.00	ug/kg	97
11) Phenanthrene-d10	10.530	188	1364880	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1647563	4000.00	ug/kg	99
20) Perylene-d12	15.828	264	1699180	4000.00	ug/kg	96
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	24578	99.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.48%#			
16) 4-Terphenyl-d14	11.923	244	26128	99.59	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.49%#			
Target Compounds						Qvalue
2) Naphthalene	7.524	128	15623	98.77	ug/kg	99
3) 2-Methyl naphthalene	8.067	142	18767	107.22	ug/kg	92
4) 1-Methyl naphthalene	8.206	142	16967	107.37	ug/kg	92
6) Dibenzofuran	9.259	168	27637	99.49	ug/kg	97
8) Acenaphthylene	9.043	152	33668	105.66	ug/kg	98
9) Acenaphthene	9.151	154	19405	105.13	ug/kg	99
10) Fluorene	9.588	166	24795	107.25	ug/kg	99
12) Phenanthrene	10.551	178	33292	103.83	ug/kg	98
13) Anthracene	10.581	178	34602	106.00	ug/kg	98
14) Fluoranthene	11.695	202	39881	105.20	ug/kg	98
15) Pyrene	12.007	202	40645	104.43	ug/kg	99
18) Benzo[a]anthracene	13.381	228	40694	104.89	ug/kg	98
19) Chrysene	13.499	228	37157	105.64	ug/kg	98
21) Benzo[b]fluoranthene	14.912	252	42476	100.19	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	42502	110.91	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	37964	100.72	ug/kg	99
24) Benzo[e]pyrene	15.550	252	36769	96.76	ug/kg	95
25) Benzo[a]pyrene	15.645	252	41057	105.75	ug/kg	98
26) Dibenz[a,h]anthracene	18.003	278	41537	104.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.077	276	40950	105.16	ug/kg	99
28) Benzo[g,h,i]perylene	19.095	276	43273	104.93	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102109.D
Acq On : 21 Oct 2016 5:39 pm
Operator :
Sample : CAL4 (100 ppb)
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 01 15:56:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102110.D
Acq On : 21 Oct 2016 6:08 pm
Operator :
Sample : CAL5 (500 ppb)
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 01 15:56:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

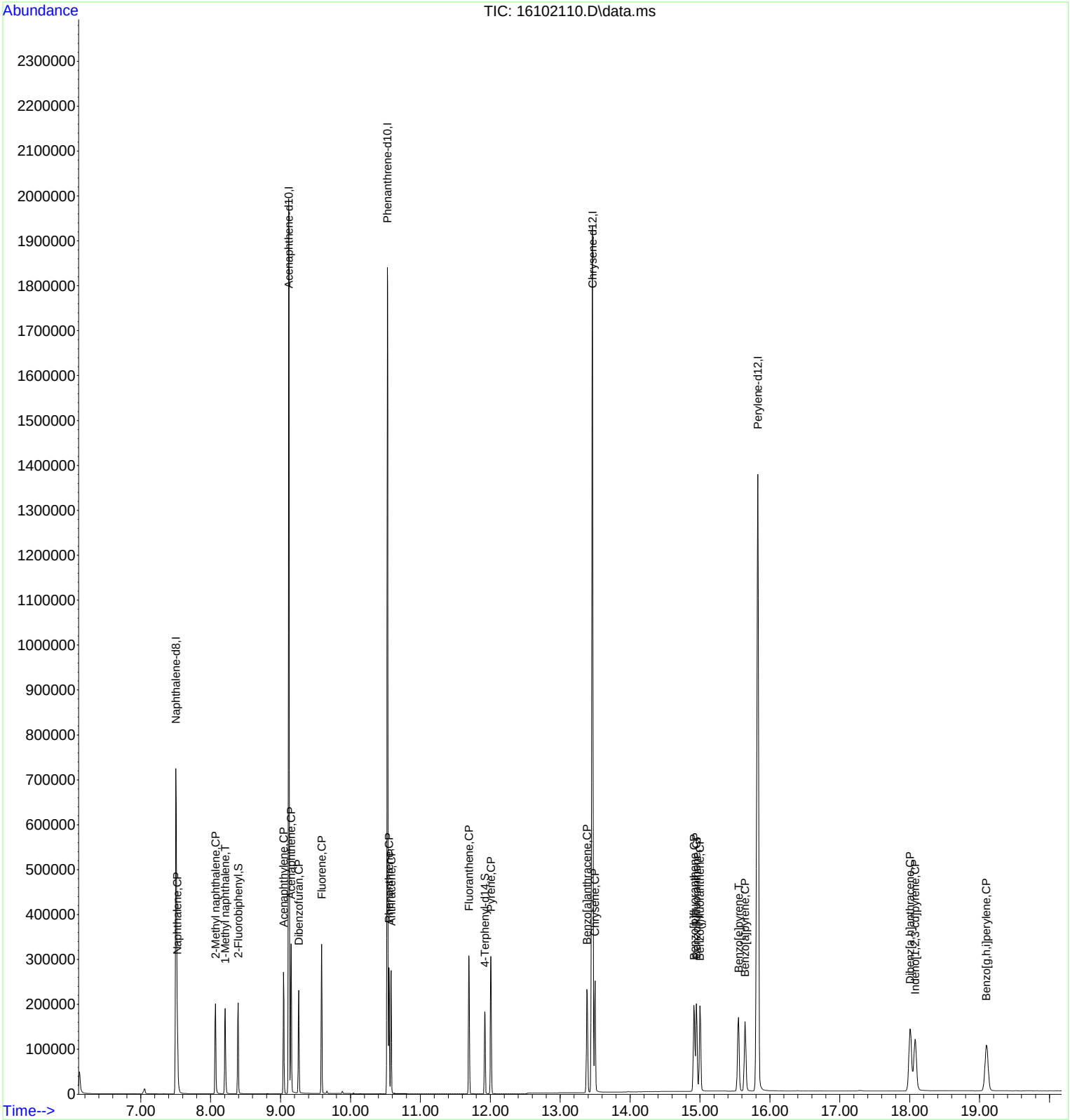
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.502	136	831350	4000.00	ug/kg	94
5) Acenaphthene-d10	9.117	164	772407	4000.00	ug/kg	98
11) Phenanthrene-d10	10.528	188	1391715	4000.00	ug/kg	99
17) Chrysene-d12	13.462	240	1670934	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1723109	4000.00	ug/kg	98
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.392	172	130253	519.18	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.98%#			
16) 4-Terphenyl-d14	11.924	244	136074	508.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.72%#			
Target Compounds						Qvalue
2) Naphthalene	7.525	128	79455	492.14	ug/kg	100
3) 2-Methyl naphthalene	8.069	142	94443	528.61	ug/kg	98
4) 1-Methyl naphthalene	8.207	142	85655	531.03	ug/kg	99
6) Dibenzofuran	9.259	168	144637	515.22	ug/kg	98
8) Acenaphthylene	9.043	152	165894	515.15	ug/kg	99
9) Acenaphthene	9.151	154	94522	506.68	ug/kg	99
10) Fluorene	9.588	166	119914	513.20	ug/kg	99
12) Phenanthrene	10.551	178	161199	493.04	ug/kg	99
13) Anthracene	10.581	178	165075	495.95	ug/kg	98
14) Fluoranthene	11.693	202	188351	487.27	ug/kg	98
15) Pyrene	12.008	202	189435	477.33	ug/kg	99
18) Benzo[a]anthracene	13.381	228	196787	500.12	ug/kg	98
19) Chrysene	13.498	228	183185	513.51	ug/kg	99
21) Benzo[b]fluoranthene	14.912	252	221293	514.74	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	189752	488.31	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	193224	505.51	ug/kg	97
24) Benzo[e]pyrene	15.549	252	196240	509.25	ug/kg	96
25) Benzo[a]pyrene	15.645	252	196298	498.57	ug/kg	98
26) Dibenz[a,h]anthracene	18.011	278	202882	501.08	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.077	276	198214	501.94	ug/kg	97
28) Benzo[g,h,i]perylene	19.102	276	209116	500.01	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102110.D
Acq On : 21 Oct 2016 6:08 pm
Operator :
Sample : CAL5 (500 ppb)
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 01 15:56:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102111.D
Acq On : 21 Oct 2016 6:36 pm
Operator :
Sample : CAL6 (1000 ppb)
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 01 15:57:01 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	901614	4000.00	ug/kg	102
5) Acenaphthene-d10	9.116	164	794582	4000.00	ug/kg	100
11) Phenanthrene-d10	10.530	188	1399389	4000.00	ug/kg	99
17) Chrysene-d12	13.461	240	1692646	4000.00	ug/kg	101
20) Perylene-d12	15.827	264	1757120	4000.00	ug/kg	100

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.390	172	259542	1005.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 25.14%#			
16) 4-Terphenyl-d14	11.923	244	269949	1003.58	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 25.09%#			

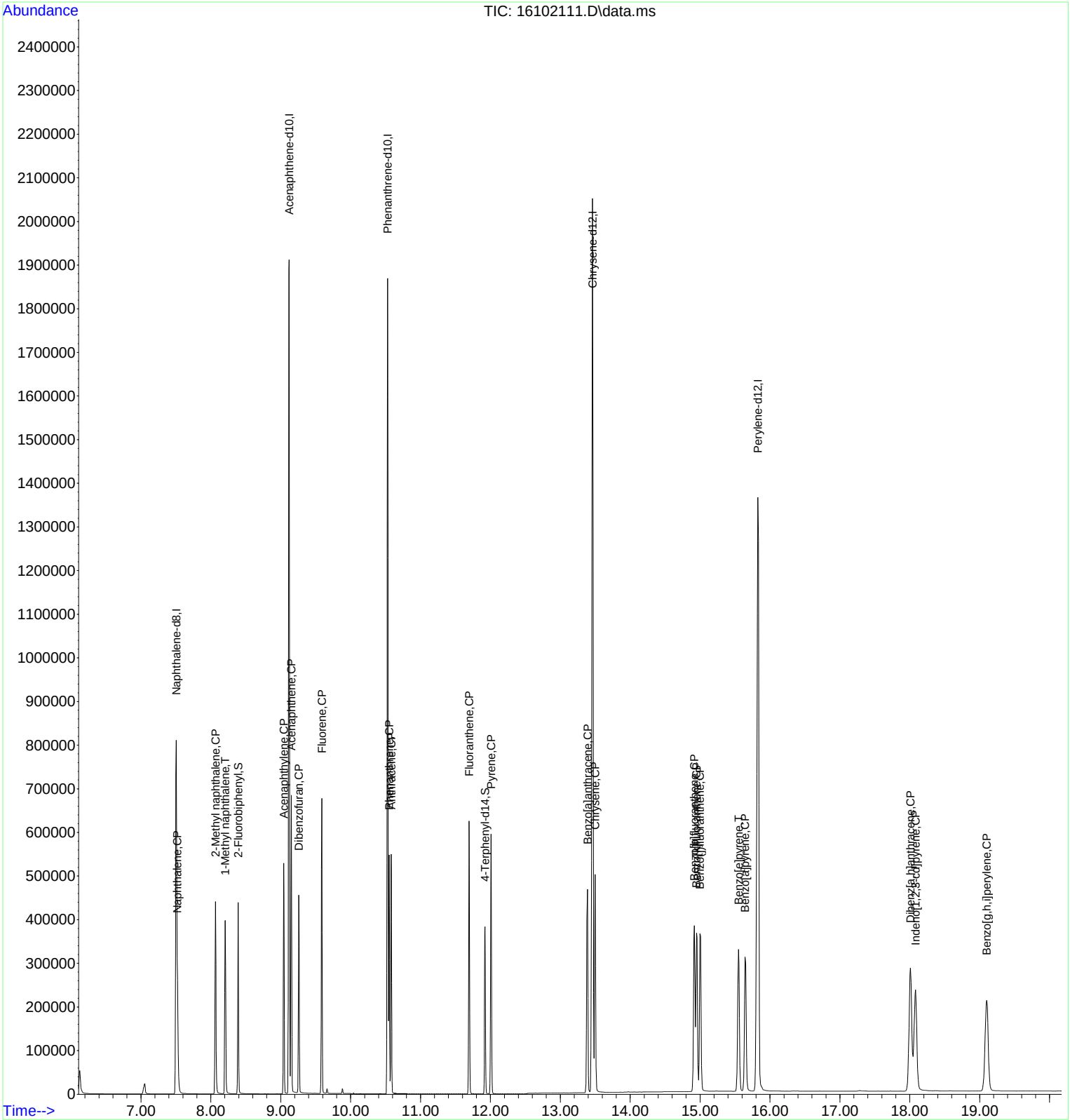
Target Compounds						Qvalue
2) Naphthalene	7.523	128	170246	972.31	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	197841	1021.05	ug/kg	95
4) 1-Methyl naphthalene	8.205	142	178787	1022.03	ug/kg	94
6) Dibenzofuran	9.258	168	288201	997.96	ug/kg	99
8) Acenaphthylene	9.042	152	332310	1003.12	ug/kg	99
9) Acenaphthene	9.150	154	191204	996.34	ug/kg	100
10) Fluorene	9.587	166	236963	985.84	ug/kg	99
12) Phenanthrene	10.551	178	319436	971.65	ug/kg	99
13) Anthracene	10.580	178	325965	973.95	ug/kg	99
14) Fluoranthene	11.695	202	369240	950.00	ug/kg	99
15) Pyrene	12.010	202	373880	936.92	ug/kg	99
18) Benzo[a]anthracene	13.387	228	390743	980.32	ug/kg	99
19) Chrysene	13.497	228	359880	995.88	ug/kg	99
21) Benzo[b]fluoranthene	14.918	252	429468	979.64	ug/kg	99
22) Benzo[k]fluoranthene	14.948	252	390453	985.34	ug/kg	96
23) Benzo(j)fluoranthene	15.006	252	392179	1006.16	ug/kg	98
24) Benzo[e]pyrene	15.548	252	392031	997.64	ug/kg	99
25) Benzo[a]pyrene	15.643	252	392501	977.60	ug/kg	97
26) Dibenz[a,h]anthracene	18.009	278	406240	983.91	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.083	276	399385	991.79	ug/kg	99
28) Benzo[g,h,i]perylene	19.101	276	416758	977.21	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102111.D
Acq On : 21 Oct 2016 6:36 pm
Operator :
Sample : CAL6 (1000 ppb)
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 01 15:57:01 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.501	136	880262	4000.00	ug/kg	100
5) Acenaphthene-d10	9.120	164	791347	4000.00	ug/kg	100
11) Phenanthrene-d10	10.527	188	1411842	4000.00	ug/kg	100
17) Chrysene-d12	13.462	240	1671788	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1761772	4000.00	ug/kg	100

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	505850	1968.02	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.20%			
16) 4-Terphenyl-d14	11.923	244	513510	1892.21	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 47.31%			

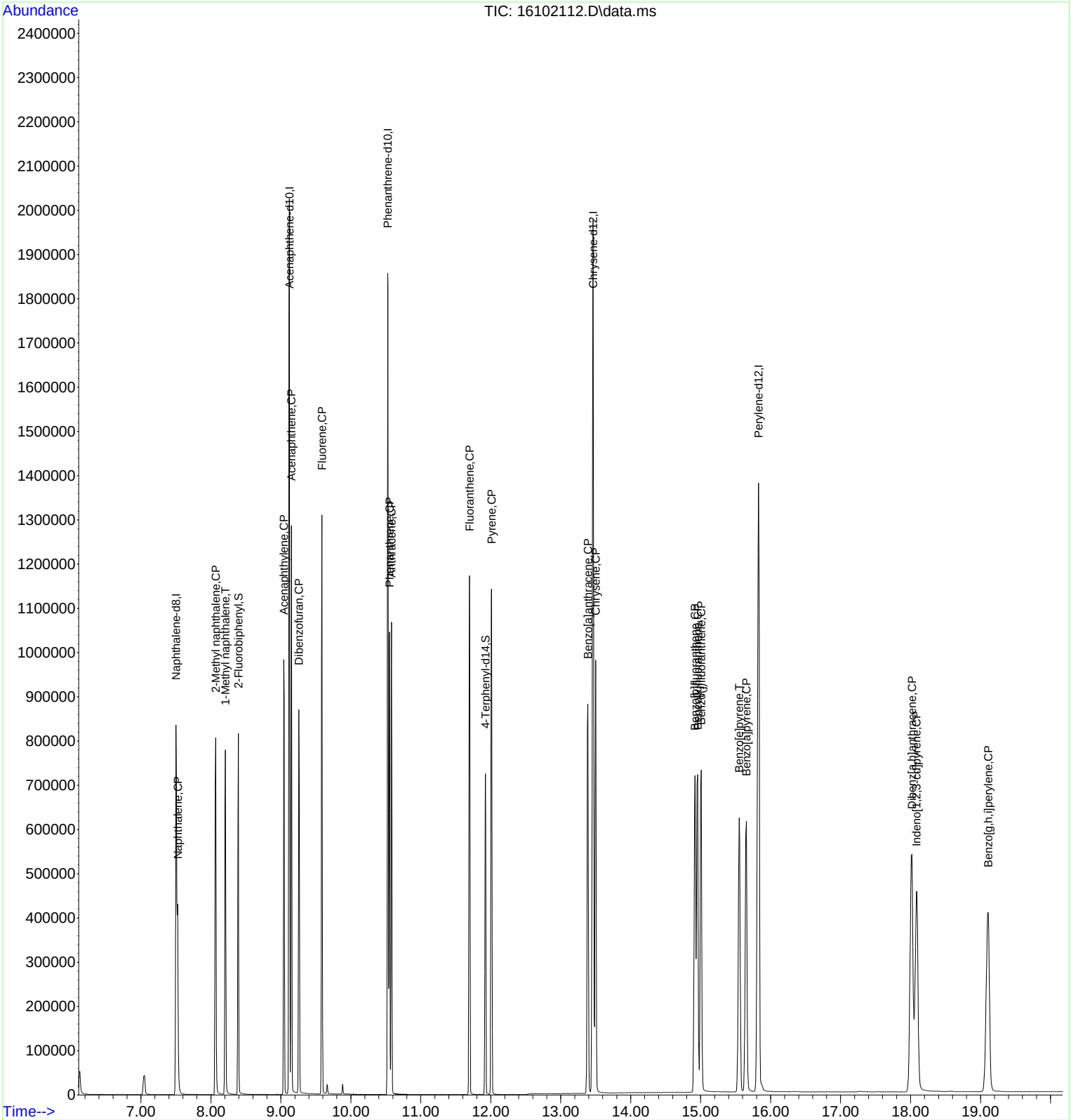
Target Compounds						Qvalue
2) Naphthalene	7.524	128	330707	1934.55	ug/kg	100
3) 2-Methyl naphthalene	8.068	142	384466	2032.34	ug/kg	100
4) 1-Methyl naphthalene	8.206	142	349288	2045.12	ug/kg	100
6) Dibenzofuran	9.258	168	555424	1931.14	ug/kg	100
8) Acenaphthylene	9.041	152	641652	1944.82	ug/kg	100
9) Acenaphthene	9.149	154	376319	1968.97	ug/kg	100
10) Fluorene	9.587	166	453958	1896.32	ug/kg	100
12) Phenanthrene	10.553	178	615418	1855.46	ug/kg	100
13) Anthracene	10.580	178	624605	1849.80	ug/kg	100
14) Fluoranthene	11.695	202	710697	1812.38	ug/kg	100
15) Pyrene	12.010	202	716680	1780.12	ug/kg	100
18) Benzo[a]anthracene	13.388	228	757231	1923.48	ug/kg	100
19) Chrysene	13.498	228	704842	1974.82	ug/kg	100
21) Benzo[b]fluoranthene	14.919	252	826991	1881.43	ug/kg	100
22) Benzo[k]fluoranthene	14.956	252	764441	1924.04	ug/kg	100
23) Benzo(j)fluoranthene	15.007	252	758348	1940.45	ug/kg	100
24) Benzo[e]pyrene	15.549	252	767440	1947.82	ug/kg	100
25) Benzo[a]pyrene	15.652	252	770646	1914.38	ug/kg	100
26) Dibenz[a,h]anthracene	18.018	278	805016	1944.59	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.091	276	781589	1935.80	ug/kg	100
28) Benzo[g,h,i]perylene	19.109	276	829323	1939.46	ug/kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

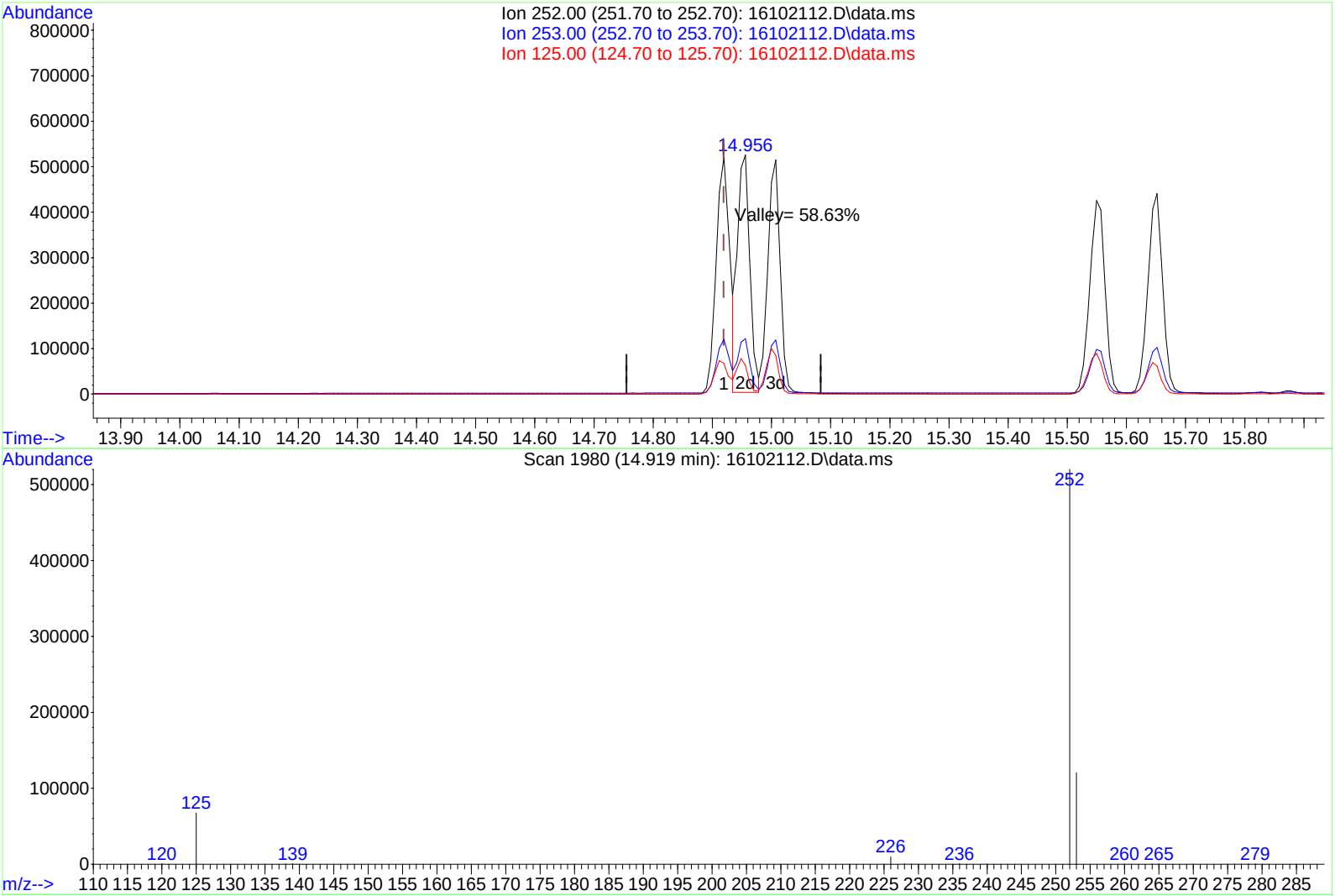
Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



TIC: 16102112.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.919min (0.000) 1881.43ug/kg

response 826991

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.68
125.00	12.90	12.93
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102113.D
Acq On : 21 Oct 2016 7:33 pm
Operator :
Sample : CAL8 (5000 ppb)
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 01 15:57:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	918505	4000.00	ug/kg	104
5) Acenaphthene-d10	9.120	164	761139	4000.00	ug/kg	96
11) Phenanthrene-d10	10.530	188	1363680	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1617869	4000.00	ug/kg	97
20) Perylene-d12	15.828	264	1675682	4000.00	ug/kg	95

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.389	172	1148781	4646.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 116.17%			
16) 4-Terphenyl-d14	11.925	244	1142675	4359.30	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 108.98%			

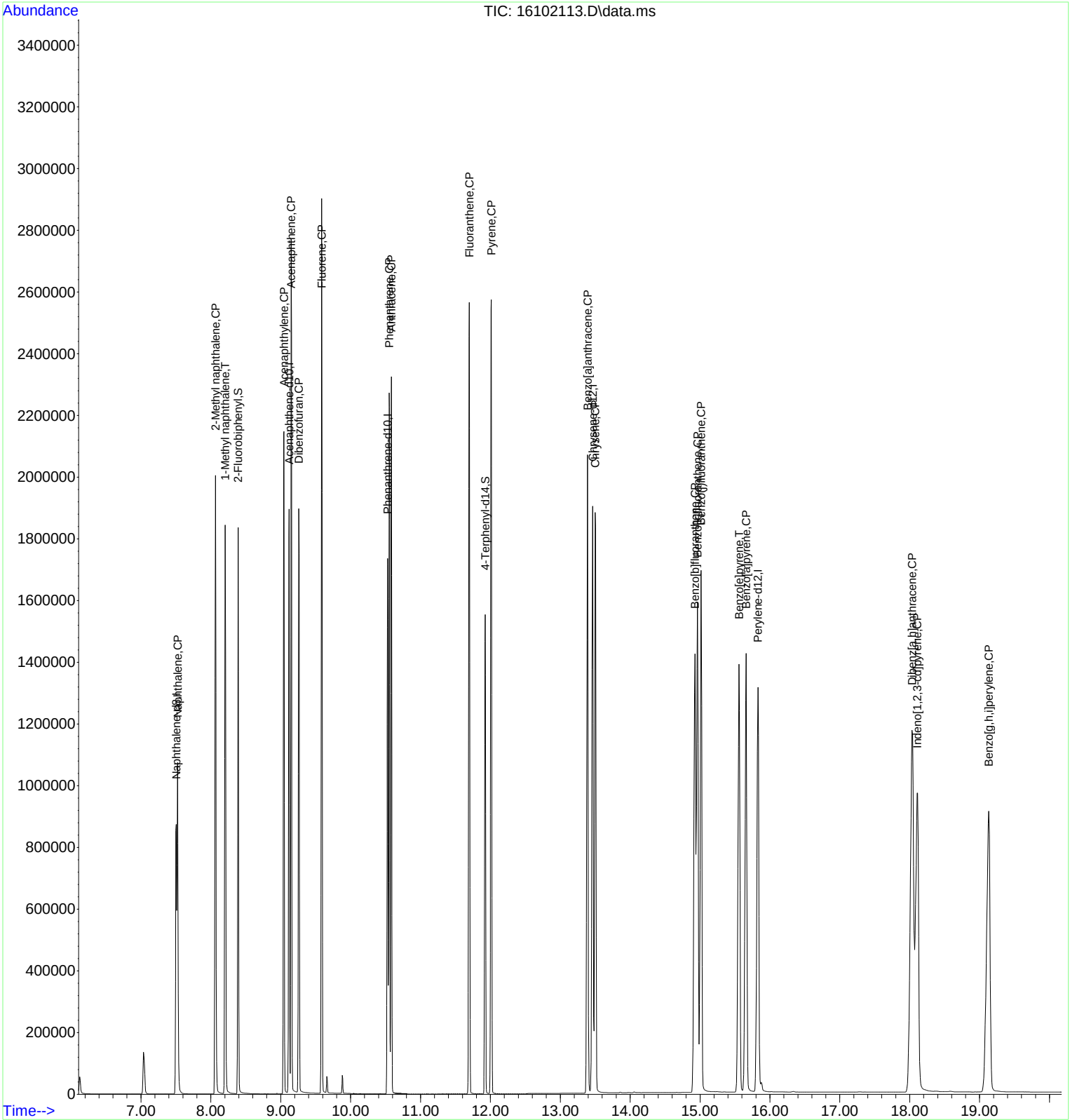
Target Compounds						Qvalue
2) Naphthalene	7.522	128	849321	4761.45	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	919664	4659.07	ug/kg	95
4) 1-Methyl naphthalene	8.204	142	837317	4698.46	ug/kg	93
6) Dibenzofuran	9.263	168	1261471	4560.05	ug/kg	97
8) Acenaphthylene	9.047	152	1465458	4618.04	ug/kg	99
9) Acenaphthene	9.150	154	861859	4688.38	ug/kg	99
10) Fluorene	9.587	166	1030857	4477.11	ug/kg	98
12) Phenanthrene	10.553	178	1393061	4348.35	ug/kg	97
13) Anthracene	10.582	178	1405259	4308.73	ug/kg	97
14) Fluoranthene	11.698	202	1569940	4144.98	ug/kg	97
15) Pyrene	12.013	202	1593940	4098.92	ug/kg	97
18) Benzo[a]anthracene	13.389	228	1717232	4507.40	ug/kg	97
19) Chrysene	13.499	228	1561030	4519.44	ug/kg	97
21) Benzo[b]fluoranthene	14.927	252	1902600	4550.84	ug/kg	97
22) Benzo[k]fluoranthene	14.964	252	1753695	4640.69	ug/kg	96
23) Benzo(j)fluoranthene	15.015	252	1743381	4690.11	ug/kg	95
24) Benzo[e]pyrene	15.557	252	1767858	4717.48	ug/kg	98
25) Benzo[a]pyrene	15.660	252	1782235	4654.76	ug/kg	97
26) Dibenz[a,h]anthracene	18.040	278	1904385	4836.56	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.114	276	1824269	4750.38	ug/kg	98
28) Benzo[g,h,i]perylene	19.132	276	1932569	4751.72	ug/kg	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102113.D
Acq On : 21 Oct 2016 7:33 pm
Operator :
Sample : CAL8 (5000 ppb)
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 01 15:57:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102114.D
Acq On : 21 Oct 2016 8:01 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 11 Sample Multiplier: 1

sscv for dibenzofuran & benzo (j) fluoranthene

Quant Time: Nov 01 15:57:10 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	1563492	4000.00	ug/kg	178
5) Acenaphthene-d10	9.117	164	794379	4000.00	ug/kg	100
11) Phenanthrene-d10	10.527	188	1388007	4000.00	ug/kg	98
17) Chrysene-d12	13.462	240	1693163	4000.00	ug/kg	101
20) Perylene-d12	15.828	264	1752733	4000.00	ug/kg	99

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	1298360	5032.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 125.80%			
16) 4-Terphenyl-d14	11.924	244	1298161	4865.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 121.64%			

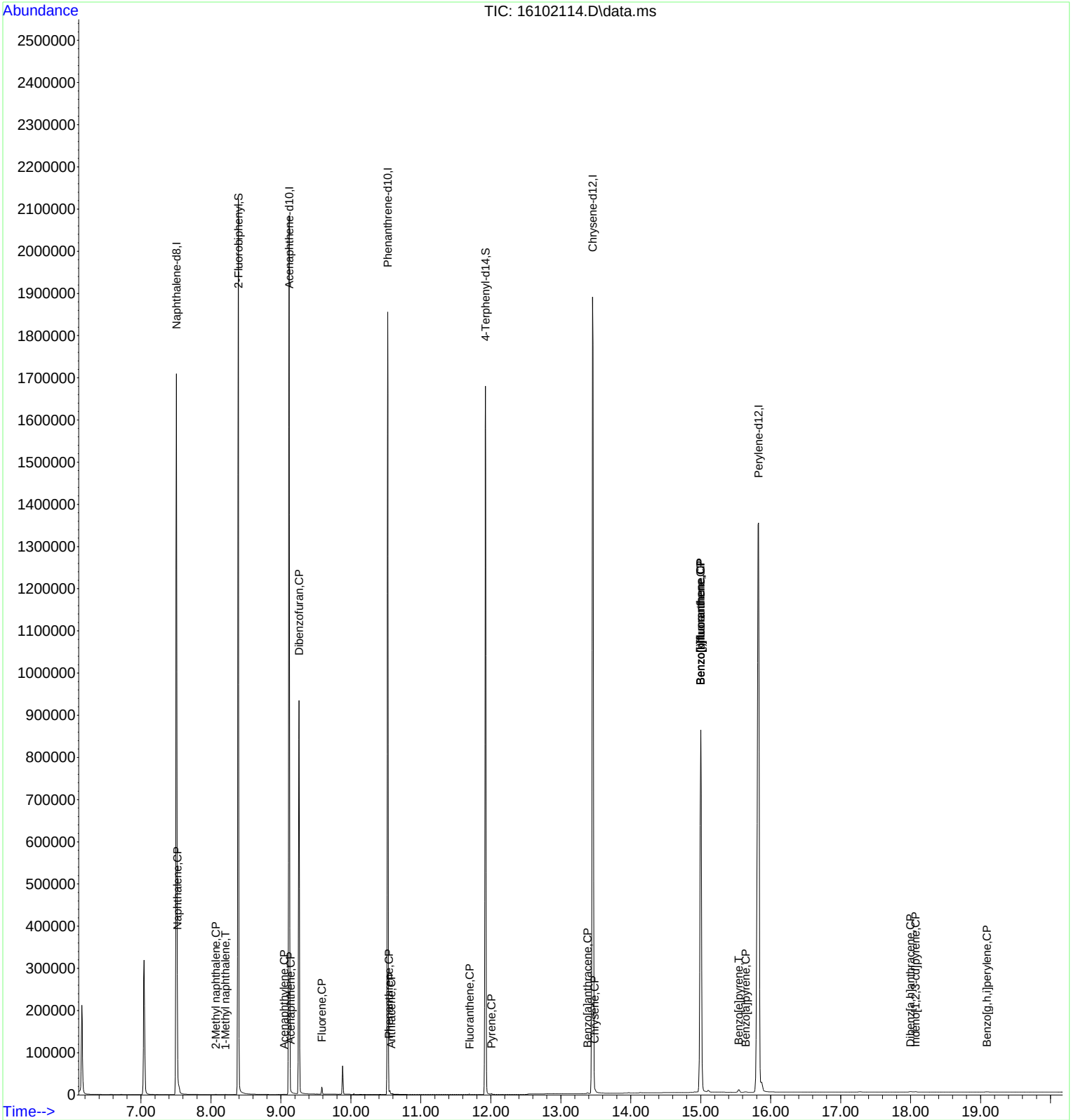
Target Compounds						Qvalue
2) Naphthalene	7.524	128	965	3.18	ug/kg#	1
3) 2-Methyl naphthalene	8.067	142	275	0.82	ug/kg	89
4) 1-Methyl naphthalene	8.206	142	169	0.56	ug/kg	93
6) Dibenzofuran	9.259	168	624874	2164.32	ug/kg	100
8) Acenaphthylene	9.043	152	414	1.25	ug/kg	95
9) Acenaphthene	9.146	154	322	1.68	ug/kg	97
10) Fluorene	9.583	166	6246	25.99	ug/kg	97
12) Phenanthrene	10.550	178	812	2.49	ug/kg	96
13) Anthracene	10.578	178	818	2.46	ug/kg	95
14) Fluoranthene	11.694	202	919	2.38	ug/kg	98
15) Pyrene	12.006	202	1080	2.73	ug/kg	98
18) Benzo[a]anthracene	13.381	228	1421	3.56	ug/kg	98
19) Chrysene	13.491	228	1285	3.55	ug/kg	98
21) Benzo[b]fluoranthene	15.000	252	903024	2065.00	ug/kg	94
22) Benzo[k]fluoranthene	15.000	252	905438	2290.67	ug/kg	93
23) Benzo(j)fluoranthene	15.000	252	905438	2328.76	ug/kg	97
24) Benzo[e]pyrene	15.542	252	7069	18.03	ug/kg	97
25) Benzo[a]pyrene	15.645	252	1594	3.98	ug/kg	91
26) Dibenz[a,h]anthracene	17.996	278	1752	4.25	ug/kg	90
27) Indeno[1,2,3-cd]pyrene	18.069	276	1462	3.64	ug/kg	98
28) Benzo[g,h,i]perylene	19.088	276	1627	3.82	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102114.D
Acq On : 21 Oct 2016 8:01 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 01 15:57:10 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102115.D
Acq On : 21 Oct 2016 8:30 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 01 15:57:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

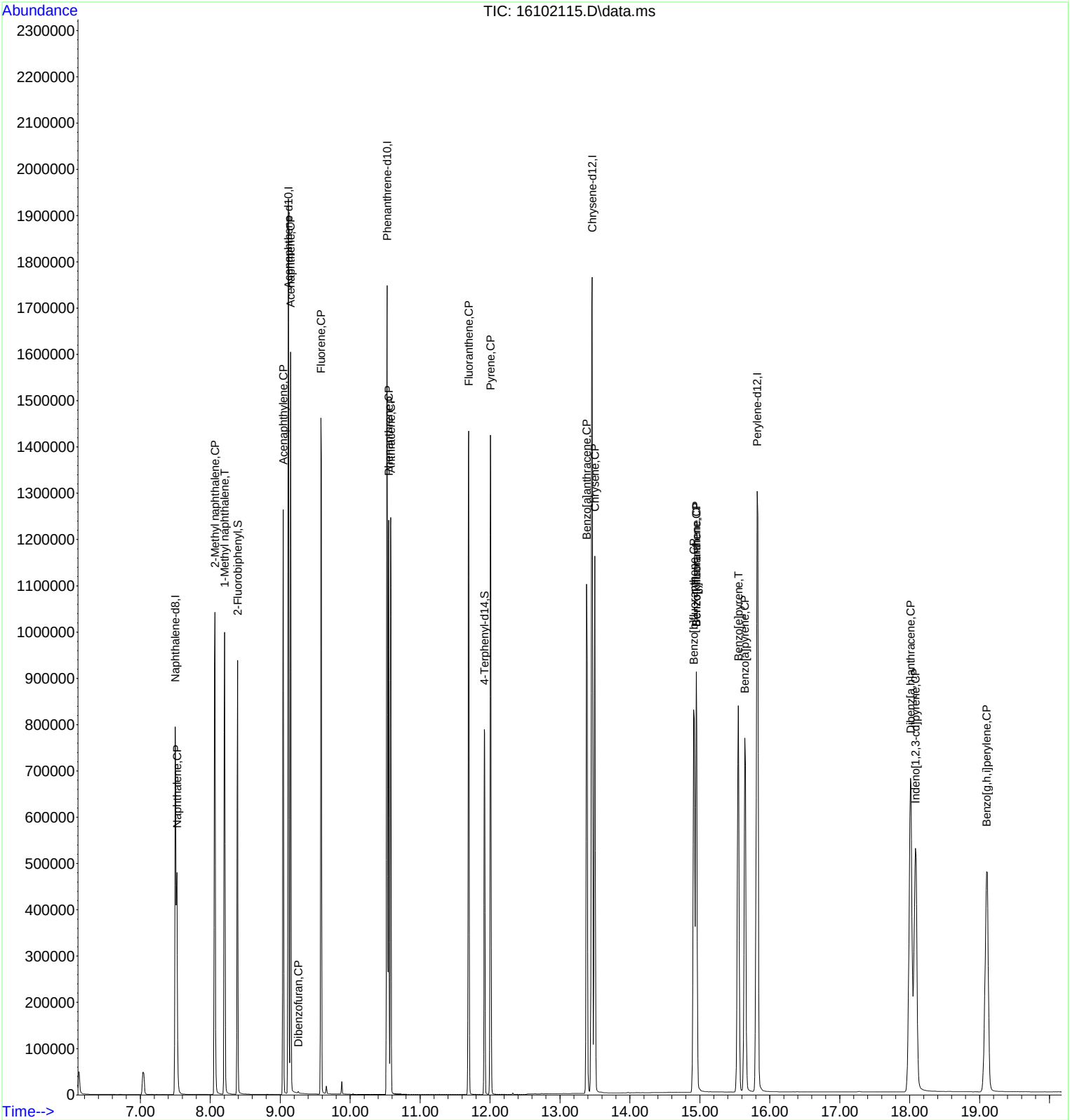
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.500	136	807543	4000.00	ug/kg	92
5) Acenaphthene-d10	9.116	164	750573	4000.00	ug/kg	95
11) Phenanthrene-d10	10.528	188	1351727	4000.00	ug/kg	96
17) Chrysene-d12	13.462	240	1612314	4000.00	ug/kg	96
20) Perylene-d12	15.820	264	1670522	4000.00	ug/kg	95
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.390	172	573032	2350.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 58.76%			
16) 4-Terphenyl-d14	11.923	244	585065	2251.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 56.29%			
Target Compounds						Qvalue
2) Naphthalene	7.523	128	388136	2474.96	ug/kg	100
3) 2-Methyl naphthalene	8.066	142	503626	2901.97	ug/kg	99
4) 1-Methyl naphthalene	8.205	142	443047	2827.68	ug/kg	99
6) ~~Dibenzofuran~~	~~9.258~~	~~168~~	~~2021~~	~~7.41~~	~~ug/kg~~	~~98~~
8) Acenaphthylene	9.042	152	769105	2457.77	ug/kg	99
9) Acenaphthene	9.150	154	467331	2578.00	ug/kg	98
10) Fluorene	9.582	166	555684	2447.36	ug/kg	98
12) Phenanthrene	10.551	178	745409	2347.32	ug/kg	99
13) Anthracene	10.580	178	744165	2301.90	ug/kg	100
14) Fluoranthene	11.695	202	870665	2319.07	ug/kg	99
15) Pyrene	12.007	202	882139	2288.54	ug/kg	99
18) Benzo[a]anthracene	13.381	228	918996	2420.50	ug/kg	98
19) Chrysene	13.498	228	851866	2474.79	ug/kg	99
21) Benzo[b]fluoranthene	14.912	252	1042059	2500.21	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	879521	2334.61	ug/kg	97
23) Benzo(j)fluoranthene	14.949	252	882686	2381.97	ug/kg	99
24) Benzo[e]pyrene	15.549	252	1010441	2704.66	ug/kg	99
25) Benzo[a]pyrene	15.645	252	953973	2499.24	ug/kg	98
26) Dibenz[a,h]anthracene	18.018	278	1001809	2552.15	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.084	276	926742	2420.68	ug/kg	97
28) Benzo[g,h,i]perylene	19.109	276	967677	2386.63	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102115.D
Acq On : 21 Oct 2016 8:30 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 01 15:57:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



ICP-MS3
For

DHL Work Order
1611028

ICP-MS3_161116A
For

DHL Work Order
1611028

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS3_161116A SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			X
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			
P/A Factor	Before ICAL	Increasing trend	X			X
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			X
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X			
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125 / 80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			X
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted	X			
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: Cara Van Dyke Date of Completion: 11/16/2016

Second-Level Review: Angie O'Donnell Date Stamp: 11/18/2016

DHL Analytical, Inc.

Run ID: **ICP-MS3_161116A** **Run No.:** 89004

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS3

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TW	CAL	R89004	11/15/2016 11:08:00 AM		
L2-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:14:00 AM		
L-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:20:00 AM		
10X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:26:00 AM		
5X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:32:00 AM		
2X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:38:00 AM		
H-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:44:00 AM		
H2-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:50:00 AM		
ICSA-161115	1	ICPMS_TW	ICSA	R89004	11/15/2016 12:13:00 PM		
ICSAB-161115	1	ICPMS_TW	ICSB	R89004	11/15/2016 12:19:00 PM		
ICV1-161115	1	ICPMS_TW	ICV	R89004	11/15/2016 12:37:00 PM		
ICB1-161115	1	ICPMS_TW	ICB	R89004	11/15/2016 12:43:00 PM		
ILCVL-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 1:17:00 PM		
MB-77899	1	ICPMS_DW	MBLK	77899	11/15/2016 1:29:00 PM		
FB-77899	1	ICPMS_DW	MBLK	77899	11/15/2016 1:35:00 PM		
LCS-77899	1	ICPMS_DW	LCS	77899	11/15/2016 1:41:00 PM		
LCSD-77899	1	ICPMS_DW	LCSD	77899	11/15/2016 1:47:00 PM		
1611118-02E	1	ICPMS_DW	SAMP	77899	11/15/2016 1:59:00 PM		
1611118-02E SD	5	ICPMS_DW	SD	77899	11/15/2016 2:05:00 PM		
1611095-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:11:00 PM		
1611095-02E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:17:00 PM		
1611095-03E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:23:00 PM		
1611095-04E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:29:00 PM		
1611095-05E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:35:00 PM		
1611095-06E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:47:00 PM		
1611095-07E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:53:00 PM		
1611095-08E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:59:00 PM		
1611095-09E	1	ICPMS_DW	SAMP	77899	11/15/2016 3:05:00 PM		
1611118-02E PDS	1	ICPMS_DW	PDS	77899	11/15/2016 3:11:00 PM		
1611118-02E MS	1	ICPMS_DW	MS	77899	11/15/2016 3:17:00 PM		

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

1611118-02E MSD	1	ICPMS_DW	MSD	77899	11/15/2016 3:23:00 PM		
CCV1-161115	1	ICPMS_TW	CCV	R89004	11/15/2016 5:06:00 PM		
CCB1-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 5:12:00 PM		
LCVL1-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 5:18:00 PM		
1611118-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:25:00 PM		
1611118-03E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:31:00 PM		
1611118-04E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:37:00 PM		
1611118-05E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:43:00 PM		
1611118-06E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:49:00 PM		
1611118-07E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:55:00 PM		
1611118-10E	1	ICPMS_DW	SAMP	77899	11/15/2016 6:01:00 PM		
1611095-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 6:08:00 PM		
1611118-02E	5	ICPMS_DW	SAMP	77899	11/15/2016 6:14:00 PM		
1611118-02E SD	25	ICPMS_DW	SD	77899	11/15/2016 6:20:00 PM		
1611118-02E PDS	5	ICPMS_DW	PDS	77899	11/15/2016 6:26:00 PM		
CCV2-16115	1	ICPMS_TW	CCV	R89004	11/15/2016 6:32:00 PM		
CCB2-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 6:44:00 PM		
LCVL2-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 6:50:00 PM		
MB-77925	1	ICPMS_TW	MBLK	77925	11/15/2016 6:56:00 PM		
LCS-77925	1	ICPMS_TW	LCS	77925	11/15/2016 7:02:00 PM		
LCSD-77925	1	ICPMS_TW	LCSD	77925	11/15/2016 7:08:00 PM		
1611120-01A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:20:00 PM		
1611120-01A SD	5	ICPMS_TW	SD	77925	11/15/2016 7:26:00 PM		
1611120-02A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:32:00 PM		
1611120-03A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:39:00 PM		
1611120-04A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:45:00 PM		
1611120-05A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:51:00 PM		
1611120-06A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:57:00 PM		
1611120-07A	1	ICPMS_TW	SAMP	77925	11/15/2016 8:03:00 PM		
1611120-01A PDS	1	ICPMS_TW	PDS	77925	11/15/2016 8:09:00 PM		
CCV3-161115	1	ICPMS_TW	CCV	R89004	11/15/2016 8:15:00 PM		
LCVL3-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 8:27:00 PM		
CCB3-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 8:33:00 PM		

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS3

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:40:00 AM		
L2-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:46:00 AM		
L-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:52:00 AM		
10X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:58:00 AM		
5X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:04:00 AM		
2X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:10:00 AM		
H-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:16:00 AM		
H2-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:22:00 AM		
ICSA-161116	1	ICPMS_TWDOD	ICSA	R89004	11/16/2016 11:46:00 AM		
ICSAB-161116	1	ICPMS_TWDOD	ICSB	R89004	11/16/2016 11:52:00 AM		
ICV1-161116	1	ICPMS_TWDOD	ICV	R89004	11/16/2016 12:10:00 PM		
ILCVL-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 12:22:00 PM		
ICB1-161116	1	ICPMS_TWDOD	ICB	R89004	11/16/2016 12:28:00 PM		
CCV1-161116	1	ICPMS_TWDOD	CCV	R89004	11/16/2016 1:35:00 PM		
CCB1-161116	1	ICPMS_TWDOD	CCB	R89004	11/16/2016 1:41:00 PM		
LCVL1-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 1:47:00 PM		
MB-77913	1	ICPMS_TWDOD	MBLK	77913	11/16/2016 1:53:00 PM		
LCS-77913	1	ICPMS_TWDOD	LCS	77913	11/16/2016 1:59:00 PM		
LCSD-77913	1	ICPMS_TWDOD	LCSD	77913	11/16/2016 2:05:00 PM		
1611028-26A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:17:00 PM		
1611028-26A SD	5	ICPMS_TWDOD	SD	77913	11/16/2016 2:24:00 PM		
1611022-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:30:00 PM		
1611022-26A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:36:00 PM		
1611028-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:42:00 PM		
1611044-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:48:00 PM		
1611053-42A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:54:00 PM		
1611071-36A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 3:00:00 PM		
1611028-26A PDS	1	ICPMS_TWDOD	PDS	77913	11/16/2016 3:06:00 PM		
1611028-26A MS	1	ICPMS_TWDOD	MS	77913	11/16/2016 3:12:00 PM		
1611028-26A MSD	1	ICPMS_TWDOD	MSD	77913	11/16/2016 3:18:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICSA-160908	ICS-A Solution (Interference Che		12/27/2016
MET-ICSAB-16090	ICS-AB Solution (Interference Ch		12/27/2016
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161019	INTERNAL STANDARD 1 PPM		01/16/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016
MET-TUNECHECK	TUNE CHECK 100 PPB SOLUTI		12/22/2016
MET-TUNING-160	ICP-MS TUNING SOLUTION - 10		12/05/2016

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

CCV2-161116	1	ICPMS_TWDOD	CCV	R89004	11/16/2016 3:24:00 PM		
CCB2-161116	1	ICPMS_TWDOD	CCB	R89004	11/16/2016 3:36:00 PM		
LCVL2-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 3:43:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICSA-160908	ICS-A Solution (Interference Che		12/27/2016
MET-ICSAB-16090	ICS-AB Solution (Interference Ch		12/27/2016
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161019	INTERNAL STANDARD 1 PPM		01/16/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016
MET-TUNECHECK	TUNE CHECK 100 PPB SOLUTI		12/22/2016
MET-TUNING-160	ICP-MS TUNING SOLUTION - 10		12/05/2016

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
1		Keyword		CALBEG	Start of CALIB						
2	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
3	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
4	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
5	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalBlk	2101		BLANK STD 1	CAL ICPMS_TW	Level 1				
6	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2102		L2-161116	CAL ICPMS_TW	Level 2				
7	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2103		L-161116	CAL ICPMS_TW	Level 3				
8	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2104		10X-161116	CAL ICPMS_TW	Level 4				
9	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2105		5X-161116	CAL ICPMS_TW	Level 5				
10	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2106		2X-161116	CAL ICPMS_TW	Level 6				
11	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2107		H-161116	CAL ICPMS_TW	Level 7				
12	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2108		H2-161116	CAL ICPMS_TW	Level 8				
13	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
14	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
15		Keyword		CALEND	End of CALIB						
16		Keyword		ICSBEG	Start of ICS						
17	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		RINSE	CAL ICPMS_TW	1.000				
18	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICS-A	2109		ICSA-161116	ICSAICPMS_TW	1.000				
19	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICS-AB	2110		ICSAB-161116	ICSBICPMS_TW	1.000				
20	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		RINSE	CAL ICPMS_TW	1.000				
21	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		RINSE	CAL ICPMS_TW	1.000				
22		Keyword		ICSEND	End of ICS						
23		Keyword		SMPLBEG	Start of SMPL						
24	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICV	2111		ICV1-161116	ICV ICPMS_TW	1.000				
25	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICB	1104		ICB1-161116	ICB ICPMS_TW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
26	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2112		ILCVL-161116	LCVLICPMS_TW	1.000				
27	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICB	1104		ICB1-161116	ICB ICPMS_TW	1.000				
28	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2201		1611118-02E	SAMPICPMS_DW	5.000				
29	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2202		1611118-02E SD	SD_ICPMS_DW	25.00				
30	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2203		1611095-01E	SAMPICPMS_DW	5.000				
31	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2204		1611118-03E	SAMPICPMS_DW	1.000				
32	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2205		1611118-10E	SAMPICPMS_DW	1.000				
33	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2206		1611118-02E PDS	PDS ICPMS_DW	5.000				
34	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
35	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2207		1611120-01A	SAMPICPMS_TW	1.000				
36	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2208		1611120-01A SD	SD_ICPMS_TW	5.000				
37	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2209		1611120-01A PDS	PDS ICPMS_TW	1.000				
38	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV1-161116	CCV ICPMS_TW	1.000				
39	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB1-161116	CCB ICPMS_TW	1.000				
40	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL1-161116	LCVLICPMS_TW	1.000				
41	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PB W	2301		MB-77913	MBLKICPMS_TW	1.000				
42	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	2302		LCS-77913	LCS ICPMS_TW	1.000				
43	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	2303		LCSD-77913	LCSDICPMS_TW	1.000				
44	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
45	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2304		1611028-26A	SAMPICPMS_TW	1.000				
46	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2305		1611028-26A SD	SD_ICPMS_TW	5.000				
47	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2306		1611022-13A	SAMPICPMS_TW	1.000				
48	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2307		1611022-26A	SAMPICPMS_TW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
49	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2308		1611028-13A	SAMPICPMS_TW	1.000				
50	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2309		1611044-13A	SAMPICPMS_TW	1.000				
51	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2310		1611053-42A	SAMPICPMS_TW	1.000				
52	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2311		1611071-36A	SAMPICPMS_TW	1.000				
53	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2312		1611028-26A PDS	PDS ICPMS_TW	1.000				
54	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	2401		1610181-01C MS	MS_ICPMS_TW	1.000				
55	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	2402		1610181-01C MSD	MSD ICPMS_TW	1.000				
56	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV2-161116	CCV ICPMS_TW	1.000				
57	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB2-161116	CCB ICPMS_TW	1.000				
58	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB2-161116	CCB ICPMS_TW	1.000				
59	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL2-161116	LCVLICPMS_TW	1.000				
60	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PB W	3101		MB-77922	MBLKICPMS_DW	1.000				
61	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	3102		LCS-77922	LCS ICPMS_DW	1.000				
62	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	3103		LCSD-77922	LCSDICPMS_DW	1.000				
63	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
64	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	3104		1611091-01B	SAMPICPMS_DW	1.000				
65	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	3105		1611091-01B SD	SD_ICPMS_DW	5.000				
66	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3106		1611091-02B	SAMPICPMS_DW	1.000				
67	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3107		1611091-03B	SAMPICPMS_DW	1.000				
68	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3108		1611091-04B	SAMPICPMS_DW	1.000				
69	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3109		1611091-05B	SAMPICPMS_DW	1.000				
70	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3110		1611091-06B	SAMPICPMS_DW	1.000				
71	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3111		1611091-07B	SAMPICPMS_DW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
72	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3112		1611091-08B	SAMPICPMS_DW	1.000				
73	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3201		1611091-09B	SAMPICPMS_DW	1.000				
74	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3202		1611091-10B	SAMPICPMS_DW	1.000				
75	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	3203		1611091-01B PDS	PDS ICPMS_DW	1.000				
76	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3204		1611091-01B MS	MS_ICPMS_DW	1.000				
77	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3205		1611091-01B MSD	MSD ICPMS_DW	1.000				
78	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV3-161116	CCV ICPMS_TW	1.000				
79	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB3-161116	CCB ICPMS_TW	1.000				
80	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL3-161116	LCVLICPMS_TW	1.000				
81	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB3-161116	CCB ICPMS_TW	1.000				
82		Keyword		StandBy							
83	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3206		1611091-11B	SAMPICPMS_DW	1.000				
84	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3207		1611089-01B	SAMPICPMS_DW	1.000				
85	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3208		1611089-02B	SAMPICPMS_DW	1.000				
86	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV4-161116	CCV ICPMS_TW	1.000				
87	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB4-161116	CCB ICPMS_TW	1.000				
88	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL4-161116	LCVLICPMS_TW	1.000				
89	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB4-161116	CCB ICPMS_TW	1.000				
90	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	3301		1610181-01C	SAMPICPMS_DW	1.000				
91	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	3302		1610181-01C SD	SD_ICPMS_DW	5.000				
92	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	3303		1610181-01C PDS	PDS ICPMS_DW	1.000				
93	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3304		1610181-01C MS	MS_ICPMS_DW	1.000				
94	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3305		1610181-01C MSD	MSD ICPMS_DW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
95	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV5-161028	CCV ICPMS_TW	1.000				
96	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB5-161028	CCB ICPMS_TW	1.000				
97	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL5-161028	LCVLICPMS_TW	1.000				
98	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL5-161028	LCVLICPMS_TW	1.000				
99	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB5-161028	CCB ICPMS_TW	1.000				
100	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1102		BLANK	CAL ICPMS_TW	1.000				
101	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1103		BLANK	CAL ICPMS_TW	1.000				
102	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
103	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
104	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		BLANK	CAL ICPMS_TW	1.000				
105	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1102		BLANK	CAL ICPMS_TW	1.000				
106	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1103		BLANK	CAL ICPMS_TW	1.000				
107	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
108	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
109		Keyword		StandBy							
110		Keyword		SMPLEND	End of SMPL						
111		Keyword		End	End of Sequence						
112		Keyword		CCVBEG	Start of CCV						
113		Keyword		CCVEND	End of CCV						
114		Keyword		BLKBEG	Start of BLANK						
115		Keyword		BLKEND	End of BLANK						
116		Keyword		ERRBEG	Start of ERRTERM						
117		Keyword		ERREND	End of ERRTERM						

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/15/2016 9:08:38 AM**
Digestion:
Prep End Date:

Prep Batch **77913** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List
Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13A	Equip Blank		50	50	1.000	1 of 1	
1611022-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-13A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A MS/MSD	Equip Blank		50	50	1.000	1 of 1	
1611044-13A	Equip Blank		50	50	1.000	1 of 1	
1611053-42A	Equip Blank		50	50	1.000	1 of 1	
1611071-36A	Equip Blank		50	50	1.000	1 of 1	
LCS-77913	Aqueous		50	50	1.000	of	
LCSD-77913	Aqueous		50	50	1.000	of	
MB-77913	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	ml	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026

9:30 - 15:15

Spk ID	Spike Name	Samp Type	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.1	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	0.2	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

11/15/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/15/2016 9:08:38 AM**
Digestion: **Start: 11/15/2016 9:30:00 AM / Stop: 11/15/2016 3:15:00 PM**
Prep End Date: **11/15/2016 3:40:43 PM**

Prep Batch **77913** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List

Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13A	Equip Blank		50	50	1.000	1 of 1	
1611022-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-13A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A MS	Equip Blank		50	50	1.000	of	
1611028-26A MSD	Equip Blank		50	50	1.000	of	
1611028-26A PDS	Equip Blank		50	50	1.000	of	
1611028-26A SD	Equip Blank		50	50	1.000	of	
1611044-13A	Equip Blank		50	50	1.000	1 of 1	
1611053-42A	Equip Blank		50	50	1.000	1 of 1	
1611071-36A	Equip Blank		50	50	1.000	1 of 1	
LCS-77913	Aqueous		50	50	1.000	of	
LCSD-77913	Aqueous		50	50	1.000	of	
MB-77913	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	ml	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.1	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	0.2	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	BALANCE #:	26	
TEST DATE:	11/07/2016	Water is at Room Temperatue (70-73°F) / (21-23°C)		
PIPETTER LAB ID:	P-01, P-09	WATER TEMP (°C):	21-23°C	
TEST VOLUME:	See Below	WATER DENSITY:	0.998	(0.9980-0.9976)

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-01	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	5.00	5.0094	5.0194	100.39	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		5.0129	5.0229	100.46		
3		5.0114	5.0214	100.43		
AVERAGE (MEAN)		5.011	5.021	100.43		0.035
						PASS

PIPETTE ID: P-09	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	0.20	0.2014	0.2018	100.90	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.2021	0.2025	101.25		
3		0.2011	0.2015	100.75		
AVERAGE (MEAN)		0.202	0.202	100.97		0.255
						PASS

PIPETTE ID:	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1						RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2						
3						
AVERAGE (MEAN)						

11/7/16
Analyst / Date

11/18/2016
Review and Approved / Date

X:\LOGS\Syringe and Pipetter Cal Logbook\MET-HG PREP\Pipetter Accuracy Check-SP-11.7.16

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	11/16/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**2.50**	2.5077	2.5027	**100.11**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		2.4916	2.4866	**99.46**		
3		2.4988	2.4938	**99.75**		
AVERAGE (MEAN)		**2.499**	**2.494**	**99.77**		**0.323**
						PASS

PIPETTE ID: P-21	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**1.00**	1.0003	0.9983	**99.83**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		1.0023	1.0003	**100.03**		
3		1.0015	0.9995	**99.95**		
AVERAGE (MEAN)		**1.001**	**0.999**	**99.94**		**0.101**
						PASS

PIPETTE ID: P-39	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.200**	0.1994	0.1990	**99.50**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1998	0.1994	**99.70**		
3		0.1992	0.1988	**99.40**		
AVERAGE (MEAN)		**0.199**	**0.199**	**99.53**		**0.153**
						PASS

11/16/16
Analyst / Date

11/17/2016
Review and Approved / Date

Calibration Summary Report

Instrument: ICPMS3
Current Method: C:\ICPCHEM\1\METHODS\DHL_3Fe.M
Calibration: C:\ICPCHEM\1\CALIB\DHL_3Fe.c
Last Update: Nov 16 2016 11:25 am
Cal Type: Y=aX+[blank]

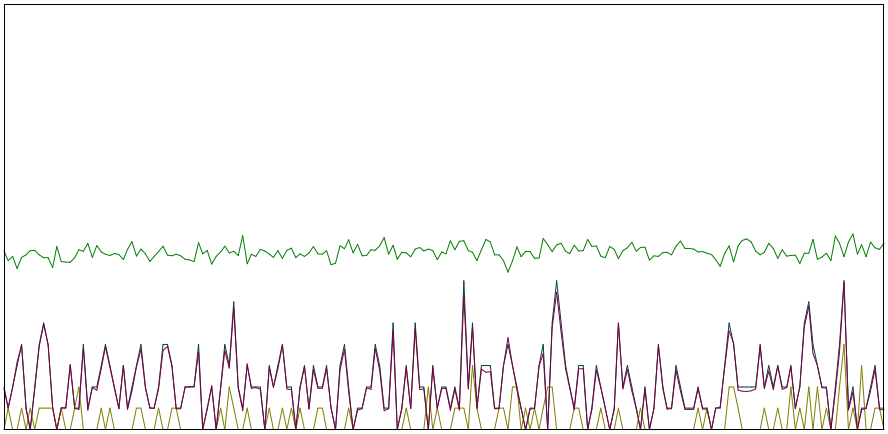
Standard	Date Acquired	File
BLANK STD 1	Nov 16 2016 10:40 am	c:\icpchem\1\data\16k16k01.b\004calb.d\
L2-161116	Nov 16 2016 10:46 am	c:\icpchem\1\data\16k16k01.b\005cals.d\
L-161116	Nov 16 2016 10:52 am	c:\icpchem\1\data\16k16k01.b\006cals.d\
10X-161116	Nov 16 2016 10:58 am	c:\icpchem\1\data\16k16k01.b\007cals.d\
5X-161116	Nov 16 2016 11:04 am	c:\icpchem\1\data\16k16k01.b\008cals.d\
2X-161116	Nov 16 2016 11:10 am	c:\icpchem\1\data\16k16k01.b\009cals.d\

Element Name	Corr Coef	Coef A	Coef B	Lvl 2	Lvl 6	Lvl 7	L7 %R	Lvl 8	L8 %R
Li	0.9999	0.3313	0.03237	1.02	264	527		1991	
Be	0.9998	0.09611	0.002377	1.03	261	541	108%	1,988	99%
B	0.9997	0.08221	0.1272	--------	245	539	108%	1,991	100%
Na	0.9998	0.4139	47.21	--------	5,281	10,310	103%	24,820	99%
Mg	1.0000	0.2117	0.3813	20.00	4,957	10,030	100%	--------	#VALUE!
Al	1.0000	0.05086	0.5022	20.00	5,059	9,975	100%	--------	#VALUE!
K	0.9999	0.06744	3.253	21.26	5,090	9,961	100%	--------	#VALUE!
Ca	1.0000	0.009243	0.2339	20.07	5,050	9,994	100%	--------	#VALUE!
Ti	1.0000	0.03191	0.001971	0.58	256	502	100%	1,999	100%
V	1.0000	1.437	0.07144	1.02	253	495	99%	2,001	100%
Cr	1.0000	1.887	0.1675	1.00	254	500	100%	2,000	100%
Mn	1.0000	0.6683	0.02252	1.05	262	513	103%	1,995	100%
Fe	0.9999	2.679	2.425	20.28	5,090	9,942	99%	--------	#VALUE!
Co	1.0000	7.139	0.07247	1.02	259	512	102%	1,996	100%
Ni	0.9999	2.115	0.3363	1.01	264	518	104%	1,993	100%
Cu	1.0000	6.009	1.191	1.07	262	514	103%	1,995	100%
Zn	0.9999	0.4809	0.1951	1.29	269	520	104%	1,992	100%
As	1.0000	0.2175	0.0223	1.02	260	506	101%	1,997	100%
Se	0.9999	0.009772	0.002323	1.16	264	516	103%	1,994	100%
Sr	1.0000	0.3182	0.03494	0.98	255	505	101%	1,998	100%
Mo	1.0000	0.05912	0.001576	1.00	249	501	100%	--------	#VALUE!
Ag	1.0000	0.1615	0.0008623	1.00	253	499	100%	--------	#VALUE!
Cd	1.0000	0.03376	0.0006484	0.97	251	497	99%	2,001	100%
Sn	0.9999	0.09384	0.01935	1.69	252	526	105%	1,993	100%
Sb	0.9999	0.1124	0.005881	1.00	245	504	101%	--------	#VALUE!
Ba	1.0000	0.04764	0.001721	0.91	244	488	98%	2,004	100%
Tl	1.0000	0.3456	0.005299	0.95	256	506	101%	1,998	100%
Pb	1.0000	0.4662	0.01099	0.98	253	516	103%	1,996	100%

REVIEWED BY
By Janice Whitt at 9:05:54 AM, 11/17/2016

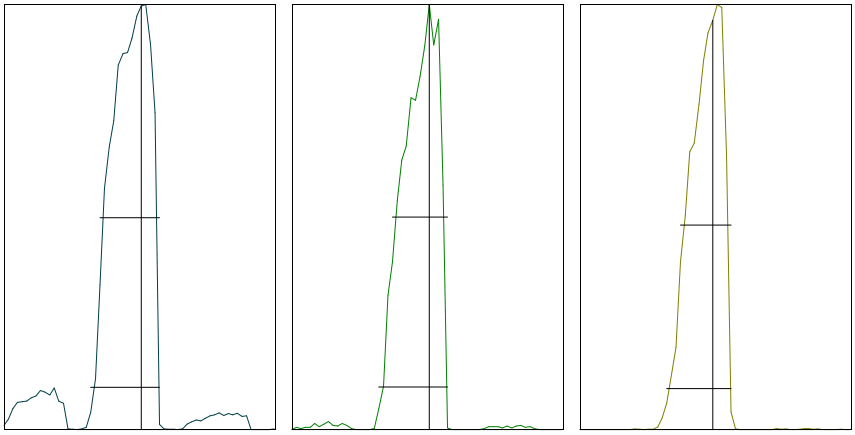
Tune Report

Tune File : He.U
Comment :



Integration Time: 0.1000 sec
Sampling Period: 0.3100 sec
n: 200
Oxide: 156/140 0.151%
Doubly Charged: 70/140 4.162%

m/z	Range	Count	Mean	RSD%	Background
51	20	1.0	2.2	67.60	0.20
59	5,000	2192.0	2087.9	3.80	0.10
75	20	0.0	0.4	160.53	0.10
51/59	1	0.046%	0.104%	67.38	



m/z:	59	89	205
Height:	2,169	652	1,868
Axis:	59.05	89.05	205.00
W-50%:	0.65	0.60	0.55
W-10%:	0.7500	0.7500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.5600 sec

Y axis : Linear

Generated : Nov 16, 2016 09:52:48
Printed : Nov 16, 2016 09:52:50

Tune Report

Tune File : He.U
Comment :

Tuning Parameters

===Plasma Condition===				===Ion Lenses===				===Q-Pole Parameters===			
RF Power	:	1600	W	Extract 1	:	0	V	AMU Gain	:	124	
RF Matching	:	1.6	V	Extract 2	:	-130	V	AMU Offset	:	120	
Smpl Depth	:	9	mm	Omega Bias-ce	:	-20	V	Axis Gain	:	0.9993	
Torch-H	:	0.2	mm	Omega Lens-ce	:	0	V	Axis Offset	:	-0.03	
Torch-V	:	0.8	mm	Cell Entrance	:	-40	V	QP Bias	:	-16.5	V
Carrier Gas	:	1.15	L/min	QP Focus	:	-10	V				
Makeup Gas	:	0	L/min	Cell Exit	:	-40	V	===Detector Parameters===			
Optional Gas	:	---	%					Discriminator	:	8	mV
Nebulizer Pump	:	0.1	rps	===Octopole Parameters===				Analog HV	:	1720	V
Sample Pump	:	---	rps	OctP RF	:	170	V	Pulse HV	:	1570	V
S/C Temp	:	2	degC	OctP Bias	:	-21.4	V				

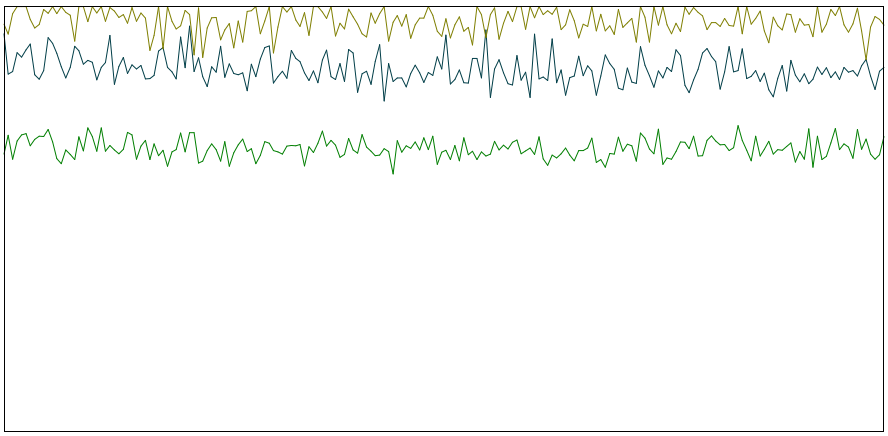
===Reaction Cell===

Reaction Mode	:	ON									
H2 Gas	:	0	mL/min	He Gas	:	5	mL/min	Optional Gas	:	---	%

Generated : Nov 16, 2016 09:52:48
Printed : Nov 16, 2016 09:52:52

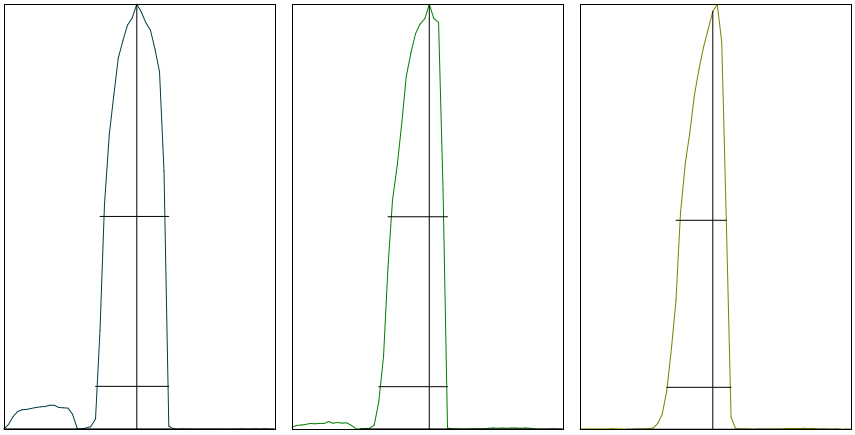
Tune Report

Tune File : nogas.u
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.8200 sec	
n:	200	
Oxide:	156/140	0.968%
Doubly Charged:	70/140	2.530%

m/z	Range	Count	Mean	RSD%	Background
7	10,000	8565.0	8520.6	3.96	1.70
89	20,000	13881.0	13317.4	3.35	3.90
205	10,000	9563.0	9688.1	3.44	9.10
156/140	2	0.887%	0.917%	12.72	
70/140	10	6.063%	3.723%	70.43	
63	5,000	2809.0	2640.3	3.81	3.20
23	100,000	75583.0	75359.3	3.15	1.90



m/z:	7	89	205
Height:	8,748	13,674	9,778
Axis:	7.00	89.05	205.00
W-50%:	0.75	0.65	0.55
W-10%:	0.800	0.7500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 16, 2016 09:47:34
Printed : Nov 16, 2016 09:47:36

Tune Report

Tune File : nogas.u
Comment :

Tuning Parameters

===Plasma Condition===				===Ion Lenses===				===Q-Pole Parameters===		
RF Power	:	1600	W	Extract 1	:	0	V	AMU Gain	:	124
RF Matching	:	1.6	V	Extract 2	:	-130	V	AMU Offset	:	120
Smpl Depth	:	9	mm	Omega Bias-ce	:	-30	V	Axis Gain	:	0.9993
Torch-H	:	0.2	mm	Omega Lens-ce	:	0.2	V	Axis Offset	:	-0.03
Torch-V	:	0.8	mm	Cell Entrance	:	-26	V	QP Bias	:	-3 V
Carrier Gas	:	1.15	L/min	QP Focus	:	0	V			
Makeup Gas	:	0	L/min	Cell Exit	:	-40	V	===Detector Parameters===		
Optional Gas	:	---	%					Discriminator	:	8 mV
Nebulizer Pump	:	0.1	rps	===Octopole Parameters===				Analog HV	:	1720 V
Sample Pump	:	---	rps	OctP RF	:	170	V	Pulse HV	:	1570 V
S/C Temp	:	2	degC	OctP Bias	:	-6	V			

===Reaction Cell===										
Reaction Mode	:	OFF								
H2 Gas	:	0	mL/min	He Gas	:	0	mL/min	Optional Gas	:	--- %

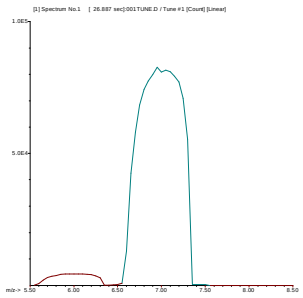
Generated : Nov 16, 2016 09:47:34
Printed : Nov 16, 2016 09:47:38

6020 QC Tune Report

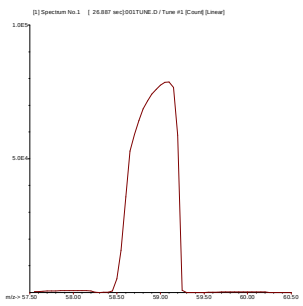
Data File: C:\ICPCHEM\1\DATA\16K16k00.B\001TUNE.D
Date Acquired: Nov 16 2016 10:02 am
Acq. Method: TN6020.M
Operator: CVD
Sample Name: TUNE CHECK
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020.M

RSD (%)

Element	Actual	Required	Flag
7 Li	2.25	5.00	
59 Co	1.98	5.00	
115 In	1.34	5.00	
205 Tl	2.26	5.00	

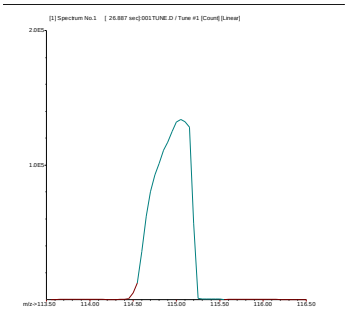


7 Li
Mass Calib.
Actual: 7.00
Required: 6.90 - 7.10
Flag:
Peak Width
Actual: 0.70
Required: 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.05
Required: 58.90 - 59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

REVIEWED BY
By Janice Whitt at 9:06:08 AM, 11/17/2016



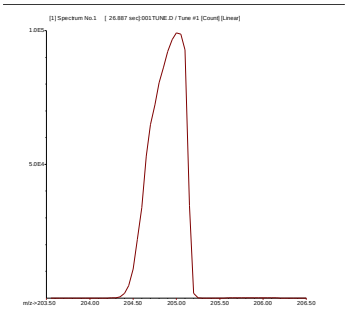
115 In

Mass Calib.

Actual:	115.05	
Required:	114.90 -	115.10
Flag:		

Peak Width

Actual:	0.60
Required:	0.90
Flag:	



205 Tl

Mass Calib.

Actual:	205.00	
Required:	204.90 -	205.10
Flag:		

Peak Width

Actual:	0.60
Required:	0.90
Flag:	

REVIEWED BY
By Janice Whitt at 9:06:14 AM, 11/17/2016

P/A Factor Tuning Report

Acquired:Nov 16 2016 09:56 am

Mass[amu]	Element	P/A Factor
6	Li	0.071848
9		0.081564
23	Na	0.088525
24	Mg	0.092232
27	Al	0.095169
39	K	0.095731
44	Ca	Sensitivity too low
45	Sc	0.096357
47	Ti	Sensitivity too low
51	V	0.098514
52	Cr	0.100915
55	Mn	0.102208
59	Co	0.105372
60	Ni	0.107449
63	Cu	0.109136
66	Zn	0.108745
72	Ge	0.107766
75	As	0.107197
78	Se	Sensitivity too low
88	Sr	0.108184
95	Mo	0.107211
106	(Cd)	0.112742
107	Ag	Sensitivity too low
108	(Cd)	0.113093
111	Cd	0.114248
115	In	0.113847
118	Sn	0.113428
121	Sb	0.113141
137	Ba	Sensitivity too low
205	Tl	0.121389
206	(Pb)	0.121400
207	(Pb)	0.121442
208	Pb	0.121598
209	Bi	0.121204
238		0.121002

===Detector Parameters===
  Discriminator: 8.0 mV
      Analog HV: 1720 V
       Pulse HV: 1570 V

REVIEWED BY
By Janice Whitt at 9:06:19 AM, 11/17/2016

Calibration Blank QC Report

Acq. Method: DHL_3Fe.M Sample Name: BLANK STD 1
Operator: CVD Instrument: ICPMS3
Last Cal. Update: Nov 16 2016 10:44 am
Date Acquired: Nov 16 2016 10:40 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)
6	Li	2	---	23.38	P	18.49	79.07
7	Li	2	45	663.38	P	121.20	18.27
9	Be	2	45	48.89	P	44.26	90.53
11	B	2	45	2605.93	P	94.62	3.63
23	Na	1	45	21422.32	P	256.70	1.20
24	Mg	1	45	173.34	P	37.86	21.84
27	Al	1	45	228.01	P	17.49	7.67
39	K	1	45	1475.71	P	60.04	4.07
44	Ca	2	45	4791.12	P	138.70	2.89
45	Sc	1	---	90770.48	P	1026.00	1.13
45	Sc	2	---	4095698.00	A	29570.00	0.72
47	Ti	1	45	0.89	P	0.77	86.60
51	V	1	45	32.45	P	4.07	12.55
51	V	2	---		P		
52	Cr	1	45	76.00	P	14.85	19.54
55	Mn	1	45	10.22	P	0.77	7.53
56	Fe	1	72	580.02	P	20.96	3.61
59	Co	1	72	17.33	P	5.81	33.53
60	Ni	1	72	80.45	P	27.74	34.48
60	Ni	2	---		P		
63	Cu	1	72	284.90	P	16.13	5.66
63	Cu	2	---		P		
66	Zn	1	72	46.67	P	4.00	8.57
66	Zn	2	---		P		
72	Ge	1	---	47835.73	P	48.72	0.10
72	Ge	2	---		P		
75	As	1	72	5.33	P	0.67	12.50
78	Se	1	72	0.56	P	0.11	20.00
88	Sr	2	###	1082.32	P	83.83	7.75
95	Mo	2	###	48.89	P	25.02	51.18
107	Ag	2	###	26.67	P	6.67	25.00
111	Cd	2	###	20.29	P	32.60	160.69
115	In	2	---	6191712.00	A	62140.00	1.00
118	Sn	2	###	598.93	P	36.57	6.11
121	Sb	2	###	182.23	P	26.94	14.78
137	Ba	2	###	53.34	P	8.82	16.54
205	Tl	2	###	148.90	P	95.83	64.36
208	Pb	2	###	308.91	P	120.10	38.88
209	Bi	2	---	5622254.00	A	32120.00	0.57

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L2-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:46 am
Last Cal. Update: Nov 16 2016 10:44 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-325.11	P	23.49	7.23	ISFail
7	Li	2	45	7637.06	P	169.90	2.22	
9	Be	2	45	2088.04	P	152.70	7.31	
11	B	2	45	4444.30	P	87.64	1.97	
23	Na	1	45	25685.93	P	483.20	1.88	
24	Mg	1	45	2114.71	P	58.73	2.78	
27	Al	1	45	696.03	P	19.37	2.78	
39	K	1	45	2146.94	P	39.31	1.83	
44	Ca	2	45	8680.06	P	226.10	2.60	
45	Sc	1	---	91628.10	P	1045.00	1.14	
45	Sc	2	---	4139009.00	A	24110.00	0.58	
47	Ti	1	45	9.33	P	1.33	14.28	
51	V	1	45	707.14	P	23.49	3.32	
51	V	2	---		P			
52	Cr	1	45	942.27	P	12.60	1.34	
55	Mn	1	45	331.57	P	16.99	5.12	
56	Fe	1	72	13712.25	P	130.50	0.95	
59	Co	1	72	1784.16	P	41.06	2.30	
60	Ni	1	72	598.69	P	19.91	3.33	
60	Ni	2	---		P			
63	Cu	1	72	1835.28	P	48.62	2.65	
63	Cu	2	---		P			
66	Zn	1	72	196.89	P	6.16	3.13	
66	Zn	2	---		P			
72	Ge	1	---	48321.38	P	161.80	0.33	
72	Ge	2	---		P			
75	As	1	72	59.19	P	2.04	3.44	
78	Se	1	72	3.30	P	0.80	24.39	
88	Sr	2	115	10816.41	P	333.80	3.09	
95	Mo	2	115	1893.56	P	152.20	8.04	
107	Ag	2	115	5106.87	P	185.40	3.63	
111	Cd	2	115	1046.65	P	24.53	2.34	
115	In	2	---	6265959.00	A	89250.00	1.42	
118	Sn	2	115	5535.18	P	3561.00	64.33	
121	Sb	2	115	3716.29	P	126.10	3.39	
137	Ba	2	115	1413.48	P	96.45	6.82	
205	Tl	2	209	9389.83	P	188.10	2.00	
208	Pb	2	209	13092.45	P	339.80	2.60	
209	Bi	2	---	5605939.00	A	42190.00	0.75	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-325.11	7.23	23.38	-1390.3	70 - 120	ISFail
45	Sc	1	91628.10	1.14	90770.48	100.9	70 - 120	
45	Sc	2	4139008.80	0.58	4095698.00	101.1	70 - 120	
72	Ge	1	48321.38	0.33	47835.73	101.0	70 - 120	
115	In	2	6265959.50	1.42	6191712.50	101.2	70 - 120	
209	Bi	2	5605938.50	0.75	5622254.50	99.7	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:52 am
Last Cal. Update: Nov 16 2016 10:50 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-3466.32	P	91.44	2.64	ISFail
7	Li	2	45	73685.96	P	1379.00	1.87	Fail
9	Be	2	45	21490.11	P	249.70	1.16	Fail
11	B	2	45	19995.60	P	214.70	1.07	
23	Na	1	45	62713.27	P	1249.00	1.99	
24	Mg	1	45	20505.31	P	367.70	1.79	Fail
27	Al	1	45	5019.75	P	71.78	1.43	Fail
39	K	1	45	8126.31	P	175.70	2.16	Fail
44	Ca	2	45	43140.82	P	572.40	1.33	Fail
45	Sc	1	---	96059.89	P	883.40	0.92	
45	Sc	2	---	4243062.00	A	52280.00	1.23	
47	Ti	1	45	161.34	P	18.52	11.48	Fail
51	V	1	45	6940.73	P	71.84	1.04	Fail
51	V	2	---		P			
52	Cr	1	45	9225.80	P	36.79	0.40	Fail
55	Mn	1	45	3300.95	P	136.40	4.13	Fail
56	Fe	1	72	136367.80	P	798.20	0.59	Fail
59	Co	1	72	18291.57	P	318.80	1.74	
60	Ni	1	72	5553.34	P	61.23	1.10	Fail
60	Ni	2	---		P			
63	Cu	1	72	16096.53	P	166.30	1.03	Fail
63	Cu	2	---		P			
66	Zn	1	72	1388.99	P	36.41	2.62	Fail
66	Zn	2	---		P			
72	Ge	1	---	49867.77	P	90.84	0.18	
72	Ge	2	---		P			
75	As	1	72	575.05	P	4.10	0.71	Fail
78	Se	1	72	26.74	P	2.28	8.54	Fail
88	Sr	2	115	100132.50	P	2415.00	2.41	Fail
95	Mo	2	115	18322.39	P	411.60	2.25	Fail
107	Ag	2	115	50894.10	P	682.00	1.34	Fail
111	Cd	2	115	11204.70	P	362.40	3.23	Fail
115	In	2	---	6443397.00	A	70110.00	1.09	
118	Sn	2	115	30983.53	P	891.90	2.88	Fail
121	Sb	2	115	35373.87	P	621.70	1.76	Fail
137	Ba	2	115	14844.39	P	337.80	2.28	Fail
205	Tl	2	209	96034.58	P	951.50	0.99	Fail
208	Pb	2	209	132055.50	P	2442.00	1.85	Fail
209	Bi	2	---	5744355.00	A	38890.00	0.68	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-3466.32	2.64	23.38	-14823.3	70 - 120	ISFail
45	Sc	1	96059.88	0.92	90770.48	105.8	70 - 120	
45	Sc	2	4243062.00	1.23	4095698.00	103.6	70 - 120	
72	Ge	1	49867.77	0.18	47835.73	104.2	70 - 120	
115	In	2	6443397.50	1.09	6191712.50	104.1	70 - 120	
209	Bi	2	5744355.00	0.68	5622254.50	102.2	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 10X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:58 am
Last Cal. Update: Nov 16 2016 10:56 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-16021.90	P	543.90	3.39	ISFail
7	Li	2	45	356781.50	P	5955.00	1.67	Fail
9	Be	2	45	102766.00	P	2134.00	2.08	Fail
11	B	2	45	86211.03	P	809.10	0.94	Fail
23	Na	1	45	220366.41	P	3312.00	1.50	Fail
24	Mg	1	45	99222.16	P	1186.00	1.20	
27	Al	1	45	24296.22	P	324.60	1.34	Fail
39	K	1	45	33140.80	P	734.00	2.21	Fail
44	Ca	2	45	185075.30	P	1505.00	0.81	Fail
45	Sc	1	---	94419.48	P	101.50	0.11	
45	Sc	2	---	4032744.00	A	1666.00	0.04	
47	Ti	1	45	786.26	P	28.67	3.65	
51	V	1	45	33501.97	P	161.10	0.48	
51	V	2	---		P			
52	Cr	1	45	45286.06	P	99.36	0.22	
55	Mn	1	45	16324.34	P	302.70	1.85	
56	Fe	1	72	669114.00	P	3608.00	0.54	
59	Co	1	72	90960.04	P	927.60	1.02	
60	Ni	1	72	27493.59	P	389.30	1.42	
60	Ni	2	---		P			
63	Cu	1	72	77490.97	P	1014.00	1.31	
63	Cu	2	---		P			
66	Zn	1	72	6531.18	P	174.70	2.67	Fail
66	Zn	2	---		P			
72	Ge	1	---	48776.45	P	147.60	0.30	
72	Ge	2	---		P			
75	As	1	72	2757.94	P	5.54	0.20	
78	Se	1	72	129.41	P	3.09	2.39	Fail
88	Sr	2	115	480478.00	P	2789.00	0.58	Fail
95	Mo	2	115	89495.32	P	958.50	1.07	Fail
107	Ag	2	115	247555.70	P	4646.00	1.88	Fail
111	Cd	2	115	52293.60	P	861.80	1.65	Fail
115	In	2	---	6117921.00	A	74920.00	1.22	
118	Sn	2	115	144122.30	P	1135.00	0.79	Fail
121	Sb	2	115	167770.00	P	2049.00	1.22	Fail
137	Ba	2	115	70270.03	P	375.30	0.53	Fail
205	Tl	2	209	458581.91	P	7224.00	1.58	Fail
208	Pb	2	209	629293.69	P	9458.00	1.50	Fail
209	Bi	2	---	5485656.00	A	9765.00	0.18	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-16021.91	3.39	23.38	-68515.5	70 - 120	ISFail
45	Sc	1	94419.48	0.11	90770.48	104.0	70 - 120	
45	Sc	2	4032744.30	0.04	4095698.00	98.5	70 - 120	
72	Ge	1	48776.45	0.30	47835.73	102.0	70 - 120	
115	In	2	6117920.50	1.22	6191712.50	98.8	70 - 120	
209	Bi	2	5485656.00	0.18	5622254.50	97.6	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 5X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:04 am
Last Cal. Update: Nov 16 2016 11:02 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-33695.50	P	260.10	0.77	ISFail
7	Li	2	45	716696.38	A	4826.00	0.67	Fail
9	Be	2	45	203307.41	P	1638.00	0.81	Fail
11	B	2	45	165872.70	P	1185.00	0.71	Fail
23	Na	1	45	409738.69	P	3574.00	0.87	Fail
24	Mg	1	45	193141.09	P	2624.00	1.36	
27	Al	1	45	46901.11	P	234.40	0.50	Fail
39	K	1	45	63235.13	P	487.60	0.77	Fail
44	Ca	2	45	361474.00	P	3689.00	1.02	Fail
45	Sc	1	---	92753.74	P	547.10	0.59	
45	Sc	2	---	4012334.00	A	50760.00	1.27	
47	Ti	1	45	1458.33	P	84.72	5.81	
51	V	1	45	65307.82	P	978.10	1.50	
51	V	2	---		P			
52	Cr	1	45	88147.01	P	1566.00	1.78	
55	Mn	1	45	31759.30	P	214.70	0.68	
56	Fe	1	72	1325957.00	A	18650.00	1.41	
59	Co	1	72	176644.20	P	2408.00	1.36	
60	Ni	1	72	53601.22	P	415.90	0.78	
60	Ni	2	---		P			
63	Cu	1	72	151988.00	P	879.70	0.58	
63	Cu	2	---		P			
66	Zn	1	72	12386.86	P	120.70	0.97	
66	Zn	2	---		P			
72	Ge	1	---	48172.42	P	152.60	0.32	
72	Ge	2	---		P			
75	As	1	72	5384.89	P	32.02	0.59	
78	Se	1	72	244.00	P	3.63	1.49	
88	Sr	2	115	970970.63	M	8519.00	0.88	Fail
95	Mo	2	115	178060.30	P	2033.00	1.14	Fail
107	Ag	2	115	488002.41	P	7122.00	1.46	Fail
111	Cd	2	115	105026.50	P	1792.00	1.71	Fail
115	In	2	---	6177524.00	A	100100.00	1.62	
118	Sn	2	115	288260.41	P	3751.00	1.30	Fail
121	Sb	2	115	335841.59	P	3816.00	1.14	Fail
137	Ba	2	115	141232.91	P	3656.00	2.59	Fail
205	Tl	2	209	919560.00	P	7513.00	0.82	Fail
208	Pb	2	209	1253953.00	P	12380.00	0.99	Fail
209	Bi	2	---	5438235.00	A	68080.00	1.25	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2		-33695.51	0.77	23.38	-144094.4	70 -	120	ISFail
45	Sc	1		92753.74	0.59	90770.48	102.2	70 -	120	
45	Sc	2		4012334.30	1.27	4095698.00	98.0	70 -	120	
72	Ge	1		48172.42	0.32	47835.73	100.7	70 -	120	
115	In	2		6177524.50	1.62	6191712.50	99.8	70 -	120	
209	Bi	2		5438235.50	1.25	5622254.50	96.7	70 -	120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 2X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:10 am
Last Cal. Update: Nov 16 2016 11:08 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-82197.35	P	1684.00	2.05	ISFail
7	Li	2	45	1756272.00	A	31650.00	1.80	Fail
9	Be	2	45	502819.41	P	8910.00	1.77	Fail
11	B	2	45	405599.19	P	4942.00	1.22	Fail
23	Na	1	45	1055851.00	A	4522.00	0.43	Fail
24	Mg	1	45	496209.69	P	2495.00	0.50	
27	Al	1	45	121898.90	P	1265.00	1.04	
39	K	1	45	163821.30	P	485.00	0.30	Fail
44	Ca	2	45	940867.00	A	20390.00	2.17	Fail
45	Sc	1	---	94557.81	P	202.60	0.21	
45	Sc	2	---	4010890.00	A	56170.00	1.40	
47	Ti	1	45	3858.43	P	80.43	2.08	
51	V	1	45	171838.59	P	403.90	0.24	
51	V	2	---		A			
52	Cr	1	45	226800.41	P	1205.00	0.53	
55	Mn	1	45	82836.01	P	276.30	0.33	
56	Fe	1	72	3346696.00	A	46230.00	1.38	
59	Co	1	72	453934.91	P	4584.00	1.01	
60	Ni	1	72	137166.59	P	905.40	0.66	
60	Ni	2	---		P			
63	Cu	1	72	386972.19	P	1514.00	0.39	
63	Cu	2	---		P			
66	Zn	1	72	31840.18	P	133.30	0.42	
66	Zn	2	---		P			
72	Ge	1	---	49081.54	P	383.60	0.78	
72	Ge	2	---		P			
75	As	1	72	13864.30	P	70.98	0.51	
78	Se	1	72	634.50	P	11.11	1.75	
88	Sr	2	115	2445578.00	A	59740.00	2.44	Fail
95	Mo	2	115	444199.59	P	4321.00	0.97	Fail
107	Ag	2	115	1231442.00	A	12290.00	1.00	
111	Cd	2	115	255518.50	P	4962.00	1.94	Fail
115	In	2	---	6036126.00	A	110900.00	1.84	
118	Sn	2	115	713190.19	P	10830.00	1.52	Fail
121	Sb	2	115	829296.13	P	13890.00	1.67	Fail
137	Ba	2	115	351025.41	P	6241.00	1.78	Fail
205	Tl	2	209	2387211.00	A	37530.00	1.57	Fail
208	Pb	2	209	3181300.00	A	59360.00	1.87	Fail
209	Bi	2	---	5393114.00	A	83250.00	1.54	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-82197.36	2.05	23.38	-351506.1	70 - 120	ISFail
45	Sc	1	94557.81	0.21	90770.48	104.2	70 - 120	
45	Sc	2	4010890.30	1.40	4095698.00	97.9	70 - 120	
72	Ge	1	49081.54	0.78	47835.73	102.6	70 - 120	
115	In	2	6036126.00	1.84	6191712.50	97.5	70 - 120	
209	Bi	2	5393113.50	1.54	5622254.50	95.9	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:16 am
Last Cal. Update: Nov 16 2016 11:14 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-155470.70	P	1205.00	0.78	ISFail
7	Li	2	45	3392275.00	A	33330.00	0.98	Fail
9	Be	2	45	1010402.00	A	18590.00	1.84	
11	B	2	45	863696.19	A	7873.00	0.91	Fail
23	Na	1	45	2003555.00	A	6466.00	0.32	Fail
24	Mg	1	45	985613.31	A	3201.00	0.32	
27	Al	1	45	235728.00	P	1513.00	0.64	
39	K	1	45	313337.50	P	1816.00	0.58	Fail
44	Ca	2	45	1798666.00	A	17970.00	1.00	Fail
45	Sc	1	---	92840.94	P	582.10	0.63	
45	Sc	2	---	3884529.00	A	41680.00	1.07	
47	Ti	1	45	7432.11	P	115.80	1.56	
51	V	1	45	330007.59	P	3950.00	1.20	
51	V	2	---		A			
52	Cr	1	45	437879.41	P	2230.00	0.51	
55	Mn	1	45	159267.20	P	54.81	0.03	
56	Fe	1	72	6365510.00	A	29600.00	0.47	
59	Co	1	72	873256.00	P	3607.00	0.41	
60	Ni	1	72	261953.41	P	529.90	0.20	
60	Ni	2	---		P			
63	Cu	1	72	738468.81	P	3867.00	0.52	
63	Cu	2	---		A			
66	Zn	1	72	59796.74	P	159.10	0.27	
66	Zn	2	---		P			
72	Ge	1	---	47795.27	P	120.60	0.25	
72	Ge	2	---		P			
75	As	1	72	26333.29	P	99.58	0.38	
78	Se	1	72	1205.91	P	15.04	1.25	
88	Sr	2	115	4681398.00	A	81770.00	1.75	Fail
95	Mo	2	115	863108.00	P	10710.00	1.24	Fail
107	Ag	2	115	2348615.00	A	18460.00	0.79	
111	Cd	2	115	488805.59	P	7036.00	1.44	Fail
115	In	2	---	5826379.00	A	47830.00	0.82	
118	Sn	2	115	1438582.00	A	27750.00	1.93	Fail
121	Sb	2	115	1648562.00	A	21790.00	1.32	Fail
137	Ba	2	115	676808.69	P	6959.00	1.03	Fail
205	Tl	2	209	4508400.00	A	62690.00	1.39	
208	Pb	2	209	6208421.00	A	53970.00	0.87	Fail
209	Bi	2	---	5160738.00	A	67330.00	1.30	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-155470.75	0.78	23.38	-664850.0	70 - 120	ISFail
45	Sc	1	92840.94	0.63	90770.48	102.3	70 - 120	
45	Sc	2	3884529.30	1.07	4095698.00	94.8	70 - 120	
72	Ge	1	47795.27	0.25	47835.73	99.9	70 - 120	
115	In	2	5826379.50	0.82	6191712.50	94.1	70 - 120	
209	Bi	2	5160738.00	1.30	5622254.50	91.8	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H2-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:22 am
Last Cal. Update: Nov 16 2016 11:20 am

QC&ISTD Elements

Element			CPS Mean		SD	RSD(%)	Flag
6 Li	2	---	-605384.88	P	15520.00	2.56	ISFail
7 Li	2	45	13240260.00	A	197000.00	1.49	Fail
9 Be	2	45	3835686.00	A	44780.00	1.17	
11 B	2	45	3287995.00	A	33210.00	1.01	Fail
23 Na	1	45	4644786.00	A	51300.00	1.10	Fail
24 Mg	1	45	2325867.00	A	25180.00	1.08	
27 Al	1	45	405.35	P	153.80	37.94	Fail
39 K	1	45	761738.81	P	2725.00	0.36	
44 Ca	2	45	4566148.00	A	14220.00	0.31	Fail
45 Sc	1	---	90018.81	P	830.80	0.92	
45 Sc	2	---	4015165.00	A	32510.00	0.81	
47 Ti	1	45	28712.13	P	502.20	1.75	
51 V	1	45	1294073.00	A	10700.00	0.83	
51 V	2	---		A			
52 Cr	1	45	1698758.00	A	22000.00	1.30	
55 Mn	1	45	600121.31	P	3756.00	0.63	
56 Fe	1	72	205006.30	P	1697.00	0.83	
59 Co	1	72	3304110.00	A	44490.00	1.35	
60 Ni	1	72	977508.88	P	8334.00	0.85	
60 Ni	2	---		A			
63 Cu	1	72	2779555.00	A	25970.00	0.93	
63 Cu	2	---		A			
66 Zn	1	72	222215.41	P	2192.00	0.99	
66 Zn	2	---		A			
72 Ge	1	---	46379.17	P	402.60	0.87	
72 Ge	2	---		P			
75 As	1	72	100746.40	P	956.50	0.95	
78 Se	1	72	4518.73	P	34.17	0.76	
88 Sr	2	115	18704270.00	A	20310.00	0.11	Fail
95 Mo	2	115	3602003.00	A	45470.00	1.26	
107 Ag	2	115	1491.28	P	262.80	17.62	Fail
111 Cd	2	115	1986643.00	A	12650.00	0.64	
115 In	2	---	5882654.00	A	30820.00	0.52	
118 Sn	2	115	5502601.00	A	11170.00	0.20	Fail
121 Sb	2	115	2212.54	P	94.57	4.27	Fail
137 Ba	2	115	2808326.00	A	20530.00	0.73	
205 Tl	2	209	17466340.00	A	182100.00	1.04	
208 Pb	2	209	23536200.00	A	157200.00	0.67	
209 Bi	2	---	5059584.00	A	51510.00	1.02	

ISTD Elements

Element		CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	2	-605385.00	2.56	23.38	#########	70 - 120	ISFail
45 Sc	1	90018.81	0.92	90770.48	99.2	70 - 120	
45 Sc	2	4015165.00	0.81	4095698.00	98.0	70 - 120	
72 Ge	1	46379.17	0.87	47835.73	97.0	70 - 120	
115 In	2	5882654.50	0.52	6191712.50	95.0	70 - 120	
209 Bi	2	5059583.50	1.02	5622254.50	90.0	70 - 120	

ICSA QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\015ICSA.D\015ICSA.D#

Date Acquired:	Nov 16 2016 11:46 am	Sample Name:	**ICSA-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSAICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	RL S	RL Aq	Flag
7	Li	2	45	0.199	ppb	18.55	8.00	5.00	
9	Be	2	45	0.106	ppb	27.36	0.32	0.80	
11	B	2	45	6.528	ppb	4.53	30.00	30.00	
23	Na	1	45	99240.000	ppb	1.25	#######	#######	
24	Mg	1	45	84750.000	ppb	1.11	#######	#######	
27	Al	1	45	95800.000	ppb	2.34	#######	#######	
39	K	1	45	94500.000	ppb	1.12	#######	#######	
44	Ca	2	45	89820.000	ppb	2.12	#######	#######	
47	Ti	1	45	1919.000	ppb	0.88	10.00	10.00	
51	V	1	45	0.132	ppb	32.00	10.00	10.00	
52	Cr	1	45	0.886	ppb	4.70	8.00	5.00	
55	Mn	1	45	1.463	ppb	7.33	8.00	10.00	
56	Fe	1	72	93160.000	ppb	1.55	#######	#######	
59	Co	1	72	1.326	ppb	4.65	8.00	10.00	
60	Ni	1	72	0.500	ppb	8.10	8.00	10.00	
63	Cu	1	72	2.255	ppb	0.29	8.00	10.00	
66	Zn	1	72	2.274	ppb	3.23	10.00	5.00	
75	As	1	72	0.440	ppb	9.49	4.00	5.00	
78	Se	1	72	0.387	ppb	22.79	2.00	5.00	
88	Sr	2	115	1.245	ppb	3.79	10.00	10.00	
95	Mo	2	115	1941.000	ppb	2.64	8.00	5.00	
107	Ag	2	115	0.103	ppb	6.19	0.80	2.00	
111	Cd	2	115	0.443	ppb	0.27	1.20	1.00	
118	Sn	2	115	0.624	ppb	8.97	10.00	10.00	
121	Sb	2	115	0.083	ppb	17.08	4.00	2.50	
137	Ba	2	115	0.587	ppb	8.62	8.00	10.00	
205	Tl	2	209	0.218	ppb	18.06	4.00	1.50	
208	Pb	2	209	0.294	ppb	10.72	1.20	1.00	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-50.57	115.37	23.38	-216.2	70 - 120	ISFail
45	Sc	1	90887.23	0.27	90770.48	100.1	70 - 120	
45	Sc	2	3822910.80	1.56	4095698.00	93.3	70 - 120	
72	Ge	1	46142.36	1.14	47835.73	96.5	70 - 120	
115	In	2	5535271.00	1.34	6191712.50	89.4	70 - 120	
209	Bi	2	4601251.50	1.38	5622254.50	81.8	70 - 120	

ICS-AB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\016ICSB.D\016ICSB.D#

Date Acquired:	Nov 16 2016 11:52 am	Sample Name:	**ICSAB-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSBICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)			Flag
7	Li	2	45	0.17	ppb	14.77	---	80 -	120		
9	Be	2	45	0.07	ppb	44.97	---	80 -	120		
11	B	2	45	5.33	ppb	1.84	---	80 -	120		
23	Na	1	45	93340.00	ppb	0.80	100000.00	80 -	120		
24	Mg	1	45	87090.00	ppb	0.75	100000.00	80 -	120		
27	Al	1	45	96280.00	ppb	0.21	100000.00	80 -	120		
39	K	1	45	94390.00	ppb	0.93	100000.00	80 -	120		
44	Ca	2	45	88670.00	ppb	1.50	100000.00	80 -	120		
47	Ti	1	45	1899.00	ppb	1.14	---	80 -	120		
51	V	1	45	38.02	ppb	1.10	40.00	80 -	120		
52	Cr	1	45	20.10	ppb	1.66	20.00	80 -	120		
55	Mn	1	45	20.08	ppb	2.66	20.00	80 -	120		
56	Fe	1	72	93980.00	ppb	0.49	100000.00	80 -	120		
59	Co	1	72	38.61	ppb	0.81	40.00	80 -	120		
60	Ni	1	72	36.69	ppb	0.52	40.00	80 -	120		
63	Cu	1	72	20.28	ppb	1.91	20.00	80 -	120		
66	Zn	1	72	20.31	ppb	0.96	20.00	80 -	120		
75	As	1	72	19.24	ppb	0.54	20.00	80 -	120		
78	Se	1	72	19.78	ppb	4.19	20.00	80 -	120		
88	Sr	2	115	1.21	ppb	2.82	---	80 -	120		
95	Mo	2	115	1974.00	ppb	1.95	---	80 -	120		
107	Ag	2	115	18.01	ppb	1.78	20.00	80 -	120		
111	Cd	2	115	8.95	ppb	4.08	10.00	80 -	120		
118	Sn	2	115	0.40	ppb	8.80	---	80 -	120		
121	Sb	2	115	0.02	ppb	21.91	---	80 -	120		
137	Ba	2	115	1.73	ppb	0.51	---	80 -	120		
205	Tl	2	209	0.13	ppb	27.92	---	80 -	120		
208	Pb	2	209	0.31	ppb	11.45	---	80 -	120		

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-0.37	######	23.38	-1.6	70 -	120		ISFail
45	Sc	1	92230.56	0.29	90770.48	101.6	70 -	120		
45	Sc	2	3819958.80	0.94	4095698.00	93.3	70 -	120		
72	Ge	1	46357.60	0.45	47835.73	96.9	70 -	120		
115	In	2	5557602.50	0.90	6191712.50	89.8	70 -	120		
209	Bi	2	4692885.00	1.07	5622254.50	83.5	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\019ICV.D\019ICV.D#

Date Acquired:	Nov 16 2016 12:10 pm	Sample Name:	**ICV1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	98.58	ppb	1.17	100.00	90 -	110	98.6	
9	Be	2	45	101.90	ppb	1.39	100.00	90 -	110	101.9	
11	B	2	45	98.60	ppb	1.62	100.00	90 -	110	98.6	
23	Na	1	45	2579.00	ppb	1.25	2500.00	90 -	110	103.2	
24	Mg	1	45	2500.00	ppb	1.04	2500.00	90 -	110	100.0	
27	Al	1	45	2559.00	ppb	0.14	2500.00	90 -	110	102.4	
39	K	1	45	2542.00	ppb	0.97	2500.00	90 -	110	101.7	
44	Ca	2	45	2346.00	ppb	1.43	2500.00	90 -	110	93.8	
47	Ti	1	45	102.80	ppb	5.00	100.00	90 -	110	102.8	
51	V	1	45	99.29	ppb	0.35	100.00	90 -	110	99.3	
52	Cr	1	45	103.20	ppb	0.86	100.00	90 -	110	103.2	
55	Mn	1	45	102.60	ppb	0.43	100.00	90 -	110	102.6	
56	Fe	1	72	2602.00	ppb	1.91	2500.00	90 -	110	104.1	
59	Co	1	72	101.70	ppb	1.10	100.00	90 -	110	101.7	
60	Ni	1	72	103.10	ppb	0.88	100.00	90 -	110	103.1	
63	Cu	1	72	101.30	ppb	1.11	100.00	90 -	110	101.3	
66	Zn	1	72	105.40	ppb	1.23	100.00	90 -	110	105.4	
75	As	1	72	100.50	ppb	0.74	100.00	90 -	110	100.5	
78	Se	1	72	103.30	ppb	1.93	100.00	90 -	110	103.3	
88	Sr	2	115	97.18	ppb	3.43	100.00	90 -	110	97.2	
95	Mo	2	115	95.21	ppb	2.05	100.00	90 -	110	95.2	
107	Ag	2	115	100.40	ppb	1.98	100.00	90 -	110	100.4	
111	Cd	2	115	98.26	ppb	1.31	100.00	90 -	110	98.3	
118	Sn	2	115	99.88	ppb	2.10	100.00	90 -	110	99.9	
121	Sb	2	115	97.31	ppb	1.95	100.00	90 -	110	97.3	
137	Ba	2	115	96.86	ppb	1.47	100.00	90 -	110	96.9	
205	Tl	2	209	95.89	ppb	1.24	100.00	90 -	110	95.9	
208	Pb	2	209	97.93	ppb	1.10	100.00	90 -	110	97.9	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-18452.37	3.78	23.38	-78909.1	70 -	120		ISFail
45	Sc	1	100059.49	0.81	90770.48	110.2	70 -	120		
45	Sc	2	3808175.30	1.10	4095698.00	93.0	70 -	120		
72	Ge	1	51962.61	0.51	47835.73	108.6	70 -	120		
115	In	2	6057315.00	0.73	6191712.50	97.8	70 -	120		
209	Bi	2	5531796.50	0.46	5622254.50	98.4	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\021LCVL.D\021LCVL.D#

Date Acquired:	Nov 16 2016 12:22 pm	Sample Name:	**ILCVL-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.83	ppb	1.77	10.00	70 -	130	98.3	
9	Be	2	45	1.04	ppb	4.57	1.00	70 -	130	104.2	
11	B	2	45	20.76	ppb	0.72	20.00	70 -	130	103.8	
23	Na	1	45	104.20	ppb	2.54	100.00	70 -	130	104.2	
24	Mg	1	45	104.70	ppb	3.66	100.00	70 -	130	104.7	
27	Al	1	45	112.30	ppb	1.73	100.00	70 -	130	112.3	
39	K	1	45	111.80	ppb	5.72	100.00	70 -	130	111.8	
44	Ca	2	45	100.80	ppb	4.71	100.00	70 -	130	100.8	
47	Ti	1	45	5.25	ppb	1.56	5.00	70 -	130	104.9	
51	V	1	45	1.05	ppb	2.94	1.00	70 -	130	104.5	
52	Cr	1	45	5.26	ppb	1.24	5.00	70 -	130	105.2	
55	Mn	1	45	5.74	ppb	1.32	5.00	70 -	130	114.8	
56	Fe	1	72	112.70	ppb	2.97	100.00	70 -	130	112.7	
59	Co	1	72	5.21	ppb	1.16	5.00	70 -	130	104.2	
60	Ni	1	72	5.39	ppb	1.46	5.00	70 -	130	107.7	
63	Cu	1	72	5.34	ppb	0.74	5.00	70 -	130	106.8	
66	Zn	1	72	5.96	ppb	3.72	5.00	70 -	130	119.2	
75	As	1	72	5.34	ppb	1.81	5.00	70 -	130	106.7	
78	Se	1	72	5.50	ppb	9.83	5.00	70 -	130	110.0	
88	Sr	2	115	4.96	ppb	1.55	5.00	70 -	130	99.1	
95	Mo	2	115	5.06	ppb	3.18	5.00	70 -	130	101.1	
107	Ag	2	115	2.03	ppb	1.91	2.00	70 -	130	101.3	
111	Cd	2	115	1.00	ppb	5.38	1.00	70 -	130	100.0	
118	Sn	2	115	5.33	ppb	1.28	5.00	70 -	130	106.5	
121	Sb	2	115	2.00	ppb	0.10	2.00	70 -	130	100.2	
137	Ba	2	115	4.92	ppb	3.10	5.00	70 -	130	98.3	
205	Tl	2	209	1.05	ppb	2.64	1.00	70 -	130	105.4	
208	Pb	2	209	1.04	ppb	3.51	1.00	70 -	130	103.8	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2 RHigl	-1756.23	16.43	23.38	-7510.3	70 -	120	ISFail
45	Sc	1	100736.46	1.05	90770.48	111.0	70 -	120	
45	Sc	2	3951775.00	0.28	4095698.00	96.5	70 -	120	
72	Ge	1	52685.69	0.74	47835.73	110.1	70 -	120	
115	In	2	6229485.50	0.14	6191712.50	100.6	70 -	120	
209	Bi	2	5626409.50	1.10	5622254.50	100.1	70 -	120	

ICB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\022_ICB.D\022_ICB.D#

Date Acquired:	Nov 16 2016 12:28 pm	Sample Name:	**ICB1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Instrument:	ICPMS3

QC Elements

Element				Conc.		RSD(%)	High Limit	Flag
7	Li	2	45	0.07	ppb	6.74	2.00	
9	Be	2	45	0.03	ppb	8.27	0.40	
11	B	2	45	1.12	ppb	1.34	10.00	
23	Na	1	45	3.11	ppb	1.93	50.00	
24	Mg	1	45	3.18	ppb	44.76	50.00	
27	Al	1	45	13.72	ppb	9.63	50.00	Failaq
39	K	1	45	0.53	ppb	4.24	50.00	
44	Ca	2	45	-2.97	ppb	8.71	50.00	
47	Ti	1	45	0.10	ppb	86.59	4.00	
51	V	1	45	0.06	ppb	18.96	4.00	
52	Cr	1	45	0.04	ppb	12.40	2.00	
55	Mn	1	45	0.08	ppb	24.14	2.00	
56	Fe	1	72	3.12	ppb	41.56	50.00	
59	Co	1	72	0.04	ppb	30.04	2.00	
60	Ni	1	72	-0.05	ppb	13.97	2.00	
63	Cu	1	72	-0.03	ppb	6.90	2.00	
66	Zn	1	72	0.21	ppb	22.62	4.00	
75	As	1	72	0.07	ppb	5.55	2.00	
78	Se	1	72	0.30	ppb	39.97	0.60	
88	Sr	2	115	0.01	ppb	13.91	4.00	
95	Mo	2	115	0.16	ppb	18.27	2.00	
107	Ag	2	115	0.03	ppb	35.78	0.40	
111	Cd	2	115	0.02	ppb	9.31	0.40	
118	Sn	2	115	0.05	ppb	12.84	20.00	
121	Sb	2	115	0.01	ppb	16.37	2.00	
137	Ba	2	115	0.03	ppb	30.74	2.00	
205	Tl	2	209	0.06	ppb	9.03	2.00	
208	Pb	2	209	0.05	ppb	11.52	0.40	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2 RHig	-4.19	######	23.38	-17.9	70 - 120	ISFail
45	Sc	1	105863.35	0.92	90770.48	116.6	70 - 120	
45	Sc	2	3961297.00	0.29	4095698.00	96.7	70 - 120	
72	Ge	1	54610.23	0.56	47835.73	114.2	70 - 120	
115	In	2	6298239.50	1.06	6191712.50	101.7	70 - 120	
209	Bi	2	5745486.50	0.89	5622254.50	102.2	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\033CCV1.D\033CCV1.D#

Date Acquired:	Nov 16 2016 01:35 pm	Sample Name:	**CCV1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	221.30	ppb	1.98	200.00	90 -	110	110.7	Fail
9	Be	2	45	208.70	ppb	1.77	200.00	90 -	110	104.4	
11	B	2	45	197.80	ppb	0.59	200.00	90 -	110	98.9	
23	Na	1	45	5550.00	ppb	0.31	5000.00	90 -	110	111.0	Fail
24	Mg	1	45	5094.00	ppb	1.24	5000.00	90 -	110	101.9	
27	Al	1	45	5319.00	ppb	0.75	5000.00	90 -	110	106.4	
39	K	1	45	5369.00	ppb	0.86	5000.00	90 -	110	107.4	
44	Ca	2	45	5082.00	ppb	0.86	5000.00	90 -	110	101.6	
47	Ti	1	45	205.90	ppb	0.84	200.00	90 -	110	103.0	
51	V	1	45	207.40	ppb	0.74	200.00	90 -	110	103.7	
52	Cr	1	45	210.30	ppb	0.61	200.00	90 -	110	105.2	
55	Mn	1	45	219.60	ppb	0.21	200.00	90 -	110	109.8	
56	Fe	1	72	5327.00	ppb	1.42	5000.00	90 -	110	106.5	
59	Co	1	72	209.80	ppb	0.80	200.00	90 -	110	104.9	
60	Ni	1	72	211.90	ppb	0.90	200.00	90 -	110	106.0	
63	Cu	1	72	211.20	ppb	0.56	200.00	90 -	110	105.6	
66	Zn	1	72	223.50	ppb	1.33	200.00	90 -	110	111.8	Fail
75	As	1	72	217.60	ppb	0.84	200.00	90 -	110	108.8	
78	Se	1	72	228.00	ppb	1.97	200.00	90 -	110	114.0	Fail
88	Sr	2	115	215.90	ppb	0.31	200.00	90 -	110	108.0	
95	Mo	2	115	208.90	ppb	0.84	200.00	90 -	110	104.5	
107	Ag	2	115	211.20	ppb	1.16	200.00	90 -	110	105.6	
111	Cd	2	115	208.80	ppb	1.28	200.00	90 -	110	104.4	
118	Sn	2	115	212.20	ppb	1.60	200.00	90 -	110	106.1	
121	Sb	2	115	209.10	ppb	1.13	200.00	90 -	110	104.6	
137	Ba	2	115	205.30	ppb	0.66	200.00	90 -	110	102.7	
205	Tl	2	209	215.60	ppb	1.55	200.00	90 -	110	107.8	
208	Pb	2	209	211.30	ppb	0.45	200.00	90 -	110	105.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-54481.09	2.40	23.38	-232981.1	70 -	120		ISFail
45	Sc	1	75101.60	0.94	90770.48	82.7	70 -	120		
45	Sc	2	3128611.30	0.31	4095698.00	76.4	70 -	120		
72	Ge	1	39785.70	0.79	47835.73	83.2	70 -	120		
115	In	2	4811983.50	1.99	6191712.50	77.7	70 -	120		
209	Bi	2	4366653.50	0.54	5622254.50	77.7	70 -	120		

CCB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\034_CCB.D\034_CCB.D#

Date Acquired:	Nov 16 2016 01:41 pm	Sample Name:	**CCB1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.232	ppb	2.72	2.00	2.00	
9	Be	2	45	0.192	ppb	14.94	0.40	0.30	
11	B	2	45	4.617	ppb	1.72	10.00	10.00	
23	Na	1	45	145.400	ppb	3.38	50.00	#####	Failsoil
24	Mg	1	45	5.221	ppb	9.33	50.00	#####	
27	Al	1	45	16.290	ppb	2.60	50.00	10.00	FailAq
39	K	1	45	9.520	ppb	4.06	50.00	#####	
44	Ca	2	45	7.488	ppb	3.20	50.00	#####	
47	Ti	1	45	0.125	ppb	173.20	4.00	3.00	
51	V	1	45	0.206	ppb	2.94	4.00	3.00	
52	Cr	1	45	0.202	ppb	11.75	2.00	2.00	
55	Mn	1	45	0.275	ppb	10.22	2.00	3.00	
56	Fe	1	72	5.460	ppb	4.33	50.00	30.00	
59	Co	1	72	0.219	ppb	0.85	2.00	3.00	
60	Ni	1	72	0.102	ppb	2.52	2.00	3.00	
63	Cu	1	72	0.171	ppb	9.48	2.00	2.00	
66	Zn	1	72	0.665	ppb	17.04	4.00	2.00	
75	As	1	72	0.252	ppb	15.07	2.00	2.00	
78	Se	1	72	0.408	ppb	10.19	0.60	2.00	
88	Sr	2	115	0.197	ppb	5.20	4.00	3.00	
95	Mo	2	115	0.410	ppb	7.08	2.00	2.00	
107	Ag	2	115	0.168	ppb	7.57	0.40	1.00	
111	Cd	2	115	0.203	ppb	9.05	0.40	0.30	
118	Sn	2	115	0.341	ppb	6.09	20.00	3.00	
121	Sb	2	115	0.546	ppb	3.34	2.00	0.80	
137	Ba	2	115	0.193	ppb	15.11	2.00	3.00	
205	Tl	2	209	0.411	ppb	2.67	2.00	0.50	
208	Pb	2	209	0.191	ppb	7.93	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-39.26	20.31	23.38	-167.9	70 - 120	ISFail
45	Sc	1		73997.24	1.42	90770.48	81.5	70 - 120	
45	Sc	2		3061413.00	1.31	4095698.00	74.7	70 - 120	
72	Ge	1		39921.27	1.06	47835.73	83.5	70 - 120	
115	In	2		4756063.00	0.57	6191712.50	76.8	70 - 120	
209	Bi	2		4354632.00	1.12	5622254.50	77.5	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\035LCVL.D\035LCVL.D#

Date Acquired:	Nov 16 2016 01:47 pm	Sample Name:	**LCVL1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	10.14	ppb	1.28	10.00	70 -	130	101.4	
9	Be	2	45	1.09	ppb	6.17	1.00	70 -	130	109.2	
11	B	2	45	21.56	ppb	1.99	20.00	70 -	130	107.8	
23	Na	1	45	211.60	ppb	1.36	100.00	70 -	130	211.6	Fail
24	Mg	1	45	101.30	ppb	1.29	100.00	70 -	130	101.3	
27	Al	1	45	100.90	ppb	3.89	100.00	70 -	130	100.9	
39	K	1	45	110.50	ppb	1.53	100.00	70 -	130	110.5	
44	Ca	2	45	104.00	ppb	0.21	100.00	70 -	130	104.0	
47	Ti	1	45	5.07	ppb	2.13	5.00	70 -	130	101.3	
51	V	1	45	1.13	ppb	2.40	1.00	70 -	130	113.2	
52	Cr	1	45	5.29	ppb	2.07	5.00	70 -	130	105.7	
55	Mn	1	45	5.52	ppb	2.44	5.00	70 -	130	110.5	
56	Fe	1	72	102.30	ppb	1.35	100.00	70 -	130	102.3	
59	Co	1	72	5.08	ppb	1.48	5.00	70 -	130	101.6	
60	Ni	1	72	5.21	ppb	1.33	5.00	70 -	130	104.3	
63	Cu	1	72	5.24	ppb	0.53	5.00	70 -	130	104.8	
66	Zn	1	72	5.61	ppb	2.33	5.00	70 -	130	112.3	
75	As	1	72	5.33	ppb	2.44	5.00	70 -	130	106.5	
78	Se	1	72	6.12	ppb	3.95	5.00	70 -	130	122.3	
88	Sr	2	115	5.12	ppb	3.15	5.00	70 -	130	102.5	
95	Mo	2	115	5.12	ppb	2.22	5.00	70 -	130	102.4	
107	Ag	2	115	2.07	ppb	5.31	2.00	70 -	130	103.3	
111	Cd	2	115	1.12	ppb	8.34	1.00	70 -	130	112.0	
118	Sn	2	115	5.39	ppb	2.15	5.00	70 -	130	107.8	
121	Sb	2	115	2.33	ppb	0.78	2.00	70 -	130	116.3	
137	Ba	2	115	5.00	ppb	1.88	5.00	70 -	130	100.1	
205	Tl	2	209	1.14	ppb	3.62	1.00	70 -	130	113.6	
208	Pb	2	209	1.07	ppb	3.09	1.00	70 -	130	107.2	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigh	-1612.30	9.05	23.38	-6894.8	70 -	120	ISFail
45	Sc	1		76576.46	0.81	90770.48	84.4	70 -	120	
45	Sc	2		3110479.00	0.96	4095698.00	75.9	70 -	120	
72	Ge	1		41515.24	0.80	47835.73	86.8	70 -	120	
115	In	2		4836370.50	1.36	6191712.50	78.1	70 -	120	
209	Bi	2		4455664.00	1.55	5622254.50	79.3	70 -	120	

PB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\036__PB.D\036__PB.D#

Date Acquired:	Nov 16 2016 01:53 pm	Sample Name:	MB-77913
Acq. Method:	DHL_3Fe.M	Misc Info:	MBLKICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	MDL	RL	Flag
7	Li	2	45	0.143	ppb	6.80	2.0	5.00	
9	Be	2	45	0.029	ppb	15.02	0.3	1.00	
11	B	2	45	23.090	ppb	4.39	10.0	30.00	J
23	Na	1	45	86.320	ppb	3.78	100.0	#####	
24	Mg	1	45	16.490	ppb	6.40	100.0	#####	
27	Al	1	45	140.400	ppb	2.73	10.0	30.00	Fail
39	K	1	45	18.660	ppb	1.81	100.0	#####	
44	Ca	2	45	301.200	ppb	0.92	100.0	#####	Fail
47	Ti	1	45	0.256	ppb	57.72	3.0	10.00	
51	V	1	45	0.144	ppb	15.48	3.0	10.00	
52	Cr	1	45	0.198	ppb	6.70	2.0	5.00	
55	Mn	1	45	0.333	ppb	4.22	3.0	10.00	
56	Fe	1	72	5.643	ppb	3.52	30.0	#####	
59	Co	1	72	0.048	ppb	15.64	3.0	10.00	
60	Ni	1	72	-0.034	ppb	16.50	3.0	10.00	
63	Cu	1	72	0.085	ppb	7.12	2.0	10.00	
66	Zn	1	72	2.415	ppb	5.56	2.0	5.00	J
75	As	1	72	0.074	ppb	30.59	2.0	5.00	
78	Se	1	72	0.175	ppb	71.84	2.0	5.00	
88	Sr	2	115	2.063	ppb	2.11	3.0	10.00	
95	Mo	2	115	0.092	ppb	9.55	2.0	5.00	
107	Ag	2	115	0.038	ppb	8.55	1.0	2.00	
111	Cd	2	115	0.030	ppb	30.41	0.3	1.00	
118	Sn	2	115	0.058	ppb	5.52	3.0	10.00	
121	Sb	2	115	0.163	ppb	10.43	0.8	2.50	
137	Ba	2	115	0.456	ppb	7.87	3.0	10.00	
205	Tl	2	209	0.069	ppb	2.52	0.5	1.50	
208	Pb	2	209	0.083	ppb	2.33	0.3	1.00	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHig	-23.25	60.04	23.38	-99.4	70 - 120	ISFail
45	Sc	1		78779.15	0.59	90770.48	86.8	70 - 120	
45	Sc	2		3126302.80	0.62	4095698.00	76.3	70 - 120	
72	Ge	1		42207.38	0.46	47835.73	88.2	70 - 120	
115	In	2		4894609.50	1.47	6191712.50	79.1	70 - 120	
209	Bi	2		4485356.50	0.45	5622254.50	79.8	70 - 120	

LCS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\037_LCS.D\037_LCS.D#

Date Acquired:	Nov 16 2016 01:59 pm	Sample Name:	**LCS-77913**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.70	ppb	0.66	200.00	80 -	120	97.9	
9	Be	2	45	190.70	ppb	0.51	200.00	80 -	120	95.4	
11	B	2	45	193.70	ppb	1.62	200.00	80 -	120	96.9	
23	Na	1	45	5152.00	ppb	1.29	5000.00	80 -	120	103.0	
24	Mg	1	45	4827.00	ppb	0.95	5000.00	80 -	120	96.5	
27	Al	1	45	5060.00	ppb	0.67	5000.00	80 -	120	101.2	
39	K	1	45	4987.00	ppb	0.39	5000.00	80 -	120	99.7	
44	Ca	2	45	4988.00	ppb	1.72	5000.00	80 -	120	99.8	
47	Ti	1	45	200.30	ppb	3.05	200.00	80 -	120	100.2	
51	V	1	45	195.80	ppb	0.52	200.00	80 -	120	97.9	
52	Cr	1	45	196.90	ppb	1.04	200.00	80 -	120	98.5	
55	Mn	1	45	205.00	ppb	0.89	200.00	80 -	120	102.5	
56	Fe	1	72	4946.00	ppb	1.49	5000.00	80 -	120	98.9	
59	Co	1	72	194.80	ppb	1.17	200.00	80 -	120	97.4	
60	Ni	1	72	197.10	ppb	1.52	200.00	80 -	120	98.6	
63	Cu	1	72	197.80	ppb	0.68	200.00	80 -	120	98.9	
66	Zn	1	72	210.60	ppb	1.44	200.00	80 -	120	105.3	
75	As	1	72	201.90	ppb	0.68	200.00	80 -	120	101.0	
78	Se	1	72	212.40	ppb	1.24	200.00	80 -	120	106.2	
88	Sr	2	115	202.10	ppb	1.55	200.00	80 -	120	101.1	
95	Mo	2	115	194.00	ppb	0.94	200.00	80 -	120	97.0	
107	Ag	2	115	189.90	ppb	0.59	200.00	80 -	120	95.0	
111	Cd	2	115	194.00	ppb	1.87	200.00	80 -	120	97.0	
118	Sn	2	115	195.90	ppb	1.93	200.00	80 -	120	98.0	
121	Sb	2	115	191.10	ppb	1.83	200.00	80 -	120	95.6	
137	Ba	2	115	193.30	ppb	0.89	200.00	80 -	120	96.7	
205	Tl	2	209	201.10	ppb	0.56	200.00	80 -	120	100.6	
208	Pb	2	209	192.60	ppb	0.78	200.00	80 -	120	96.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47051.68	1.35	23.38	-201210.2	70 -	120	ISFail
45	Sc	1	76791.60	0.33	90770.48	84.6	70 -	120	
45	Sc	2	3089002.30	0.73	4095698.00	75.4	70 -	120	
72	Ge	1	40839.87	0.92	47835.73	85.4	70 -	120	
115	In	2	4794189.50	1.15	6191712.50	77.4	70 -	120	
209	Bi	2	4398718.50	0.41	5622254.50	78.2	70 -	120	

LCS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\038_LCS.D\038_LCS.D#

Date Acquired:	Nov 16 2016 02:05 pm	Sample Name:	**LCSD-77913**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCSDICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.60	ppb	1.27	200.00	80 -	120	97.8	
9	Be	2	45	192.30	ppb	1.18	200.00	80 -	120	96.2	
11	B	2	45	190.40	ppb	0.75	200.00	80 -	120	95.2	
23	Na	1	45	5154.00	ppb	1.38	5000.00	80 -	120	103.1	
24	Mg	1	45	4876.00	ppb	1.33	5000.00	80 -	120	97.5	
27	Al	1	45	5013.00	ppb	1.07	5000.00	80 -	120	100.3	
39	K	1	45	5054.00	ppb	0.60	5000.00	80 -	120	101.1	
44	Ca	2	45	4970.00	ppb	1.99	5000.00	80 -	120	99.4	
47	Ti	1	45	195.90	ppb	2.18	200.00	80 -	120	98.0	
51	V	1	45	194.20	ppb	1.00	200.00	80 -	120	97.1	
52	Cr	1	45	194.30	ppb	1.04	200.00	80 -	120	97.2	
55	Mn	1	45	202.70	ppb	1.96	200.00	80 -	120	101.4	
56	Fe	1	72	4880.00	ppb	1.27	5000.00	80 -	120	97.6	
59	Co	1	72	191.90	ppb	0.62	200.00	80 -	120	96.0	
60	Ni	1	72	195.90	ppb	1.15	200.00	80 -	120	98.0	
63	Cu	1	72	195.50	ppb	0.62	200.00	80 -	120	97.8	
66	Zn	1	72	207.90	ppb	2.36	200.00	80 -	120	104.0	
75	As	1	72	201.00	ppb	0.63	200.00	80 -	120	100.5	
78	Se	1	72	205.90	ppb	0.74	200.00	80 -	120	103.0	
88	Sr	2	115	199.70	ppb	1.81	200.00	80 -	120	99.9	
95	Mo	2	115	193.80	ppb	1.78	200.00	80 -	120	96.9	
107	Ag	2	115	190.20	ppb	1.33	200.00	80 -	120	95.1	
111	Cd	2	115	193.00	ppb	1.50	200.00	80 -	120	96.5	
118	Sn	2	115	196.80	ppb	1.69	200.00	80 -	120	98.4	
121	Sb	2	115	193.20	ppb	1.77	200.00	80 -	120	96.6	
137	Ba	2	115	191.20	ppb	2.34	200.00	80 -	120	95.6	
205	Tl	2	209	196.80	ppb	2.73	200.00	80 -	120	98.4	
208	Pb	2	209	191.70	ppb	2.96	200.00	80 -	120	95.9	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47734.52	3.69	23.38	-204130.3	70 -	120	ISFail
45	Sc	1	78607.66	0.85	90770.48	86.6	70 -	120	
45	Sc	2	3078442.00	2.00	4095698.00	75.2	70 -	120	
72	Ge	1	41923.94	1.66	47835.73	87.6	70 -	120	
115	In	2	4774978.50	1.25	6191712.50	77.1	70 -	120	
209	Bi	2	4418151.50	2.45	5622254.50	78.6	70 -	120	

Sample QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\040AREF.D\040AREF.D#

Date Acquired:	Nov 16 2016 02:17 pm	Sample Name:	**1611028-26A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TW
Operator:	CVD	Bench Diln:	1
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	0.106	ppb	#REF!	10.11	2000.00	ND
9	Be	2	45	0.047	ppb	#REF!	21.94	2000.00	ND
11	B	2	45	24.490	ppb	#REF!	0.32	2000.00	J
23	Na	1	45	100.000	ppb	#REF!	0.72	25000.00	>RL
24	Mg	1	45	4.562	ppb	#REF!	12.22	25000.00	ND
27	Al	1	45	10.140	ppb	#REF!	6.93	10000.00	ND
39	K	1	45	9.760	ppb	#REF!	3.28	25000.00	ND
44	Ca	2	45	20.250	ppb	#REF!	2.81	25000.00	ND
47	Ti	1	45	0.079	ppb	#REF!	43.30	2000.00	ND
51	V	1	45	0.117	ppb	#REF!	22.53	2000.00	ND
52	Cr	1	45	0.111	ppb	#REF!	23.73	2000.00	ND
55	Mn	1	45	0.188	ppb	#REF!	33.48	2000.00	ND
56	Fe	1	72	4.559	ppb	#REF!	12.88	10000.00	ND
59	Co	1	72	0.085	ppb	#REF!	26.96	2000.00	ND
60	Ni	1	72	0.027	ppb	#REF!	11.32	2000.00	ND
63	Cu	1	72	0.077	ppb	#REF!	18.97	2000.00	ND
66	Zn	1	72	0.380	ppb	#REF!	5.33	2000.00	ND
75	As	1	72	0.105	ppb	#REF!	12.71	2000.00	ND
78	Se	1	72	0.350	ppb	#REF!	15.75	2000.00	ND
88	Sr	2	115	0.168	ppb	#REF!	14.55	2000.00	ND
95	Mo	2	115	0.335	ppb	#REF!	16.78	2000.00	ND
107	Ag	2	115	0.055	ppb	#REF!	34.11	500.00	ND
111	Cd	2	115	0.046	ppb	#REF!	36.64	2000.00	ND
118	Sn	2	115	0.059	ppb	#REF!	4.91	2000.00	ND
121	Sb	2	115	0.161	ppb	#REF!	6.21	500.00	ND
137	Ba	2	115	0.089	ppb	#REF!	6.82	2000.00	ND
205	Tl	2	209	0.138	ppb	#REF!	15.43	2000.00	ND
208	Pb	2	209	0.073	ppb	#REF!	23.80	2000.00	ND

ISTD Elements

Element			CPS Mean	RSD(%)		Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-21.10	71.68	RHigh	23.38	-90.2	70 - 120	ISFail
45	Sc	1	79551.13	0.60		90770.48	87.6	70 - 120	
45	Sc	2	3135244.80	1.63		4095698.00	76.5	70 - 120	
72	Ge	1	42559.02	1.05		47835.73	89.0	70 - 120	
115	In	2	4919258.50	1.60		6191712.50	79.4	70 - 120	
209	Bi	2	4535853.50	0.75		5622254.50	80.7	70 - 120	

DT QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\041DT1.D\041DT1.D#

Date Acquired:	Nov 16 2016 02:24 pm	Sample Name:	**1611028-26A SD**
Acq. Method:	DHL_3Fe.M	Misc Info:	SD ICPMS_TW
Operator:	CVD	Bench Diln:	5.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)	Rec(%)	Flag
7	Li	2	45	0.06	ppb	10.79	-2.71	90 - 110	-10.6	
9	Be	2	45	0.02	ppb	18.94	0.05	90 - 110	232.7	
11	B	2	45	6.99	ppb	2.32	24.49	90 - 110	142.7	
23	Na	1	45	51.81	ppb	0.98	100.00	90 - 110	259.1	
24	Mg	1	45	1.63	ppb	11.89	4.56	90 - 110	179.0	
27	Al	1	45	2.30	ppb	7.65	10.14	90 - 110	113.6	
39	K	1	45	11.19	ppb	1.13	9.76	90 - 110	573.3	
44	Ca	2	45	6.24	ppb	0.90	20.25	90 - 110	154.2	
47	Ti	1	45	-0.03	ppb	173.20	0.08	90 - 110	-178.4	
51	V	1	45	0.06	ppb	7.22	0.12	90 - 110	254.3	
52	Cr	1	45	0.08	ppb	13.03	0.11	90 - 110	344.4	
55	Mn	1	45	1.20	ppb	11.44	0.19	90 - 110	3179.4	
56	Fe	1	72	16.92	ppb	0.86	4.56	90 - 110	1855.7	
59	Co	1	72	0.04	ppb	14.40	0.09	90 - 110	243.1	
60	Ni	1	72	0.13	ppb	15.89	0.03	90 - 110	2418.9	
63	Cu	1	72	0.91	ppb	2.22	0.08	90 - 110	5947.2	
66	Zn	1	72	0.24	ppb	16.04	0.38	90 - 110	312.6	
75	As	1	72	0.06	ppb	22.50	0.11	90 - 110	266.8	
78	Se	1	72	0.33	ppb	9.09	0.35	90 - 110	472.8	
88	Sr	2	115	0.05	ppb	7.25	0.17	90 - 110	140.2	
95	Mo	2	115	0.14	ppb	12.55	0.34	90 - 110	207.3	
107	Ag	2	115	0.03	ppb	19.63	0.05	90 - 110	309.5	
111	Cd	2	115	0.02	ppb	36.97	0.05	90 - 110	186.1	
118	Sn	2	115	0.08	ppb	1.61	0.06	90 - 110	670.0	
121	Sb	2	115	0.12	ppb	12.84	0.16	90 - 110	361.9	
137	Ba	2	115	0.03	ppb	31.24	0.09	90 - 110	192.3	
205	Tl	2	209	0.09	ppb	9.90	0.14	90 - 110	343.3	
208	Pb	2	209	0.04	ppb	22.71	0.07	90 - 110	258.1	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHig	-2.71	696.51	23.38	-11.6	70 -	120	ISFail
45	Sc	1		81710.48	1.31	90770.48	90.0	70 -	120	
45	Sc	2		3181941.80	1.12	4095698.00	77.7	70 -	120	
72	Ge	1		43990.27	0.86	47835.73	92.0	70 -	120	
115	In	2		4971032.00	0.64	6191712.50	80.3	70 -	120	
209	Bi	2		4608186.00	1.31	5622254.50	82.0	70 -	120	

Sample QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\044SMPL.D\044SMPL.D#

Date Acquired:	Nov 16 2016 02:42 pm	Sample Name:	**1611028-13A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TW
Operator:	CVD	Bench Diln:	1
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	0.027	ppb	#REF!	6.56	2000.00	ND
9	Be	2	45	-0.002	ppb	#REF!	14.78	2000.00	ND
11	B	2	45	18.270	ppb	#REF!	1.31	2000.00	J
23	Na	1	45	111.800	ppb	#REF!	0.84	25000.00	J
24	Mg	1	45	2.587	ppb	#REF!	8.91	25000.00	ND
27	Al	1	45	-2.545	ppb	#REF!	5.22	10000.00	ND
39	K	1	45	11.660	ppb	#REF!	3.11	25000.00	ND
44	Ca	2	45	3.049	ppb	#REF!	2.54	25000.00	ND
47	Ti	1	45	-0.028	ppb	#REF!	173.20	2000.00	ND
51	V	1	45	0.030	ppb	#REF!	21.44	2000.00	ND
52	Cr	1	45	0.043	ppb	#REF!	8.68	2000.00	ND
55	Mn	1	45	0.073	ppb	#REF!	7.87	2000.00	ND
56	Fe	1	72	5.545	ppb	#REF!	0.69	10000.00	ND
59	Co	1	72	0.004	ppb	#REF!	37.50	2000.00	ND
60	Ni	1	72	-0.009	ppb	#REF!	11.70	2000.00	ND
63	Cu	1	72	0.137	ppb	#REF!	8.05	2000.00	ND
66	Zn	1	72	0.420	ppb	#REF!	18.66	2000.00	ND
75	As	1	72	0.011	ppb	#REF!	27.56	2000.00	ND
78	Se	1	72	0.127	ppb	#REF!	14.28	2000.00	ND
88	Sr	2	115	-0.011	ppb	#REF!	6.70	2000.00	ND
95	Mo	2	115	0.420	ppb	#REF!	4.13	2000.00	ND
107	Ag	2	115	0.012	ppb	#REF!	29.74	500.00	ND
111	Cd	2	115	0.015	ppb	#REF!	38.39	2000.00	ND
118	Sn	2	115	-0.014	ppb	#REF!	10.04	2000.00	ND
121	Sb	2	115	0.074	ppb	#REF!	3.07	500.00	ND
137	Ba	2	115	0.009	ppb	#REF!	18.43	2000.00	ND
205	Tl	2	209	0.029	ppb	#REF!	3.43	2000.00	ND
208	Pb	2	209	0.020	ppb	#REF!	16.53	2000.00	ND

ISTD Elements

Element			CPS Mean	RSD(%)		Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	3.73	538.30	RHigh	23.38	16.0	70 - 120	ISFail
45	Sc	1	82269.27	1.23		90770.48	90.6	70 - 120	
45	Sc	2	3125211.80	1.24		4095698.00	76.3	70 - 120	
72	Ge	1	43649.31	1.48		47835.73	91.2	70 - 120	
115	In	2	4902667.00	1.70		6191712.50	79.2	70 - 120	
209	Bi	2	4567593.50	1.87		5622254.50	81.2	70 - 120	

PDS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\048_PDS.D\048_PDS.D#

Date Acquired:	Nov 16 2016 03:06 pm	Sample Name:	**1611028-26A PDS**
Acq. Method:	DHL_3Fe.M	Misc Info:	PDS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	198.40	ppb	1.25	-31101.69	200	75-125	######	Fail
9	Be	2	45	196.10	ppb	0.44	0.05	200	75-125	98.0	
11	B	2	45	199.40	ppb	2.54	24.49	200	75-125	87.5	
23	Na	1	45	5188.00	ppb	1.53	100.00	5000	75-125	101.8	
24	Mg	1	45	4804.00	ppb	1.17	4.56	5000	75-125	96.0	
27	Al	1	45	5030.00	ppb	1.38	10.14	5000	75-125	100.4	
39	K	1	45	5115.00	ppb	1.08	9.76	5000	75-125	102.1	
44	Ca	2	45	4657.00	ppb	3.52	20.25	5000	75-125	92.7	
47	Ti	1	45	195.50	ppb	3.29	0.08	200	75-125	97.7	
51	V	1	45	196.40	ppb	0.68	0.12	200	75-125	98.1	
52	Cr	1	45	203.10	ppb	1.17	0.11	200	75-125	101.5	
55	Mn	1	45	205.10	ppb	1.09	0.19	200	75-125	102.5	
56	Fe	1	72	4984.00	ppb	1.32	4.56	5000	75-125	99.6	
59	Co	1	72	194.40	ppb	1.06	0.09	200	75-125	97.2	
60	Ni	1	72	196.50	ppb	0.75	0.03	200	75-125	98.2	
63	Cu	1	72	190.80	ppb	0.55	0.08	200	75-125	95.4	
66	Zn	1	72	204.80	ppb	0.88	0.38	200	75-125	102.2	
75	As	1	72	199.30	ppb	1.05	0.11	200	75-125	99.6	
78	Se	1	72	205.30	ppb	1.45	0.35	200	75-125	102.5	
88	Sr	2	115	200.50	ppb	1.81	0.17	200	75-125	100.2	
95	Mo	2	115	190.10	ppb	2.07	0.34	200	75-125	94.9	
107	Ag	2	115	186.80	ppb	2.47	0.05	200	75-125	93.4	
111	Cd	2	115	192.30	ppb	3.06	0.05	200	75-125	96.1	
118	Sn	2	115	202.40	ppb	2.19	0.06	200	75-125	101.2	
121	Sb	2	115	189.80	ppb	1.76	0.16	200	75-125	94.8	
137	Ba	2	115	194.40	ppb	2.62	0.09	200	75-125	97.2	
205	Tl	2	209	202.80	ppb	2.31	0.14	200	75-125	101.3	
208	Pb	2	209	196.60	ppb	2.95	0.07	200	75-125	98.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-31101.69	4.76	23.38	-133002.2	70 - 120	ISFail
45	Sc	1	83978.49	0.79	90770.48	92.5	70 - 120	
45	Sc	2	3107189.80	2.26	4095698.00	75.9	70 - 120	
72	Ge	1	44375.64	0.41	47835.73	92.8	70 - 120	
115	In	2	4842685.00	1.74	6191712.50	78.2	70 - 120	
209	Bi	2	4457390.50	1.49	5622254.50	79.3	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\049_MS.D\049_MS.D#

1611028-26A MS

Date Acquired:	Nov 16 2016 03:12 pm	Sample Name:	~~1610181-01C MS~~
Acq. Method:	DHL_3Fe.M	Misc Info:	MS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	196.80	ppb	0.66	########	200	80-120	######	Fail
9	Be	2	45	193.20	ppb	1.29	0.05	200	80-120	96.6	
11	B	2	45	212.40	ppb	3.14	24.49	200	80-120	94.0	
23	Na	1	45	5220.00	ppb	1.68	100.00	5000	80-120	102.4	
24	Mg	1	45	4791.00	ppb	1.38	4.56	5000	80-120	95.7	
27	Al	1	45	4991.00	ppb	1.42	10.14	5000	80-120	99.6	
39	K	1	45	5055.00	ppb	1.30	9.76	5000	80-120	100.9	
44	Ca	2	45	4893.00	ppb	3.49	20.25	5000	80-120	97.5	
47	Ti	1	45	188.30	ppb	2.41	0.08	200	80-120	94.1	
51	V	1	45	189.20	ppb	0.78	0.12	200	80-120	94.5	
52	Cr	1	45	190.70	ppb	1.17	0.11	200	80-120	95.3	
55	Mn	1	45	201.10	ppb	1.18	0.19	200	80-120	100.5	
56	Fe	1	72	4880.00	ppb	2.03	4.56	5000	80-120	97.5	
59	Co	1	72	190.20	ppb	1.18	0.09	200	80-120	95.1	
60	Ni	1	72	191.40	ppb	1.44	0.03	200	80-120	95.7	
63	Cu	1	72	191.30	ppb	0.95	0.08	200	80-120	95.6	
66	Zn	1	72	200.10	ppb	1.00	0.38	200	80-120	99.9	
75	As	1	72	196.50	ppb	1.11	0.11	200	80-120	98.2	
78	Se	1	72	205.90	ppb	2.13	0.35	200	80-120	102.8	
88	Sr	2	115	199.70	ppb	2.35	0.17	200	80-120	99.8	
95	Mo	2	115	191.50	ppb	1.78	0.34	200	80-120	95.6	
107	Ag	2	115	191.20	ppb	2.10	0.05	200	80-120	95.6	
111	Cd	2	115	191.20	ppb	2.12	0.05	200	80-120	95.6	
118	Sn	2	115	197.60	ppb	1.29	0.06	200	80-120	98.8	
121	Sb	2	115	191.90	ppb	2.00	0.16	200	80-120	95.9	
137	Ba	2	115	190.40	ppb	1.30	0.09	200	80-120	95.2	
205	Tl	2	209	199.40	ppb	0.67	0.14	200	80-120	99.6	
208	Pb	2	209	193.10	ppb	3.00	0.07	200	80-120	96.5	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-46741.06	0.98	23.38	########	70 - 120	ISFail
45	Sc	1	84787.74	0.31	90770.48	93.4	70 - 120	
45	Sc	2	3060665.80	1.99	4095698.00	74.7	70 - 120	
72	Ge	1	44533.09	0.64	47835.73	93.1	70 - 120	
115	In	2	4815742.00	1.01	6191712.50	77.8	70 - 120	
209	Bi	2	4452220.50	0.81	5622254.50	79.2	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\050_MS.D\050_MS.D#

1611028-26A MSD

Date Acquired:	Nov 16 2016 03:18 pm	Sample Name:	~~1610181-01C MSD~~
Acq. Method:	DHL_3Fe.M	Misc Info:	MSD ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	195.20	ppb	1.14	########	200	80-120	######	Fail
9	Be	2	45	190.50	ppb	1.55	0.05	200	80-120	95.2	
11	B	2	45	205.90	ppb	2.24	24.49	200	80-120	90.7	
23	Na	1	45	5188.00	ppb	0.78	100.00	5000	80-120	101.8	
24	Mg	1	45	4813.00	ppb	0.62	4.56	5000	80-120	96.2	
27	Al	1	45	4975.00	ppb	0.90	10.14	5000	80-120	99.3	
39	K	1	45	5062.00	ppb	0.54	9.76	5000	80-120	101.0	
44	Ca	2	45	4881.00	ppb	2.27	20.25	5000	80-120	97.2	
47	Ti	1	45	196.00	ppb	1.98	0.08	200	80-120	98.0	
51	V	1	45	191.50	ppb	0.59	0.12	200	80-120	95.7	
52	Cr	1	45	194.00	ppb	0.24	0.11	200	80-120	96.9	
55	Mn	1	45	201.30	ppb	0.50	0.19	200	80-120	100.6	
56	Fe	1	72	4958.00	ppb	0.81	4.56	5000	80-120	99.1	
59	Co	1	72	195.00	ppb	0.30	0.09	200	80-120	97.5	
60	Ni	1	72	195.80	ppb	0.62	0.03	200	80-120	97.9	
63	Cu	1	72	195.10	ppb	0.08	0.08	200	80-120	97.5	
66	Zn	1	72	204.60	ppb	1.55	0.38	200	80-120	102.1	
75	As	1	72	199.80	ppb	0.23	0.11	200	80-120	99.8	
78	Se	1	72	208.10	ppb	1.95	0.35	200	80-120	103.9	
88	Sr	2	115	197.50	ppb	2.89	0.17	200	80-120	98.7	
95	Mo	2	115	191.00	ppb	1.70	0.34	200	80-120	95.3	
107	Ag	2	115	189.60	ppb	1.97	0.05	200	80-120	94.8	
111	Cd	2	115	191.10	ppb	2.17	0.05	200	80-120	95.5	
118	Sn	2	115	197.70	ppb	1.78	0.06	200	80-120	98.8	
121	Sb	2	115	190.80	ppb	2.08	0.16	200	80-120	95.3	
137	Ba	2	115	189.30	ppb	1.20	0.09	200	80-120	94.6	
205	Tl	2	209	200.50	ppb	2.04	0.14	200	80-120	100.2	
208	Pb	2	209	191.70	ppb	1.45	0.07	200	80-120	95.8	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-46453.83	1.84	23.38	########	70 - 120	ISFail
45	Sc	1	81711.51	0.43	90770.48	90.0	70 - 120	
45	Sc	2	3042212.80	2.19	4095698.00	74.3	70 - 120	
72	Ge	1	42633.91	0.49	47835.73	89.1	70 - 120	
115	In	2	4811446.50	1.27	6191712.50	77.7	70 - 120	
209	Bi	2	4385258.00	0.90	5622254.50	78.0	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\051CCV1.D\051CCV1.D#

Date Acquired:	Nov 16 2016 03:24 pm	Sample Name:	**CCV2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	207.70	ppb	0.35	200.00	90 -	110	103.9	
9	Be	2	45	205.30	ppb	0.83	200.00	90 -	110	102.7	
11	B	2	45	190.50	ppb	2.10	200.00	90 -	110	95.3	
23	Na	1	45	5446.00	ppb	1.83	5000.00	90 -	110	108.9	
24	Mg	1	45	5071.00	ppb	1.69	5000.00	90 -	110	101.4	
27	Al	1	45	5298.00	ppb	1.34	5000.00	90 -	110	106.0	
39	K	1	45	5422.00	ppb	1.69	5000.00	90 -	110	108.4	
44	Ca	2	45	5027.00	ppb	2.35	5000.00	90 -	110	100.5	
47	Ti	1	45	212.30	ppb	1.92	200.00	90 -	110	106.2	
51	V	1	45	208.30	ppb	1.07	200.00	90 -	110	104.2	
52	Cr	1	45	210.20	ppb	1.07	200.00	90 -	110	105.1	
55	Mn	1	45	219.60	ppb	1.48	200.00	90 -	110	109.8	
56	Fe	1	72	5261.00	ppb	2.06	5000.00	90 -	110	105.2	
59	Co	1	72	206.20	ppb	1.04	200.00	90 -	110	103.1	
60	Ni	1	72	207.70	ppb	1.07	200.00	90 -	110	103.9	
63	Cu	1	72	208.10	ppb	1.11	200.00	90 -	110	104.1	
66	Zn	1	72	218.80	ppb	1.05	200.00	90 -	110	109.4	
75	As	1	72	215.60	ppb	1.11	200.00	90 -	110	107.8	
78	Se	1	72	220.70	ppb	2.39	200.00	90 -	110	110.4	Fail
88	Sr	2	115	215.80	ppb	1.83	200.00	90 -	110	107.9	
95	Mo	2	115	209.40	ppb	2.13	200.00	90 -	110	104.7	
107	Ag	2	115	213.90	ppb	2.17	200.00	90 -	110	107.0	
111	Cd	2	115	212.40	ppb	1.28	200.00	90 -	110	106.2	
118	Sn	2	115	215.30	ppb	2.03	200.00	90 -	110	107.7	
121	Sb	2	115	213.90	ppb	1.11	200.00	90 -	110	107.0	
137	Ba	2	115	210.40	ppb	1.01	200.00	90 -	110	105.2	
205	Tl	2	209	215.40	ppb	1.56	200.00	90 -	110	107.7	
208	Pb	2	209	211.30	ppb	2.81	200.00	90 -	110	105.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-48540.40	1.53	23.38	-207576.6	70 -	120		ISFail
45	Sc	1	82595.88	1.16	90770.48	91.0	70 -	120		
45	Sc	2	3021088.80	2.40	4095698.00	73.8	70 -	120		
72	Ge	1	43802.78	1.36	47835.73	91.6	70 -	120		
115	In	2	4699487.00	2.10	6191712.50	75.9	70 -	120		
209	Bi	2	4394438.50	1.36	5622254.50	78.2	70 -	120		

CCB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\053_CCB.D\053_CCB.D#

Date Acquired:	Nov 16 2016 03:36 pm	Sample Name:	**CCB2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.164	ppb	20.76	2.00	2.00	
9	Be	2	45	0.134	ppb	14.38	0.40	0.30	
11	B	2	45	2.530	ppb	2.12	10.00	10.00	
23	Na	1	45	36.990	ppb	1.31	50.00	#####	
24	Mg	1	45	3.605	ppb	13.62	50.00	#####	
27	Al	1	45	15.900	ppb	4.48	50.00	10.00	FailAq
39	K	1	45	9.372	ppb	4.23	50.00	#####	
44	Ca	2	45	0.901	ppb	2.04	50.00	#####	
47	Ti	1	45	0.005	ppb	86.60	4.00	3.00	
51	V	1	45	0.154	ppb	18.39	4.00	3.00	
52	Cr	1	45	0.168	ppb	18.58	2.00	2.00	
55	Mn	1	45	0.219	ppb	28.75	2.00	3.00	
56	Fe	1	72	3.709	ppb	22.32	50.00	30.00	
59	Co	1	72	0.145	ppb	23.14	2.00	3.00	
60	Ni	1	72	0.036	ppb	19.40	2.00	3.00	
63	Cu	1	72	0.070	ppb	17.40	2.00	2.00	
66	Zn	1	72	0.240	ppb	16.11	4.00	2.00	
75	As	1	72	0.169	ppb	28.47	2.00	2.00	
78	Se	1	72	0.564	ppb	25.79	0.60	2.00	
88	Sr	2	115	0.105	ppb	12.62	4.00	3.00	
95	Mo	2	115	0.202	ppb	19.12	2.00	2.00	
107	Ag	2	115	0.112	ppb	20.66	0.40	1.00	
111	Cd	2	115	0.093	ppb	13.50	0.40	0.30	
118	Sn	2	115	0.173	ppb	7.18	20.00	3.00	
121	Sb	2	115	0.268	ppb	12.56	2.00	0.80	
137	Ba	2	115	0.120	ppb	14.70	2.00	3.00	
205	Tl	2	209	0.214	ppb	8.17	2.00	0.50	
208	Pb	2	209	0.136	ppb	17.50	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-41.11	37.85	23.38	-175.8	70 - 120	ISFail
45	Sc	1		83184.97	0.95	90770.48	91.6	70 - 120	
45	Sc	2		3064456.80	0.50	4095698.00	74.8	70 - 120	
72	Ge	1		44409.53	0.79	47835.73	92.8	70 - 120	
115	In	2		4842320.00	1.15	6191712.50	78.2	70 - 120	
209	Bi	2		4498236.50	0.41	5622254.50	80.0	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\054LCVL.D\054LCVL.D#

Date Acquired:	Nov 16 2016 03:43 pm	Sample Name:	**LCVL2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.77	ppb	0.89	10.00	70 -	130	97.7	
9	Be	2	45	1.04	ppb	2.99	1.00	70 -	130	103.7	
11	B	2	45	20.70	ppb	2.05	20.00	70 -	130	103.5	
23	Na	1	45	129.30	ppb	0.61	100.00	70 -	130	129.3	
24	Mg	1	45	98.44	ppb	1.58	100.00	70 -	130	98.4	
27	Al	1	45	103.00	ppb	1.39	100.00	70 -	130	103.0	
39	K	1	45	113.60	ppb	3.31	100.00	70 -	130	113.6	
44	Ca	2	45	98.83	ppb	0.90	100.00	70 -	130	98.8	
47	Ti	1	45	5.91	ppb	18.93	5.00	70 -	130	118.3	
51	V	1	45	1.07	ppb	7.04	1.00	70 -	130	106.9	
52	Cr	1	45	5.24	ppb	2.35	5.00	70 -	130	104.7	
55	Mn	1	45	5.72	ppb	1.82	5.00	70 -	130	114.4	
56	Fe	1	72	101.80	ppb	0.80	100.00	70 -	130	101.8	
59	Co	1	72	5.00	ppb	0.66	5.00	70 -	130	99.9	
60	Ni	1	72	5.17	ppb	2.72	5.00	70 -	130	103.4	
63	Cu	1	72	4.98	ppb	2.25	5.00	70 -	130	99.5	
66	Zn	1	72	5.81	ppb	6.81	5.00	70 -	130	116.2	
75	As	1	72	5.37	ppb	1.86	5.00	70 -	130	107.4	
78	Se	1	72	5.64	ppb	8.49	5.00	70 -	130	112.8	
88	Sr	2	115	4.98	ppb	1.61	5.00	70 -	130	99.6	
95	Mo	2	115	4.96	ppb	2.42	5.00	70 -	130	99.3	
107	Ag	2	115	2.04	ppb	2.57	2.00	70 -	130	102.0	
111	Cd	2	115	1.05	ppb	7.89	1.00	70 -	130	105.0	
118	Sn	2	115	5.29	ppb	1.48	5.00	70 -	130	105.8	
121	Sb	2	115	2.16	ppb	3.05	2.00	70 -	130	107.9	
137	Ba	2	115	5.03	ppb	3.01	5.00	70 -	130	100.5	
205	Tl	2	209	1.09	ppb	0.52	1.00	70 -	130	109.0	
208	Pb	2	209	1.04	ppb	1.93	1.00	70 -	130	104.2	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigh	-1331.39	6.76	23.38	-5693.5	70 -	120	ISFail
45	Sc	1		83820.43	1.91	90770.48	92.3	70 -	120	
45	Sc	2		3092937.80	1.04	4095698.00	75.5	70 -	120	
72	Ge	1		44883.67	0.58	47835.73	93.8	70 -	120	
115	In	2		4854223.00	1.97	6191712.50	78.4	70 -	120	
209	Bi	2		4527704.00	1.02	5622254.50	80.5	70 -	120	

ICP-MS4
For

DHL Work Order
1611028

ICP-MS4_161116B
For

DHL Work Order
1611028

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS4_161116B SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			X
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			X
P/A Factor	Before ICAL	Increasing trend	X			
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			X
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			X
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X	X		
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125 / 80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			X
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted			X	
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: _____ Date of Completion: 11/17/2016

Second-Level Review: _____ Date Stamp: 11/18/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161116B **Run No.:** 89029

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:34:00 AM		
L2-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:36:00 AM		
L-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:38:00 AM		
10X-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:40:00 AM		
5X-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:42:00 AM		
2X-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:44:00 AM		
H-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:46:00 AM		
H2-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:48:00 AM		
ICSA-161116	1	ICPMS_TWDOD	ICSA	R89029	11/16/2016 10:56:00 AM		
ICSAB-161116	1	ICPMS_TWDOD	ICSB	R89029	11/16/2016 10:58:00 AM		
ICV-161116	1	ICPMS_TWDOD	ICV	R89029	11/16/2016 11:07:00 AM		
LCVL-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 11:14:00 AM		
ICB-161116	1	ICPMS_TWDOD	ICB	R89029	11/16/2016 11:25:00 AM		
CCV3-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 1:23:00 PM		
LCVL3-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 2:01:00 PM		
CCB3-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 2:16:00 PM		
MB-77902	5	ICPMS_TSDOD1	MBLK	77902	11/16/2016 2:18:00 PM		
LCS-77902	5	ICPMS_TSDOD1	LCS	77902	11/16/2016 2:21:00 PM		
LCSD-77902	5	ICPMS_TSDOD1	LCSD	77902	11/16/2016 2:23:00 PM		
1611028-10A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:27:00 PM		
1611028-10A SD	25	ICPMS_TSDOD1	SD	77902	11/16/2016 2:29:00 PM		
1611022-22A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:31:00 PM		
1611022-23A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:33:00 PM		
1611022-24A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:35:00 PM		
1611022-25A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:37:00 PM		
1611028-01A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:38:00 PM		
1611028-02A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:40:00 PM		
1611028-03A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:42:00 PM		
1611028-04A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:44:00 PM		
1611028-05A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:46:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Run ID: ICP-MS4_161116B **Run No.:** 89029

1611028-10A PDS	5	ICPMS_TSDOD1	PDS	77902	11/16/2016 2:53:00 PM		
1611028-10A MS	5	ICPMS_TSDOD1	MS	77902	11/16/2016 2:55:00 PM		
1611028-10A MSD	5	ICPMS_TSDOD1	MSD	77902	11/16/2016 2:57:00 PM		
CCV4-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 2:59:00 PM		
LCVL4-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 3:06:00 PM		
CCB4-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 3:12:00 PM		
1611028-06A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:14:00 PM		
1611028-07A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:16:00 PM		
1611028-08A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:18:00 PM		
1611028-09A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:20:00 PM		
1611028-11A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:22:00 PM		
1611028-12A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:24:00 PM		
1611028-14A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:26:00 PM		
1611028-15A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:28:00 PM		
1611028-16A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:30:00 PM		
1611028-17A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:32:00 PM		
CCV5-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 3:34:00 PM		
LCVL5-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 3:39:00 PM		
CCB5-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 3:41:00 PM		
MB-77903	5	ICPMS_TSDOD1	MBLK	77903	11/16/2016 3:43:00 PM		
LCS-77903	5	ICPMS_TSDOD1	LCS	77903	11/16/2016 3:45:00 PM		
LCSD-77903	5	ICPMS_TSDOD1	LCSD	77903	11/16/2016 3:47:00 PM		
1611044-01A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:51:00 PM		
1611044-01A SD	25	ICPMS_TSDOD1	SD	77903	11/16/2016 3:53:00 PM		
1611028-18A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:55:00 PM		
1611028-19A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:57:00 PM		
1611028-20A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:59:00 PM		
1611028-21A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:01:00 PM		
1611028-22A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:03:00 PM		
1611028-23A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:05:00 PM		
1611028-24A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:07:00 PM		
1611028-25A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:09:00 PM		
1611044-02A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:11:00 PM		
1611044-01A PDS	5	ICPMS_TSDOD1	PDS	77903	11/16/2016 4:13:00 PM		
1611044-01A MS	5	ICPMS_TSDOD1	MS	77903	11/16/2016 4:15:00 PM		S-flag Pb- High

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161116B **Run No.:** 89029

1611044-01A MSD	5	ICPMS_TSDOD1	MSD	77903	11/16/2016 4:17:00 PM		S-flag Pb- High
CCV6-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 4:19:00 PM		
LCVL6-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 4:30:00 PM		
CCB6-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 4:32:00 PM		
1611044-03A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:34:00 PM		
1611044-04A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:36:00 PM		
1611044-05A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:38:00 PM		
1611044-06A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:40:00 PM		
1611044-07A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:42:00 PM		
1611044-08A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:44:00 PM		
1611044-09A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:46:00 PM		
1611044-10A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:48:00 PM		
1611044-11A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:50:00 PM		
1611044-12A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:52:00 PM		
CCV7-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 4:54:00 PM		
LCVL7-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 4:59:00 PM		
CCB7-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 5:08:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\161116.b

Acquisition Order

#	Sequence Flow
1	Calibration Standards
2	Unknown Samples
3	Blank Samples

Calibration Standards:

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
1	CCB		CAL ICPMS_TW		1101	
2	CCB		CAL ICPMS_TW		1101	
3	CCB		CAL ICPMS_TW		1101	
4	CCB		CAL ICPMS_TW		1102	
5	CCB		CAL ICPMS_TW		1102	
6	CCB		CAL ICPMS_TW		1102	
7	CCB		CAL ICPMS_TW		1102	
8	CCB		CAL ICPMS_TW		1103	
9	CCB		CAL ICPMS_TW		1103	
10	CCB		CAL ICPMS_TW		1103	
11	CCB		CAL ICPMS_TW		1103	
12	CalBlk	BLANK STD 1	CAL ICPMS_TW	1	2101	
13	CalStd	L2-161116	CAL ICPMS_TW	2	2102	
14	CalStd	L-161116	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161116	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161116	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161116	CAL ICPMS_TW	6	2106	
18	CalStd	H-161116	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161116	CAL ICPMS_TW	8	2108	
20	ICB	BLANK	CCB ICPMS_TW		1101	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
21	ICB	BLANK	CCB ICPMS_TW		1102	
22	ICB	BLANK	CCB ICPMS_TW		1103	
23	ICSA	ICSA-161116	ICSAICPMS_TW		2109	
24	ICSB	ICSAB-161116	ICSBICPMS_TW		2110	
25	ICB	BLANK	CCB ICPMS_TW		1101	
26	ICB	BLANK	CCB ICPMS_TW		1102	
27	ICB	BLANK	CCB ICPMS_TW		1103	
28	ICV	ICV-161116	ICV ICPMS_TW		2111	
29	ICB	ICB-161116	ICB ICPMS_TW		1101	
30	ICB	ICB-161116	ICB ICPMS_TW		1103	
31	LLICV	LCVL-161116	LCVLICPMS_TW		2112	
32	ICB	ICB-161116	ICB ICPMS_TW		1101	
33	ICB	ICB-161116	ICB ICPMS_TW		1103	
34	LLICV	LCVL-161116	LCVLICPMS_TW		2112	
35	ICB	ICB-161116	ICB ICPMS_TW		1102	
36	ICB	ICB-161116	ICB ICPMS_TW		1103	
37	PB_W	MB-77886	MBLKICPMS_TW		2201	1
38	LCS_W	LCS-77886	LCS ICPMS_TW		2202	1
39	LCS_W	LCSD-77886	LCSDICPMS_TW		2203	1
40	CCB	RINSE	CCB ICPMS_TW		1101	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	AllRef	1611126-01A	SAMPICPMS_TW		2204	10
42	SD	1611126-01A SD	SD ICPMS_TW		2205	50
43	PDS	1611126-01A PDS	PDS ICPMS_TW		2206	10
44	CCB	RINSE	CCB ICPMS_TW		1102	
45	AllRef	1611126-01A	SAMPICPMS_TW		2207	1
46	SD	1611126-01A SD	SD ICPMS_TW		2208	5
47	SAMP_W	1611126-02A	SAMPICPMS_TW		2209	1

Sample List

48	PDS	1611126-01A PDS	PDS ICPMS_TW		2210	1
49	MS_W	1611126-01A MS	MS ICPMS_TW		2211	1
50	MS_W	1611126-01A MSD	MSD ICPMS_TW		2212	1
51	CCB	RINSE	CCB ICPMS_TW		1102	
52	CCB	RINSE	CCB ICPMS_TW		1103	
53	CCB	RINSE	CCB ICPMS_TW		1102	
54	CCB	RINSE	CCB ICPMS_TW		1102	
55	CCB	RINSE	CCB ICPMS_TW		1103	
56	CCB	RINSE	CCB ICPMS_TW		1103	
57	SAMP_W	1611089-01A	SAMPICPMS_TW		2301	10
58	SAMP_W	1611089-02A	SAMPICPMS_TW		2302	10
59	SAMP_W	1611088-11B	SAMPICPMS_DW		2403	50
60	SAMP_W	1611088-12B	SAMPICPMS_DW		2404	50

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	SAMP_W	1611088-13B	SAMPICPMS_DW		2405	50
62	CCV	CCV1-161116	CCV ICPMS_TW		1207	
63	CCB	CCB1-161116	CCB ICPMS_TW		1102	
64	LLCCV	LCVL1-161116	LCVLICPMS_TW		2112	
65	CCB	CCB1-161116	CCB ICPMS_TW		1103	
66	AllRef	1611081-22A	SAMPICPMS_TW		2303	50
67	SD	1611081-22A SD	SD ICPMS_TW		2304	250
68	SAMP_W	1611091-02A	SAMPICPMS_TW		2305	10
69	SAMP_W	1611091-03A	SAMPICPMS_TW		2306	10
70	SAMP_W	1611091-04A	SAMPICPMS_TW		2307	50
71	SAMP_W	1611091-05A	SAMPICPMS_TW		2308	50
72	SAMP_W	1611091-06A	SAMPICPMS_TW		2309	10
73	SAMP_W	1611091-07A	SAMPICPMS_TW		2310	10
74	SAMP_W	1611091-08A	SAMPICPMS_TW		2311	10
75	SAMP_W	1611091-09A	SAMPICPMS_TW		2312	10
76	SAMP_W	1611091-11A	SAMPICPMS_TW		2401	10

Sample List

77	PDS	1611081-22A PDS	PDS ICPMS_TW		2402	50
78	CCV	CCV2-161116	CCV ICPMS_TW		1207	
79	CCB	CCB2-161116	CCB ICPMS_TW		1102	
80	LLCCV	LCVL2-161116	LCVLICPMS_TW		2112	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	CCB	CCB2-161116	CCB ICPMS_TW		1103	
82	AllRef	1611088-01B	SAMPICPMS_DW		3101	50
83	SD	1611088-01B SD	SD ICPMS_DW		3102	250
84	SAMP_W	1611088-02B	SAMPICPMS_DW		3103	50
85	SAMP_W	1611088-03B	SAMPICPMS_DW		3104	50
86	SAMP_W	1611088-04B	SAMPICPMS_DW		3105	10
87	SAMP_W	1611088-05B	SAMPICPMS_DW		3106	10
88	SAMP_W	1611088-06B	SAMPICPMS_DW		3107	100
89	SAMP_W	1611088-07B	SAMPICPMS_DW		3108	50
90	SAMP_W	1611088-08B	SAMPICPMS_DW		3109	100
91	SAMP_W	1611088-09B	SAMPICPMS_DW		3110	50
92	SAMP_W	1611088-10B	SAMPICPMS_DW		3111	100
93	PDS	1611088-01B PDS	PDS ICPMS_DW		3112	50
94	CCV	CCV3-161116	CCV ICPMS_TW		1207	
95	CCB	CCB3-161116	CCB ICPMS_TW		1102	
96	LLCCV	LCVL3-161116	LCVLICPMS_TW		2512	
97	CCB	CCB3-161116	CCB ICPMS_TW		1103	
98	PB	MB-77902	MBLKICPMS_TSDOD1		3201	5
99	LCS_S	LCS-77902	LCS ICPMS_TSDOD1		3202	5
100	LCS_S	LCSD-77902	LCSDICPMS_TSDOD1		3203	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	CCB	RINSE	CCB ICPMS_TW		1101	
102	AllRef	1611028-10A	SAMPICPMS_TSDOD1		3204	5
103	SD	1611028-10A SD	SD ICPMS_TSDOD1		3205	25
104	Sample	1611022-22A	SAMPICPMS_TSDOD1		3206	5
105	Sample	1611022-23A	SAMPICPMS_TSDOD1		3207	5
106	Sample	1611022-24A	SAMPICPMS_TSDOD1		3208	5
107	Sample	1611022-25A	SAMPICPMS_TSDOD1		3209	5
108	Sample	1611028-01A	SAMPICPMS_TSDOD1		3210	5
109	Sample	1611028-02A	SAMPICPMS_TSDOD1		3211	5
110	Sample	1611028-03A	SAMPICPMS_TSDOD1		3212	5
111	Sample	1611028-04A	SAMPICPMS_TSDOD1		3301	5
112	Sample	1611028-05A	SAMPICPMS_TSDOD1		3302	5
113	PDS	1611028-10A PDS	PDS ICPMS_TSDOD1		3303	5
114	PDS	1611028-10A PDS	PDS ICPMS_TSDOD1		3303	5
115	MS_S	1611028-10A MS	MS ICPMS_TSDOD1		3304	5
116	MS_S	1611028-10A MSD	MSD ICPMS_TSDOD1		3305	5
117	CCV	CCV4-161116	CCV ICPMS_TW		1207	
118	CCB	CCB4-161116	CCB ICPMS_TW		1102	
119	LLCCV	LCVL4-161116	LCVLICPMS_TW		2512	
120	CCB	CCB4-161116	CCB ICPMS_TW		1103	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1611028-06A	SAMPICPMS_TSDOD1		3306	5
122	Sample	1611028-07A	SAMPICPMS_TSDOD1		3307	5
123	Sample	1611028-08A	SAMPICPMS_TSDOD1		3308	5
124	Sample	1611028-09A	SAMPICPMS_TSDOD1		3309	5
125	Sample	1611028-11A	SAMPICPMS_TSDOD1		3310	5
126	Sample	1611028-12A	SAMPICPMS_TSDOD1		3311	5
127	Sample	1611028-14A	SAMPICPMS_TSDOD1		3312	5
128	Sample	1611028-15A	SAMPICPMS_TSDOD1		3401	5
129	Sample	1611028-16A	SAMPICPMS_TSDOD1		3402	5
130	Sample	1611028-17A	SAMPICPMS_TSDOD1		3403	5
131	CCV	CCV5-161116	CCV ICPMS_TW		1207	
132	CCB	CCB5-161116	CCB ICPMS_TW		1102	
133	LLCCV	LCVL5-161116	LCVLICPMS_TW		2511	
134	CCB	CCB5-161116	CCB ICPMS_TW		1103	
135	PB	MB-77903	MBLKICPMS_TSDOD1		4101	5
136	LCS_S	LCS-77903	LCS ICPMS_TSDOD1		4102	5
137	LCS_S	LCSD-77903	LCSDICPMS_TSDOD1		4103	5
138	CCB	RINSE	CCB ICPMS_TW		1101	
139	AllRef	1611044-01A	SAMPICPMS_TSDOD1		4104	5
140	SD	1611044-01A SD	SD ICPMS_TSDOD1		4105	25

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	Sample	1611028-18A	SAMPICPMS_TSDOD1		4106	5
142	Sample	1611028-19A	SAMPICPMS_TSDOD1		4107	5
143	Sample	1611028-20A	SAMPICPMS_TSDOD1		4108	5
144	Sample	1611028-21A	SAMPICPMS_TSDOD1		4109	5
145	Sample	1611028-22A	SAMPICPMS_TSDOD1		4110	5
146	Sample	1611028-23A	SAMPICPMS_TSDOD1		4111	5
147	Sample	1611028-24A	SAMPICPMS_TSDOD1		4112	5
148	Sample	1611028-25A	SAMPICPMS_TSDOD1		4201	5
149	Sample	1611044-02A	SAMPICPMS_TSDOD1		4202	5
150	PDS	1611044-01A PDS	PDS ICPMS_TSDOD1		4203	5
151	MS_S	1611044-01A MS	MS ICPMS_TSDOD1		4204	5
152	MS_S	1611044-01A MSD	MSD ICPMS_TSDOD1		4205	5
153	CCV	CCV6-161116	CCV ICPMS_TW		1207	
154	CCB	CCB6-161116	CCB ICPMS_TW		1102	
155	LLCCV	LCVL6-161116	LCVLICPMS_TW		2511	
156	CCB	CCB6-161116	CCB ICPMS_TW		1103	
157	Sample	1611044-03A	SAMPICPMS_TSDOD1		4206	5
158	Sample	1611044-04A	SAMPICPMS_TSDOD1		4207	5
159	Sample	1611044-05A	SAMPICPMS_TSDOD1		4208	5
160	Sample	1611044-06A	SAMPICPMS_TSDOD1		4209	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
161	Sample	1611044-07A	SAMPICPMS_TSDOD1		4210	5
162	Sample	1611044-08A	SAMPICPMS_TSDOD1		4211	5
163	Sample	1611044-09A	SAMPICPMS_TSDOD1		4212	5
164	Sample	1611044-10A	SAMPICPMS_TSDOD1		4301	5
165	Sample	1611044-11A	SAMPICPMS_TSDOD1		4302	5
166	Sample	1611044-12A	SAMPICPMS_TSDOD1		4303	5
167	CCV	CCV7-161116	CCV ICPMS_TW		1207	
168	CCB	CCB7-161116	CCB ICPMS_TW		1102	

Sample List

169	LLCCV	LCVL7-161116	LCVLICPMS_TW	2511	
170	CCB	CCB7-161116	CCB ICPMS_TW	1102	
171	PB	MB-77903	MBLKICPMS_TS	4101	5
172	LCS_S	LCS-77903	LCS ICPMS_TS	4102	5
173	LCS_S	LCSD-77903	LCSDICPMS_TS	4103	5
174	CCB	RINSE	CCB ICPMS_TW	1101	
175	AllRef	1611142-01A	SAMPICPMS_TS	4104	5
176	SD	1611142-01A SD	SD ICPMS_TS	4105	25
177	Sample	1611142-02A	SAMPICPMS_TS	4106	5
178	Sample	1611142-03A	SAMPICPMS_TS	4107	5
179	Sample	1611142-04A	SAMPICPMS_TS	4108	5
180	Sample	1611142-05A	SAMPICPMS_TS	4109	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
181	Sample	1611142-06A	SAMPICPMS_TS		4110	5
182	Sample	1611142-07A	SAMPICPMS_TS		4111	5
183	Sample	1611114-06B	SAMPICPMS_TS		4112	5
184	Sample	1611115-01A	SAMPICPMS_TS		4201	5
185	Sample	1611153-01B	SAMPICPMS_TS		4202	5
186	PDS	1611142-01A PDS	PDS ICPMS_TS		4203	5
187	MS_S	1611142-01A MS	MS ICPMS_TS		4204	5
188	MS_S	1611142-01A MSD	MSD ICPMS_TS		4205	5
189	CCV	CCV8-161116	CCV ICPMS_TW		1207	
190	CCB	CCB8-161116	CCB ICPMS_TW		1102	
191	LLCCV	LCVL8-161116	LCVLICPMS_TW		2511	
192	CCB	CCB8-161116	CCB ICPMS_TW		1102	
193	Sample	1611130-01B	SAMPICPMS_TS		4206	5
194	CCV	CCV9-161116	CCV ICPMS_TW		1207	
195	CCB	CCB9-161116	CCB ICPMS_TW		1102	
196	LLCCV	LCVL9-161116	LCVLICPMS_TW		2511	
197	CCB	CCB9-161116	CCB ICPMS_TW		1102	

Sample List

198	CCB	CCB9-161116	CCB ICPMS_TW		1102
199	CCB	CCB9-161116	CCB ICPMS_TW		1102
200	CCB	CCB9-161116	CCB ICPMS_TW		1102

#	Skip
181	
182	
183	
184	
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186	
187	
188	
189	
190	
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193	
194	
195	
196	
197	
198	
199	
200	

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
201	CCB	CCB9-161116	CCB ICPMS_TW		1103	
202	CCB	CCB9-161116	CCB ICPMS_TW		1103	
203	CCB	CCB9-161116	CCB ICPMS_TW		1103	
204	CCB	CCB9-161116	CCB ICPMS_TW		1103	

#	Skip
201	
202	
203	
204	

Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/14/2016 3:30:43 PM**
Digestion:
Prep End Date:

Prep Batch **77902** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List
Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-22A	Soil		1.09	50	50.000	1 of 1	
1611022-23A	Soil		1.08	50	50.000	1 of 1	
1611022-24A	Soil		1.08	50	50.000	1 of 1	
1611022-25A	Soil		1.08	50	50.000	1 of 1	
1611028-01A	Soil		1.12	50	50.000	1 of 1	
1611028-02A	Soil		1.02	50	50.000	1 of 1	
1611028-03A	Soil		1.02	50	50.000	1 of 1	
1611028-04A	Soil		1.08	50	50.000	1 of 1	
1611028-05A	Soil		1.13	50	50.000	1 of 1	
1611028-06A	Soil		1.05	50	50.000	1 of 1	
1611028-07A	Soil		1.07	50	50.000	1 of 1	
1611028-08A	Soil		1.14	50	50.000	1 of 1	
1611028-09A	Soil		1.05	50	50.000	1 of 1	
1611028-10A	Soil		1.14	50	50.000	of 3	
1611028-10A MS	Soil		1.08	50	50.000	of	
1611028-10A MSD	Soil		1.11	50	50.000	of	
1611028-11A	Soil		1.02	50	50.000	1 of 1	
1611028-12A	Soil		1.04	50	50.000	1 of 1	
1611028-14A	Soil		1.05	50	50.000	1 of 1	
1611028-15A	Soil		1.11	50	50.000	1 of 1	
1611028-16A	Soil		1.04	50	50.000	1 of 1	
1611028-17A	Soil		1.05	50	50.000	1 of 1	
LCS-77902	Soil		1	50	50.000	of	
LCSD-77902	Soil		1	50	50.000	of	
MB-77902	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

8:40-8:50
8:55-10:55
11:15-13:15
13:30-13:45

14/15/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/2/2016 12:20:00 PM**
Digestion: **Start: 11/2/2016 1:00:00 PM / Stop: 11/6/2016 9:20:00 AM**
Prep End Date: **11/6/2016 12:00:00 PM**

Prep Batch **77771** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-01A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-03A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-04A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-06A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611022-07A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-08A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-09A	Soil		0	0	#Num!	of 3	
SS							
1611022-10A	Soil		0	0	#Num!	1 of 1	
SS MS/MSD							
1611022-11A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611022-12A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-14A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/2/2016 12:20:00 PM**
Digestion: **Start: 11/2/2016 1:00:00 PM / Stop: 11/6/2016 9:20:00 AM**
Prep End Date: **11/6/2016 12:00:00 PM**

Prep Batch **77771** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-15A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-16A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-17A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611022-18A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-19A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611022-20A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-21A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-22A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-23A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611022-24A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611022-25A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-01A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-03A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-04A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-06A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-07A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-08A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-09A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-10A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1611028-11A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-12A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-14A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-15A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-16A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-17A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-18A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-19A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-20A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-21A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-22A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-23A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-24A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-25A	Soil		0	0	#Num!	1 of 1	
SS							

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26
TEST DATE:	11/15/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**	
PIPETTER LAB ID:	P-01, P-09	**WATER TEMP (°C):**	**21-23°C**
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998** (0.9980-0.9976)

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-01	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	5.00	4.9943	5.0043	100.09	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		4.9869	4.9969	99.94		
3		4.9999	5.0099	100.20		
AVERAGE (MEAN)		**4.994**	**5.004**	**100.07**		**0.131**
						PASS

PIPETTE ID: P-09	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	0.20	0.1992	0.1996	99.80	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.1990	0.1994	99.70		
3		0.1990	0.1994	99.70		
AVERAGE (MEAN)		**0.199**	**0.199**	**99.73**		**0.058**
						PASS

PIPETTE ID:	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1						RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2						
3						
AVERAGE (MEAN)						

11/15/16
Analyst / Date

11/18/2016
Review and Approved / Date

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	11/16/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**2.50**	2.5077	2.5027	**100.11**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		2.4916	2.4866	**99.46**		
3		2.4988	2.4938	**99.75**		
AVERAGE (MEAN)		**2.499**	**2.494**	**99.77**		**0.323**
						PASS

PIPETTE ID: P-21	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**1.00**	1.0003	0.9983	**99.83**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		1.0023	1.0003	**100.03**		
3		1.0015	0.9995	**99.95**		
AVERAGE (MEAN)		**1.001**	**0.999**	**99.94**		**0.101**
						PASS

PIPETTE ID: P-39	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.200**	0.1994	0.1990	**99.50**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1998	0.1994	**99.70**		
3		0.1992	0.1988	**99.40**		
AVERAGE (MEAN)		**0.199**	**0.199**	**99.53**		**0.153**
						PASS

11/16/16
Analyst / Date

11/18/2016
Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/14/2016 3:30:43 PM**
Digestion: **Start: 11/15/2016 8:40:00 AM / Stop: 11/15/2016 1:45:00 PM**
Prep End Date: **11/15/2016 3:00:12 PM**

Prep Batch **77902** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

- Thermometer #71
- Pipette#-P-09
- Pipette #P-01
- Hot Block #3
- Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-22A	Soil		1.09	50	45.872	1 of 1	
1611022-23A	Soil		1.08	50	46.296	1 of 1	
1611022-24A	Soil		1.08	50	46.296	1 of 1	
1611022-25A	Soil		1.08	50	46.296	1 of 1	
1611028-01A	Soil		1.12	50	44.643	1 of 1	
1611028-02A	Soil		1.02	50	49.020	1 of 1	
1611028-03A	Soil		1.02	50	49.020	1 of 1	
1611028-04A	Soil		1.08	50	46.296	1 of 1	
1611028-05A	Soil		1.13	50	44.248	1 of 1	
1611028-06A	Soil		1.05	50	47.619	1 of 1	
1611028-07A	Soil		1.07	50	46.729	1 of 1	
1611028-08A	Soil		1.14	50	43.860	1 of 1	
1611028-09A	Soil		1.05	50	47.619	1 of 1	
1611028-10A	Soil		1.14	50	43.860	of 3	
1611028-10A MS	Soil		1.08	50	46.296	of	
1611028-10A MSD	Soil		1.11	50	45.045	of	
1611028-10A PDS	Soil		1.14	50	43.860	of	
1611028-10A SD	Soil		1.14	50	43.860	of	
1611028-11A	Soil		1.02	50	49.020	1 of 1	
1611028-12A	Soil		1.04	50	48.077	1 of 1	
1611028-14A	Soil		1.05	50	47.619	1 of 1	
1611028-15A	Soil		1.11	50	45.045	1 of 1	
1611028-16A	Soil		1.04	50	48.077	1 of 1	
1611028-17A	Soil		1.05	50	47.619	1 of 1	
LCS-77902	Soil		1	50	50.000	of	
LCSD-77902	Soil		1	50	50.000	of	
MB-77902	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/14/2016 3:32:19 PM**
Digestion:
Prep End Date:

Prep Batch **77903** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List
Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		1.01	50	50.000	1 of 1	
1611028-19A	Soil		1.07	50	50.000	1 of 1	
1611028-20A	Soil		1.09	50	50.000	1 of 1	
1611028-21A	Soil		1.06	50	50.000	1 of 1	
1611028-22A	Soil		1.03	50	50.000	1 of 1	
1611028-23A	Soil		1.06	50	50.000	1 of 1	
1611028-24A	Soil		1.02	50	50.000	1 of 1	
1611028-25A	Soil		1.02	50	50.000	1 of 1	
1611044-01A	Soil		1.03	50	50.000	of 3	
1611044-01A MS	Soil		1.02	50	50.000	of	
1611044-01A MSD	Soil		1.04	50	50.000	of	
1611044-02A	Soil		1.02	50	50.000	1 of 1	
1611044-03A	Soil		1.02	50	50.000	1 of 1	
1611044-04A	Soil		1.12	50	50.000	1 of 1	
1611044-05A	Soil		1.01	50	50.000	1 of 1	
1611044-06A	Soil		1.10	50	50.000	1 of 1	
1611044-07A	Soil		1.03	50	50.000	1 of 1	
1611044-08A	Soil		1.11	50	50.000	1 of 1	
1611044-09A	Soil		1.03	50	50.000	1 of 1	
1611044-10A	Soil		1.09	50	50.000	1 of 1	
1611044-11A	Soil		1.03	50	50.000	1 of 1	
1611044-12A	Soil		1.07	50	50.000	1 of 1	
LCS-77903	Soil		1	50	50.000	of	
LCSD-77903	Soil		1	50	50.000	of	
MB-77903	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. D
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

8:40 - 8:50
8:55 - 10:55
11:15 - 13:15
13:30 - 13:45

11/15/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-01A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-03A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-04A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-06A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-07A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-08A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-09A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-10A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1611028-11A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-12A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-14A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-15A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-16A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-17A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-18A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-19A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-20A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-21A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-22A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-23A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-24A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-25A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/4/2016 10:00:00 AM**
Digestion: **Start: 11/4/2016 10:20:00 AM / Stop: 11/9/2016 9:00:00 AM**
Prep End Date: **11/9/2016 1:00:00 PM**

Prep Batch **77804** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-01A	Soil		0	0	#Num!	of 3	
	SS MS/MSD						
1611044-02A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-03A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-04A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-05A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-06A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-07A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-08A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-09A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-10A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-11A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-12A	Soil		0	0	#Num!	1 of 1	
	SS						

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/14/2016 3:32:19 PM**
Digestion: **Start: 11/15/2016 8:40:00 AM / Stop: 11/15/2016 1:45:00 PM**
Prep End Date: **11/15/2016 3:01:57 PM**

Prep Batch **77903** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		1.01	50	49.505	1 of 1	
1611028-19A	Soil		1.07	50	46.729	1 of 1	
1611028-20A	Soil		1.09	50	45.872	1 of 1	
1611028-21A	Soil		1.06	50	47.170	1 of 1	
1611028-22A	Soil		1.03	50	48.544	1 of 1	
1611028-23A	Soil		1.06	50	47.170	1 of 1	
1611028-24A	Soil		1.02	50	49.020	1 of 1	
1611028-25A	Soil		1.02	50	49.020	1 of 1	
1611044-01A	Soil		1.03	50	48.544	of 3	
1611044-01A MS	Soil		1.02	50	49.020	of	
1611044-01A MSD	Soil		1.04	50	48.077	of	
1611044-01A PDS	Soil		1.03	50	48.544	of	
1611044-01A SD	Soil		1.03	50	48.544	of	
1611044-02A	Soil		1.02	50	49.020	1 of 1	
1611044-03A	Soil		1.02	50	49.020	1 of 1	
1611044-04A	Soil		1.12	50	44.643	1 of 1	
1611044-05A	Soil		1.01	50	49.505	1 of 1	
1611044-06A	Soil		1.1	50	45.455	1 of 1	
1611044-07A	Soil		1.03	50	48.544	1 of 1	
1611044-08A	Soil		1.11	50	45.045	1 of 1	
1611044-09A	Soil		1.03	50	48.544	1 of 1	
1611044-10A	Soil		1.09	50	45.872	1 of 1	
1611044-11A	Soil		1.03	50	48.544	1 of 1	
1611044-12A	Soil		1.07	50	46.729	1 of 1	
LCS-77903	Soil		1	50	50.000	of	
LCSD-77903	Soil		1	50	50.000	of	
MB-77903	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

Calibration Summary Report

Date Acquired 11/16/2016 10:34
Data Batch 161116.b

Level	Calibration File Name
1	012CALB.d
2	013CALS.d
3	014CALS.d
4	015CALS.d
5	016CALS.d
6	017CALS.d
7	018CALS.d
8	019CALS.d

Calibration Table

Ele	Corr Coef	Curve Equation
As	1.0000	y = 0.0011 * x + 3.5702E-004
Be	1.0000	y = 4.5756E-005 * x + 0.0000E+000
B	1.0000	y = 2.0296E-005 * x + 9.0650E-005
Na	0.9999	y = 7.9095E-004 * x + 0.0602
Mg	1.0000	y = 4.2309E-004 * x + 6.4007E-004
Al	1.0000	y = 1.7079E-004 * x + 0.0017
K	1.0000	y = 4.1812E-004 * x + 0.0590
Ca	1.0000	y = 2.2444E-005 * x + 4.9157E-004
Ti	1.0000	y = 1.3940E-004 * x + 7.0437E-006
V	1.0000	y = 0.0041 * x + 0.0035
Cr	1.0000	y = 0.0047 * x + 0.0013
Mn	1.0000	y = 0.0030 * x + 2.1304E-004
Fe	1.0000	y = 0.0041 * x + 0.0081
Co	0.9999	y = 0.0111 * x + 1.3587E-004
Ni	0.9999	y = 0.0029 * x + 4.5627E-004
Cu	0.9999	y = 0.0080 * x + 0.0026
Zn	0.9999	y = 0.0014 * x + 0.0012
Se	0.9999	y = 7.8955E-005 * x + 1.4362E-004
Sr	1.0000	y = 6.8507E-004 * x + 7.6599E-005
Mo	1.0000	y = 4.8588E-004 * x + 1.1895E-005
Ag	1.0000	y = 0.0015 * x + 1.0019E-005
Cd	1.0000	y = 2.2660E-004 * x + 1.3057E-006
Sn	1.0000	y = 5.1960E-004 * x + 1.1420E-004
Sb	1.0000	y = 7.4811E-004 * x + 6.0525E-005
Tl	1.0000	y = 0.0016 * x + 6.2086E-006
Ba	1.0000	y = 2.5419E-004 * x + 7.0977E-006
Pb	1.0000	y = 0.0021 * x + 1.2273E-004
Li	1.0000	y = 3.6944E-005 * x + 1.6630E-005

Calibration Summary Report

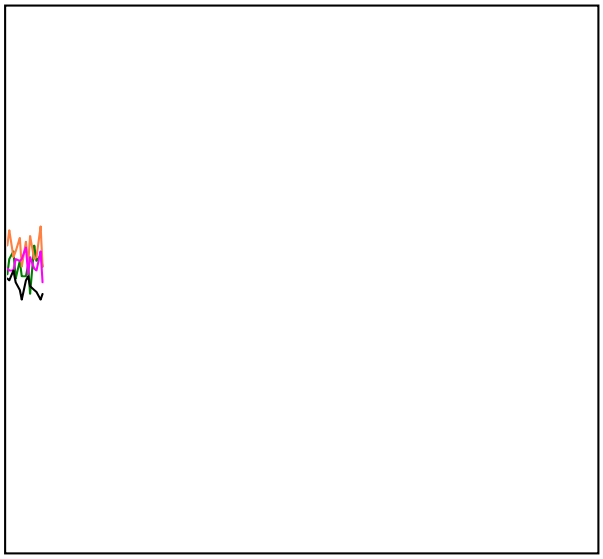
Level 7 Cal

Ele	Conc	Calc	%Rec
As	500	512.37	102
Be	500	510.13	102
B	500	497.98	100
Na	10000	10215.56	102
Mg	10000	9910.04	99
Al	10000	9977.80	100
K	10000	9948.16	99
Ca	10000	9532.78	95
Ti	500	504.72	101
V	500	501.44	100
Cr	500	504.01	101
Mn	500	495.48	99
Fe	10000	9973.55	100
Co	500	523.32	105
Ni	500	520.72	104
Cu	500	523.47	105
Zn	500	518.11	104
Se	500	519.79	104
Sr	500	500.82	100
Mo	500	508.71	102
Ag	500	498.46	100
Cd	500	511.42	102
Sn	500	499.06	100
Sb	500	498.48	100
Tl	500	507.44	101
Ba	500	507.08	101
Pb	500	503.90	101

Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1996.04	100
Be	2000	1996.38	100
B	2000	1999.86	100
Na	25000	24896.71	100
Mg	25000	25036.62	100
K	25000	25009.82	100
Ca	25000	25238.14	99
Ti	2000	1998.24	100
V	2000	1999.14	100
Cr	2000	1998.02	100
Mn	2000	2000.57	100
Co	2000	1992.22	100
Ni	2000	1992.94	100
Cu	2000	1991.83	100
Zn	2000	1993.75	100
Se	2000	1993.77	100
Sr	2000	1998.93	100
Mo	2000	1996.80	100
Cd	2000	1995.80	100
Sn	2000	1999.62	100
Tl	2000	1997.54	100
Ba	2000	1997.20	100
Pb	2000	1997.81	100
Li	2000	1999.71	100

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	196	214.0	6.49
59	2000	1047	1046.2	4.62
89	2000	1045	1110.2	4.63
140	5000	2469	2634.2	3.35
205	5000	2368	2437.3	3.40
156/140	1	0.081 %	0.235 %	43.94
51	500	242	245.6	7.85
56	5000	3651	3592.1	2.93
75	50	7	11.9	34.83
78	20	11	10.8	42.73

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.53
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.4
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	0.2		

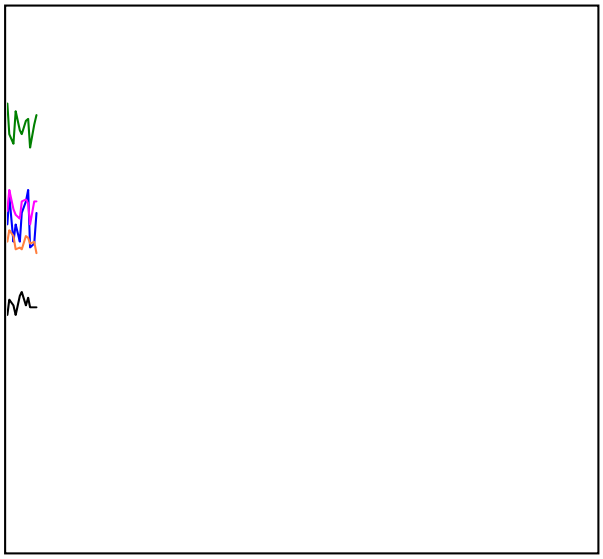
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.51E+2	Pa	Carrier Gas(BP)	1.29E+2	kPa
Analyzer Press	1.50E-4	Pa	Reflected Power	4	W
Forward Power	1550	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	311	302.8	6.27
59	2000	1602	1565.3	3.19
89	5000	2737	2839.3	2.30
140	5000	3213	3165.0	2.90
205	5000	2248	2272.6	2.96
156/140	2	0.654 %	0.814 %	29.83
51	50000	34385	33801.6	1.85
56	200000	146698	148876.5	2.22
75	10000	6042	5976.8	1.85
78	2000	1779	1751.8	3.73

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.53
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.4
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	7.0		

Cell Parameters

Use Gas	false	3rd Gas Flow	0
He Flow	4.2	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.51E+2	Pa	Carrier Gas(BP)	1.28E+2	kPa
Analyzer Press	1.00E-4	Pa	Reflected Power	4	W
Forward Power	1548	W			

US EPA Tune Check Sample Report

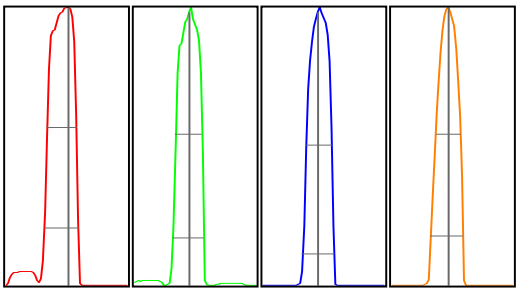
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	601460	0.88	5.00	
59	1019240	0.29	5.00	
115	1676786	0.45	5.00	
205	1517024	1.13	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	593673	598297	604307	605827	605194
59	1017220	1023688	1020133	1018952	1016207
115	1677958	1670812	1668488	1678961	1687712
205	1544562	1516803	1517163	1507903	1498688

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	87802	7.05	6.9 - 7.1		0.823	0.850	
59	166666	58.90	58.9 - 59.1		0.747	0.850	
115	288246	114.90	114.9 - 115.1	[F]	0.754	0.850	
205	263240	204.95	204.9 - 205.1		0.775	0.850	

X% = 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Nebulizer Pump	0.10	rps
RF Matching	1.90	V	S/C Temp	2	℃
Smpl Depth	8.0	mm	Gas Switch	Dilution Gas	
Carrier Gas	0.53	L/min	Makeup/Dilution Gas	0.52	L/min
Option Gas	0.0	%			

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Cell Entrance	-40	V
Extract 2	-200.0	V	Cell Exit	-60	V
Omega Bias	-100	V	Deflect	7.0	V
Omega Lens	8.4	V	Plate Bias	-60	V

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	200	V
H2 Flow	0.0	mL/min	Energy Discrimination	3.0	V
3rd Gas Flow	0	%			

P/A Factor Tuning Report

Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 11/16/2016 10:34:39

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1917 V
PulseHV: 1023 V

Acquired: 11/16/2016 10:00:51

Mass[u]	Element	P/A Factor
6	Li	0.100093
9	Be	0.112123
23	Na	0.119567
24	Mg	0.124271
27	Al	0.128188
39	K	0.129434
45	Sc	0.131520
48		0.132301
51	V	0.134015
52	Cr	0.137565
55	Mn	0.139173
59	Co	0.141567
60	Ni	0.142178
63	Cu	0.143668
66	Zn	0.145239
72		0.143867
74	Ge	0.144558
75	As	0.144007
88	Sr	0.144961
89		0.144543
95		0.143026
97	Mo	0.143242
98	Mo	0.144318
99	[Mo]	0.145279
101		0.146225
105		0.149204
111	Cd	0.150438
114	Cd	0.150721
115	In	0.150763
118	Sn	0.150348
121		0.149772
123	Sb	0.149915
135	Ba	0.148881
138		0.151128
175		0.157134
193		0.156588
205	Tl	0.157829
206	[Pb]	0.157479
207	[Pb]	0.157648
208	Pb	0.157894
209	Bi	0.158567
232		0.158277
238	U	0.158746
44	Ca	Signal too low
78	Se	Signal too low
107	Ag	Signal too low
172		Signal too low

Calibration Blank Report

Date Acquired	11/16/2016 10:34	Sample Name	BLANK STD 1
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	21	40.69
9	Be	45	0	#DIV/0!
11	B	45	114	19.82
23	Na	45	75936	0.33
24	Mg	45	808	8.70
27	Al	45	2156	4.88
39	K	45	74433	1.30
44	Ca	45	624	9.08
47	Ti	45	9	21.63
51	V	45	4466	2.64
52	Cr	45	1686	8.00
55	Mn	45	269	14.53
56	Fe	45	10192	4.90
59	Co	72	109	24.75
60	Ni	72	366	13.10
63	Cu	72	2052	3.44
66	Zn	72	949	12.13
75	As	72	286	7.92
78	Se	72	115	9.19
88	Sr	115	587	14.51
95	Mo	115	91	31.96
107	Ag	115	77	26.09
111	Cd	115	10	0.00
118	Sn	115	874	5.82
121	Sb	115	463	10.60
137	Ba	115	54	34.82
205	Tl	209	98	36.45
208	Pb	209	1050	2.40

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1262119	0.32
72	Ge	801025	0.50
115	In	7659162	0.66
209	Bi	15802225	1.35

Calibration Standard Report

Date Acquired	11/16/2016 10:36	Sample Name	L2-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	53	10.66
9	Be	45	63	9.65
11	B	45	120	17.35
23	Na	45	103481	1.91
24	Mg	45	12219	1.05
27	Al	45	6592	2.04
39	K	45	86913	0.01
44	Ca	45	1369	3.13
47	Ti	45	186	7.26
51	V	45	9469	1.37
52	Cr	45	7804	4.30
55	Mn	45	4182	1.41
56	Fe	45	112851	0.80
59	Co	72	9475	3.13
60	Ni	72	2877	4.10
63	Cu	72	11634	1.11
66	Zn	72	2265	1.47
75	As	72	1212	4.34
78	Se	72	193	12.09
88	Sr	115	5772	3.20
95	Mo	115	3704	3.43
107	Ag	115	11042	2.12
111	Cd	115	1785	7.67
118	Sn	115	4926	1.77
121	Sb	115	6184	3.25
137	Ba	115	1969	5.85
205	Tl	209	25211	2.15
208	Pb	209	18551	0.22

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1249815	0.26	1262119	99.03	70	120	
72	Ge	788961	0.95	801025	98.49	70	120	
115	In	7569652	2.05	7659162	98.83	70	120	
209	Bi	15398153	0.53	15802225	97.44	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:38	Sample Name	L-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	499	2.39
9	Be	45	622	5.44
11	B	45	320	11.74
23	Na	45	277274	0.51
24	Mg	45	107600	1.06
27	Al	45	44910	1.06
39	K	45	178944	0.48
44	Ca	45	6693	2.07
47	Ti	45	1852	1.50
51	V	45	56410	1.30
52	Cr	45	62585	2.29
55	Mn	45	38571	2.82
56	Fe	45	1032928	1.78
59	Co	72	92883	0.36
60	Ni	72	24742	1.34
63	Cu	72	74233	1.00
66	Zn	72	12775	2.37
75	As	72	9288	0.67
78	Se	72	791	8.01
88	Sr	115	51825	1.44
95	Mo	115	35698	0.49
107	Ag	115	110342	1.53
111	Cd	115	17257	3.69
118	Sn	115	39330	0.94
121	Sb	115	56665	0.76
137	Ba	115	19062	1.22
205	Tl	209	244870	0.11
208	Pb	209	178137	0.14

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1246249	0.44	1262119	98.74	70	120	
72	Ge	784663	0.52	801025	97.96	70	120	
115	In	7479861	2.15	7659162	97.66	70	120	
209	Bi	15688204	1.40	15802225	99.28	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:40	Sample Name	10X-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2436	3.08
9	Be	45	2923	1.05
11	B	45	1471	8.98
23	Na	45	1090379	0.07
24	Mg	45	534666	0.62
27	Al	45	218114	1.26
39	K	45	601412	1.20
44	Ca	45	29937	0.38
47	Ti	45	8868	2.08
51	V	45	260017	0.31
52	Cr	45	305088	1.21
55	Mn	45	193501	0.54
56	Fe	45	5160147	0.48
59	Co	72	460615	0.59
60	Ni	72	122846	0.37
63	Cu	72	336496	0.72
66	Zn	72	59576	1.34
75	As	72	44851	1.23
78	Se	72	3198	1.36
88	Sr	115	256980	0.54
95	Mo	115	182952	1.58
107	Ag	115	549499	1.21
111	Cd	115	87487	0.93
118	Sn	115	195572	0.47
121	Sb	115	281386	0.18
137	Ba	115	95633	1.90
205	Tl	209	1249106	0.98
208	Pb	209	889136	0.43

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1246141	0.30	1262119	98.73	70	120	
72	Ge	782929	0.78	801025	97.74	70	120	
115	In	7455783	1.90	7659162	97.34	70	120	
209	Bi	15316808	1.27	15802225	96.93	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:42	Sample Name	5X-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	4636	2.10
9	Be	45	5940	0.29
11	B	45	2648	2.47
23	Na	45	2080001	0.66
24	Mg	45	1060982	0.81
27	Al	45	431629	0.30
39	K	45	1129881	0.27
44	Ca	45	59650	0.78
47	Ti	45	18068	1.29
51	V	45	517502	0.73
52	Cr	45	604506	0.36
55	Mn	45	382614	0.60
56	Fe	45	10384585	1.65
59	Co	72	919380	0.28
60	Ni	72	242817	0.43
63	Cu	72	667589	0.99
66	Zn	72	119160	1.16
75	As	72	89072	1.06
78	Se	72	6634	1.22
88	Sr	115	516081	1.10
95	Mo	115	363725	0.82
107	Ag	115	1099804	0.44
111	Cd	115	173516	0.51
118	Sn	115	389013	0.50
121	Sb	115	563111	1.38
137	Ba	115	191497	0.88
205	Tl	209	2508210	0.23
208	Pb	209	1789787	0.64

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1259848	0.82	1262119	99.82	70	120	
72	Ge	780849	0.76	801025	97.48	70	120	
115	In	7448409	1.77	7659162	97.25	70	120	
209	Bi	15641797	1.33	15802225	98.98	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:44	Sample Name	2X-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	11494	0.44
9	Be	45	14558	0.58
11	B	45	6511	2.21
23	Na	45	5039080	1.82
24	Mg	45	2616806	0.44
27	Al	45	1067450	0.88
39	K	45	2684960	1.03
44	Ca	45	146453	0.56
47	Ti	45	43681	0.94
51	V	45	1285064	0.36
52	Cr	45	1504347	0.90
55	Mn	45	956137	0.67
56	Fe	45	25666351	0.72
59	Co	72	2273614	0.57
60	Ni	72	596805	0.73
63	Cu	72	1650247	0.46
66	Zn	72	292001	0.14
75	As	72	220278	0.98
78	Se	72	15975	1.26
88	Sr	115	1292532	1.46
95	Mo	115	921475	0.34
107	Ag	115	2729186	0.15
111	Cd	115	432050	0.66
118	Sn	115	974230	0.33
121	Sb	115	1408447	0.17
137	Ba	115	481647	0.63
205	Tl	209	6330122	0.49
208	Pb	209	4505730	1.35

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1236961	0.33	1262119	98.01	70	120	
72	Ge	778871	0.35	801025	97.23	70	120	
115	In	7466607	0.83	7659162	97.49	70	120	
209	Bi	15285064	1.55	15802225	96.73	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:46	Sample Name	H-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	23033	1.60
9	Be	45	29048	1.50
11	B	45	12693	3.65
23	Na	45	10130691	1.87
24	Mg	45	5218901	0.81
27	Al	45	2122957	1.82
39	K	45	5250230	1.88
44	Ca	45	292587	1.94
47	Ti	45	87574	1.50
51	V	45	2548294	0.72
52	Cr	45	2966126	0.44
55	Mn	45	1874077	0.44
56	Fe	45	50991826	1.25
59	Co	72	4485291	0.61
60	Ni	72	1174876	0.70
63	Cu	72	3225706	0.83
66	Zn	72	572969	0.33
75	As	72	437103	0.36
78	Se	72	31758	0.52
88	Sr	115	2573639	1.05
95	Mo	115	1853853	0.22
107	Ag	115	5488460	0.70
111	Cd	115	869182	0.39
118	Sn	115	1945571	0.59
121	Sb	115	2828318	1.16
137	Ba	115	966682	1.07
205	Tl	209	12734625	1.04
208	Pb	209	8861030	0.55

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1244514	0.59	1262119	98.61	70	120	
72	Ge	771151	0.39	801025	96.27	70	120	
115	In	7580845	1.33	7659162	98.98	70	120	
209	Bi	15471243	1.74	15802225	97.91	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:48	Sample Name	H2-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	90440	0.69
9	Be	45	111803	0.89
11	B	45	49791	1.27
23	Na	45	24176108	1.62
24	Mg	45	12965396	0.17
27	Al	45	2327	13.04
39	K	45	12871871	2.38
44	Ca	45	760771	0.37
47	Ti	45	340948	1.06
51	V	45	9978883	1.58
52	Cr	45	11559908	2.68
55	Mn	45	7440641	0.63
56	Fe	45	1608451	0.56
59	Co	72	17156547	1.15
60	Ni	72	4517142	0.68
63	Cu	72	12327513	0.82
66	Zn	72	2212811	0.93
75	As	72	1710209	0.65
78	Se	72	122086	0.80
88	Sr	115	10114978	4.39
95	Mo	115	7164698	1.47
107	Ag	115	2591	24.71
111	Cd	115	3339976	1.25
118	Sn	115	7673875	1.51
121	Sb	115	5699	8.96
137	Ba	115	3749114	0.82
205	Tl	209	49617307	1.05
208	Pb	209	34769086	2.12

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1223927	0.57	1262119	96.97	70	120	
72	Ge	774846	0.30	801025	96.73	70	120	
115	In	7378190	0.71	7659162	96.33	70	120	
209	Bi	15308743	0.89	15802225	96.88	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	11/16/2016 10:56	Sample Name	ICSA-161116
Data Batch	161116.b	Comment	ICSAICPMS_TW
Data File Name	023ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.079	4	58.1	1.2	0.8	
11	B	18.381	556	12.0	30	30	
51	V	-0.243	3051	7.1	10	10	
52	Cr	0.819	6237	4.6	8	5	
55	Mn	0.486	2026	4.0	8	10	
59	Co	1.264	10651	0.8	8	10	
60	Ni	0.463	1359	3.7	8	10	
63	Cu	2.363	16101	2.7	8	10	
66	Zn	2.510	3589	6.9	10	5	
75	As	0.400	601	5.0	4	5	
78	Se	0.043	110	5.2	2	5	
88	Sr	1.070	5689	5.0	10	10	
107	Ag	0.107	1175	2.9	0.8	2	
111	Cd	0.643	1032	8.4	1.2	1	
118	Sn	0.836	3863	6.1	10	10	
121	Sb	0.108	1002	4.7	4	2.5	
137	Ba	0.464	878	1.6	8	10	
205	Tl	0.088	2135	7.7	4	1.5	
208	Pb	0.459	8425	1.8	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1197965	0.11	1262119	94.92	70	120	
72	Ge	751139	0.24	801025	93.77	70	120	
115	In	7121246	0.74	7659162	92.98	70	120	
209	Bi	14335552	1.90	15802225	90.72	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	11/16/2016 10:58	Sample Name	ICSAB-161116
Data Batch	161116.b	Comment	ICSBICPMS_TW
Data File Name	024ICSB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
51	V	45	38.263	190433	1.18	40	95.7	80	120	
52	Cr	45	20.332	116313	1.75	20	101.7	80	120	
55	Mn	45	19.230	70014	1.00	20	96.1	80	120	
59	Co	72	39.132	326214	0.83	40	97.8	80	120	
60	Ni	72	37.230	81999	1.51	40	93.1	80	120	
63	Cu	72	21.247	129154	0.92	20	106.2	80	120	
66	Zn	72	21.941	24443	1.48	20	109.7	80	120	
75	As	72	19.601	16518	1.54	20	98.0	80	120	
78	Se	72	19.229	1246	1.38	20	96.1	80	120	
107	Ag	115	19.047	193401	0.21	20	95.2	80	120	
111	Cd	115	10.024	15714	1.76	10	100.2	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1193784	0.18	1262119	94.59	70	120	
72	Ge	749851	0.75	801025	93.61	70	120	
115	In	7014400	0.39	7659162	91.58	70	120	
209	Bi	14282886	1.79	15802225	90.39	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	11/16/2016 11:07	Sample Name	ICV-161116
Data Batch	161116.b	Comment	ICV ICPMS_TW
Data File Name	028_ICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	96.017	4483	3.39	100	96.0	90	110	
9	Be	45	102.773	5915	1.25	100	102.8	90	110	
11	B	45	101.173	2697	1.72	100	101.2	90	110	
23	Na	45	2511.408	2574106	0.73	2500	100.5	90	110	
24	Mg	45	2460.567	1310247	0.57	2500	98.4	90	110	
27	Al	45	2476.200	534058	1.27	2500	99.0	90	110	
39	K	45	2485.304	1381250	0.76	2500	99.4	90	110	
44	Ca	45	2269.808	70892	1.79	2500	90.8	90	110	
47	Ti	45	100.023	17546	1.10	100	100.0	90	110	
51	V	45	101.199	523357	0.23	100	101.2	90	110	
52	Cr	45	105.626	629603	0.42	100	105.6	90	110	
55	Mn	45	99.548	380745	1.01	100	99.5	90	110	
56	Fe	45	2605.521	13471301	1.67	2500	104.2	90	110	
59	Co	72	105.825	926022	0.54	100	105.8	90	110	
60	Ni	72	104.413	240790	0.46	100	104.4	90	110	
63	Cu	72	104.365	658186	0.63	100	104.4	90	110	
66	Zn	72	103.821	117961	0.59	100	103.8	90	110	
75	As	72	100.769	87987	0.36	100	100.8	90	110	
78	Se	72	101.312	6410	1.58	100	101.3	90	110	
88	Sr	115	98.854	517738	0.14	100	98.9	90	110	
95	Mo	115	97.799	362976	0.29	100	97.8	90	110	
107	Ag	115	100.269	1124341	0.86	100	100.3	90	110	
111	Cd	115	100.940	174683	0.09	100	100.9	90	110	
118	Sn	115	99.700	396502	0.48	100	99.7	90	110	
121	Sb	115	100.328	580134	0.96	100	100.3	90	110	
137	Ba	115	101.080	196259	0.27	100	101.1	90	110	
205	Tl	209	98.270	2504189	0.48	100	98.3	90	110	
208	Pb	209	100.842	1801419	0.80	100	100.8	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1257944	1.12	1262119	99.67	70	120	
72	Ge	787304	0.94	801025	98.29	70	120	
115	In	7744751	2.40	7659162	101.12	70	120	
209	Bi	15707190	1.39	15802225	99.40	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 11:14	Sample Name	LCVL-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	031LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.847	475	1.91	1	984.7	70	130	Fail
9	Be	45	1.126	64	10.58	1	112.6	70	130	
11	B	45	26.256	778	7.07	20	131.3	70	130	Fail
23	Na	45	106.528	180204	1.24	100	106.5	70	130	
24	Mg	45	100.109	53647	1.34	100	100.1	70	130	
27	Al	45	100.089	23460	2.54	100	100.1	70	130	
39	K	45	95.117	123205	0.57	100	95.1	70	130	
44	Ca	45	98.755	3649	2.29	100	98.8	70	130	
47	Ti	45	4.887	859	3.50	5	97.7	70	130	
51	V	45	0.866	8820	4.01	1	86.6	70	130	
52	Cr	45	5.120	31858	0.81	5	102.4	70	130	
55	Mn	45	5.287	20311	2.14	5	105.7	70	130	
56	Fe	45	102.199	533817	0.47	100	102.2	70	130	
59	Co	72	5.319	46377	1.26	5	106.4	70	130	
60	Ni	72	5.254	12387	1.88	5	105.1	70	130	
63	Cu	72	5.389	35691	0.33	5	107.8	70	130	
66	Zn	72	5.129	6676	1.54	5	102.6	70	130	
75	As	72	5.176	4759	1.87	5	103.5	70	130	
78	Se	72	5.573	457	2.24	5	111.5	70	130	
88	Sr	115	5.090	26746	1.14	5	101.8	70	130	
95	Mo	115	5.128	18788	1.68	5	102.6	70	130	
107	Ag	115	2.031	22453	1.34	2	101.6	70	130	
111	Cd	115	1.002	1713	5.15	1	100.2	70	130	
118	Sn	115	5.344	21705	0.56	5	106.9	70	130	
121	Sb	115	2.018	11915	0.99	2	100.9	70	130	
137	Ba	115	5.144	9865	0.80	5	102.9	70	130	
205	Tl	209	0.980	25274	1.71	1	98.0	70	130	
208	Pb	209	1.097	20802	1.82	1	109.7	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1247713	0.55	1262119	98.86	70	120	
72	Ge	782785	0.36	801025	97.72	70	120	
115	In	7613232	0.85	7659162	99.40	70	120	
209	Bi	15835545	0.87	15802225	100.21	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	11/16/2016 11:25	Sample Name	ICB-161116
Data Batch	161116.b	Comment	ICB ICPMS_TW
Data File Name	036_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.219	11	42.3	2	5	
9	Be	45	0.018	1	173.2	0.4	0.3	
11	B	45	3.101	192	3.6	10	10	
23	Na	45	0.437	75728	1.3	50	100	
24	Mg	45	-0.739	410	18.6	50	100	
27	Al	45	8.621	3980	5.4	50	10	
39	K	45	-4.099	71663	1.5	50	100	
44	Ca	45	-0.561	602	11.4	50	100	
47	Ti	45	-0.025	4	43.4	4	3	
51	V	45	-0.165	3589	2.7	4	3	
52	Cr	45	-0.064	1290	5.0	2	2	
55	Mn	45	-0.017	202	17.2	2	3	
56	Fe	45	4.636	33938	1.0	50	50	
59	Co	72	-0.001	96	10.7	2	3	
60	Ni	72	-0.077	183	28.6	2	3	
63	Cu	72	-0.058	1668	9.5	2	2	
66	Zn	72	14.692	17666	1.0	4	2	FailAq FailSoil
75	As	72	-0.076	217	4.8	2	2	
78	Se	72	0.498	145	5.1	1	2	
88	Sr	115	0.000	581	9.3	4	3	
95	Mo	115	0.067	334	17.0	2	2	
107	Ag	115	0.006	138	20.1	0.4	1	
111	Cd	115	-0.001	9	57.3	0.4	0.3	
118	Sn	115	0.109	1288	9.5	4	3	
121	Sb	115	-0.027	307	10.0	2	0.8	
137	Ba	115	-0.008	38	13.5	2	3	
205	Tl	209	-0.001	84	41.5	2	0.5	
208	Pb	209	0.055	2031	1.9	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1251513	0.54	1262119	99.16	70	120	
72	Ge	795049	0.52	801025	99.25	70	120	
115	In	7578172	1.09	7659162	98.94	70	120	
209	Bi	15770829	1.03	15802225	99.80	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 13:23	Sample Name	CCV3-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	094_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	209.068	8911	1.85	200	104.5	90	110	
9	Be	45	215.671	11361	1.11	200	107.8	90	110	
11	B	45	241.041	5738	2.76	200	120.5	90	110	Fail
23	Na	45	5163.609	4771642	0.80	5000	103.3	90	110	
24	Mg	45	5113.074	2491439	0.22	5000	102.3	90	110	
27	Al	45	5454.501	1074489	0.16	5000	109.1	90	110	
39	K	45	5147.905	2546184	0.80	5000	103.0	90	110	
44	Ca	45	4848.745	137964	1.73	5000	97.0	90	110	
47	Ti	45	203.528	32675	0.62	200	101.8	90	110	
51	V	45	205.337	967854	0.91	200	102.7	90	110	
52	Cr	45	208.836	1137958	0.65	200	104.4	90	110	
55	Mn	45	204.329	715140	0.46	200	102.2	90	110	
56	Fe	45	5183.222	24522039	1.07	5000	103.7	90	110	
59	Co	72	212.337	1724327	0.64	200	106.2	90	110	
60	Ni	72	211.749	452857	1.27	200	105.9	90	110	
63	Cu	72	213.218	1245973	0.70	200	106.6	90	110	
66	Zn	72	213.245	223941	0.28	200	106.6	90	110	
75	As	72	211.311	170956	0.99	200	105.7	90	110	
78	Se	72	208.270	12120	1.15	200	104.1	90	110	
88	Sr	115	200.788	978689	0.94	200	100.4	90	110	
95	Mo	115	203.170	702036	0.64	200	101.6	90	110	
107	Ag	115	200.533	2093646	0.57	200	100.3	90	110	
111	Cd	115	206.672	333032	0.54	200	103.3	90	110	
118	Sn	115	202.185	747855	0.44	200	101.1	90	110	
121	Sb	115	206.573	1111632	0.73	200	103.3	90	110	
137	Ba	115	204.851	370332	0.34	200	102.4	90	110	
205	Tl	209	199.087	4844578	0.32	200	99.5	90	110	
208	Pb	209	204.360	3484947	0.48	200	102.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1151377	0.78	1262119	91.23	70	120	
72	Ge	730635	0.47	801025	91.21	70	120	
115	In	7203753	0.79	7659162	94.05	70	120	
209	Bi	14998352	1.16	15802225	94.91	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 14:01	Sample Name	LCVL3-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	096LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.427	460	5.18	1	1042.7	70	130	Fail
9	Be	45	0.980	51	25.72	1	98.0	70	130	
11	B	45	33.911	892	2.54	20	169.6	70	130	Fail
23	Na	45	110.077	168621	0.18	100	110.1	70	130	
24	Mg	45	100.418	49391	1.52	100	100.4	70	130	
27	Al	45	103.073	22116	1.24	100	103.1	70	130	
39	K	45	106.152	118374	0.49	100	106.2	70	130	
44	Ca	45	99.198	3363	2.64	100	99.2	70	130	
47	Ti	45	5.430	874	8.43	5	108.6	70	130	
51	V	45	0.918	8338	1.74	1	91.8	70	130	
52	Cr	45	5.179	29559	1.16	5	103.6	70	130	
55	Mn	45	5.440	19177	3.74	5	108.8	70	130	
56	Fe	45	102.906	493340	1.06	100	102.9	70	130	
59	Co	72	5.220	42838	1.79	5	104.4	70	130	
60	Ni	72	5.329	11817	3.52	5	106.6	70	130	
63	Cu	72	5.228	32644	1.26	5	104.6	70	130	
66	Zn	72	4.921	6063	1.25	5	98.4	70	130	
75	As	72	5.084	4404	2.92	5	101.7	70	130	
78	Se	72	4.874	389	6.54	5	97.5	70	130	
88	Sr	115	5.109	25145	1.27	5	102.2	70	130	
95	Mo	115	4.977	17080	2.28	5	99.5	70	130	
107	Ag	115	2.000	20711	2.05	2	100.0	70	130	
111	Cd	115	0.997	1597	3.62	1	99.7	70	130	
118	Sn	115	5.068	19322	1.08	5	101.4	70	130	
121	Sb	115	1.991	11017	3.63	2	99.6	70	130	
137	Ba	115	5.007	8996	1.40	5	100.1	70	130	
205	Tl	209	0.992	24172	0.87	1	99.2	70	130	
208	Pb	209	0.959	17308	3.50	1	95.9	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1145376	1.02	1262119	90.75	70	120	
72	Ge	736770	1.03	801025	91.98	70	120	
115	In	7130168	0.35	7659162	93.09	70	120	
209	Bi	14963097	0.35	15802225	94.69	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 14:16	Sample Name	CCB3-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	097_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.260	8	25.0	2	5	
9	Be	45	0.032	2	91.7	0.4	0.3	
11	B	45	9.362	320	7.5	10	10	
23	Na	45	2.309	70710	1.5	50	100	
24	Mg	45	-0.826	331	7.3	50	100	
27	Al	45	19.443	5733	4.5	50	10	FailAq
39	K	45	1.688	68066	0.8	50	100	
44	Ca	45	-0.041	563	3.9	50	100	
47	Ti	45	-0.008	7	86.6	4	3	
51	V	45	-0.115	3504	1.8	4	3	
52	Cr	45	-0.093	1020	3.3	2	2	
55	Mn	45	0.013	287	23.6	2	3	
56	Fe	45	-0.444	7134	3.6	50	50	
59	Co	72	-0.005	61	30.0	2	3	
60	Ni	72	-0.095	129	25.9	2	3	
63	Cu	72	-0.067	1472	5.8	2	2	
66	Zn	72	-0.533	307	8.5	4	2	
75	As	72	-0.025	240	1.8	2	2	
78	Se	72	0.247	119	4.4	1	2	
88	Sr	115	0.005	566	3.9	4	3	
95	Mo	115	0.009	113	10.6	2	2	
107	Ag	115	0.005	122	31.6	0.4	1	
111	Cd	115	-0.004	3	100.1	0.4	0.3	
118	Sn	115	-0.109	413	4.3	4	3	
121	Sb	115	-0.010	374	13.0	2	0.8	
137	Ba	115	-0.004	43	20.4	2	3	
205	Tl	209	-0.001	70	9.5	2	0.5	
208	Pb	209	-0.040	308	5.1	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1140631	1.11	1262119	90.37	70	120	
72	Ge	727134	0.21	801025	90.78	70	120	
115	In	7081679	0.57	7659162	92.46	70	120	
209	Bi	14958890	0.67	15802225	94.66	70	120	

Method Blank Report

Date Acquired	11/16/16 2:18 PM	Sample Name	MB-77902
Data Batch	161116.b	Comment	MBLKICPMS_TSDOD1
Data File Name	098_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.201	11	19.52		
9	Be	45	0.000	0	#DIV/0!		
11	B	45	10.106	342	22.09		J
23	Na	45	8.016	76938	1.00		
24	Mg	45	4.914	3146	5.82		
27	Al	45	-4.590	1069	4.68		
39	K	45	7.258	71737	0.23		
44	Ca	45	11.116	889	7.71		
47	Ti	45	0.080	21	32.88		
51	V	45	-0.132	3470	3.21		
52	Cr	45	0.258	2957	9.89		
55	Mn	45	0.153	783	3.21		
56	Fe	45	1.748	17647	2.22		
59	Co	72	0.003	120	33.80		
60	Ni	72	0.040	417	12.32		
63	Cu	72	-0.007	1823	1.28		
66	Zn	72	3.304	4309	6.39		
75	As	72	-0.052	218	5.40		
78	Se	72	0.153	113	3.50		
88	Sr	115	-0.022	442	19.37		
95	Mo	115	0.016	140	18.60		
107	Ag	115	0.007	144	16.37		
111	Cd	115	0.001	11	86.60		
118	Sn	115	3.759	14626	1.42		
121	Sb	115	-0.007	396	14.21		
137	Ba	115	0.037	118	24.07		
205	Tl	209	-0.001	78	4.95		
208	Pb	209	0.012	1199	14.68		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1156848	0.18	1262119	91.66	70	120	
72	Ge	728396	0.59	801025	90.93	70	120	
115	In	7171776	0.51	7659162	93.64	70	120	
209	Bi	15091706	1.53	15802225	95.50	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 14:21	Sample Name	LCS-77902
Data Batch	161116.b	Comment	LCS ICPMS_TSDOD1
Data File Name	099_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	206.307	8773	0.75	200	103.2	80	120	
9	Be	45	207.377	10898	2.30	200	103.7	80	120	
11	B	45	215.623	5130	3.43	200	107.8	80	120	
23	Na	45	5118.280	4718667	0.61	1000	511.8	80	120	Fail
24	Mg	45	5068.078	2463397	0.18	1000	506.8	80	120	Fail
27	Al	45	1007.415	199570	0.78	1000	100.7	80	120	
39	K	45	5069.954	2502341	0.55	1000	507.0	80	120	Fail
44	Ca	45	4694.112	133233	1.52	1000	469.4	80	120	Fail
47	Ti	45	197.031	31552	0.88	200	98.5	80	120	
51	V	45	198.601	933925	0.69	200	99.3	80	120	
52	Cr	45	200.423	1089456	0.36	200	100.2	80	120	
55	Mn	45	198.482	692968	0.34	200	99.2	80	120	
56	Fe	45	1005.123	4750879	0.47	1000	100.5	80	120	
59	Co	72	205.093	1649463	0.22	200	102.5	80	120	
60	Ni	72	205.136	434504	0.92	200	102.6	80	120	
63	Cu	72	204.127	1181443	0.08	200	102.1	80	120	
66	Zn	72	204.321	212538	0.74	200	102.2	80	120	
75	As	72	202.170	161997	0.73	200	101.1	80	120	
78	Se	72	203.273	11717	1.76	200	101.6	80	120	
88	Sr	115	198.157	942824	0.91	200	99.1	80	120	
95	Mo	115	200.470	676171	1.21	200	100.2	80	120	
107	Ag	115	197.567	2013440	0.47	200	98.8	80	120	
111	Cd	115	198.554	312314	0.25	200	99.3	80	120	
118	Sn	115	202.862	732436	0.66	200	101.4	80	120	
121	Sb	115	201.494	1058453	0.13	200	100.7	80	120	
137	Ba	115	200.164	353206	0.62	200	100.1	80	120	
205	Tl	209	191.245	4595781	0.39	200	95.6	80	120	
208	Pb	209	195.269	3288400	0.19	200	97.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1148527	0.63	1262119	91.00	70	120	
72	Ge	723605	0.47	801025	90.33	70	120	
115	In	7031599	0.62	7659162	91.81	70	120	
209	Bi	14810588	0.56	15802225	93.72	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 14:23	Sample Name	LCSD-77902
Data Batch	161116.b	Comment	LCSDICPMS_TSDOD1
Data File Name	100_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	208.045	8834	1.20	200	104.0	80	120	
9	Be	45	212.085	11130	1.87	200	106.0	80	120	
11	B	45	228.898	5432	1.83	200	114.4	80	120	
23	Na	45	5215.887	4800188	1.05	1000	521.6	80	120	Fail
24	Mg	45	5142.580	2496017	1.18	1000	514.3	80	120	Fail
27	Al	45	1018.524	201453	1.09	1000	101.9	80	120	
39	K	45	5113.051	2519509	0.22	1000	511.3	80	120	Fail
44	Ca	45	4732.646	134136	0.74	1000	473.3	80	120	Fail
47	Ti	45	203.357	32520	0.77	200	101.7	80	120	
51	V	45	200.281	940425	0.48	200	100.1	80	120	
52	Cr	45	203.314	1103556	0.77	200	101.7	80	120	
55	Mn	45	200.441	698826	0.90	200	100.2	80	120	
56	Fe	45	1019.144	4810192	0.47	1000	101.9	80	120	
59	Co	72	203.498	1666344	1.13	200	101.7	80	120	
60	Ni	72	203.222	438261	1.41	200	101.6	80	120	
63	Cu	72	204.470	1204946	0.87	200	102.2	80	120	
66	Zn	72	202.214	214183	0.43	200	101.1	80	120	
75	As	72	202.097	164884	0.77	200	101.0	80	120	
78	Se	72	199.713	11723	1.58	200	99.9	80	120	
88	Sr	115	200.293	959954	0.49	200	100.1	80	120	
95	Mo	115	202.193	686995	0.93	200	101.1	80	120	
107	Ag	115	201.951	2073196	0.70	200	101.0	80	120	
111	Cd	115	204.440	323934	0.49	200	102.2	80	120	
118	Sn	115	204.773	744769	0.92	200	102.4	80	120	
121	Sb	115	203.193	1075201	0.43	200	101.6	80	120	
137	Ba	115	202.482	359926	0.78	200	101.2	80	120	
205	Tl	209	193.455	4719289	0.81	200	96.7	80	120	
208	Pb	209	196.632	3361372	0.20	200	98.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1146903	0.72	1262119	90.87	70	120	
72	Ge	736758	0.46	801025	91.98	70	120	
115	In	7082885	0.20	7659162	92.48	70	120	
209	Bi	15035352	1.03	15802225	95.15	70	120	

Sample Report

Date Acquired	11/16/16 2:27 PM	Sample Name	1611028-10A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	102_ARF.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	105.658	4308	2.01	2000	>RL
9	Be	45	1.869	94	5.63	2000	>RL
11	B	45	116.619	2701	4.36	2000	>RL
23	Na	45	2456.807	2202024	0.80	25000	>RL
24	Mg	45	14999.113	6975201	0.84	25000	>RL
27	Al	45	63204.208	11867440	2.03	10000	OUTCAL
39	K	45	9719.124	4531756	0.99	25000	>RL
44	Ca	45	404160.059	10934180	2.44	25000	OUTCAL
47	Ti	45	196.980	30181	2.66	2000	>RL
51	V	45	99.005	447496	0.40	2000	>RL
52	Cr	45	50.329	262925	0.80	2000	>RL
55	Mn	45	430.025	1436589	0.62	2000	>RL
56	Fe	45	57556.977	259869607	0.84	10000	OUTCAL
59	Co	72	14.199	107714	1.08	2000	>RL
60	Ni	72	22.913	46018	1.19	2000	>RL
63	Cu	72	14.669	81644	0.88	2000	>RL
66	Zn	72	111.765	109949	1.71	2000	>RL
75	As	72	21.912	16766	1.93	2000	>RL
78	Se	72	3.815	303	6.60	2000	>RL
88	Sr	115	3087.579	14105857	0.61	2000	OUTCAL
95	Mo	115	2.451	8022	2.55	2000	>RL
107	Ag	115	0.100	1049	3.71	500	
111	Cd	115	0.187	292	9.22	2000	
118	Sn	115	5.416	19540	3.33	2000	>RL
121	Sb	115	0.383	2340	1.62	500	
137	Ba	115	513.805	871012	0.96	2000	>RL
205	Tl	209	0.435	9956	5.04	2000	
208	Pb	209	27.555	438467	0.98	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1099238	1.31	1262119	87.09	70	120	
72	Ge	682005	0.88	801025	85.14	70	120	
115	In	6765878	1.29	7659162	88.34	70	120	
209	Bi	13971766	2.19	15802225	88.42	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/16/2016 14:29	Sample Name	1611028-10A SD
Data Batch	161116.b	Comment	SD ICPMS_TSDOD1
Data File Name	103_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	21.697	898	2.60	105.7	102.7	110	90	Good
9	Be	45	0.504	25	9.93	1.9	134.9	110	90	
11	B	45	34.334	864	3.58	116.6	147.2	110	90	
23	Na	45	515.878	514111	0.52	2456.8	105.0	110	90	Good
24	Mg	45	3131.652	1455701	0.89	14999.1	104.4	110	90	Good
27	Al	45	12619.937	2368663	0.73	63204.2	99.8	110	90	Good
39	K	45	2039.680	1001223	0.25	9719.1	104.9	110	90	Good
44	Ca	45	83597.072	2259659	0.76	404160.1	103.4	110	90	Good
47	Ti	45	39.198	6009	2.06	197.0	99.5	110	90	Good
51	V	45	20.357	95012	0.64	99.0	102.8	110	90	Good
52	Cr	45	10.535	56151	2.00	50.3	104.7	110	90	Good
55	Mn	45	90.281	301487	0.41	430.0	105.0	110	90	Good
56	Fe	45	12162.309	54864624	0.61	57557.0	105.7	110	90	Good
59	Co	72	2.925	22744	2.31	14.2	103.0	110	90	Good
60	Ni	72	4.827	10153	1.52	22.9	105.3	110	90	Good
63	Cu	72	3.141	19258	1.84	14.7	107.1	110	90	Good
66	Zn	72	23.915	24683	2.82	111.8	107.0	110	90	Good
75	As	72	4.337	3589	2.06	21.9	99.0	110	90	Good
78	Se	72	0.965	153	16.30	3.8	126.5	110	90	
88	Sr	115	601.596	2828235	1.05	3087.6	97.4	110	90	Good
95	Mo	115	0.516	1802	4.34	2.5	105.3	110	90	Good
107	Ag	115	0.043	502	4.98	0.1	214.2	110	90	
111	Cd	115	0.043	77	15.68	0.2	116.0	110	90	
118	Sn	115	1.001	4363	6.33	5.4	92.4	110	90	Good
121	Sb	115	0.062	744	6.05	0.4	81.2	110	90	
137	Ba	115	104.839	182883	0.76	513.8	102.0	110	90	Good
205	Tl	209	0.096	2364	1.25	0.4	110.3	110	90	
208	Pb	209	5.564	93209	0.36	27.6	101.0	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1098214	1.59	1262119	87.01	70	120	
72	Ge	696690	0.93	801025	86.97	70	120	
115	In	6961475	1.58	7659162	90.89	70	120	
209	Bi	14584639	0.35	15802225	92.29	70	120	

Sample Report

Date Acquired	11/16/16 2:38 PM	Sample Name	1611028-01A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	108SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	80.457	3220	4.50	2000	>RL
9	Be	45	2.302	113	9.27	2000	>RL
11	B	45	118.797	2695	2.00	2000	>RL
23	Na	45	2047.250	1808656	1.17	25000	>RL
24	Mg	45	15725.983	7166910	1.76	25000	>RL
27	Al	45	74367.690	13682391	2.39	10000	OUTCAL
39	K	45	12312.948	5608781	1.89	25000	>RL
44	Ca	45	302960.221	8030356	1.39	25000	OUTCAL
47	Ti	45	224.539	33712	1.43	2000	>RL
51	V	45	119.268	527447	1.28	2000	>RL
52	Cr	45	61.706	315533	2.32	2000	>RL
55	Mn	45	400.302	1310173	1.51	2000	>RL
56	Fe	45	70270.852	310805757	2.08	10000	OUTCAL
59	Co	72	17.330	129248	0.37	2000	>RL
60	Ni	72	31.536	62163	1.40	2000	>RL
63	Cu	72	29.861	161640	1.07	2000	>RL
66	Zn	72	200.050	192869	0.74	2000	>RL
75	As	72	22.892	17210	1.68	2000	>RL
78	Se	72	4.492	334	7.87	2000	>RL
88	Sr	115	1375.432	6043286	0.62	2000	>RL
95	Mo	115	2.947	9257	2.24	2000	>RL
107	Ag	115	0.121	1201	7.51	500	
111	Cd	115	0.436	642	10.97	2000	>RL
118	Sn	115	5.941	20544	2.03	2000	>RL
121	Sb	115	1.866	9447	1.96	500	
137	Ba	115	805.762	1313581	0.99	2000	>RL
205	Tl	209	0.523	11574	4.75	2000	
208	Pb	209	50.683	780575	0.43	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1077053	1.42	1262119	85.34	70	120	
72	Ge	670600	0.99	801025	83.72	70	120	
115	In	6508055	1.98	7659162	84.97	70	120	
209	Bi	13536182	2.01	15802225	85.66	70	120	

Sample Report

Date Acquired	11/16/16 2:40 PM	Sample Name	1611028-02A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	109SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	110.048	4182	1.72	2000	>RL
9	Be	45	1.592	75	18.18	2000	>RL
11	B	45	123.367	2657	4.79	2000	>RL
23	Na	45	2277.962	1907393	1.55	25000	>RL
24	Mg	45	13458.677	5834742	2.17	25000	>RL
27	Al	45	54289.062	9500138	0.59	10000	OUTCAL
39	K	45	7059.368	3084290	1.07	25000	>RL
44	Ca	45	432429.763	10903512	2.50	25000	OUTCAL
47	Ti	45	191.666	27384	3.54	2000	>RL
51	V	45	82.477	348068	1.88	2000	>RL
52	Cr	45	43.926	214045	1.00	2000	>RL
55	Mn	45	90.620	282304	0.47	2000	>RL
56	Fe	45	39578.849	166546784	0.74	10000	OUTCAL
59	Co	72	7.428	52624	0.57	2000	>RL
60	Ni	72	14.984	28181	1.62	2000	>RL
63	Cu	72	8.988	47310	0.99	2000	>RL
66	Zn	72	76.323	70307	3.11	2000	>RL
75	As	72	12.749	9198	2.16	2000	>RL
78	Se	72	3.230	254	9.96	2000	>RL
88	Sr	115	3335.725	14105422	2.02	2000	OUTCAL
95	Mo	115	1.548	4717	3.71	2000	
107	Ag	115	0.042	439	7.45	500	
111	Cd	115	0.088	131	20.39	2000	
118	Sn	115	5.278	17639	1.53	2000	>RL
121	Sb	115	0.126	964	7.10	500	
137	Ba	115	330.190	518027	0.74	2000	>RL
205	Tl	209	0.277	5724	2.19	2000	
208	Pb	209	21.549	308682	1.52	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1024475	1.12	1262119	81.17	70	120	
72	Ge	636406	0.82	801025	79.45	70	120	
115	In	6261933	1.57	7659162	81.76	70	120	
209	Bi	12569598	1.50	15802225	79.54	70	120	

Sample Report

Date Acquired	11/16/16 2:42 PM	Sample Name	1611028-03A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	110SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	95.412	3577	3.50	2000	>RL
9	Be	45	2.634	122	22.63	2000	>RL
11	B	45	148.047	3127	3.80	2000	>RL
23	Na	45	5261.386	4263944	0.66	25000	>RL
24	Mg	45	72165.325	30837665	0.76	25000	OUTCAL
27	Al	45	51990.992	8969406	0.39	10000	OUTCAL
39	K	45	7655.435	3292540	0.56	25000	>RL
44	Ca	45	426335.828	10597352	0.88	25000	OUTCAL
47	Ti	45	127.639	17981	3.05	2000	>RL
51	V	45	75.179	313125	0.96	2000	>RL
52	Cr	45	41.574	199796	0.33	2000	>RL
55	Mn	45	2315.294	7106121	0.04	2000	OUTCAL
56	Fe	45	73612.660	305407517	1.43	10000	OUTCAL
59	Co	72	34.480	240862	0.80	2000	>RL
60	Ni	72	68.290	125794	1.38	2000	>RL
63	Cu	72	11.642	60027	1.47	2000	>RL
66	Zn	72	216.866	195842	1.59	2000	>RL
75	As	72	21.266	14997	0.34	2000	>RL
78	Se	72	5.975	387	3.56	2000	>RL
88	Sr	115	4294.418	17712608	1.38	2000	OUTCAL
95	Mo	115	8.520	24999	2.20	2000	>RL
107	Ag	115	0.028	311	13.31	500	
111	Cd	115	1.292	1771	6.31	2000	>RL
118	Sn	115	5.110	16681	1.24	2000	>RL
121	Sb	115	0.521	2739	4.58	500	
137	Ba	115	274.289	419810	1.85	2000	>RL
205	Tl	209	1.652	33365	0.76	2000	
208	Pb	209	25.747	364274	1.15	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1010064	1.15	1262119	80.03	70	120	
72	Ge	628325	0.44	801025	78.44	70	120	
115	In	6108403	1.91	7659162	79.75	70	120	
209	Bi	12418980	0.69	15802225	78.59	70	120	

Sample Report

Date Acquired	11/16/16 2:44 PM	Sample Name	1611028-04A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	111SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	77.324	3206	2.17	2000	>RL
9	Be	45	1.919	98	13.73	2000	>RL
11	B	45	155.986	3635	5.83	2000	>RL
23	Na	45	7094.557	6326570	0.43	25000	>RL
24	Mg	45	31568.045	14899442	2.20	25000	OUTCAL
27	Al	45	59126.261	11266659	1.68	10000	OUTCAL
39	K	45	7892.144	3747012	1.00	25000	>RL
44	Ca	45	450059.514	12355194	0.21	25000	OUTCAL
47	Ti	45	132.228	20570	2.05	2000	>RL
51	V	45	83.466	383583	2.68	2000	>RL
52	Cr	45	45.559	241732	2.23	2000	>RL
55	Mn	45	1619.356	5491299	3.42	2000	>RL
56	Fe	45	54810.041	251215243	3.08	10000	OUTCAL
59	Co	72	32.750	247147	3.02	2000	>RL
60	Ni	72	42.456	84581	1.79	2000	>RL
63	Cu	72	14.426	79925	1.49	2000	>RL
66	Zn	72	152.319	148820	2.01	2000	>RL
75	As	72	19.037	14526	1.58	2000	>RL
78	Se	72	4.006	312	1.01	2000	>RL
88	Sr	115	2026.122	9067127	1.02	2000	OUTCAL
95	Mo	115	5.351	17057	1.29	2000	>RL
107	Ag	115	0.038	431	12.50	500	
111	Cd	115	0.385	579	5.19	2000	
118	Sn	115	5.810	20478	1.89	2000	>RL
121	Sb	115	0.199	1383	2.21	500	
137	Ba	115	88.662	147289	2.63	2000	>RL
205	Tl	209	0.738	16183	1.01	2000	
208	Pb	209	35.702	546647	1.63	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1115655	1.60	1262119	88.40	70	120	
72	Ge	678683	1.78	801025	84.73	70	120	
115	In	6627568	1.85	7659162	86.53	70	120	
209	Bi	13448051	0.47	15802225	85.10	70	120	

Sample Report

Date Acquired	11/16/16 2:46 PM	Sample Name	1611028-05A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	112SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	66.193	2784	2.36	2000	>RL
9	Be	45	2.667	138	2.17	2000	>RL
11	B	45	120.255	2862	3.48	2000	>RL
23	Na	45	2116.580	1960964	1.49	25000	>RL
24	Mg	45	16058.086	7683943	1.68	25000	>RL
27	Al	45	77269.616	14926555	1.15	10000	OUTCAL
39	K	45	14305.274	6830195	0.91	25000	>RL
44	Ca	45	202579.802	5637768	1.52	25000	OUTCAL
47	Ti	45	252.783	39853	1.20	2000	>RL
51	V	45	129.473	600871	1.12	2000	>RL
52	Cr	45	65.717	352769	1.34	2000	>RL
55	Mn	45	662.077	2275438	0.28	2000	>RL
56	Fe	45	72874.699	338548351	1.76	10000	OUTCAL
59	Co	72	23.732	183286	1.27	2000	>RL
60	Ni	72	40.854	83311	0.68	2000	>RL
63	Cu	72	44.019	245937	0.67	2000	>RL
66	Zn	72	265.591	264933	1.28	2000	>RL
75	As	72	25.668	19958	1.77	2000	>RL
78	Se	72	5.130	381	3.11	2000	>RL
88	Sr	115	2216.932	10137418	1.97	2000	OUTCAL
95	Mo	115	3.342	10917	1.01	2000	>RL
107	Ag	115	0.176	1789	2.47	500	
111	Cd	115	0.642	978	8.11	2000	>RL
118	Sn	115	6.273	22523	1.35	2000	>RL
121	Sb	115	3.891	20051	1.15	500	>RL
137	Ba	115	937.245	1589825	0.51	2000	>RL
205	Tl	209	0.630	14413	2.96	2000	
208	Pb	209	58.511	933667	0.53	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1130947	1.20	1262119	89.61	70	120	
72	Ge	694538	0.16	801025	86.71	70	120	
115	In	6771657	2.21	7659162	88.41	70	120	
209	Bi	14025648	1.69	15802225	88.76	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/16/2016 14:53	Sample Name	1611028-10A PDS
Data Batch	161116.b	Comment	PDS ICPMS_TSDOD1
Data File Name	114_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	282.073	10920	1.93	105.7	200	88.2	75	125	
9	Be	45	192.613	9220	1.02	1.9	200	95.4	75	125	
11	B	45	301.887	6509	5.49	116.6	200	92.6	75	125	
23	Na	45	7267.251	6076703	1.67	2456.8	5000	96.2	75	125	
24	Mg	45	19334.470	8558847	1.48	14999.1	5000	86.7	75	125	
27	Al	45	67600.563	12079514	1.14	63204.2	5000	87.9	75	125	
39	K	45	15037.823	6641851	3.45	9719.1	5000	106.4	75	125	
44	Ca	45	########	10781335	2.53	404160.1	5000	290.1	75	125	Fail
47	Ti	45	387.872	56582	2.15	197.0	200	95.4	75	125	
51	V	45	291.453	1246863	2.17	99.0	200	96.2	75	125	
52	Cr	45	242.001	1198138	2.17	50.3	200	95.8	75	125	
55	Mn	45	614.060	1952571	1.85	430.0	200	92.0	75	125	
56	Fe	45	61723.367	265240461	1.59	57557.0	5000	83.3	75	125	
59	Co	72	206.772	1480609	0.87	14.2	200	96.3	75	125	
60	Ni	72	211.017	397953	1.22	22.9	200	94.1	75	125	
63	Cu	72	198.878	1024911	0.89	14.7	200	92.1	75	125	
66	Zn	72	296.405	274187	1.09	111.8	200	92.3	75	125	
75	As	72	221.692	158153	1.62	21.9	200	99.9	75	125	
78	Se	72	200.924	10314	1.69	3.8	200	98.6	75	125	
88	Sr	115	3390.593	14433509	2.93	3087.6	200	151.5	75	125	Fail
95	Mo	115	191.873	579271	1.86	2.5	200	94.7	75	125	
107	Ag	115	185.714	1693892	1.56	0.1	200	92.8	75	125	
111	Cd	115	183.660	258573	2.03	0.2	200	91.7	75	125	
118	Sn	115	198.879	642676	1.62	5.4	200	96.7	75	125	
121	Sb	115	188.122	884401	0.85	0.4	200	93.9	75	125	
137	Ba	115	723.014	1141746	1.53	513.8	200	104.6	75	125	
205	Tl	209	187.176	3863529	1.83	0.4	200	93.4	75	125	
208	Pb	209	216.826	3136525	2.12	27.6	200	94.6	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1046329	2.23	1262119	82.90	70	120	
72	Ge	644331	1.75	801025	80.44	70	120	
115	In	6293872	2.06	7659162	82.17	70	120	
209	Bi	12722266	2.06	15802225	80.51	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 14:55	Sample Name	1611028-10A MS
Data Batch	161116.b	Comment	MS ICPMS_TSDOD1
Data File Name	115_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	266.488	10749	3.59	105.7	200	80.4	80	120	
9	Be	45	195.690	9763	5.34	1.9	200	96.9	80	120	
11	B	45	289.083	6494	3.96	116.6	200	86.2	80	120	
23	Na	45	7201.585	6274445	3.88	2456.8	1000	474.5	80	120	Fail
24	Mg	45	17732.327	8176474	2.87	14999.1	1000	273.3	80	120	Fail
27	Al	45	57680.169	10740003	4.06	63204.2	1000	-552.4	80	120	Fail
39	K	45	14829.700	6822899	3.64	9719.1	1000	511.1	80	120	Fail
44	Ca	45	########	13338692	3.36	404160.1	1000	9314.4	80	120	Fail
47	Ti	45	338.916	51515	4.44	197.0	200	71.0	80	120	Fail
51	V	45	295.708	1318062	4.41	99.0	200	98.4	80	120	
52	Cr	45	238.612	1231003	4.66	50.3	200	94.1	80	120	
55	Mn	45	567.188	1878833	3.47	430.0	200	68.6	80	120	Fail
56	Fe	45	60988.448	273083065	4.00	57557.0	1000	343.1	80	120	Fail
59	Co	72	205.682	1553875	3.75	14.2	200	95.7	80	120	
60	Ni	72	210.926	419642	3.61	22.9	200	94.0	80	120	
63	Cu	72	203.511	1106495	4.13	14.7	200	94.4	80	120	
66	Zn	72	292.024	285072	4.74	111.8	200	90.1	80	120	
75	As	72	231.488	174263	5.22	21.9	200	104.8	80	120	
78	Se	72	206.768	11199	5.39	3.8	200	101.5	80	120	
88	Sr	115	3568.897	15918491	4.72	3087.6	200	240.7	80	120	Fail
95	Mo	115	194.421	614950	3.84	2.5	200	96.0	80	120	
107	Ag	115	184.003	1758789	4.51	0.1	200	92.0	80	120	
111	Cd	115	190.219	280626	4.57	0.2	200	95.0	80	120	
118	Sn	115	202.419	685378	4.02	5.4	200	98.5	80	120	
121	Sb	115	101.419	499760	3.70	0.4	200	50.5	80	120	Fail
137	Ba	115	594.067	982991	4.08	513.8	200	40.1	80	120	Fail
205	Tl	209	191.429	4168670	3.45	0.4	200	95.5	80	120	
208	Pb	209	227.255	3467773	3.41	27.6	200	99.8	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1090023	3.75	1262119	86.36	70	120	
72	Ge	679703	3.69	801025	84.85	70	120	
115	In	6594922	4.47	7659162	86.10	70	120	
209	Bi	13419445	2.96	15802225	84.92	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 14:57	Sample Name	1611028-10A MSD
Data Batch	161116.b	Comment	MSD ICPMS_TSDOD1
Data File Name	116_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	267.850	10398	0.55	105.7	200	81.1	80	120	
9	Be	45	193.889	9310	2.28	1.9	200	96.0	80	120	
11	B	45	295.979	6402	6.12	116.6	200	89.7	80	120	
23	Na	45	7277.805	6103551	2.35	2456.8	1000	482.1	80	120	Fail
24	Mg	45	18765.773	8334207	3.79	14999.1	1000	376.7	80	120	Fail
27	Al	45	59645.030	10690771	2.27	63204.2	1000	-355.9	80	120	Fail
39	K	45	13856.627	6142353	3.08	9719.1	1000	413.8	80	120	Fail
44	Ca	45	########	13552344	2.18	404160.1	1000	#####	80	120	Fail
47	Ti	45	368.971	53986	2.86	197.0	200	86.0	80	120	
51	V	45	286.467	1229216	2.55	99.0	200	93.7	80	120	
52	Cr	45	239.646	1189994	2.56	50.3	200	94.7	80	120	
55	Mn	45	549.865	1753443	1.65	430.0	200	59.9	80	120	Fail
56	Fe	45	50089.847	215863911	1.26	57557.0	1000	-746.7	80	120	Fail
59	Co	72	204.776	1501061	2.23	14.2	200	95.3	80	120	
60	Ni	72	210.483	406303	1.79	22.9	200	93.8	80	120	
63	Cu	72	200.067	1055452	2.33	14.7	200	92.7	80	120	
66	Zn	72	287.551	272321	2.56	111.8	200	87.9	80	120	
75	As	72	220.481	161013	2.82	21.9	200	99.3	80	120	
78	Se	72	206.929	10868	1.16	3.8	200	101.6	80	120	
88	Sr	115	3796.113	16410344	1.24	3087.6	200	354.3	80	120	Fail
95	Mo	115	193.650	593923	2.18	2.5	200	95.6	80	120	
107	Ag	115	184.817	1712626	1.58	0.1	200	92.4	80	120	
111	Cd	115	189.478	271046	2.38	0.2	200	94.6	80	120	
118	Sn	115	202.122	663701	2.31	5.4	200	98.4	80	120	
121	Sb	115	99.357	474784	1.57	0.4	200	49.5	80	120	Fail
137	Ba	115	552.663	886715	1.55	513.8	200	19.4	80	120	Fail
205	Tl	209	192.727	4037849	1.82	0.4	200	96.1	80	120	
208	Pb	209	217.315	3190820	2.27	27.6	200	94.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1049407	2.51	1262119	83.15	70	120	
72	Ge	659498	2.01	801025	82.33	70	120	
115	In	6395344	2.62	7659162	83.50	70	120	
209	Bi	12913901	2.22	15802225	81.72	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 14:59	Sample Name	CCV4-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	117_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	204.103	8295	1.36	200	102.1	90	110	
9	Be	45	216.934	10896	0.48	200	108.5	90	110	
11	B	45	232.951	5290	3.44	200	116.5	90	110	Fail
23	Na	45	5241.325	4616594	0.72	5000	104.8	90	110	
24	Mg	45	5151.857	2393396	0.50	5000	103.0	90	110	
27	Al	45	5501.546	1033302	1.01	5000	110.0	90	110	Fail
39	K	45	5270.844	2483963	0.58	5000	105.4	90	110	
44	Ca	45	5122.072	138916	0.98	5000	102.4	90	110	
47	Ti	45	208.798	31963	2.45	200	104.4	90	110	
51	V	45	210.215	944564	0.41	200	105.1	90	110	
52	Cr	45	211.752	1099991	1.29	200	105.9	90	110	
55	Mn	45	209.141	697891	0.26	200	104.6	90	110	
56	Fe	45	5286.055	23845676	1.77	5000	105.7	90	110	
59	Co	72	211.702	1653893	0.63	200	105.9	90	110	
60	Ni	72	212.491	437202	0.88	200	106.2	90	110	
63	Cu	72	212.457	1194427	0.42	200	106.2	90	110	
66	Zn	72	218.048	220277	0.42	200	109.0	90	110	
75	As	72	219.001	170438	0.21	200	109.5	90	110	
78	Se	72	216.995	12144	0.84	200	108.5	90	110	
88	Sr	115	208.627	967959	0.57	200	104.3	90	110	
95	Mo	115	207.402	682174	0.58	200	103.7	90	110	
107	Ag	115	205.001	2037408	0.46	200	102.5	90	110	
111	Cd	115	211.140	323869	0.77	200	105.6	90	110	
118	Sn	115	206.631	727572	0.58	200	103.3	90	110	
121	Sb	115	209.999	1075835	0.83	200	105.0	90	110	
137	Ba	115	210.420	362088	0.07	200	105.2	90	110	
205	Tl	209	199.422	4652184	0.37	200	99.7	90	110	
208	Pb	209	204.384	3341287	0.65	200	102.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1097801	0.98	1262119	86.98	70	120	
72	Ge	702929	0.92	801025	87.75	70	120	
115	In	6858628	2.13	7659162	89.55	70	120	
209	Bi	14381082	2.19	15802225	91.01	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 15:06	Sample Name	LCVL4-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	119LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.179	440	5.80	1	1017.9	70	130	Fail
9	Be	45	1.232	63	30.34	1	123.2	70	130	
11	B	45	34.155	879	7.75	20	170.8	70	130	Fail
23	Na	45	111.631	166547	0.86	100	111.6	70	130	
24	Mg	45	101.344	48821	1.00	100	101.3	70	130	
27	Al	45	107.524	22512	2.39	100	107.5	70	130	
39	K	45	114.089	119663	0.84	100	114.1	70	130	
44	Ca	45	111.087	3622	3.70	100	111.1	70	130	
47	Ti	45	4.988	788	3.00	5	99.8	70	130	
51	V	45	0.765	7470	1.16	1	76.5	70	130	
52	Cr	45	5.308	29641	0.84	5	106.2	70	130	
55	Mn	45	5.565	19210	1.03	5	111.3	70	130	
56	Fe	45	107.043	502288	0.57	100	107.0	70	130	
59	Co	72	5.330	43154	1.91	5	106.6	70	130	
60	Ni	72	5.559	12151	1.45	5	111.2	70	130	
63	Cu	72	5.378	33081	1.26	5	107.6	70	130	
66	Zn	72	5.002	6068	3.69	5	100.0	70	130	
75	As	72	5.347	4557	2.65	5	106.9	70	130	
78	Se	72	5.581	425	12.74	5	111.6	70	130	
88	Sr	115	5.454	26061	0.41	5	109.1	70	130	
95	Mo	115	5.198	17338	2.49	5	104.0	70	130	
107	Ag	115	2.062	20755	1.81	2	103.1	70	130	
111	Cd	115	1.063	1655	2.44	1	106.3	70	130	
118	Sn	115	5.331	19716	3.22	5	106.6	70	130	
121	Sb	115	2.185	11712	1.18	2	109.2	70	130	
137	Ba	115	5.483	9571	3.18	5	109.7	70	130	
205	Tl	209	1.028	24529	3.14	1	102.8	70	130	
208	Pb	209	1.060	18630	1.79	1	106.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1121864	1.07	1262119	88.89	70	120	
72	Ge	726913	0.64	801025	90.75	70	120	
115	In	6931832	0.59	7659162	90.50	70	120	
209	Bi	14658152	0.26	15802225	92.76	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 15:12	Sample Name	CCB4-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	120_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.044	17	21.1	2	5	
9	Be	45	0.052	3	78.1	0.4	0.3	
11	B	45	10.022	327	4.7	10	10	FailAq FailSoil
23	Na	45	5.845	71962	1.2	50	100	
24	Mg	45	-0.430	509	12.5	50	100	
27	Al	45	21.704	6014	1.2	50	10	FailAq
39	K	45	9.435	69890	0.4	50	100	
44	Ca	45	3.470	644	2.4	50	100	
47	Ti	45	-0.036	2	173.2	4	3	
51	V	45	-0.246	2815	5.7	4	3	
52	Cr	45	-0.089	1014	2.9	2	2	
55	Mn	45	0.001	240	10.5	2	3	
56	Fe	45	0.424	10906	2.7	50	50	
59	Co	72	0.003	120	35.5	2	3	
60	Ni	72	-0.076	168	17.8	2	3	
63	Cu	72	-0.070	1431	4.8	2	2	
66	Zn	72	-0.545	289	11.6	4	2	
75	As	72	-0.060	208	8.8	2	2	
78	Se	72	0.557	134	14.8	1	2	
88	Sr	115	0.056	794	15.1	4	3	
95	Mo	115	0.024	164	20.8	2	2	
107	Ag	115	0.010	174	5.8	0.4	1	
111	Cd	115	0.003	13	90.2	0.4	0.3	
118	Sn	115	-0.078	517	7.2	4	3	
121	Sb	115	0.038	618	7.4	2	0.8	
137	Ba	115	0.006	60	43.4	2	3	
205	Tl	209	0.007	243	27.5	2	0.5	
208	Pb	209	0.007	1073	2.8	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1110771	0.48	1262119	88.01	70	120	
72	Ge	714341	0.96	801025	89.18	70	120	
115	In	6952244	1.43	7659162	90.77	70	120	
209	Bi	14447457	0.44	15802225	91.43	70	120	

Sample Report

Date Acquired	11/16/16 3:14 PM	Sample Name	1611028-06A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	121SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	72.439	2841	5.22	2000	>RL
9	Be	45	1.443	70	9.56	2000	>RL
11	B	45	86.880	1956	5.68	2000	>RL
23	Na	45	2152.266	1858143	0.57	25000	>RL
24	Mg	45	17007.970	7587182	0.68	25000	>RL
27	Al	45	47050.986	8475115	1.39	10000	OUTCAL
39	K	45	6705.861	3018545	0.71	25000	>RL
44	Ca	45	565351.003	14673527	3.09	25000	OUTCAL
47	Ti	45	161.738	23770	3.52	2000	>RL
51	V	45	70.344	306107	1.37	2000	>RL
52	Cr	45	37.845	190004	0.93	2000	>RL
55	Mn	45	1128.910	3617363	0.90	2000	>RL
56	Fe	45	40001.687	173233722	0.18	10000	OUTCAL
59	Co	72	14.259	105488	0.44	2000	>RL
60	Ni	72	25.830	50551	0.89	2000	>RL
63	Cu	72	11.435	62435	1.77	2000	>RL
66	Zn	72	89.926	86428	1.58	2000	>RL
75	As	72	11.521	8708	0.89	2000	>RL
78	Se	72	3.300	269	8.69	2000	>RL
88	Sr	115	2439.252	10605982	0.69	2000	OUTCAL
95	Mo	115	2.654	8262	0.75	2000	>RL
107	Ag	115	0.062	646	3.74	500	
111	Cd	115	0.254	374	4.57	2000	
118	Sn	115	5.066	17442	0.78	2000	>RL
121	Sb	115	0.392	2270	5.35	500	
137	Ba	115	380.572	613978	1.11	2000	>RL
205	Tl	209	0.516	10995	1.28	2000	
208	Pb	209	21.923	325963	0.68	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1054476	1.53	1262119	83.55	70	120	
72	Ge	665121	1.20	801025	83.03	70	120	
115	In	6438995	0.66	7659162	84.07	70	120	
209	Bi	13045956	0.85	15802225	82.56	70	120	

Sample Report

Date Acquired	11/16/16 3:16 PM	Sample Name	1611028-07A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	122SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	61.324	2471	1.88	2000	>RL
9	Be	45	2.261	112	8.61	2000	>RL
11	B	45	170.179	3837	1.96	2000	>RL
23	Na	45	10628.813	9166257	1.94	25000	>RL
24	Mg	45	15492.045	7096409	0.66	25000	>RL
27	Al	45	71539.489	13228580	1.66	10000	OUTCAL
39	K	45	9279.206	4264099	0.37	25000	>RL
44	Ca	45	237135.230	6318438	2.02	25000	OUTCAL
47	Ti	45	136.692	20636	0.56	2000	>RL
51	V	45	96.122	428052	1.12	2000	>RL
52	Cr	45	58.424	300380	0.93	2000	>RL
55	Mn	45	403.705	1328355	1.19	2000	>RL
56	Fe	45	55160.741	245287270	2.50	10000	OUTCAL
59	Co	72	51.445	380977	0.45	2000	>RL
60	Ni	72	40.294	78820	1.75	2000	>RL
63	Cu	72	15.426	83776	0.98	2000	>RL
66	Zn	72	140.513	134816	1.57	2000	>RL
75	As	72	16.980	12744	2.11	2000	>RL
78	Se	72	4.232	318	11.75	2000	>RL
88	Sr	115	1781.286	7845303	1.75	2000	>RL
95	Mo	115	2.202	6956	2.16	2000	>RL
107	Ag	115	0.027	323	7.78	500	
111	Cd	115	0.073	114	9.36	2000	
118	Sn	115	6.083	21059	2.86	2000	>RL
121	Sb	115	0.168	1211	0.84	500	
137	Ba	115	634.961	1037561	1.68	2000	>RL
205	Tl	209	0.398	8762	1.11	2000	
208	Pb	209	41.429	633984	1.06	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1082611	0.58	1262119	85.78	70	120	
72	Ge	666167	0.53	801025	83.16	70	120	
115	In	6521665	0.84	7659162	85.15	70	120	
209	Bi	13444150	1.11	15802225	85.08	70	120	

Sample Report

Date Acquired	11/16/16 3:18 PM	Sample Name	1611028-08A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	123SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	87.890	3491	2.46	2000	>RL
9	Be	45	5.763	282	3.19	2000	>RL
11	B	45	188.307	4186	5.34	2000	>RL
23	Na	45	13177.743	11214029	2.62	25000	>RL
24	Mg	45	17794.557	8053827	1.98	25000	>RL
27	Al	45	79818.319	14582200	1.67	10000	OUTCAL
39	K	45	10534.452	4774279	0.78	25000	>RL
44	Ca	45	233933.823	6157878	0.48	25000	OUTCAL
47	Ti	45	135.877	20267	0.83	2000	>RL
51	V	45	103.949	457000	0.43	2000	>RL
52	Cr	45	63.929	324602	0.60	2000	>RL
55	Mn	45	1290.928	4196170	1.00	2000	>RL
56	Fe	45	59047.204	259422212	1.03	10000	OUTCAL
59	Co	72	181.250	1316518	0.61	2000	>RL
60	Ni	72	144.408	276330	0.42	2000	>RL
63	Cu	72	21.725	115053	0.58	2000	>RL
66	Zn	72	410.809	385169	0.77	2000	>RL
75	As	72	16.658	12270	1.51	2000	>RL
78	Se	72	6.144	411	5.28	2000	>RL
88	Sr	115	1871.271	8105053	1.32	2000	>RL
95	Mo	115	3.224	9979	1.86	2000	>RL
107	Ag	115	0.058	602	5.02	500	
111	Cd	115	0.146	218	4.92	2000	
118	Sn	115	6.431	21853	1.33	2000	>RL
121	Sb	115	0.261	1638	3.81	500	
137	Ba	115	130.769	210173	0.37	2000	>RL
205	Tl	209	0.722	15436	2.67	2000	
208	Pb	209	51.192	763679	0.27	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1069615	0.95	1262119	84.75	70	120	
72	Ge	653525	0.80	801025	81.59	70	120	
115	In	6414326	1.46	7659162	83.75	70	120	
209	Bi	13109699	0.96	15802225	82.96	70	120	

Sample Report

Date Acquired	11/16/16 3:20 PM	Sample Name	1611028-09A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	124SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	68.550	2725	4.84	2000	>RL
9	Be	45	1.902	93	3.72	2000	>RL
11	B	45	119.798	2696	2.82	2000	>RL
23	Na	45	1958.835	1720468	0.57	25000	>RL
24	Mg	45	14486.381	6552347	1.16	25000	>RL
27	Al	45	66236.634	12094470	1.60	10000	OUTCAL
39	K	45	12799.012	5783695	1.80	25000	>RL
44	Ca	45	276684.684	7279116	1.40	25000	OUTCAL
47	Ti	45	229.967	34275	1.41	2000	>RL
51	V	45	109.844	482433	1.09	2000	>RL
52	Cr	45	59.365	301344	0.43	2000	>RL
55	Mn	45	465.810	1513289	0.29	2000	>RL
56	Fe	45	65322.846	286809482	1.56	10000	OUTCAL
59	Co	72	16.537	122469	0.24	2000	>RL
60	Ni	72	31.259	61186	1.40	2000	>RL
63	Cu	72	53.632	286891	1.06	2000	>RL
66	Zn	72	302.786	289446	1.18	2000	>RL
75	As	72	21.436	16018	0.85	2000	>RL
78	Se	72	3.540	282	0.40	2000	>RL
88	Sr	115	2055.033	9022914	1.81	2000	OUTCAL
95	Mo	115	3.219	10099	1.61	2000	>RL
107	Ag	115	0.334	3209	4.81	500	
111	Cd	115	0.555	814	3.69	2000	>RL
118	Sn	115	6.878	23648	1.34	2000	>RL
121	Sb	115	2.808	14012	3.02	500	>RL
137	Ba	115	739.580	1204791	0.13	2000	>RL
205	Tl	209	0.488	10805	0.60	2000	
208	Pb	209	61.121	942024	0.71	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1068946	0.47	1262119	84.69	70	120	
72	Ge	665870	0.95	801025	83.13	70	120	
115	In	6502790	1.71	7659162	84.90	70	120	
209	Bi	13546034	0.86	15802225	85.72	70	120	

Sample Report

Date Acquired	11/16/16 3:22 PM	Sample Name	1611028-11A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	125SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	53.730	2185	1.59	2000	>RL
9	Be	45	1.890	94	10.83	2000	>RL
11	B	45	115.289	2654	4.92	2000	>RL
23	Na	45	5415.090	4741120	2.22	25000	>RL
24	Mg	45	11260.598	5201092	1.25	25000	>RL
27	Al	45	51337.094	9572555	0.87	10000	OUTCAL
39	K	45	8698.295	4034495	0.54	25000	>RL
44	Ca	45	402688.893	10818159	0.74	25000	OUTCAL
47	Ti	45	139.233	21194	1.44	2000	>RL
51	V	45	73.766	332106	0.56	2000	>RL
52	Cr	45	41.424	215169	0.29	2000	>RL
55	Mn	45	1284.598	4261374	0.22	2000	>RL
56	Fe	45	49472.413	221808382	1.51	10000	OUTCAL
59	Co	72	17.693	133828	0.16	2000	>RL
60	Ni	72	20.301	40693	2.50	2000	>RL
63	Cu	72	10.326	57824	0.52	2000	>RL
66	Zn	72	121.134	118762	0.52	2000	>RL
75	As	72	13.660	10514	1.20	2000	>RL
78	Se	72	2.715	243	2.74	2000	>RL
88	Sr	115	4080.739	18315280	2.61	2000	OUTCAL
95	Mo	115	2.145	6905	6.82	2000	>RL
107	Ag	115	0.027	326	8.34	500	
111	Cd	115	0.138	213	1.56	2000	
118	Sn	115	5.164	18336	2.25	2000	>RL
121	Sb	115	0.117	980	10.38	500	
137	Ba	115	121.989	203176	0.39	2000	>RL
205	Tl	209	0.343	7665	6.09	2000	
208	Pb	209	21.184	328550	0.68	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1091649	0.94	1262119	86.49	70	120	
72	Ge	680150	0.91	801025	84.91	70	120	
115	In	6646124	0.69	7659162	86.77	70	120	
209	Bi	13607210	0.74	15802225	86.11	70	120	

Sample Report

Date Acquired	11/16/16 3:24 PM	Sample Name	1611028-12A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	126SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	83.194	3392	2.63	2000	>RL
9	Be	45	2.417	121	9.48	2000	>RL
11	B	45	134.854	3105	5.35	2000	>RL
23	Na	45	4860.034	4285611	0.41	25000	>RL
24	Mg	45	12743.885	5919148	1.28	25000	>RL
27	Al	45	53762.381	10081307	1.36	10000	OUTCAL
39	K	45	14148.597	6558526	0.51	25000	>RL
44	Ca	45	221875.891	5994508	1.34	25000	OUTCAL
47	Ti	45	144.095	22060	2.68	2000	>RL
51	V	45	74.517	337333	0.59	2000	>RL
52	Cr	45	46.552	242984	0.89	2000	>RL
55	Mn	45	665.409	2219827	0.62	2000	>RL
56	Fe	45	72834.639	328420280	1.31	10000	OUTCAL
59	Co	72	32.239	246899	1.18	2000	>RL
60	Ni	72	38.220	77314	0.35	2000	>RL
63	Cu	72	6.999	40269	2.45	2000	>RL
66	Zn	72	186.019	184261	0.08	2000	>RL
75	As	72	17.238	13373	0.70	2000	>RL
78	Se	72	4.611	350	2.53	2000	>RL
88	Sr	115	3094.404	13962704	2.19	2000	OUTCAL
95	Mo	115	2.270	7344	5.52	2000	>RL
107	Ag	115	0.024	300	20.76	500	
111	Cd	115	0.083	132	11.91	2000	
118	Sn	115	5.094	18195	0.74	2000	>RL
121	Sb	115	0.101	906	5.39	500	
137	Ba	115	147.622	247169	1.67	2000	>RL
205	Tl	209	0.293	6655	0.69	2000	
208	Pb	209	24.166	380740	1.69	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1097747	1.08	1262119	86.98	70	120	
72	Ge	688806	0.88	801025	85.99	70	120	
115	In	6681590	0.87	7659162	87.24	70	120	
209	Bi	13828337	1.31	15802225	87.51	70	120	

Sample Report

Date Acquired	11/16/16 3:26 PM	Sample Name	1611028-14A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	127SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	63.528	2709	1.02	2000	>RL
9	Be	45	2.976	156	11.10	2000	>RL
11	B	45	91.089	2222	4.39	2000	>RL
23	Na	45	1066.738	1035799	0.09	25000	>RL
24	Mg	45	13235.167	6417554	1.91	25000	>RL
27	Al	45	74957.571	14671538	1.75	10000	OUTCAL
39	K	45	15197.957	7349434	0.64	25000	>RL
44	Ca	45	33596.328	947992	0.34	25000	OUTCAL
47	Ti	45	274.578	43871	1.10	2000	>RL
51	V	45	101.488	478143	0.65	2000	>RL
52	Cr	45	64.100	348687	0.76	2000	>RL
55	Mn	45	554.189	1930048	0.50	2000	>RL
56	Fe	45	67754.395	318911694	1.13	10000	OUTCAL
59	Co	72	22.609	180724	0.41	2000	>RL
60	Ni	72	39.444	83262	0.30	2000	>RL
63	Cu	72	37.098	214807	1.30	2000	>RL
66	Zn	72	230.412	237993	0.70	2000	>RL
75	As	72	22.353	18021	0.23	2000	>RL
78	Se	72	4.376	352	5.30	2000	>RL
88	Sr	115	349.217	1625385	0.36	2000	>RL
95	Mo	115	2.391	7972	1.72	2000	>RL
107	Ag	115	0.137	1430	5.72	500	
111	Cd	115	0.594	923	1.44	2000	>RL
118	Sn	115	6.111	22359	2.77	2000	>RL
121	Sb	115	3.488	18339	1.60	500	>RL
137	Ba	115	519.190	896416	0.63	2000	>RL
205	Tl	209	0.582	13614	1.94	2000	
208	Pb	209	87.973	1432062	0.49	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1145929	0.24	1262119	90.79	70	120	
72	Ge	718837	0.24	801025	89.74	70	120	
115	In	6891395	1.39	7659162	89.98	70	120	
209	Bi	14311027	0.43	15802225	90.56	70	120	

Sample Report

Date Acquired	11/16/16 3:28 PM	Sample Name	1611028-15A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	128SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	79.339	3402	2.89	2000	>RL
9	Be	45	3.214	170	5.35	2000	>RL
11	B	45	128.761	3120	2.46	2000	>RL
23	Na	45	3599.629	3354719	0.70	25000	>RL
24	Mg	45	18069.935	8823056	1.86	25000	>RL
27	Al	45	96699.686	19058858	1.42	10000	OUTCAL
39	K	45	18904.480	9189400	1.45	25000	>RL
44	Ca	45	72341.514	2054913	1.04	25000	OUTCAL
47	Ti	45	281.991	45367	0.76	2000	>RL
51	V	45	136.615	646716	0.51	2000	>RL
52	Cr	45	80.902	442749	0.56	2000	>RL
55	Mn	45	631.804	2215688	0.42	2000	>RL
56	Fe	45	82947.208	393141193	0.62	10000	OUTCAL
59	Co	72	26.604	213823	1.39	2000	>RL
60	Ni	72	48.749	103401	1.42	2000	>RL
63	Cu	72	29.832	174065	1.29	2000	>RL
66	Zn	72	234.493	243552	1.36	2000	>RL
75	As	72	24.095	19514	1.18	2000	>RL
78	Se	72	5.165	399	11.85	2000	>RL
88	Sr	115	495.864	2296680	0.96	2000	>RL
95	Mo	115	2.126	7063	1.62	2000	>RL
107	Ag	115	0.133	1387	4.25	500	
111	Cd	115	0.481	746	9.82	2000	>RL
118	Sn	115	6.323	22990	1.76	2000	>RL
121	Sb	115	0.832	4666	5.35	500	
137	Ba	115	478.167	821580	1.03	2000	>RL
205	Tl	209	0.704	16442	2.49	2000	
208	Pb	209	40.800	664644	0.58	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1153929	0.62	1262119	91.43	70	120	
72	Ge	722843	0.49	801025	90.24	70	120	
115	In	6857751	1.19	7659162	89.54	70	120	
209	Bi	14311714	1.46	15802225	90.57	70	120	

Sample Report

Date Acquired	11/16/16 3:30 PM	Sample Name	1611028-16A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	129SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	55.761	2249	2.34	2000	>RL
9	Be	45	1.438	71	5.84	2000	>RL
11	B	45	133.394	3031	2.10	2000	>RL
23	Na	45	7455.748	6453801	1.46	25000	>RL
24	Mg	45	10215.546	4682427	0.44	25000	>RL
27	Al	45	48054.897	8891417	0.73	10000	OUTCAL
39	K	45	8432.421	3883533	1.37	25000	>RL
44	Ca	45	364653.232	9722625	1.74	25000	OUTCAL
47	Ti	45	166.125	25098	2.53	2000	>RL
51	V	45	78.038	348498	1.80	2000	>RL
52	Cr	45	46.085	237411	1.24	2000	>RL
55	Mn	45	138.441	456055	2.47	2000	>RL
56	Fe	45	44336.533	197310254	2.18	10000	OUTCAL
59	Co	72	8.555	64802	0.87	2000	>RL
60	Ni	72	17.716	35571	0.83	2000	>RL
63	Cu	72	9.272	52137	1.03	2000	>RL
66	Zn	72	87.536	86102	0.81	2000	>RL
75	As	72	15.714	12069	2.05	2000	>RL
78	Se	72	3.936	309	12.88	2000	>RL
88	Sr	115	1442.552	6572617	0.77	2000	>RL
95	Mo	115	1.359	4471	2.34	2000	
107	Ag	115	0.041	470	10.64	500	
111	Cd	115	0.123	194	6.93	2000	
118	Sn	115	4.906	17722	2.38	2000	>RL
121	Sb	115	0.193	1380	1.21	500	
137	Ba	115	755.952	1277986	0.81	2000	>RL
205	Tl	209	0.274	6098	2.99	2000	
208	Pb	209	22.941	353716	1.11	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1083461	2.05	1262119	85.84	70	120	
72	Ge	680639	1.52	801025	84.97	70	120	
115	In	6747796	1.58	7659162	88.10	70	120	
209	Bi	13529343	0.67	15802225	85.62	70	120	

Sample Report

Date Acquired	11/16/16 3:32 PM	Sample Name	1611028-17A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	130SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	79.876	3254	3.62	2000	>RL
9	Be	45	2.033	102	10.92	2000	>RL
11	B	45	154.877	3546	5.80	2000	>RL
23	Na	45	9121.951	7976592	1.06	25000	>RL
24	Mg	45	11501.751	5336563	2.09	25000	>RL
27	Al	45	52883.452	9904638	0.51	10000	OUTCAL
39	K	45	10968.612	5093355	1.68	25000	>RL
44	Ca	45	196985.928	5315923	1.29	25000	OUTCAL
47	Ti	45	139.759	21370	1.35	2000	>RL
51	V	45	93.374	421234	0.79	2000	>RL
52	Cr	45	53.197	277127	1.27	2000	>RL
55	Mn	45	150.042	500135	1.70	2000	>RL
56	Fe	45	86669.247	390319229	1.46	10000	OUTCAL
59	Co	72	10.633	81723	1.57	2000	>RL
60	Ni	72	18.302	37294	1.25	2000	>RL
63	Cu	72	9.253	52817	1.20	2000	>RL
66	Zn	72	116.042	115587	1.33	2000	>RL
75	As	72	28.228	21806	0.40	2000	>RL
78	Se	72	4.308	334	13.52	2000	>RL
88	Sr	115	1381.241	6267575	2.06	2000	>RL
95	Mo	115	3.586	11621	0.55	2000	>RL
107	Ag	115	0.022	284	15.07	500	
111	Cd	115	0.051	86	13.69	2000	
118	Sn	115	5.008	18005	0.33	2000	>RL
121	Sb	115	0.161	1212	7.86	500	
137	Ba	115	156.361	263340	1.18	2000	>RL
205	Tl	209	0.257	5811	0.45	2000	
208	Pb	209	24.716	387035	0.40	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1096455	0.38	1262119	86.87	70	120	
72	Ge	690809	0.57	801025	86.24	70	120	
115	In	6722255	2.04	7659162	87.77	70	120	
209	Bi	13744709	1.01	15802225	86.98	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 15:34	Sample Name	CCV5-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	131_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.035	8260	1.56	200	101.5	90	110	
9	Be	45	211.671	10641	0.28	200	105.8	90	110	
11	B	45	222.975	5073	4.50	200	111.5	90	110	Fail
23	Na	45	5175.161	4563446	0.71	5000	103.5	90	110	
24	Mg	45	5093.757	2368593	0.92	5000	101.9	90	110	
27	Al	45	5467.716	1027864	1.00	5000	109.4	90	110	
39	K	45	5255.967	2479471	1.29	5000	105.1	90	110	
44	Ca	45	4946.496	134305	2.43	5000	98.9	90	110	
47	Ti	45	206.119	31578	1.96	200	103.1	90	110	
51	V	45	208.624	938356	1.50	200	104.3	90	110	
52	Cr	45	210.664	1095381	0.29	200	105.3	90	110	
55	Mn	45	207.376	692617	0.74	200	103.7	90	110	
56	Fe	45	5220.958	23567651	1.17	5000	104.4	90	110	
59	Co	72	208.984	1639058	1.04	200	104.5	90	110	
60	Ni	72	209.812	433376	1.77	200	104.9	90	110	
63	Cu	72	212.186	1197581	1.78	200	106.1	90	110	
66	Zn	72	214.005	217049	0.70	200	107.0	90	110	
75	As	72	214.540	167626	1.28	200	107.3	90	110	
78	Se	72	212.509	11941	1.82	200	106.3	90	110	
88	Sr	115	206.048	959513	1.02	200	103.0	90	110	
95	Mo	115	205.201	677452	0.62	200	102.6	90	110	
107	Ag	115	202.368	2018616	0.94	200	101.2	90	110	
111	Cd	115	209.201	322072	1.09	200	104.6	90	110	
118	Sn	115	205.163	725000	0.94	200	102.6	90	110	
121	Sb	115	206.070	1059531	1.10	200	103.0	90	110	
137	Ba	115	210.537	363637	1.02	200	105.3	90	110	
205	Tl	209	197.725	4604198	0.50	200	98.9	90	110	
208	Pb	209	202.666	3307160	0.45	200	101.3	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1098738	1.01	1262119	87.06	70	120	
72	Ge	705634	0.48	801025	88.09	70	120	
115	In	6882115	0.84	7659162	89.85	70	120	
209	Bi	14351831	0.75	15802225	90.82	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 15:39	Sample Name	LCVL5-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	133LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.107	426	4.09	1	1010.7	70	130	Fail
9	Be	45	1.109	55	23.59	1	110.9	70	130	
11	B	45	29.766	759	5.07	20	148.8	70	130	Fail
23	Na	45	107.771	158828	0.63	100	107.8	70	130	
24	Mg	45	98.884	46399	0.87	100	98.9	70	130	
27	Al	45	159.675	31656	1.61	100	159.7	70	130	Fail
39	K	45	109.090	114252	1.67	100	109.1	70	130	
44	Ca	45	115.492	3645	2.30	100	115.5	70	130	
47	Ti	45	4.815	741	8.49	5	96.3	70	130	
51	V	45	0.678	6884	1.99	1	67.8	70	130	Fail
52	Cr	45	5.166	28123	1.47	5	103.3	70	130	
55	Mn	45	5.448	18316	2.00	5	109.0	70	130	
56	Fe	45	107.253	490051	1.55	100	107.3	70	130	
59	Co	72	5.114	40007	1.21	5	102.3	70	130	
60	Ni	72	5.073	10740	2.66	5	101.5	70	130	
63	Cu	72	5.228	31120	0.88	5	104.6	70	130	
66	Zn	72	5.262	6122	1.42	5	105.2	70	130	
75	As	72	5.240	4319	2.57	5	104.8	70	130	
78	Se	72	6.051	436	4.28	5	121.0	70	130	
88	Sr	115	5.098	24194	0.74	5	102.0	70	130	
95	Mo	115	4.929	16315	2.48	5	98.6	70	130	
107	Ag	115	1.943	19388	3.05	2	97.1	70	130	
111	Cd	115	1.070	1652	4.09	1	107.0	70	130	
118	Sn	115	5.052	18572	0.74	5	101.0	70	130	
121	Sb	115	2.021	10776	2.20	2	101.0	70	130	
137	Ba	115	5.083	8806	2.66	5	101.7	70	130	
205	Tl	209	1.012	23187	0.48	1	101.2	70	130	
208	Pb	209	1.012	17119	0.82	1	101.2	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1092377	1.38	1262119	86.55	70	120	
72	Ge	702254	0.75	801025	87.67	70	120	
115	In	6875779	1.68	7659162	89.77	70	120	
209	Bi	14065448	1.70	15802225	89.01	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 15:41	Sample Name	CCB5-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	134_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.026	17	21.8	2	5	
9	Be	45	0.053	3	43.3	0.4	0.3	
11	B	45	11.025	348	4.7	10	10	FailAq FailSoil
23	Na	45	5.156	71059	1.0	50	100	
24	Mg	45	-0.036	691	12.0	50	100	
27	Al	45	24.490	6516	4.4	50	10	FailAq
39	K	45	6.975	68457	0.4	50	100	
44	Ca	45	8.874	789	6.2	50	100	
47	Ti	45	-0.022	4	114.6	4	3	
51	V	45	-0.324	2452	5.4	4	3	
52	Cr	45	-0.079	1066	9.5	2	2	
55	Mn	45	0.013	278	10.2	2	3	
56	Fe	45	3.064	22853	4.4	50	50	
59	Co	72	0.006	141	13.0	2	3	
60	Ni	72	-0.072	176	24.0	2	3	
63	Cu	72	-0.079	1381	8.2	2	2	
66	Zn	72	-0.430	408	3.7	4	2	
75	As	72	-0.090	184	9.1	2	2	
78	Se	72	0.707	143	6.7	1	2	
88	Sr	115	0.093	951	7.6	4	3	
95	Mo	115	0.073	320	3.8	2	2	
107	Ag	115	0.020	262	25.5	0.4	1	
111	Cd	115	0.005	17	0.0	0.4	0.3	
118	Sn	115	-0.026	689	7.7	4	3	
121	Sb	115	0.011	469	4.7	2	0.8	
137	Ba	115	0.024	90	16.1	2	3	
205	Tl	209	0.016	462	8.4	2	0.5	
208	Pb	209	0.015	1206	11.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1106075	0.32	1262119	87.64	70	120	
72	Ge	716142	0.46	801025	89.40	70	120	
115	In	6834634	0.84	7659162	89.23	70	120	
209	Bi	14367921	0.97	15802225	90.92	70	120	

Method Blank Report

Date Acquired	11/16/16 3:43 PM	Sample Name	MB-77903
Data Batch	161116.b	Comment	MBLKICPMS_TSDOD1
Data File Name	135_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.100	14	17.56		
9	Be	45	0.053	3	21.65		
11	B	45	10.689	341	22.97		J
23	Na	45	14.823	79654	0.49		
24	Mg	45	3.320	2266	5.84		
27	Al	45	-1.759	1559	5.30		
39	K	45	17.299	73363	0.25		
44	Ca	45	13.697	921	10.17		
47	Ti	45	0.064	18	57.27		
51	V	45	-0.292	2600	7.03		
52	Cr	45	0.093	1970	10.15		
55	Mn	45	0.128	666	1.76		
56	Fe	45	7.347	42386	6.74		
59	Co	72	0.010	180	23.21		
60	Ni	72	0.047	428	1.96		
63	Cu	72	0.011	1906	5.31		
66	Zn	72	0.357	1220	4.40		
75	As	72	-0.073	198	5.89		
78	Se	72	0.396	126	6.49		
88	Sr	115	0.041	741	13.39		
95	Mo	115	0.048	248	8.11		
107	Ag	115	0.012	193	26.93		
111	Cd	115	0.017	37	39.62		
118	Sn	115	3.802	14656	1.19		
121	Sb	115	-0.009	384	3.28		
137	Ba	115	0.036	114	10.23		
205	Tl	209	0.010	336	26.85		
208	Pb	209	0.031	1510	7.66		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1108103	0.99	1262119	87.80	70	120	
72	Ge	719256	0.79	801025	89.79	70	120	
115	In	7111949	3.18	7659162	92.86	70	120	
209	Bi	14867186	0.73	15802225	94.08	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 15:45	Sample Name	LCS-77903
Data Batch	161116.b	Comment	LCS ICPMS_TSDOD1
Data File Name	136_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.250	8385	1.04	200	99.6	80	120	
9	Be	45	207.216	10776	2.33	200	103.6	80	120	
11	B	45	207.793	4896	3.20	200	103.9	80	120	
23	Na	45	5095.075	4648520	2.33	1000	509.5	80	120	Fail
24	Mg	45	4980.447	2395580	1.09	1000	498.0	80	120	Fail
27	Al	45	986.463	193416	1.50	1000	98.6	80	120	
39	K	45	5069.397	2476007	0.72	1000	506.9	80	120	Fail
44	Ca	45	4703.766	132120	0.62	1000	470.4	80	120	Fail
47	Ti	45	200.990	31851	1.50	200	100.5	80	120	
51	V	45	200.926	934919	0.41	200	100.5	80	120	
52	Cr	45	203.378	1093946	0.33	200	101.7	80	120	
55	Mn	45	199.723	690007	0.15	200	99.9	80	120	
56	Fe	45	1011.947	4733060	0.41	1000	101.2	80	120	
59	Co	72	203.488	1640951	0.53	200	101.7	80	120	
60	Ni	72	203.722	432673	0.92	200	101.9	80	120	
63	Cu	72	205.377	1191867	0.33	200	102.7	80	120	
66	Zn	72	202.789	211521	0.29	200	101.4	80	120	
75	As	72	207.061	166352	0.40	200	103.5	80	120	
78	Se	72	203.221	11746	0.84	200	101.6	80	120	
88	Sr	115	199.229	947535	0.46	200	99.6	80	120	
95	Mo	115	200.622	676425	0.23	200	100.3	80	120	
107	Ag	115	200.015	2037820	1.01	200	100.0	80	120	
111	Cd	115	201.804	317326	0.71	200	100.9	80	120	
118	Sn	115	205.199	740664	1.26	200	102.6	80	120	
121	Sb	115	204.649	1074678	0.86	200	102.3	80	120	
137	Ba	115	203.973	359733	1.03	200	102.0	80	120	
205	Tl	209	195.261	4609836	0.36	200	97.6	80	120	
208	Pb	209	198.031	3276167	0.64	200	99.0	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1136505	0.16	1262119	90.05	70	120	
72	Ge	725551	0.51	801025	90.58	70	120	
115	In	7030545	2.18	7659162	91.79	70	120	
209	Bi	14550601	0.91	15802225	92.08	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 15:47	Sample Name	LCSD-77903
Data Batch	161116.b	Comment	LCSDICPMS_TSDOD1
Data File Name	137_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.042	8349	1.21	200	99.5	80	120	
9	Be	45	207.044	10731	2.09	200	103.5	80	120	
11	B	45	214.190	5027	3.63	200	107.1	80	120	
23	Na	45	5100.727	4638485	0.93	1000	510.1	80	120	Fail
24	Mg	45	5027.227	2410226	0.63	1000	502.7	80	120	Fail
27	Al	45	997.673	194956	0.62	1000	99.8	80	120	
39	K	45	5123.212	2493495	0.38	1000	512.3	80	120	Fail
44	Ca	45	4728.858	132391	0.05	1000	472.9	80	120	Fail
47	Ti	45	201.929	31894	1.92	200	101.0	80	120	
51	V	45	203.436	943467	1.05	200	101.7	80	120	
52	Cr	45	204.407	1095908	0.76	200	102.2	80	120	
55	Mn	45	200.020	688809	0.89	200	100.0	80	120	
56	Fe	45	1024.356	4775589	0.57	1000	102.4	80	120	
59	Co	72	204.284	1653779	1.44	200	102.1	80	120	
60	Ni	72	204.378	435766	0.26	200	102.2	80	120	
63	Cu	72	205.009	1194446	0.57	200	102.5	80	120	
66	Zn	72	202.345	211888	0.33	200	101.2	80	120	
75	As	72	205.514	165763	0.08	200	102.8	80	120	
78	Se	72	201.142	11672	1.44	200	100.6	80	120	
88	Sr	115	199.392	950262	1.28	200	99.7	80	120	
95	Mo	115	202.903	685424	0.84	200	101.5	80	120	
107	Ag	115	200.421	2045375	1.20	200	100.2	80	120	
111	Cd	115	201.708	317782	1.04	200	100.9	80	120	
118	Sn	115	205.693	743839	0.88	200	102.8	80	120	
121	Sb	115	204.658	1076873	1.17	200	102.3	80	120	
137	Ba	115	202.259	357438	1.01	200	101.1	80	120	
205	Tl	209	194.148	4618683	0.90	200	97.1	80	120	
208	Pb	209	198.027	3301354	0.92	200	99.0	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1132847	0.54	1262119	89.76	70	120	
72	Ge	728421	0.64	801025	90.94	70	120	
115	In	7044696	2.40	7659162	91.98	70	120	
209	Bi	14662232	0.73	15802225	92.79	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/16/2016 15:53	Sample Name	1611044-01A SD
Data Batch	161116.b	Comment	SD ICPMS_TSDOD1
Data File Name	140_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	12.814	544	3.86	58.3	109.9	110	90	Good
9	Be	45	0.636	32	9.45	2.8	111.7	110	90	
11	B	45	24.126	644	7.25	80.7	149.4	110	90	
23	Na	45	240.302	277972	0.75	1096.6	109.6	110	90	Good
24	Mg	45	2760.133	1297914	0.64	13177.1	104.7	110	90	Good
27	Al	45	13666.637	2594721	0.66	67621.4	101.1	110	90	Good
39	K	45	3318.653	1606915	0.58	15795.2	105.1	110	90	Good
44	Ca	45	13852.121	379239	1.52	65810.0	105.2	110	90	Good
47	Ti	45	77.065	11940	2.40	361.9	106.5	110	90	Good
51	V	45	20.971	98901	1.24	101.4	103.4	110	90	Good
52	Cr	45	13.309	71361	1.00	61.8	107.6	110	90	Good
55	Mn	45	142.518	481322	0.69	672.5	106.0	110	90	Good
56	Fe	45	13555.929	61860342	0.79	64493.9	105.1	110	90	Good
59	Co	72	5.066	39931	1.94	24.3	104.2	110	90	Good
60	Ni	72	8.524	17962	0.91	40.5	105.2	110	90	Good
63	Cu	72	8.245	48403	1.00	39.1	105.5	110	90	Good
66	Zn	72	58.597	60200	0.20	270.3	108.4	110	90	Good
75	As	72	5.225	4340	0.96	25.6	101.9	110	90	Good
78	Se	72	1.315	175	9.54	4.7	140.8	110	90	
88	Sr	115	69.582	329969	1.55	350.2	99.3	110	90	Good
95	Mo	115	0.494	1743	9.98	2.2	112.0	110	90	
107	Ag	115	0.068	760	18.56	0.2	157.1	110	90	
111	Cd	115	0.167	270	5.38	0.8	103.3	110	90	Good
118	Sn	115	1.108	4779	2.87	6.1	90.3	110	90	Good
121	Sb	115	2.116	11487	0.62	10.8	98.4	110	90	Good
137	Ba	115	89.161	156727	1.32	442.5	100.7	110	90	Good
205	Tl	209	0.135	3309	1.56	0.7	102.4	110	90	Good
208	Pb	209	79.029	1319455	0.80	402.0	98.3	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1110857	0.70	1262119	88.02	70	120	
72	Ge	707564	0.59	801025	88.33	70	120	
115	In	7014865	2.12	7659162	91.59	70	120	
209	Bi	14676662	0.57	15802225	92.88	70	120	

Sample Report

Date Acquired	11/16/16 3:55 PM	Sample Name	1611028-18A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	141SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	63.217	2594	3.79	2000	>RL
9	Be	45	2.530	128	9.44	2000	>RL
11	B	45	79.002	1868	4.39	2000	>RL
23	Na	45	1132.793	1054335	0.16	25000	>RL
24	Mg	45	12334.891	5755421	0.44	25000	>RL
27	Al	45	70656.635	13308279	0.33	10000	OUTCAL
39	K	45	14770.058	6874725	1.12	25000	>RL
44	Ca	45	29419.108	798883	0.48	25000	OUTCAL
47	Ti	45	242.606	37302	2.32	2000	>RL
51	V	45	94.308	427840	0.34	2000	>RL
52	Cr	45	59.415	311126	0.47	2000	>RL
55	Mn	45	563.206	1887434	0.92	2000	>RL
56	Fe	45	66813.178	302625801	0.40	10000	OUTCAL
59	Co	72	22.269	172712	1.24	2000	>RL
60	Ni	72	38.725	79320	0.63	2000	>RL
63	Cu	72	31.243	175816	0.34	2000	>RL
66	Zn	72	324.087	324479	0.56	2000	>RL
75	As	72	21.344	16708	1.08	2000	>RL
78	Se	72	4.508	348	5.95	2000	>RL
88	Sr	115	297.750	1374103	0.53	2000	>RL
95	Mo	115	2.229	7374	1.23	2000	>RL
107	Ag	115	0.158	1627	1.28	500	
111	Cd	115	0.477	737	11.34	2000	>RL
118	Sn	115	5.993	21752	1.41	2000	>RL
121	Sb	115	2.758	14465	1.49	500	>RL
137	Ba	115	438.250	750263	1.04	2000	>RL
205	Tl	209	0.564	13019	3.80	2000	
208	Pb	209	69.155	1111009	0.71	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1102710	0.44	1262119	87.37	70	120	
72	Ge	697499	0.63	801025	87.08	70	120	
115	In	6832483	1.06	7659162	89.21	70	120	
209	Bi	14122247	0.75	15802225	89.37	70	120	

Sample Report

Date Acquired	11/16/16 3:57 PM	Sample Name	1611028-19A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	142SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	80.104	3295	2.04	2000	>RL
9	Be	45	3.402	172	6.87	2000	>RL
11	B	45	116.894	2727	3.50	2000	>RL
23	Na	45	3955.191	3530218	0.71	25000	>RL
24	Mg	45	17491.813	8194568	1.61	25000	>RL
27	Al	45	91528.395	17308899	0.52	10000	OUTCAL
39	K	45	18009.908	8403076	2.70	25000	>RL
44	Ca	45	69409.976	1891721	0.46	25000	OUTCAL
47	Ti	45	271.193	41864	2.20	2000	>RL
51	V	45	132.246	600807	1.00	2000	>RL
52	Cr	45	77.805	408612	0.42	2000	>RL
55	Mn	45	602.740	2028135	0.78	2000	>RL
56	Fe	45	82920.689	377098145	0.62	10000	OUTCAL
59	Co	72	25.154	192469	0.47	2000	>RL
60	Ni	72	45.588	92074	1.17	2000	>RL
63	Cu	72	28.542	158616	0.74	2000	>RL
66	Zn	72	227.217	224687	0.98	2000	>RL
75	As	72	22.548	17400	0.76	2000	>RL
78	Se	72	4.870	363	1.58	2000	>RL
88	Sr	115	492.616	2220076	0.90	2000	>RL
95	Mo	115	2.102	6798	3.84	2000	>RL
107	Ag	115	0.129	1317	4.44	500	
111	Cd	115	0.467	704	14.36	2000	>RL
118	Sn	115	6.332	22404	1.25	2000	>RL
121	Sb	115	0.685	3812	3.99	500	
137	Ba	115	541.916	906075	0.85	2000	>RL
205	Tl	209	0.692	15378	1.20	2000	
208	Pb	209	48.841	756718	1.21	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1107159	0.39	1262119	87.72	70	120	
72	Ge	688142	0.43	801025	85.91	70	120	
115	In	6673226	1.03	7659162	87.13	70	120	
209	Bi	13613954	1.23	15802225	86.15	70	120	

Sample Report

Date Acquired	11/16/16 3:59 PM	Sample Name	1611028-20A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	143SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	57.345	2297	4.09	2000	>RL
9	Be	45	1.666	82	14.99	2000	>RL
11	B	45	144.161	3246	2.33	2000	>RL
23	Na	45	9260.618	7945872	1.10	25000	>RL
24	Mg	45	10262.989	4672486	1.07	25000	>RL
27	Al	45	48377.467	8891050	2.38	10000	OUTCAL
39	K	45	9139.772	4175297	0.67	25000	>RL
44	Ca	45	372411.647	9861144	1.07	25000	OUTCAL
47	Ti	45	163.574	24540	2.86	2000	>RL
51	V	45	83.299	369163	0.72	2000	>RL
52	Cr	45	48.286	246984	0.38	2000	>RL
55	Mn	45	149.384	488659	0.17	2000	>RL
56	Fe	45	47135.043	208323570	1.13	10000	OUTCAL
59	Co	72	8.098	60789	0.47	2000	>RL
60	Ni	72	16.826	33497	1.45	2000	>RL
63	Cu	72	10.258	56975	1.42	2000	>RL
66	Zn	72	84.834	82715	0.71	2000	>RL
75	As	72	19.957	15121	0.75	2000	>RL
78	Se	72	3.054	259	7.61	2000	>RL
88	Sr	115	1708.824	7582982	0.77	2000	>RL
95	Mo	115	1.967	6269	2.53	2000	
107	Ag	115	0.080	829	13.70	500	
111	Cd	115	0.161	246	10.28	2000	
118	Sn	115	5.125	17999	2.50	2000	>RL
121	Sb	115	0.229	1520	0.44	500	
137	Ba	115	340.089	559963	0.95	2000	>RL
205	Tl	209	0.267	5981	1.41	2000	
208	Pb	209	27.328	423118	0.47	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1075978	0.60	1262119	85.25	70	120	
72	Ge	674426	0.49	801025	84.20	70	120	
115	In	6571178	0.70	7659162	85.79	70	120	
209	Bi	13596723	2.34	15802225	86.04	70	120	

Sample Report

Date Acquired	11/16/16 4:01 PM	Sample Name	1611028-21A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	144SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	66.550	2663	1.16	2000	>RL
9	Be	45	1.672	82	3.90	2000	>RL
11	B	45	149.756	3368	3.07	2000	>RL
23	Na	45	9033.095	7751225	1.76	25000	>RL
24	Mg	45	9619.596	4379485	0.15	25000	>RL
27	Al	45	44655.800	8207626	2.11	10000	OUTCAL
39	K	45	10761.218	4904364	0.47	25000	>RL
44	Ca	45	208325.483	5516335	0.19	25000	OUTCAL
47	Ti	45	139.762	20965	3.71	2000	>RL
51	V	45	69.853	310166	0.77	2000	>RL
52	Cr	45	44.172	226040	0.76	2000	>RL
55	Mn	45	84.090	275159	0.51	2000	>RL
56	Fe	45	63244.077	279504273	0.76	10000	OUTCAL
59	Co	72	6.063	46039	0.64	2000	>RL
60	Ni	72	12.937	26116	2.13	2000	>RL
63	Cu	72	6.643	37924	0.53	2000	>RL
66	Zn	72	88.787	87491	0.57	2000	>RL
75	As	72	15.705	12084	0.55	2000	>RL
78	Se	72	3.475	285	4.70	2000	>RL
88	Sr	115	3631.519	16149627	0.88	2000	OUTCAL
95	Mo	115	2.179	6950	3.02	2000	>RL
107	Ag	115	0.040	444	24.81	500	
111	Cd	115	0.035	60	22.22	2000	
118	Sn	115	5.010	17651	1.38	2000	>RL
121	Sb	115	0.129	1034	1.04	500	
137	Ba	115	108.991	179884	0.37	2000	>RL
205	Tl	209	0.199	4474	2.55	2000	
208	Pb	209	22.212	344011	0.38	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1075931	0.82	1262119	85.25	70	120	
72	Ge	681889	0.56	801025	85.13	70	120	
115	In	6585710	0.46	7659162	85.98	70	120	
209	Bi	13589619	0.68	15802225	86.00	70	120	

Sample Report

Date Acquired	11/16/16 4:03 PM	Sample Name	1611028-22A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	145SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	63.187	2572	1.10	2000	>RL
9	Be	45	2.938	147	9.88	2000	>RL
11	B	45	84.542	1977	6.64	2000	>RL
23	Na	45	1355.893	1239101	0.65	25000	>RL
24	Mg	45	12722.004	5889600	1.72	25000	>RL
27	Al	45	73557.223	13745579	1.42	10000	OUTCAL
39	K	45	15431.979	7123706	0.78	25000	>RL
44	Ca	45	34800.075	937447	0.55	25000	OUTCAL
47	Ti	45	257.200	39235	2.39	2000	>RL
51	V	45	99.827	449077	0.32	2000	>RL
52	Cr	45	61.929	321668	0.20	2000	>RL
55	Mn	45	559.414	1860002	0.44	2000	>RL
56	Fe	45	67820.130	304746112	1.47	10000	OUTCAL
59	Co	72	22.774	176078	0.67	2000	>RL
60	Ni	72	39.167	79970	0.07	2000	>RL
63	Cu	72	33.462	187582	0.36	2000	>RL
66	Zn	72	228.491	228283	0.48	2000	>RL
75	As	72	22.341	17422	0.86	2000	>RL
78	Se	72	4.278	335	9.73	2000	>RL
88	Sr	115	330.002	1509457	0.31	2000	>RL
95	Mo	115	2.279	7472	0.81	2000	>RL
107	Ag	115	0.166	1696	3.57	500	
111	Cd	115	0.502	768	0.90	2000	>RL
118	Sn	115	6.097	21920	1.14	2000	>RL
121	Sb	115	2.585	13464	0.68	500	>RL
137	Ba	115	427.148	724734	1.25	2000	>RL
205	Tl	209	0.557	12731	1.04	2000	
208	Pb	209	66.087	1052171	0.21	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1094034	0.73	1262119	86.68	70	120	
72	Ge	695289	0.32	801025	86.80	70	120	
115	In	6771491	0.44	7659162	88.41	70	120	
209	Bi	13994621	0.99	15802225	88.56	70	120	

Sample Report

Date Acquired	11/16/16 4:05 PM	Sample Name	1611028-23A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	146SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	76.366	3149	2.02	2000	>RL
9	Be	45	2.770	141	22.17	2000	>RL
11	B	45	126.041	2939	4.09	2000	>RL
23	Na	45	4914.751	4380012	0.74	25000	>RL
24	Mg	45	17158.090	8055732	1.03	25000	>RL
27	Al	45	83806.712	15882682	1.70	10000	OUTCAL
39	K	45	15961.326	7470527	1.43	25000	>RL
44	Ca	45	102028.194	2786486	0.24	25000	OUTCAL
47	Ti	45	246.456	38128	1.65	2000	>RL
51	V	45	127.502	580641	0.34	2000	>RL
52	Cr	45	73.041	384511	0.61	2000	>RL
55	Mn	45	522.805	1762993	0.58	2000	>RL
56	Fe	45	74860.058	341189853	1.42	10000	OUTCAL
59	Co	72	22.514	173433	0.20	2000	>RL
60	Ni	72	42.143	85702	0.35	2000	>RL
63	Cu	72	27.105	151731	0.67	2000	>RL
66	Zn	72	200.840	200040	1.34	2000	>RL
75	As	72	21.874	17001	0.75	2000	>RL
78	Se	72	4.439	342	9.51	2000	>RL
88	Sr	115	572.727	2580402	0.68	2000	>RL
95	Mo	115	1.944	6288	1.11	2000	
107	Ag	115	0.111	1141	1.61	500	
111	Cd	115	0.496	748	10.96	2000	>RL
118	Sn	115	6.185	21889	1.41	2000	>RL
121	Sb	115	0.773	4247	1.85	500	
137	Ba	115	1427.432	2385547	0.71	2000	>RL
205	Tl	209	0.608	13589	1.88	2000	
208	Pb	209	38.995	607968	0.94	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1109574	0.33	1262119	87.91	70	120	
72	Ge	692799	1.27	801025	86.49	70	120	
115	In	6672421	2.03	7659162	87.12	70	120	
209	Bi	13695743	1.37	15802225	86.67	70	120	

Sample Report

Date Acquired	11/16/16 4:07 PM	Sample Name	1611028-24A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	147SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	57.892	2344	0.95	2000	>RL
9	Be	45	2.123	106	1.45	2000	>RL
11	B	45	140.170	3193	1.07	2000	>RL
23	Na	45	8652.906	7507978	0.61	25000	>RL
24	Mg	45	9640.469	4436288	0.69	25000	>RL
27	Al	45	43922.845	8160036	1.24	10000	OUTCAL
39	K	45	10212.835	4707821	0.58	25000	>RL
44	Ca	45	161033.928	4310197	0.64	25000	OUTCAL
47	Ti	45	140.523	21311	0.33	2000	>RL
51	V	45	72.781	326504	0.85	2000	>RL
52	Cr	45	47.205	244065	0.67	2000	>RL
55	Mn	45	72.256	239005	0.46	2000	>RL
56	Fe	45	72040.983	321819409	1.06	10000	OUTCAL
59	Co	72	6.047	46117	2.16	2000	>RL
60	Ni	72	12.756	25865	1.74	2000	>RL
63	Cu	72	6.757	38717	2.23	2000	>RL
66	Zn	72	94.726	93712	0.89	2000	>RL
75	As	72	18.186	14016	0.54	2000	>RL
78	Se	72	3.730	300	2.91	2000	>RL
88	Sr	115	821.444	3660374	0.40	2000	>RL
95	Mo	115	2.918	9301	3.02	2000	>RL
107	Ag	115	0.025	300	13.10	500	
111	Cd	115	0.035	60	40.07	2000	
118	Sn	115	5.082	17926	0.31	2000	>RL
121	Sb	115	0.162	1199	8.99	500	
137	Ba	115	89.192	147496	0.77	2000	>RL
205	Tl	209	0.216	4889	2.98	2000	
208	Pb	209	21.370	334508	0.65	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1087542	0.95	1262119	86.17	70	120	
72	Ge	684997	1.10	801025	85.52	70	120	
115	In	6598658	0.97	7659162	86.15	70	120	
209	Bi	13733324	1.28	15802225	86.91	70	120	

Sample Report

Date Acquired	11/16/16 4:09 PM	Sample Name	1611028-25A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	148SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	55.833	2267	1.54	2000	>RL
9	Be	45	1.270	63	18.44	2000	>RL
11	B	45	133.445	3053	1.64	2000	>RL
23	Na	45	9984.853	8678361	0.53	25000	>RL
24	Mg	45	10344.745	4773808	0.49	25000	>RL
27	Al	45	46768.308	8711945	0.90	10000	OUTCAL
39	K	45	8784.806	4070014	0.24	25000	>RL
44	Ca	45	378184.737	10150789	2.13	25000	OUTCAL
47	Ti	45	178.305	27113	0.82	2000	>RL
51	V	45	74.257	334017	1.96	2000	>RL
52	Cr	45	50.161	260013	1.69	2000	>RL
55	Mn	45	122.301	405535	0.89	2000	>RL
56	Fe	45	38536.370	172626331	0.83	10000	OUTCAL
59	Co	72	7.034	53718	0.74	2000	>RL
60	Ni	72	16.795	34010	1.01	2000	>RL
63	Cu	72	9.444	53492	0.78	2000	>RL
66	Zn	72	72.644	72162	1.01	2000	>RL
75	As	72	11.764	9167	0.22	2000	>RL
78	Se	72	3.006	261	16.75	2000	>RL
88	Sr	115	1388.917	6272528	1.14	2000	>RL
95	Mo	115	1.600	5203	2.40	2000	
107	Ag	115	0.050	549	13.11	500	
111	Cd	115	0.134	209	11.76	2000	
118	Sn	115	5.012	17931	1.29	2000	>RL
121	Sb	115	0.168	1241	1.27	500	
137	Ba	115	414.515	694601	0.63	2000	>RL
205	Tl	209	0.263	5943	1.43	2000	
208	Pb	209	22.322	348612	0.12	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1090603	1.01	1262119	86.41	70	120	
72	Ge	685974	0.41	801025	85.64	70	120	
115	In	6688688	1.70	7659162	87.33	70	120	
209	Bi	13702921	0.41	15802225	86.72	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/16/2016 16:13	Sample Name	1611044-01A PDS
Data Batch	161116.b	Comment	PDS ICPMS_TSDOD1
Data File Name	150_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	235.824	9713	0.52	58.3	200	88.8	75	125	
9	Be	45	196.173	9989	0.90	2.8	200	96.7	75	125	
11	B	45	268.430	6163	1.34	80.7	200	93.9	75	125	
23	Na	45	5810.443	5181040	0.76	1096.6	5000	94.3	75	125	
24	Mg	45	17533.574	8255668	0.98	13177.1	5000	87.1	75	125	
27	Al	45	70876.037	13471873	0.71	67621.4	5000	65.1	75	125	Fail
39	K	45	20678.197	9686773	1.04	15795.2	5000	97.7	75	125	
44	Ca	45	70231.001	1923861	0.34	65810.0	5000	88.4	75	125	
47	Ti	45	545.462	84622	0.69	361.9	200	91.8	75	125	
51	V	45	290.146	1320180	1.04	101.4	200	94.4	75	125	
52	Cr	45	256.420	1350119	0.59	61.8	200	97.3	75	125	
55	Mn	45	854.383	2889446	0.68	672.5	200	90.9	75	125	
56	Fe	45	69061.598	315672556	0.55	64493.9	5000	91.4	75	125	
59	Co	72	218.418	1683033	0.88	24.3	200	97.1	75	125	
60	Ni	72	230.823	468386	1.10	40.5	200	95.2	75	125	
63	Cu	72	225.430	1249904	0.32	39.1	200	93.2	75	125	
66	Zn	72	461.438	458859	0.69	270.3	200	95.6	75	125	
75	As	72	223.486	171547	0.50	25.6	200	98.9	75	125	
78	Se	72	197.226	10895	1.62	4.7	200	96.3	75	125	
88	Sr	115	542.327	2443165	0.64	350.2	200	96.1	75	125	
95	Mo	115	191.441	611620	0.20	2.2	200	94.6	75	125	
107	Ag	115	193.980	1872413	0.47	0.2	200	96.9	75	125	
111	Cd	115	190.641	284021	0.77	0.8	200	94.9	75	125	
118	Sn	115	202.132	691261	0.39	6.1	200	98.0	75	125	
121	Sb	115	209.911	1044402	0.39	10.8	200	99.6	75	125	
137	Ba	115	642.104	1073091	0.51	442.5	200	99.8	75	125	
205	Tl	209	186.192	4158815	1.02	0.7	200	92.8	75	125	
208	Pb	209	590.555	9242732	1.34	402.0	200	94.3	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1112813	0.34	1262119	88.17	70	120	
72	Ge	693306	0.54	801025	86.55	70	120	
115	In	6660033	0.44	7659162	86.96	70	120	
209	Bi	13767003	1.28	15802225	87.12	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 16:15	Sample Name	1611044-01A MS
Data Batch	161116.b	Comment	MS ICPMS_TSDOD1
Data File Name	151_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	246.185	10002	1.52	58.3	200	93.9	80	120	
9	Be	45	199.490	10019	1.58	2.8	200	98.3	80	120	
11	B	45	288.241	6520	2.51	80.7	200	103.8	80	120	
23	Na	45	6070.371	5336113	0.88	1096.6	1000	497.4	80	120	Fail
24	Mg	45	18244.996	8474202	1.28	13177.1	1000	506.8	80	120	Fail
27	Al	45	75591.905	14172862	0.49	67621.4	1000	797.0	80	120	Fail
39	K	45	22564.514	10420934	1.05	15795.2	1000	676.9	80	120	Fail
44	Ca	45	74446.032	2011514	0.66	65810.0	1000	863.6	80	120	Fail
47	Ti	45	649.938	99454	0.81	361.9	200	144.0	80	120	Fail
51	V	45	307.271	1378755	1.01	101.4	200	103.0	80	120	
52	Cr	45	264.826	1375317	0.25	61.8	200	101.5	80	120	
55	Mn	45	891.072	2972315	1.19	672.5	200	109.3	80	120	
56	Fe	45	70610.144	318336672	2.04	64493.9	1000	611.6	80	120	Fail
59	Co	72	224.744	1721532	1.25	24.3	200	100.2	80	120	
60	Ni	72	238.420	480977	0.34	40.5	200	99.0	80	120	
63	Cu	72	235.741	1299435	0.69	39.1	200	98.3	80	120	
66	Zn	72	470.031	464679	1.38	270.3	200	99.9	80	120	
75	As	72	232.405	177333	0.58	25.6	200	103.4	80	120	
78	Se	72	203.842	11191	0.24	4.7	200	99.6	80	120	
88	Sr	115	567.495	2557337	0.84	350.2	200	108.6	80	120	
95	Mo	115	191.166	610911	0.46	2.2	200	94.5	80	120	
107	Ag	115	192.682	1860441	1.09	0.2	200	96.2	80	120	
111	Cd	115	199.173	296828	0.67	0.8	200	99.2	80	120	
118	Sn	115	206.119	705134	1.36	6.1	200	100.0	80	120	
121	Sb	115	101.430	505004	0.33	10.8	200	45.3	80	120	Fail
137	Ba	115	635.397	1062317	1.59	442.5	200	96.4	80	120	
205	Tl	209	188.708	4292576	0.87	0.7	200	94.0	80	120	
208	Pb	209	786.979	12541345	1.30	402.0	200	192.5	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1097682	0.70	1262119	86.97	70	120	
72	Ge	689340	1.50	801025	86.06	70	120	
115	In	6662775	1.82	7659162	86.99	70	120	
209	Bi	14019464	0.72	15802225	88.72	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 16:17	Sample Name	1611044-01A MSD
Data Batch	161116.b	Comment	MSD ICPMS_TSDOD1
Data File Name	152_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	246.985	10121	0.68	58.3	200	94.3	80	120	
9	Be	45	203.693	10317	2.15	2.8	200	100.4	80	120	
11	B	45	285.764	6525	4.29	80.7	200	102.5	80	120	
23	Na	45	6094.298	5404306	3.51	1096.6	1000	499.8	80	120	Fail
24	Mg	45	18801.462	8809047	1.84	13177.1	1000	562.4	80	120	Fail
27	Al	45	75006.010	14183622	1.14	67621.4	1000	738.5	80	120	Fail
39	K	45	22613.342	10535233	1.35	15795.2	1000	681.8	80	120	Fail
44	Ca	45	72912.358	1987391	0.89	65810.0	1000	710.2	80	120	Fail
47	Ti	45	648.921	100186	2.35	361.9	200	143.5	80	120	Fail
51	V	45	307.818	1393478	1.44	101.4	200	103.2	80	120	
52	Cr	45	262.653	1376042	0.94	61.8	200	100.4	80	120	
55	Mn	45	890.846	2997733	1.15	672.5	200	109.2	80	120	
56	Fe	45	69304.561	315220387	0.99	64493.9	1000	481.1	80	120	Fail
59	Co	72	221.901	1709438	0.58	24.3	200	98.8	80	120	
60	Ni	72	238.062	482928	0.24	40.5	200	98.8	80	120	
63	Cu	72	235.004	1302585	0.36	39.1	200	98.0	80	120	
66	Zn	72	475.749	472930	0.46	270.3	200	102.7	80	120	
75	As	72	232.599	178490	0.60	25.6	200	103.5	80	120	
78	Se	72	202.847	11199	0.69	4.7	200	99.1	80	120	
88	Sr	115	564.070	2561096	0.55	350.2	200	106.9	80	120	
95	Mo	115	190.565	613614	0.35	2.2	200	94.2	80	120	
107	Ag	115	192.081	1868806	0.84	0.2	200	95.9	80	120	
111	Cd	115	197.204	296131	1.03	0.8	200	98.2	80	120	
118	Sn	115	205.168	707125	0.64	6.1	200	99.5	80	120	
121	Sb	115	99.977	501562	0.17	10.8	200	44.6	80	120	Fail
137	Ba	115	655.637	1104400	0.64	442.5	200	106.5	80	120	
205	Tl	209	190.211	4314933	0.47	0.7	200	94.8	80	120	
208	Pb	209	780.876	12411040	0.18	402.0	200	189.4	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1107370	1.51	1262119	87.74	70	120	
72	Ge	693183	1.43	801025	86.54	70	120	
115	In	6712774	1.09	7659162	87.64	70	120	
209	Bi	13981650	0.89	15802225	88.48	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 16:19	Sample Name	CCV6-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	153_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	202.529	8264	1.29	200	101.3	90	110	
9	Be	45	213.995	10790	2.72	200	107.0	90	110	
11	B	45	216.357	4940	1.40	200	108.2	90	110	
23	Na	45	5164.029	4568179	0.62	5000	103.3	90	110	
24	Mg	45	5053.650	2357361	0.39	5000	101.1	90	110	
27	Al	45	5423.484	1022809	0.55	5000	108.5	90	110	
39	K	45	5214.111	2467940	0.42	5000	104.3	90	110	
44	Ca	45	4839.251	131807	0.65	5000	96.8	90	110	
47	Ti	45	205.327	31555	0.39	200	102.7	90	110	
51	V	45	205.990	929455	0.77	200	103.0	90	110	
52	Cr	45	209.673	1093698	0.86	200	104.8	90	110	
55	Mn	45	205.575	688807	1.34	200	102.8	90	110	
56	Fe	45	5187.399	23491673	0.69	5000	103.7	90	110	
59	Co	72	212.189	1657814	0.91	200	106.1	90	110	
60	Ni	72	211.668	435512	0.71	200	105.8	90	110	
63	Cu	72	211.696	1190257	0.88	200	105.8	90	110	
66	Zn	72	216.500	218729	0.47	200	108.2	90	110	
75	As	72	218.261	169865	0.39	200	109.1	90	110	
78	Se	72	215.008	12036	2.59	200	107.5	90	110	
88	Sr	115	210.351	957096	0.19	200	105.2	90	110	
95	Mo	115	209.542	675924	0.33	200	104.8	90	110	
107	Ag	115	206.940	2016929	0.48	200	103.5	90	110	
111	Cd	115	214.013	321926	0.09	200	107.0	90	110	
118	Sn	115	207.925	717956	0.53	200	104.0	90	110	
121	Sb	115	211.120	1060650	0.80	200	105.6	90	110	
137	Ba	115	214.039	361181	0.68	200	107.0	90	110	
205	Tl	209	197.408	4611198	0.41	200	98.7	90	110	
208	Pb	209	202.260	3310876	0.72	200	101.1	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1102239	1.01	1262119	87.33	70	120	
72	Ge	702988	1.21	801025	87.76	70	120	
115	In	6725443	1.83	7659162	87.81	70	120	
209	Bi	14396674	0.87	15802225	91.11	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 16:30	Sample Name	LCVL6-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	155LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.807	418	2.28	1	980.7	70	130	Fail
9	Be	45	1.044	53	7.67	1	104.4	70	130	
11	B	45	27.900	724	5.83	20	139.5	70	130	Fail
23	Na	45	107.966	160565	1.02	100	108.0	70	130	
24	Mg	45	97.622	46265	1.10	100	97.6	70	130	
27	Al	45	154.215	30931	3.70	100	154.2	70	130	Fail
39	K	45	111.562	116507	0.56	100	111.6	70	130	
44	Ca	45	97.603	3195	3.94	100	97.6	70	130	
47	Ti	45	5.188	806	4.25	5	103.8	70	130	
51	V	45	0.701	7057	1.58	1	70.1	70	130	
52	Cr	45	5.103	28080	1.78	5	102.1	70	130	
55	Mn	45	5.385	18287	2.91	5	107.7	70	130	
56	Fe	45	102.796	474658	0.23	100	102.8	70	130	
59	Co	72	5.151	40927	0.87	5	103.0	70	130	
60	Ni	72	5.173	11117	0.70	5	103.5	70	130	
63	Cu	72	5.212	31515	1.43	5	104.2	70	130	
66	Zn	72	5.152	6106	1.11	5	103.0	70	130	
75	As	72	5.350	4474	3.50	5	107.0	70	130	
78	Se	72	5.701	424	4.78	5	114.0	70	130	
88	Sr	115	5.119	24261	2.17	5	102.4	70	130	
95	Mo	115	4.993	16502	0.80	5	99.9	70	130	
107	Ag	115	2.003	19971	0.74	2	100.1	70	130	
111	Cd	115	1.016	1567	4.06	1	101.6	70	130	
118	Sn	115	5.139	18856	1.63	5	102.8	70	130	
121	Sb	115	2.043	10876	2.69	2	102.2	70	130	
137	Ba	115	5.240	9064	3.46	5	104.8	70	130	
205	Tl	209	0.959	22993	1.19	1	95.9	70	130	
208	Pb	209	1.040	18385	1.79	1	104.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1103119	0.76	1262119	87.40	70	120	
72	Ge	713255	0.78	801025	89.04	70	120	
115	In	6866475	0.71	7659162	89.65	70	120	
209	Bi	14723291	0.57	15802225	93.17	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 16:32	Sample Name	CCB6-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	156_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.243	8	34.6	2	5	
9	Be	45	0.013	1	86.6	0.4	0.3	
11	B	45	8.171	280	9.5	10	10	
23	Na	45	6.491	71235	0.5	50	100	
24	Mg	45	-0.600	421	13.5	50	100	
27	Al	45	23.128	6172	1.1	50	10	FailAq
39	K	45	9.077	68481	0.6	50	100	
44	Ca	45	3.395	631	3.5	50	100	
47	Ti	45	-0.014	6	124.9	4	3	
51	V	45	-0.311	2479	2.9	4	3	
52	Cr	45	-0.098	950	7.4	2	2	
55	Mn	45	0.009	262	10.7	2	3	
56	Fe	45	0.416	10676	3.5	50	50	
59	Co	72	-0.001	88	5.8	2	3	
60	Ni	72	-0.071	174	4.4	2	3	
63	Cu	72	-0.078	1366	4.8	2	2	
66	Zn	72	-0.462	369	2.8	4	2	
75	As	72	-0.057	207	14.1	2	2	
78	Se	72	0.566	133	2.1	1	2	
88	Sr	115	0.012	580	9.0	4	3	
95	Mo	115	0.039	208	3.7	2	2	
107	Ag	115	0.011	179	2.8	0.4	1	
111	Cd	115	0.001	11	75.5	0.4	0.3	
118	Sn	115	-0.083	491	15.5	4	3	
121	Sb	115	-0.017	327	7.4	2	0.8	
137	Ba	115	0.013	71	15.1	2	3	
205	Tl	209	0.006	236	3.3	2	0.5	
208	Pb	209	0.063	1992	9.2	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1091025	1.17	1262119	86.44	70	120	
72	Ge	704722	0.30	801025	87.98	70	120	
115	In	6836042	0.90	7659162	89.25	70	120	
209	Bi	14434508	1.51	15802225	91.34	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 16:54	Sample Name	CCV7-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	167_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.198	7811	1.51	200	99.6	90	110	
9	Be	45	211.084	10228	1.15	200	105.5	90	110	
11	B	45	217.190	4765	3.45	200	108.6	90	110	
23	Na	45	5150.840	4378478	0.62	5000	103.0	90	110	
24	Mg	45	5103.620	2287414	0.67	5000	102.1	90	110	
27	Al	45	5426.708	983312	0.90	5000	108.5	90	110	
39	K	45	5214.328	2371486	0.69	5000	104.3	90	110	
44	Ca	45	4935.933	129168	0.80	5000	98.7	90	110	
47	Ti	45	208.434	30779	0.53	200	104.2	90	110	
51	V	45	207.153	898120	0.68	200	103.6	90	110	
52	Cr	45	210.254	1053851	0.86	200	105.1	90	110	
55	Mn	45	206.781	665712	0.39	200	103.4	90	110	
56	Fe	45	5269.544	22930057	0.72	5000	105.4	90	110	
59	Co	72	210.723	1588881	0.59	200	105.4	90	110	
60	Ni	72	210.902	418792	0.53	200	105.5	90	110	
63	Cu	72	211.887	1149705	1.20	200	105.9	90	110	
66	Zn	72	215.986	210600	1.00	200	108.0	90	110	
75	As	72	218.706	164284	1.04	200	109.4	90	110	
78	Se	72	211.872	11446	1.42	200	105.9	90	110	
88	Sr	115	205.335	916501	0.27	200	102.7	90	110	
95	Mo	115	206.137	652273	0.48	200	103.1	90	110	
107	Ag	115	202.156	1932775	0.29	200	101.1	90	110	
111	Cd	115	208.573	307806	2.02	200	104.3	90	110	
118	Sn	115	205.368	695595	0.53	200	102.7	90	110	
121	Sb	115	207.642	1023289	0.68	200	103.8	90	110	
137	Ba	115	209.441	346739	1.25	200	104.7	90	110	
205	Tl	209	199.205	4433743	0.80	200	99.6	90	110	
208	Pb	209	202.091	3151911	0.89	200	101.0	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1059112	0.92	1262119	83.92	70	120	
72	Ge	678410	0.69	801025	84.69	70	120	
115	In	6596470	0.69	7659162	86.13	70	120	
209	Bi	13718894	1.25	15802225	86.82	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 16:59	Sample Name	LCVL7-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	169LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.528	436	7.11	1	1052.8	70	130	Fail
9	Be	45	1.117	55	6.56	1	111.7	70	130	
11	B	45	27.188	691	6.42	20	135.9	70	130	Fail
23	Na	45	108.446	157032	1.16	100	108.4	70	130	
24	Mg	45	97.119	44901	1.03	100	97.1	70	130	
27	Al	45	160.519	31335	1.07	100	160.5	70	130	Fail
39	K	45	113.496	114520	0.57	100	113.5	70	130	
44	Ca	45	123.127	3793	5.98	100	123.1	70	130	
47	Ti	45	4.918	746	9.84	5	98.4	70	130	
51	V	45	0.725	6986	1.55	1	72.5	70	130	
52	Cr	45	5.139	27572	2.15	5	102.8	70	130	
55	Mn	45	5.345	17707	0.53	5	106.9	70	130	
56	Fe	45	106.728	480385	0.89	100	106.7	70	130	
59	Co	72	5.142	40267	1.09	5	102.8	70	130	
60	Ni	72	5.001	10602	0.67	5	100.0	70	130	
63	Cu	72	5.114	30509	1.20	5	102.3	70	130	
66	Zn	72	5.012	5877	3.60	5	100.2	70	130	
75	As	72	5.175	4272	3.10	5	103.5	70	130	
78	Se	72	5.688	417	8.37	5	113.8	70	130	
88	Sr	115	4.991	23568	2.23	5	99.8	70	130	
95	Mo	115	4.910	16157	1.34	5	98.2	70	130	
107	Ag	115	1.963	19492	0.16	2	98.2	70	130	
111	Cd	115	1.003	1541	3.56	1	100.3	70	130	
118	Sn	115	5.086	18588	0.93	5	101.7	70	130	
121	Sb	115	1.979	10504	2.85	2	98.9	70	130	
137	Ba	115	5.159	8884	2.07	5	103.2	70	130	
205	Tl	209	0.971	22290	1.45	1	97.1	70	130	
208	Pb	209	1.057	17879	2.26	1	105.7	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1076056	0.64	1262119	85.26	70	120	
72	Ge	702955	0.38	801025	87.76	70	120	
115	In	6837394	1.63	7659162	89.27	70	120	
209	Bi	14103546	2.11	15802225	89.25	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 17:08	Sample Name	CCB7-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	170_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.117	14	44.7	2	5	
9	Be	45	0.020	1	100.0	0.4	0.3	
11	B	45	6.197	240	16.4	10	10	
23	Na	45	4.842	70958	0.9	50	100	
24	Mg	45	-0.400	522	8.3	50	100	
27	Al	45	0.775	2040	1.4	50	10	
39	K	45	7.939	69073	0.9	50	100	
44	Ca	45	2.043	604	3.5	50	100	
47	Ti	45	-0.036	2	86.6	4	3	
51	V	45	-0.320	2476	2.3	4	3	
52	Cr	45	-0.058	1178	8.3	2	2	
55	Mn	45	0.029	332	9.5	2	3	
56	Fe	45	0.829	12733	2.5	50	50	
59	Co	72	-0.002	82	37.7	2	3	
60	Ni	72	0.105	554	8.3	2	3	
63	Cu	72	-0.030	1686	6.0	2	2	
66	Zn	72	-0.333	513	6.7	4	2	
75	As	72	-0.104	175	7.4	2	2	
78	Se	72	0.262	119	11.8	1	2	
88	Sr	115	0.029	684	10.8	4	3	
95	Mo	115	0.019	149	2.6	2	2	
107	Ag	115	0.008	154	10.6	0.4	1	
111	Cd	115	0.005	18	57.3	0.4	0.3	
118	Sn	115	-0.029	704	7.3	4	3	
121	Sb	115	-0.021	317	26.1	2	0.8	
137	Ba	115	0.037	117	9.9	2	3	
205	Tl	209	0.004	181	7.0	2	0.5	
208	Pb	209	0.006	1092	4.4	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1108810	0.99	1262119	87.85	70	120	
72	Ge	725586	0.90	801025	90.58	70	120	
115	In	7107928	1.20	7659162	92.80	70	120	
209	Bi	14945402	0.98	15802225	94.58	70	120	

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6. **Termination.**

7. **Miscellaneous.**

0.10% per annum, payable quarterly in arrears on March 15, June 15, September 15 and December 15 of each year, commencing on March 15, 2016				

8. **Governing Law.**

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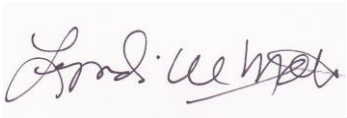

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72390

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill STE 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: November 3, 2016 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1611044
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 8082 PCB ❑ 608 PCB ❑ 8270 O-P PEST ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS METALS ❑ RCRA ❑ TX11 ❑ Lead PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	FIELD NOTES
SGR-DU132(0-2)-A	01	11-03-16	1031	S	Bag	1				1		
SGR-DU132(2-4)-A	02	11-03-16	1032	S	Bag	1				1		
SGR-DU132(4-6)-A	03	11-03-16	1033	S	Bag	1				1		
SGR-DU132(6-8)-A	04	11-03-16	1034	S	Bag	1				1		
SGR-DU132(0-2)-B	05	11-03-16	1024	S	Bag	1				1		
SGR-DU132(2-4)-B	06	11-03-16	1025	S	Bag	1				1		
SGR-DU132(4-6)-B	07	11-03-16	1026	S	Bag	1				1		
SGR-DU132(6-8)-B	08	11-03-16	1027	S	Bag	1				1		
SGR-DU132(0-2)-C	09	11-03-16	1011	S	Bag	1				1		
SGR-DU132(2-4)-C	10	11-03-16	1012	S	Bag	1				1		
SGR-DU132(4-6)-C	11	11-03-16	1013	S	Bag	1				1		
SGR-DU132(6-8)-C	12	11-03-16	1014	S	Bag	1				1		
~~SGR-EB132(20161103)~~		11-03-16		S	Bag							Can 11/3/2016
SGR-EB132(20161103)	13	11.03-16	1101	W	Bottles	2		1		1		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	11.3.16/1800	Fedex
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Fedex	11-4-16 9:45	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ❑
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/0.4/0.5 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73151

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Roschill STE350 Lenexa KS 66215
PHONE: 913 645 3703 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: November 3, 2016 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1601044
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
SGR-DU046(10-12)	14	11-03-16	1546	S	Jar	1				1		X X	
~~SGR-DU046(12-14)~~				S	Jar	1				1		X X	on 11/3/16
~~SGR-DU046(14-15)~~				S	Jar	1				1		X X	on 11/3/16
SGR-DU074(10-12)	15	11-03-16	1450	S	Jar	1				1		X X	
SGR-DU074(12-14)	16	11-03-16	1453	S	Jar	1				1		X X X	3 Hold per
SGR-DU074(14-15)	17	11-03-16	1455	S	Jar	1				1		X X X	3 Alex JB 11/4/16
SGR-DU010-04(10-12)	18	11-03-16	1331	S	Jar	1				1		X X	
SGR-DU010-04(12-14)	19	11-03-16	1332	S	Jar	1				1		X X X	3 Hold per
SGR-DU010-04(14-15)	20	11-03-16	1333	S	Jar	1				1		X X X	3 Alex JB 11/4/16
~~SGR-EB~~													on 11/3/16
~~SGR-DUP(20161103)~~													on 11/3/16
SGR-DUP01(20161103)	21	11-03-16	—	S	Jar	1				1		X X	
~~SGR-DUP02-08(10-12)~~		11-03-16		S	Jar	1				1		X X	on 11/3/16

RELINQUISHED BY: (Signature) DATE/TIME 11-3-16 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 11-4-16 9:45 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/0.4/0.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/4/2016

Work Order Number 1611044 | Received by JT

Checklist completed by: _____ (Signature) 11/4/2016 (Date) | Reviewed by DB (Initials) 11/4/2016 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.5 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? No		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611044-01
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:31 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	97.6	JH	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 03:51 PM
IS: Bismuth	88.1		0	30-120	0		%REC	5	11/16/16 03:51 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.105		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Acenaphthylene	0.0697		0.0465	0.0929	0.0697	U	mg/Kg-dry	10	11/11/16 04:23 PM
Anthracene	0.309		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[a]anthracene	2.51	JL	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[a]pyrene	3.15		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[b]fluoranthene	2.99		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[e]pyrene	2.37		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[g,h,i]perylene	2.36		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[j]fluoranthene	1.44		0.0465	0.0929	0.0697	N	mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[k]fluoranthene	1.40		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Chrysene	3.29		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Dibenz[a,h]anthracene	0.337		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Fluoranthene	4.04	JL	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Fluorene	0.0595		0.0465	0.0929	0.0697	J	mg/Kg-dry	10	11/11/16 04:23 PM
Indeno[1,2,3-cd]pyrene	2.25	JL	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Phenanthrene	1.51		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Pyrene	3.53		0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
IS: Acenaphthene-d10	90.2		0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Chrysene-d12	89.5		0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Naphthalene-d8	102		0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Perylene-d12	88.9		0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Phenanthrene-d10	88.6		0	50-200	0		%REC	10	11/11/16 04:23 PM
Surr: 2-Fluorobiphenyl	94.4		0	46-115	0		%REC	10	11/11/16 04:23 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611044-01
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:31 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.8	0	58-133	0		%REC	10	11/11/16 04:23 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611044-02
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:32 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	122	JH	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:11 PM
IS: Bismuth	87.8		0	30-120	0		%REC	5	11/16/16 04:11 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.131		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Acenaphthylene	0.0690		0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/11/16 04:51 PM
Anthracene	0.791		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[a]anthracene	3.87		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[a]pyrene	4.24		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[b]fluoranthene	4.19		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[e]pyrene	3.13		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[g,h,i]perylene	2.98		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[j]fluoranthene	1.99		0.0460	0.0920	0.0690	N	mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[k]fluoranthene	1.86		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Chrysene	4.77		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Dibenz[a,h]anthracene	0.490		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Fluoranthene	6.56		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Fluorene	0.133		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Indeno[1,2,3-cd]pyrene	2.96		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Phenanthrene	3.54		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Pyrene	5.32		0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
IS: Acenaphthene-d10	92.8		0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Chrysene-d12	89.3		0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Naphthalene-d8	95.2		0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Perylene-d12	89.3		0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Phenanthrene-d10	90.8		0	50-200	0		%REC	10	11/11/16 04:51 PM
Surr: 2-Fluorobiphenyl	92.0		0	46-115	0		%REC	10	11/11/16 04:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611044-02
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:32 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	95.7	0	58-133	0		%REC	10	11/11/16 04:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611044-03
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:33 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	9.23	JH	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:34 PM
IS: Bismuth	86.0		0	30-120	0		%REC	5	11/16/16 04:34 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Acenaphthylene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Anthracene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[a]anthracene	0.0579		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[a]pyrene	0.0602		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[b]fluoranthene	0.0592		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[e]pyrene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[g,h,i]perylene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[j]fluoranthene	0.0743		0.0495	0.0990	0.0743	NU	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[k]fluoranthene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Chrysene	0.0634		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Dibenz[a,h]anthracene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Fluoranthene	0.0975		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Fluorene	0.0743		0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Indeno[1,2,3-cd]pyrene	0.0552		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Phenanthrene	0.0584		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Pyrene	0.0819		0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
IS: Acenaphthene-d10	85.1		0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Chrysene-d12	84.3		0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Naphthalene-d8	91.7		0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Perylene-d12	82.7		0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Phenanthrene-d10	84.2		0	50-200	0		%REC	10	11/11/16 05:20 PM
Surr: 2-Fluorobiphenyl	88.0		0	46-115	0		%REC	10	11/11/16 05:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611044-03
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:33 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	93.6	0	58-133	0		%REC	10	11/11/16 05:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611044-04
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:34 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	7.40	JH	0.0893	0.268	0.134		mg/Kg-dry	5	11/16/16 04:36 PM
IS: Bismuth	83.9		0	30-120	0		%REC	5	11/16/16 04:36 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Acenaphthylene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Anthracene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[a]anthracene	0.0582		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[a]pyrene	0.0628		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[b]fluoranthene	0.0658		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[e]pyrene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[g,h,i]perylene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[j]fluoranthene	0.0699		0.0466	0.0932	0.0699	NU	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[k]fluoranthene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Chrysene	0.0663		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Dibenz[a,h]anthracene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Fluoranthene	0.0981		0.0466	0.0932	0.0699		mg/Kg-dry	10	11/11/16 05:49 PM
Fluorene	0.0699		0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Indeno[1,2,3-cd]pyrene	0.0475		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Phenanthrene	0.0532		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Pyrene	0.0844		0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
IS: Acenaphthene-d10	85.4		0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Chrysene-d12	84.4		0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Naphthalene-d8	105		0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Perylene-d12	83.2		0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Phenanthrene-d10	84.4		0	50-200	0		%REC	10	11/11/16 05:49 PM
Surr: 2-Fluorobiphenyl	91.7		0	46-115	0		%REC	10	11/11/16 05:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611044-04
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:34 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	96.9	0	58-133	0		%REC	10	11/11/16 05:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611044-05
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:24 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	73.8	JH 0.0990	0.297	0.149		mg/Kg-dry	5	11/16/16 04:38 PM
IS: Bismuth	84.9	0	30-120	0		%REC	5	11/16/16 04:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0576	0.0478	0.0955	0.0716	J	mg/Kg-dry	10	11/11/16 06:17 PM
Acenaphthylene	0.0716	0.0478	0.0955	0.0716	U	mg/Kg-dry	10	11/11/16 06:17 PM
Anthracene	0.243	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[a]anthracene	1.35	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[a]pyrene	1.59	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[b]fluoranthene	1.60	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[e]pyrene	1.20	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[g,h,i]perylene	1.15	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[j]fluoranthene	0.742	0.0478	0.0955	0.0716	N	mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[k]fluoranthene	0.692	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Chrysene	1.80	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Dibenz[a,h]anthracene	0.171	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Fluoranthene	2.54	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Fluorene	0.0716	0.0478	0.0955	0.0716	U	mg/Kg-dry	10	11/11/16 06:17 PM
Indeno[1,2,3-cd]pyrene	1.13	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Phenanthrene	1.21	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Pyrene	2.14	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
IS: Acenaphthene-d10	88.4	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Chrysene-d12	87.6	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Naphthalene-d8	98.4	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Perylene-d12	86.8	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Phenanthrene-d10	87.3	0	50-200	0		%REC	10	11/11/16 06:17 PM
Surr: 2-Fluorobiphenyl	87.4	0	46-115	0		%REC	10	11/11/16 06:17 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611044-05
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:24 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	90.3	0	58-133	0		%REC	10	11/11/16 06:17 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611044-06
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:25 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	63.0	JH	0.0909	0.273	0.136		mg/Kg-dry	5	11/16/16 04:40 PM
IS: Bismuth	85.2		0	30-120	0		%REC	5	11/16/16 04:40 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0747		0.0498	0.0996	0.0747	U	mg/Kg-dry	10	11/11/16 06:46 PM
Acenaphthylene	0.0747		0.0498	0.0996	0.0747	U	mg/Kg-dry	10	11/11/16 06:46 PM
Anthracene	0.0984		0.0498	0.0996	0.0747	J	mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[a]anthracene	0.744		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[a]pyrene	0.836		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[b]fluoranthene	0.774		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[e]pyrene	0.615		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[g,h,i]perylene	0.596		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[j]fluoranthene	0.387		0.0498	0.0996	0.0747	N	mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[k]fluoranthene	0.429		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Chrysene	1.03		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Dibenz[a,h]anthracene	0.0920		0.0498	0.0996	0.0747	J	mg/Kg-dry	10	11/11/16 06:46 PM
Fluoranthene	1.25		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Fluorene	0.0747		0.0498	0.0996	0.0747	U	mg/Kg-dry	10	11/11/16 06:46 PM
Indeno[1,2,3-cd]pyrene	0.580		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Phenanthrene	0.451		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Pyrene	1.05		0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
IS: Acenaphthene-d10	86.9		0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Chrysene-d12	85.2		0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Naphthalene-d8	101		0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Perylene-d12	84.5		0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Phenanthrene-d10	85.1		0	50-200	0		%REC	10	11/11/16 06:46 PM
Surr: 2-Fluorobiphenyl	88.5		0	46-115	0		%REC	10	11/11/16 06:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611044-06
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:25 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	90.5	0	58-133	0		%REC	10	11/11/16 06:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611044-07
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:26 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	7.87	JH	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:42 PM
IS: Bismuth	84.5		0	30-120	0		%REC	5	11/16/16 04:42 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0712		0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Acenaphthylene	0.0712		0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Anthracene	0.0712		0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[a]anthracene	0.122		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[a]pyrene	0.146		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[b]fluoranthene	0.132		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[e]pyrene	0.105		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[g,h,i]perylene	0.105		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[j]fluoranthene	0.0637		0.0475	0.0950	0.0712	JN	mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[k]fluoranthene	0.0655		0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/11/16 07:15 PM
Chrysene	0.135		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Dibenz[a,h]anthracene	0.0712		0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Fluoranthene	0.183		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Fluorene	0.0712		0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Indeno[1,2,3-cd]pyrene	0.107		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Phenanthrene	0.0573		0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/11/16 07:15 PM
Pyrene	0.162		0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
IS: Acenaphthene-d10	80.4		0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Chrysene-d12	78.9		0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Naphthalene-d8	98.0		0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Perylene-d12	78.1		0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Phenanthrene-d10	78.7		0	50-200	0		%REC	10	11/11/16 07:15 PM
Surr: 2-Fluorobiphenyl	85.0		0	46-115	0		%REC	10	11/11/16 07:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611044-07
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:26 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	90.1	0	58-133	0		%REC	10	11/11/16 07:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611044-08
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:27 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	8.61	JH	0.0901	0.270	0.135		mg/Kg-dry	5	11/16/16 04:44 PM
IS: Bismuth	84.9		0	30-120	0		%REC	5	11/16/16 04:44 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0745		0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Acenaphthylene	0.0745		0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Anthracene	0.0745		0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[a]anthracene	0.143		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[a]pyrene	0.179		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[b]fluoranthene	0.167		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[e]pyrene	0.129		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[g,h,i]perylene	0.134		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[j]fluoranthene	0.0779		0.0497	0.0993	0.0745	JN	mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[k]fluoranthene	0.0970		0.0497	0.0993	0.0745	J	mg/Kg-dry	10	11/11/16 07:43 PM
Chrysene	0.175		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Dibenz[a,h]anthracene	0.0745		0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Fluoranthene	0.209		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Fluorene	0.0745		0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Indeno[1,2,3-cd]pyrene	0.129		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Phenanthrene	0.0624		0.0497	0.0993	0.0745	J	mg/Kg-dry	10	11/11/16 07:43 PM
Pyrene	0.188		0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
IS: Acenaphthene-d10	79.0		0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Chrysene-d12	77.8		0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Naphthalene-d8	108		0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Perylene-d12	76.9		0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Phenanthrene-d10	78.5		0	50-200	0		%REC	10	11/11/16 07:43 PM
Surr: 2-Fluorobiphenyl	96.5		0	46-115	0		%REC	10	11/11/16 07:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611044-08
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:27 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	86.9	0	58-133	0		%REC	10	11/11/16 07:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611044-09
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:11 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	49.7	JH	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:46 PM
IS: Bismuth	86.8		0	30-120	0		%REC	5	11/16/16 04:46 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0728		0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Acenaphthylene	0.0728		0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Anthracene	0.0728		0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[a]anthracene	0.342		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[a]pyrene	0.449		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[b]fluoranthene	0.417		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[e]pyrene	0.354		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[g,h,i]perylene	0.351		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[j]fluoranthene	0.201		0.0485	0.0971	0.0728	N	mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[k]fluoranthene	0.461		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Chrysene	0.436		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Dibenz[a,h]anthracene	0.0494		0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/11/16 08:12 PM
Fluoranthene	0.526		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Fluorene	0.0728		0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Indeno[1,2,3-cd]pyrene	0.330		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Phenanthrene	0.172		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Pyrene	0.486		0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
IS: Acenaphthene-d10	86.7		0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Chrysene-d12	85.2		0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Naphthalene-d8	126		0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Perylene-d12	83.8		0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Phenanthrene-d10	84.8		0	50-200	0		%REC	10	11/11/16 08:12 PM
Surr: 2-Fluorobiphenyl	111		0	46-115	0		%REC	10	11/11/16 08:12 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611044-09
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:11 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	97.7	0	58-133	0		%REC	10	11/11/16 08:12 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611044-10
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:12 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	14.1	JH 0.0917	0.275	0.138		mg/Kg-dry	5	11/16/16 04:48 PM
IS: Bismuth	85.0	0	30-120	0		%REC	5	11/16/16 04:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Acenaphthylene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Anthracene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[a]anthracene	0.178	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[a]pyrene	0.169	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[b]fluoranthene	0.147	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[e]pyrene	0.124	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[g,h,i]perylene	0.115	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[j]fluoranthene	0.0806	0.0468	0.0935	0.0702	JN	mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[k]fluoranthene	0.0965	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Chrysene	0.172	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Dibenz[a,h]anthracene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Fluoranthene	0.333	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Fluorene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Indeno[1,2,3-cd]pyrene	0.112	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Phenanthrene	0.207	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Pyrene	0.288	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
IS: Acenaphthene-d10	79.8	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Chrysene-d12	86.2	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Naphthalene-d8	114	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Perylene-d12	76.1	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Phenanthrene-d10	78.3	0	50-200	0		%REC	10	11/11/16 08:41 PM
Surr: 2-Fluorobiphenyl	87.6	0	46-115	0		%REC	10	11/11/16 08:41 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611044-10
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:12 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	91.3	0	58-133	0		%REC	10	11/11/16 08:41 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611044-11
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:13 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	8.77	JH	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:50 PM
IS: Bismuth	85.4		0	30-120	0		%REC	5	11/16/16 04:50 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Acenaphthylene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Anthracene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[a]anthracene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[a]pyrene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[b]fluoranthene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[e]pyrene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[g,h,i]perylene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[j]fluoranthene	0.0698		0.0466	0.0931	0.0698	NU	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[k]fluoranthene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Chrysene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Dibenz[a,h]anthracene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Fluoranthene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Fluorene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Indeno[1,2,3-cd]pyrene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Phenanthrene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Pyrene	0.0698		0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
IS: Acenaphthene-d10	76.9		0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Chrysene-d12	76.9		0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Naphthalene-d8	116		0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Perylene-d12	72.5		0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Phenanthrene-d10	75.5		0	50-200	0		%REC	10	11/11/16 09:09 PM
Surr: 2-Fluorobiphenyl	111		0	46-115	0		%REC	10	11/11/16 09:09 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611044-11
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:13 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	92.9	0	58-133	0		%REC	10	11/11/16 09:09 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611044-12
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:14 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	7.61	JH	0.0935	0.280	0.140		mg/Kg-dry	5	11/16/16 04:52 PM
IS: Bismuth	82.3		0	30-120	0		%REC	5	11/16/16 04:52 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0694		0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Acenaphthylene	0.0694		0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Anthracene	0.0694		0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[a]anthracene	0.191		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[a]pyrene	0.218		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[b]fluoranthene	0.203		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[e]pyrene	0.163		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[g,h,i]perylene	0.159		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[j]fluoranthene	0.100		0.0463	0.0926	0.0694	N	mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[k]fluoranthene	0.0929		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Chrysene	0.229		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Dibenz[a,h]anthracene	0.0694		0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Fluoranthene	0.300		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Fluorene	0.0694		0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Indeno[1,2,3-cd]pyrene	0.155		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Phenanthrene	0.0852		0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/11/16 09:38 PM
Pyrene	0.266		0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
IS: Acenaphthene-d10	84.3		0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Chrysene-d12	82.4		0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Naphthalene-d8	115		0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Perylene-d12	80.9		0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Phenanthrene-d10	101		0	50-200	0		%REC	10	11/11/16 09:38 PM
Surr: 2-Fluorobiphenyl	86.6		0	46-115	0		%REC	10	11/11/16 09:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611044-12
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:14 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	89.4	0	58-133	0		%REC	10	11/11/16 09:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB132(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-13
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 11:01 AM
Lab Order:	1611044	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.000900	0.000300	0.00100	0.000900	U	mg/L	1	11/16/16 02:48 PM
IS: Bismuth	81.2	0	30-120	0		%REC	1	11/16/16 02:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Acenaphthylene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Anthracene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[a]anthracene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[a]pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[b]fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[e]pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[g,h,i]perylene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[j]fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	NU	mg/L	1	11/08/16 12:57 PM
Benzo[k]fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Chrysene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Dibenz[a,h]anthracene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Fluorene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Indeno[1,2,3-cd]pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Phenanthrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
IS: Acenaphthene-d10	101	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Chrysene-d12	102	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Naphthalene-d8	103	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Perylene-d12	109	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Phenanthrene-d10	101	0	50-200	0		%REC	1	11/08/16 12:57 PM
Surr: 2-Fluorobiphenyl	72.2	0	53-106	0		%REC	1	11/08/16 12:57 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB132(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-13
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 11:01 AM
Lab Order:	1611044	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	83.4	0	58-132	0		%REC	1	11/08/16 12:57 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU046(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-14
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 03:46 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.43	0.115	0.345	0.172		mg/Kg-dry	5	11/11/16 01:34 PM
IS: Bismuth	92.4	0	30-120	0		%REC	5	11/11/16 01:34 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Acenaphthylene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Anthracene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[a]anthracene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[a]pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[b]fluoranthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[e]pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[g,h,i]perylene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[j]fluoranthene	0.0907	0.0604	0.121	0.0907	NU	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[k]fluoranthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Chrysene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Dibenz[a,h]anthracene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Fluoranthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Fluorene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Indeno[1,2,3-cd]pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Phenanthrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
IS: Acenaphthene-d10	85.9	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Chrysene-d12	92.5	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Naphthalene-d8	87.6	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Perylene-d12	103	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Phenanthrene-d10	86.5	0	50-200	0		%REC	10	11/11/16 06:09 PM
Surr: 2-Fluorobiphenyl	90.1	0	46-115	0		%REC	10	11/11/16 06:09 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU046(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-14
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 03:46 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	102	0	58-133	0		%REC	10	11/11/16 06:09 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	22.3	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU074(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-15
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 02:50 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	20.0	J	0.117	0.351	0.176		mg/Kg-dry	5	11/11/16 01:36 PM
IS: Bismuth	93.3		0	30-120	0		%REC	5	11/11/16 01:36 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Acenaphthylene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Anthracene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[a]anthracene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[a]pyrene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[b]fluoranthene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[e]pyrene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[g,h,i]perylene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[j]fluoranthene	0.0902		0.0602	0.120	0.0902	NU	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[k]fluoranthene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Chrysene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Dibenz[a,h]anthracene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Fluoranthene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Fluorene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Indeno[1,2,3-cd]pyrene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Phenanthrene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Pyrene	0.0902		0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
IS: Acenaphthene-d10	83.6		0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Chrysene-d12	90.8		0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Naphthalene-d8	84.6		0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Perylene-d12	100		0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Phenanthrene-d10	84.2		0	50-200	0		%REC	10	11/11/16 06:37 PM
Surr: 2-Fluorobiphenyl	88.7		0	46-115	0		%REC	10	11/11/16 06:37 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU074(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-15
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 02:50 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	104	0	58-133	0		%REC	10	11/11/16 06:37 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	17.9	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU010-04(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-18
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 01:31 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.86	0.117	0.352	0.176		mg/Kg-dry	5	11/11/16 01:38 PM
IS: Bismuth	95.9	0	30-120	0		%REC	5	11/11/16 01:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Acenaphthylene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Anthracene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[a]anthracene	0.187	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[a]pyrene	0.225	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[b]fluoranthene	0.214	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[e]pyrene	0.167	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[g,h,i]perylene	0.177	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[j]fluoranthene	0.0977	0.0593	0.119	0.0890	JN	mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[k]fluoranthene	0.101	0.0593	0.119	0.0890	J	mg/Kg-dry	10	11/11/16 07:05 PM
Chrysene	0.217	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Dibenz[a,h]anthracene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Fluoranthene	0.315	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Fluorene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Indeno[1,2,3-cd]pyrene	0.174	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Phenanthrene	0.135	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Pyrene	0.276	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
IS: Acenaphthene-d10	81.5	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Chrysene-d12	87.0	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Naphthalene-d8	81.6	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Perylene-d12	97.1	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Phenanthrene-d10	82.1	0	50-200	0		%REC	10	11/11/16 07:05 PM
Surr: 2-Fluorobiphenyl	89.9	0	46-115	0		%REC	10	11/11/16 07:05 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU010-04(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-18
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 01:31 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	110	0	58-133	0		%REC	10	11/11/16 07:05 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	18.9	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP01(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-21
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	9.04	J	0.114	0.343	0.171		mg/Kg-dry	5	11/11/16 01:40 PM
IS: Bismuth	94.8		0	30-120	0		%REC	5	11/11/16 01:40 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Acenaphthylene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Anthracene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[a]anthracene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[a]pyrene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[b]fluoranthene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[e]pyrene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[g,h,i]perylene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[j]fluoranthene	0.0925		0.0617	0.123	0.0925	NU	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[k]fluoranthene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Chrysene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Dibenz[a,h]anthracene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Fluoranthene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Fluorene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Indeno[1,2,3-cd]pyrene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Phenanthrene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Pyrene	0.0925		0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
IS: Acenaphthene-d10	83.6		0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Chrysene-d12	90.3		0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Naphthalene-d8	84.6		0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Perylene-d12	101		0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Phenanthrene-d10	84.5		0	50-200	0		%REC	10	11/11/16 07:33 PM
Surr: 2-Fluorobiphenyl	84.9		0	46-115	0		%REC	10	11/11/16 07:33 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP01(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-21
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	105	0	58-133	0		%REC	10	11/11/16 07:33 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	18.9	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

November 22, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1611044

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 21 sample(s) on 11/4/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 5 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas & DoD Laboratory Certification Number: T104704211-16-17 & DoD-ELAP #L15-426

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DHL ANALYTICAL
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Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72390

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill STE 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: November 3, 2016 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1611044
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 8082 PCB ❑ 608 PCB ❑ 8270 O-P PEST ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS METALS ❑ RCRA ❑ TX11 ❑ Lead PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	FIELD NOTES
SGR-DU132(0-2)-A	01	11-03-16	1031	S	Bag	1				1		
SGR-DU132(2-4)-A	02	11-03-16	1032	S	Bag	1				1		
SGR-DU132(4-6)-A	03	11-03-16	1033	S	Bag	1				1		
SGR-DU132(6-8)-A	04	11-03-16	1034	S	Bag	1				1		
SGR-DU132(0-2)-B	05	11-03-16	1024	S	Bag	1				1		
SGR-DU132(2-4)-B	06	11-03-16	1025	S	Bag	1				1		
SGR-DU132(4-6)-B	07	11-03-16	1026	S	Bag	1				1		
SGR-DU132(6-8)-B	08	11-03-16	1027	S	Bag	1				1		
SGR-DU132(0-2)-C	09	11-03-16	1011	S	Bag	1				1		
SGR-DU132(2-4)-C	10	11-03-16	1012	S	Bag	1				1		
SGR-DU132(4-6)-C	11	11-03-16	1013	S	Bag	1				1		
SGR-DU132(6-8)-C	12	11-03-16	1014	S	Bag	1				1		
~~SGR-EB132(20161103)~~		11-03-16		S	Bag							Can 11/3/2016
SGR-EB132(20161103)	13	11.03-16	1101	W	Bottles	2		1		1		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	11.3.16/1800	Fedex
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Fedex	11-4-16 9:45	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ❑
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/0.4/0.5 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73151

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Roschill STE350 Lenexa KS 66215
PHONE: 913 645 3703 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: November 3, 2016 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1601044
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
SGR-DU046(10-12)	14	11-03-16	1546	S	Jar	1				1		X X	
~~SGR-DU046(12-14)~~				S	Jar	1				1		X X	on 11/3/16
~~SGR-DU046(14-15)~~				S	Jar	1				1		X X	on 11/3/16
SGR-DU074(10-12)	15	11-03-16	1450	S	Jar	1				1		X X	
SGR-DU074(12-14)	16	11-03-16	1453	S	Jar	1				1		X X X	3 Hold per
SGR-DU074(14-15)	17	11-03-16	1455	S	Jar	1				1		X X X	3 Alex JB 11/4/16
SGR-DU010-04(10-12)	18	11-03-16	1331	S	Jar	1				1		X X	
SGR-DU010-04(12-14)	19	11-03-16	1332	S	Jar	1				1		X X X	3 Hold per
SGR-DU010-04(14-15)	20	11-03-16	1333	S	Jar	1				1		X X X	3 Alex JB 11/4/16
~~SGR-EB~~													on 11/3/16
~~SGR-DUP(20161103)~~													on 11/3/16
SGR-DUP01(20161103)	21	11-03-16	—	S	Jar	1				1		X X	
~~SGR-DUP02-08(10-12)~~		11-03-16		S	Jar	1				1		X X	on 11/3/16

RELINQUISHED BY: (Signature) DATE/TIME 11-3-16 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 11-4-16 9:45 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/0.4/0.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 03NOV16
ACTWGT: 64.70 LB
CAD: 006994464/SSFE1722
DIMS: 23x14x13 IN

BILL THIRD PARTY

Part # 156297V-435 RI12 APV EXP 08/17 •

TO **DHL ANALYTICAL**

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J162016101201uv

2 of 3

MPS# 0263 **7845 4642 9887**

Mstr# 7845 4642 9876 0201

FRI - 04 NOV 3:00P
STANDARD OVERNIGHT

44 BSMA

78664
TX-US **AUS**

CUSTODY SEAL
DATE 11/3/2016
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

ORIGIN ID:LRDA (913) -03
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 03NOV16
ACTWGT: 69.60 LB
CAD: 006994464/SSFE1722
DIMS: 23x14x13 IN

BILL THIRD PARTY

Part # 156297V-4335 REV2 APV EXP 08/17 •

TO **DHL ANALYTICAL**

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 3

TRK# 0201 **7845 4642 9876**

MASTER

FRI - 04 NOV 3:00P
STANDARD OVERNIGHT

44 BSMA

78664
TX-US AUS

CUSTODY SEAL
DATE 11/3/2016
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE
ACTWGT: 71. FZ
CAD: 006994 E1722
DIMS: 23x14x1.
BILL THIRD PARTY

Part # 156297V-4335 REV2 APV EXP 08/17 •

TO **DHL ANALYTICAL**

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

3 of 3

MPS# 0263 **7845 4642 9898**

Mstr# 7845 4642 9876 0201

FRI - 04 NOV 3:00P
STANDARD OVERNIGHT

44 BSMA

78664
TX-US AUS

CUSTODY SEAL
DATE 11/3/2016
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/4/2016

Work Order Number 1611044 | Received by JT

Checklist completed by: _____ (Signature) 11/4/2016 (Date) | Reviewed by DB (Initials) 11/4/2016 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.5 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? No		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc.
Laboratory Review Checklist: Reportable Data

Project Name: Laredo SGR	**Date:** 11/22/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1611044
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?	**X**				
		7) Were % moisture (or solids) reported for all soil and sediment samples?	**X**				
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?	**X**				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	**X**				
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MQL?	**X**				
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		**X**			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: Laredo SGR | **Date:** 11/22/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1611044

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?		**X**			**S2-01**
		2) Were percent differences for each analyte within the method-required QC limits?	**X**				
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on June 1-5, 2015. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director



Signature

11/22/16

Date

DHL Analytical, Inc. **Date:** *22-Nov-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611044

CASE NARRATIVE

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver. 5.0 and NELAC.

The "U" flag indicates the results for that sample are nondetect.

Samples were analyzed using the methods outlined in the following references:

Method SW8270D-LL - PAH Analysis (The compound Benzo[j]fluoranthene is not NELAC or DOD Certified)
Method SW6020A- Metals Analysis

Exception Report R1-01

Samples were received on and log-in performed on 11/4/2016. A total of 21 samples were received and 17 were analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03 and R7-04

For Metals Analysis, for soil batch 77903, the recovery of Lead for the Matrix Spike and Matrix Spike Duplicate (1611044-01 MS/MSD) was above the method control limits. This was flagged accordingly in the QC Summary Report. The recovery of this analyte was within method control limits in the associated LCS. No further corrective action was taken.

For PAH Analysis, for soil batches 77875 and 77861, the recoveries/RPDs of up to twelve compounds for the Matrix Spike and Matrix Spike Duplicate(s) (1611071-16, 1611044-01 MS/MSD) were outside of the method control limits. These were flagged accordingly in the QC Summary Report. The recoveries of these compounds were within method control limits in the associated LCS. Client was informed and no further corrective action was taken.

Exception Report R10-01

For PAH Analysis, the samples were diluted due to observed color of extract; dilution meets project specifications.

For the subsurface samples in this workorder, DHL Analytical performed an Incremental Sampling Method (ISM) according to an internal SOP, as approved by the client and included in the project QAPP. This workorder consist of twelve sub-surface samples for DHL WO # 1611044. These were processed to pass #10 sieve (2mm); of those subsurface samples, five samples had insufficient sample

volume to perform the sub-sampling procedure as stated in the SOP and the entire sieved sample mass was used for the analysis. The remaining four samples analyzed were discreet soil samples collected in 4 ounce soil containers and ISM process not used, as per project specs.

Exception Report S2-01

For PAH Analysis, performed on 11/11/2016, the Matrix Spike Duplicate (1611071-16 MSD) and the ending Continuing Calibration Verification (CCV1-16111) were analyzed less than one hour outside of the method specified 12-hour window. All of the field sample were analyzed within the method specified 12-hour window. Client was informed and no further corrective action was taken.

A summary of project communication follows:

The Subcontract Agreement No. D16-003 for Arcadis Project No. 04285081.0000.00043 was sent to DHL Analytical from client and signed on 1/6/2016, the contract for work signed and approved by both parties on 1/12/2016. A Modification No. 01-D16-003 was signed by both parties on 4/21/2016.

The bottlekit was requested from Alex Walters of Arcadis sent via email to John DuPont on 10/110/2016.
The following DHL Bottle Orders:
#7345 sent on 10/28/2016 via Lonestar Overnight Ground to arrive by 10/31/2016.
#7346 sent on 10/31/2016 via Lonestar Overnight Ground to arrive by 11/1/2016.
#7347 sent on 11/2/2016 via Lonestar Overnight Ground to arrive by 11/3/2016.

This sample delivery group arrives at DHL Analytical and Sample Summary was sent on 11/4/2016. Associated shipping documents are kept in the project folder and/or client folder as part of the Administrative records filed in the QA office.

DHL project manager/qa staff discussed with client the following issues:
email communications 11/14/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding variance for tune frequency and some compounds for QC samples outside of the control limits. The client accepted the corrective action for the quality variances on 11/14/2016.

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611044

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1611044-01	SGR-DU132(0-2)-A		11/03/16 10:31 AM	11/4/2016
1611044-02	SGR-DU132(2-4)-A		11/03/16 10:32 AM	11/4/2016
1611044-03	SGR-DU132(4-6)-A		11/03/16 10:33 AM	11/4/2016
1611044-04	SGR-DU132(6-8)-A		11/03/16 10:34 AM	11/4/2016
1611044-05	SGR-DU132(0-2)-B		11/03/16 10:24 AM	11/4/2016
1611044-06	SGR-DU132(2-4)-B		11/03/16 10:25 AM	11/4/2016
1611044-07	SGR-DU132(4-6)-B		11/03/16 10:26 AM	11/4/2016
1611044-08	SGR-DU132(6-8)-B		11/03/16 10:27 AM	11/4/2016
1611044-09	SGR-DU132(0-2)-C		11/03/16 10:11 AM	11/4/2016
1611044-10	SGR-DU132(2-4)-C		11/03/16 10:12 AM	11/4/2016
1611044-11	SGR-DU132(4-6)-C		11/03/16 10:13 AM	11/4/2016
1611044-12	SGR-DU132(6-8)-C		11/03/16 10:14 AM	11/4/2016
1611044-13	SGR-EB132(20161103)		11/03/16 11:01 AM	11/4/2016
1611044-14	SGR-DU046(10-12)		11/03/16 03:46 PM	11/4/2016
1611044-15	SGR-DU074(10-12)		11/03/16 02:50 PM	11/4/2016
1611044-16	SGR-DU074(12-14)		11/03/16 02:53 PM	11/4/2016
1611044-17	SGR-DU074(14-15)		11/03/16 02:55 PM	11/4/2016
1611044-18	SGR-DU010-04(10-12)		11/03/16 01:31 PM	11/4/2016
1611044-19	SGR-DU010-04(12-14)		11/03/16 01:32 PM	11/4/2016
1611044-20	SGR-DU010-04(14-15)		11/03/16 01:33 PM	11/4/2016
1611044-21	SGR-DUP01(20161103)		11/03/16	11/4/2016

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611044-01A	SGR-DU132(0-2)-A	11/03/16 10:31 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(0-2)-A	11/03/16 10:31 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-02A	SGR-DU132(2-4)-A	11/03/16 10:32 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(2-4)-A	11/03/16 10:32 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-03A	SGR-DU132(4-6)-A	11/03/16 10:33 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(4-6)-A	11/03/16 10:33 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-04A	SGR-DU132(6-8)-A	11/03/16 10:34 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(6-8)-A	11/03/16 10:34 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-05A	SGR-DU132(0-2)-B	11/03/16 10:24 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(0-2)-B	11/03/16 10:24 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-06A	SGR-DU132(2-4)-B	11/03/16 10:25 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(2-4)-B	11/03/16 10:25 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-07A	SGR-DU132(4-6)-B	11/03/16 10:26 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(4-6)-B	11/03/16 10:26 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-08A	SGR-DU132(6-8)-B	11/03/16 10:27 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(6-8)-B	11/03/16 10:27 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-09A	SGR-DU132(0-2)-C	11/03/16 10:11 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(0-2)-C	11/03/16 10:11 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-10A	SGR-DU132(2-4)-C	11/03/16 10:12 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(2-4)-C	11/03/16 10:12 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-11A	SGR-DU132(4-6)-C	11/03/16 10:13 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(4-6)-C	11/03/16 10:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-12A	SGR-DU132(6-8)-C	11/03/16 10:14 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU132(6-8)-C	11/03/16 10:14 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611044-13A	SGR-EB132(20161103)	11/03/16 11:01 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611044-13B	SGR-EB132(20161103)	11/03/16 11:01 AM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/07/16 10:45 AM	77809
1611044-14A	SGR-DU046(10-12)	11/03/16 03:46 PM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-DU046(10-12)	11/03/16 03:46 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611044-14A	SGR-DU046(10-12)	11/03/16 03:46 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611044-15A	SGR-DU074(10-12)	11/03/16 02:50 PM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-DU074(10-12)	11/03/16 02:50 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-DU074(10-12)	11/03/16 02:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611044-18A	SGR-DU010-04(10-12)	11/03/16 01:31 PM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-DU010-04(10-12)	11/03/16 01:31 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-DU010-04(10-12)	11/03/16 01:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611044-21A	SGR-DUP01(20161103)	11/03/16	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-DUP01(20161103)	11/03/16	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-DUP01(20161103)	11/03/16	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

ISM PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611044-01A	SGR-DU132(0-2)-A	11/3/2016 10:31:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-02A	SGR-DU132(2-4)-A	11/3/2016 10:32:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-03A	SGR-DU132(4-6)-A	11/3/2016 10:33:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-04A	SGR-DU132(6-8)-A	11/3/2016 10:34:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-05A	SGR-DU132(0-2)-B	11/3/2016 10:24:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-06A	SGR-DU132(2-4)-B	11/3/2016 10:25:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-07A	SGR-DU132(4-6)-B	11/3/2016 10:26:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-08A	SGR-DU132(6-8)-B	11/3/2016 10:27:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-09A	SGR-DU132(0-2)-C	11/3/2016 10:11:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-10A	SGR-DU132(2-4)-C	11/3/2016 10:12:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-11A	SGR-DU132(4-6)-C	11/3/2016 10:13:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804
1611044-12A	SGR-DU132(6-8)-C	11/3/2016 10:14:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/4/2016 10:00:00 AM	77804

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611044-01A	SGR-DU132(0-2)-A	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 04:23 PM	GCMS8_161111A
	SGR-DU132(0-2)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 03:51 PM	ICP-MS4_161116B
1611044-02A	SGR-DU132(2-4)-A	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 04:51 PM	GCMS8_161111A
	SGR-DU132(2-4)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:11 PM	ICP-MS4_161116B
1611044-03A	SGR-DU132(4-6)-A	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 05:20 PM	GCMS8_161111A
	SGR-DU132(4-6)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:34 PM	ICP-MS4_161116B
1611044-04A	SGR-DU132(6-8)-A	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 05:49 PM	GCMS8_161111A
	SGR-DU132(6-8)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:36 PM	ICP-MS4_161116B
1611044-05A	SGR-DU132(0-2)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 06:17 PM	GCMS8_161111A
	SGR-DU132(0-2)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:38 PM	ICP-MS4_161116B
1611044-06A	SGR-DU132(2-4)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 06:46 PM	GCMS8_161111A
	SGR-DU132(2-4)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:40 PM	ICP-MS4_161116B
1611044-07A	SGR-DU132(4-6)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 07:15 PM	GCMS8_161111A
	SGR-DU132(4-6)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:42 PM	ICP-MS4_161116B
1611044-08A	SGR-DU132(6-8)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 07:43 PM	GCMS8_161111A
	SGR-DU132(6-8)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:44 PM	ICP-MS4_161116B
1611044-09A	SGR-DU132(0-2)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 08:12 PM	GCMS8_161111A
	SGR-DU132(0-2)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:46 PM	ICP-MS4_161116B
1611044-10A	SGR-DU132(2-4)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 08:41 PM	GCMS8_161111A
	SGR-DU132(2-4)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:48 PM	ICP-MS4_161116B
1611044-11A	SGR-DU132(4-6)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 09:09 PM	GCMS8_161111A
	SGR-DU132(4-6)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:50 PM	ICP-MS4_161116B
1611044-12A	SGR-DU132(6-8)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 09:38 PM	GCMS8_161111A
	SGR-DU132(6-8)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:52 PM	ICP-MS4_161116B
1611044-13A	SGR-EB132(20161103)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 02:48 PM	ICP-MS3_161116A
1611044-13B	SGR-EB132(20161103)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77809	1	11/08/16 12:57 PM	GCMS6_161108A
1611044-14A	SGR-DU046(10-12)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 06:09 PM	GCMS6_161111C
	SGR-DU046(10-12)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611044-14A	SGR-DU046(10-12)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:34 PM	ICP-MS4_161111D
1611044-15A	SGR-DU074(10-12)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 06:37 PM	GCMS6_161111C
	SGR-DU074(10-12)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-DU074(10-12)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:36 PM	ICP-MS4_161111D
1611044-18A	SGR-DU010-04(10-12)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 07:05 PM	GCMS6_161111C
	SGR-DU010-04(10-12)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-DU010-04(10-12)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:38 PM	ICP-MS4_161111D
1611044-21A	SGR-DUP01(20161103)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 07:33 PM	GCMS6_161111C
	SGR-DUP01(20161103)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-DUP01(20161103)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:40 PM	ICP-MS4_161111D

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611044-01
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:31 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	97.6	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 03:51 PM
IS: Bismuth	88.1	0	30-120	0		%REC	5	11/16/16 03:51 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.105	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Acenaphthylene	0.0697	0.0465	0.0929	0.0697	U	mg/Kg-dry	10	11/11/16 04:23 PM
Anthracene	0.309	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[a]anthracene	2.51	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[a]pyrene	3.15	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[b]fluoranthene	2.99	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[e]pyrene	2.37	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[g,h,i]perylene	2.36	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[j]fluoranthene	1.44	0.0465	0.0929	0.0697	N	mg/Kg-dry	10	11/11/16 04:23 PM
Benzo[k]fluoranthene	1.40	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Chrysene	3.29	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Dibenz[a,h]anthracene	0.337	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Fluoranthene	4.04	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Fluorene	0.0595	0.0465	0.0929	0.0697	J	mg/Kg-dry	10	11/11/16 04:23 PM
Indeno[1,2,3-cd]pyrene	2.25	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Phenanthrene	1.51	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
Pyrene	3.53	0.0465	0.0929	0.0697		mg/Kg-dry	10	11/11/16 04:23 PM
IS: Acenaphthene-d10	90.2	0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Chrysene-d12	89.5	0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Naphthalene-d8	102	0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Perylene-d12	88.9	0	50-200	0		%REC	10	11/11/16 04:23 PM
IS: Phenanthrene-d10	88.6	0	50-200	0		%REC	10	11/11/16 04:23 PM
Surr: 2-Fluorobiphenyl	94.4	0	46-115	0		%REC	10	11/11/16 04:23 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611044-01
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:31 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.8	0	58-133	0		%REC	10	11/11/16 04:23 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611044-02
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:32 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	122	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:11 PM
IS: Bismuth	87.8	0	30-120	0		%REC	5	11/16/16 04:11 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.131	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Acenaphthylene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/11/16 04:51 PM
Anthracene	0.791	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[a]anthracene	3.87	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[a]pyrene	4.24	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[b]fluoranthene	4.19	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[e]pyrene	3.13	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[g,h,i]perylene	2.98	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[j]fluoranthene	1.99	0.0460	0.0920	0.0690	N	mg/Kg-dry	10	11/11/16 04:51 PM
Benzo[k]fluoranthene	1.86	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Chrysene	4.77	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Dibenz[a,h]anthracene	0.490	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Fluoranthene	6.56	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Fluorene	0.133	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Indeno[1,2,3-cd]pyrene	2.96	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Phenanthrene	3.54	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
Pyrene	5.32	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/11/16 04:51 PM
IS: Acenaphthene-d10	92.8	0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Chrysene-d12	89.3	0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Naphthalene-d8	95.2	0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Perylene-d12	89.3	0	50-200	0		%REC	10	11/11/16 04:51 PM
IS: Phenanthrene-d10	90.8	0	50-200	0		%REC	10	11/11/16 04:51 PM
Surr: 2-Fluorobiphenyl	92.0	0	46-115	0		%REC	10	11/11/16 04:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611044-02
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:32 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	95.7	0	58-133	0		%REC	10	11/11/16 04:51 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611044-03
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:33 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.23	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:34 PM
IS: Bismuth	86.0	0	30-120	0		%REC	5	11/16/16 04:34 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Acenaphthylene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Anthracene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[a]anthracene	0.0579	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[a]pyrene	0.0602	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[b]fluoranthene	0.0592	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[e]pyrene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[g,h,i]perylene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[j]fluoranthene	0.0743	0.0495	0.0990	0.0743	NU	mg/Kg-dry	10	11/11/16 05:20 PM
Benzo[k]fluoranthene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Chrysene	0.0634	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Dibenz[a,h]anthracene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Fluoranthene	0.0975	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Fluorene	0.0743	0.0495	0.0990	0.0743	U	mg/Kg-dry	10	11/11/16 05:20 PM
Indeno[1,2,3-cd]pyrene	0.0552	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Phenanthrene	0.0584	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
Pyrene	0.0819	0.0495	0.0990	0.0743	J	mg/Kg-dry	10	11/11/16 05:20 PM
IS: Acenaphthene-d10	85.1	0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Chrysene-d12	84.3	0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Naphthalene-d8	91.7	0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Perylene-d12	82.7	0	50-200	0		%REC	10	11/11/16 05:20 PM
IS: Phenanthrene-d10	84.2	0	50-200	0		%REC	10	11/11/16 05:20 PM
Surr: 2-Fluorobiphenyl	88.0	0	46-115	0		%REC	10	11/11/16 05:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611044-03
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:33 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	93.6	0	58-133	0		%REC	10	11/11/16 05:20 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611044-04
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:34 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.40	0.0893	0.268	0.134		mg/Kg-dry	5	11/16/16 04:36 PM
IS: Bismuth	83.9	0	30-120	0		%REC	5	11/16/16 04:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Acenaphthylene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Anthracene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[a]anthracene	0.0582	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[a]pyrene	0.0628	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[b]fluoranthene	0.0658	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[e]pyrene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[g,h,i]perylene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[j]fluoranthene	0.0699	0.0466	0.0932	0.0699	NU	mg/Kg-dry	10	11/11/16 05:49 PM
Benzo[k]fluoranthene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Chrysene	0.0663	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Dibenz[a,h]anthracene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Fluoranthene	0.0981	0.0466	0.0932	0.0699		mg/Kg-dry	10	11/11/16 05:49 PM
Fluorene	0.0699	0.0466	0.0932	0.0699	U	mg/Kg-dry	10	11/11/16 05:49 PM
Indeno[1,2,3-cd]pyrene	0.0475	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Phenanthrene	0.0532	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
Pyrene	0.0844	0.0466	0.0932	0.0699	J	mg/Kg-dry	10	11/11/16 05:49 PM
IS: Acenaphthene-d10	85.4	0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Chrysene-d12	84.4	0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Naphthalene-d8	105	0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Perylene-d12	83.2	0	50-200	0		%REC	10	11/11/16 05:49 PM
IS: Phenanthrene-d10	84.4	0	50-200	0		%REC	10	11/11/16 05:49 PM
Surr: 2-Fluorobiphenyl	91.7	0	46-115	0		%REC	10	11/11/16 05:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611044-04
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:34 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	96.9	0	58-133	0		%REC	10	11/11/16 05:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611044-05
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:24 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	73.8	0.0990	0.297	0.149		mg/Kg-dry	5	11/16/16 04:38 PM
IS: Bismuth	84.9	0	30-120	0		%REC	5	11/16/16 04:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0576	0.0478	0.0955	0.0716	J	mg/Kg-dry	10	11/11/16 06:17 PM
Acenaphthylene	0.0716	0.0478	0.0955	0.0716	U	mg/Kg-dry	10	11/11/16 06:17 PM
Anthracene	0.243	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[a]anthracene	1.35	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[a]pyrene	1.59	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[b]fluoranthene	1.60	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[e]pyrene	1.20	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[g,h,i]perylene	1.15	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[j]fluoranthene	0.742	0.0478	0.0955	0.0716	N	mg/Kg-dry	10	11/11/16 06:17 PM
Benzo[k]fluoranthene	0.692	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Chrysene	1.80	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Dibenz[a,h]anthracene	0.171	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Fluoranthene	2.54	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Fluorene	0.0716	0.0478	0.0955	0.0716	U	mg/Kg-dry	10	11/11/16 06:17 PM
Indeno[1,2,3-cd]pyrene	1.13	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Phenanthrene	1.21	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
Pyrene	2.14	0.0478	0.0955	0.0716		mg/Kg-dry	10	11/11/16 06:17 PM
IS: Acenaphthene-d10	88.4	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Chrysene-d12	87.6	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Naphthalene-d8	98.4	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Perylene-d12	86.8	0	50-200	0		%REC	10	11/11/16 06:17 PM
IS: Phenanthrene-d10	87.3	0	50-200	0		%REC	10	11/11/16 06:17 PM
Surr: 2-Fluorobiphenyl	87.4	0	46-115	0		%REC	10	11/11/16 06:17 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611044-05
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:24 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	90.3	0	58-133	0		%REC	10	11/11/16 06:17 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611044-06
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:25 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	63.0	0.0909	0.273	0.136		mg/Kg-dry	5	11/16/16 04:40 PM
IS: Bismuth	85.2	0	30-120	0		%REC	5	11/16/16 04:40 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0747	0.0498	0.0996	0.0747	U	mg/Kg-dry	10	11/11/16 06:46 PM
Acenaphthylene	0.0747	0.0498	0.0996	0.0747	U	mg/Kg-dry	10	11/11/16 06:46 PM
Anthracene	0.0984	0.0498	0.0996	0.0747	J	mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[a]anthracene	0.744	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[a]pyrene	0.836	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[b]fluoranthene	0.774	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[e]pyrene	0.615	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[g,h,i]perylene	0.596	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[j]fluoranthene	0.387	0.0498	0.0996	0.0747	N	mg/Kg-dry	10	11/11/16 06:46 PM
Benzo[k]fluoranthene	0.429	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Chrysene	1.03	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Dibenz[a,h]anthracene	0.0920	0.0498	0.0996	0.0747	J	mg/Kg-dry	10	11/11/16 06:46 PM
Fluoranthene	1.25	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Fluorene	0.0747	0.0498	0.0996	0.0747	U	mg/Kg-dry	10	11/11/16 06:46 PM
Indeno[1,2,3-cd]pyrene	0.580	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Phenanthrene	0.451	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
Pyrene	1.05	0.0498	0.0996	0.0747		mg/Kg-dry	10	11/11/16 06:46 PM
IS: Acenaphthene-d10	86.9	0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Chrysene-d12	85.2	0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Naphthalene-d8	101	0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Perylene-d12	84.5	0	50-200	0		%REC	10	11/11/16 06:46 PM
IS: Phenanthrene-d10	85.1	0	50-200	0		%REC	10	11/11/16 06:46 PM
Surr: 2-Fluorobiphenyl	88.5	0	46-115	0		%REC	10	11/11/16 06:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611044-06
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:25 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	90.5	0	58-133	0		%REC	10	11/11/16 06:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611044-07
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:26 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.87	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:42 PM
IS: Bismuth	84.5	0	30-120	0		%REC	5	11/16/16 04:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Acenaphthylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[a]anthracene	0.122	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[a]pyrene	0.146	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[b]fluoranthene	0.132	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[e]pyrene	0.105	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[g,h,i]perylene	0.105	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[j]fluoranthene	0.0637	0.0475	0.0950	0.0712	JN	mg/Kg-dry	10	11/11/16 07:15 PM
Benzo[k]fluoranthene	0.0655	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/11/16 07:15 PM
Chrysene	0.135	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Dibenz[a,h]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Fluoranthene	0.183	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Fluorene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/11/16 07:15 PM
Indeno[1,2,3-cd]pyrene	0.107	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
Phenanthrene	0.0573	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/11/16 07:15 PM
Pyrene	0.162	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/11/16 07:15 PM
IS: Acenaphthene-d10	80.4	0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Chrysene-d12	78.9	0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Naphthalene-d8	98.0	0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Perylene-d12	78.1	0	50-200	0		%REC	10	11/11/16 07:15 PM
IS: Phenanthrene-d10	78.7	0	50-200	0		%REC	10	11/11/16 07:15 PM
Surr: 2-Fluorobiphenyl	85.0	0	46-115	0		%REC	10	11/11/16 07:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611044-07
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:26 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	90.1	0	58-133	0		%REC	10	11/11/16 07:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611044-08
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:27 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.61	0.0901	0.270	0.135		mg/Kg-dry	5	11/16/16 04:44 PM
IS: Bismuth	84.9	0	30-120	0		%REC	5	11/16/16 04:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0745	0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Acenaphthylene	0.0745	0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Anthracene	0.0745	0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[a]anthracene	0.143	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[a]pyrene	0.179	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[b]fluoranthene	0.167	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[e]pyrene	0.129	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[g,h,i]perylene	0.134	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[j]fluoranthene	0.0779	0.0497	0.0993	0.0745	JN	mg/Kg-dry	10	11/11/16 07:43 PM
Benzo[k]fluoranthene	0.0970	0.0497	0.0993	0.0745	J	mg/Kg-dry	10	11/11/16 07:43 PM
Chrysene	0.175	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Dibenz[a,h]anthracene	0.0745	0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Fluoranthene	0.209	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Fluorene	0.0745	0.0497	0.0993	0.0745	U	mg/Kg-dry	10	11/11/16 07:43 PM
Indeno[1,2,3-cd]pyrene	0.129	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
Phenanthrene	0.0624	0.0497	0.0993	0.0745	J	mg/Kg-dry	10	11/11/16 07:43 PM
Pyrene	0.188	0.0497	0.0993	0.0745		mg/Kg-dry	10	11/11/16 07:43 PM
IS: Acenaphthene-d10	79.0	0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Chrysene-d12	77.8	0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Naphthalene-d8	108	0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Perylene-d12	76.9	0	50-200	0		%REC	10	11/11/16 07:43 PM
IS: Phenanthrene-d10	78.5	0	50-200	0		%REC	10	11/11/16 07:43 PM
Surr: 2-Fluorobiphenyl	96.5	0	46-115	0		%REC	10	11/11/16 07:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611044-08
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:27 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	86.9	0	58-133	0		%REC	10	11/11/16 07:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611044-09
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:11 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	49.7	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:46 PM
IS: Bismuth	86.8	0	30-120	0		%REC	5	11/16/16 04:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Acenaphthylene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[a]anthracene	0.342	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[a]pyrene	0.449	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[b]fluoranthene	0.417	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[e]pyrene	0.354	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[g,h,i]perylene	0.351	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[j]fluoranthene	0.201	0.0485	0.0971	0.0728	N	mg/Kg-dry	10	11/11/16 08:12 PM
Benzo[k]fluoranthene	0.461	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Chrysene	0.436	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Dibenz[a,h]anthracene	0.0494	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/11/16 08:12 PM
Fluoranthene	0.526	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Fluorene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/11/16 08:12 PM
Indeno[1,2,3-cd]pyrene	0.330	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Phenanthrene	0.172	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
Pyrene	0.486	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/11/16 08:12 PM
IS: Acenaphthene-d10	86.7	0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Chrysene-d12	85.2	0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Naphthalene-d8	126	0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Perylene-d12	83.8	0	50-200	0		%REC	10	11/11/16 08:12 PM
IS: Phenanthrene-d10	84.8	0	50-200	0		%REC	10	11/11/16 08:12 PM
Surr: 2-Fluorobiphenyl	111	0	46-115	0		%REC	10	11/11/16 08:12 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611044-09
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:11 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	97.7	0	58-133	0		%REC	10	11/11/16 08:12 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611044-10
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:12 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	14.1	0.0917	0.275	0.138		mg/Kg-dry	5	11/16/16 04:48 PM
IS: Bismuth	85.0	0	30-120	0		%REC	5	11/16/16 04:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Acenaphthylene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Anthracene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[a]anthracene	0.178	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[a]pyrene	0.169	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[b]fluoranthene	0.147	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[e]pyrene	0.124	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[g,h,i]perylene	0.115	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[j]fluoranthene	0.0806	0.0468	0.0935	0.0702	JN	mg/Kg-dry	10	11/11/16 08:41 PM
Benzo[k]fluoranthene	0.0965	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Chrysene	0.172	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Dibenz[a,h]anthracene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Fluoranthene	0.333	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Fluorene	0.0702	0.0468	0.0935	0.0702	U	mg/Kg-dry	10	11/11/16 08:41 PM
Indeno[1,2,3-cd]pyrene	0.112	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Phenanthrene	0.207	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
Pyrene	0.288	0.0468	0.0935	0.0702		mg/Kg-dry	10	11/11/16 08:41 PM
IS: Acenaphthene-d10	79.8	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Chrysene-d12	86.2	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Naphthalene-d8	114	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Perylene-d12	76.1	0	50-200	0		%REC	10	11/11/16 08:41 PM
IS: Phenanthrene-d10	78.3	0	50-200	0		%REC	10	11/11/16 08:41 PM
Surr: 2-Fluorobiphenyl	87.6	0	46-115	0		%REC	10	11/11/16 08:41 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611044-10
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:12 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	91.3	0	58-133	0		%REC	10	11/11/16 08:41 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611044-11
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:13 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.77	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:50 PM
IS: Bismuth	85.4	0	30-120	0		%REC	5	11/16/16 04:50 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Acenaphthylene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[a]anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[a]pyrene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[b]fluoranthene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[e]pyrene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[g,h,i]perylene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[j]fluoranthene	0.0698	0.0466	0.0931	0.0698	NU	mg/Kg-dry	10	11/11/16 09:09 PM
Benzo[k]fluoranthene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Chrysene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Dibenz[a,h]anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Fluoranthene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Fluorene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Indeno[1,2,3-cd]pyrene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Phenanthrene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
Pyrene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/11/16 09:09 PM
IS: Acenaphthene-d10	76.9	0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Chrysene-d12	76.9	0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Naphthalene-d8	116	0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Perylene-d12	72.5	0	50-200	0		%REC	10	11/11/16 09:09 PM
IS: Phenanthrene-d10	75.5	0	50-200	0		%REC	10	11/11/16 09:09 PM
Surr: 2-Fluorobiphenyl	111	0	46-115	0		%REC	10	11/11/16 09:09 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611044-11
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:13 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	92.9	0	58-133	0		%REC	10	11/11/16 09:09 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611044-12
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:14 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.61	0.0935	0.280	0.140		mg/Kg-dry	5	11/16/16 04:52 PM
IS: Bismuth	82.3	0	30-120	0		%REC	5	11/16/16 04:52 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Acenaphthylene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Anthracene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[a]anthracene	0.191	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[a]pyrene	0.218	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[b]fluoranthene	0.203	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[e]pyrene	0.163	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[g,h,i]perylene	0.159	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[j]fluoranthene	0.100	0.0463	0.0926	0.0694	N	mg/Kg-dry	10	11/11/16 09:38 PM
Benzo[k]fluoranthene	0.0929	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Chrysene	0.229	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Dibenz[a,h]anthracene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Fluoranthene	0.300	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Fluorene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/11/16 09:38 PM
Indeno[1,2,3-cd]pyrene	0.155	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
Phenanthrene	0.0852	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/11/16 09:38 PM
Pyrene	0.266	0.0463	0.0926	0.0694		mg/Kg-dry	10	11/11/16 09:38 PM
IS: Acenaphthene-d10	84.3	0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Chrysene-d12	82.4	0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Naphthalene-d8	115	0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Perylene-d12	80.9	0	50-200	0		%REC	10	11/11/16 09:38 PM
IS: Phenanthrene-d10	101	0	50-200	0		%REC	10	11/11/16 09:38 PM
Surr: 2-Fluorobiphenyl	86.6	0	46-115	0		%REC	10	11/11/16 09:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU132(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611044-12
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 10:14 AM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	89.4	0	58-133	0		%REC	10	11/11/16 09:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB132(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-13
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 11:01 AM
Lab Order:	1611044	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.000900	0.000300	0.00100	0.000900	U	mg/L	1	11/16/16 02:48 PM
IS: Bismuth	81.2	0	30-120	0		%REC	1	11/16/16 02:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Acenaphthylene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Anthracene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[a]anthracene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[a]pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[b]fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[e]pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[g,h,i]perylene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Benzo[j]fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	NU	mg/L	1	11/08/16 12:57 PM
Benzo[k]fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Chrysene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Dibenz[a,h]anthracene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Fluoranthene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Fluorene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Indeno[1,2,3-cd]pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Phenanthrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
Pyrene	0.0000658	0.0000411	0.0000823	0.0000658	U	mg/L	1	11/08/16 12:57 PM
IS: Acenaphthene-d10	101	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Chrysene-d12	102	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Naphthalene-d8	103	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Perylene-d12	109	0	50-200	0		%REC	1	11/08/16 12:57 PM
IS: Phenanthrene-d10	101	0	50-200	0		%REC	1	11/08/16 12:57 PM
Surr: 2-Fluorobiphenyl	72.2	0	53-106	0		%REC	1	11/08/16 12:57 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB132(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-13
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 11:01 AM
Lab Order:	1611044	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	83.4	0	58-132	0		%REC	1	11/08/16 12:57 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU046(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-14
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 03:46 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.43	0.115	0.345	0.172		mg/Kg-dry	5	11/11/16 01:34 PM
IS: Bismuth	92.4	0	30-120	0		%REC	5	11/11/16 01:34 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Acenaphthylene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Anthracene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[a]anthracene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[a]pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[b]fluoranthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[e]pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[g,h,i]perylene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[j]fluoranthene	0.0907	0.0604	0.121	0.0907	NU	mg/Kg-dry	10	11/11/16 06:09 PM
Benzo[k]fluoranthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Chrysene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Dibenz[a,h]anthracene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Fluoranthene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Fluorene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Indeno[1,2,3-cd]pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Phenanthrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
Pyrene	0.0907	0.0604	0.121	0.0907	U	mg/Kg-dry	10	11/11/16 06:09 PM
IS: Acenaphthene-d10	85.9	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Chrysene-d12	92.5	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Naphthalene-d8	87.6	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Perylene-d12	103	0	50-200	0		%REC	10	11/11/16 06:09 PM
IS: Phenanthrene-d10	86.5	0	50-200	0		%REC	10	11/11/16 06:09 PM
Surr: 2-Fluorobiphenyl	90.1	0	46-115	0		%REC	10	11/11/16 06:09 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU046(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-14
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 03:46 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	102	0	58-133	0		%REC	10	11/11/16 06:09 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	22.3	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU074(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-15
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 02:50 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	20.0	0.117	0.351	0.176		mg/Kg-dry	5	11/11/16 01:36 PM
IS: Bismuth	93.3	0	30-120	0		%REC	5	11/11/16 01:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Acenaphthylene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Anthracene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[a]anthracene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[a]pyrene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[b]fluoranthene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[e]pyrene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[g,h,i]perylene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[j]fluoranthene	0.0902	0.0602	0.120	0.0902	NU	mg/Kg-dry	10	11/11/16 06:37 PM
Benzo[k]fluoranthene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Chrysene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Dibenz[a,h]anthracene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Fluoranthene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Fluorene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Indeno[1,2,3-cd]pyrene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Phenanthrene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
Pyrene	0.0902	0.0602	0.120	0.0902	U	mg/Kg-dry	10	11/11/16 06:37 PM
IS: Acenaphthene-d10	83.6	0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Chrysene-d12	90.8	0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Naphthalene-d8	84.6	0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/11/16 06:37 PM
IS: Phenanthrene-d10	84.2	0	50-200	0		%REC	10	11/11/16 06:37 PM
Surr: 2-Fluorobiphenyl	88.7	0	46-115	0		%REC	10	11/11/16 06:37 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU074(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-15
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 02:50 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	104	0	58-133	0		%REC	10	11/11/16 06:37 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	17.9	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU010-04(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-18
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 01:31 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.86	0.117	0.352	0.176		mg/Kg-dry	5	11/11/16 01:38 PM
IS: Bismuth	95.9	0	30-120	0		%REC	5	11/11/16 01:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Acenaphthylene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Anthracene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[a]anthracene	0.187	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[a]pyrene	0.225	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[b]fluoranthene	0.214	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[e]pyrene	0.167	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[g,h,i]perylene	0.177	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[j]fluoranthene	0.0977	0.0593	0.119	0.0890	JN	mg/Kg-dry	10	11/11/16 07:05 PM
Benzo[k]fluoranthene	0.101	0.0593	0.119	0.0890	J	mg/Kg-dry	10	11/11/16 07:05 PM
Chrysene	0.217	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Dibenz[a,h]anthracene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Fluoranthene	0.315	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Fluorene	0.0890	0.0593	0.119	0.0890	U	mg/Kg-dry	10	11/11/16 07:05 PM
Indeno[1,2,3-cd]pyrene	0.174	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Phenanthrene	0.135	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
Pyrene	0.276	0.0593	0.119	0.0890		mg/Kg-dry	10	11/11/16 07:05 PM
IS: Acenaphthene-d10	81.5	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Chrysene-d12	87.0	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Naphthalene-d8	81.6	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Perylene-d12	97.1	0	50-200	0		%REC	10	11/11/16 07:05 PM
IS: Phenanthrene-d10	82.1	0	50-200	0		%REC	10	11/11/16 07:05 PM
Surr: 2-Fluorobiphenyl	89.9	0	46-115	0		%REC	10	11/11/16 07:05 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU010-04(10-12)
Project:	Laredo SGR	**Lab ID:**	1611044-18
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16 01:31 PM
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	110	0	58-133	0		%REC	10	11/11/16 07:05 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	18.9	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP01(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-21
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.04	0.114	0.343	0.171		mg/Kg-dry	5	11/11/16 01:40 PM
IS: Bismuth	94.8	0	30-120	0		%REC	5	11/11/16 01:40 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Acenaphthylene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Anthracene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[a]anthracene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[a]pyrene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[b]fluoranthene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[e]pyrene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[g,h,i]perylene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[j]fluoranthene	0.0925	0.0617	0.123	0.0925	NU	mg/Kg-dry	10	11/11/16 07:33 PM
Benzo[k]fluoranthene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Chrysene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Dibenz[a,h]anthracene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Fluoranthene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Fluorene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Indeno[1,2,3-cd]pyrene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Phenanthrene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
Pyrene	0.0925	0.0617	0.123	0.0925	U	mg/Kg-dry	10	11/11/16 07:33 PM
IS: Acenaphthene-d10	83.6	0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Chrysene-d12	90.3	0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Naphthalene-d8	84.6	0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/11/16 07:33 PM
IS: Phenanthrene-d10	84.5	0	50-200	0		%REC	10	11/11/16 07:33 PM
Surr: 2-Fluorobiphenyl	84.9	0	46-115	0		%REC	10	11/11/16 07:33 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP01(20161103)
Project:	Laredo SGR	**Lab ID:**	1611044-21
Project No:	04285081.0000.00043	**Collection Date:**	11/03/16
Lab Order:	1611044	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	105	0	58-133	0		%REC	10	11/11/16 07:33 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	18.9	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161114B

Sample ID **DCS1-77661**	Batch ID: **77661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS3_161114B**	Analysis Date: **11/14/2016 3:31:00 PM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000473	0.00100	0.000500	0	94.6	80	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

The QC data in batch 77913 applies to the following samples: 1611044-13A

Sample ID **MB-77913** Batch ID: **77913** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS3_161116A** Analysis Date: **11/16/2016 1:53:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000900	0.00100								U
IS: Bismuth	0.200		0.200		79.8	30	120			

Sample ID **LCS-77913** Batch ID: **77913** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS3_161116A** Analysis Date: **11/16/2016 1:59:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.193	0.00100	0.200	0	96.3	88	115			
IS: Bismuth	0.200		0.200		78.2	30	120			

Sample ID **LCSD-77913** Batch ID: **77913** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS3_161116A** Analysis Date: **11/16/2016 2:05:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	95.8	88	115	0.468	20	
IS: Bismuth	0.200		0.200		78.6	30	120	0	0	

Sample ID **1611028-26A SD** Batch ID: **77913** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS3_161116A** Analysis Date: **11/16/2016 2:24:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00450	0.00500	0	0				0	10	U
IS: Bismuth	1.00		0.200		82.0	30	120	0	0	

Sample ID **1611028-26A PDS** Batch ID: **77913** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS3_161116A** Analysis Date: **11/16/2016 3:06:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.3	80	120			
IS: Bismuth	0.200		0.200		79.3	30	120			

Sample ID **1611028-26A MS** Batch ID: **77913** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS3_161116A** Analysis Date: **11/16/2016 3:12:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.193	0.00100	0.200	0	96.6	88	115			
IS: Bismuth	0.200		0.200		79.2	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

Sample ID **1611028-26A MSD**	Batch ID: **77913**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:18:00 PM**	Prep Date: **11/15/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	95.8	88	115	0.728	20	
IS: Bismuth	0.200		0.200		78.0	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

Sample ID **ICV1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 12:10:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0979	0.00100	0.100	0	97.9	90	110			
IS: Bismuth	0.200		0.200		98.4	30	120			

Sample ID **ILCVL-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 12:22:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	106	90	110			
IS: Bismuth	0.200		0.200		77.7	30	120			

Sample ID **LCVL1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 1:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00107	0.00100	0.00100	0	107	80	120			
IS: Bismuth	0.200		0.200		79.3	30	120			

Sample ID **CCV2-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	106	90	110			
IS: Bismuth	0.200		0.200		78.2	30	120			

Sample ID **LCVL2-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		80.5	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160916A

Sample ID **DCS1-77170**	Batch ID: **77170**	TestNo: **SW6020A**	Units: **mg/Kg**		
SampType: **DCS**	Run ID: **ICP-MS4_160916A**	Analysis Date: **9/16/2016 12:15:00 PM**	Prep Date: **9/12/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.261	0.300	0.2500	0	104	80	120	0	0	
IS: Bismuth	50.0		200.0		104	70	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

The QC data in batch 77842 applies to the following samples: 1611044-14A, 1611044-15A, 1611044-18A, 1611044-21A

Sample ID	**MB-77842**	Batch ID:	**77842**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**MBLK**	Run ID:	**ICP-MS4_161111D**	Analysis Date:	**11/11/2016 1:22:00 PM**	Prep Date:	**11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		102	30	120			

Sample ID	**LCS-77842**	Batch ID:	**77842**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**LCS**	Run ID:	**ICP-MS4_161111D**	Analysis Date:	**11/11/2016 1:24:00 PM**	Prep Date:	**11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.1	0.300	50.00	0	98.2	84	118			
IS: Bismuth	50.0		200.0		99.4	30	120			

Sample ID	**LCSD-77842**	Batch ID:	**77842**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**LCSD**	Run ID:	**ICP-MS4_161111D**	Analysis Date:	**11/11/2016 1:26:00 PM**	Prep Date:	**11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.7	0.300	50.00	0	99.3	84	118	1.08	20	
IS: Bismuth	50.0		200.0		98.4	30	120	0	0	

Sample ID	**1611053-16A SD**	Batch ID:	**77842**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**SD**	Run ID:	**ICP-MS4_161111D**	Analysis Date:	**11/11/2016 1:32:00 PM**	Prep Date:	**11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	8.36	1.47	0	8.297				0.693	10	
IS: Bismuth	245		195.7		98.7	30	120	0	0	

Sample ID	**1611053-16A PDS**	Batch ID:	**77842**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**PDS**	Run ID:	**ICP-MS4_161111D**	Analysis Date:	**11/11/2016 1:52:00 PM**	Prep Date:	**11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	55.7	0.294	48.92	8.297	96.9	80	120			
IS: Bismuth	48.9		978.4		95.2	30	120			

Sample ID	**1611053-16A MS**	Batch ID:	**77842**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**MS**	Run ID:	**ICP-MS4_161111D**	Analysis Date:	**11/11/2016 1:54:00 PM**	Prep Date:	**11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	56.1	0.299	49.82	8.297	95.9	84	118			
IS: Bismuth	49.8		199.3		94.6	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **1611053-16A MSD**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:56:00 PM**	Prep Date: **11/9/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	56.5	0.296	49.37	8.297	97.7	84	118	0.776	20	
IS: Bismuth	49.4		197.5		91.5	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **ICV-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 10:18:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.101	0.00100	0.100	0	101	90	110			
IS: Bismuth	0.200		0.200		102	30	120			

Sample ID **LCVL-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 10:24:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00111	0.00100	0.00100	0	111	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV4-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.7	90	110			
IS: Bismuth	0.200		0.200		96.9	30	120			

Sample ID **LCVL4-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000981	0.00100	0.00100	0	98.1	80	120			
IS: Bismuth	0.200		0.200		98.5	30	120			

Sample ID **CCV5-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.3	90	110			
IS: Bismuth	0.200		0.200		97.5	30	120			

Sample ID **LCVL5-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00103	0.00100	0.00100	0	103	80	120			
IS: Bismuth	0.200		0.200		97.0	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **CCV6-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.7	90	110			
IS: Bismuth	0.200		0.200		99.0	30	120			

Sample ID **LCVL6-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00103	0.00100	0.00100	0	103	80	120			
IS: Bismuth	0.200		0.200		99.5	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

The QC data in batch 77903 applies to the following samples: 1611044-01A, 1611044-02A, 1611044-03A, 1611044-04A, 1611044-05A, 1611044-06A, 1611044-07A, 1611044-08A, 1611044-09A, 1611044-10A, 1611044-11A, 1611044-12A

Sample ID **MB-77903** Batch ID: **77903** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 3:43:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		94.1	30	120			

Sample ID **LCS-77903** Batch ID: **77903** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 3:45:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.5	0.300	50.00	0	99.0	84	118			
IS: Bismuth	50.0		200.0		92.1	30	120			

Sample ID **LCSD-77903** Batch ID: **77903** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 3:47:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.5	0.300	50.00	0	99.0	84	118	0.002	20	
IS: Bismuth	50.0		200.0		92.8	30	120	0	0	

Sample ID **1611044-01A SD** Batch ID: **77903** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 3:53:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	95.9	1.46	0	97.57				1.71	10	
IS: Bismuth	243		194.2		92.9	30	120	0	0	

Sample ID **1611044-01A PDS** Batch ID: **77903** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 4:13:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	143	0.291	48.54	97.57	94.3	80	120			
IS: Bismuth	48.5		970.9		87.1	30	120			

Sample ID **1611044-01A MS** Batch ID: **77903** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 4:15:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	193	0.294	49.02	97.57	194	84	118			S
IS: Bismuth	49.0		196.1		88.7	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

Sample ID **1611044-01A MSD**	Batch ID: **77903**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 4:17:00 PM**	Prep Date: **11/14/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	188	0.288	48.08	97.57	187	84	118	2.72	20	S
IS: Bismuth	48.1		192.3		88.5	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

Sample ID **ICV-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 11:07:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.101	0.00100	0.100	0	101	90	110			
IS: Bismuth	0.200		0.200		99.4	30	120			

Sample ID **LCVL-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 11:14:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00110	0.00100	0.00100	0	110	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV5-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.203	0.00100	0.200	0	101	90	110			
IS: Bismuth	0.200		0.200		90.8	30	120			

Sample ID **LCVL5-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00101	0.00100	0.00100	0	101	80	120			
IS: Bismuth	0.200		0.200		89.0	30	120			

Sample ID **CCV6-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 4:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.202	0.00100	0.200	0	101	90	110			
IS: Bismuth	0.200		0.200		91.1	30	120			

Sample ID **LCVL6-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 4:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		93.2	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

Sample ID **CCV7-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 4:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.202	0.00100	0.200	0	101	90	110			
IS: Bismuth	0.200		0.200		86.8	30	120			

Sample ID **LCVL7-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 4:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00106	0.00100	0.00100	0	106	80	120			
IS: Bismuth	0.200		0.200		89.3	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160830A

Sample ID **DCS-76975**	Batch ID: **76975**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **DCS**	Run ID: **GCMS6_160830A**	Analysis Date: **8/30/2016 11:07:00 AM**	Prep Date: **8/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.0000272	0.0000500	0.0000400	0	68.0	20	200	0	0	
Acenaphthylene	0.0000275	0.0000500	0.0000400	0	68.8	20	200	0	0	
Anthracene	0.0000302	0.0000500	0.0000400	0	75.6	20	200	0	0	
Benzo[a]anthracene	0.0000348	0.0000500	0.0000400	0	87.1	20	200	0	0	
Benzo[a]pyrene	0.0000353	0.0000500	0.0000400	0	88.2	20	200	0	0	
Benzo[b]fluoranthene	0.0000391	0.0000500	0.0000400	0	97.8	20	200	0	0	
Benzo[e]pyrene	0.0000366	0.0000500	0.0000400	0	91.4	20	200	0	0	
Benzo[g,h,i]perylene	0.0000294	0.0000500	0.0000400	0	73.4	20	200	0	0	
Benzo[j]fluoranthene	0.0000371	0.0000500	0.0000400	0	92.8	20	200	0	0	N
Benzo[k]fluoranthene	0.0000364	0.0000500	0.0000400	0	90.9	20	200	0	0	
Chrysene	0.0000339	0.0000500	0.0000400	0	84.8	20	200	0	0	
Dibenz[a,h]anthracene	0.0000297	0.0000500	0.0000400	0	74.3	20	200	0	0	
Fluoranthene	0.0000331	0.0000500	0.0000400	0	82.7	20	200	0	0	
Fluorene	0.0000281	0.0000500	0.0000400	0	70.3	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0000295	0.0000500	0.0000400	0	73.9	20	200	0	0	
Phenanthrene	0.0000334	0.0000500	0.0000400	0	83.5	20	200	0	0	
Pyrene	0.0000301	0.0000500	0.0000400	0	75.2	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161021A

Sample ID **DCS-77602**	Batch ID: **77602**	TestNo: **SW8270D-LL**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **GCMS6_161021A**	Analysis Date: **10/21/2016 5:02:00 PM**	Prep Date: **10/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00962	0.0100	0.01000	0	96.2	20	200	0	0	
Acenaphthylene	0.00967	0.0100	0.01000	0	96.7	20	200	0	0	
Anthracene	0.00913	0.0100	0.01000	0	91.3	20	200	0	0	
Benzo[a]anthracene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Benzo[a]pyrene	0.00921	0.0100	0.01000	0	92.1	20	200	0	0	
Benzo[b]fluoranthene	0.0100	0.0100	0.01000	0	100	20	200	0	0	
Benzo[g,h,i]perylene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Benzo[k]fluoranthene	0.0100	0.0100	0.01000	0	100	20	200	0	0	
Chrysene	0.0103	0.0100	0.01000	0	103	20	200	0	0	
Dibenz[a,h]anthracene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Fluoranthene	0.0105	0.0100	0.01000	0	104	20	200	0	0	
Fluorene	0.0102	0.0100	0.01000	0	102	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0103	0.0100	0.01000	0	103	20	200	0	0	
Phenanthrene	0.0110	0.0100	0.01000	0	110	20	200	0	0	
Pyrene	0.0106	0.0100	0.01000	0	106	20	200	0	0	
IS: Acenaphthene-d10	4.00		4.000		91.5	50	200	0	0	
IS: Chrysene-d12	4.00		4.000		92.8	50	200	0	0	
IS: Naphthalene-d8	4.00		4.000		91.3	50	200	0	0	
IS: Perylene-d12	4.00		4.000		92.7	50	200	0	0	
IS: Phenanthrene-d10	4.00		4.000		91.5	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.885		1.000		88.5	43	125	0	0	
Surr: 4-Terphenyl-d14	0.914		1.000		91.4	32	125	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

The QC data in batch 77809 applies to the following samples: 1611044-13B

Sample ID **LCS-77809** Batch ID: **77809** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS6_161108A** Analysis Date: **11/8/2016 10:05:00 AM** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00280	0.0000500	0.00400	0	70.1	48	114			
Acenaphthylene	0.00293	0.0000500	0.00400	0	73.4	35	121			
Anthracene	0.00322	0.0000500	0.00400	0	80.4	53	119			
Benzo[a]anthracene	0.00382	0.0000500	0.00400	0	95.5	59	120			
Benzo[a]pyrene	0.00369	0.0000500	0.00400	0	92.3	53	120			
Benzo[b]fluoranthene	0.00353	0.0000500	0.00400	0	88.3	53	126			
Benzo[e]pyrene	0.00374	0.0000500	0.00400	0	93.5	40	140			
Benzo[g,h,i]perylene	0.00361	0.0000500	0.00400	0	90.4	44	128			
Benzo[j]fluoranthene	0.00341	0.0000500	0.00400	0	85.3	45	124			N
Benzo[k]fluoranthene	0.00387	0.0000500	0.00400	0	96.8	54	125			
Chrysene	0.00386	0.0000500	0.00400	0	96.4	57	120			
Dibenz[a,h]anthracene	0.00367	0.0000500	0.00400	0	91.8	44	131			
Fluoranthene	0.00365	0.0000500	0.00400	0	91.2	58	120			
Fluorene	0.00304	0.0000500	0.00400	0	76.1	50	118			
Indeno[1,2,3-cd]pyrene	0.00372	0.0000500	0.00400	0	92.9	48	130			
Phenanthrene	0.00332	0.0000500	0.00400	0	82.9	53	115			
Pyrene	0.00355	0.0000500	0.00400	0	88.9	53	121			
IS: Acenaphthene-d10	0.00800		0.00800		103	50	200			
IS: Chrysene-d12	0.00800		0.00800		104	50	200			
IS: Naphthalene-d8	0.00800		0.00800		106	50	200			
IS: Perylene-d12	0.00800		0.00800		112	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		103	50	200			
Surr: 2-Fluorobiphenyl	5.47		8.000		68.4	53	106			
Surr: 4-Terphenyl-d14	6.56		8.000		82.0	58	132			

Sample ID **MB-77809** Batch ID: **77809** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS6_161108A** Analysis Date: **11/8/2016 10:37:00 AM** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.0000400	0.0000500								U
Acenaphthylene	0.0000400	0.0000500								U
Anthracene	0.0000400	0.0000500								U
Benzo[a]anthracene	0.0000400	0.0000500								U
Benzo[a]pyrene	0.0000400	0.0000500								U
Benzo[b]fluoranthene	0.0000400	0.0000500								U
Benzo[e]pyrene	0.0000400	0.0000500								U
Benzo[g,h,i]perylene	0.0000400	0.0000500								U
Benzo[j]fluoranthene	0.0000400	0.0000500								NU
Benzo[k]fluoranthene	0.0000400	0.0000500								U
Chrysene	0.0000400	0.0000500								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

Sample ID **MB-77809**	Batch ID: **77809**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 10:37:00 AM**	Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.0000400	0.0000500								U
Fluoranthene	0.0000400	0.0000500								U
Fluorene	0.0000400	0.0000500								U
Indeno[1,2,3-cd]pyrene	0.0000400	0.0000500								U
Phenanthrene	0.0000400	0.0000500								U
Pyrene	0.0000400	0.0000500								U
IS: Acenaphthene-d10	0.00800		0.00800		113	50	200			
IS: Chrysene-d12	0.00800		0.00800		118	50	200			
IS: Naphthalene-d8	0.00800		0.00800		115	50	200			
IS: Perylene-d12	0.00800		0.00800		125	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		110	50	200			
Surr: 2-Fluorobiphenyl	5.57		8.000		69.6	53	106			
Surr: 4-Terphenyl-d14	6.71		8.000		83.9	58	132			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

Sample ID **ICV-161108**	Batch ID: **R88889**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **ICV**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 9:37:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.27	0.0000500	2.00	0	113	80	120			
Acenaphthylene	2.34	0.0000500	2.00	0	117	80	120			
Anthracene	2.10	0.0000500	2.00	0	105	80	120			
Benzo[a]anthracene	2.29	0.0000500	2.00	0	115	80	120			
Benzo[a]pyrene	2.21	0.0000500	2.00	0	110	80	120			
Benzo[b]fluoranthene	2.30	0.0000500	2.00	0	115	80	120			
Benzo[e]pyrene	2.20	0.0000500	2.00	0	110	80	120			
Benzo[g,h,i]perylene	2.13	0.0000500	2.00	0	107	80	120			
Benzo[j]fluoranthene	2.18	0.0000500	2.00	0	109	80	120			N
Benzo[k]fluoranthene	2.04	0.0000500	2.00	0	102	80	120			
Chrysene	2.27	0.0000500	2.00	0	113	80	120			
Dibenz[a,h]anthracene	2.16	0.0000500	2.00	0	108	80	120			
Fluoranthene	2.23	0.0000500	2.00	0	112	80	120			
Fluorene	2.32	0.0000500	2.00	0	116	80	120			
Indeno[1,2,3-cd]pyrene	2.19	0.0000500	2.00	0	109	80	120			
Phenanthrene	2.10	0.0000500	2.00	0	105	80	120			
Pyrene	2.18	0.0000500	2.00	0	109	80	120			
IS: Acenaphthene-d10	4.00		4.00		95.7	50	200			
IS: Chrysene-d12	4.00		4.00		102	50	200			
IS: Naphthalene-d8	4.00		4.00		103	50	200			
IS: Perylene-d12	4.00		4.00		108	50	200			
IS: Phenanthrene-d10	4.00		4.00		98.6	50	200			
Surr: 2-Fluorobiphenyl	2380		2000		119	65	120			
Surr: 4-Terphenyl-d14	2340		2000		117	65	120			

Sample ID **CCV1-161108**	Batch ID: **R88889**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **CCV**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 1:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.03	0.0000500	1.00	0	103	50	150			
Acenaphthylene	1.07	0.0000500	1.00	0	107	50	150			
Anthracene	1.01	0.0000500	1.00	0	101	50	150			
Benzo[a]anthracene	1.06	0.0000500	1.00	0	106	50	150			
Benzo[a]pyrene	1.02	0.0000500	1.00	0	102	50	150			
Benzo[b]fluoranthene	1.07	0.0000500	1.00	0	107	50	150			
Benzo[e]pyrene	1.02	0.0000500	1.00	0	102	50	150			
Benzo[g,h,i]perylene	0.995	0.0000500	1.00	0	99.5	50	150			
Benzo[j]fluoranthene	1.02	0.0000500	1.00	0	102	50	150			N
Benzo[k]fluoranthene	0.957	0.0000500	1.00	0	95.7	50	150			
Chrysene	1.06	0.0000500	1.00	0	106	50	150			
Dibenz[a,h]anthracene	0.999	0.0000500	1.00	0	99.9	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

Sample ID **CCV1-161108**	Batch ID: **R88889**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **CCV**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 1:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.06	0.0000500	1.00	0	106	50	150			
Fluorene	1.04	0.0000500	1.00	0	104	50	150			
Indeno[1,2,3-cd]pyrene	1.02	0.0000500	1.00	0	102	50	150			
Phenanthrene	1.02	0.0000500	1.00	0	102	50	150			
Pyrene	1.03	0.0000500	1.00	0	103	50	150			
IS: Acenaphthene-d10	4.00		4.00		105	50	200			
IS: Chrysene-d12	4.00		4.00		108	50	200			
IS: Naphthalene-d8	4.00		4.00		109	50	200			
IS: Perylene-d12	4.00		4.00		117	50	200			
IS: Phenanthrene-d10	4.00		4.00		105	50	200			
Surr: 2-Fluorobiphenyl	1080		1000		108	50	150			
Surr: 4-Terphenyl-d14	1100		1000		110	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

The QC data in batch 77875 applies to the following samples: 1611044-14A, 1611044-15A, 1611044-18A, 1611044-21A

Sample ID **LCS-77875** Batch ID: **77875** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161111C** Analysis Date: **11/11/2016 5:13:00 PM** Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.953	0.0100	1.000	0	95.3	44	111			
Acenaphthylene	0.976	0.0100	1.000	0	97.6	39	116			
Anthracene	0.916	0.0100	1.000	0	91.6	50	114			
Benzo[a]anthracene	0.980	0.0100	1.000	0	98.0	54	122			
Benzo[a]pyrene	0.891	0.0100	1.000	0	89.1	50	125			
Benzo[b]fluoranthene	0.935	0.0100	1.000	0	93.5	53	128			
Benzo[e]pyrene	0.951	0.0100	1.000	0	95.1	43	140			
Benzo[g,h,i]perylene	0.981	0.0100	1.000	0	98.1	49	127			
Benzo[j]fluoranthene	0.892	0.0100	1.000	0	89.2	45	125			N
Benzo[k]fluoranthene	0.922	0.0100	1.000	0	92.2	56	123			
Chrysene	1.01	0.0100	1.000	0	101	57	118			
Dibenz[a,h]anthracene	0.970	0.0100	1.000	0	97.0	50	129			
Fluoranthene	1.04	0.0100	1.000	0	104	55	119			
Fluorene	1.01	0.0100	1.000	0	101	47	114			
Indeno[1,2,3-cd]pyrene	0.987	0.0100	1.000	0	98.7	49	130			
Phenanthrene	0.991	0.0100	1.000	0	99.1	49	113			
Pyrene	1.02	0.0100	1.000	0	102	55	117			
IS: Acenaphthene-d10	4.00		4.000		91.4	50	200			
IS: Chrysene-d12	4.00		4.000		98.7	50	200			
IS: Naphthalene-d8	4.00		4.000		98.2	50	200			
IS: Perylene-d12	4.00		4.000		110	50	200			
IS: Phenanthrene-d10	4.00		4.000		92.3	50	200			
Surr: 2-Fluorobiphenyl	0.902		1.000		90.2	46	115			
Surr: 4-Terphenyl-d14	0.981		1.000		98.1	58	133			

Sample ID **MB-77875** Batch ID: **77875** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161111C** Analysis Date: **11/11/2016 5:41:00 PM** Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **MB-77875**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_161111C**	Analysis Date: **11/11/2016 5:41:00 PM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		85.8	50	200			
IS: Chrysene-d12	4.00		4.000		93.1	50	200			
IS: Naphthalene-d8	4.00		4.000		92.1	50	200			
IS: Perylene-d12	4.00		4.000		103	50	200			
IS: Phenanthrene-d10	4.00		4.000		86.6	50	200			
Surr: 2-Fluorobiphenyl	0.934		1.000		93.4	46	115			
Surr: 4-Terphenyl-d14	1.05		1.000		105	58	133			

Sample ID **1611071-16AMS**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:01:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.15	0.104	1.039	0	110	44	111			
Acenaphthylene	1.16	0.104	1.039	0	112	39	116			
Anthracene	1.16	0.104	1.039	0	112	50	114			
Benzo[a]anthracene	1.33	0.104	1.039	0.08309	120	54	122			
Benzo[a]pyrene	1.28	0.104	1.039	0.1136	112	50	125			
Benzo[b]fluoranthene	1.33	0.104	1.039	0.1160	117	53	128			
Benzo[e]pyrene	1.26	0.104	1.039	0.09519	112	43	140			
Benzo[g,h,i]perylene	1.27	0.104	1.039	0.09686	113	49	127			
Benzo[j]fluoranthene	1.12	0.104	1.039	0.05339	103	45	125			N
Benzo[k]fluoranthene	1.13	0.104	1.039	0.06146	103	56	123			
Chrysene	1.35	0.104	1.039	0.1026	120	57	118			S
Dibenz[a,h]anthracene	1.18	0.104	1.039	0	113	50	129			
Fluoranthene	1.64	0.104	1.039	0.1461	143	55	119			S
Fluorene	1.19	0.104	1.039	0	115	47	114			S
Indeno[1,2,3-cd]pyrene	1.29	0.104	1.039	0.09420	115	49	130			
Phenanthrene	1.35	0.104	1.039	0	130	49	113			S
Pyrene	1.56	0.104	1.039	0.1359	137	55	117			S
IS: Acenaphthene-d10	41.6		4.156		81.2	50	200			
IS: Chrysene-d12	41.6		4.156		88.1	50	200			
IS: Naphthalene-d8	41.6		4.156		88.2	50	200			
IS: Perylene-d12	41.6		4.156		97.5	50	200			
IS: Phenanthrene-d10	41.6		4.156		80.9	50	200			
Surr: 2-Fluorobiphenyl	1.05		1.039		101	46	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **1611071-16AMS**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:01:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	1.16		1.039		111	58	133			

Sample ID **1611071-16AMSD**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:29:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.09	0.0995	0.9945	0	109	44	111	5.35	20	
Acenaphthylene	1.10	0.0995	0.9945	0	111	39	116	5.54	20	
Anthracene	1.07	0.0995	0.9945	0	107	50	114	8.24	20	
Benzo[a]anthracene	1.17	0.0995	0.9945	0.08309	110	54	122	12.5	20	
Benzo[a]pyrene	1.16	0.0995	0.9945	0.1136	105	50	125	9.97	20	
Benzo[b]fluoranthene	1.25	0.0995	0.9945	0.1160	114	53	128	6.13	20	
Benzo[e]pyrene	1.16	0.0995	0.9945	0.09519	107	43	140	8.28	20	
Benzo[g,h,i]perylene	1.18	0.0995	0.9945	0.09686	109	49	127	7.55	20	
Benzo[j]fluoranthene	1.04	0.0995	0.9945	0.05339	98.9	45	125	7.75	20	N
Benzo[k]fluoranthene	1.03	0.0995	0.9945	0.06146	97.2	56	123	9.67	20	
Chrysene	1.19	0.0995	0.9945	0.1026	110	57	118	12.2	20	
Dibenz[a,h]anthracene	1.12	0.0995	0.9945	0	112	50	129	5.41	20	
Fluoranthene	1.33	0.0995	0.9945	0.1461	119	55	119	20.6	20	R
Fluorene	1.13	0.0995	0.9945	0	114	47	114	5.07	20	
Indeno[1,2,3-cd]pyrene	1.20	0.0995	0.9945	0.09420	112	49	130	7.12	20	
Phenanthrene	1.16	0.0995	0.9945	0	116	49	113	15.1	20	S
Pyrene	1.31	0.0995	0.9945	0.1359	118	55	117	17.4	20	S
IS: Acenaphthene-d10	39.8		3.978		82.3	50	200	0	0	
IS: Chrysene-d12	39.8		3.978		88.6	50	200	0	0	
IS: Naphthalene-d8	39.8		3.978		88.0	50	200	0	0	
IS: Perylene-d12	39.8		3.978		97.7	50	200	0	0	
IS: Phenanthrene-d10	39.8		3.978		81.3	50	200	0	0	
Surr: 2-Fluorobiphenyl	1.00		0.9945		101	46	115	0	0	
Surr: 4-Terphenyl-d14	1.11		0.9945		112	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **ICV-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/11/2016 3:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.17	0.0100	2.000	0	108	80	120			
Acenaphthylene	2.22	0.0100	2.000	0	111	80	120			
Anthracene	2.10	0.0100	2.000	0	105	80	120			
Benzo[a]anthracene	2.13	0.0100	2.000	0	106	80	120			
Benzo[a]pyrene	2.00	0.0100	2.000	0	100	80	120			
Benzo[b]fluoranthene	2.14	0.0100	2.000	0	107	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	101	80	120			
Benzo[g,h,i]perylene	2.08	0.0100	2.000	0	104	80	120			
Benzo[j]fluoranthene	1.97	0.0100	2.000	0	98.4	80	120			N
Benzo[k]fluoranthene	1.83	0.0100	2.000	0	91.7	80	120			
Chrysene	2.11	0.0100	2.000	0	106	80	120			
Dibenz[a,h]anthracene	2.09	0.0100	2.000	0	104	80	120			
Fluoranthene	2.19	0.0100	2.000	0	109	80	120			
Fluorene	2.22	0.0100	2.000	0	111	80	120			
Indeno[1,2,3-cd]pyrene	2.10	0.0100	2.000	0	105	80	120			
Phenanthrene	2.13	0.0100	2.000	0	107	80	120			
Pyrene	2.14	0.0100	2.000	0	107	80	120			
IS: Acenaphthene-d10	4.00		4.000		92.1	50	200			
IS: Chrysene-d12	4.00		4.000		100	50	200			
IS: Naphthalene-d8	4.00		4.000		94.6	50	200			
IS: Perylene-d12	4.00		4.000		111	50	200			
IS: Phenanthrene-d10	4.00		4.000		93.7	50	200			
Surr: 2-Fluorobiphenyl	2.30		2.000		115	65	120			
Surr: 4-Terphenyl-d14	2.33		2.000		117	65	120			

Sample ID **CCV1-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.05	0.0100	1.000	0	105	50	150			
Acenaphthylene	1.08	0.0100	1.000	0	108	50	150			
Anthracene	1.04	0.0100	1.000	0	104	50	150			
Benzo[a]anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]pyrene	0.979	0.0100	1.000	0	97.9	50	150			
Benzo[b]fluoranthene	1.04	0.0100	1.000	0	104	50	150			
Benzo[e]pyrene	0.991	0.0100	1.000	0	99.1	50	150			
Benzo[g,h,i]perylene	1.01	0.0100	1.000	0	101	50	150			
Benzo[j]fluoranthene	0.964	0.0100	1.000	0	96.4	50	150			N
Benzo[k]fluoranthene	0.915	0.0100	1.000	0	91.5	50	150			
Chrysene	1.04	0.0100	1.000	0	104	50	150			
Dibenz[a,h]anthracene	1.01	0.0100	1.000	0	101	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **CCV1-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.08	0.0100	1.000	0	108	50	150			
Fluorene	1.08	0.0100	1.000	0	108	50	150			
Indeno[1,2,3-cd]pyrene	1.02	0.0100	1.000	0	102	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.06	0.0100	1.000	0	106	50	150			
IS: Acenaphthene-d10	4.00		4.000		92.0	50	200			
IS: Chrysene-d12	4.00		4.000		98.4	50	200			
IS: Naphthalene-d8	4.00		4.000		98.2	50	200			
IS: Perylene-d12	4.00		4.000		109	50	200			
IS: Phenanthrene-d10	4.00		4.000		91.5	50	200			
Surr: 2-Fluorobiphenyl	1.13		1.000		113	50	150			
Surr: 4-Terphenyl-d14	1.17		1.000		117	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_160913A

Sample ID **DCS-77144**	Batch ID: **77144**	TestNo: **SW8270D-LL**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **GCMS8_160913A**	Analysis Date: **9/13/2016 1:33:00 PM**	Prep Date: **9/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00812	0.0500	0.01000	0	81.2	20	200	0	0	
Acenaphthylene	0.00849	0.0500	0.01000	0	84.9	20	200	0	0	
Anthracene	0.00762	0.0500	0.01000	0	76.2	20	200	0	0	
Benzo[a]anthracene	0.00870	0.0500	0.01000	0	87.0	20	200	0	0	
Benzo[a]pyrene	0.00842	0.0500	0.01000	0	84.2	20	200	0	0	
Benzo[b]fluoranthene	0.00905	0.0500	0.01000	0	90.5	20	200	0	0	
Benzo[e]pyrene	0.00928	0.0500	0.01000	0	92.8	20	200	0	0	
Benzo[g,h,i]perylene	0.00968	0.0500	0.01000	0	96.8	20	200	0	0	
Benzo[k]fluoranthene	0.00934	0.0500	0.01000	0	93.4	20	200	0	0	
Chrysene	0.00889	0.0500	0.01000	0	88.9	20	200	0	0	
Dibenz[a,h]anthracene	0.0101	0.0500	0.01000	0	101	20	200	0	0	
Fluoranthene	0.00778	0.0500	0.01000	0	77.8	20	200	0	0	
Fluorene	0.00824	0.0500	0.01000	0	82.4	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0101	0.0500	0.01000	0	101	20	200	0	0	
Phenanthrene	0.00995	0.0500	0.01000	0	99.5	20	200	0	0	
Pyrene	0.00780	0.0500	0.01000	0	78.0	20	200	0	0	
IS: Acenaphthene-d10	4.00		4.000		95.8	50	200	0	0	
IS: Chrysene-d12	4.00		4.000		93.6	50	200	0	0	
IS: Naphthalene-d8	4.00		4.000		120	50	200	0	0	
IS: Perylene-d12	4.00		4.000		104	50	200	0	0	
IS: Phenanthrene-d10	4.00		4.000		67.1	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.862		1.000		86.2	43	125	0	0	
Surr: 4-Terphenyl-d14	0.801		1.000		80.1	32	125	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

The QC data in batch 77861 applies to the following samples: 1611044-01A, 1611044-02A, 1611044-03A, 1611044-04A, 1611044-05A, 1611044-06A, 1611044-07A, 1611044-08A, 1611044-09A, 1611044-10A, 1611044-11A, 1611044-12A

Sample ID **LCS-77861** Batch ID: **77861** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_161111A** Analysis Date: **11/11/2016 10:03:00 A** Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.884	0.0100	1.000	0	88.4	44	111			
Acenaphthylene	0.896	0.0100	1.000	0	89.6	39	116			
Anthracene	0.808	0.0100	1.000	0	80.8	50	114			
Benzo[a]anthracene	0.918	0.0100	1.000	0	91.8	54	122			
Benzo[a]pyrene	0.841	0.0100	1.000	0	84.1	50	125			
Benzo[b]fluoranthene	0.852	0.0100	1.000	0	85.2	53	128			
Benzo[e]pyrene	0.911	0.0100	1.000	0	91.1	43	140			
Benzo[g,h,i]perylene	0.893	0.0100	1.000	0	89.3	49	127			
Benzo[j]fluoranthene	0.869	0.0100	1.000	0	86.9	45	125			N
Benzo[k]fluoranthene	0.935	0.0100	1.000	0	93.5	56	123			
Chrysene	0.947	0.0100	1.000	0	94.7	57	118			
Dibenz[a,h]anthracene	0.884	0.0100	1.000	0	88.4	50	129			
Fluoranthene	0.871	0.0100	1.000	0	87.1	55	119			
Fluorene	0.915	0.0100	1.000	0	91.5	47	114			
Indeno[1,2,3-cd]pyrene	0.879	0.0100	1.000	0	87.9	49	130			
Phenanthrene	0.884	0.0100	1.000	0	88.4	49	113			
Pyrene	0.859	0.0100	1.000	0	85.9	55	117			
IS: Acenaphthene-d10	4.00		4.000		100	50	200			
IS: Chrysene-d12	4.00		4.000		103	50	200			
IS: Naphthalene-d8	4.00		4.000		139	50	200			
IS: Perylene-d12	4.00		4.000		104	50	200			
IS: Phenanthrene-d10	4.00		4.000		103	50	200			
Surr: 2-Fluorobiphenyl	0.790		1.000		79.0	46	115			
Surr: 4-Terphenyl-d14	0.818		1.000		81.8	58	133			

Sample ID **MB-77861** Batch ID: **77861** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161111A** Analysis Date: **11/11/2016 10:32:00 A** Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

Sample ID **MB-77861**	Batch ID: **77861**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 10:32:00 A**	Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	0.00750	0.0100								U
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		99.5	50	200			
IS: Chrysene-d12	4.00		4.000		101	50	200			
IS: Naphthalene-d8	4.00		4.000		129	50	200			
IS: Perylene-d12	4.00		4.000		102	50	200			
IS: Phenanthrene-d10	4.00		4.000		100	50	200			
Surr: 2-Fluorobiphenyl	0.835		1.000		83.5	46	115			
Surr: 4-Terphenyl-d14	0.928		1.000		92.8	58	133			

Sample ID **SB-161111**	Batch ID: **77861**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **SBLK**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 3:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100	0							U
Acenaphthylene	0.00750	0.0100	0							U
Anthracene	0.00750	0.0100	0							U
Benzo[a]anthracene	0.00750	0.0100	0							U
Benzo[a]pyrene	0.00750	0.0100	0							U
Benzo[b]fluoranthene	0.00750	0.0100	0							U
Benzo[e]pyrene	0.00750	0.0100	0							U
Benzo[g,h,i]perylene	0.00750	0.0100	0							U
Benzo[j]fluoranthene	0.00750	0.0100	0							NU
Benzo[k]fluoranthene	0.00750	0.0100	0							U
Chrysene	0.00750	0.0100	0							U
Dibenz[a,h]anthracene	0.00750	0.0100	0							U
Fluoranthene	0.00750	0.0100	0							U
Fluorene	0.00750	0.0100	0							U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100	0							U
Phenanthrene	0.00750	0.0100	0							U
Pyrene	0.00750	0.0100	0							U
IS: Acenaphthene-d10	4.00		0							
IS: Chrysene-d12	4.00		0							
IS: Naphthalene-d8	4.00		0							
IS: Perylene-d12	4.00		0							
IS: Phenanthrene-d10	4.00		0							

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

Sample ID **SB-161111**	Batch ID: **77861**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **SBLK**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 3:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	0.0000900		0							
Surr: 4-Terphenyl-d14	0.000470		0							

Sample ID **1611044-01AMS**	Batch ID: **77861**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 10:07:00 P**	Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.00	0.0993	0.9930	0.1050	90.3	44	111			
Acenaphthylene	0.918	0.0993	0.9930	0	92.4	39	116			
Anthracene	1.16	0.0993	0.9930	0.3093	85.5	50	114			
Benzo[a]anthracene	2.97	0.0993	0.9930	2.507	46.6	54	122			S
Benzo[a]pyrene	3.71	0.0993	0.9930	3.153	56.4	50	125			
Benzo[b]fluoranthene	3.51	0.0993	0.9930	2.987	52.6	53	128			
Benzo[e]pyrene	3.12	0.0993	0.9930	2.369	75.4	43	140			
Benzo[g,h,i]perylene	3.11	0.0993	0.9930	2.358	75.5	49	127			
Benzo[j]fluoranthene	2.12	0.0993	0.9930	1.440	68.6	45	125			N
Benzo[k]fluoranthene	2.32	0.0993	0.9930	1.397	93.2	56	123			
Chrysene	3.77	0.0993	0.9930	3.285	48.5	57	118			S
Dibenz[a,h]anthracene	1.30	0.0993	0.9930	0.3366	97.0	50	129			
Fluoranthene	4.23	0.0993	0.9930	4.038	18.9	55	119			S
Fluorene	0.980	0.0993	0.9930	0.05948	92.7	47	114			
Indeno[1,2,3-cd]pyrene	3.02	0.0993	0.9930	2.254	77.5	49	130			
Phenanthrene	2.28	0.0993	0.9930	1.507	77.4	49	113			
Pyrene	3.79	0.0993	0.9930	3.526	26.8	55	117			S
IS: Acenaphthene-d10	39.7		3.972		84.8	50	200			
IS: Chrysene-d12	39.7		3.972		82.1	50	200			
IS: Naphthalene-d8	39.7		3.972		128	50	200			
IS: Perylene-d12	39.7		3.972		80.4	50	200			
IS: Phenanthrene-d10	39.7		3.972		83.7	50	200			
Surr: 2-Fluorobiphenyl	0.901		0.9930		90.7	46	115			
Surr: 4-Terphenyl-d14	0.920		0.9930		92.6	58	133			

Sample ID **1611044-01AMSD**	Batch ID: **77861**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 10:36:00 P**	Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.05	0.0985	0.9852	0.1050	95.7	44	111	4.49	20	
Acenaphthylene	0.979	0.0985	0.9852	0	99.4	39	116	6.47	20	
Anthracene	1.13	0.0985	0.9852	0.3093	82.8	50	114	2.86	20	
Benzo[a]anthracene	2.49	0.0985	0.9852	2.507	-1.75	54	122	17.6	20	S
Benzo[a]pyrene	2.87	0.0985	0.9852	3.153	-29.1	50	125	25.8	20	SR

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

Sample ID **1611044-01AMSD** Batch ID: **77861** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **GCMS8_161111A** Analysis Date: **11/11/2016 10:36:00 P** Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo[b]fluoranthene	2.81	0.0985	0.9852	2.987	-17.8	53	128	22.1	20	SR
Benzo[e]pyrene	2.43	0.0985	0.9852	2.369	6.35	43	140	24.7	20	SR
Benzo[g,h,i]perylene	2.41	0.0985	0.9852	2.358	4.80	49	127	25.5	20	SR
Benzo[j]fluoranthene	1.77	0.0985	0.9852	1.440	33.3	45	125	18.2	20	SN
Benzo[k]fluoranthene	1.90	0.0985	0.9852	1.397	50.8	56	123	20.2	20	S
Chrysene	3.01	0.0985	0.9852	3.285	-28.1	57	118	22.4	20	SR
Dibenz[a,h]anthracene	1.20	0.0985	0.9852	0.3366	87.6	50	129	8.03	20	
Fluoranthene	4.19	0.0985	0.9852	4.038	15.5	55	119	0.820	20	S
Fluorene	1.02	0.0985	0.9852	0.05948	97.5	47	114	4.09	20	
Indeno[1,2,3-cd]pyrene	2.36	0.0985	0.9852	2.254	10.6	49	130	24.7	20	SR
Phenanthrene	1.98	0.0985	0.9852	1.507	47.7	49	113	14.0	20	S
Pyrene	3.72	0.0985	0.9852	3.526	20.1	55	117	1.82	20	S
IS: Acenaphthene-d10	39.4		3.941		85.1	50	200	0	0	
IS: Chrysene-d12	39.4		3.941		82.0	50	200	0	0	
IS: Naphthalene-d8	39.4		3.941		109	50	200	0	0	
IS: Perylene-d12	39.4		3.941		80.8	50	200	0	0	
IS: Phenanthrene-d10	39.4		3.941		84.5	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.897		0.9852		91.1	46	115	0	0	
Surr: 4-Terphenyl-d14	1.12		0.9852		114	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

Sample ID **ICV-161111**	Batch ID: **R88967**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 9:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.04	0.0100	2.000	0	102	80	120			
Acenaphthylene	2.06	0.0100	2.000	0	103	80	120			
Anthracene	1.93	0.0100	2.000	0	96.6	80	120			
Benzo[a]anthracene	2.04	0.0100	2.000	0	102	80	120			
Benzo[a]pyrene	2.01	0.0100	2.000	0	101	80	120			
Benzo[b]fluoranthene	2.06	0.0100	2.000	0	103	80	120			
Benzo[e]pyrene	2.04	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.04	0.0100	2.000	0	102	80	120			
Benzo[j]fluoranthene	2.06	0.0100	2.000	0	103	80	120			N
Benzo[k]fluoranthene	1.96	0.0100	2.000	0	98.2	80	120			
Chrysene	2.06	0.0100	2.000	0	103	80	120			
Dibenz[a,h]anthracene	2.03	0.0100	2.000	0	102	80	120			
Fluoranthene	1.92	0.0100	2.000	0	96.0	80	120			
Fluorene	2.04	0.0100	2.000	0	102	80	120			
Indeno[1,2,3-cd]pyrene	2.01	0.0100	2.000	0	100	80	120			
Phenanthrene	1.96	0.0100	2.000	0	97.9	80	120			
Pyrene	1.90	0.0100	2.000	0	95.2	80	120			
IS: Acenaphthene-d10	4.00		4.000		103	50	200			
IS: Chrysene-d12	4.00		4.000		105	50	200			
IS: Naphthalene-d8	4.00		4.000		83.5	50	200			
IS: Perylene-d12	4.00		4.000		106	50	200			
IS: Phenanthrene-d10	4.00		4.000		104	50	200			
Surr: 2-Fluorobiphenyl	2.06		2.000		103	65	120			
Surr: 4-Terphenyl-d14	2.10		2.000		105	65	120			

Sample ID **ICV2-161111**	Batch ID: **R88967**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 2:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.06	0.0100	2.000	0	103	80	120			
Acenaphthylene	2.04	0.0100	2.000	0	102	80	120			
Anthracene	1.91	0.0100	2.000	0	95.6	80	120			
Benzo[a]anthracene	2.07	0.0100	2.000	0	104	80	120			
Benzo[a]pyrene	1.99	0.0100	2.000	0	99.7	80	120			
Benzo[b]fluoranthene	2.03	0.0100	2.000	0	102	80	120			
Benzo[e]pyrene	2.04	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.00	0.0100	2.000	0	100	80	120			
Benzo[j]fluoranthene	2.04	0.0100	2.000	0	102	80	120			N
Benzo[k]fluoranthene	1.94	0.0100	2.000	0	97.1	80	120			
Chrysene	2.13	0.0100	2.000	0	106	80	120			
Dibenz[a,h]anthracene	2.00	0.0100	2.000	0	99.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

Sample ID **ICV2-161111**	Batch ID: **R88967**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 2:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.87	0.0100	2.000	0	93.4	80	120			
Fluorene	2.04	0.0100	2.000	0	102	80	120			
Indeno[1,2,3-cd]pyrene	1.99	0.0100	2.000	0	99.7	80	120			
Phenanthrene	1.94	0.0100	2.000	0	97.0	80	120			
Pyrene	1.86	0.0100	2.000	0	93.0	80	120			
IS: Acenaphthene-d10	4.00		4.000		97.4	50	200			
IS: Chrysene-d12	4.00		4.000		95.3	50	200			
IS: Naphthalene-d8	4.00		4.000		81.6	50	200			
IS: Perylene-d12	4.00		4.000		97.3	50	200			
IS: Phenanthrene-d10	4.00		4.000		98.7	50	200			
Surr: 2-Fluorobiphenyl	2.05		2.000		102	65	120			
Surr: 4-Terphenyl-d14	2.04		2.000		102	65	120			

Sample ID **CCV1-161114**	Batch ID: **R88967**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS8_161111A**	Analysis Date: **11/11/2016 11:05:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.08	0.0100	1.000	0	108	50	150			
Acenaphthylene	1.08	0.0100	1.000	0	108	50	150			
Anthracene	1.00	0.0100	1.000	0	100	50	150			
Benzo[a]anthracene	1.07	0.0100	1.000	0	107	50	150			
Benzo[a]pyrene	1.04	0.0100	1.000	0	104	50	150			
Benzo[b]fluoranthene	1.03	0.0100	1.000	0	103	50	150			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	50	150			
Benzo[g,h,i]perylene	1.04	0.0100	1.000	0	104	50	150			
Benzo[j]fluoranthene	1.09	0.0100	1.000	0	109	50	150			N
Benzo[k]fluoranthene	1.08	0.0100	1.000	0	108	50	150			
Chrysene	1.11	0.0100	1.000	0	111	50	150			
Dibenz[a,h]anthracene	1.03	0.0100	1.000	0	103	50	150			
Fluoranthene	0.990	0.0100	1.000	0	99.0	50	150			
Fluorene	1.07	0.0100	1.000	0	107	50	150			
Indeno[1,2,3-cd]pyrene	1.04	0.0100	1.000	0	104	50	150			
Phenanthrene	1.03	0.0100	1.000	0	103	50	150			
Pyrene	0.968	0.0100	1.000	0	96.8	50	150			
IS: Acenaphthene-d10	4.00		4.000		84.7	50	200			
IS: Chrysene-d12	4.00		4.000		81.6	50	200			
IS: Naphthalene-d8	4.00		4.000		88.4	50	200			
IS: Perylene-d12	4.00		4.000		80.6	50	200			
IS: Phenanthrene-d10	4.00		4.000		84.7	50	200			
Surr: 2-Fluorobiphenyl	1.08		1.000		108	50	150			
Surr: 4-Terphenyl-d14	1.08		1.000		108	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161109A

The QC data in batch 77841 applies to the following samples: 1611044-14A, 1611044-15A, 1611044-18A, 1611044-21A

Sample ID **1611044-14A DUP** Batch ID: **77841** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_161109A** Analysis Date: **11/10/2016 8:00:00 AM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	22.0	0	0	22.26				1.08	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_160830A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-76975	-----	SW8270D-LL	76975	1	8/30/2016 11:07:00 AM	8/25/2016 3:00:24 PM	A

Run ID: GCMS6_161021A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77602	-----	SW8270D-LL	77602	1	10/21/2016 5:02:00 PM	10/19/2016 8:45:21 AM	S

Run ID: GCMS6_161108A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161108	-----	SW8270D-LL	R88889	1	11/8/2016 9:09:00 AM		A
ICV-161108	-----	SW8270D-LL	R88889	1	11/8/2016 9:37:00 AM		A
LCS-77809	-----	SW8270D-LL	77809	1	11/8/2016 10:05:00 AM	11/7/2016 10:45:00 AM	A
MB-77809	-----	SW8270D-LL	77809	1	11/8/2016 10:37:00 AM	11/7/2016 10:45:00 AM	A
1611044-13B	SGR-EB132(20161103)	SW8270D-LL	77809	1	11/8/2016 12:57:00 PM	11/7/2016 10:45:00 AM	E
CCV1-161108	-----	SW8270D-LL	R88889	1	11/8/2016 1:53:00 PM		A

Run ID: GCMS6_161111C

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161111	-----	SW8270D-LL	R88956	1	11/11/2016 3:22:00 PM		S
ICV-161111	-----	SW8270D-LL	R88956	1	11/11/2016 3:50:00 PM		S
LCS-77875	-----	SW8270D-LL	77875	1	11/11/2016 5:13:00 PM	11/11/2016 12:55:01 PM	S
MB-77875	-----	SW8270D-LL	77875	1	11/11/2016 5:41:00 PM	11/11/2016 12:55:01 PM	S
1611044-14A	SGR-DU046(10-12)	SW8270D-LL	77875	10	11/11/2016 6:09:00 PM	11/11/2016 12:55:01 PM	S
1611044-15A	SGR-DU074(10-12)	SW8270D-LL	77875	10	11/11/2016 6:37:00 PM	11/11/2016 12:55:01 PM	S
1611044-18A	SGR-DU010-04(10-12)	SW8270D-LL	77875	10	11/11/2016 7:05:00 PM	11/11/2016 12:55:01 PM	S
1611044-21A	SGR-DUP01(20161103)	SW8270D-LL	77875	10	11/11/2016 7:33:00 PM	11/11/2016 12:55:01 PM	S
1611071-16AMS	-----	SW8270D-LL	77875	10	11/12/2016 3:01:00 AM	11/11/2016 12:55:01 PM	S
1611071-16AMSD	-----	SW8270D-LL	77875	10	11/12/2016 3:29:00 AM	11/11/2016 12:55:01 PM	S
CCV1-161111	-----	SW8270D-LL	R88956	1	11/12/2016 3:57:00 AM		S

Run ID: GCMS8_160913A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77144	-----	SW8270D-LL	77144	1	9/13/2016 1:33:00 PM	9/9/2016 8:42:54 AM	S

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS8_161111A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161111	-----	SW8270D-LL	R88967	1	11/11/2016 9:05:00 AM		S
ICV-161111	-----	SW8270D-LL	R88967	1	11/11/2016 9:34:00 AM		S
LCS-77861	-----	SW8270D-LL	77861	1	11/11/2016 10:03:00 AM	11/10/2016 2:12:53 PM	S
MB-77861	-----	SW8270D-LL	77861	1	11/11/2016 10:32:00 AM	11/10/2016 2:12:53 PM	S
DFTPP2-161111	-----	SW8270D-LL	R88967	1	11/11/2016 2:23:00 PM		S
ICV2-161111	-----	SW8270D-LL	R88967	1	11/11/2016 2:52:00 PM		S
SB-161111	-----	SW8270D-LL	77861	1	11/11/2016 3:25:00 PM		S
1611044-01A	SGR-DU132(0-2)-A	SW8270D-LL	77861	10	11/11/2016 4:23:00 PM	11/10/2016 2:12:53 PM	S
1611044-02A	SGR-DU132(2-4)-A	SW8270D-LL	77861	10	11/11/2016 4:51:00 PM	11/10/2016 2:12:53 PM	S
1611044-03A	SGR-DU132(4-6)-A	SW8270D-LL	77861	10	11/11/2016 5:20:00 PM	11/10/2016 2:12:53 PM	S
1611044-04A	SGR-DU132(6-8)-A	SW8270D-LL	77861	10	11/11/2016 5:49:00 PM	11/10/2016 2:12:53 PM	S
1611044-05A	SGR-DU132(0-2)-B	SW8270D-LL	77861	10	11/11/2016 6:17:00 PM	11/10/2016 2:12:53 PM	S
1611044-06A	SGR-DU132(2-4)-B	SW8270D-LL	77861	10	11/11/2016 6:46:00 PM	11/10/2016 2:12:53 PM	S
1611044-07A	SGR-DU132(4-6)-B	SW8270D-LL	77861	10	11/11/2016 7:15:00 PM	11/10/2016 2:12:53 PM	S
1611044-08A	SGR-DU132(6-8)-B	SW8270D-LL	77861	10	11/11/2016 7:43:00 PM	11/10/2016 2:12:53 PM	S
1611044-09A	SGR-DU132(0-2)-C	SW8270D-LL	77861	10	11/11/2016 8:12:00 PM	11/10/2016 2:12:53 PM	S
1611044-10A	SGR-DU132(2-4)-C	SW8270D-LL	77861	10	11/11/2016 8:41:00 PM	11/10/2016 2:12:53 PM	S
1611044-11A	SGR-DU132(4-6)-C	SW8270D-LL	77861	10	11/11/2016 9:09:00 PM	11/10/2016 2:12:53 PM	S
1611044-12A	SGR-DU132(6-8)-C	SW8270D-LL	77861	10	11/11/2016 9:38:00 PM	11/10/2016 2:12:53 PM	S
1611044-01AMS	SGR-DU132(0-2)-AMS	SW8270D-LL	77861	10	11/11/2016 10:07:00 PM	11/10/2016 2:12:53 PM	S
1611044-01AMSD	SGR-DU132(0-2)-AMSD	SW8270D-LL	77861	10	11/11/2016 10:36:00 PM	11/10/2016 2:12:53 PM	S
CCV1-161114	-----	SW8270D-LL	R88967	1	11/11/2016 11:05:00 PM		S

Run ID: ICP-MS3_161114B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS1-77661	-----	SW6020A	77661	1	11/14/2016 3:31:00 PM	10/25/2016 8:22:11 AM	A

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS3_161116A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R89004	1	11/16/2016 10:40:00 AM		A
L2-161116	-----	SW6020A	R89004	1	11/16/2016 10:46:00 AM		A
L-161116	-----	SW6020A	R89004	1	11/16/2016 10:52:00 AM		A
10X-161116	-----	SW6020A	R89004	1	11/16/2016 10:58:00 AM		A
5X-161116	-----	SW6020A	R89004	1	11/16/2016 11:04:00 AM		A
2X-161116	-----	SW6020A	R89004	1	11/16/2016 11:10:00 AM		A
H-161116	-----	SW6020A	R89004	1	11/16/2016 11:16:00 AM		A
H2-161116	-----	SW6020A	R89004	1	11/16/2016 11:22:00 AM		A
ICSA-161116	-----	SW6020A	R89004	1	11/16/2016 11:46:00 AM		A
ICSAB-161116	-----	SW6020A	R89004	1	11/16/2016 11:52:00 AM		A
ICV1-161116	-----	SW6020A	R89004	1	11/16/2016 12:10:00 PM		A
ILCVL-161116	-----	SW6020A	R89004	1	11/16/2016 12:22:00 PM		A
ICB1-161116	-----	SW6020A	R89004	1	11/16/2016 12:28:00 PM		A
CCV1-161116	-----	SW6020A	R89004	1	11/16/2016 1:35:00 PM		A
CCB1-161116	-----	SW6020A	R89004	1	11/16/2016 1:41:00 PM		A
LCVL1-161116	-----	SW6020A	R89004	1	11/16/2016 1:47:00 PM		A
MB-77913	-----	SW6020A	77913	1	11/16/2016 1:53:00 PM	11/15/2016 9:08:38 AM	A
LCS-77913	-----	SW6020A	77913	1	11/16/2016 1:59:00 PM	11/15/2016 9:08:38 AM	A
LCSD-77913	-----	SW6020A	77913	1	11/16/2016 2:05:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A SD	-----	SW6020A	77913	5	11/16/2016 2:24:00 PM	11/15/2016 9:08:38 AM	A
1611044-13A	SGR-EB132(20161103)	SW6020A	77913	1	11/16/2016 2:48:00 PM	11/15/2016 9:08:38 AM	E
1611028-26A PDS	-----	SW6020A	77913	1	11/16/2016 3:06:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MS	-----	SW6020A	77913	1	11/16/2016 3:12:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MSD	-----	SW6020A	77913	1	11/16/2016 3:18:00 PM	11/15/2016 9:08:38 AM	A
CCV2-161116	-----	SW6020A	R89004	1	11/16/2016 3:24:00 PM		A
CCB2-161116	-----	SW6020A	R89004	1	11/16/2016 3:36:00 PM		A
LCVL2-161116	-----	SW6020A	R89004	1	11/16/2016 3:43:00 PM		A

Run ID: ICP-MS4_160916A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS1-77170	-----	SW6020A	77170	5	9/16/2016 12:15:00 PM	9/12/2016 10:01:07 AM	S

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161111D

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R88958	1	11/11/2016 9:49:00 AM		A
L2-161111	-----	SW6020A	R88958	1	11/11/2016 9:51:00 AM		A
L-161111	-----	SW6020A	R88958	1	11/11/2016 9:53:00 AM		A
10X-161111	-----	SW6020A	R88958	1	11/11/2016 9:55:00 AM		A
5X-161111	-----	SW6020A	R88958	1	11/11/2016 9:57:00 AM		A
2X-161111	-----	SW6020A	R88958	1	11/11/2016 9:59:00 AM		A
H-161111	-----	SW6020A	R88958	1	11/11/2016 10:01:00 AM		A
H2-161111	-----	SW6020A	R88958	1	11/11/2016 10:03:00 AM		A
ICSA-161111	-----	SW6020A	R88958	1	11/11/2016 10:09:00 AM		A
ICSAB-161111	-----	SW6020A	R88958	1	11/11/2016 10:11:00 AM		A
ICV-161111	-----	SW6020A	R88958	1	11/11/2016 10:18:00 AM		A
LCVL-161111	-----	SW6020A	R88958	1	11/11/2016 10:24:00 AM		A
ICB-161111	-----	SW6020A	R88958	1	11/11/2016 10:29:00 AM		A
CCV4-161111	-----	SW6020A	R88958	1	11/11/2016 1:11:00 PM		A
LCVL4-161111	-----	SW6020A	R88958	1	11/11/2016 1:15:00 PM		A
CCB4-161111	-----	SW6020A	R88958	1	11/11/2016 1:20:00 PM		A
MB-77842	-----	SW6020A	77842	5	11/11/2016 1:22:00 PM	11/9/2016 2:30:25 PM	S
LCS-77842	-----	SW6020A	77842	5	11/11/2016 1:24:00 PM	11/9/2016 2:30:25 PM	S
LCSD-77842	-----	SW6020A	77842	5	11/11/2016 1:26:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A SD	-----	SW6020A	77842	25	11/11/2016 1:32:00 PM	11/9/2016 2:30:25 PM	S
1611044-14A	SGR-DU046(10-12)	SW6020A	77842	5	11/11/2016 1:34:00 PM	11/9/2016 2:30:25 PM	S
1611044-15A	SGR-DU074(10-12)	SW6020A	77842	5	11/11/2016 1:36:00 PM	11/9/2016 2:30:25 PM	S
1611044-18A	SGR-DU010-04(10-12)	SW6020A	77842	5	11/11/2016 1:38:00 PM	11/9/2016 2:30:25 PM	S
1611044-21A	SGR-DUP01(20161103)	SW6020A	77842	5	11/11/2016 1:40:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A PDS	-----	SW6020A	77842	5	11/11/2016 1:52:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A MS	-----	SW6020A	77842	5	11/11/2016 1:54:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A MSD	-----	SW6020A	77842	5	11/11/2016 1:56:00 PM	11/9/2016 2:30:25 PM	S
CCV5-161111	-----	SW6020A	R88958	1	11/11/2016 1:58:00 PM		A
LCVL5-161111	-----	SW6020A	R88958	1	11/11/2016 2:02:00 PM		A
CCB5-161111	-----	SW6020A	R88958	1	11/11/2016 2:11:00 PM		A
CCV6-161111	-----	SW6020A	R88958	1	11/11/2016 2:31:00 PM		A
LCVL6-161111	-----	SW6020A	R88958	1	11/11/2016 2:35:00 PM		A
CCB6-161111	-----	SW6020A	R88958	1	11/11/2016 2:55:00 PM		A

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161116B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R89029	1	11/16/2016 10:34:00 AM		A
L2-161116	-----	SW6020A	R89029	1	11/16/2016 10:36:00 AM		A
L-161116	-----	SW6020A	R89029	1	11/16/2016 10:38:00 AM		A
10X-161116	-----	SW6020A	R89029	1	11/16/2016 10:40:00 AM		A
5X-161116	-----	SW6020A	R89029	1	11/16/2016 10:42:00 AM		A
2X-161116	-----	SW6020A	R89029	1	11/16/2016 10:44:00 AM		A
H-161116	-----	SW6020A	R89029	1	11/16/2016 10:46:00 AM		A
H2-161116	-----	SW6020A	R89029	1	11/16/2016 10:48:00 AM		A
ICSA-161116	-----	SW6020A	R89029	1	11/16/2016 10:56:00 AM		A
ICSAB-161116	-----	SW6020A	R89029	1	11/16/2016 10:58:00 AM		A
ICV-161116	-----	SW6020A	R89029	1	11/16/2016 11:07:00 AM		A
LCVL-161116	-----	SW6020A	R89029	1	11/16/2016 11:14:00 AM		A
ICB-161116	-----	SW6020A	R89029	1	11/16/2016 11:25:00 AM		A
CCV5-161116	-----	SW6020A	R89029	1	11/16/2016 3:34:00 PM		A
LCVL5-161116	-----	SW6020A	R89029	1	11/16/2016 3:39:00 PM		A
CCB5-161116	-----	SW6020A	R89029	1	11/16/2016 3:41:00 PM		A
MB-77903	-----	SW6020A	77903	5	11/16/2016 3:43:00 PM	11/14/2016 3:32:19 PM	S
LCS-77903	-----	SW6020A	77903	5	11/16/2016 3:45:00 PM	11/14/2016 3:32:19 PM	S
LCSD-77903	-----	SW6020A	77903	5	11/16/2016 3:47:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A	SGR-DU132(0-2)-A	SW6020A	77903	5	11/16/2016 3:51:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A SD	SGR-DU132(0-2)-A	SW6020A	77903	25	11/16/2016 3:53:00 PM	11/14/2016 3:32:19 PM	S
1611044-02A	SGR-DU132(2-4)-A	SW6020A	77903	5	11/16/2016 4:11:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A PDS	SGR-DU132(0-2)-A	SW6020A	77903	5	11/16/2016 4:13:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A MS	SGR-DU132(0-2)-AMS	SW6020A	77903	5	11/16/2016 4:15:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A MSD	SGR-DU132(0-2)-AMSD	SW6020A	77903	5	11/16/2016 4:17:00 PM	11/14/2016 3:32:19 PM	S
CCV6-161116	-----	SW6020A	R89029	1	11/16/2016 4:19:00 PM		A
LCVL6-161116	-----	SW6020A	R89029	1	11/16/2016 4:30:00 PM		A
CCB6-161116	-----	SW6020A	R89029	1	11/16/2016 4:32:00 PM		A
1611044-03A	SGR-DU132(4-6)-A	SW6020A	77903	5	11/16/2016 4:34:00 PM	11/14/2016 3:32:19 PM	S
1611044-04A	SGR-DU132(6-8)-A	SW6020A	77903	5	11/16/2016 4:36:00 PM	11/14/2016 3:32:19 PM	S
1611044-05A	SGR-DU132(0-2)-B	SW6020A	77903	5	11/16/2016 4:38:00 PM	11/14/2016 3:32:19 PM	S
1611044-06A	SGR-DU132(2-4)-B	SW6020A	77903	5	11/16/2016 4:40:00 PM	11/14/2016 3:32:19 PM	S
1611044-07A	SGR-DU132(4-6)-B	SW6020A	77903	5	11/16/2016 4:42:00 PM	11/14/2016 3:32:19 PM	S
1611044-08A	SGR-DU132(6-8)-B	SW6020A	77903	5	11/16/2016 4:44:00 PM	11/14/2016 3:32:19 PM	S
1611044-09A	SGR-DU132(0-2)-C	SW6020A	77903	5	11/16/2016 4:46:00 PM	11/14/2016 3:32:19 PM	S
1611044-10A	SGR-DU132(2-4)-C	SW6020A	77903	5	11/16/2016 4:48:00 PM	11/14/2016 3:32:19 PM	S
1611044-11A	SGR-DU132(4-6)-C	SW6020A	77903	5	11/16/2016 4:50:00 PM	11/14/2016 3:32:19 PM	S
1611044-12A	SGR-DU132(6-8)-C	SW6020A	77903	5	11/16/2016 4:52:00 PM	11/14/2016 3:32:19 PM	S

Lab Order: 1611044
Client: Arcadis
Project: Laredo SGR

Sequence Report

CCV7-161116	-----	SW6020A	R89029	1	11/16/2016 4:54:00 PM	A
LCVL7-161116	-----	SW6020A	R89029	1	11/16/2016 4:59:00 PM	A
CCB7-161116	-----	SW6020A	R89029	1	11/16/2016 5:08:00 PM	A

Run ID: PMOIST_161109A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611044-14A	SGR-DU046(10-12)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611044-15A	SGR-DU074(10-12)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611044-18A	SGR-DU010-04(10-12)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611044-21A	SGR-DUP01(20161103)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611044-14A DUP	SGR-DU046(10-12)PD9	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S

DHL Analytical, Inc.

Date: *22-Nov-16*

CLIENT: Arcadis
Work Order: 1611044
Project: Laredo SGR

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Lead	0.100	0.300

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Lead	0.000300	0.00100

TestNo: SW8270D-LL	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Acenaphthene	0.00500	0.0100
Acenaphthylene	0.00500	0.0100
Anthracene	0.00500	0.0100
Benzo[a]anthracene	0.00500	0.0100
Benzo[a]pyrene	0.00500	0.0100
Benzo[b]fluoranthene	0.00500	0.0100
Benzo[e]pyrene	0.00500	0.0100
Benzo[g,h,i]perylene	0.00500	0.0100
Benzo[j]fluoranthene	0.00500	0.0100
Benzo[k]fluoranthene	0.00500	0.0100
Chrysene	0.00500	0.0100
Dibenz[a,h]anthracene	0.00500	0.0100
Fluoranthene	0.00500	0.0100
Fluorene	0.00500	0.0100
Indeno[1,2,3-cd]pyrene	0.00500	0.0100
Phenanthrene	0.00500	0.0100
Pyrene	0.00500	0.0100

TestNo: SW8270D-LL	MDL	MQL
Analyte	**mg/L**	**mg/L**
Acenaphthene	0.0000250	0.0000500
Acenaphthylene	0.0000250	0.0000500
Anthracene	0.0000250	0.0000500
Benzo[a]anthracene	0.0000250	0.0000500
Benzo[a]pyrene	0.0000250	0.0000500
Benzo[b]fluoranthene	0.0000250	0.0000500
Benzo[e]pyrene	0.0000250	0.0000500
Benzo[g,h,i]perylene	0.0000250	0.0000500
Benzo[j]fluoranthene	0.0000250	0.0000500
Benzo[k]fluoranthene	0.0000250	0.0000500
Chrysene	0.0000250	0.0000500
Dibenz[a,h]anthracene	0.0000250	0.0000500
Fluoranthene	0.0000250	0.0000500
Fluorene	0.0000250	0.0000500
Indeno[1,2,3-cd]pyrene	0.0000250	0.0000500
Phenanthrene	0.0000250	0.0000500
Pyrene	0.0000250	0.0000500

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

GCMS6
For

DHL Work Order
1611044

GCMS6_161108A
For

DHL Work Order
1611044

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161108A
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			X
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report	X		X
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS			X	
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS			X	
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)			X	

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	7 days (Aq) - extraction	X			X
	14 days (Soil) - extraction			X	
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only			X	
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			X
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE 1. Are all non-conformances included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Are all corrective actions included?				X	
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS __LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	X Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	X Other (describe below)	___ Accept data
X Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

No LCSD/MS/MSD required - Equipment Blanks only in Batch

Analyst: Don Winston Date: 11/8/2016

Second-Level Review: Date: **REVIEWED/APPROVED** By Sherri Herschmann at 11:22:18 AM, 11/11/2016 **11/11/2016**

DHL Analytical, Inc.

Run ID: GCMS6_161108A **Run No.:** 88889

Analytical Run Date: 11/8/2016 **InstrumentID:** GCMS6

Analyst: Duston Bezner **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161108	1	PAH_LL_WDOD1	TUNE	R88889	11/8/2016 9:09:00 AM		
ICV-161108	1	PAH_LL_WDOD1	ICV	R88889	11/8/2016 9:37:00 AM		
LCS-77809	1	PAH_LL_WDOD1	LCS	77809	11/8/2016 10:05:00 AM		
MB-77809	1	PAH_LL_WDOD1	MBLK	77809	11/8/2016 10:37:00 AM		
1611022-13B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 11:04:00 AM		
1611022-26B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 11:33:00 AM		
1611028-13B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 12:01:00 PM		
1611028-26B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 12:29:00 PM		
1611044-13B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 12:57:00 PM		
1611053-42B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 1:25:00 PM		
CCV1-161108	1	PAH_LL_WDOD1	CCV	R88889	11/8/2016 1:53:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHICV161020	2 PPM PAH ICV	ICV	01/18/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	01/11/2026

REVIEWED/APPROVED

By Sherri Herschmann at 11:24:23 AM, 11/11/2016

Sequence Name: C:\HPCHEM\1\SEQUENCE\161108.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161108\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16110801	PP161020	SBLK
2	Sample	2	16110802	DFTPPPAH	DFTPP-161108
3	Sample	3	16110803	PP161020	ICV-161108
4	Sample	4	16110804	PP161020	LCS-77809
5	Sample	5	16110805	PP161020	MB-77809
6	Sample	6	16110806	PP161020	1611022-13B
7	Sample	7	16110807	PP161020	1611022-26B
8	Sample	8	16110808	PP161020	1611028-13B
9	Sample	9	16110809	PP161020	1611028-26B
10	Sample	10	16110810	PP161020	1611044-13B
11	Sample	11	16110811	PP161020	1611053-42B
12	Sample	12	16110812	PP161020	CCV1-161108
13	Sample	1	16110813	DFTPPPAH	DFTPP-161108
14	Sample	2	16110814	PP161020	ICV-161108
15	Sample	3	16110815	PP161020	LCS-77815
16	Sample	4	16110816	PP161020	MB-77815
17	Sample	5	16110817	PP161020	1611022-01A
18	Sample	6	16110818	PP161020	1611022-02A
19	Sample	7	16110819	PP161020	1611022-03A
20	Sample	8	16110820	PP161020	1611022-04A
21	Sample	9	16110821	PP161020	1611022-05A
22	Sample	10	16110822	PP161020	1611022-06A
23	Sample	11	16110823	PP161020	1611022-07A
24	Sample	12	16110824	PP161020	1611022-08A
25	Sample	13	16110825	PP161020	1611022-09A
26	Sample	14	16110826	PP161020	1611022-10A
27	Sample	15	16110827	PP161020	1611022-11A
28	Sample	16	16110828	PP161020	1611022-12A
29	Sample	17	16110829	PP161020	1611022-14A
30	Sample	18	16110830	PP161020	1611022-15A
31	Sample	19	16110831	PP161020	1611022-16A
32	Sample	20	16110832	PP161020	1611022-17A
33	Sample	21	16110833	PP161020	1611022-18A
34	Sample	22	16110834	PP161020	1611022-19A
35	Sample	23	16110835	PP161020	1611022-20A
36	Sample	24	16110836	PP161020	1611022-21A
37	Sample	25	16110837	PP161020	1611022-09AMS
38	Sample	26	16110838	PP161020	1611022-09AMSD
39	Sample	27	16110839	PP161020	CCV1-161108

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/7/2016 10:45:00 AM**
Digestion:
Prep End Date: **11/17/2016 12:00:00 PM**

Prep Batch **77809** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List

Turbo-Vap #1,2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13B	Equip Blank	6	313	1	0.003	1 of 1	
1611022-26B	Equip Blank	6	309.1	1	0.003	1 of 1	
	More samples coming in tomorrow!!!						
1611028-13B	Equip Blank	6	310.8	1	0.003	1 of 1	
1611028-26B	Equip Blank	6	323	1	0.003	1 of 1	
1611044-13B	Equip Blank	6	303.9	1	0.003	1 of 1	
1611053-42B	Equip Blank	6	318	1	0.003	1 of 1	
LCS-77809	Aqueous	6	500	1	0.002	of	
	No LCSD/MS/MSD required as per JD.						
MB-77809	Aqueous	6	500	1	0.002	of	

Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	120	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS	0.01	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.1	01/29/2017

REVIEWED/APPROVED
By Sherri Herschmann at 11:31:35 AM, 11/11/2016

DHL Analytical, Inc. PREP BATCH REPORT

Prep Start Date: **11/7/2016 ~~10:04:03~~ AM** ~~10:45AM~~ JG 11/7/16 10:45AM

Digestion:

Prep End Date: 11/7/16 12:00PM

Prep Batch **77809** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List
Turbo-Vap #1,2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13B	Equip Blank	6	500	1	0.002	1 of 1	525.6 - 212.6 = 313.0
1611022-26B	Equip Blank	6	500	1	0.002	1 of 1	522.2 - 213.1 = 309.1
More samples coming in tomorrow!!!							
1611028-13B	Equip Blank	6	500	1	0.002	1 of 1	524.6 - 213.8 = 310.8
1611028-26B	Equip Blank	6	500	1	0.002	1 of 1	536.7 - 213.7 = 323.0
1611044-13B	Equip Blank	6	500	1	0.002	1 of 1	517.4 - 213.5 = 303.9
1611053-42B	Equip Blank	6	500	1	0.002	1 of 1	531.6 - 213.6 = 318.0
LCS-77809	Aqueous	6	500	1	0.002	of	
No LCSD/MS/MSD required as per JD.							
MB-77809	Aqueous	6	500	1	0.002	of	

REVIEWED/APPROVED
By Sherri Herschmann at 11:40:46 AM, 11/11/2016

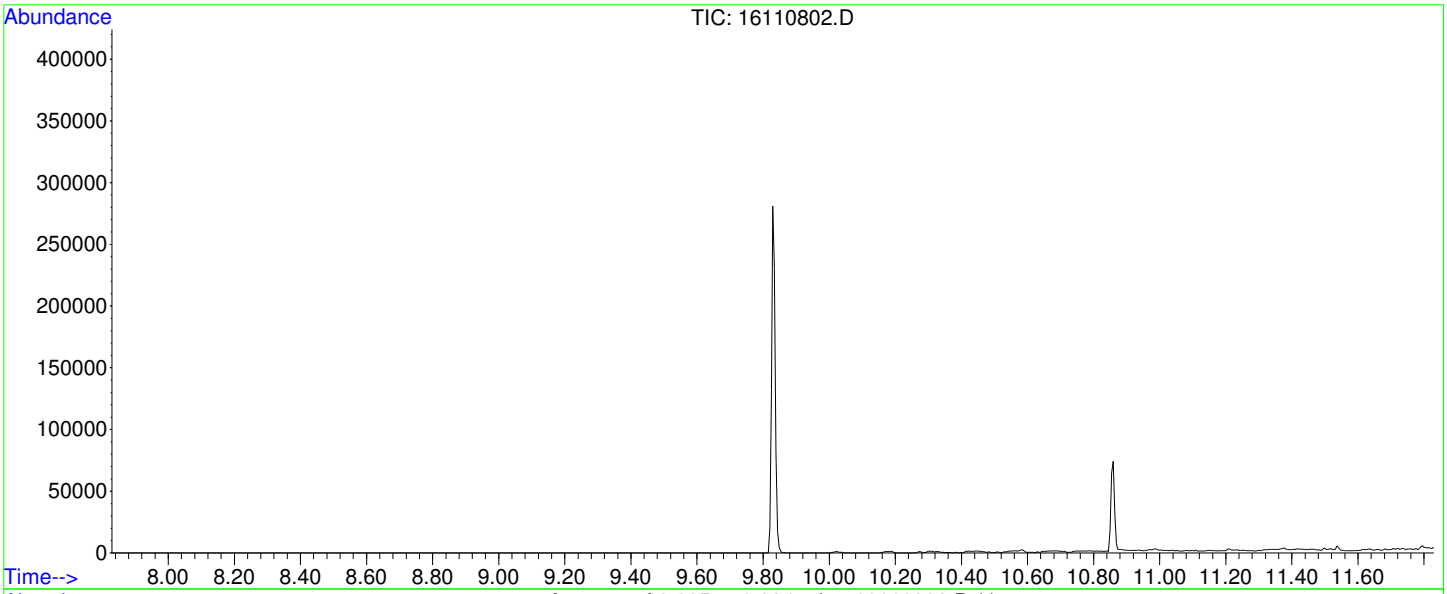
Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	120	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS	0.01	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.1	01/29/2017

JG 11/7/16

11/7/16

Data File : C:\HPCHEM\1\DATA\161108\16110802.D Vial: 2
Acq On : 8 Nov 2016 9:09 am Operator:
Sample : DFTPP-161108 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 794, 795, 796; Background Corrected with Scan 790

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	21.1	5780	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	27.6	7552	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.5	11340	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	27336	PASS
199	198	5	9	6.9	1893	PASS
275	198	10	60	28.1	7682	PASS
365	198	1	200	3.2	873	PASS
441	442	0.01	24	14.9	6168	PASS
442	198	50	400	151.4	41379	PASS
443	442	15	24	19.3	7990	PASS

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110803.D Vial: 3
Acq On : 8 Nov 2016 9:37 am Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

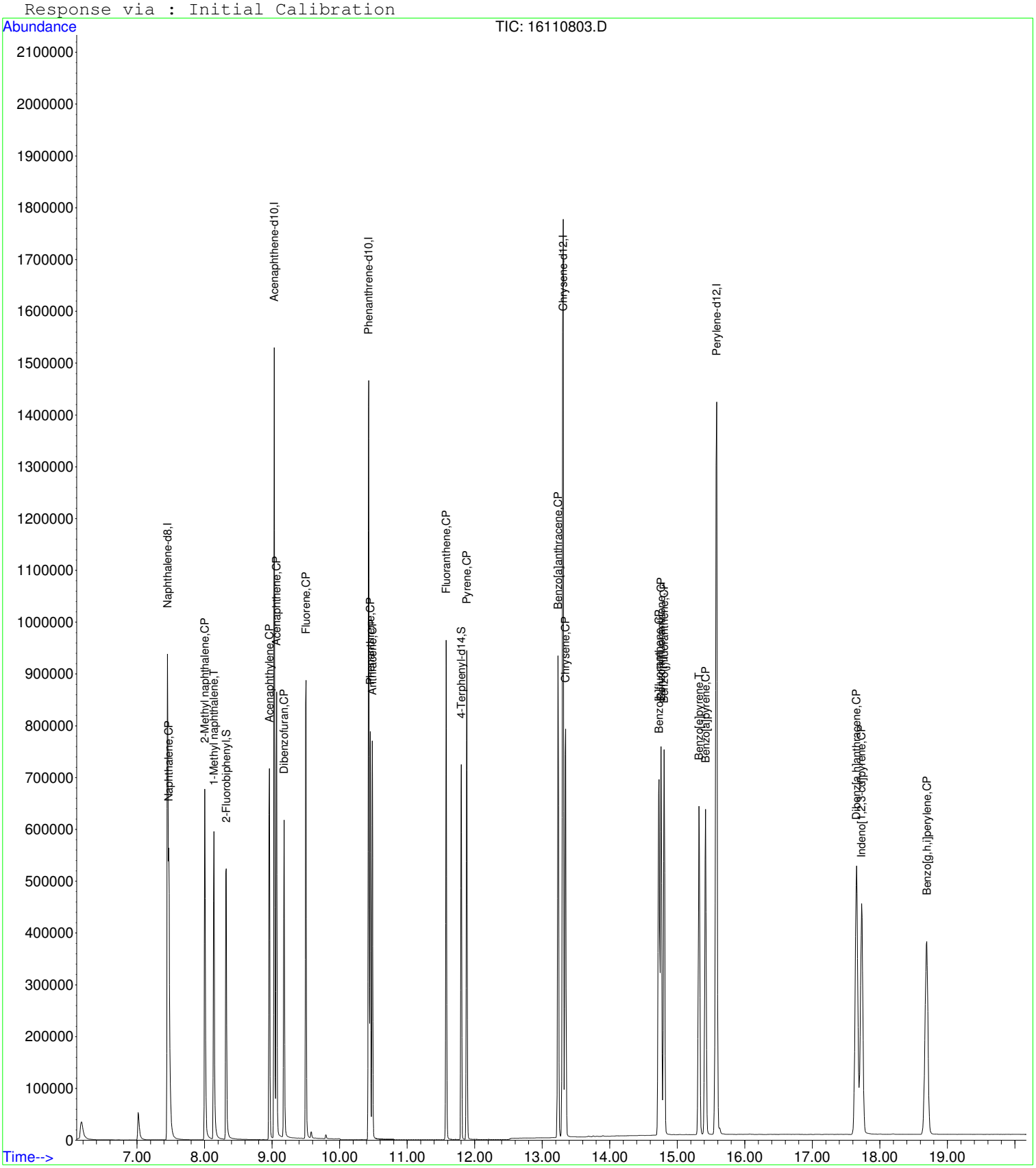
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1127580	4000.00	ug/kg	103
5) Acenaphthene-d10	9.03	164	606384	4000.00	ug/kg	96
11) Phenanthrene-d10	10.43	188	1183171	4000.00	ug/kg	99
17) Chrysene-d12	13.31	240	1572300	4000.00	ug/kg	102
20) Perylene-d12	15.58	264	1645898	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	422364	2384.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	59.62%		
16) 4-Terphenyl-d14	11.80	244	555282	2336.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.42%		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	447296	2203.45	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	332962	2204.05	ug/kg	94
4) 1-Methyl naphthalene	8.14	142	300306	2127.85	ug/kg	92
6) Dibenzofuran	9.18	168	448729	2325.88	ug/kg	99
8) Acenaphthylene	8.96	152	501464	2340.85	ug/kg	99
9) Acenaphthene	9.07	154	291000	2269.82	ug/kg	96
10) Fluorene	9.50	166	363382	2315.85	ug/kg	98
12) Phenanthrene	10.45	178	484887	2104.73	ug/kg	100
13) Anthracene	10.48	178	497052	2096.15	ug/kg	99
14) Fluoranthene	11.58	202	607651	2233.13	ug/kg	100
15) Pyrene	11.88	202	616128	2180.33	ug/kg	100
18) Benzo[a]anthracene	13.23	228	704353	2291.42	ug/kg	100
19) Chrysene	13.35	228	646153	2268.99	ug/kg	98
21) Benzo[b]fluoranthene	14.73	252	841444	2302.11	ug/kg	97
22) Benzo[k]fluoranthene	14.76	252	687267	2039.98	ug/kg	100
23) Benzo(j)fluoranthene	14.81	252	709734	2178.23	ug/kg	100
24) Benzo[e]pyrene	15.32	252	717273	2197.26	ug/kg	98
25) Benzo[a]pyrene	15.42	252	735166	2205.94	ug/kg	99
26) Dibenz[a,h]anthracene	17.66	278	756015	2159.59	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.73	276	740134	2188.49	ug/kg	99
28) Benzo[g,h,i]perylene	18.70	276	761476	2130.86	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110803.D Vial: 3
Acq On : 8 Nov 2016 9:37 am Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

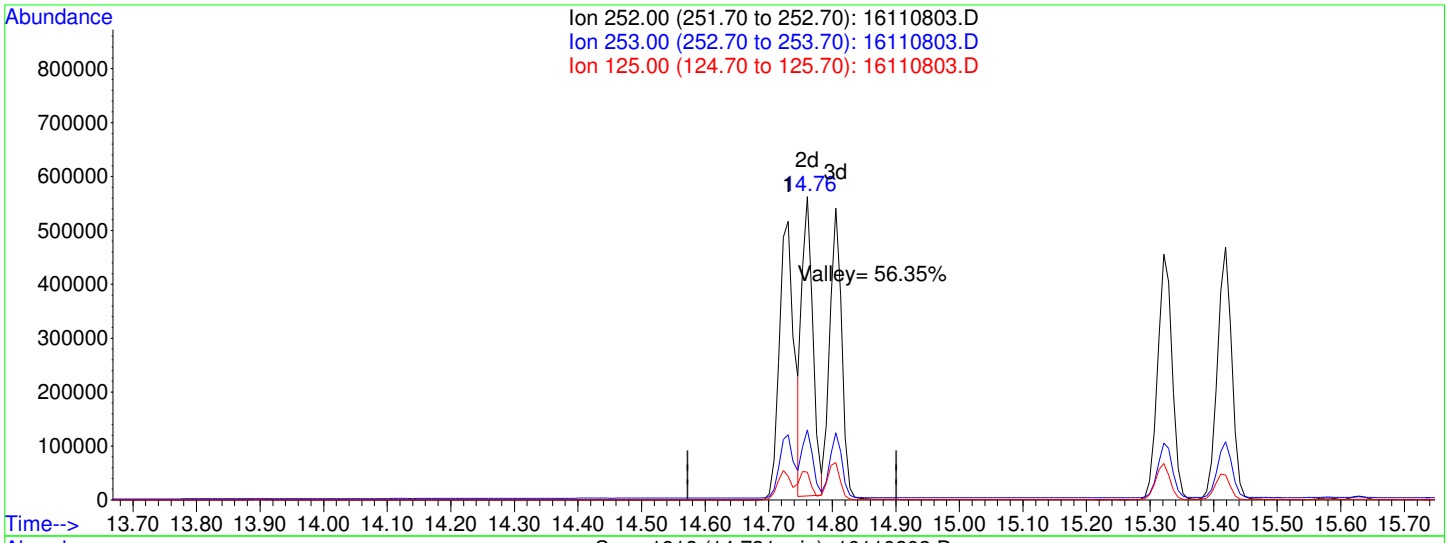
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration

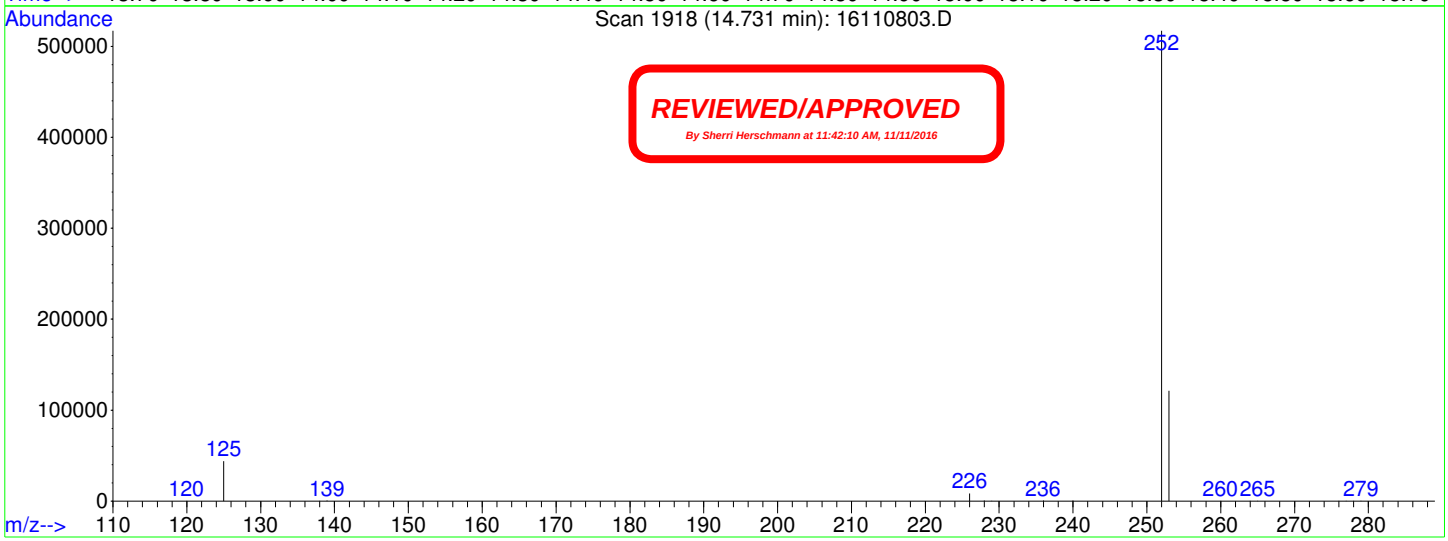


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161108\16110803.D Vial: 3
Acq On : 8 Nov 2016 9:37 am Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 9:57 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Multiple Level Calibration





TIC: 16110803.D

(21) Benzo[b]fluoranthene (CP)

14.73min 2302.11ug/kg

response 841444

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.75
125.00	10.50	8.43
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110804.D Vial: 4
Acq On : 8 Nov 2016 10:05 am Operator:
Sample : LCS-77809 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

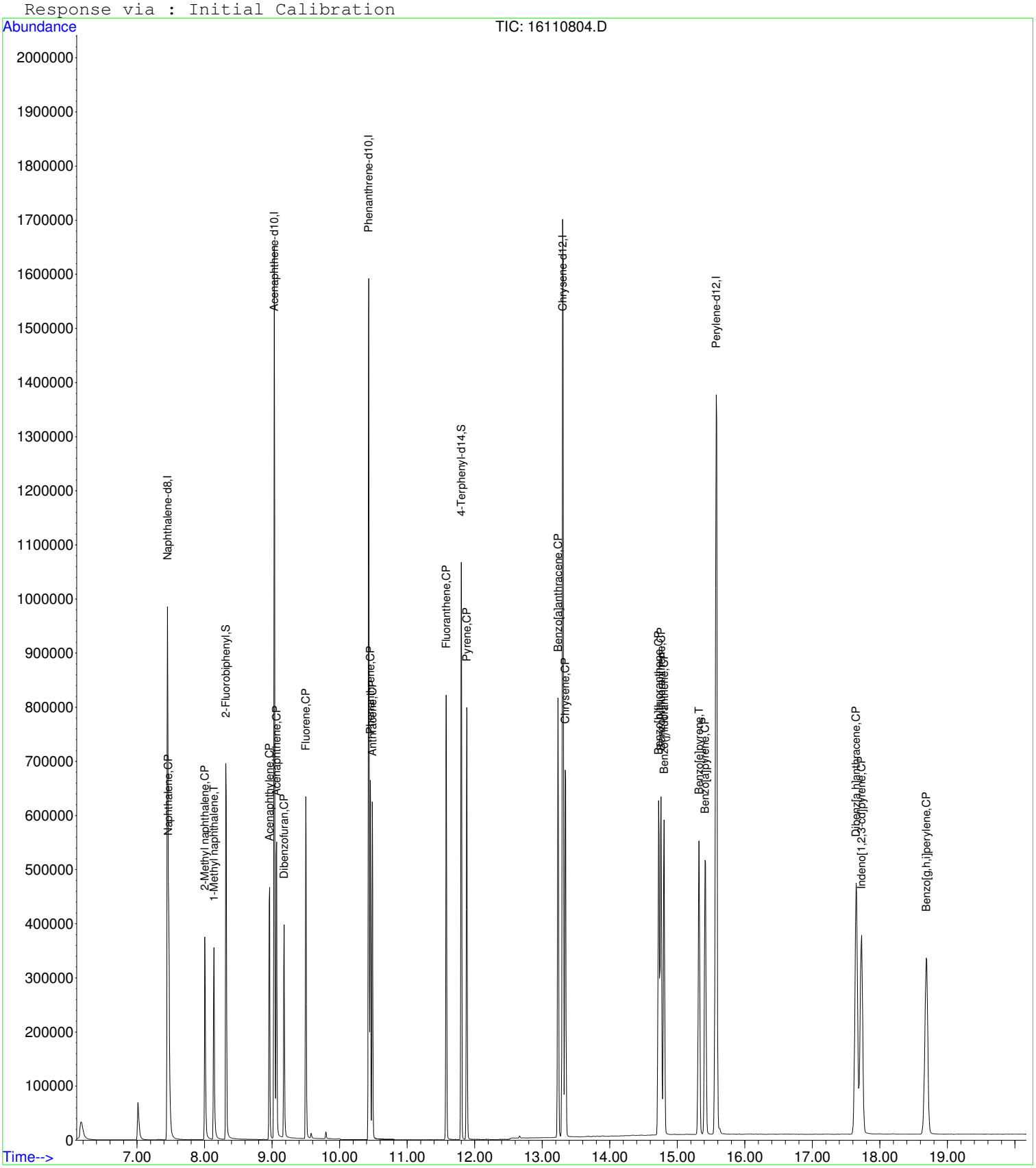
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1160264	4000.00	ug/kg	106
5) Acenaphthene-d10	9.03	164	652744	4000.00	ug/kg	103
11) Phenanthrene-d10	10.43	188	1237377	4000.00	ug/kg	103
17) Chrysene-d12	13.31	240	1603568	4000.00	ug/kg	104
20) Perylene-d12	15.58	264	1696513	4000.00	ug/kg	112
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	521238	2734.20	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	68.36%		
16) 4-Terphenyl-d14	11.80	244	815551	3281.62	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	82.04%		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	258098	1235.62	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	189078	1216.35	ug/kg	92
4) 1-Methyl naphthalene	8.14	142	176442	1214.98	ug/kg	93
6) Dibenzofuran	9.18	168	297086	1430.51	ug/kg	100
8) Acenaphthylene	8.96	152	338353	1467.27	ug/kg	99
9) Acenaphthene	9.07	154	193534	1402.36	ug/kg	96
10) Fluorene	9.50	166	256949	1521.24	ug/kg	98
12) Phenanthrene	10.45	178	399546	1658.32	ug/kg	100
13) Anthracene	10.48	178	398842	1608.30	ug/kg	99
14) Fluoranthene	11.58	202	518916	1823.48	ug/kg	100
15) Pyrene	11.88	202	525224	1777.22	ug/kg	100
18) Benzo[a]anthracene	13.23	228	598952	1910.54	ug/kg	100
19) Chrysene	13.34	228	559934	1927.89	ug/kg	100
21) Benzo[b]fluoranthene	14.72	252	665679	1766.89	ug/kg	100
22) Benzo[k]fluoranthene	14.76	252	672060	1935.33	ug/kg	99
23) Benzo(j)fluoranthene	14.81	252	572790	1705.49	ug/kg	99
24) Benzo[e]pyrene	15.32	252	629325	1870.33	ug/kg	98
25) Benzo[a]pyrene	15.42	252	633795	1845.03	ug/kg	98
26) Dibenz[a,h]anthracene	17.65	278	662147	1835.02	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.73	276	647929	1858.69	ug/kg	98
28) Benzo[g,h,i]perylene	18.69	276	665771	1807.46	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110804.D Vial: 4
Acq On : 8 Nov 2016 10:05 am Operator:
Sample : LCS-77809 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110805.D Vial: 5
Acq On : 8 Nov 2016 10:37 am Operator:
Sample : MB-77809 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

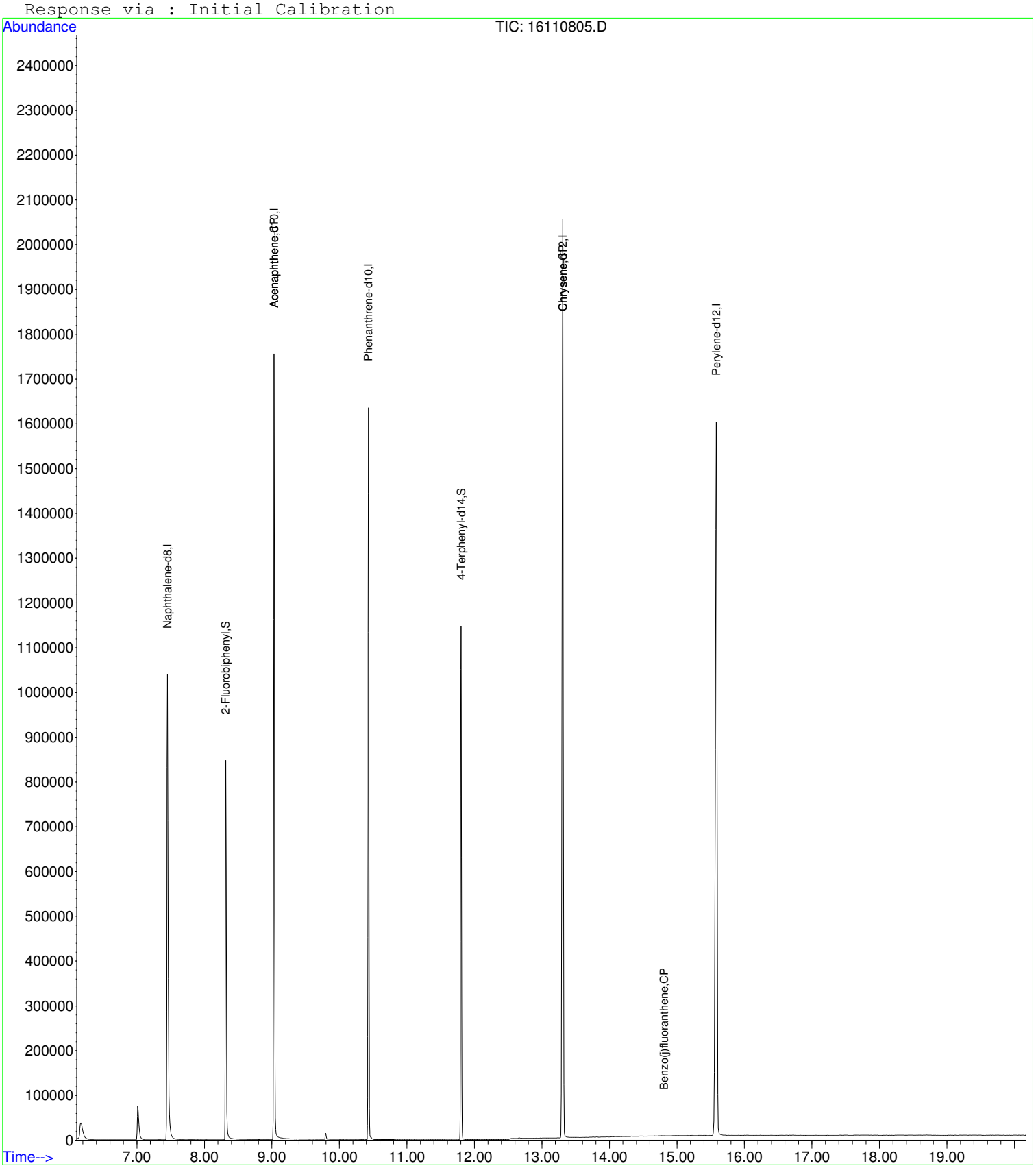
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1259697	4000.00	ug/kg	115
5) Acenaphthene-d10	9.03	164	718062	4000.00	ug/kg	113
11) Phenanthrene-d10	10.43	188	1317969	4000.00	ug/kg	110
17) Chrysene-d12	13.31	240	1816723	4000.00	ug/kg	118
20) Perylene-d12	15.58	264	1889726	4000.00	ug/kg	125
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	584182	2785.63	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	69.64%		
16) 4-Terphenyl-d14	11.80	244	888592	3356.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	83.92%		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	2438	~~16.06 ug/kg#~~		10
19) Chrysene	13.31	228	4210	~~12.79 ug/kg~~		67
23) Benzo(j)fluoranthene	14.81	252	232	0.62	ug/kg#	55

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110805.D Vial: 5
Acq On : 8 Nov 2016 10:37 am Operator:
Sample : MB-77809 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110810.D Vial: 10
Acq On : 8 Nov 2016 12:57 pm Operator:
Sample : 1611044-13B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:41 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

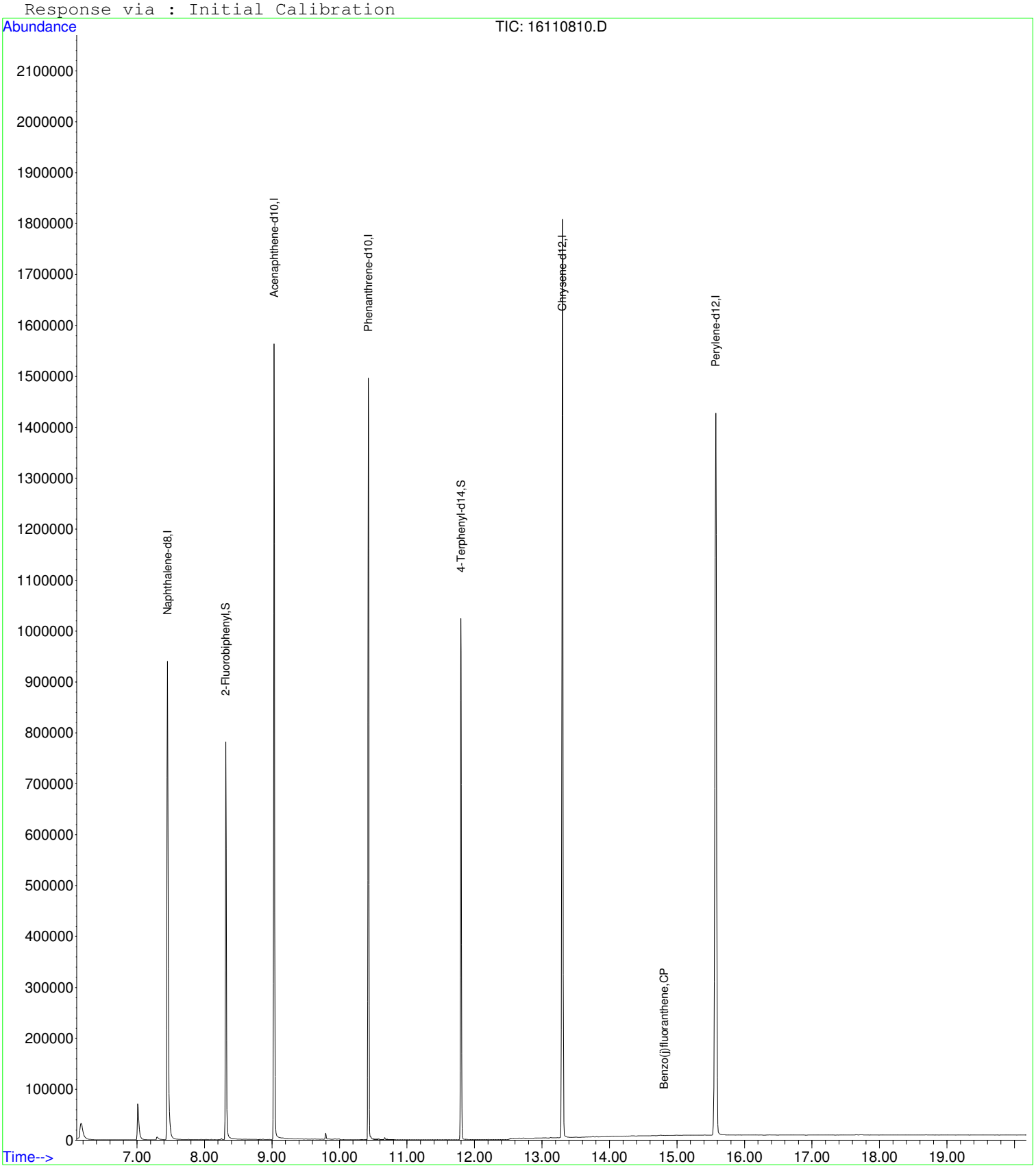
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1120712	4000.00	ug/kg	103
5) Acenaphthene-d10	9.03	164	640256	4000.00	ug/kg	101
11) Phenanthrene-d10	10.43	188	1211922	4000.00	ug/kg	101
17) Chrysene-d12	13.30	240	1578299	4000.00	ug/kg	102
20) Perylene-d12	15.58	264	1658779	4000.00	ug/kg	109
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	540152	2888.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 72.22%			
16) 4-Terphenyl-d14	11.80	244	811660	3334.56	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 83.36%			
Target Compounds						Qvalue
23) Benzo(j)fluoranthene	14.80	252	113	0.34	ug/kg#	1

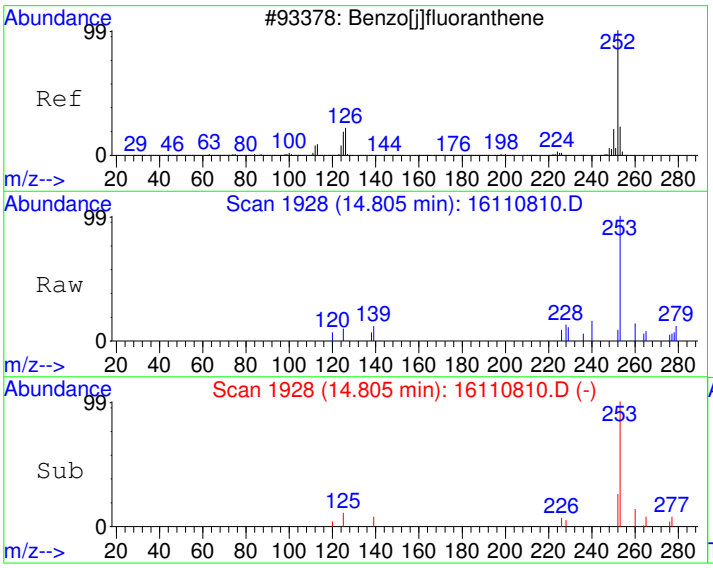
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110810.D Vial: 10
Acq On : 8 Nov 2016 12:57 pm Operator:
Sample : 1611044-13B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:41 2016 Quant Results File: PP161020.RES

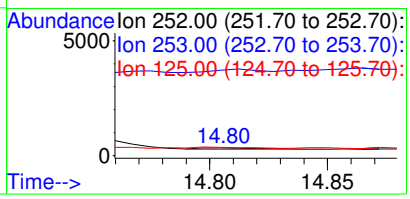
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration





#23
Benzo(j)fluoranthene
Concen: 0.34 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.01 min
Lab File: 16110810.D
Acq: 8 Nov 2016 12:57 pm

Tgt Ion:252	Resp:	113	
Ion	Ratio	Lower	Upper
252	100		
253	169.1	2.3	42.3#
125	34.5	0.0	32.6#



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110812.D Vial: 12
Acq On : 8 Nov 2016 1:53 pm Operator:
Sample : CCV1-161108 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

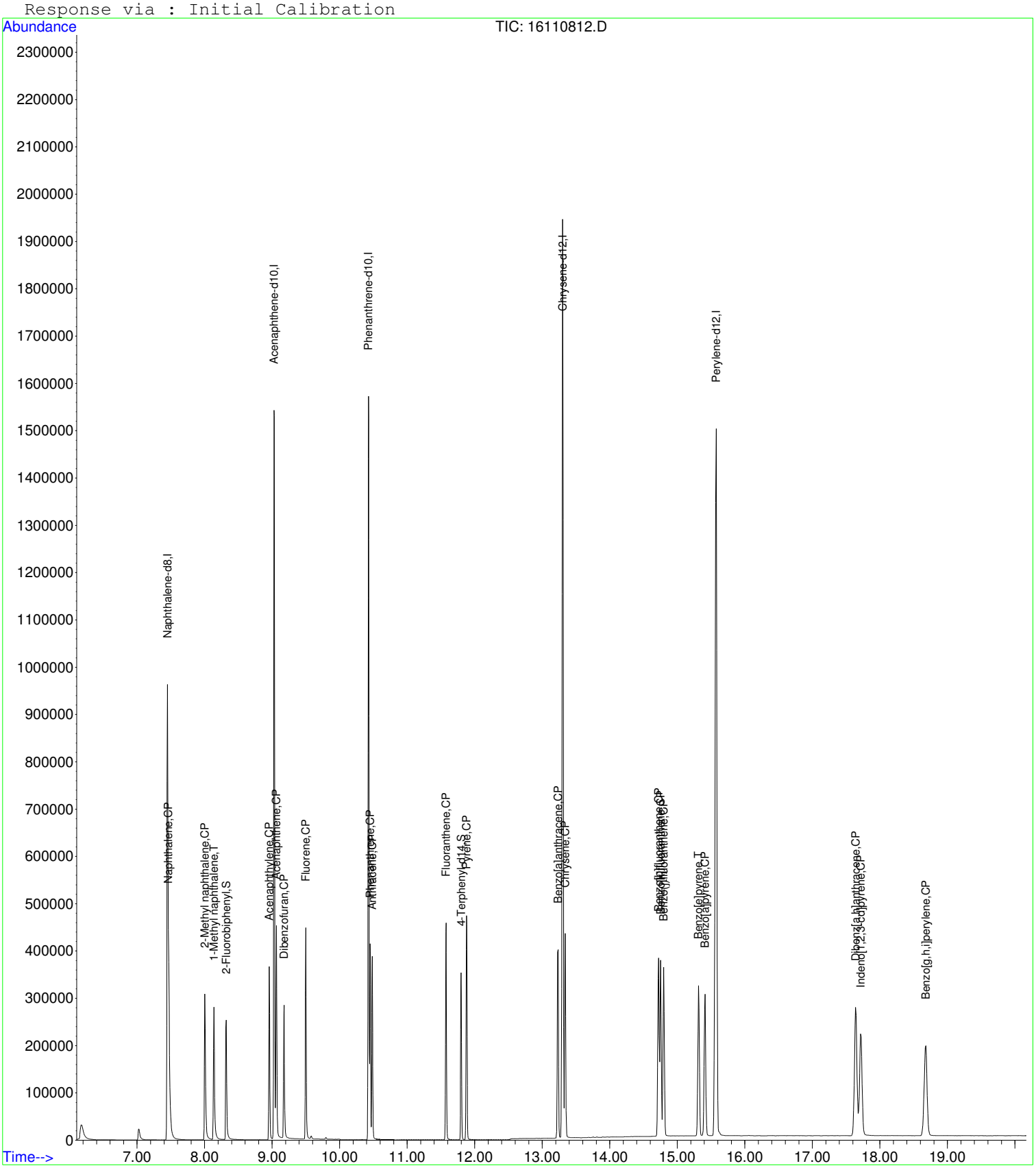
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1190454	4000.00	ug/kg	109
5) Acenaphthene-d10	9.03	164	666968	4000.00	ug/kg	105
11) Phenanthrene-d10	10.43	188	1263874	4000.00	ug/kg	105
17) Chrysene-d12	13.30	240	1659912	4000.00	ug/kg	108
20) Perylene-d12	15.58	264	1780897	4000.00	ug/kg	117
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	210918	1082.79	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.07%#			
16) 4-Terphenyl-d14	11.80	244	278801	1098.32	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.46%#			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	219624	1024.76	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	164000	1028.26	ug/kg	91
4) 1-Methyl naphthalene	8.14	142	149176	1001.18	ug/kg	94
6) Dibenzofuran	9.18	168	224344	1057.21	ug/kg	100
8) Acenaphthylene	8.96	152	251020	1065.33	ug/kg	99
9) Acenaphthene	9.06	154	145891	1034.59	ug/kg	99
10) Fluorene	9.50	166	179611	1040.69	ug/kg	100
12) Phenanthrene	10.45	178	251708	1022.81	ug/kg	99
13) Anthracene	10.48	178	256293	1011.81	ug/kg	99
14) Fluoranthene	11.58	202	307222	1056.95	ug/kg	100
15) Pyrene	11.88	202	309801	1026.31	ug/kg	99
18) Benzo[a]anthracene	13.23	228	343891	1059.71	ug/kg	99
19) Chrysene	13.34	228	319450	1062.55	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	421695	1066.26	ug/kg	98
22) Benzo[k]fluoranthene	14.75	252	348833	956.93	ug/kg	100
23) Benzo(j)fluoranthene	14.80	252	359077	1018.50	ug/kg	99
24) Benzo[e]pyrene	15.31	252	360317	1020.11	ug/kg	98
25) Benzo[a]pyrene	15.41	252	366132	1015.34	ug/kg	99
26) Dibenz[a,h]anthracene	17.64	278	378569	999.42	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.72	276	373996	1022.03	ug/kg	100
28) Benzo[g,h,i]perylene	18.68	276	384622	994.71	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110812.D Vial: 12
Acq On : 8 Nov 2016 1:53 pm Operator:
Sample : CCV1-161108 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



GCMS6_161111C
For

DHL Work Order
1611044

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161111C
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report		X	x
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			x
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS		X		
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS		X		
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)		X		

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis	7 days (Aq) - extraction			X	
1. Are all sample hold times met?	14 days (Soil) - extraction	X			
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only	X			x
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			x
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE	All deviations from the method and SOP that affect data quality	X			x
1. Are all non-conformances included and noted?					
2. Are all corrective actions included?		X			
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?		X			

Approved by: ***QA APPROVED*** *By John DuPont at 12:00:41 PM, 11/14/2016* Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS ___LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
X Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

MSD and ending CCV ran outside the 12 hour tune.

Analyst: Don Winston Date: 11/14/2016

Second-Level Review: Janice Whitt Date: 11/14/2016 ***REVIEWED BY*** *By Janice Whitt at 11:38:09 AM, 11/14/2016*

DHL Analytical, Inc.

Run ID: GCMS6_161111C **Run No.:** 88956

Analytical Run Date: 11/11/2016 **InstrumentID:** GCMS6

Analyst: Don Winston **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161111	1	PAH_LL_SDOD1	TUNE	R88956	11/11/2016 3:22:00 PM		All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers.
ICV-161111	1	PAH_LL_SDOD1	ICV	R88956	11/11/2016 3:50:00 PM		
LCS-77875	1	PAH_LL_SDOD1	LCS	77875	11/11/2016 4:18:00 PM		DNR-Internal standards not spiked. See rerun.
MB-77875	1	PAH_LL_SDOD1	MBLK	77875	11/11/2016 4:46:00 PM		DNR-Internal standards not spiked. See rerun.
LCS-77875	1	PAH_LL_SDOD1	LCS	77875	11/11/2016 5:13:00 PM		
MB-77875	1	PAH_LL_SDOD1	MBLK	77875	11/11/2016 5:41:00 PM		
1611044-14A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 6:09:00 PM		
1611044-15A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 6:37:00 PM		
1611044-18A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 7:05:00 PM		
1611044-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 7:33:00 PM		
1611053-01A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:01:00 PM		
1611053-06A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:29:00 PM		
1611053-11A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:57:00 PM		
1611053-16A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 9:25:00 PM		
1611053-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 9:53:00 PM		
1611053-26A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 10:21:00 PM		
1611071-16A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 10:49:00 PM		
1611071-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 11:17:00 PM		
1611053-41A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 11:45:00 PM		
1611071-01A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 12:13:00 AM		
1611071-04A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 12:41:00 AM		
1611071-08A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 1:09:00 AM		
1611071-11A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 1:37:00 AM		
1611053-31A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 2:05:00 AM		
1611053-36A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 2:33:00 AM		
1611071-16AMS	10	PAH_LL_SDOD1	MS	77875	11/12/2016 3:01:00 AM		High recovery for Chrysene, Fluoranthene, Fluorene, Phenanthrene and Pyrene .

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

DHL Analytical, Inc.

Run ID: GCMS6_161111C **Run No.:** 88956

1611071-16AMSD	10	PAH_LL_SDOD1	MSD	77875	11/12/2016 3:29:00 AM		High recovery for Phenanthrene and Pyrene. %RPD outside limits for Fluoranthene. MSD ran 7 minutes outside 12 hour tune.
CCV1-161111	1	PAH_LL_SDOD1	CCV	R88956	11/12/2016 3:57:00 AM		CCV ran 35 minutes outside 12 hour tune.

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C
11	Sample	1	16111111	DFTPPPAH	DFTPP-161111
12	Sample	2	16111112	PP161020	ICV-161111
13	Sample	3	16111113	PP161020	LCS-77875
14	Sample	4	16111114	PP161020	MB-77875
15	Sample	3	16111115	PP161020	LCS-77875
16	Sample	4	16111116	PP161020	MB-77875
17	Sample	5	16111117	PP161020	1611044-14A
18	Sample	6	16111118	PP161020	1611044-15A
19	Sample	7	16111119	PP161020	1611044-18A
20	Sample	8	16111120	PP161020	1611044-21A
21	Sample	9	16111121	PP161020	1611053-01A
22	Sample	10	16111122	PP161020	1611053-06A
23	Sample	11	16111123	PP161020	1611053-11A
24	Sample	12	16111124	PP161020	1611053-16A
25	Sample	13	16111125	PP161020	1611053-21A
26	Sample	14	16111126	PP161020	1611053-26A
27	Sample	15	16111127	PP161020	1611071-16A
28	Sample	16	16111128	PP161020	1611071-21A
29	Sample	17	16111129	PP161020	1611053-41A
30	Sample	18	16111130	PP161020	1611071-01A
31	Sample	19	16111131	PP161020	1611071-04A
32	Sample	20	16111132	PP161020	1611071-08A
33	Sample	21	16111133	PP161020	1611071-11A
34	Sample	22	16111134	PP161020	1611053-31A
35	Sample	23	16111135	PP161020	1611053-36A
36	Sample	24	16111136	PP161020	1611071-16AMS
37	Sample	25	16111137	PP161020	1611071-16AMSD
38	Sample	26	16111138	PP161020	CCV1-161111

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: **11/11/2016 2:59:00 PM**

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10.64	10	0.940	1 of 1	
	Clay-like. This is a reprep of 77829.						
1611044-15A	Soil		10.12	10	0.988	1 of 1	
	Clay-like.						
1611044-18A	Soil		10.4	10	0.962	1 of 1	
	Clay-like.						
1611044-21A	Soil		10	10	1.000	1 of 1	
	Clay-like.						
1611053-01A	Soil		10.1	10	0.990	1 of 1	
1611053-06A	Soil		10.3	10	0.971	1 of 1	
	Contains grass, pebbles, shells						
1611053-11A	Soil		10.2	10	0.980	1 of 1	
1611053-16A	Soil		10.25	10	0.976	1 of 1	
1611053-21A	Soil		10.07	10	0.993	1 of 1	
1611053-26A	Soil		10.35	10	0.966	1 of 1	
	Contains grass, leaves						
1611053-31A	Soil		10.7	10	0.935	1 of 1	
	Contains grass, leaves						
1611053-36A	Soil		10.45	10	0.957	1 of 1	
	Contains grass, leaves						
1611053-41A	Soil		10.53	10	0.950	1 of 1	
	Contains grass, leaves, roots						
1611071-01A	Soil		10.48	10	0.954	1 of 1	
1611071-04A	Soil		10.95	10	0.913	1 of 1	
1611071-08A	Soil		10.53	10	0.950	1 of 1	
	Clay.						
1611071-11A	Soil		10.61	10	0.943	1 of 1	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:05 AM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: **11/11/2016 2:59:00 PM**

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-16A	Soil		10.64	10	0.940	1 of 1	
1611071-16AMS	Soil		10.07	10	0.993	of	
1611071-16AMSD	Soil		10.52	10	0.951	of	
1611071-21A	Soil		10.33	10	0.968	1 of 1	
LCS-77875	Soil		10	10	1.000	of	
MB-77875	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:07 AM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: 11/11/2016 2:59 PM

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia** Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10.64	10	1.000	1 of 1	clay-like This is a reprep of 77829
1611044-15A	Soil		10.12	10	1.000	1 of 1	
1611044-18A	Soil		10.40	10	1.000	1 of 1	
1611044-21A	Soil		10.00	10	1.000	1 of 1	
1611053-01A	Soil		10.10	10	1.000	1 of 1	
1611053-06A	Soil		10.30	10	1.000	1 of 1	contains grass, pebbles, shells
1611053-11A	Soil		10.20	10	1.000	1 of 1	
1611053-16A	Soil		10.25	10	1.000	1 of 1	
1611053-21A	Soil		10.07	10	1.000	1 of 1	
1611053-26A	Soil		10.35	10	1.000	1 of 1	Contains grass, leaves
1611053-31A	Soil		10.70	10	1.000	1 of 1	" " "
1611053-36A	Soil		10.45	10	1.000	1 of 1	" "
1611053-41A	Soil		10.53	10	1.000	1 of 1	" " " , roots
1611071-01A	Soil		10.48	10	1.000	1 of 1	
1611071-04A	Soil		10.95	10	1.000	1 of 1	
1611071-08A	Soil		10.53	10	1.000	1 of 1	clay
1611071-11A	Soil		10.61	10	1.000	1 of 1	
1611071-16A	Soil		10.64	10	1.000	1 of 1	
1611071-16AMS	Soil		10.07	10	1.000	of	
1611071-16AMSD	Soil		10.52	10	1.000	of	
1611071-21A	Soil		10.33	10	1.000	1 of 1	
LCS-77875	Soil		10	10	1.000	of	
MB-77875	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

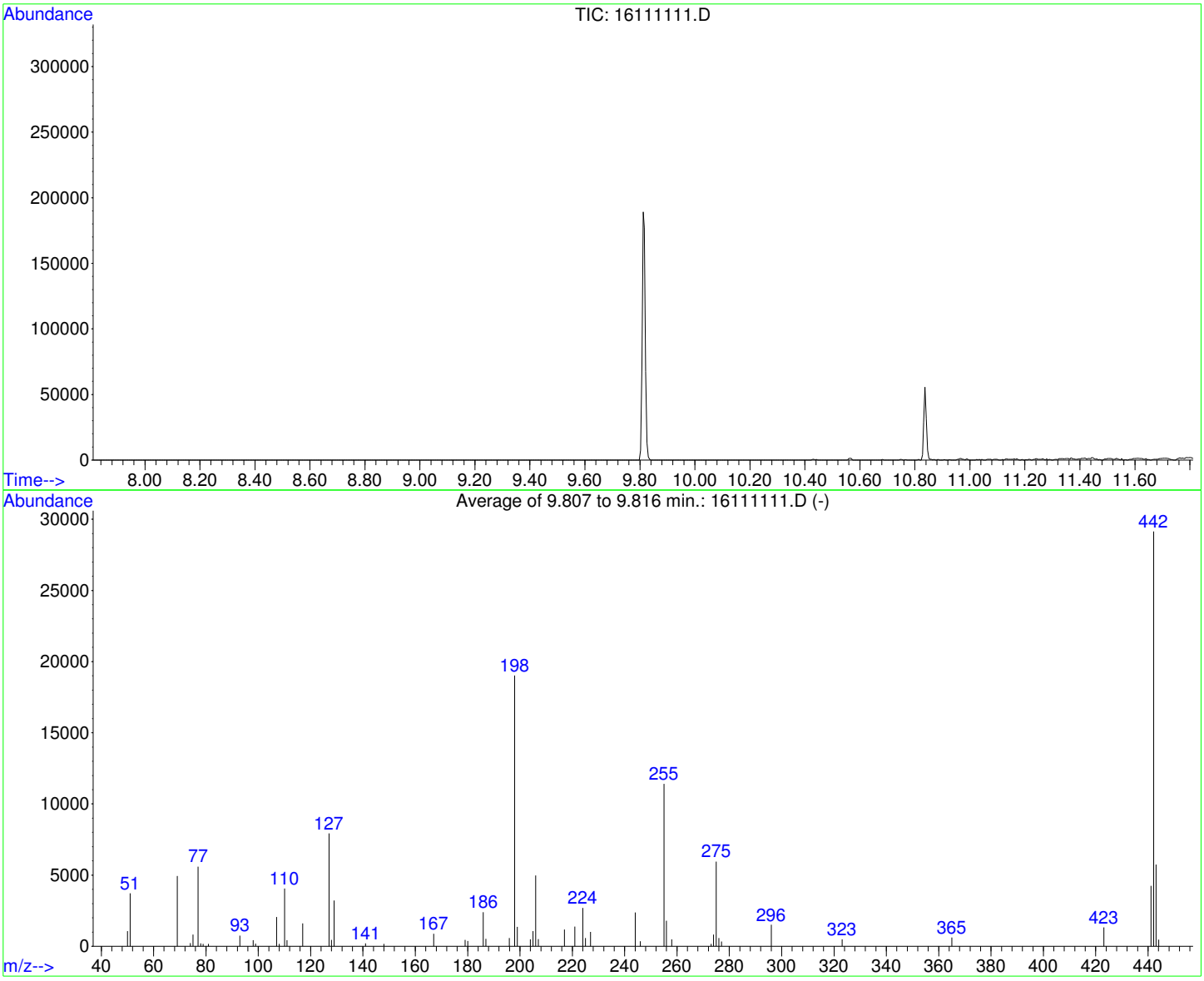
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:00 AM, 11/14/2016

11/11/16

11/11/16

Data File : C:\HPCHEM\1\DATA\161111\16111111.D Vial: 1
Acq On : 11 Nov 2016 3:22 pm Operator:
Sample : DFTPP-161111 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 791, 792, 793; Background Corrected with Scan 787

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	19.6	3721	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	26.0	4943	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.7	7923	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	19016	PASS
199	198	5	9	7.2	1362	PASS
275	198	10	60	31.3	5956	PASS
365	198	1	200	3.3	620	PASS
441	442	0.01	24	14.6	4248	PASS
442	198	50	400	153.3	29146	PASS
443	442	15	24	19.7	5743	PASS

REVIEWED BY
By Janice Whitt at 10:54:02 AM, 11/14/2016

Manual Integrations Tracking Form - DoD QSM 5.0 Requirement

Instrument ID: GCMS #6 **Data Folder: GCMS6_161111C**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611044-18A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-01A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-06A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-11A	Benzo[k]fluoranthene– Integrated wrong peak			
1611053-26A	Benzo[k]fluoranthene– Integrated wrong peak			
1611053-31A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-01A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-04A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-16A	Benzo[k]fluoranthene– Integrated wrong peak			

***Manually Integrated = MI**

Don Winston

11-11-2016

Analyst **Date**

2nd Level Review **Date**

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

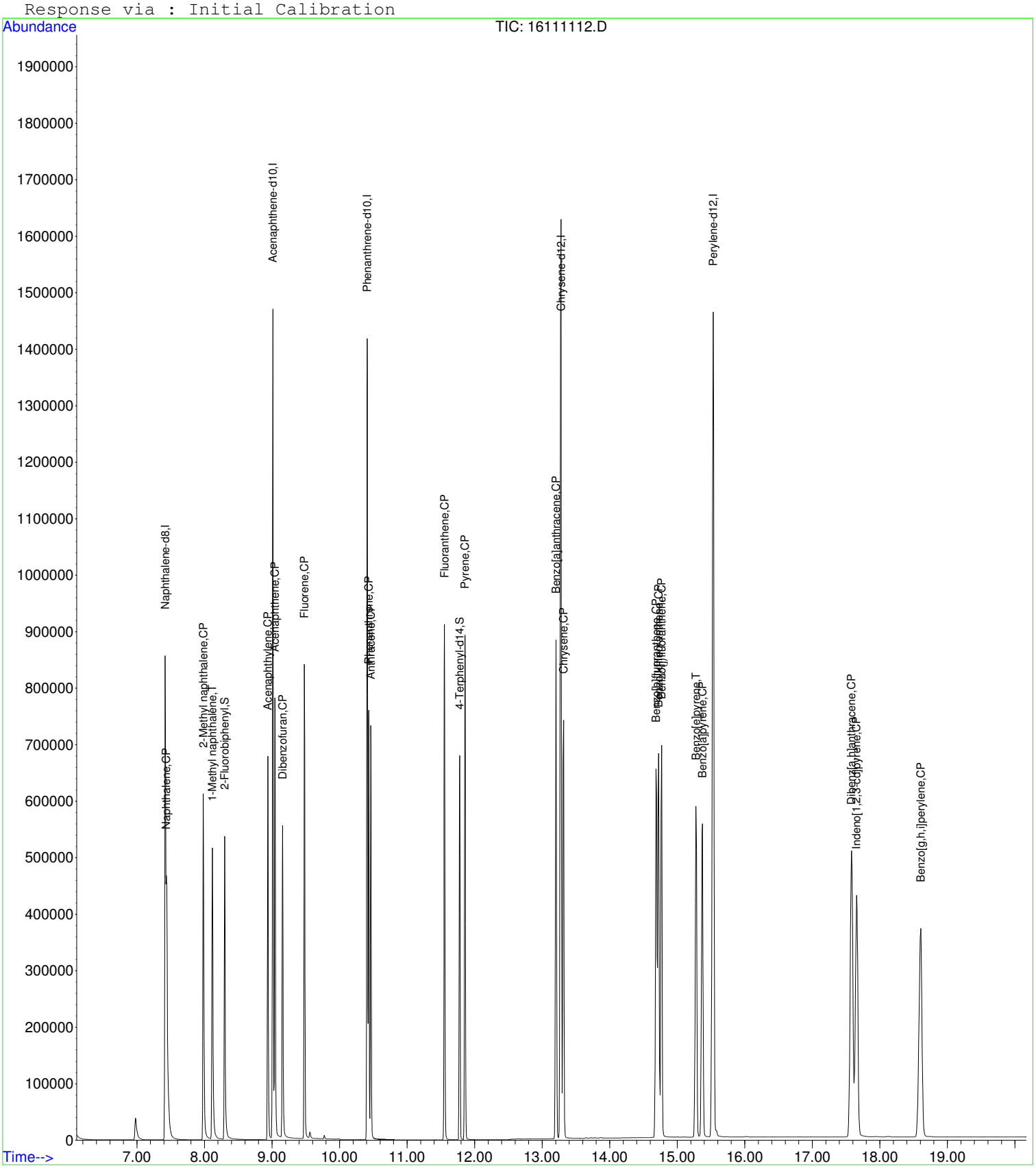
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1032489	4000.00	ug/kg	95
5) Acenaphthene-d10	9.01	164	583652	4000.00	ug/kg	92
11) Phenanthrene-d10	10.41	188	1124326	4000.00	ug/kg	94
17) Chrysene-d12	13.28	240	1548523	4000.00	ug/kg	100
20) Perylene-d12	15.53	264	1687021	4000.00	ug/kg	111
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	392693	2303.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	57.59%		
16) 4-Terphenyl-d14	11.78	244	526763	2332.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.32%		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	395881	2129.78	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	301328	2178.35	ug/kg	92
4) 1-Methyl naphthalene	8.12	142	271193	2098.54	ug/kg	95
6) Dibenzofuran	9.16	168	418688	2254.69	ug/kg	98
8) Acenaphthylene	8.94	152	456810	2215.46	ug/kg	100
9) Acenaphthene	9.04	154	267447	2167.35	ug/kg	99
10) Fluorene	9.48	166	335369	2220.56	ug/kg	98
12) Phenanthrene	10.43	178	466758	2132.07	ug/kg	100
13) Anthracene	10.46	178	473783	2102.59	ug/kg	100
14) Fluoranthene	11.55	202	565079	2185.36	ug/kg	99
15) Pyrene	11.86	202	574300	2138.67	ug/kg	100
18) Benzo[a]anthracene	13.20	228	643750	2126.42	ug/kg	100
19) Chrysene	13.32	228	593119	2114.74	ug/kg	98
21) Benzo[b]fluoranthene	14.69	252	803287	2144.14	ug/kg	99
22) Benzo[k]fluoranthene	14.72	252	632979	1833.04	ug/kg	99
23) Benzo(j)fluoranthene	14.77	252	656983	1967.19	ug/kg	98
24) Benzo[e]pyrene	15.28	252	679007	2029.34	ug/kg	97
25) Benzo[a]pyrene	15.37	252	684518	2003.90	ug/kg	98
26) Dibenz[a,h]anthracene	17.58	278	749501	2088.79	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.66	276	726395	2095.51	ug/kg	98
28) Benzo[g,h,i]perylene	18.61	276	761602	2079.26	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

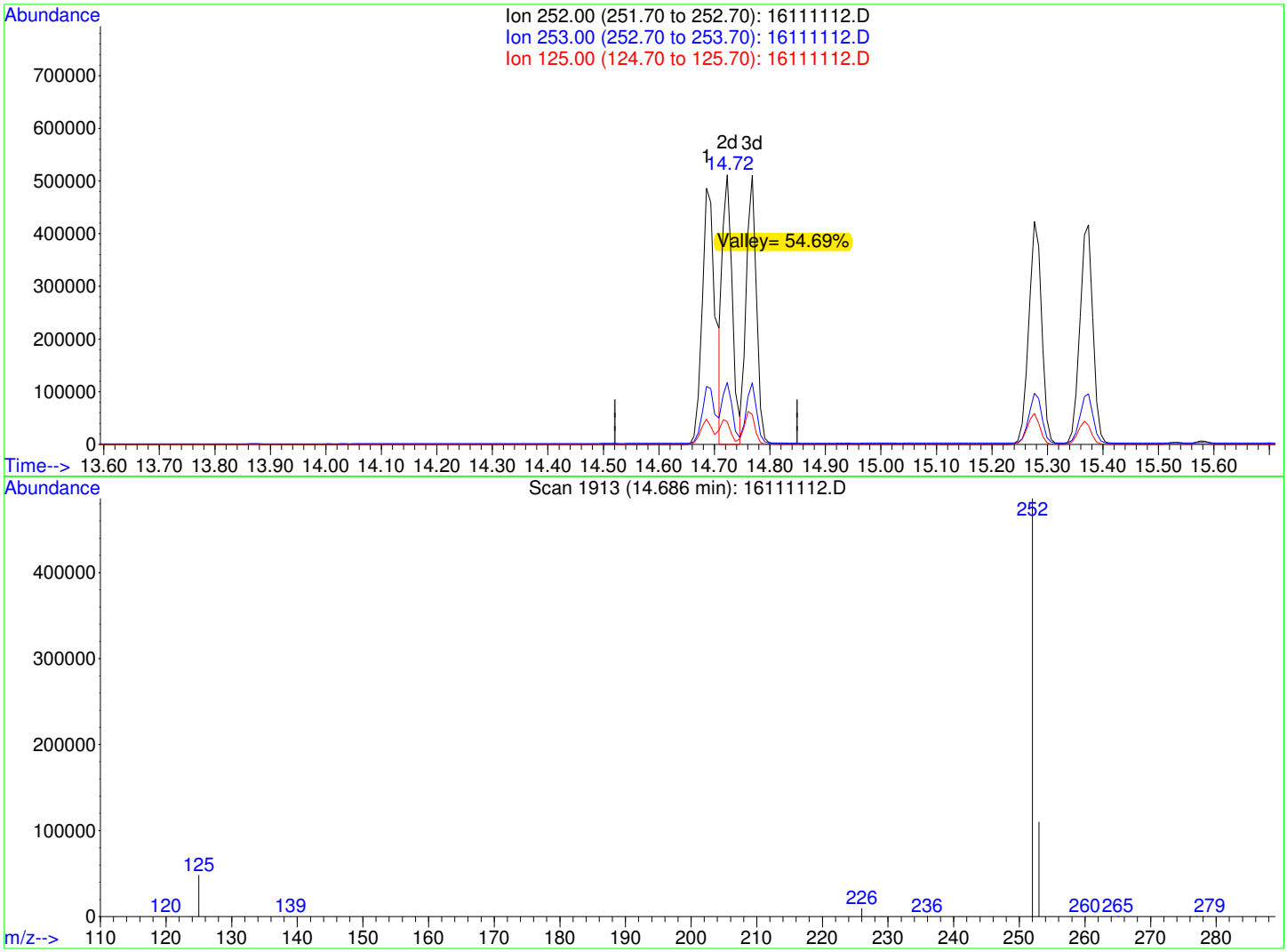
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration



TIC: 16111112.D

(21) Benzo[b]fluoranthene (CP)

14.69min 2144.14ug/kg

response 803287

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.22
125.00	10.50	9.91
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111113.D Vial: 3
Acq On : 11 Nov 2016 4:18 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

DNR-Internal standards not spiked.

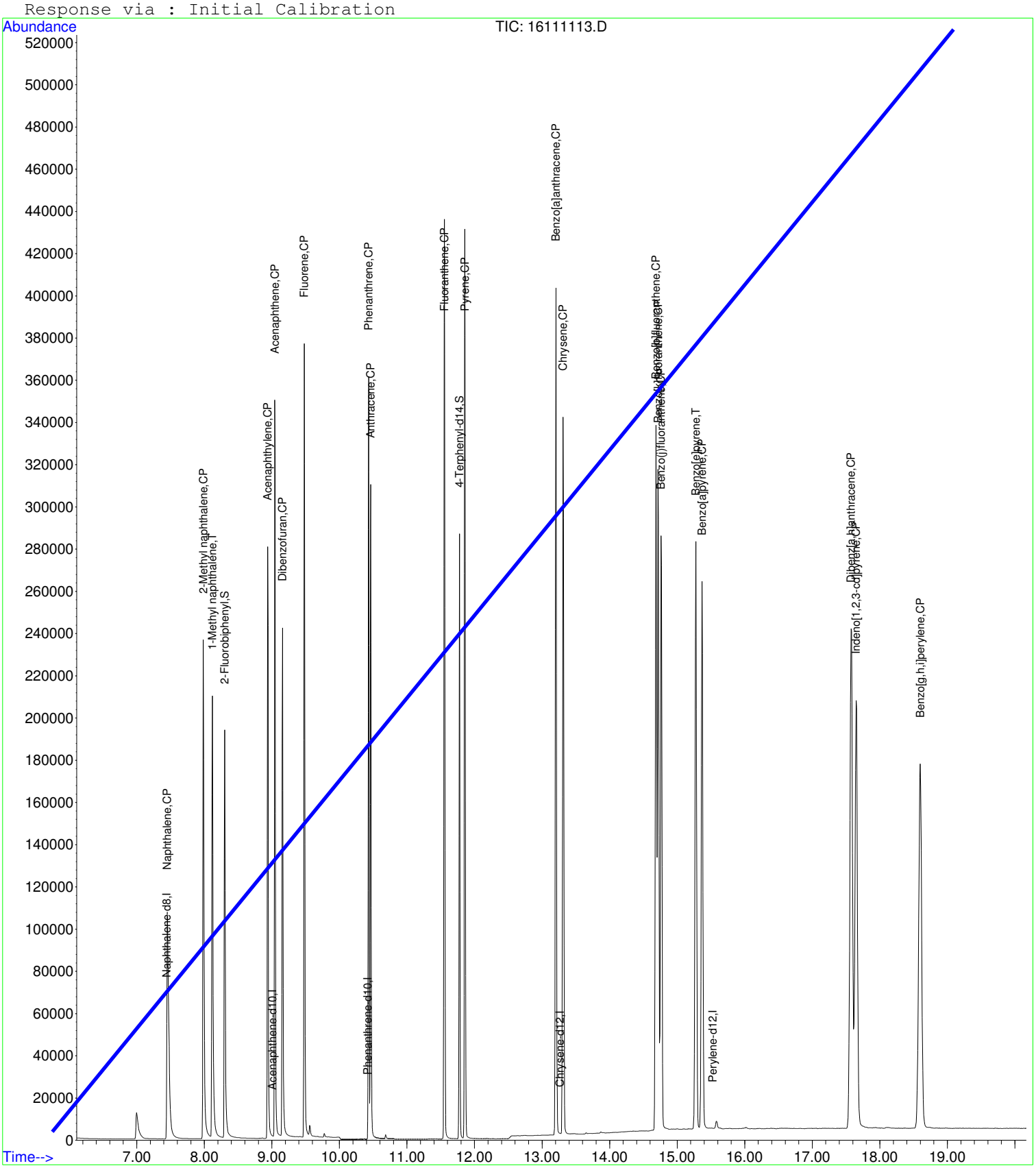
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.44	136	126	4000.00	ug/kg	0
5) Acenaphthene-d10	9.01	164	33	4000.00	ug/kg	0
11) Phenanthrene-d10	10.41	188	99	4000.00	ug/kg	0
17) Chrysene-d12	13.27	240	179	4000.00	ug/kg	0
20) Perylene-d12	15.53	264	135	4000.00	ug/kg	0
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	156280	16215363.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 405384.10%#		
16) 4-Terphenyl-d14	11.78	244	222852	11207803.16	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 280195.08%#		
Target Compounds						Qvalue
2) Naphthalene	7.46	128	183761	8101006.95	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	129393	7665025.21	ug/kg	91
4) 1-Methyl naphthalene	8.12	142	117416	7445294.43	ug/kg	94
6) Dibenzofuran	9.16	168	186594	17771944.61	ug/kg	99
8) Acenaphthylene	8.94	152	202584	17376912.86	ug/kg	100
9) Acenaphthene	9.04	154	123712	17731412.16	ug/kg	99
10) Fluorene	9.48	166	154772	18124782.92	ug/kg	98
12) Phenanthrene	10.43	178	221291	11479720.66	ug/kg	99
13) Anthracene	10.46	178	203883	10527755.98	ug/kg	99
14) Fluoranthene	11.55	202	268357	11786481.96	ug/kg	99
15) Pyrene	11.86	202	273146	11552015.66	ug/kg	99
18) Benzo[a]anthracene	13.20	228	298299	8524112.13	ug/kg	99
19) Chrysene	13.31	228	282667	8718762.14	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	343939	11472300.09	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	339683	12292590.88	ug/kg	100
23) Benzo(j)fluoranthene	14.76	252	285828	10695048.84	ug/kg	98
24) Benzo[e]pyrene	15.28	252	321395	12003432.31	ug/kg	96
25) Benzo[a]pyrene	15.37	252	304803	11150546.78	ug/kg	99
26) Dibenz[a,h]anthracene	17.58	278	349419	12169044.78	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.66	276	344457	12417614.79	ug/kg	95
28) Benzo[g,h,i]perylene	18.60	276	359536	12266179.54	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111113.D Vial: 3
Acq On : 11 Nov 2016 4:18 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111114.D Vial: 4
Acq On : 11 Nov 2016 4:46 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

DNR-Internal standards not spiked.

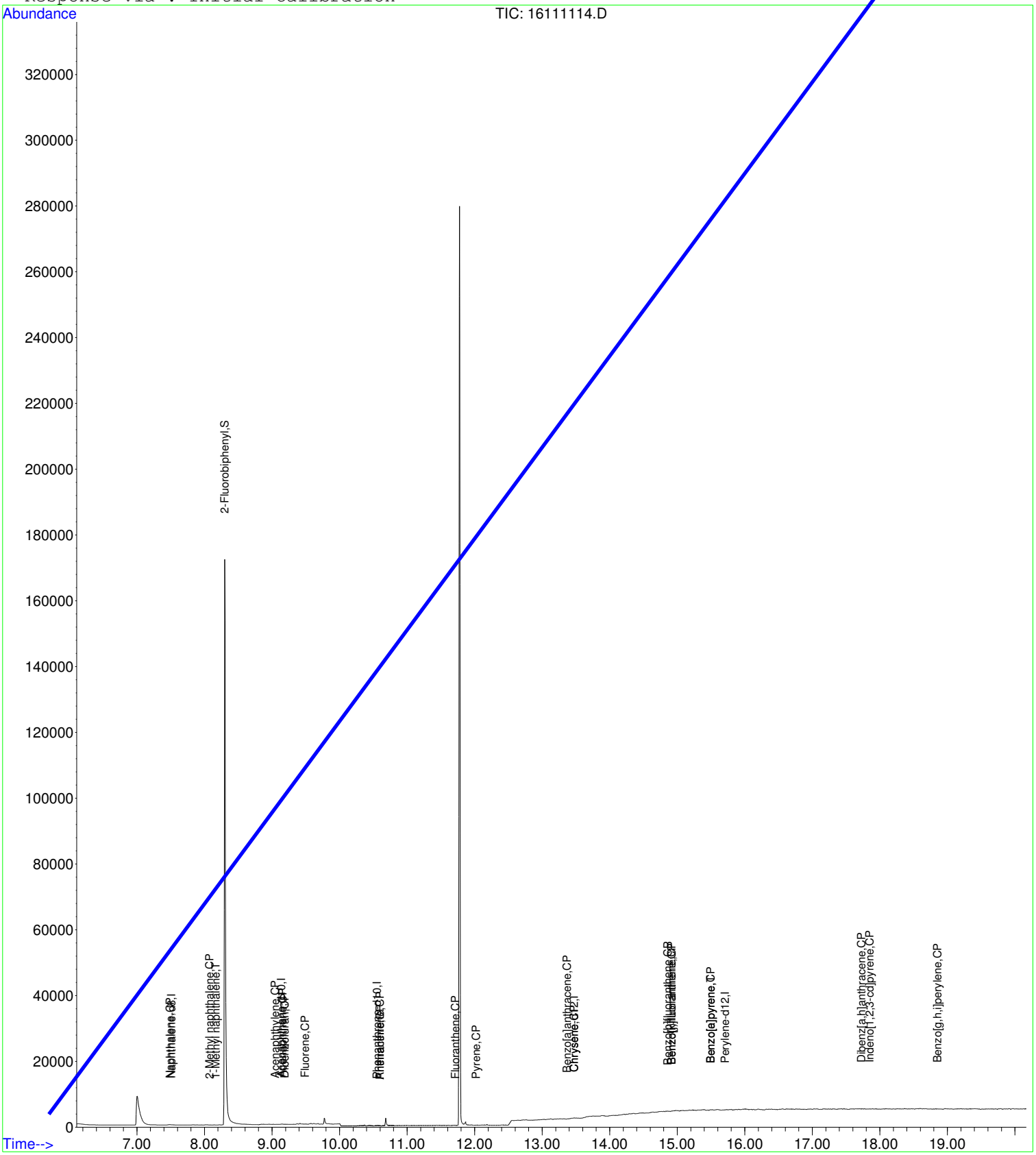
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.52	136	92	4000.00	ug/kg	0
5) Acenaphthene-d10	9.14	164	14	4000.00	ug/kg	0
11) Phenanthrene-d10	10.55	188	31	4000.00	ug/kg	0
17) Chrysene-d12	13.47	240	162	4000.00	ug/kg	0
20) Perylene-d12	15.71	264	18	4000.00	ug/kg	0
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	153433	37525628.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 938140.72%#		
16) 4-Terphenyl-d14	0.00	244	0	0.00	ug/kg	
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 0.00%#		
Target Compounds						Qvalue
2) Naphthalene	7.49	128	181	10928.10	ug/kg#	1
3) 2-Methyl naphthalene	8.07	142	7	567.92	ug/kg#	25
4) 1-Methyl naphthalene	8.17	142	9	781.59	ug/kg	82
6) Dibenzofuran	9.19	168	54	12123.19	ug/kg#	44
8) Acenaphthylene	9.05	152	16	3234.99	ug/kg	62
9) Acenaphthene	9.16	154	87	29392.51	ug/kg#	11
10) Fluorene	9.49	166	31	8557.13	ug/kg	96
12) Phenanthrene	10.60	178	8	1325.35	ug/kg	73
13) Anthracene	10.60	178	8	1287.65	ug/kg	74
14) Fluoranthene	11.71	202	19	2665.01	ug/kg	64
15) Pyrene	12.02	202	11	1485.69	ug/kg	66
18) Benzo[a]anthracene	13.36	228	11	347.32	ug/kg	52
19) Chrysene	13.47	228	34	1158.77	ug/kg	80
21) Benzo[b]fluoranthene	14.86	252	35	8755.85	ug/kg#	1
22) Benzo[k]fluoranthene	14.91	252	52	14113.48	ug/kg#	1
23) Benzo(j)fluoranthene	14.91	252	52	14592.93	ug/kg#	1
24) Benzo[e]pyrene	15.49	252	51	14285.58	ug/kg	80
25) Benzo[a]pyrene	15.49	252	51	13992.92	ug/kg	80
26) Dibenz[a,h]anthracene	17.73	278	31	8097.16	ug/kg	62
27) Indeno[1,2,3-cd]pyrene	17.85	276	8	2162.99	ug/kg	68
28) Benzo[g,h,i]perylene	18.86	276	13	3326.38	ug/kg	77

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111114.D Vial: 4
Acq On : 11 Nov 2016 4:46 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111115.D Vial: 3
Acq On : 11 Nov 2016 5:13 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

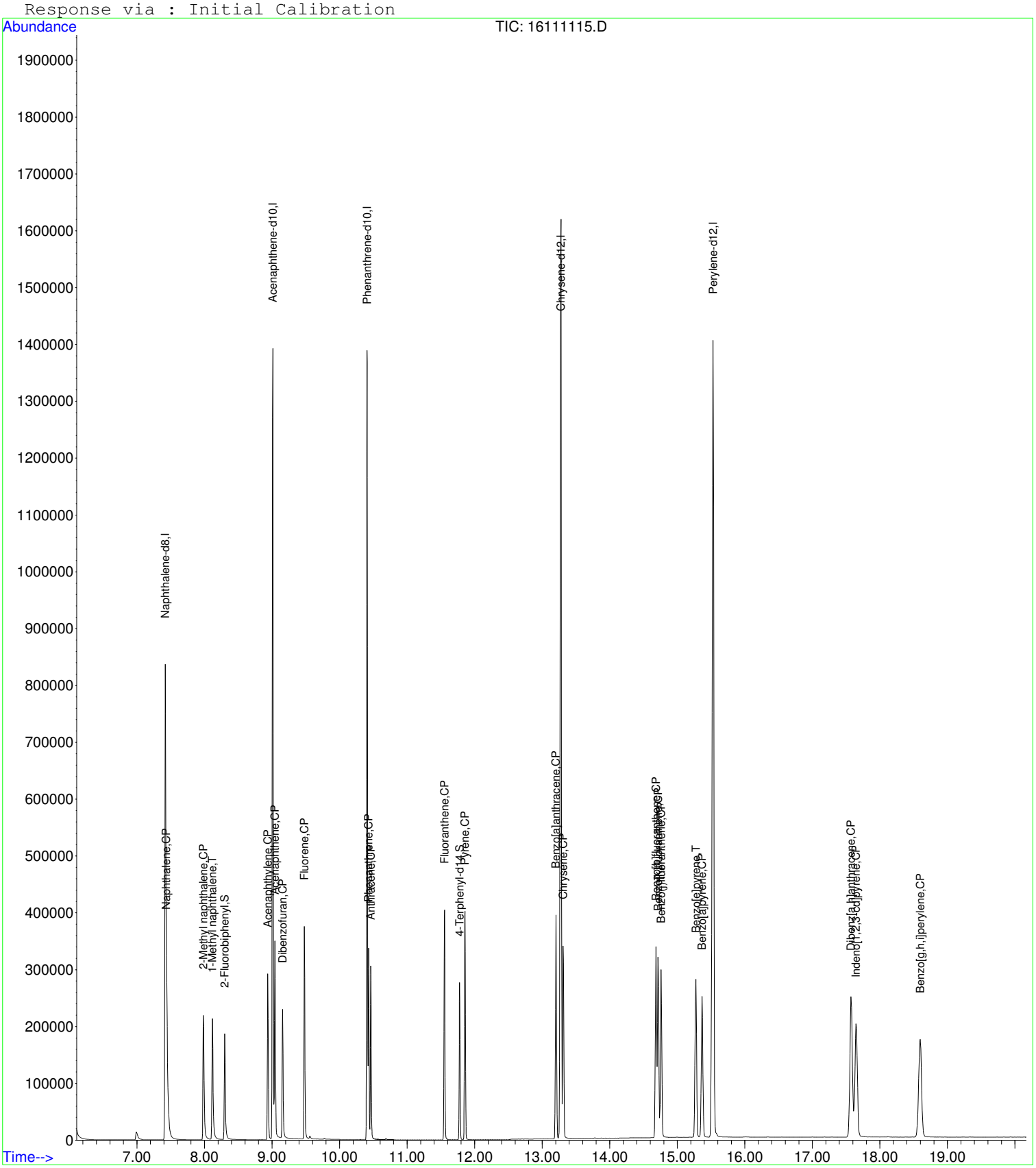
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1072292	4000.00	ug/kg	98
5) Acenaphthene-d10	9.01	164	579546	4000.00	ug/kg	91
11) Phenanthrene-d10	10.41	188	1108329	4000.00	ug/kg	92
17) Chrysene-d12	13.28	240	1521870	4000.00	ug/kg	99
20) Perylene-d12	15.53	264	1666829	4000.00	ug/kg	110
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	152691	902.12	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.55%#			
16) 4-Terphenyl-d14	11.78	244	218369	980.98	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 24.52%#			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	174376	903.30	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	128247	892.70	ug/kg	89
4) 1-Methyl naphthalene	8.12	142	117084	872.39	ug/kg	97
6) Dibenzofuran	9.16	168	182543	989.98	ug/kg	99
8) Acenaphthylene	8.94	152	199814	975.93	ug/kg	99
9) Acenaphthene	9.04	154	116807	953.29	ug/kg	100
10) Fluorene	9.48	166	150940	1006.49	ug/kg	100
12) Phenanthrene	10.43	178	213890	991.12	ug/kg	99
13) Anthracene	10.46	178	203443	915.89	ug/kg	99
14) Fluoranthene	11.55	202	264742	1038.63	ug/kg	98
15) Pyrene	11.86	202	268835	1015.58	ug/kg	99
18) Benzo[a]anthracene	13.20	228	291608	980.10	ug/kg	99
19) Chrysene	13.31	228	277931	1008.31	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	345936	934.56	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	314560	921.97	ug/kg	98
23) Benzo(j)fluoranthene	14.76	252	294480	892.43	ug/kg	99
24) Benzo[e]pyrene	15.28	252	314323	950.79	ug/kg	96
25) Benzo[a]pyrene	15.37	252	300755	891.11	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	343914	970.07	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.65	276	338128	987.25	ug/kg	98
28) Benzo[g,h,i]perylene	18.60	276	354925	980.72	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111115.D Vial: 3
Acq On : 11 Nov 2016 5:13 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111116.D Vial: 4
Acq On : 11 Nov 2016 5:41 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

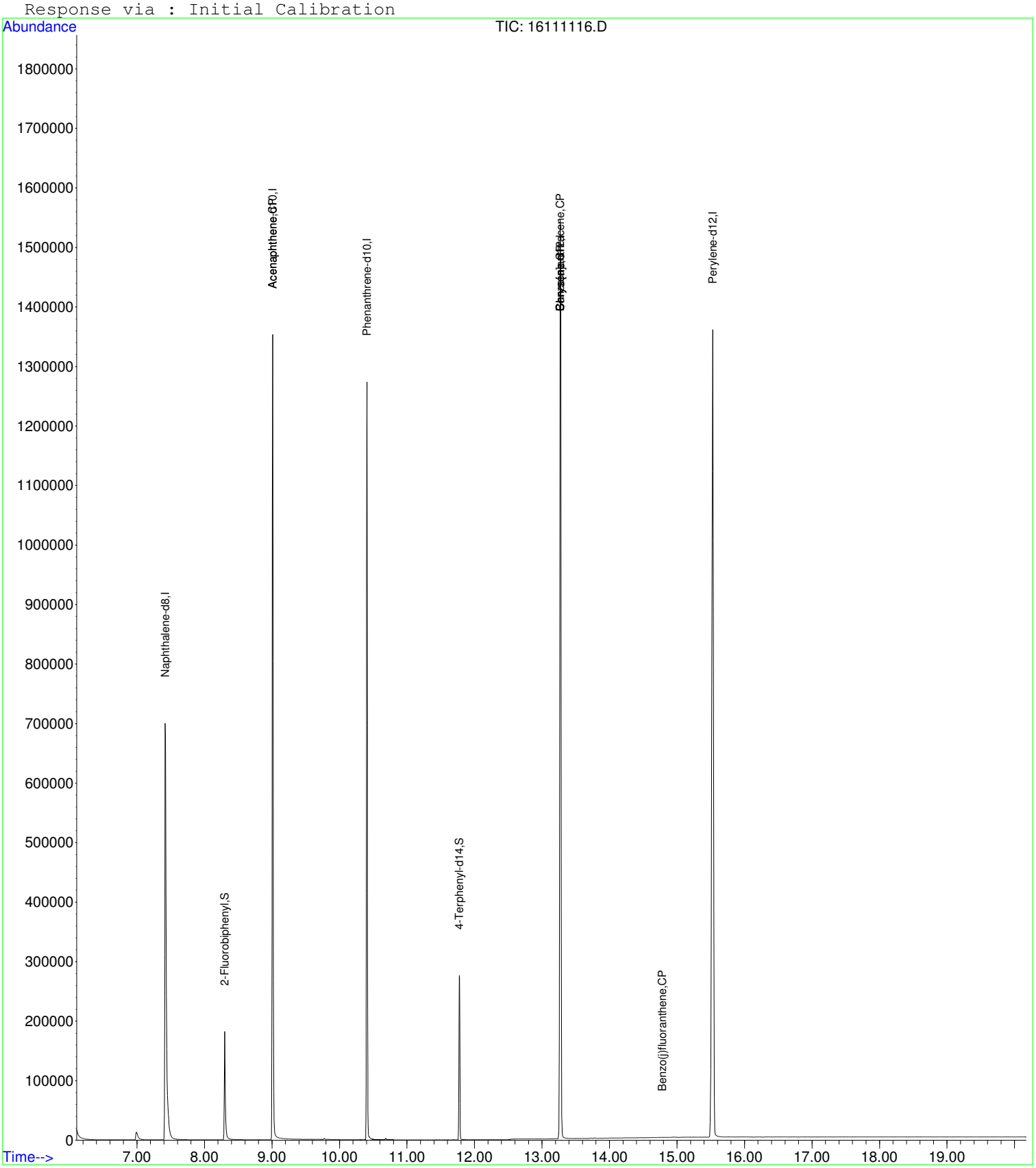
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1005466	4000.00	ug/kg	92
5) Acenaphthene-d10	9.01	164	544025	4000.00	ug/kg	86
11) Phenanthrene-d10	10.41	188	1039292	4000.00	ug/kg	87
17) Chrysene-d12	13.27	240	1435158	4000.00	ug/kg	93
20) Perylene-d12	15.53	264	1562116	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	148387	933.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.35%#		
16) 4-Terphenyl-d14	11.78	244	219034	1049.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	26.23%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	2001	~~17.40 ug/kg#~~		~~11~~
18) Benzo[a]anthracene	13.27	228	3372	~~12.02 ug/kg~~		~~73~~
19) Chrysene	13.27	228	3372	~~12.97 ug/kg~~		~~69~~
23) Benzo(j)fluoranthene	14.77	252	58	0.19 ug/kg#		47

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111116.D Vial: 4
Acq On : 11 Nov 2016 5:41 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111117.D Vial: 5
Acq On : 11 Nov 2016 6:09 pm Operator:
Sample : 1611044-14A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:43 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

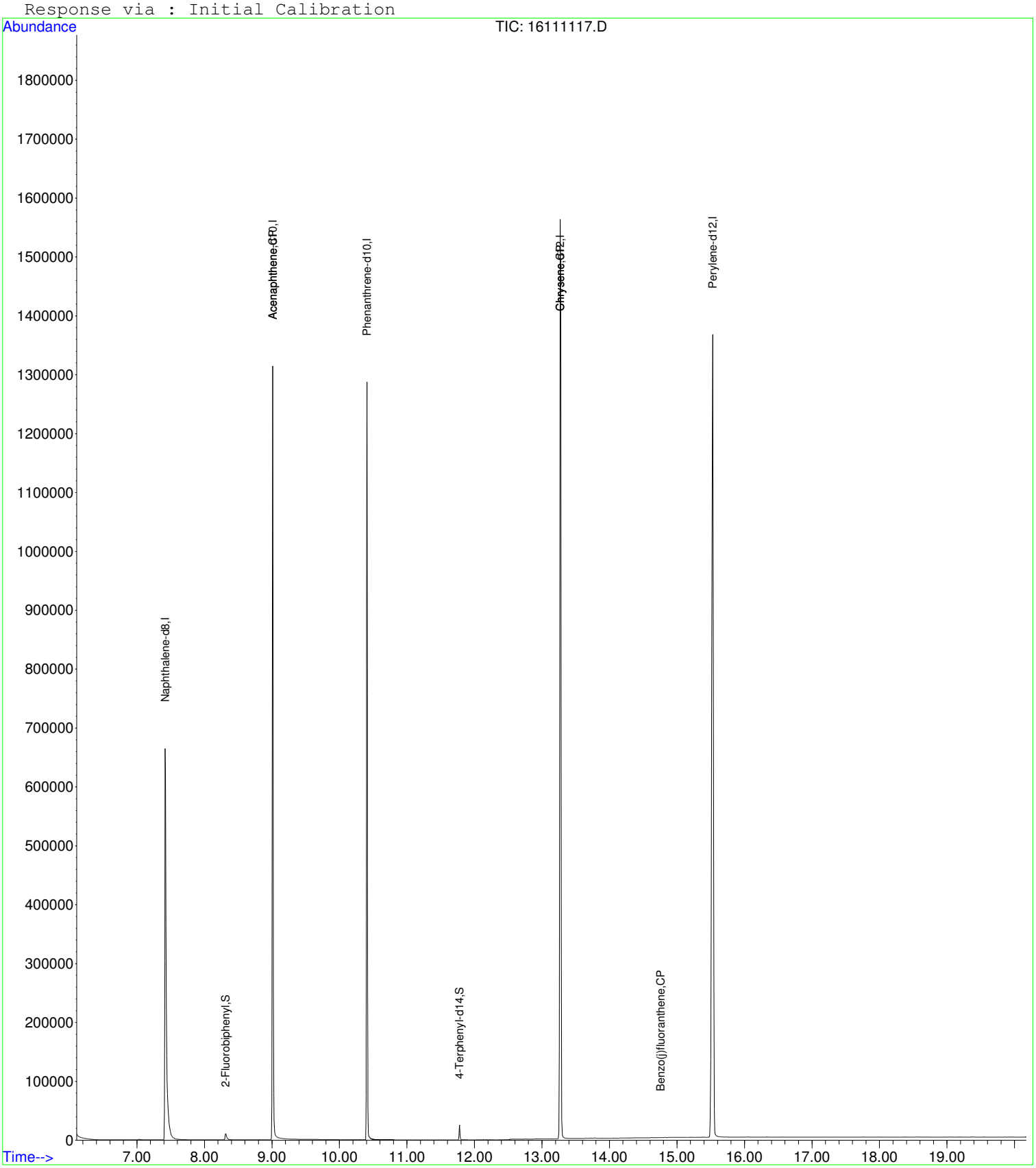
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	956195	4000.00	ug/kg	88
5) Acenaphthene-d10	9.01	164	544212	4000.00	ug/kg	86
11) Phenanthrene-d10	10.41	188	1038668	4000.00	ug/kg	87
17) Chrysene-d12	13.27	240	1426644	4000.00	ug/kg	93
20) Perylene-d12	15.53	264	1565547	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	14329	90.15	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.25%#		
16) 4-Terphenyl-d14	11.78	244	21353	102.36	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.56%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1876	16.30	ug/kg#	12
19) Chrysene	13.27	228	3245	12.56	ug/kg	71
23) Benzo(j)fluoranthene	14.76	252	37	0.12	ug/kg#	1

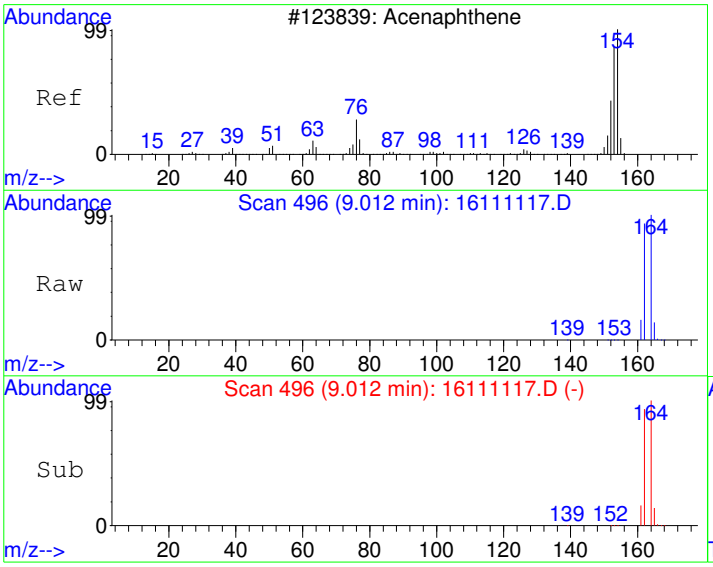
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111117.D Vial: 5
Acq On : 11 Nov 2016 6:09 pm Operator:
Sample : 1611044-14A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:43 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

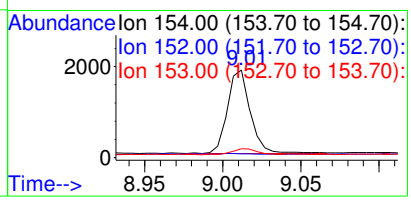


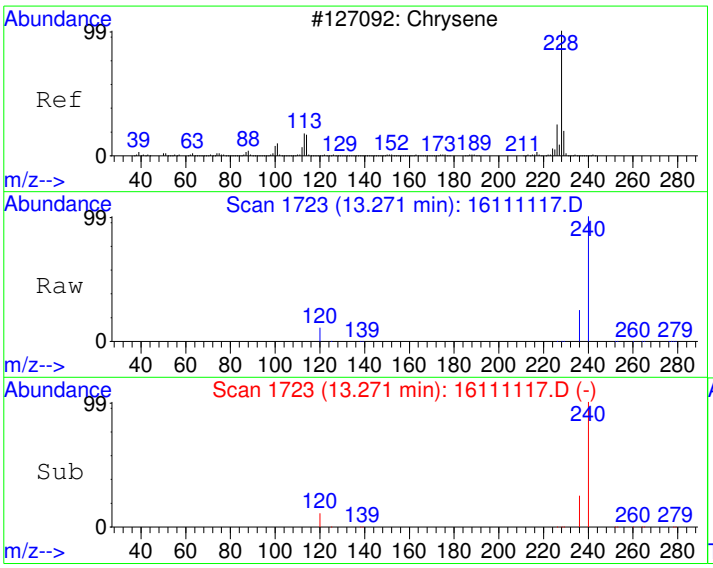


#9
Acenaphthene
Concen: 16.30 ug/kg
RT: 9.01 min Scan# 496
Delta R.T. -0.03 min
Lab File: 16111117.D
Acq: 11 Nov 2016 6:09 pm

Tgt Ion:154 Resp: 1876

Ion	Ratio	Lower	Upper
154	100		
152	0.5	19.8	79.8#
153	7.0	77.1	137.1#

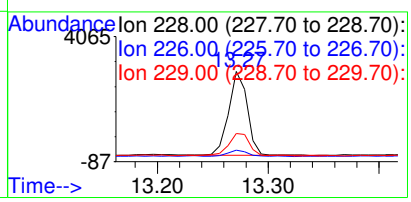


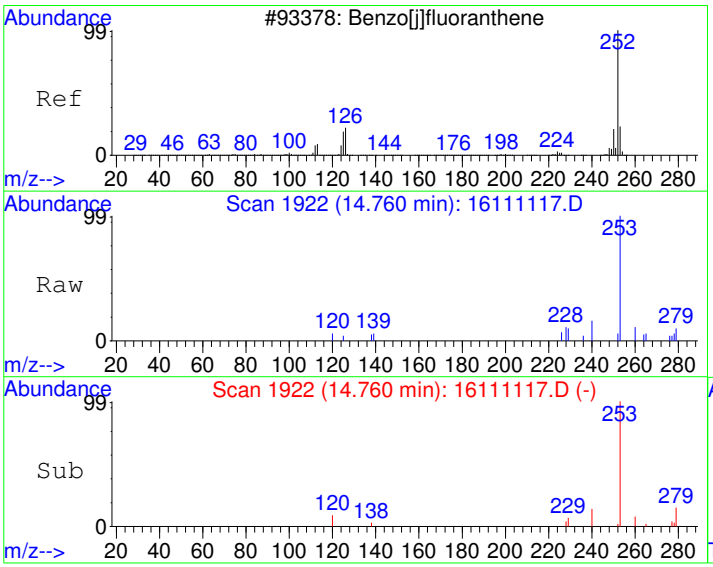


#19
Chrysene
Concen: 12.56 ug/kg
RT: 13.27 min Scan# 1723
Delta R.T. -0.04 min
Lab File: 16111117.D
Acq: 11 Nov 2016 6:09 pm

Tgt Ion:228 Resp: 3245

Ion	Ratio	Lower	Upper
228	100		
226	7.1	0.0	58.8
229	26.3	0.0	50.2

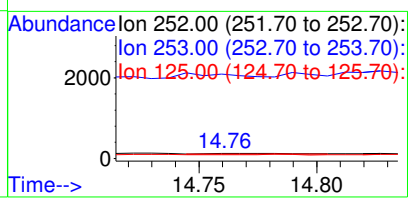




#23
Benzo(j)fluoranthene
Concen: 0.12 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111117.D
Acq: 11 Nov 2016 6:09 pm

Tgt Ion:252 Resp: 37

Ion	Ratio	Lower	Upper
252	100		
253	313.3	2.3	42.3#
125	0.0	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111118.D Vial: 6
Acq On : 11 Nov 2016 6:37 pm Operator:
Sample : 1611044-15A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:43 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

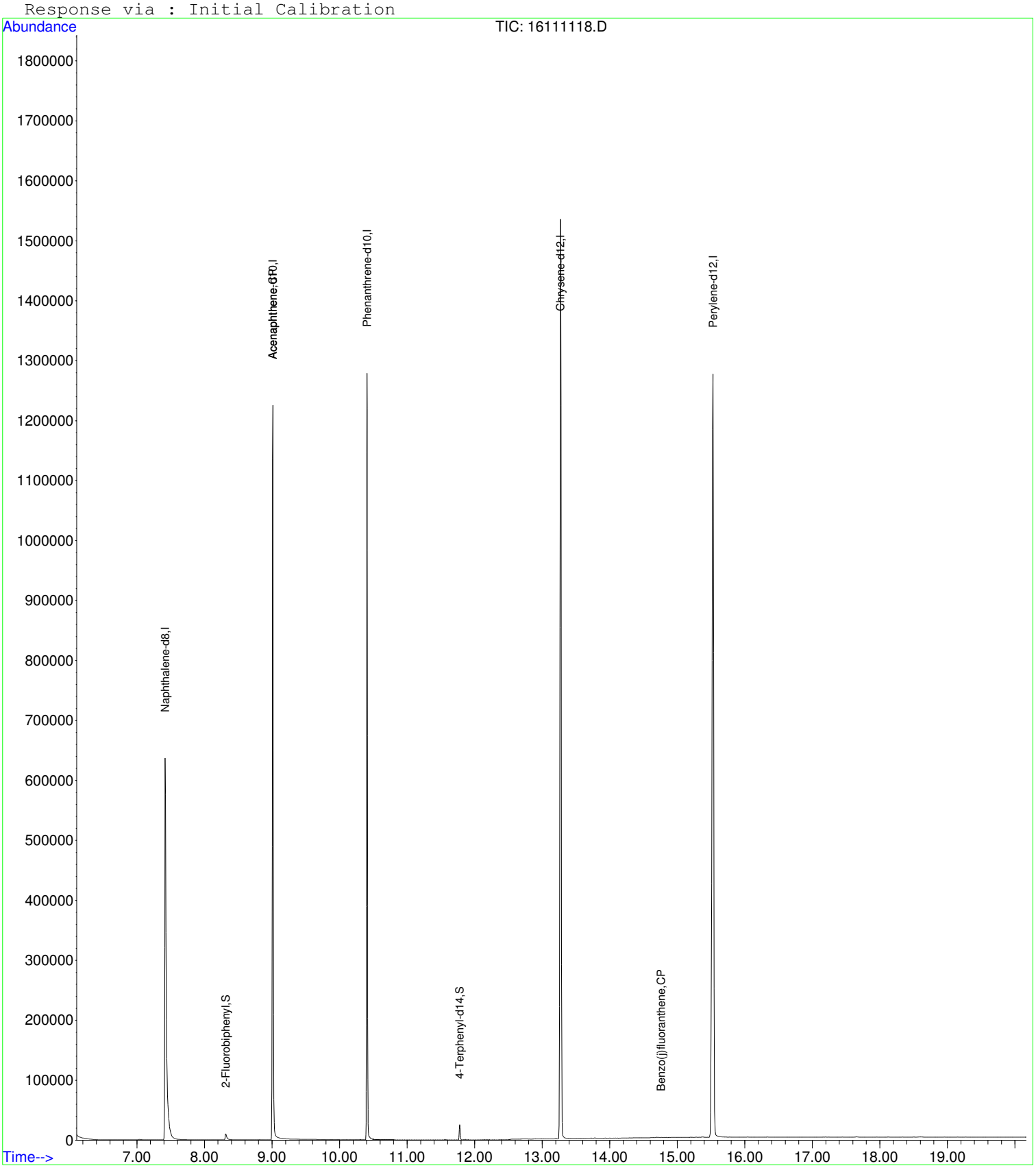
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	923835	4000.00	ug/kg	85
5) Acenaphthene-d10	9.01	164	529993	4000.00	ug/kg	84
11) Phenanthrene-d10	10.41	188	1010438	4000.00	ug/kg	84
17) Chrysene-d12	13.27	240	1400844	4000.00	ug/kg	91
20) Perylene-d12	15.53	264	1522845	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	13724	88.66	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.22%#		
16) 4-Terphenyl-d14	11.78	244	21009	103.52	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.59%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1866	~~16.65~~	~~ug/kg#~~	~~10~~
23) Benzo(j)fluoranthene	14.77	252	376	1.25	ug/kg	93

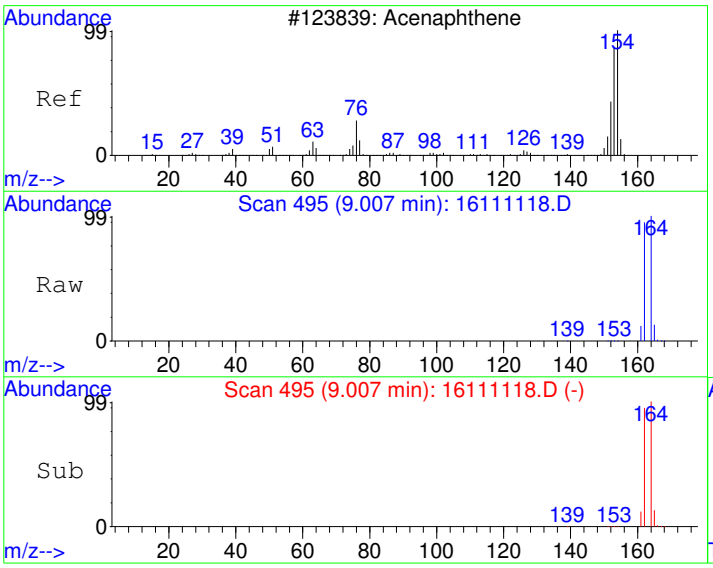
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111118.D Vial: 6
Acq On : 11 Nov 2016 6:37 pm Operator:
Sample : 1611044-15A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:43 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

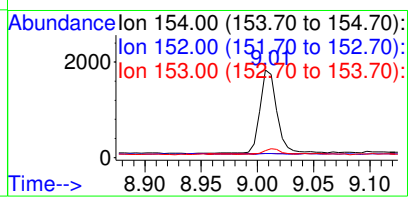


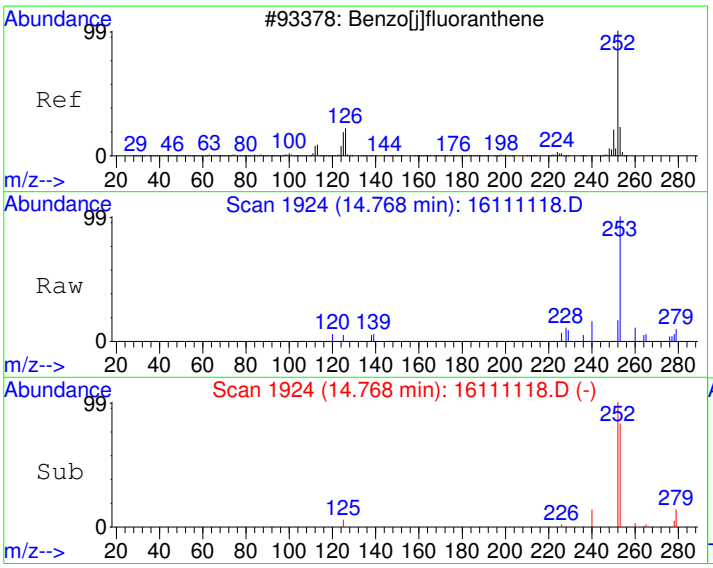


#9
Acenaphthene
Concen: 16.65 ug/kg
RT: 9.01 min Scan# 495
Delta R.T. -0.04 min
Lab File: 16111118.D
Acq: 11 Nov 2016 6:37 pm

Tgt Ion:154 Resp: 1866

Ion	Ratio	Lower	Upper
154	100		
152	0.7	19.8	79.8#
153	4.6	77.1	137.1#

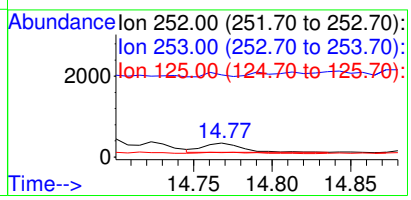




#23
Benzo(j)fluoranthene
Concen: 1.25 ug/kg
RT: 14.77 min Scan# 1924
Delta R.T. 0.00 min
Lab File: 16111118.D
Acq: 11 Nov 2016 6:37 pm

Tgt Ion:252 Resp: 376

Ion	Ratio	Lower	Upper
252	100		
253	23.8	2.3	42.3
125	7.0	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111119.D Vial: 7
Acq On : 11 Nov 2016 7:05 pm Operator:
Sample : 1611044-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	890465	4000.00	ug/kg	82
5) Acenaphthene-d10	9.01	164	516505	4000.00	ug/kg	81
11) Phenanthrene-d10	10.41	188	985030	4000.00	ug/kg	82
17) Chrysene-d12	13.27	240	1342077	4000.00	ug/kg	87
20) Perylene-d12	15.52	264	1472876	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	13559	89.89	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.25%#		
16) 4-Terphenyl-d14	11.78	244	21839	110.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.76%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1801	~~16.49 ug/kg#~~		~~11~~
12) Phenanthrene	10.43	178	2188	11.41 ug/kg		99
14) Fluoranthene	11.56	202	6020	26.57 ug/kg		98
15) Pyrene	11.86	202	5476	23.28 ug/kg		99
18) Benzo[a]anthracene	13.20	228	4135	15.76 ug/kg		98
19) Chrysene	13.31	228	4456	18.33 ug/kg		98
21) Benzo[b]fluoranthene	14.69	252	5898	18.03 ug/kg		97
22) Benzo[k]fluoranthene	14.69	252	5898	~~19.56 ug/kg~~		~~97~~
23) Benzo(j)fluoranthene	14.77	252	2403	8.24 ug/kg		92
24) Benzo[e]pyrene	15.28	252	4108	14.06 ug/kg		92
25) Benzo[a]pyrene	15.37	252	5666	19.00 ug/kg		97
27) Indeno[1,2,3-cd]pyrene	17.66	276	4447	14.69 ug/kg		96
28) Benzo[g,h,i]perylene	18.60	276	4775	14.93 ug/kg		96

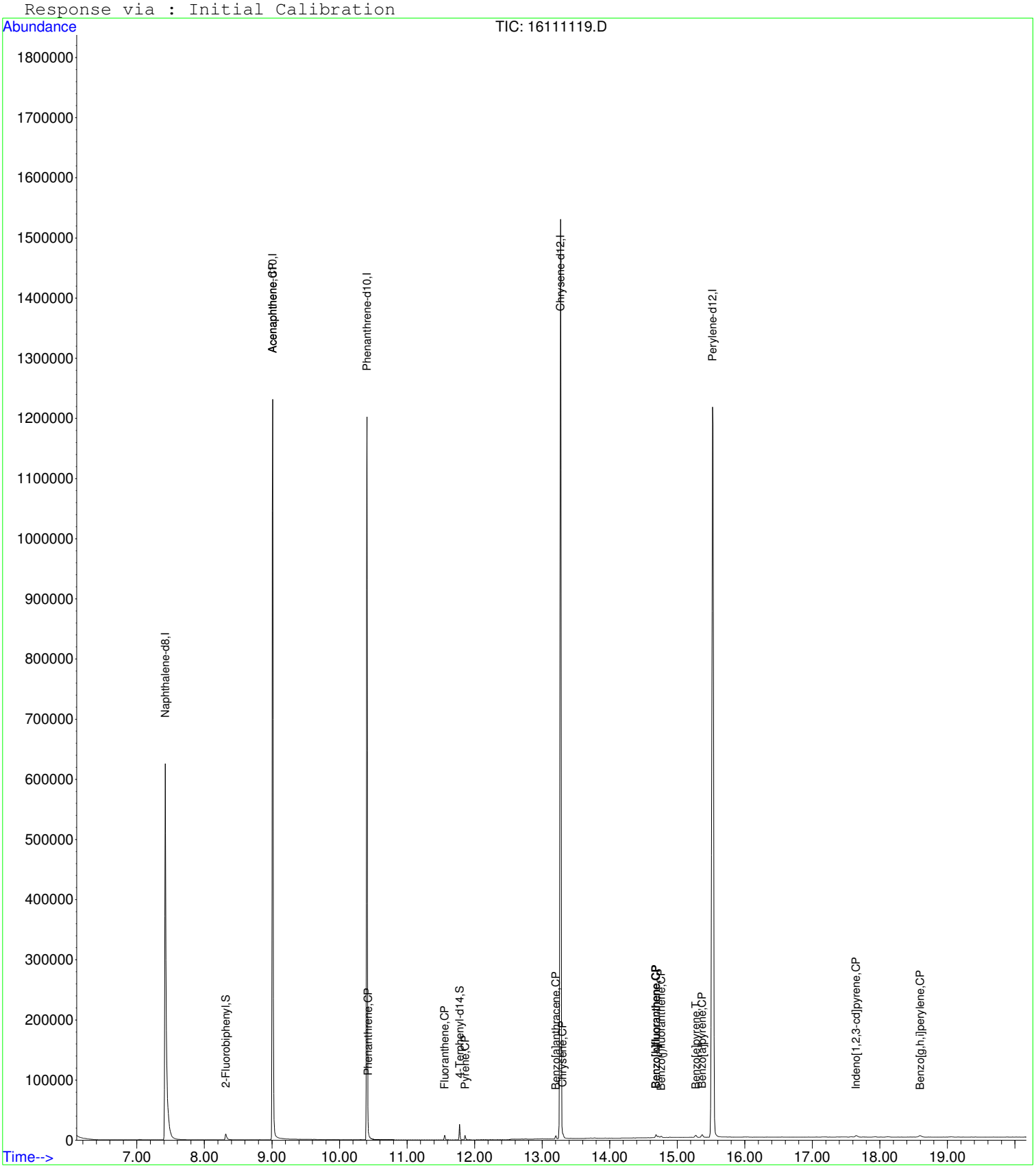
Wrong RT See MI

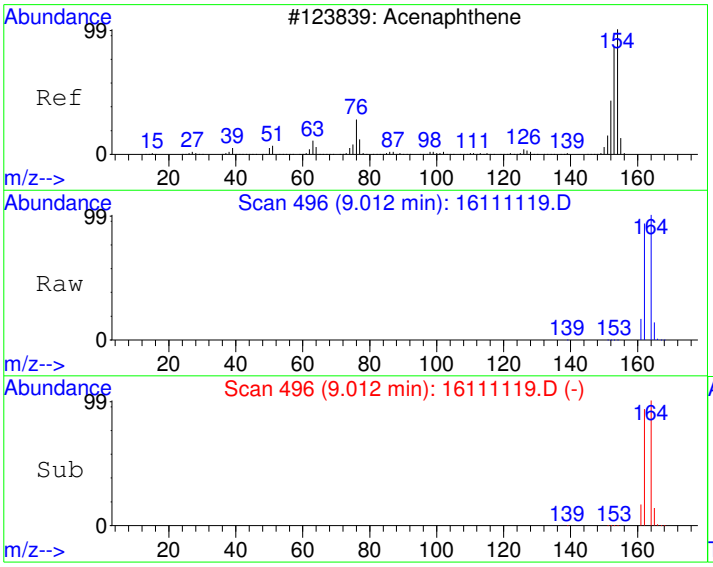
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111119.D Vial: 7
Acq On : 11 Nov 2016 7:05 pm Operator:
Sample : 1611044-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

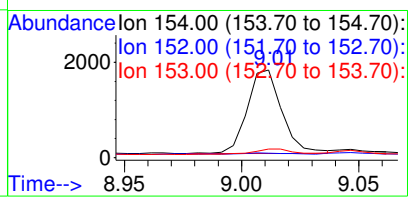


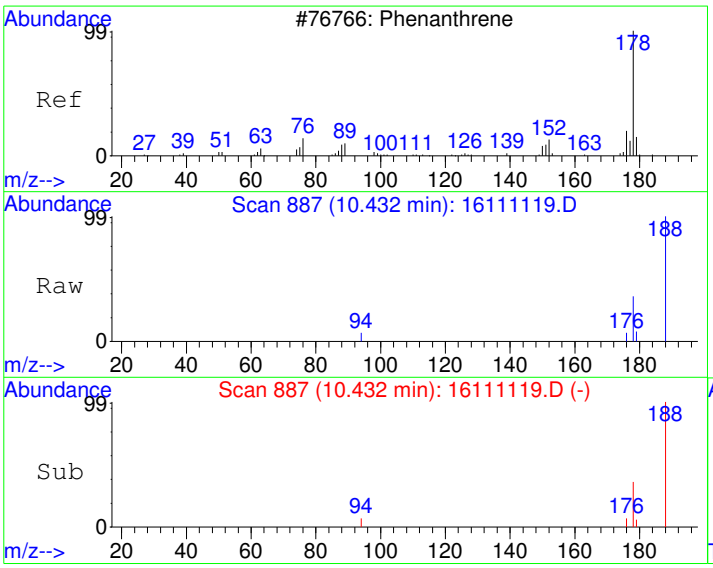


#9
Acenaphthene
Concen: 16.49 ug/kg
RT: 9.01 min Scan# 496
Delta R.T. -0.03 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:154 Resp: 1801

Ion	Ratio	Lower	Upper
154	100		
152	0.7	19.8	79.8#
153	6.6	77.1	137.1#

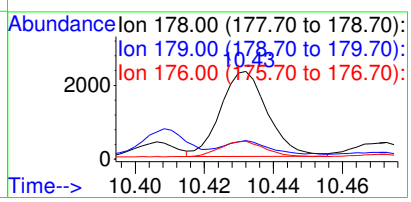


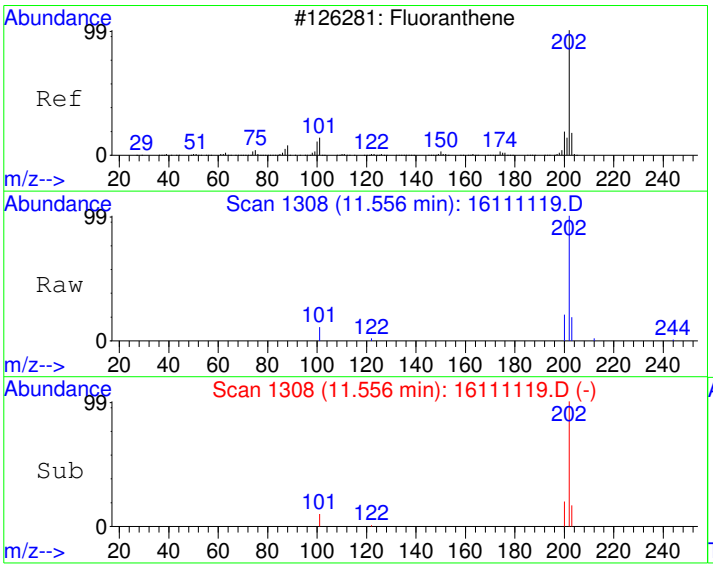


#12
Phenanthrene
Concen: 11.41 ug/kg
RT: 10.43 min Scan# 887
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:178 Resp: 2188

Ion	Ratio	Lower	Upper
178	100		
179	16.7	0.0	45.8
176	18.6	0.0	48.3

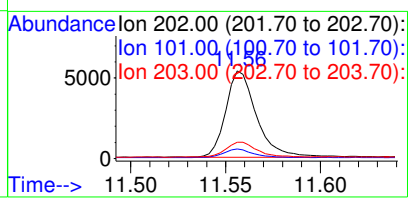


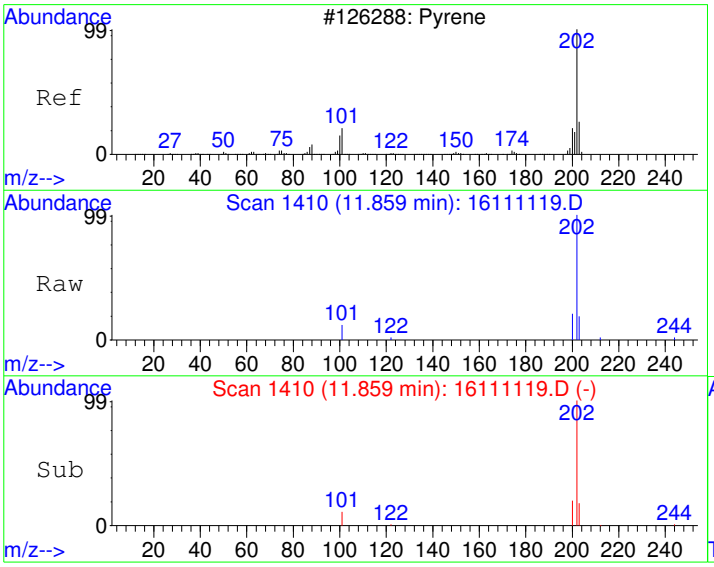


#14
Fluoranthene
Concen: 26.57 ug/kg
RT: 11.56 min Scan# 1308
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:202 Resp: 6020

Ion	Ratio	Lower	Upper
202	100		
101	10.0	0.0	40.6
203	17.1	0.0	48.0

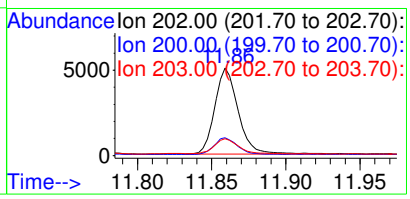


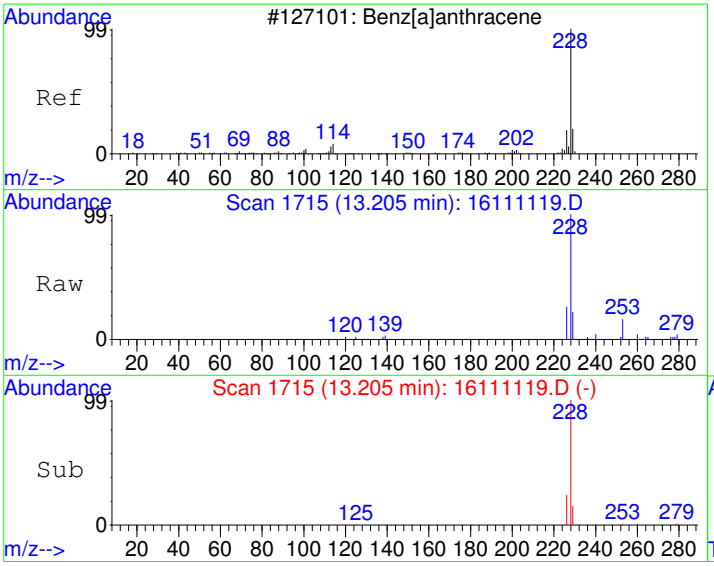


#15
Pyrene
Concen: 23.28 ug/kg
RT: 11.86 min Scan# 1410
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:202 Resp: 5476

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	17.7	0.0	47.8

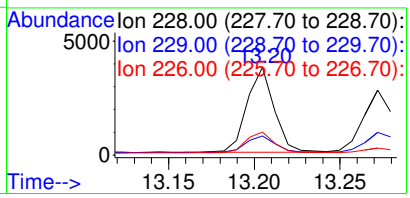


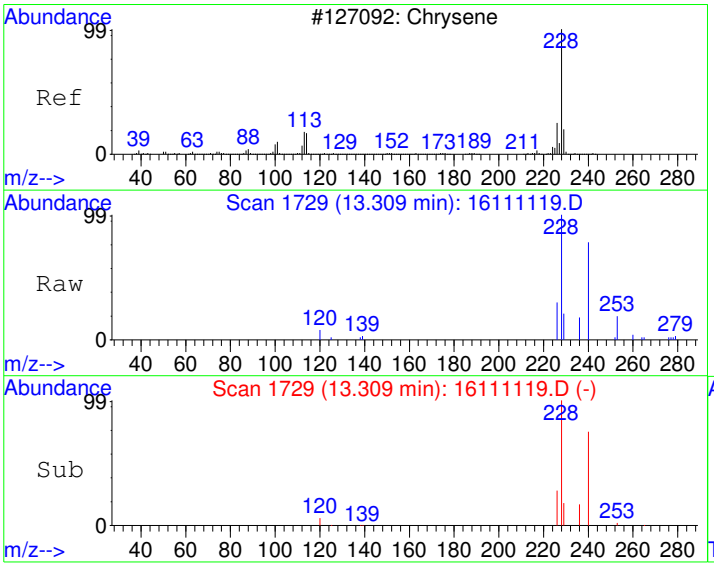


#18
Benzo[a]anthracene
Concen: 15.76 ug/kg
RT: 13.20 min Scan# 1715
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:228 Resp: 4135

Ion	Ratio	Lower	Upper
228	100		
229	19.7	0.0	50.4
226	24.6	0.0	55.6

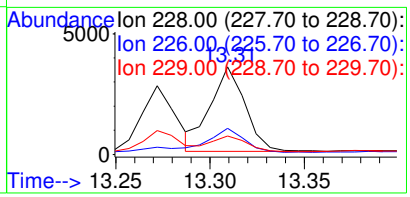


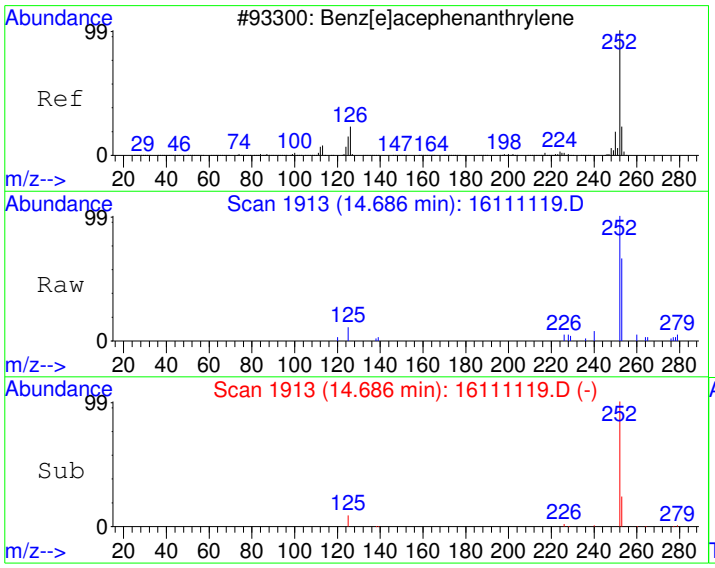


#19
Chrysene
Concen: 18.33 ug/kg
RT: 13.31 min Scan# 1729
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:228 Resp: 4456

Ion	Ratio	Lower	Upper
228	100		
226	28.4	0.0	58.8
229	18.3	0.0	50.2

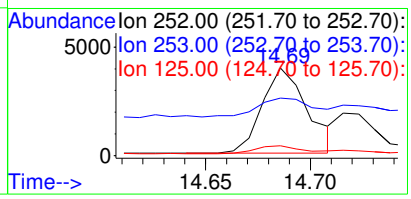


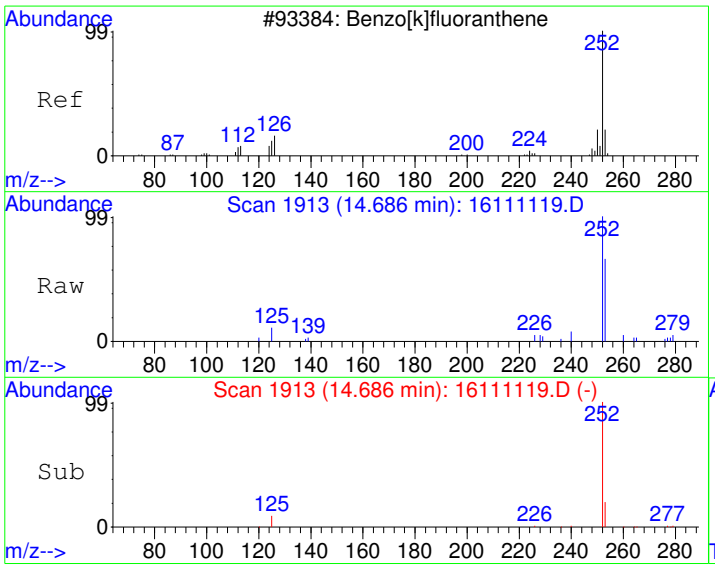


#21
Benzo[b]fluoranthene
Concen: 18.03 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:252 Resp: 5898

Ion	Ratio	Lower	Upper
252	100		
253	20.8	0.0	52.1
125	9.3	0.0	40.5

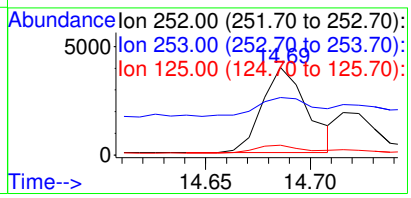




#22
Benzo[k]fluoranthene
Concen: 19.56 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. -0.04 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:252 Resp: 5898

Ion	Ratio	Lower	Upper
252	100		
253	20.8	2.4	42.4
125	9.3	0.0	28.2

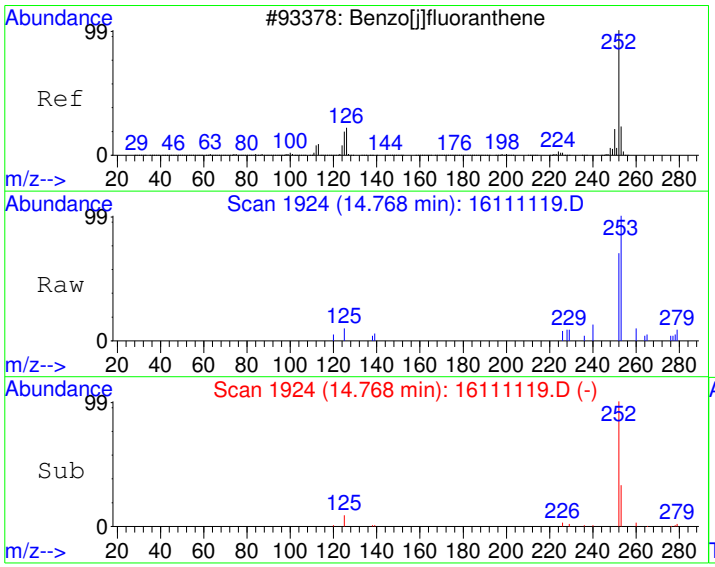


BEFORE MANUAL INTEGRATION

By Don Winston at 9:34:36 AM, 11/14/2016

BEFORE MANUAL INTEGRATION

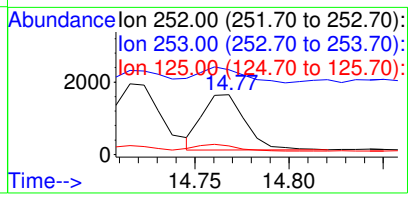
By Janice Whitt at 11:01:31 AM, 11/14/2016

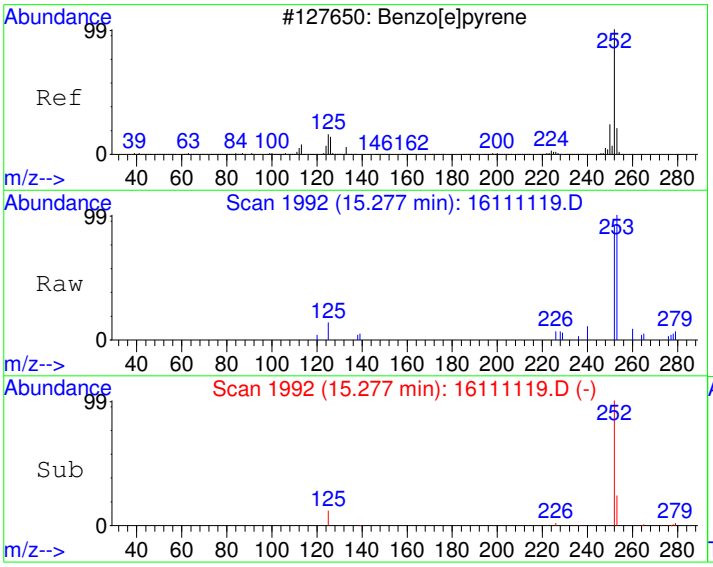


#23
Benzo(j)fluoranthene
Concen: 8.24 ug/kg
RT: 14.77 min Scan# 1924
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:252 Resp: 2403

Ion	Ratio	Lower	Upper
252	100		
253	18.2	2.3	42.3
125	9.4	0.0	32.6

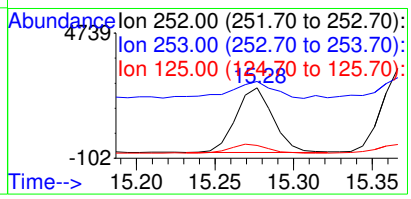


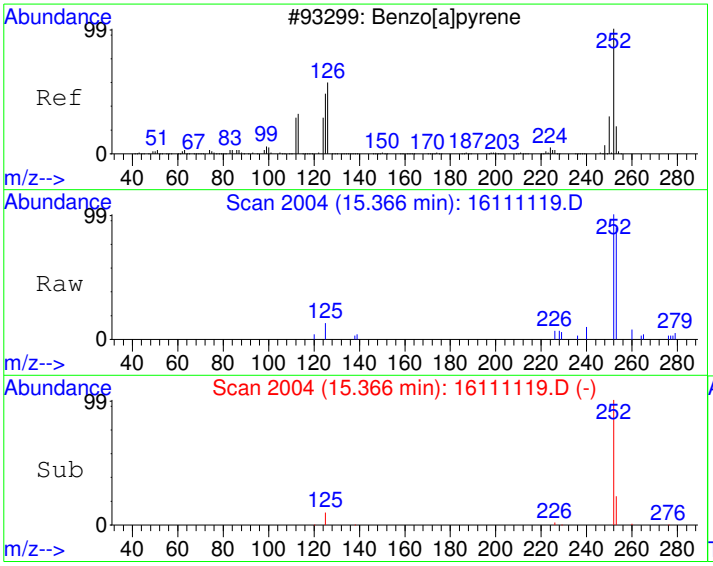


#24
Benzo[e]pyrene
Concen: 14.06 ug/kg
RT: 15.28 min Scan# 1992
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:252 Resp: 4108

Ion	Ratio	Lower	Upper
252	100		
253	25.1	1.8	41.8
125	12.1	0.0	35.7

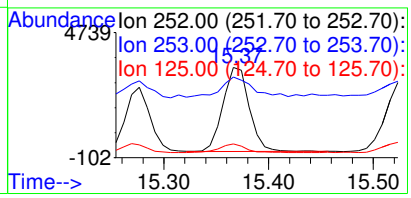


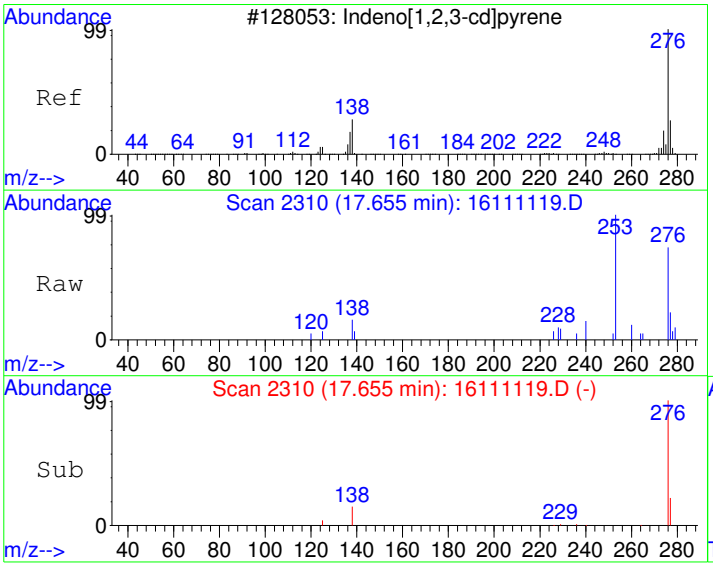


#25
Benzo[a]pyrene
Concen: 19.00 ug/kg
RT: 15.37 min Scan# 2004
Delta R.T. -0.01 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:252 Resp: 5666

Ion	Ratio	Lower	Upper
252	100		
253	24.0	2.2	42.2
125	10.2	0.0	30.8

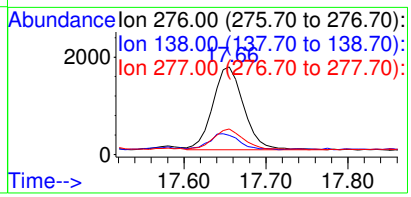


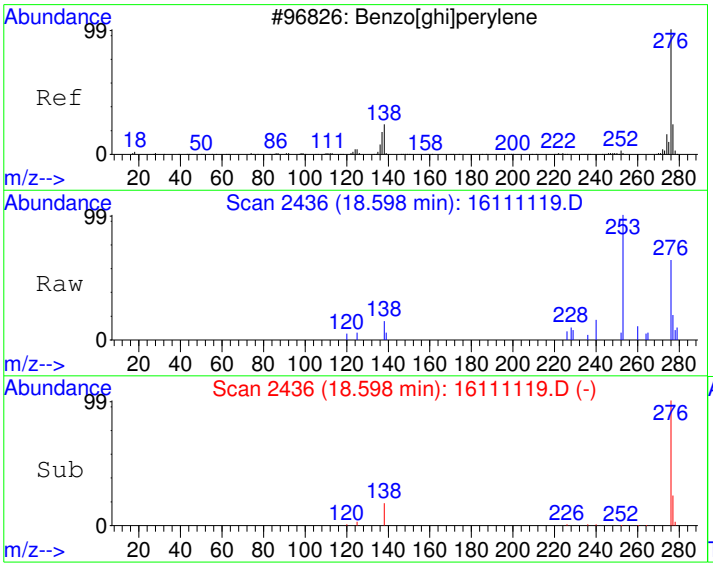


#27
Indeno[1,2,3-cd]pyrene
Concen: 14.69 ug/kg
RT: 17.66 min Scan# 2310
Delta R.T. 0.00 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:276 Resp: 4447

Ion	Ratio	Lower	Upper
276	100		
138	16.3	0.0	39.3
277	24.7	4.0	44.0

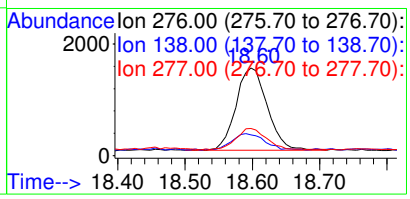




#28
Benzo[g,h,i]perylene
Concen: 14.93 ug/kg
RT: 18.60 min Scan# 2436
Delta R.T. -0.01 min
Lab File: 16111119.D
Acq: 11 Nov 2016 7:05 pm

Tgt Ion:276 Resp: 4775

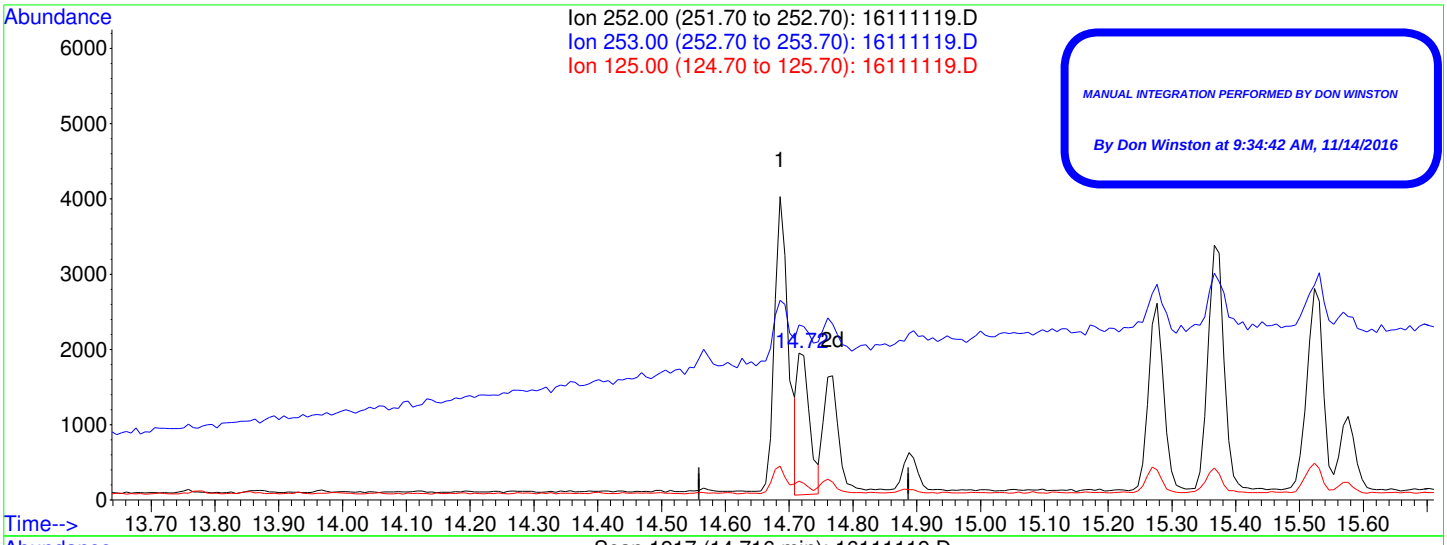
Ion	Ratio	Lower	Upper
276	100		
138	18.5	0.8	40.8
277	25.6	4.0	44.0

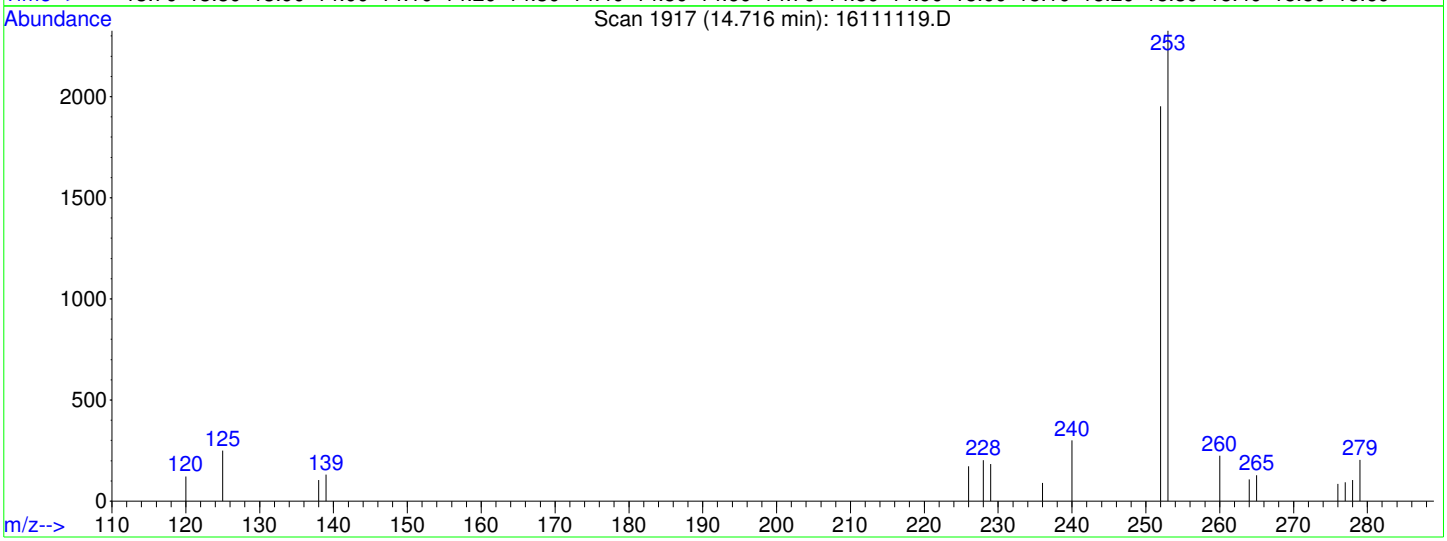


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111119.D Vial: 7
Acq On : 11 Nov 2016 7:05 pm Operator:
Sample : 1611044-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:27 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration





TIC: 16111119.D

(22) Benzo[k]fluoranthene (CP)

14.72min 8.52ug/kg m

response 2568

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	119.10#
125.00	8.20	12.80
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:01:38 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111120.D Vial: 8
Acq On : 11 Nov 2016 7:33 pm Operator:
Sample : 1611044-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

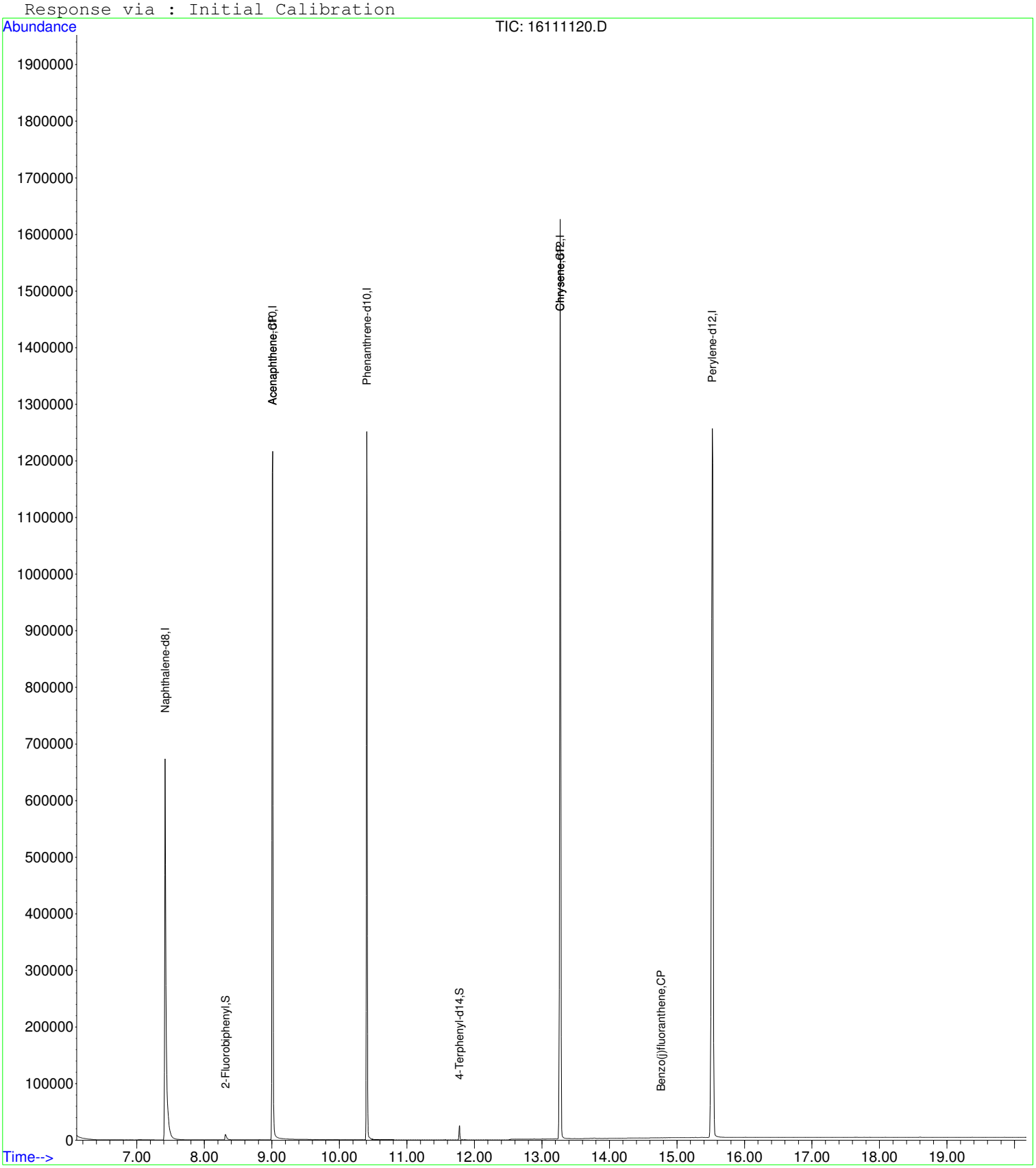
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	923720	4000.00	ug/kg	85
5) Acenaphthene-d10	9.01	164	529628	4000.00	ug/kg	84
11) Phenanthrene-d10	10.41	188	1013619	4000.00	ug/kg	84
17) Chrysene-d12	13.27	240	1391682	4000.00	ug/kg	90
20) Perylene-d12	15.52	264	1532290	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	13126	84.86	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.12%#		
16) 4-Terphenyl-d14	11.78	244	21316	104.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.62%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1771	15.82	ug/kg#	10
19) Chrysene	13.27	228	3135	12.44	ug/kg	68
23) Benzo(j)fluoranthene	14.77	252	193	0.64	ug/kg	64

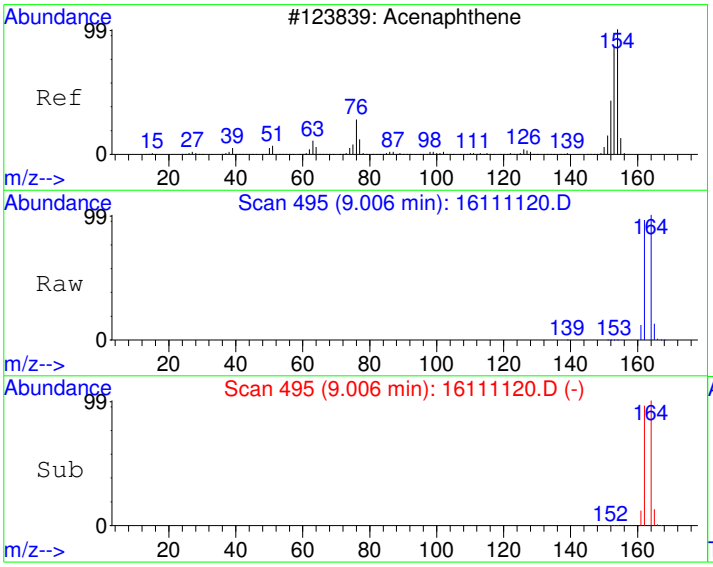
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111120.D Vial: 8
Acq On : 11 Nov 2016 7:33 pm Operator:
Sample : 1611044-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

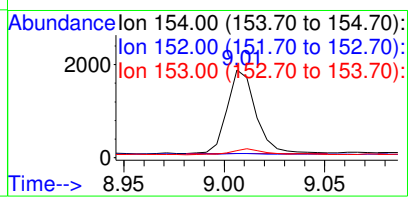


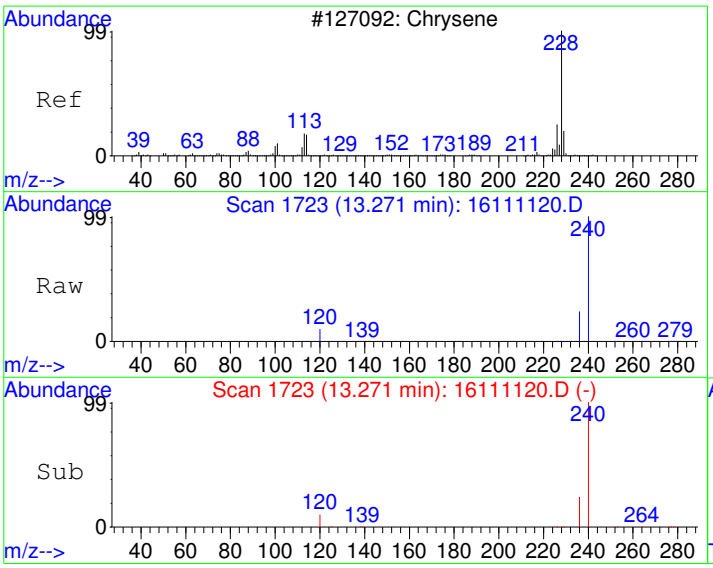


#9
Acenaphthene
Concen: 15.82 ug/kg
RT: 9.01 min Scan# 495
Delta R.T. -0.04 min
Lab File: 16111120.D
Acq: 11 Nov 2016 7:33 pm

Tgt Ion:154 Resp: 1771

Ion	Ratio	Lower	Upper
154	100		
152	0.7	19.8	79.8#
153	4.7	77.1	137.1#

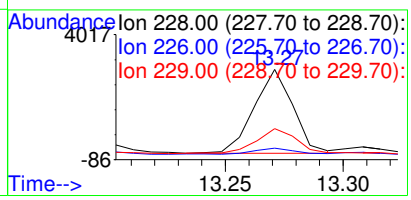


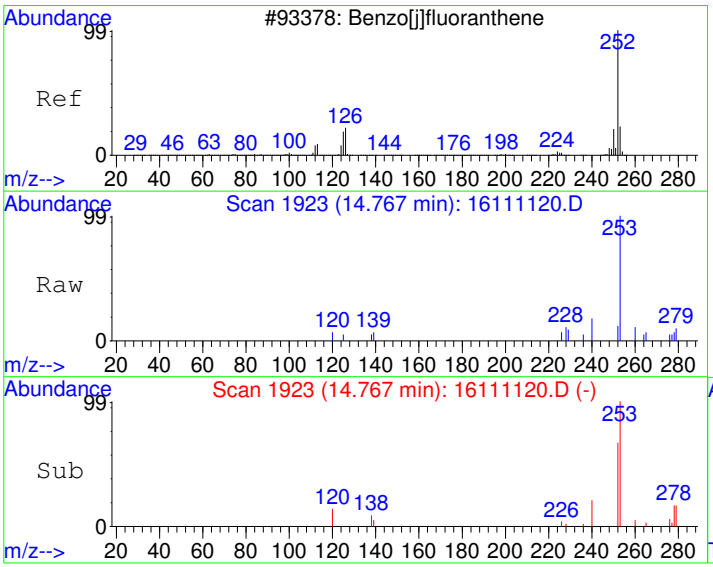


#19
Chrysene
Concen: 12.44 ug/kg
RT: 13.27 min Scan# 1723
Delta R.T. -0.04 min
Lab File: 16111120.D
Acq: 11 Nov 2016 7:33 pm

Tgt Ion:228 Resp: 3135

Ion	Ratio	Lower	Upper
228	100		
226	7.0	0.0	58.8
229	29.6	0.0	50.2

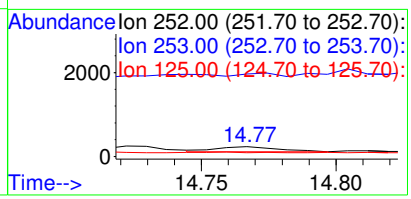




#23
Benzo(j)fluoranthene
Concen: 0.64 ug/kg
RT: 14.77 min Scan# 1923
Delta R.T. -0.00 min
Lab File: 16111120.D
Acq: 11 Nov 2016 7:33 pm

Tgt Ion:252 Resp: 193

Ion	Ratio	Lower	Upper
252	100		
253	4.2	2.3	42.3
125	0.0	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111136.D Vial: 24
Acq On : 12 Nov 2016 3:01 am Operator:
Sample : 1611071-16AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

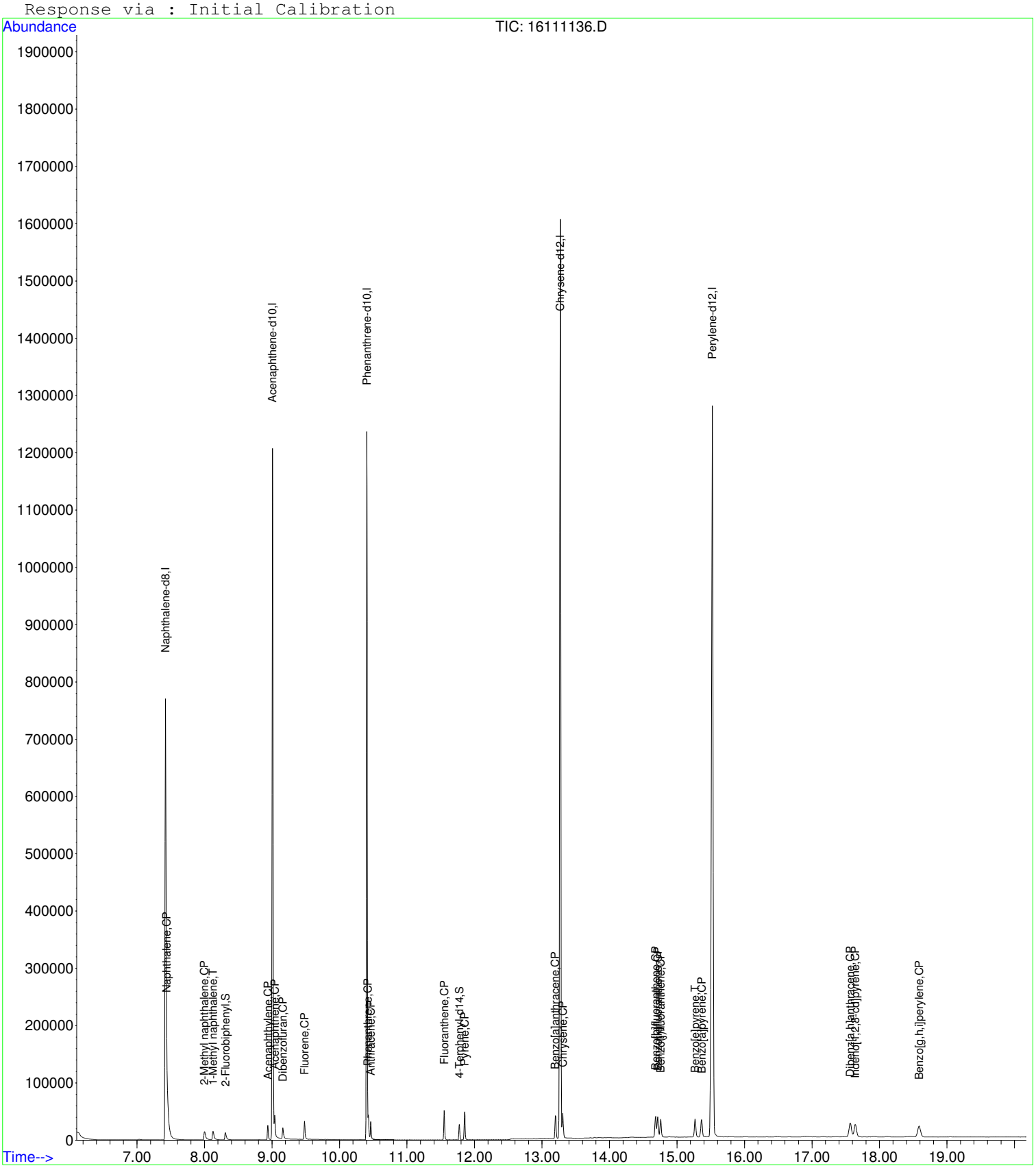
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	962442	4000.00	ug/kg	88
5) Acenaphthene-d10	9.01	164	514445	4000.00	ug/kg	81
11) Phenanthrene-d10	10.40	188	971340	4000.00	ug/kg	81
17) Chrysene-d12	13.27	240	1358962	4000.00	ug/kg	88
20) Perylene-d12	15.52	264	1479258	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15195	101.13	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.53%#		
16) 4-Terphenyl-d14	11.77	244	21705	111.26	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.78%#		
Target Compounds						Qvalue
2) Naphthalene	7.45	128	17627	101.73	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	12835	99.54	ug/kg	94
4) 1-Methyl naphthalene	8.13	142	12042	99.97	ug/kg	94
6) Dibenzofuran	9.16	168	18541	113.28	ug/kg	99
8) Acenaphthylene	8.94	152	20372	112.09	ug/kg	98
9) Acenaphthene	9.04	154	11994	110.27	ug/kg	99
10) Fluorene	9.48	166	15271	114.72	ug/kg	100
12) Phenanthrene	10.43	178	24522	129.65	ug/kg	98
13) Anthracene	10.46	178	21740	111.68	ug/kg	98
14) Fluoranthene	11.55	202	35166	157.42	ug/kg	98
15) Pyrene	11.85	202	34798	150.00	ug/kg	99
18) Benzo[a]anthracene	13.20	228	34045	128.14	ug/kg	99
19) Chrysene	13.31	228	31939	129.76	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	41946	127.69	ug/kg	97
22) Benzo[k]fluoranthene	14.71	252	32999	108.98	ug/kg	98
23) Benzo(j)fluoranthene	14.76	252	31597	107.90	ug/kg	98
24) Benzo[e]pyrene	15.27	252	35550	121.17	ug/kg	97
25) Benzo[a]pyrene	15.37	252	36888	123.15	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	35651	113.31	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.64	276	37821	124.43	ug/kg	99
28) Benzo[g,h,i]perylene	18.59	276	39328	122.45	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111136.D Vial: 24
Acq On : 12 Nov 2016 3:01 am Operator:
Sample : 1611071-16AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111137.D Vial: 25
Acq On : 12 Nov 2016 3:29 am Operator:
Sample : 1611071-16AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

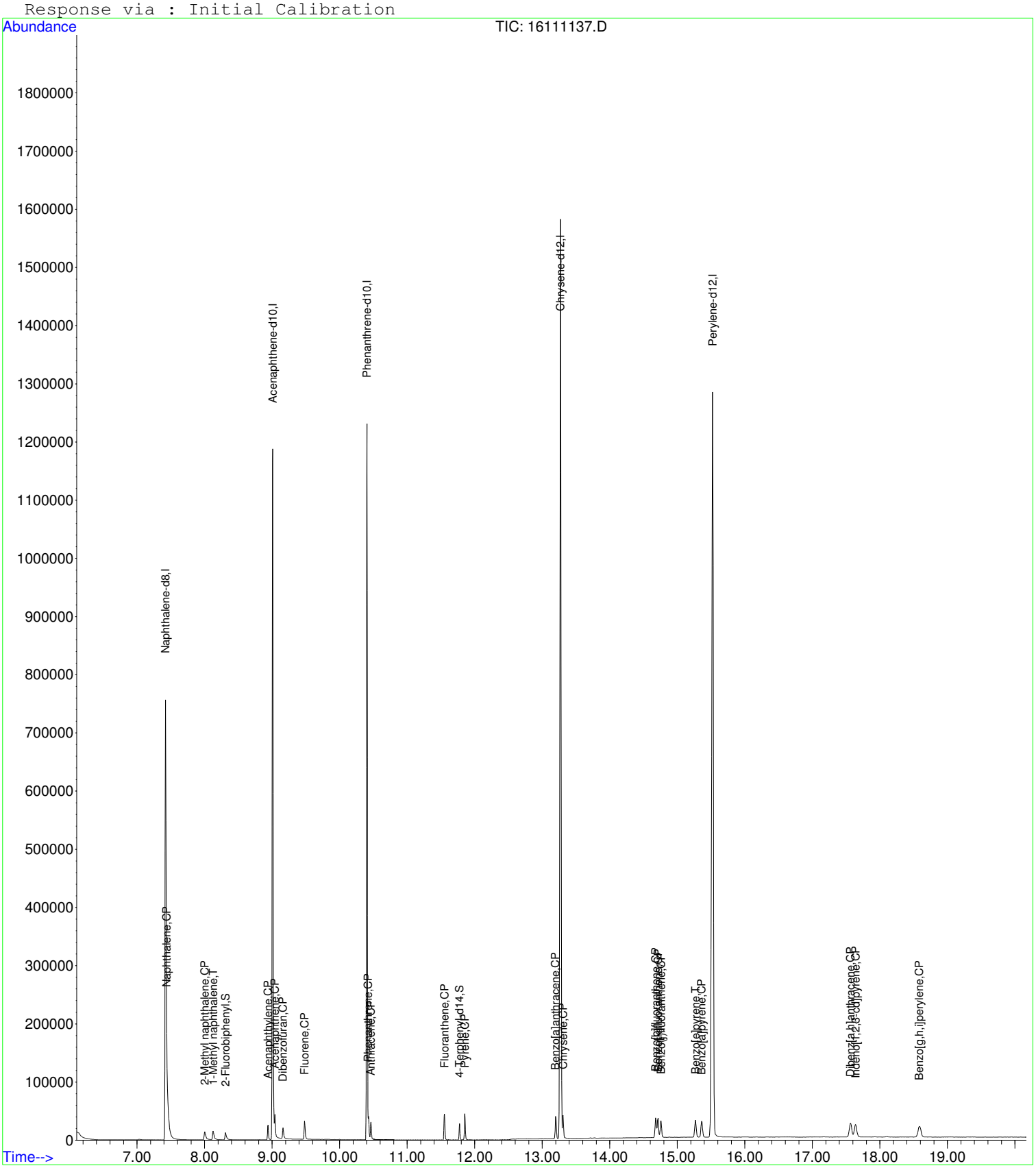
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	961258	4000.00	ug/kg	88
5) Acenaphthene-d10	9.01	164	521751	4000.00	ug/kg	82
11) Phenanthrene-d10	10.40	188	975385	4000.00	ug/kg	81
17) Chrysene-d12	13.27	240	1366453	4000.00	ug/kg	89
20) Perylene-d12	15.52	264	1482692	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15327	100.58	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.51%#		
16) 4-Terphenyl-d14	11.77	244	21920	111.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.80%#		
Target Compounds						Qvalue
2) Naphthalene	7.45	128	17409	100.60	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	12660	98.30	ug/kg	95
4) 1-Methyl naphthalene	8.13	142	11970	99.49	ug/kg	96
6) Dibenzofuran	9.16	168	18693	112.61	ug/kg	99
8) Acenaphthylene	8.94	152	20422	110.79	ug/kg	99
9) Acenaphthene	9.04	154	12046	109.20	ug/kg	99
10) Fluorene	9.48	166	15381	113.92	ug/kg	99
12) Phenanthrene	10.43	178	22121	116.47	ug/kg	98
13) Anthracene	10.46	178	21002	107.44	ug/kg	99
14) Fluoranthene	11.55	202	30003	133.75	ug/kg	98
15) Pyrene	11.85	202	30676	131.68	ug/kg	98
18) Benzo[a]anthracene	13.20	228	31546	118.09	ug/kg	99
19) Chrysene	13.31	228	29707	120.03	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	41310	125.46	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	31367	103.35	ug/kg	97
23) Benzo(j)fluoranthene	14.76	252	30618	104.31	ug/kg	96
24) Benzo[e]pyrene	15.27	252	34265	116.52	ug/kg	97
25) Benzo[a]pyrene	15.36	252	34957	116.44	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	35365	112.14	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.64	276	36878	121.05	ug/kg	97
28) Benzo[g,h,i]perylene	18.58	276	38183	118.61	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111137.D Vial: 25
Acq On : 12 Nov 2016 3:29 am Operator:
Sample : 1611071-16AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111138.D Vial: 26
Acq On : 12 Nov 2016 3:57 am Operator:
Sample : CCV1-161111 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

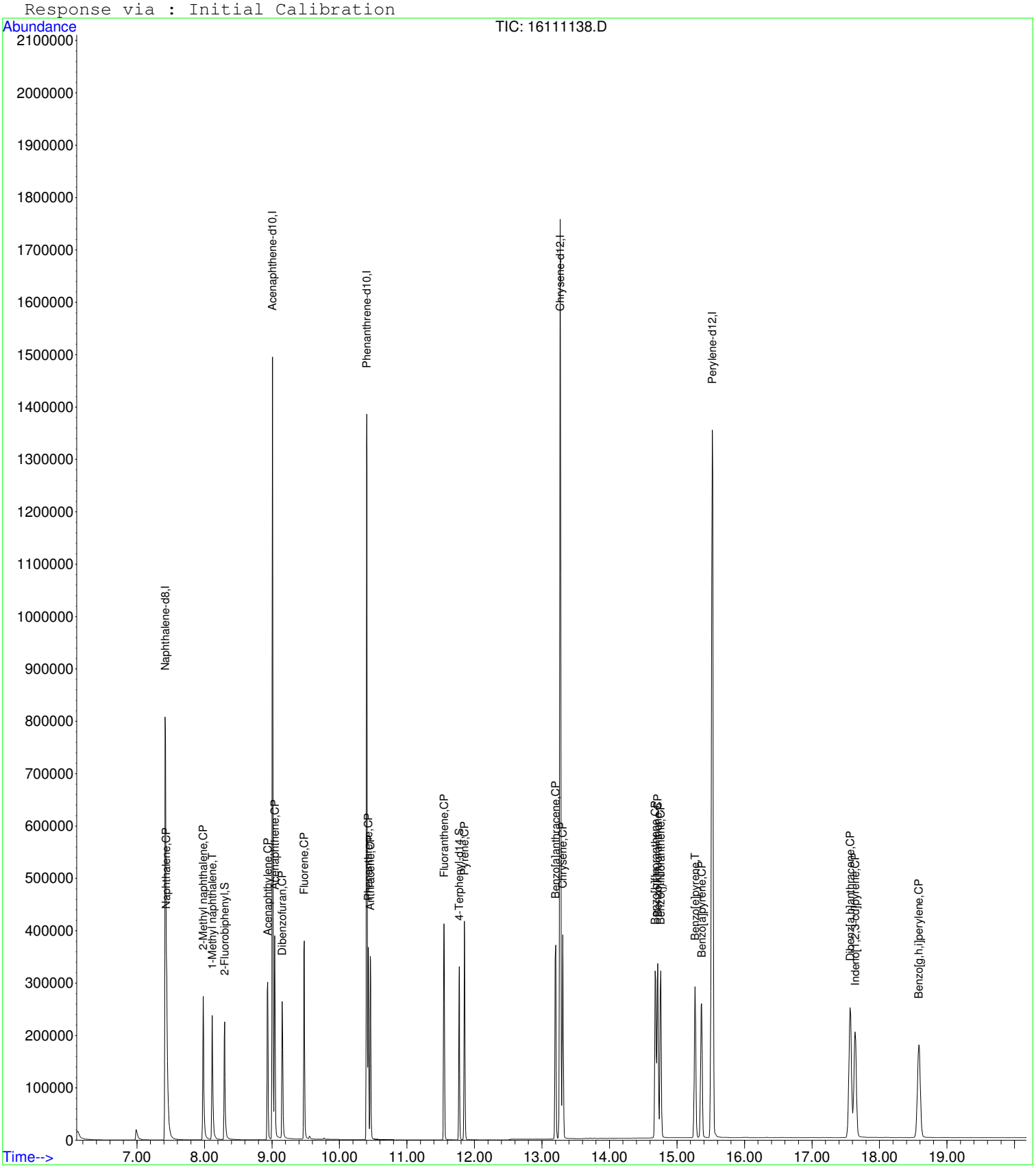
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1071899	4000.00	ug/kg	98
5) Acenaphthene-d10	9.01	164	583181	4000.00	ug/kg	92
11) Phenanthrene-d10	10.40	188	1098717	4000.00	ug/kg	92
17) Chrysene-d12	13.27	240	1517162	4000.00	ug/kg	98
20) Perylene-d12	15.52	264	1655703	4000.00	ug/kg	109
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	192577	1130.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	28.27%#		
16) 4-Terphenyl-d14	11.77	244	257287	1165.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	29.15%#		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	201942	1046.48	ug/kg	100
3) 2-Methyl naphthalene	7.98	142	147853	1029.56	ug/kg	92
4) 1-Methyl naphthalene	8.12	142	133493	995.02	ug/kg	93
6) Dibenzofuran	9.15	168	203633	1097.48	ug/kg	99
8) Acenaphthylene	8.94	152	222966	1082.22	ug/kg	99
9) Acenaphthene	9.04	154	129679	1051.75	ug/kg	98
10) Fluorene	9.48	166	163013	1080.22	ug/kg	98
12) Phenanthrene	10.43	178	224414	1048.98	ug/kg	99
13) Anthracene	10.46	178	229126	1040.53	ug/kg	99
14) Fluoranthene	11.55	202	274125	1084.85	ug/kg	98
15) Pyrene	11.85	202	277777	1058.54	ug/kg	99
18) Benzo[a]anthracene	13.20	228	306358	1032.87	ug/kg	99
19) Chrysene	13.31	228	286499	1042.61	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	381262	1036.92	ug/kg	99
22) Benzo[k]fluoranthene	14.71	252	310098	915.00	ug/kg	99
23) Benzo(j)fluoranthene	14.76	252	315923	963.85	ug/kg	98
24) Benzo[e]pyrene	15.27	252	325406	990.93	ug/kg	97
25) Benzo[a]pyrene	15.37	252	328277	979.19	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	356867	1013.37	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.64	276	347526	1021.51	ug/kg	98
28) Benzo[g,h,i]perylene	18.58	276	363341	1010.72	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111138.D Vial: 26
Acq On : 12 Nov 2016 3:57 am Operator:
Sample : CCV1-161111 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



GCMS6
Calibration Curve
For

DHL Work Order
1611044

CAL ID: 704

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #6 **Calibration File Name:** PAH161020.CAL

Target Concentration	Solvent Amount mL	Standard Preparation Stocks and Surrogate (µL/mL)	Final Volume mL
5 ppb	0.999	0.001 mL of 5000 ppb	1
10 ppb	0.998	0.002 mL of 5000 ppb	1
50 ppb	0.990	0.01 mL of 5000 ppb	1
100 ppb	0.980	0.02 mL of 5000 ppb	1
500 ppb	0.900	0.10 mL of 5000 ppb	1
1000 ppb	0.800	0.20 mL of 5000 ppb	1
2000 ppb	0.600	0.40 mL of 5000 ppb	1
5000 ppb	----	PAHCAL161020	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV161005-1	1
SSCV 2500 ppb	----	PAHSSCV161020-2	1

Standards Used for the Calibration Curve

1 uL Internal Standard SV160510-5 spiked in all.

Primary Stock STDs	DHL Standard ID	Second Source (SS) Stock STDs	DHL Standard ID
5 PPM (5000 PPB) PAH CAL STD	**PAHCAL161020**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV161005-1**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV161020-2**

Review Item	Acceptance Criteria	Yes	No	N/A	2nd Level Review
1. Are all standards within expiration dates?	Primary Stocks = 1 year Intermediate Standards = 6 months	X			X
2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)**	Manual Integration Tracking Form			X	
3. Does the tune and resolution check meet criteria?	Benzo(b) / Benzo(k)phenanthrene Valley > 50% See Tune Eval Report	X			
4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15%	%RSD < 15% COD ≥ 0.990	X			
5. Has the low point been reprocessed under the new ICAL curve and meets criteria?	70-130% recovery	X			
6. Has the SSCV been analyzed and meets criteria?	80-120% recovery	X			

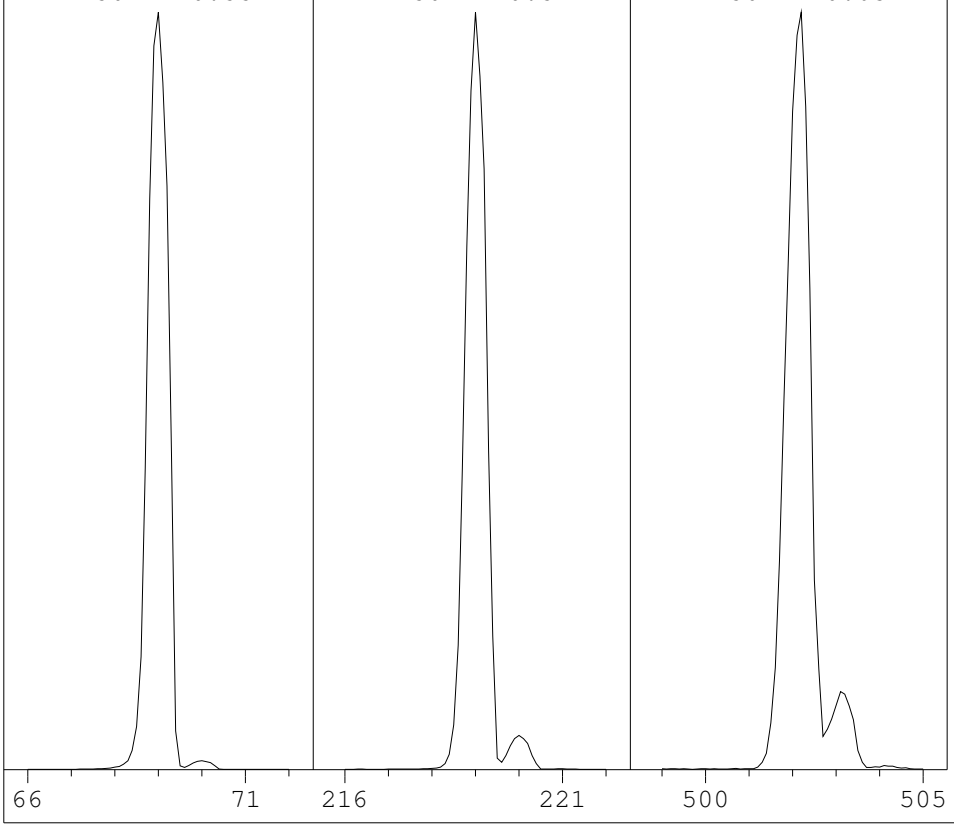
Analyst: Don Winston Date: 10/21/2016

Second-Level Review: Date: 10/31/2016

HP5973

Instrument: GC/MS #6

Thu Oct 20 15:57:14 2016 C:\HPCHEM\1\5973\ATUNE.U



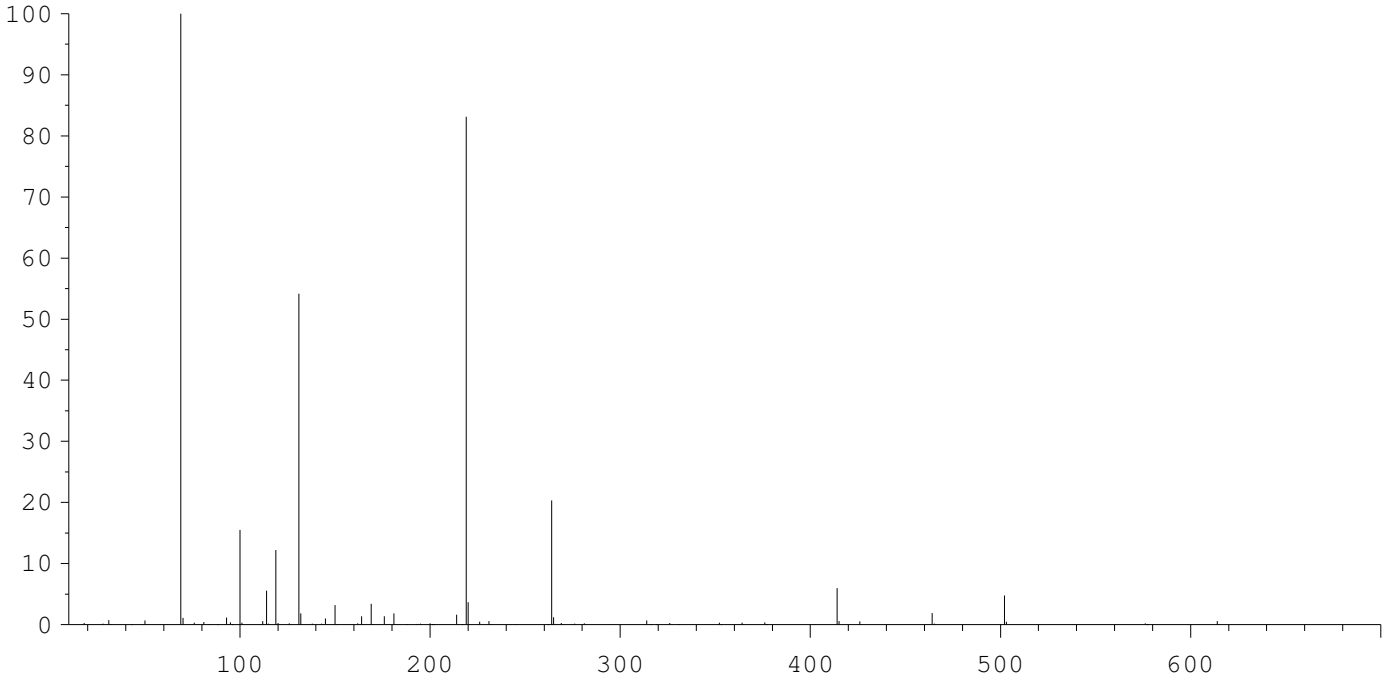
Ion Pol	POS	MassGain	22
		MassOffs	-14
Emission	34.6	AmuGain	2185
EleEnergy	69.9	AmuOffs	128
Filament	2	Wid219	0.011
		DC Pol	POS
Repeller	26.77		
IonFocus	68.3	HED	ON
EntLens	11.5	EMVolts	1365
EntOffs	17.32		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

Zones:

MS Source	230	Foreline	79
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100

121 peaks Base: 69.00 Abundance: 448000



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	448000	100.00	70.00	5033	1.12
219.00	372352	83.11	220.00	16424	4.41
502.20	21448	4.79	503.10	2205	10.28

TARGET MASS:	50	69	131	219	414	502
TARGET ABUND(%):	1.0	100.0	55.0	45.0	3.5	2.5
ACTUAL TUNE ABUND(%):	0.7	100.0	54.1	46.1	6.0	4.8

Response Factor Report GC/MS #6

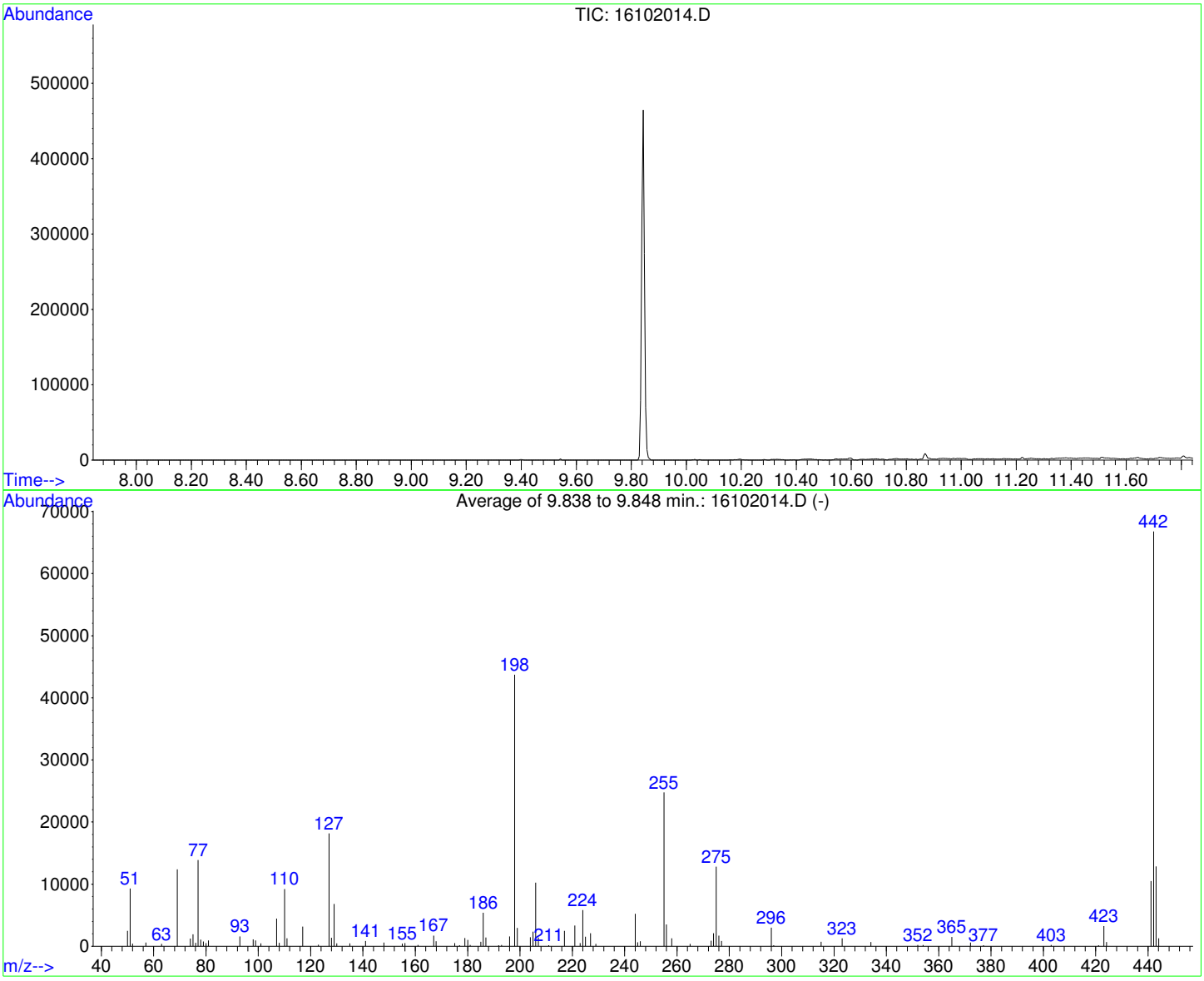
Method Path : F:\IC\GCMS#10\
Method File : PP161020.M
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response Via : Initial Calibration

Calibration Files
1 =16102015.D 2 =16102016.D 3 =16102017.D 4 =16102018.D 5 =16102019.D 6 =16102020.D 7 =16102021.D
8 =16102022.D

		Compound	1	2	3	4	5	6	7	8	Avg	%RSD	Fit	RSD/CF	Constant	Linear	Quad
1)	I	Naphthalene-d8	----------ISTD----------														
2)	CP	Naphthalene	0.764	0.642	0.735	0.735	0.734	0.721	0.715	0.716	0.720	4.90	A	0.0490	0.0000	0.7201	0.0000
3)	CP	2-Methyl napht...	0.508	0.464	0.540	0.565	0.560	0.558	0.545	0.546	0.536	6.38	A	0.0638	0.0000	0.5359	0.0000
4)	T	1-Methyl napht...	0.498	0.456	0.505	0.528	0.517	0.511	0.495	0.494	0.501	4.28	A	0.0428	0.0000	0.5007	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.293	1.160	1.301	1.245	1.339	1.308	1.284	1.251	1.273	4.30#	A	0.0430	0.0000	1.2726	0.0000
7)	S	2-Fluorobiphenyl	1.085	1.046	1.197	1.146	1.253	1.222	1.212	1.186	1.168	6.10	A	0.0610	0.0000	1.1682	0.0000
8)	CP	Acenaphthylene	1.402	1.236	1.412	1.476	1.459	1.453	1.448	1.419	1.413	5.37	A	0.0537	0.0000	1.4131	0.0000
9)	CP	Acenaphthene	0.834	0.753	0.864	0.904	0.870	0.852	0.846	0.842	0.846#	5.09	A	0.0509	0.0000	0.8457	0.0000
10)	CP	Fluorene	1.018	0.906	1.046	1.105	1.076	1.063	1.043	1.023	1.035	5.71	A	0.0571	0.0000	1.0351	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	0.841	0.716	0.763	0.817	0.795	0.783	0.771	0.744	0.779	5.10	A	0.0510	0.0000	0.7789	0.0000
13)	CP	Anthracene	0.840	0.722	0.807	0.855	0.818	0.808	0.790	0.773	0.802	5.15	A	0.0515	0.0000	0.8017	0.0000
14)	CP	Fluoranthene	0.955	0.843	0.931	0.980	0.941	0.926	0.908	0.876	0.920	4.77	A	0.0477	0.0000	0.9199	0.0000
15)	CP	Pyrene	1.037	0.902	0.976	1.020	0.956	0.940	0.924	0.889	0.955	5.58	A	0.0558	0.0000	0.9553	0.0000
16)	S	4-Terphenyl-d14	0.845	0.760	0.826	0.785	0.834	0.814	0.799	0.764	0.803	3.96	A	0.0396	0.0000	0.8034	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...	0.853	0.709	0.769	0.817	0.794	0.780	0.771	0.762	0.782#	5.40	A	0.0540	0.0000	0.7820	0.0000
19)	CP	Chrysene	0.741	0.665	0.722	0.763	0.753	0.734	0.713	0.705	0.724	4.30	A	0.0430	0.0000	0.7245	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	0.905	0.828	0.853	0.912	0.902	0.879	0.947	0.881	0.888	4.15	A	0.0415	0.0000	0.8883	0.0000
22)	CP	Benzo[k]fluora...	0.835	0.745	0.887	0.914	0.807	0.842	0.737	0.782	0.819	7.74	A	0.0774	0.0000	0.8188	0.0000
23)	CP	Benzo(j)fluora...	0.833	0.739	0.822	0.769	0.821	0.782	0.779	0.790	0.792	3.99	A	0.0399	0.0000	0.7919	0.0000
24)	T	Benzo[e]pyrene	0.820	0.755	0.817	0.770	0.811	0.799	0.787	0.788	0.793	2.89	A	0.0289	0.0000	0.7933	0.0000
25)	CP	Benzo[a]pyrene	0.839	0.747	0.819	0.862	0.817	0.806	0.794	0.795	0.810	4.20	A	0.0420	0.0000	0.8099	0.0000
26)	CP	Dibenz[a,h]ant...	0.910	0.761	0.856	0.905	0.859	0.849	0.824	0.842	0.851	5.51	A	0.0551	0.0000	0.8508	0.0000
27)	CP	Indeno[1,2,3-c...	0.832	0.748	0.832	0.873	0.833	0.826	0.810	0.820	0.822	4.25	A	0.0425	0.0000	0.8219	0.0000
28)	CP	Benzo[g,h,i]pe...	0.933	0.790	0.874	0.912	0.872	0.859	0.847	0.861	0.868	4.95	A	0.0495	0.0000	0.8685	0.0000

(#) = Out of Range

Data File : C:\HPCHEM\1\DATA\161020\16102014.D Vial: 1
Acq On : 20 Oct 2016 4:10 pm Operator: LG
Sample : DFTPP-161020 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 797, 798, 799; Background Corrected with Scan 792

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	21.3	9307	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	28.4	12400	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.6	18168	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	43720	PASS
199	198	5	9	6.7	2945	PASS
275	198	10	60	29.3	12809	PASS
365	198	1	200	3.5	1520	PASS
441	442	0.01	24	15.7	10489	PASS
442	198	50	400	152.8	66792	PASS
443	442	15	24	19.3	12867	PASS

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102015.D Vial: 2
Acq On : 20 Oct 2016 4:37 pm Operator: LG
Sample : CAL1 5PPB Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 12:12 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

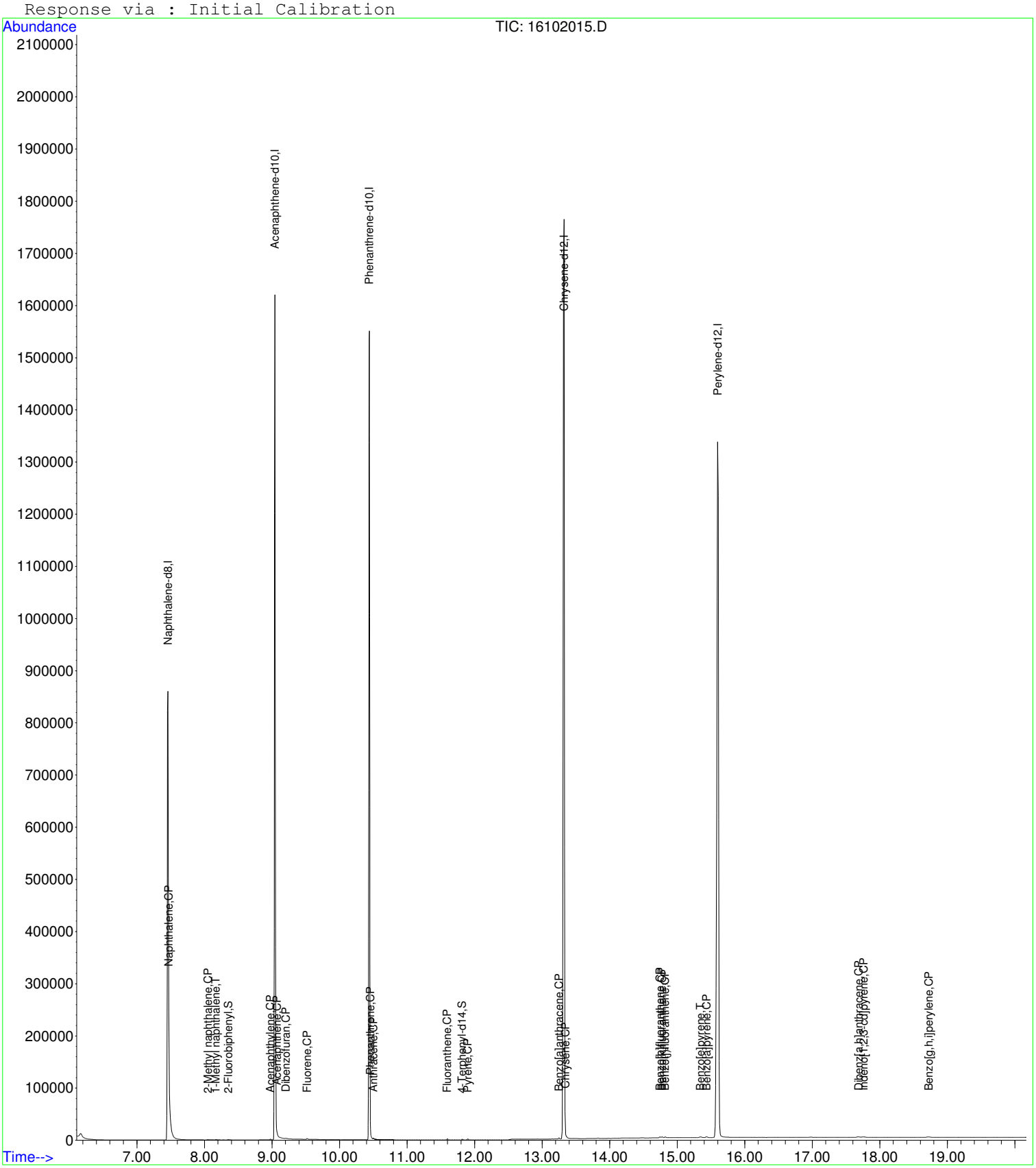
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1104031	4000.00	ug/kg	101
5) Acenaphthene-d10	9.04	164	663810	4000.00	ug/kg	105
11) Phenanthrene-d10	10.44	188	1243895	4000.00	ug/kg	104
17) Chrysene-d12	13.32	240	1645676	4000.00	ug/kg	107
20) Perylene-d12	15.60	264	1632131	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	900	4.64	ug/kg	0.03
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.12%#		
16) 4-Terphenyl-d14	11.82	244	1314	5.26	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.13%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	1054	5.30	ug/kg	98
3) 2-Methyl naphthalene	8.06	142	701	4.74	ug/kg	96
4) 1-Methyl naphthalene	8.17	142	687	4.97	ug/kg	90
6) Dibenzofuran	9.21	168	1073	5.08	ug/kg#	86
8) Acenaphthylene	8.98	152	1163	4.96	ug/kg	98
9) Acenaphthene	9.08	154	692	4.93	ug/kg	98
10) Fluorene	9.52	166	845	4.92	ug/kg	99
12) Phenanthrene	10.46	178	1308	5.40	ug/kg	99
13) Anthracene	10.50	178	1306	5.24	ug/kg	98
14) Fluoranthene	11.59	202	1485	5.19	ug/kg	99
15) Pyrene	11.90	202	1613	5.43	ug/kg	99
18) Benzo[a]anthracene	13.25	228	1755	5.45	ug/kg	99
19) Chrysene	13.35	228	1524	5.11	ug/kg	99
21) Benzo[b]fluoranthene	14.75	252	1847	5.10	ug/kg	95
22) Benzo[k]fluoranthene	14.78	252	1704	5.10	ug/kg	96
23) Benzo(j)fluoranthene	14.82	252	1699	5.26	ug/kg	99
24) Benzo[e]pyrene	15.34	252	1673	5.17	ug/kg	97
25) Benzo[a]pyrene	15.43	252	1712	5.18	ug/kg	97
26) Dibenz[a,h]anthracene	17.69	278	1857	5.35	ug/kg	90
27) Indeno[1,2,3-cd]pyrene	17.76	276	1697	5.06	ug/kg	96
28) Benzo[g,h,i]perylene	18.73	276	1903	5.37	ug/kg	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102015.D Vial: 2
Acq On : 20 Oct 2016 4:37 pm Operator: LG
Sample : CAL1 5PPB Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 12:12 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102016.D Vial: 3
Acq On : 20 Oct 2016 5:05 pm Operator: LG
Sample : CAL2 10PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

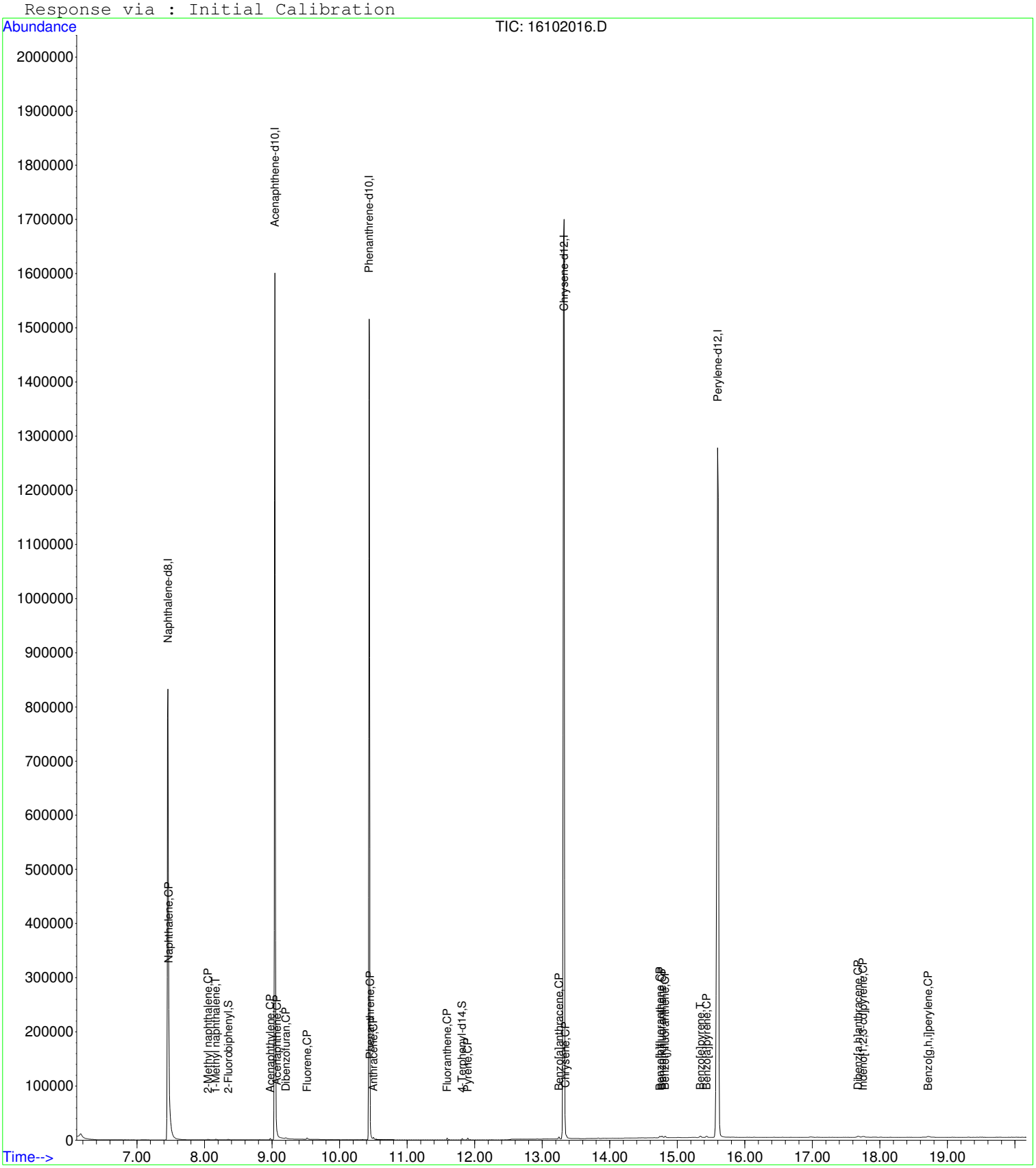
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1059596	4000.00	ug/kg	97
5) Acenaphthene-d10	9.04	164	650945	4000.00	ug/kg	103
11) Phenanthrene-d10	10.44	188	1218263	4000.00	ug/kg	102
17) Chrysene-d12	13.32	240	1574859	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	1544067	4000.00	ug/kg	102
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	1702	8.95	ug/kg	0.03
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.22%#		
16) 4-Terphenyl-d14	11.81	244	2315	9.46	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.24%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	1700	8.91	ug/kg	100
3) 2-Methyl naphthalene	8.05	142	1228	8.65	ug/kg	96
4) 1-Methyl naphthalene	8.17	142	1209	9.12	ug/kg	95
6) Dibenzofuran	9.20	168	1888	9.12	ug/kg	100
8) Acenaphthylene	8.98	152	2012	8.75	ug/kg	99
9) Acenaphthene	9.08	154	1226	8.91	ug/kg	93
10) Fluorene	9.52	166	1475	8.76	ug/kg	96
12) Phenanthrene	10.46	178	2182	9.20	ug/kg	99
13) Anthracene	10.50	178	2199	9.01	ug/kg	98
14) Fluoranthene	11.59	202	2566	9.16	ug/kg	97
15) Pyrene	11.90	202	2746	9.44	ug/kg	98
18) Benzo[a]anthracene	13.25	228	2792	9.07	ug/kg	99
19) Chrysene	13.35	228	2617	9.17	ug/kg	98
21) Benzo[b]fluoranthene	14.75	252	3196	9.32	ug/kg	96
22) Benzo[k]fluoranthene	14.78	252	2876	9.10	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	2854	9.34	ug/kg	95
24) Benzo[e]pyrene	15.34	252	2913	9.51	ug/kg	90
25) Benzo[a]pyrene	15.43	252	2885	9.23	ug/kg	98
26) Dibenz[a,h]anthracene	17.68	278	2938	8.95	ug/kg	94
27) Indeno[1,2,3-cd]pyrene	17.76	276	2888	9.10	ug/kg	95
28) Benzo[g,h,i]perylene	18.72	276	3048	9.09	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102016.D Vial: 3
Acq On : 20 Oct 2016 5:05 pm Operator: LG
Sample : CAL2 10PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102017.D Vial: 4
Acq On : 20 Oct 2016 5:32 pm Operator: LG
Sample : CAL3 50PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

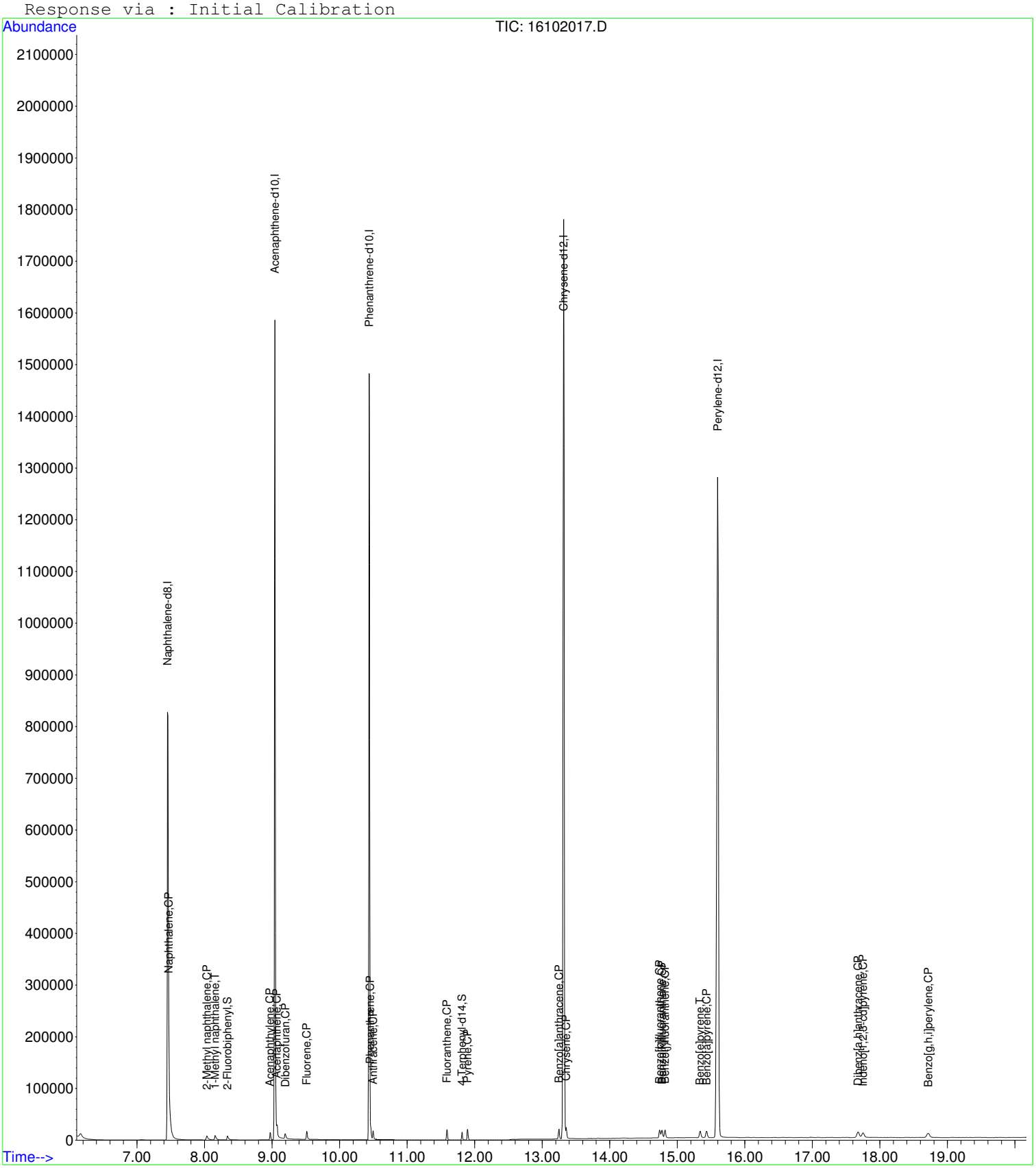
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1069876	4000.00	ug/kg	98
5) Acenaphthene-d10	9.04	164	639900	4000.00	ug/kg	101
11) Phenanthrene-d10	10.44	188	1199553	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1556495	4000.00	ug/kg	101
20) Perylene-d12	15.60	264	1510453	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.34	172	9571	51.21	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.28%#		
16) 4-Terphenyl-d14	11.81	244	12381	51.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.28%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	9826	51.02	ug/kg	99
3) 2-Methyl naphthalene	8.03	142	7228	50.43	ug/kg	94
4) 1-Methyl naphthalene	8.16	142	6749	50.40	ug/kg	94
6) Dibenzofuran	9.20	168	10409	51.13	ug/kg	99
8) Acenaphthylene	8.97	152	11296	49.97	ug/kg	99
9) Acenaphthene	9.08	154	6911	51.08	ug/kg	99
10) Fluorene	9.51	166	8365	50.52	ug/kg	98
12) Phenanthrene	10.46	178	11442	48.99	ug/kg	99
13) Anthracene	10.50	178	12107	50.36	ug/kg	98
14) Fluoranthene	11.59	202	13956	50.59	ug/kg	100
15) Pyrene	11.89	202	14634	51.08	ug/kg	99
18) Benzo[a]anthracene	13.25	228	14964	49.18	ug/kg	98
19) Chrysene	13.35	228	14045	49.82	ug/kg	98
21) Benzo[b]fluoranthene	14.74	252	16099	47.99	ug/kg	98
22) Benzo[k]fluoranthene	14.78	252	16740	54.14	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	15526	51.92	ug/kg	98
24) Benzo[e]pyrene	15.34	252	15417	51.46	ug/kg	99
25) Benzo[a]pyrene	15.43	252	15472	50.59	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	16166	50.32	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.75	276	15710	50.62	ug/kg	98
28) Benzo[g,h,i]perylene	18.72	276	16503	50.32	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102017.D Vial: 4
Acq On : 20 Oct 2016 5:32 pm Operator: LG
Sample : CAL3 50PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102018.D Vial: 5
Acq On : 20 Oct 2016 6:00 pm Operator: LG
Sample : CAL4 100PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

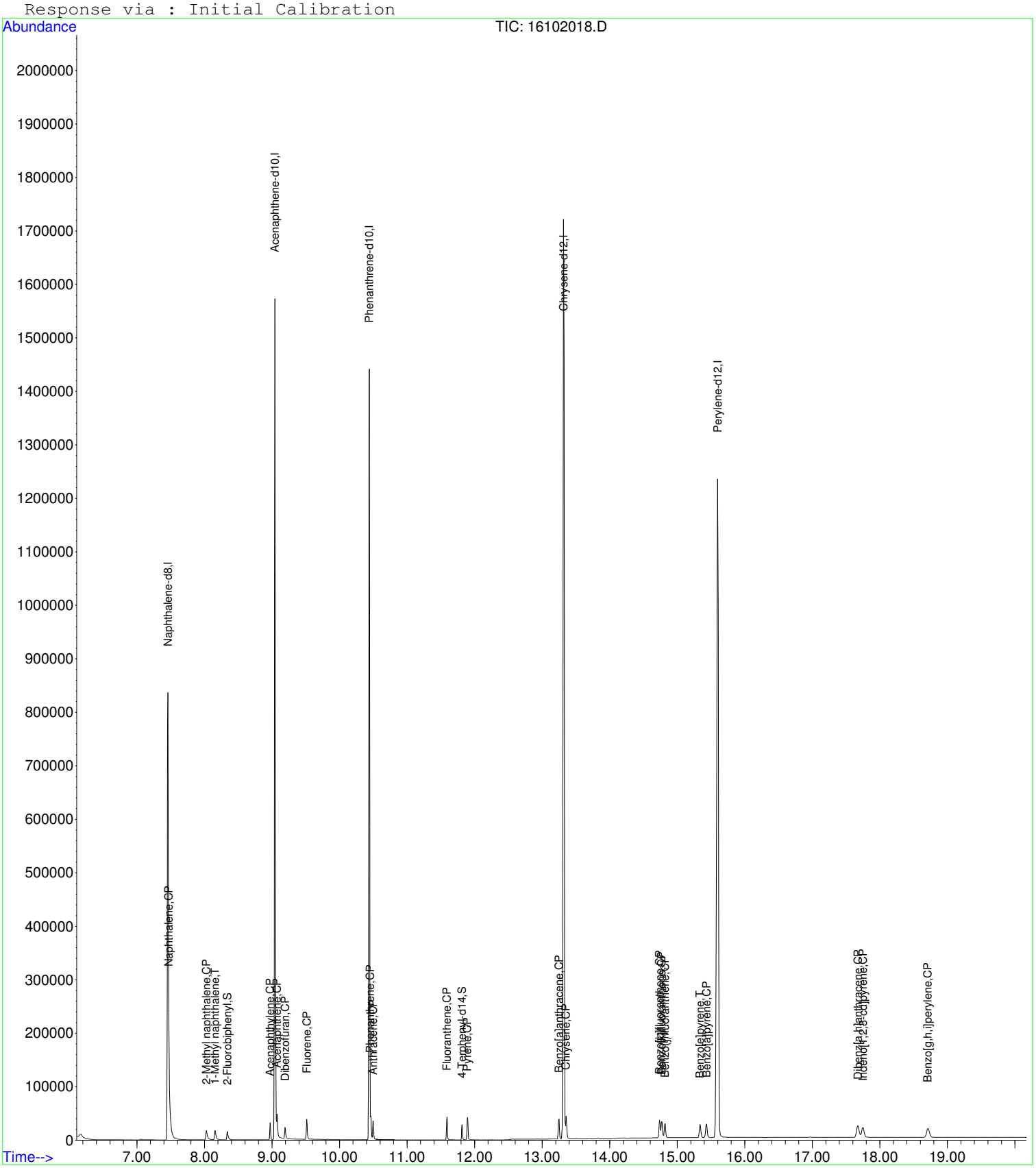
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040067	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	629544	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1179032	4000.00	ug/kg	98
17) Chrysene-d12	13.32	240	1524929	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1486769	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.34	172	18041	98.12	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.45%#		
16) 4-Terphenyl-d14	11.81	244	23153	97.77	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.44%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	19110	102.06	ug/kg	99
3) 2-Methyl naphthalene	8.03	142	14691	105.43	ug/kg	95
4) 1-Methyl naphthalene	8.16	142	13737	105.53	ug/kg	94
6) Dibenzofuran	9.19	168	19596	97.83	ug/kg	98
8) Acenaphthylene	8.97	152	23230	104.45	ug/kg	100
9) Acenaphthene	9.08	154	14222	106.85	ug/kg	97
10) Fluorene	9.51	166	17388	106.74	ug/kg	100
12) Phenanthrene	10.46	178	24086	104.92	ug/kg	99
13) Anthracene	10.49	178	25202	106.65	ug/kg	99
14) Fluoranthene	11.59	202	28875	106.49	ug/kg	99
15) Pyrene	11.89	202	30065	106.77	ug/kg	99
18) Benzo[a]anthracene	13.25	228	31153	104.50	ug/kg	99
19) Chrysene	13.35	228	29098	105.35	ug/kg	98
21) Benzo[b]fluoranthene	14.74	252	33911	102.71	ug/kg	99
22) Benzo[k]fluoranthene	14.77	252	33987	111.68	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	28571	97.07	ug/kg	98
24) Benzo[e]pyrene	15.34	252	28638	97.12	ug/kg	99
25) Benzo[a]pyrene	15.43	252	32027	106.39	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	33641	106.38	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.75	276	32454	106.23	ug/kg	98
28) Benzo[g,h,i]perylene	18.71	276	33915	105.06	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102018.D Vial: 5
Acq On : 20 Oct 2016 6:00 pm Operator: LG
Sample : CAL4 100PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102019.D Vial: 6
Acq On : 20 Oct 2016 6:28 pm Operator: LG
Sample : CAL5 500PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

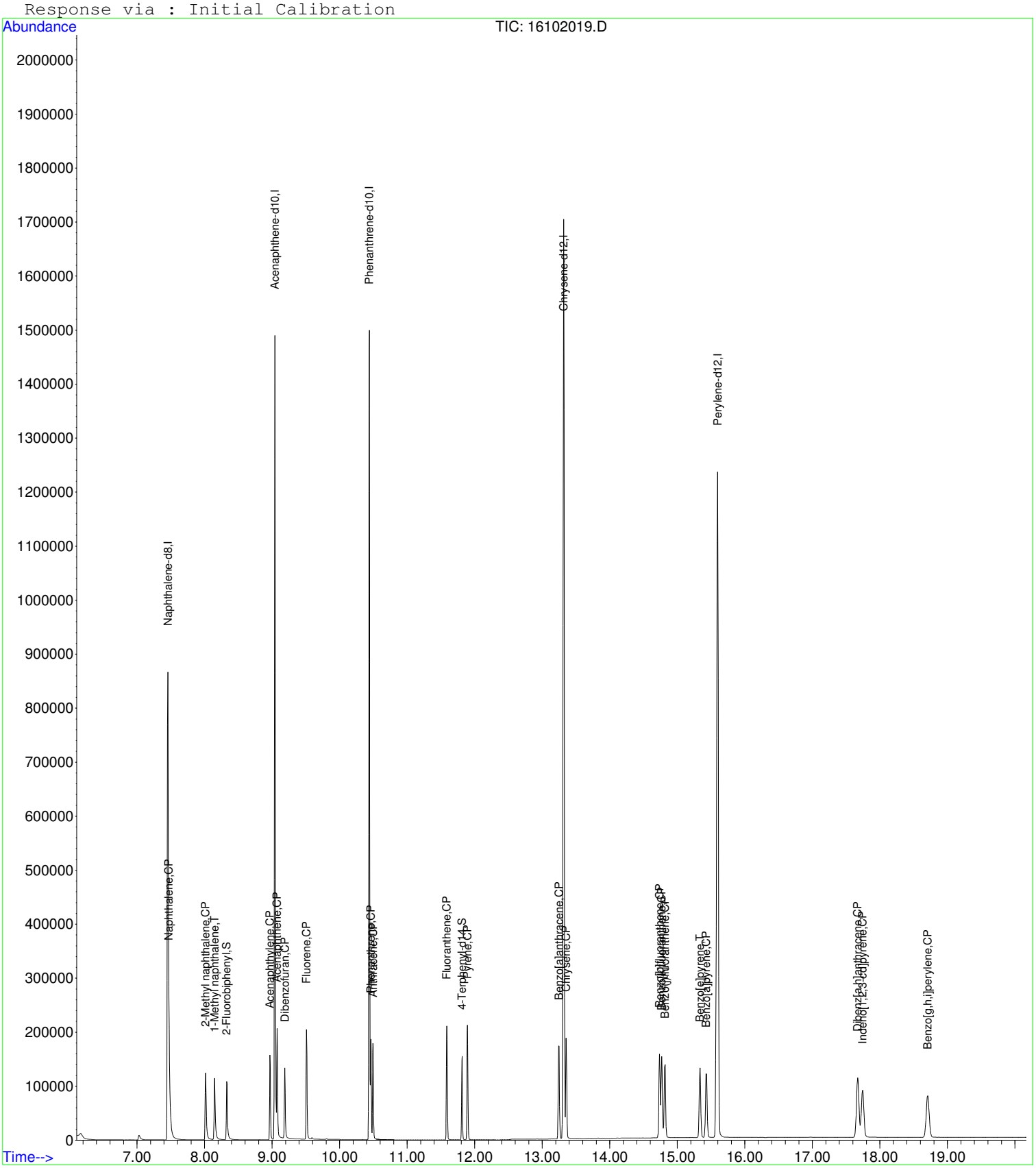
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040959	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	616557	4000.00	ug/kg	97
11) Phenanthrene-d10	10.44	188	1169580	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1497950	4000.00	ug/kg	97
20) Perylene-d12	15.60	264	1474044	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	96550	536.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 13.40%#			
16) 4-Terphenyl-d14	11.81	244	121909	518.97	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.97%#			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	95501	509.60	ug/kg	100
3) 2-Methyl naphthalene	8.02	142	72925	522.90	ug/kg	95
4) 1-Methyl naphthalene	8.15	142	67336	516.82	ug/kg	92
6) Dibenzofuran	9.19	168	103229	526.23	ug/kg	99
8) Acenaphthylene	8.97	152	112445	516.24	ug/kg	99
9) Acenaphthene	9.07	154	67042	514.30	ug/kg	98
10) Fluorene	9.51	166	82939	519.85	ug/kg	98
12) Phenanthrene	10.46	178	116156	510.05	ug/kg	100
13) Anthracene	10.49	178	119534	509.95	ug/kg	100
14) Fluoranthene	11.59	202	137568	511.44	ug/kg	99
15) Pyrene	11.89	202	139711	500.15	ug/kg	99
18) Benzo[a]anthracene	13.25	228	148744	507.92	ug/kg	99
19) Chrysene	13.35	228	141022	519.78	ug/kg	99
21) Benzo[b]fluoranthene	14.74	252	166152	507.57	ug/kg	98
22) Benzo[k]fluoranthene	14.77	252	148773	493.08	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	151187	518.10	ug/kg	98
24) Benzo[e]pyrene	15.34	252	149352	510.86	ug/kg	98
25) Benzo[a]pyrene	15.43	252	150503	504.25	ug/kg	98
26) Dibenz[a,h]anthracene	17.67	278	158215	504.64	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.74	276	153526	506.88	ug/kg	99
28) Benzo[g,h,i]perylene	18.71	276	160601	501.81	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102019.D Vial: 6
Acq On : 20 Oct 2016 6:28 pm Operator: LG
Sample : CAL5 500PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102020.D Vial: 7
Acq On : 20 Oct 2016 6:56 pm Operator: LG
Sample : CAL6 1000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

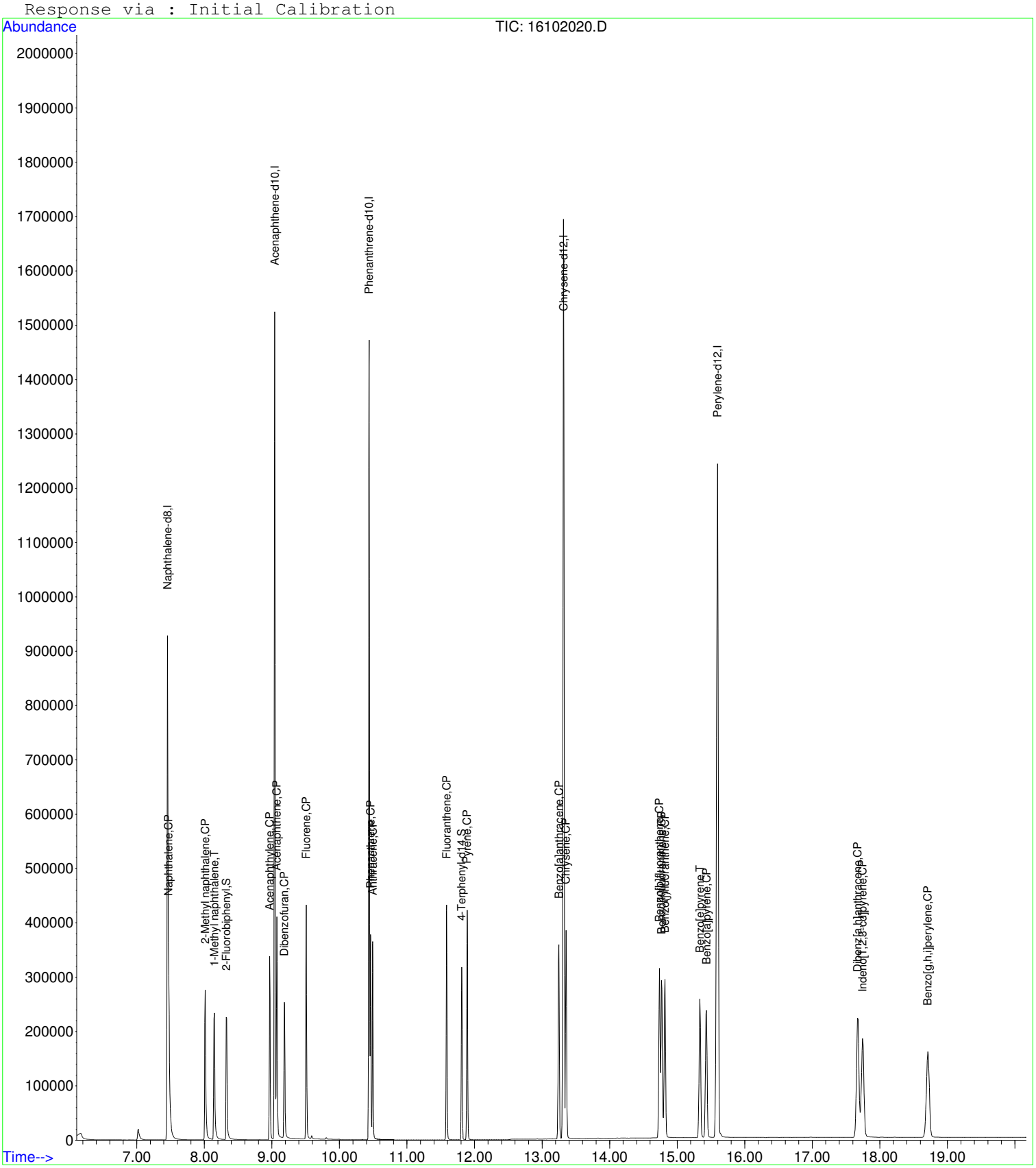
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1048894	4000.00	ug/kg	96
5) Acenaphthene-d10	9.04	164	626534	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1187118	4000.00	ug/kg	99
17) Chrysene-d12	13.32	240	1520400	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1497511	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	191429	1046.17	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	26.15%#		
16) 4-Terphenyl-d14	11.81	244	241549	1013.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	25.33%#		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	189020	1001.00	ug/kg	100
3) 2-Methyl naphthalene	8.01	142	146428	1042.00	ug/kg	97
4) 1-Methyl naphthalene	8.15	142	133996	1020.67	ug/kg	91
6) Dibenzofuran	9.19	168	204839	1027.59	ug/kg	99
8) Acenaphthylene	8.97	152	227633	1028.42	ug/kg	100
9) Acenaphthene	9.07	154	133512	1007.91	ug/kg	99
10) Fluorene	9.51	166	166447	1026.66	ug/kg	99
12) Phenanthrene	10.46	178	232447	1005.62	ug/kg	99
13) Anthracene	10.49	178	239736	1007.64	ug/kg	99
14) Fluoranthene	11.59	202	274903	1006.91	ug/kg	100
15) Pyrene	11.89	202	278891	983.65	ug/kg	99
18) Benzo[a]anthracene	13.25	228	296594	997.83	ug/kg	99
19) Chrysene	13.35	228	279060	1013.38	ug/kg	99
21) Benzo[b]fluoranthene	14.74	252	329092	989.58	ug/kg	99
22) Benzo[k]fluoranthene	14.77	252	315203	1028.31	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	292754	987.52	ug/kg	98
24) Benzo[e]pyrene	15.34	252	299206	1007.40	ug/kg	98
25) Benzo[a]pyrene	15.43	252	301906	995.66	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	317822	997.83	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.74	276	309360	1005.38	ug/kg	100
28) Benzo[g,h,i]perylene	18.71	276	321446	988.64	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102020.D Vial: 7
Acq On : 20 Oct 2016 6:56 pm Operator: LG
Sample : CAL6 1000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102021.D Vial: 8
Acq On : 20 Oct 2016 7:24 pm Operator: LG
Sample : CAL7 2000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

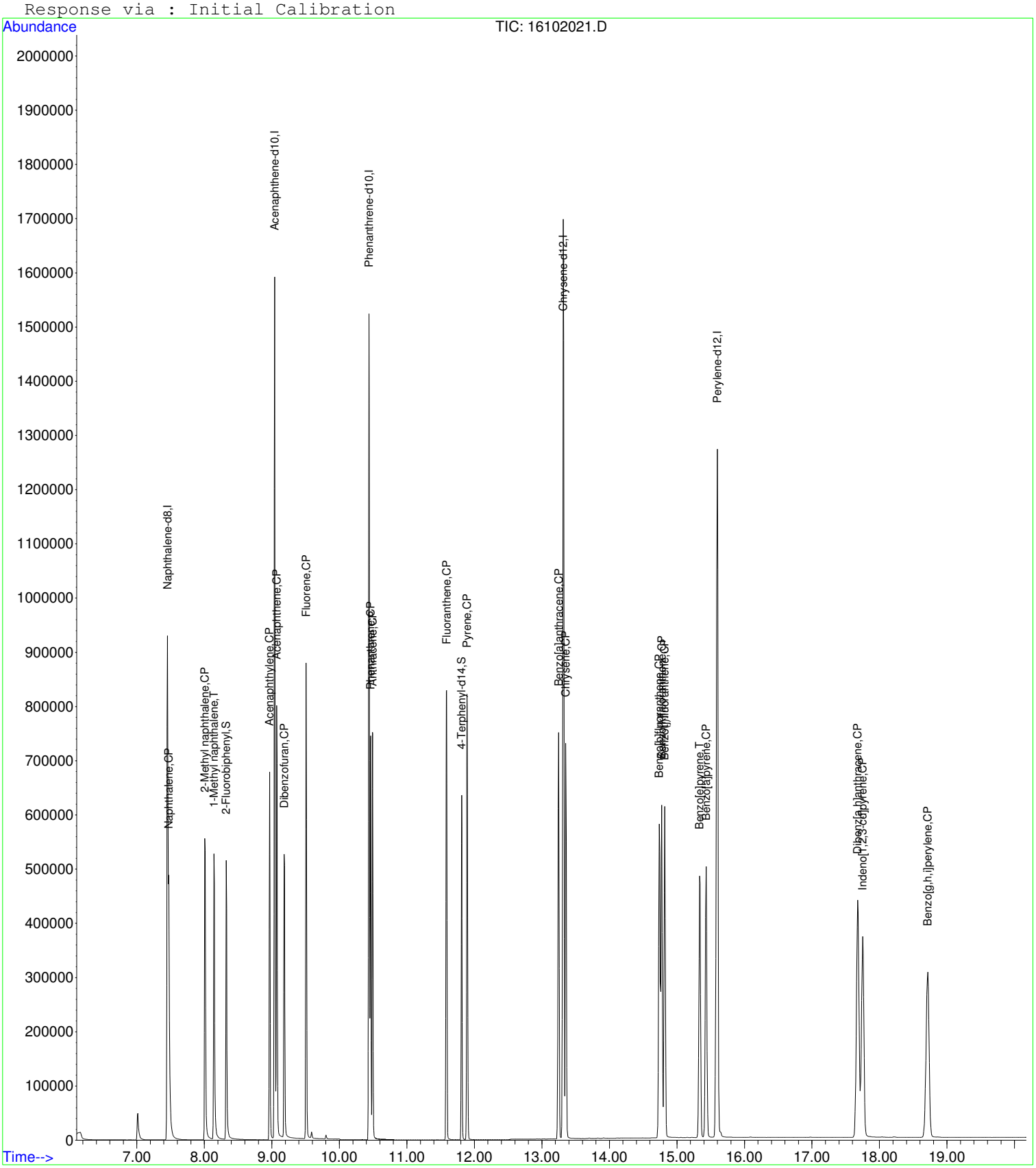
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1091786	4000.00	ug/kg	100
5) Acenaphthene-d10	9.04	164	633848	4000.00	ug/kg	100
11) Phenanthrene-d10	10.44	188	1200220	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1541952	4000.00	ug/kg	100
20) Perylene-d12	15.60	264	1517090	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	384078	2074.78	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.87%			
16) 4-Terphenyl-d14	11.81	244	479633	1989.70	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.74%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	390302	1985.73	ug/kg	100
3) 2-Methyl naphthalene	8.01	142	297716	2035.34	ug/kg	100
4) 1-Methyl naphthalene	8.14	142	270306	1978.08	ug/kg	100
6) Dibenzofuran	9.19	168	406812	2017.25	ug/kg	100
8) Acenaphthylene	8.97	152	458773	2048.77	ug/kg	100
9) Acenaphthene	9.07	154	268073	2000.38	ug/kg	100
10) Fluorene	9.51	166	330653	2015.96	ug/kg	100
12) Phenanthrene	10.46	178	462874	1980.64	ug/kg	100
13) Anthracene	10.49	178	474385	1972.14	ug/kg	100
14) Fluoranthene	11.59	202	545193	1975.13	ug/kg	100
15) Pyrene	11.89	202	554395	1934.00	ug/kg	100
18) Benzo[a]anthracene	13.25	228	594548	1972.27	ug/kg	100
19) Chrysene	13.35	228	549735	1968.41	ug/kg	100
21) Benzo[b]fluoranthene	14.74	252	718108	2131.48	ug/kg	100
22) Benzo[k]fluoranthene	14.77	252	559144	1800.59	ug/kg	100
23) Benzo(j)fluoranthene	14.82	252	590891	1967.47	ug/kg	100
24) Benzo[e]pyrene	15.34	252	597297	1985.08	ug/kg	100
25) Benzo[a]pyrene	15.43	252	602075	1959.97	ug/kg	100
26) Dibenz[a,h]anthracene	17.68	278	625235	1937.65	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.75	276	614639	1971.72	ug/kg	100
28) Benzo[g,h,i]perylene	18.72	276	642670	1951.09	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102021.D Vial: 8
Acq On : 20 Oct 2016 7:24 pm Operator: LG
Sample : CAL7 2000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102022.D Vial: 9
Acq On : 20 Oct 2016 7:52 pm Operator: LG
Sample : CAL8 5000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

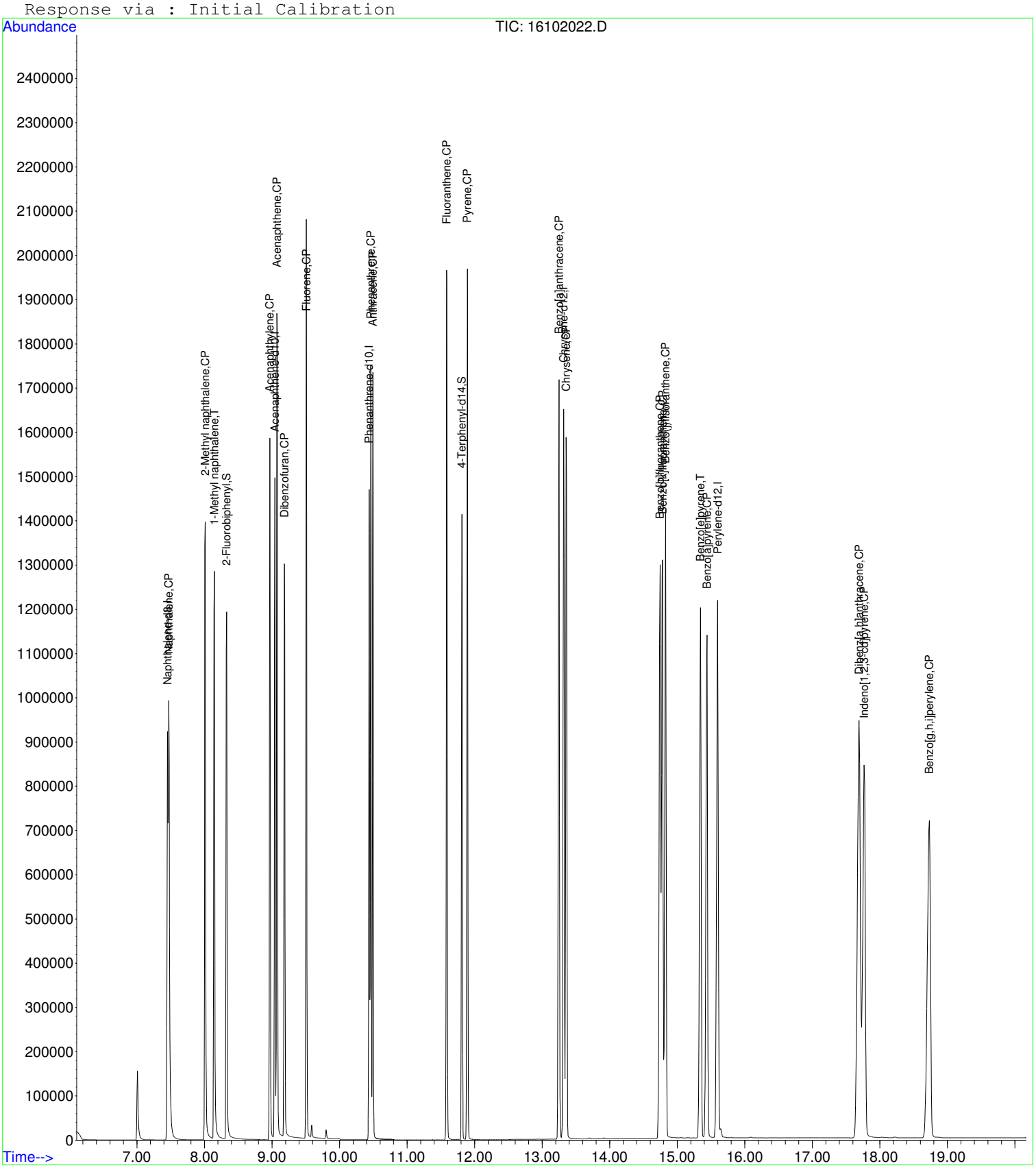
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1041865	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	606729	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1156115	4000.00	ug/kg	96
17) Chrysene-d12	13.32	240	1468571	4000.00	ug/kg	95
20) Perylene-d12	15.60	264	1438518	4000.00	ug/kg	95
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	899137	5074.21	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 126.86%			
16) 4-Terphenyl-d14	11.81	244	1103576	4752.70	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 118.82%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	932459	4971.35	ug/kg	99
3) 2-Methyl naphthalene	8.01	142	711066	5094.15	ug/kg	99
4) 1-Methyl naphthalene	8.15	142	643834	4937.28	ug/kg	90
6) Dibenzofuran	9.19	168	948517	4913.62	ug/kg	98
8) Acenaphthylene	8.97	152	1076114	5020.48	ug/kg	99
9) Acenaphthene	9.08	154	638925	4980.82	ug/kg	94
10) Fluorene	9.51	166	775875	4941.87	ug/kg	99
12) Phenanthrene	10.46	178	1075043	4775.60	ug/kg	98
13) Anthracene	10.49	178	1117103	4821.25	ug/kg	99
14) Fluoranthene	11.59	202	1265556	4759.78	ug/kg	98
15) Pyrene	11.89	202	1284240	4650.97	ug/kg	99
18) Benzo[a]anthracene	13.25	228	1398116	4869.66	ug/kg	99
19) Chrysene	13.35	228	1293823	4864.21	ug/kg	99
21) Benzo[b]fluoranthene	14.75	252	1583462	4956.73	ug/kg	98
22) Benzo[k]fluoranthene	14.78	252	1406704	4777.39	ug/kg	98
23) Benzo(j)fluoranthene	14.83	252	1421031	4989.99	ug/kg	99
24) Benzo[e]pyrene	15.34	252	1416645	4965.30	ug/kg	97
25) Benzo[a]pyrene	15.44	252	1429283	4906.97	ug/kg	98
26) Dibenz[a,h]anthracene	17.69	278	1513569	4946.87	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.77	276	1474949	4989.98	ug/kg	99
28) Benzo[g,h,i]perylene	18.73	276	1549045	4959.63	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102022.D Vial: 9
Acq On : 20 Oct 2016 7:52 pm Operator: LG
Sample : CAL8 5000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102023.D Vial: 10
Acq On : 20 Oct 2016 8:19 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

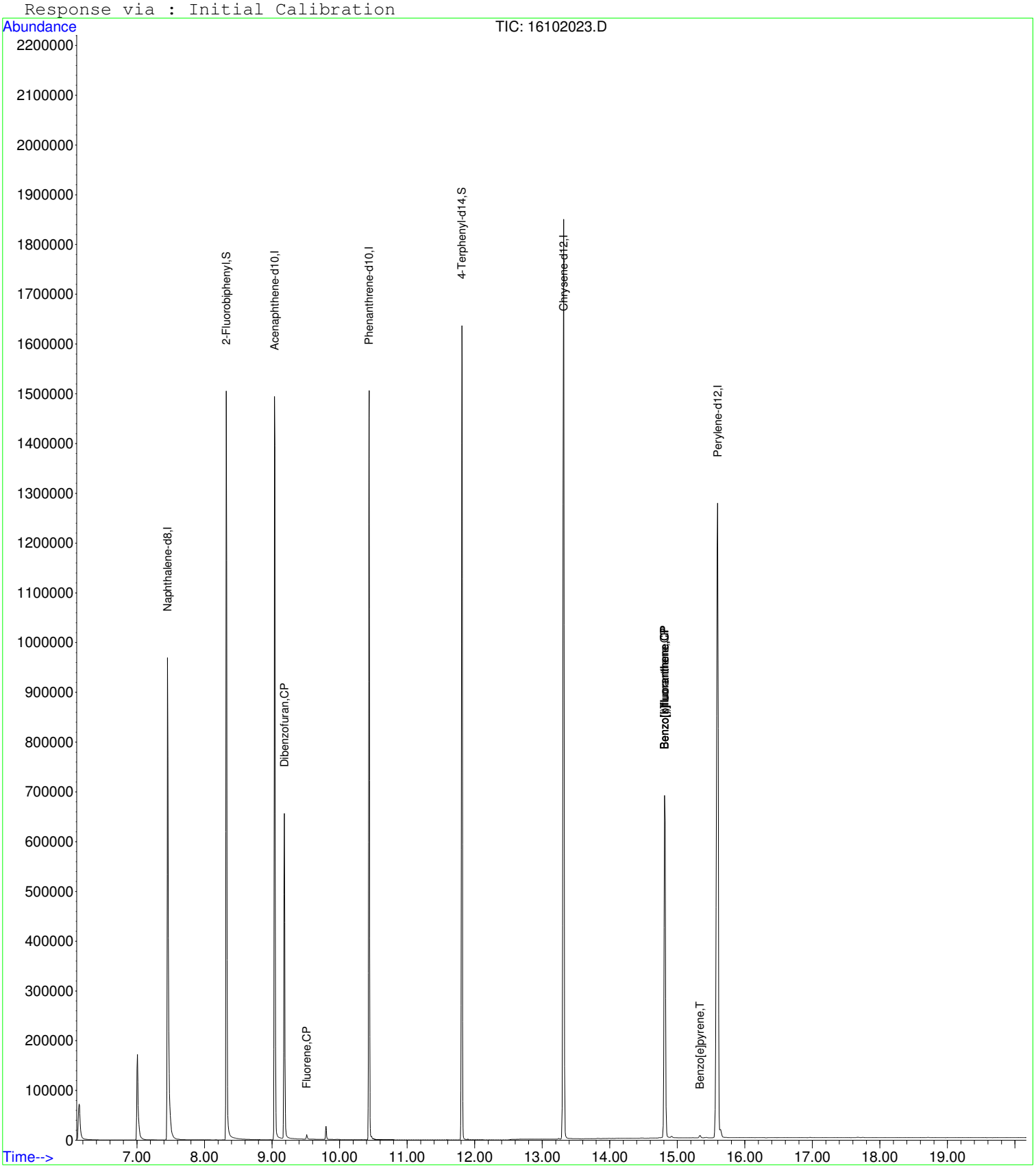
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1171217	4000.00	ug/kg	107
5) Acenaphthene-d10	9.04	164	648893	4000.00	ug/kg	102
11) Phenanthrene-d10	10.44	188	1210829	4000.00	ug/kg	101
17) Chrysene-d12	13.32	240	1579392	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	1559784	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	1045019	5514.27	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 137.86%			
16) 4-Terphenyl-d14	11.81	244	1313734	5402.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 135.05%			
Target Compounds						Qvalue
6) Dibenzofuran	9.18	168	476465	2307.86	ug/kg	100
10) Fluorene	9.51	166	4465	26.59	ug/kg	100
21) ~~Benzo[b]fluoranthene~~	~~14.81~~	~~252~~	~~738803~~	~~2132.88~~	~~ug/kg~~	~~96~~
22) ~~Benzo[k]fluoranthene~~	~~14.81~~	~~252~~	~~739383~~	~~2315.84~~	~~ug/kg~~	~~95~~
23) Benzo(j)fluoranthene	14.81	252	739383	2394.51	ug/kg	98
24) Benzo[e]pyrene	15.34	252	5583	18.05	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102023.D Vial: 10
Acq On : 20 Oct 2016 8:19 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102024.D Vial: 11
Acq On : 20 Oct 2016 8:47 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

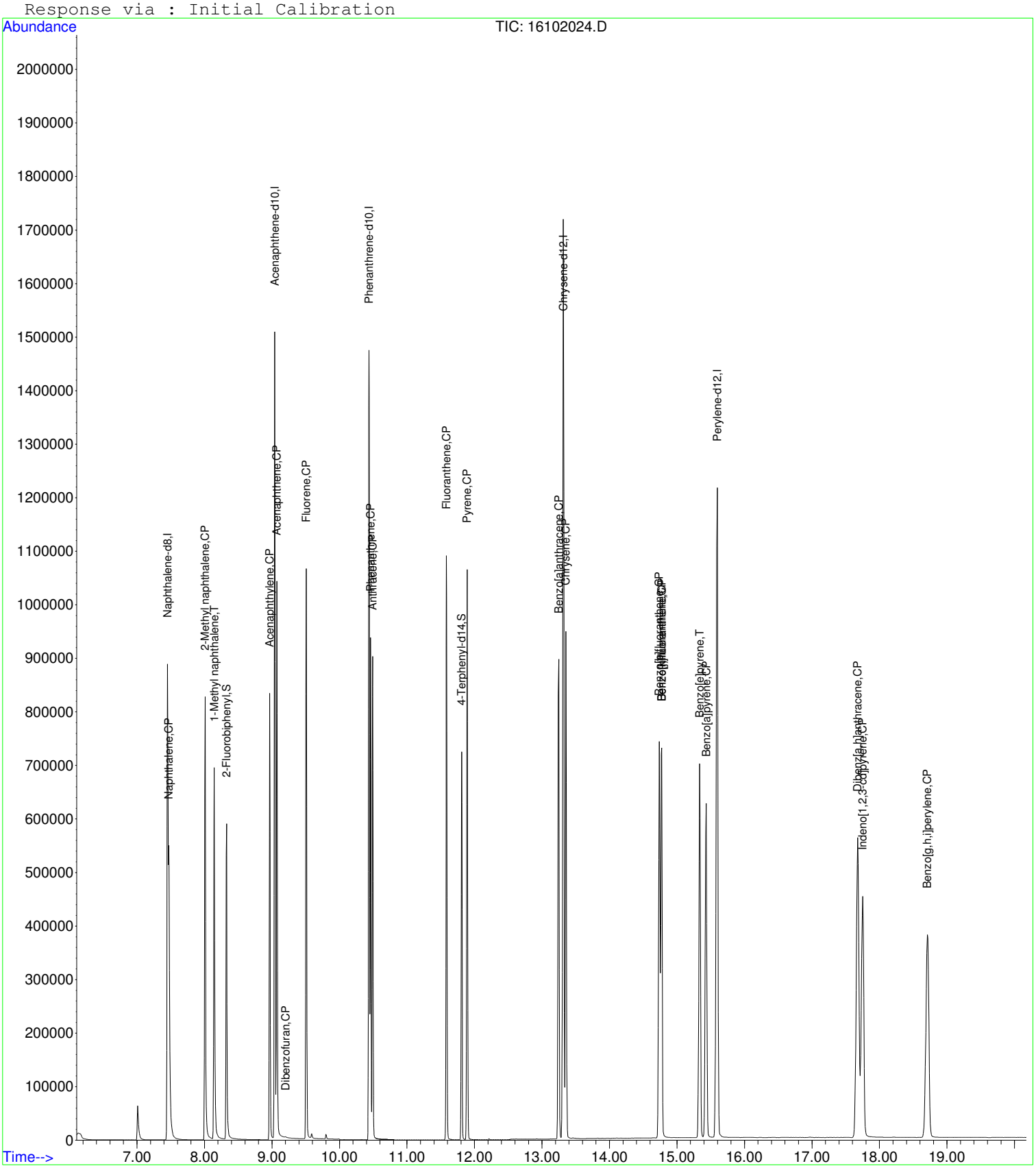
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1036180	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	609450	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1158659	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1508270	4000.00	ug/kg	98
20) Perylene-d12	15.60	264	1454395	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	448215	2518.17	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	62.95%		
16) 4-Terphenyl-d14	11.81	244	551388	2369.41	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	59.24%		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	475797	2550.60	ug/kg	99
3) 2-Methyl naphthalene	8.01	142	395608	2849.73	ug/kg	98
4) 1-Methyl naphthalene	8.14	142	354416	2732.77	ug/kg	92
6) ~~Dibenzofuran~~	~~9.20~~	~~168~~	~~1432~~	~~7.39~~	~~ug/kg~~	~~97~~
8) Acenaphthylene	8.97	152	559039	2596.48	ug/kg	100
9) Acenaphthene	9.07	154	341082	2647.07	ug/kg	99
10) Fluorene	9.51	166	414488	2628.26	ug/kg	99
12) Phenanthrene	10.46	178	567945	2517.41	ug/kg	100
13) Anthracene	10.49	178	584466	2516.93	ug/kg	100
14) Fluoranthene	11.58	202	686532	2576.39	ug/kg	99
15) Pyrene	11.89	202	693705	2506.79	ug/kg	100
18) Benzo[a]anthracene	13.25	228	739481	2507.83	ug/kg	99
19) Chrysene	13.35	228	693654	2539.20	ug/kg	100
21) Benzo[b]fluoranthene	14.74	252	796577	2466.31	ug/kg	99
22) Benzo[k]fluoranthene	14.77	252	753964	2532.63	ug/kg	99
23) Benzo(j)fluoranthene	14.77	252	755048	2622.43	ug/kg	95
24) Benzo[e]pyrene	15.34	252	810913	2811.20	ug/kg	98
25) Benzo[a]pyrene	15.43	252	757583	2572.52	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	799215	2583.60	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.75	276	741482	2481.16	ug/kg	100
28) Benzo[g,h,i]perylene	18.71	276	771487	2443.13	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102024.D Vial: 11
Acq On : 20 Oct 2016 8:47 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



GCMS8
For

DHL Work Order
1611044

GCMS8_161111A
For

DHL Work Order
1611044

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS8_161111A
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report	X		x
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			x
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS	X			
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS	X			
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)	X			

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis	7 days (Aq) - extraction			X	
1. Are all sample hold times met?	14 days (Soil) - extraction	X			
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only			X	x
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			x
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE	All deviations from the method and SOP that affect data quality			X	x
1. Are all non-conformances included and noted?					
2. Are all corrective actions included?				X	
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS ___LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
___ Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

Analyst: Don Winston Date: 11/14/2016

Second-Level Review: Janice Whitt Date: 11/14/2016

REVIEWED BY
By Janice Whitt at 3:48:33 PM, 11/14/2016

DHL Analytical, Inc.

Run ID: GCMS8_161111A **Run No.:** 88967

Analytical Run Date: 11/11/2016 **InstrumentID:** GCMS8

Analyst: Don Winston **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 707 **Column ID:** 0.18mm

Column Length: 20m

Cal Comments: PP161021.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161111	1	PAH_LL_SDOD1	TUNE	R88967	11/11/2016 9:05:00 AM		
ICV-161111	1	PAH_LL_SDOD1	ICV	R88967	11/11/2016 9:34:00 AM		
LCS-77861	1	PAH_LL_SDOD1	LCS	77861	11/11/2016 10:03:00 AM		
MB-77861	1	PAH_LL_SDOD1	MBLK	77861	11/11/2016 10:32:00 AM		
1611028-18A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 11:01:00 AM		
1611028-19A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 11:29:00 AM		
1611028-20A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 11:59:00 AM		
1611028-21A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 12:28:00 PM		
1611028-22A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 12:56:00 PM		
1611028-23A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 1:25:00 PM		
1611028-24A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 1:54:00 PM		
DFTPP2-161111	1	PAH_LL_SDOD1	TUNE	R88967	11/11/2016 2:23:00 PM		
ICV2-161111	1	PAH_LL_SDOD1	ICV	R88967	11/11/2016 2:52:00 PM		
SB-161111	1	PAH_LL_SDOD1	SBLK	77861	11/11/2016 3:25:00 PM		
1611028-25A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 3:54:00 PM		
1611044-01A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 4:23:00 PM		
1611044-02A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 4:51:00 PM		
1611044-03A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 5:20:00 PM		
1611044-04A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 5:49:00 PM		
1611044-05A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 6:17:00 PM		
1611044-06A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 6:46:00 PM		
1611044-07A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 7:15:00 PM		
1611044-08A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 7:43:00 PM		
1611044-09A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 8:12:00 PM		
1611044-10A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 8:41:00 PM		
1611044-11A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 9:09:00 PM		
1611044-12A	10	PAH_LL_SDOD1	SAMP	77861	11/11/2016 9:38:00 PM		
1611044-01AMS	10	PAH_LL_SDOD1	MS	77861	11/11/2016 10:07:00 PM		4 compounds low
1611044-01AMSD	10	PAH_LL_SDOD1	MSD	77861	11/11/2016 10:36:00 PM		12 compounds low and 6 compounds out RPD

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

DHL Analytical, Inc.

Run ID: GCMS8_161111A **Run No.:** 88967

CCV1-161114	1	PAH_LL_SDOD1	CCV	R88967	11/11/2016 11:05:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\msdchem\1\sequence\161111.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\161110\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line			Sample Name/Misc Info		
1)	Sample	3	16111103	PP161021	DFTPP-161111
2)	Sample	4	16111104	PP161021	ICV-161111
3)	Sample	5	16111105	PP161021	LCS-77861
4)	Sample	6	16111106	PP161021	MB-77861
5)	Sample	7	16111107	PP161021	1611028-18A
6)	Sample	8	16111108	PP161021	1611028-19A
7)	Sample	9	16111109	PP161021	1611028-20A
8)	Sample	10	16111110	PP161021	1611028-21A
9)	Sample	11	16111111	PP161021	1611028-22A
10)	Sample	12	16111112	PP161021	1611028-23A
11)	Sample	13	16111113	PP161021	1611028-24A
12)	Sample	14	16111114	DFTPPPAH	DFTPP2-161111
13)	Sample	15	16111115	PP161021	ICV-161111
14)	Sample	16	16111116	PP161021	SB-161111
15)	Sample	17	16111117	PP161021	1611028-25A
16)	Sample	18	16111118	PP161021	1611044-01A
17)	Sample	19	16111119	PP161021	1611044-02A
18)	Sample	20	16111120	PP161021	1611044-03A
19)	Sample	21	16111121	PP161021	1611044-04A
20)	Sample	22	16111122	PP161021	1611044-05A
21)	Sample	23	16111123	PP161021	1611044-06A
22)	Sample	24	16111124	PP161021	1611044-07A
23)	Sample	25	16111125	PP161021	1611044-08A
24)	Sample	26	16111126	PP161021	1611044-09A
25)	Sample	27	16111127	PP161021	1611044-10A
26)	Sample	28	16111128	PP161021	1611044-11A
27)	Sample	29	16111129	PP161021	1611044-12A
28)	Sample	30	16111130	PP161021	1611044-01AMS
29)	Sample	30	16111131	PP161021	1611044-01AMSD
30)	Sample	32	16111132	PP161021	CCV1-161111

Sequence Name: C:\msdchem\1\sequence\161111.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\161110\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line			Sample Name/Misc Info		
1)	Sample	3	16111103	PP161021	DFTPP-161111
2)	Sample	4	16111104	PP161021	ICV-161111
3)	Sample	5	16111105	PP161021	LCS-77861
4)	Sample	6	16111106	PP161021	MB-77861
5)	Sample	7	16111107	PP161021	1611028-18A
6)	Sample	8	16111108	PP161021	1611028-19A
7)	Sample	9	16111109	PP161021	1611028-20A
8)	Sample	10	16111110	PP161021	1611028-21A
9)	Sample	11	16111111	PP161021	1611028-22A
10)	Sample	12	16111112	PP161021	1611028-23A
11)	Sample	13	16111113	PP161021	1611028-24A
12)	Sample	14	16111114	DFTPPPAH	DFTPP2-161111
13)	Sample	15	16111115	PP161021	ICV-161111
14)	Sample	16	16111116	PP161021	SB-161111
15)	Sample	17	16111117	PP161021	1611028-25A
16)	Sample	18	16111118	PP161021	1611044-01A
17)	Sample	19	16111119	PP161021	1611044-02A
18)	Sample	20	16111120	PP161021	1611044-03A
19)	Sample	21	16111121	PP161021	1611044-04A
20)	Sample	22	16111122	PP161021	1611044-05A
21)	Sample	23	16111123	PP161021	1611044-06A
22)	Sample	24	16111124	PP161021	1611044-07A
23)	Sample	25	16111125	PP161021	1611044-08A
24)	Sample	26	16111126	PP161021	1611044-09A
25)	Sample	27	16111127	PP161021	1611044-10A
26)	Sample	28	16111128	PP161021	1611044-11A
27)	Sample	29	16111129	PP161021	1611044-12A
28)	Sample	30	16111130	PP161021	1611044-01AMS
29)	Sample	30	16111131	PP161021	1611044-01AMSD
30)	Sample	32	16111132	PP161021	CCV1-161111

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/10/2016 2:12:53 PM**
Digestion:
Prep End Date: **11/10/2016 5:00:00 PM**

Prep Batch **77861** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		10.22	10	0.978	1 of 1	
1611028-19A	Soil		10.12	10	0.988	1 of 1	
1611028-20A	Soil		10.92	10	0.916	1 of 1	
1611028-21A	Soil		10.18	10	0.982	1 of 1	
1611028-22A	Soil		10.4	10	0.962	1 of 1	
1611028-23A	Soil		10.08	10	0.992	1 of 1	
1611028-24A	Soil		10.62	10	0.942	1 of 1	
1611028-25A	Soil		10.45	10	0.957	1 of 1	
1611044-01A	Soil		10.76	10	0.929	1 of 3	
1611044-01AMS	Soil		10.07	10	0.993	1 of	
1611044-01AMSD	Soil		10.15	10	0.985	1 of	
1611044-02A	Soil		10.87	10	0.920	1 of 1	
1611044-03A	Soil		10.1	10	0.990	1 of 1	
1611044-04A	Soil		10.73	10	0.932	1 of 1	
1611044-05A	Soil		10.47	10	0.955	1 of 1	
1611044-06A	Soil		10.04	10	0.996	1 of 1	
1611044-07A	Soil		10.53	10	0.950	1 of 1	
1611044-08A	Soil		10.07	10	0.993	1 of 1	
1611044-09A	Soil		10.3	10	0.971	1 of 1	
1611044-10A	Soil		10.69	10	0.935	1 of 1	
1611044-11A	Soil		10.74	10	0.931	1 of 1	
1611044-12A	Soil		10.8	10	0.926	1 of 1	
LCS-77861	Soil		10	10	1.000	of	
MB-77861	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 2:41:46 PM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/10/2016 2:12:53 PM**
Digestion:
Prep End Date: 11/10/16 5:07PM

Prep Batch **77861** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		10.22	10	1.000	1 of 1	
1611028-19A	Soil		10.12	10	1.000	1 of 1	
1611028-20A	Soil		10.92	10	1.000	1 of 1	
1611028-21A	Soil		10.18	10	1.000	1 of 1	
1611028-22A	Soil		10.40	10	1.000	1 of 1	
1611028-23A	Soil		10.08	10	1.000	1 of 1	
1611028-24A	Soil		10.62	10	1.000	1 of 1	
1611028-25A	Soil		10.45	10	1.000	1 of 1	
1611044-01A	Soil		10.76	10	1.000	of 3	
1611044-01AMS	Soil		10.07	10	1.000	of	
1611044-01AMSD	Soil		10.15	10	1.000	of	
1611044-02A	Soil		10.87	10	1.000	1 of 1	
1611044-03A	Soil		10.10	10	1.000	1 of 1	
1611044-04A	Soil		10.73	10	1.000	1 of 1	
1611044-05A	Soil		10.47	10	1.000	1 of 1	
1611044-06A	Soil		10.04	10	1.000	1 of 1	
1611044-07A	Soil		10.53	10	1.000	1 of 1	
1611044-08A	Soil		10.07	10	1.000	1 of 1	
1611044-09A	Soil		10.30	10	1.000	1 of 1	
1611044-10A	Soil		10.69	10	1.000	1 of 1	
1611044-11A	Soil		10.74	10	1.000	1 of 1	
1611044-12A	Soil		10.80	10	1.000	1 of 1	
LCS-77861	Soil		10	10	1.000	of	
MB-77861	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 2:41:43 PM, 11/14/2016

11/10/16

11/10/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-15A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-16A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-17A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-18A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-19A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-20A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-21A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-22A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-23A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-24A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-25A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 2:42:02 PM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/4/2016 10:00:00 AM**
Digestion: **Start: 11/4/2016 10:20:00 AM / Stop: 11/9/2016 9:00:00 AM**
Prep End Date: **11/9/2016 1:00:00 PM**

Prep Batch **77804** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

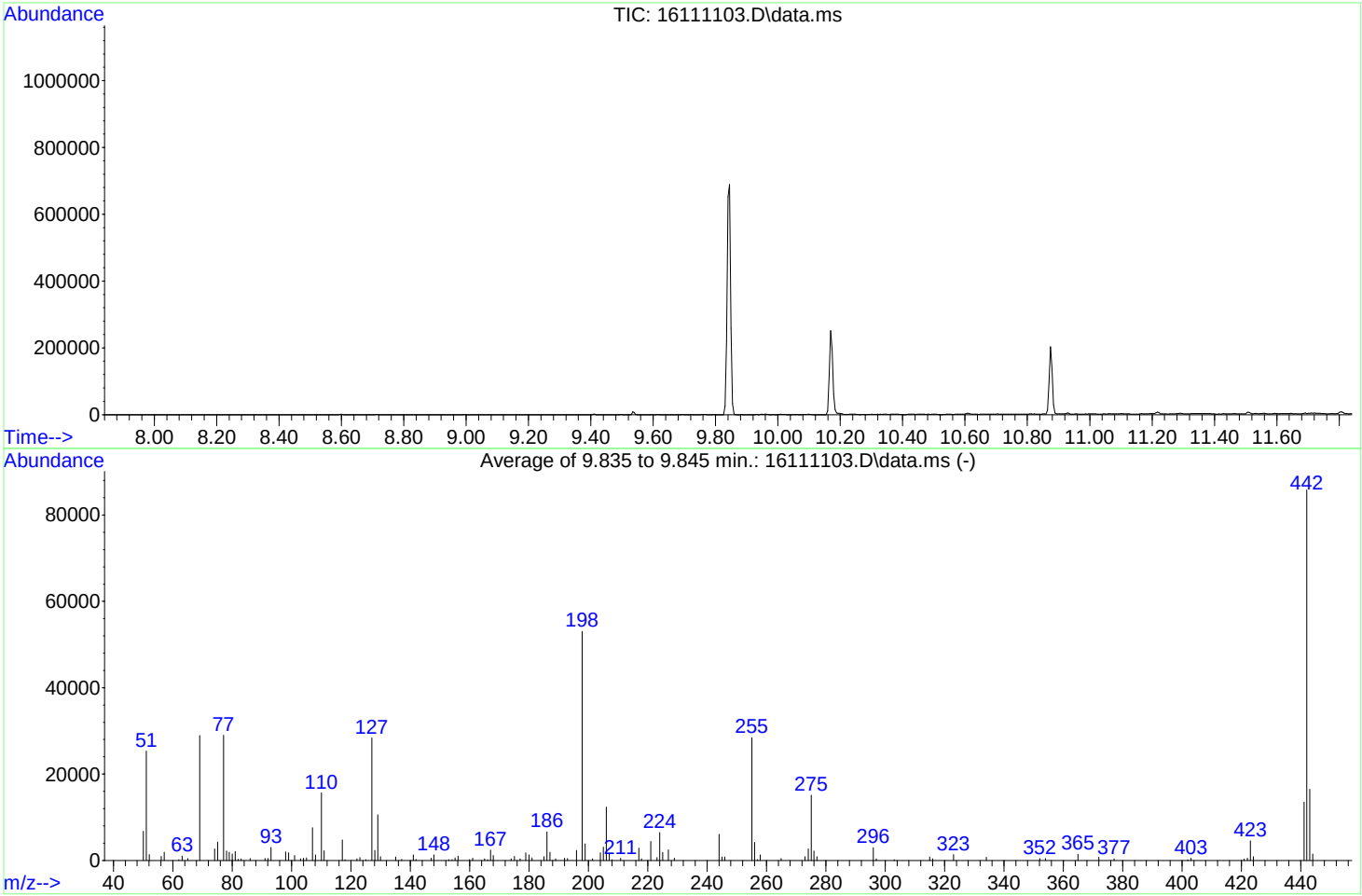
Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-01A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1611044-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-03A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-04A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-06A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-07A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-08A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-09A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-10A	Soil		0	0	#Num!	1 of 1	
SS							
1611044-11A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611044-12A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 2:42:00 PM, 11/14/2016

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111103.D
Acq On : 11 Nov 2016 9:05 am
Operator :
Sample : DFTPP-161111
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 797, 798, 799; Background Corrected with Scan 793

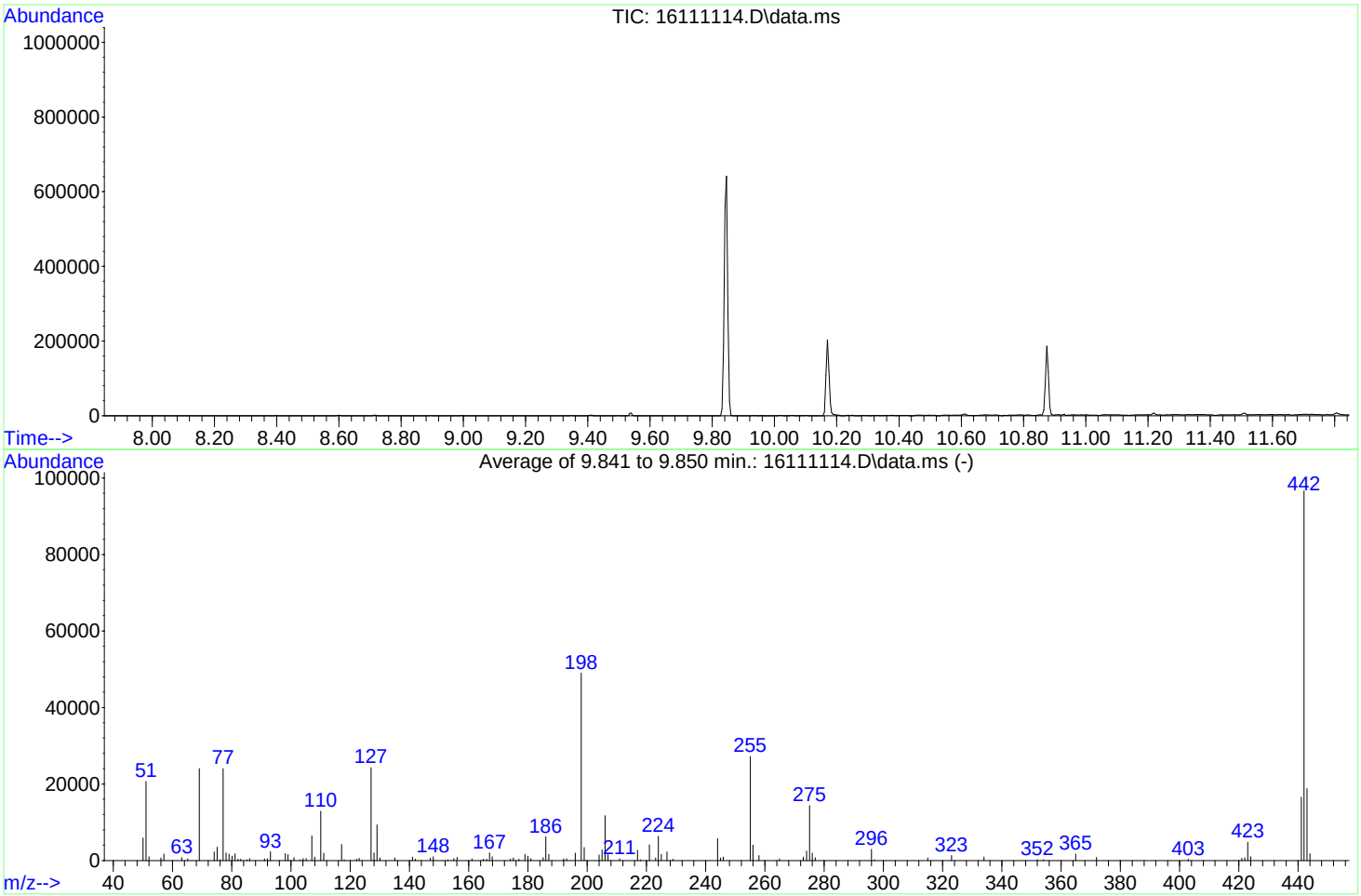
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	47.7	25301	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	54.6	28944	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	53.5	28372	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	53045	PASS
199	198	5	9	7.2	3808	PASS
275	198	10	60	28.5	15101	PASS
365	198	1	200	2.7	1442	PASS
441	442	0.01	24	15.7	13501	PASS
442	198	50	400	161.8	85832	PASS
443	442	15	24	19.2	16470	PASS

REVIEWED BY
By Janice Whitt at 2:42:05 PM, 11/14/2016

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111114.D
Acq On : 11 Nov 2016 2:23 pm
Operator :
Sample : DFTPP2-161111
Misc : TUNE
ALS Vial : 12 Sample Multiplier: 10

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 798, 799, 800; Background Corrected with Scan 793

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	42.2	20671	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	49.0	23984	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	49.5	24224	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	48978	PASS
199	198	5	9	7.0	3422	PASS
275	198	10	60	29.4	14387	PASS
365	198	1	200	3.4	1675	PASS
441	442	0.01	24	17.2	16584	PASS
442	198	50	400	197.4	96685	PASS
443	442	15	24	19.5	18807	PASS

REVIEWED BY
By Janice Whitt at 2:42:08 PM, 11/14/2016

Manual Integrations Tracking Form - DoD QSM 4.2 Requirement

Instrument ID: GCMS#8 **Data Folder: GCMS8_161111A**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611044-08A	Benzo(k)fluoranthene – integrated wrong peak.			

***Manually Integrated = MI**

Don Winston

11-11-16

Analyst **Date**

Janice Whitt 11/14/2016

2nd Level Review **Date**

MI_GCMS8

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111104.D
Acq On : 11 Nov 2016 9:34 am
Operator :
Sample : ICV-161111
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 13:25:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

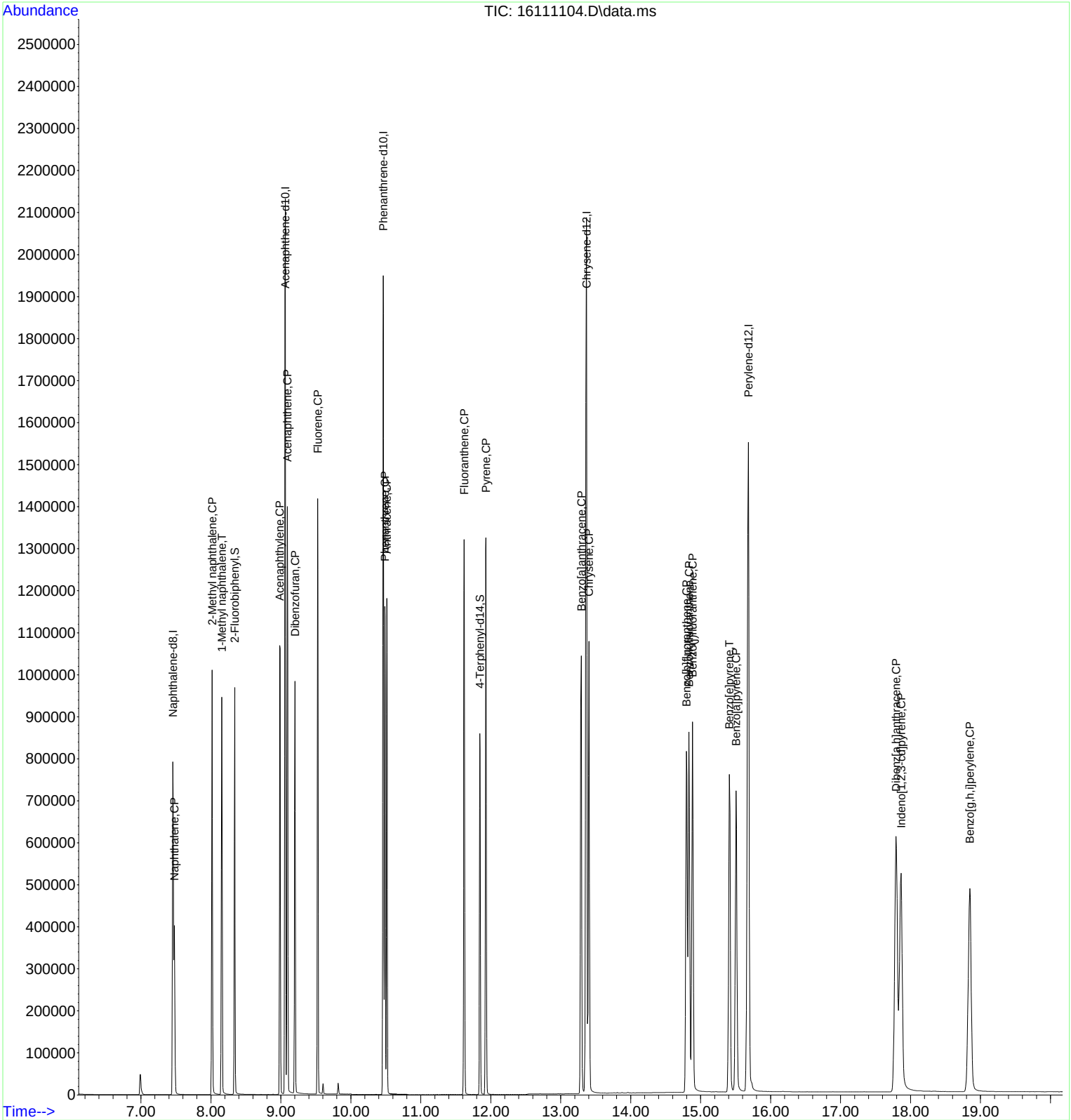
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.455	136	735208	4000.00	ug/kg	84
5) Acenaphthene-d10	9.063	164	817682	4000.00	ug/kg	103
11) Phenanthrene-d10	10.463	188	1474370	4000.00	ug/kg	104
17) Chrysene-d12	13.367	240	1752009	4000.00	ug/kg	105
20) Perylene-d12	15.682	264	1864814	4000.00	ug/kg	106
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	547595	2061.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.55%			
16) 4-Terphenyl-d14	11.844	244	596505	2104.82	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 52.62%			
Target Compounds						Qvalue
2) Naphthalene	7.478	128	286195	2004.48	ug/kg	100
3) 2-Methyl naphthalene	8.016	142	398707	2523.45	ug/kg	94
4) 1-Methyl naphthalene	8.155	142	362189	2539.05	ug/kg	95
6) Dibenzofuran	9.201	168	614051	2066.22	ug/kg	100
8) Acenaphthylene	8.984	152	702379	2060.32	ug/kg	100
9) Acenaphthene	9.092	154	403415	2042.77	ug/kg	100
10) Fluorene	9.525	166	504646	2040.17	ug/kg	97
12) Phenanthrene	10.486	178	678298	1958.31	ug/kg	99
13) Anthracene	10.516	178	681584	1932.94	ug/kg	100
14) Fluoranthene	11.620	202	786616	1920.92	ug/kg	100
15) Pyrene	11.931	202	800686	1904.43	ug/kg	100
18) Benzo[a]anthracene	13.294	228	843617	2044.79	ug/kg	100
19) Chrysene	13.404	228	769182	2056.41	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	957057	2057.02	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	825572	1963.09	ug/kg	99
23) Benzo(j)fluoranthene	14.883	252	850220	2055.32	ug/kg	99
24) Benzo[e]pyrene	15.411	252	852826	2044.93	ug/kg	99
25) Benzo[a]pyrene	15.506	252	856590	2010.30	ug/kg	99
26) Dibenz[a,h]anthracene	17.791	278	890854	2033.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.865	276	857699	2006.92	ug/kg	100
28) Benzo[g,h,i]perylene	18.846	276	922565	2038.30	ug/kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111104.D
Acq On : 11 Nov 2016 9:34 am
Operator :
Sample : ICV-161111
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

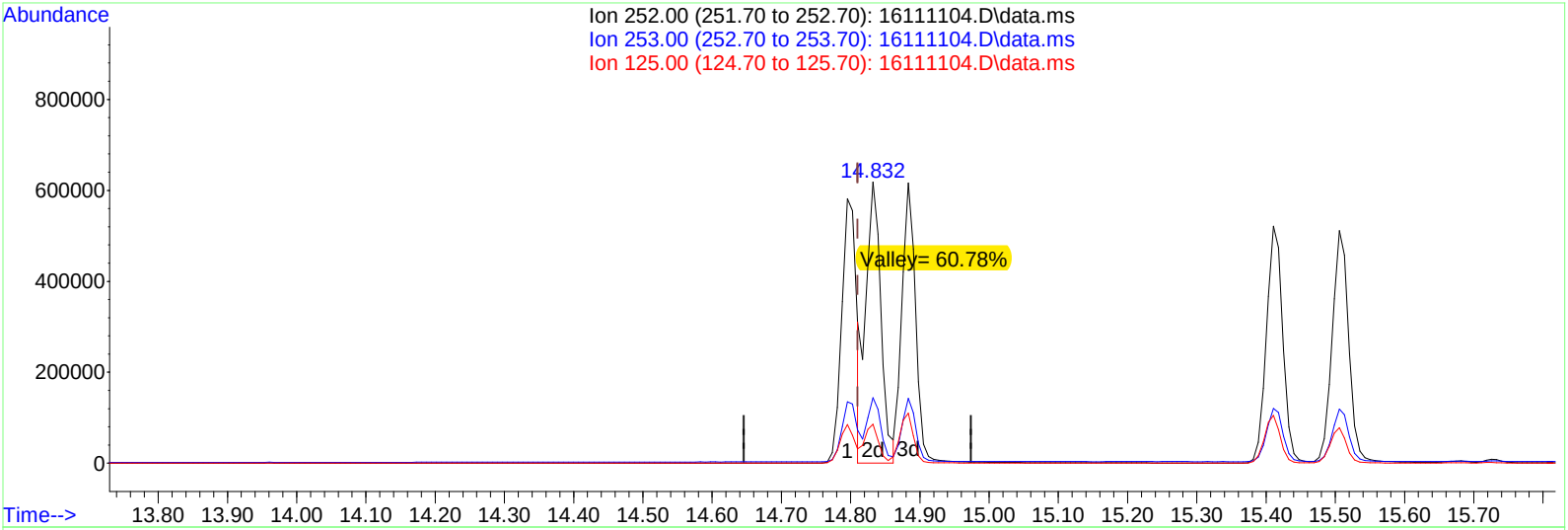
Quant Time: Nov 14 13:25:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

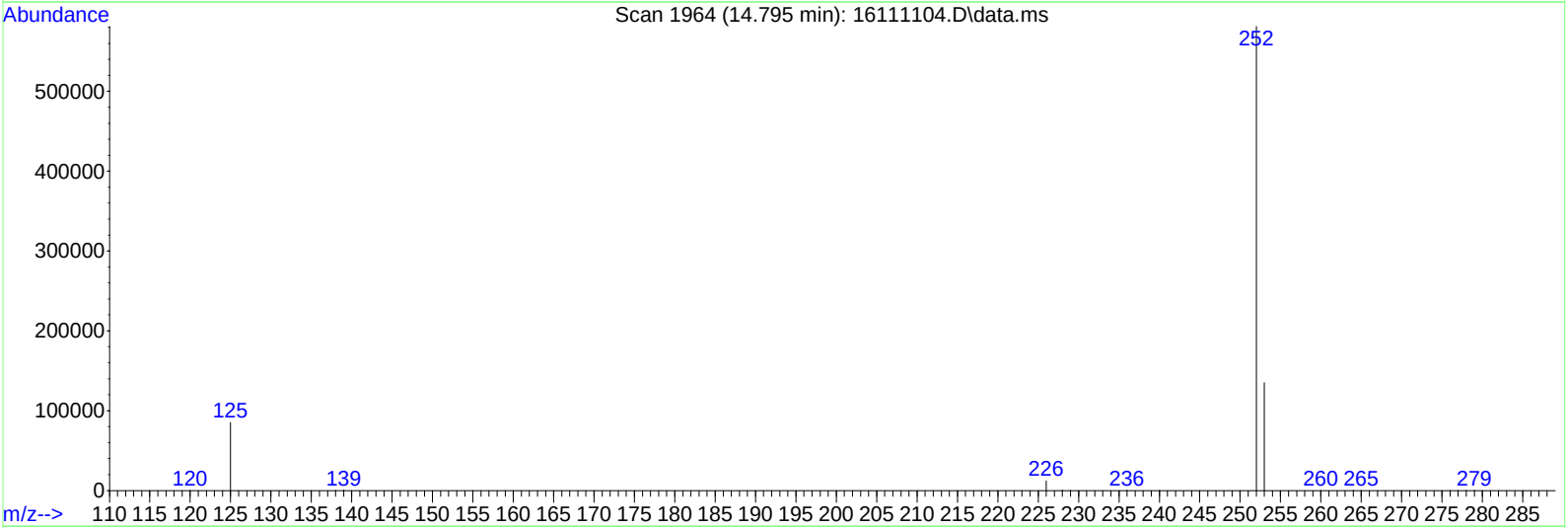


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111104.D
Acq On : 11 Nov 2016 9:34 am
Operator :
Sample : ICV-161111
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 13:25:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration





TIC: 16111104.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.795min (-0.015) 2057.02ug/kg

response 957057

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.72
125.00	12.90	14.65
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111105.D
Acq On : 11 Nov 2016 10:03 am
Operator :
Sample : LCS-77861
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 13:25:31 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1219971	4000.00	ug/kg	139
5) Acenaphthene-d10	9.062	164	792087	4000.00	ug/kg	100
11) Phenanthrene-d10	10.463	188	1459415	4000.00	ug/kg	103
17) Chrysene-d12	13.366	240	1723011	4000.00	ug/kg	103
20) Perylene-d12	15.681	264	1827848	4000.00	ug/kg	104

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	203127	789.53	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.74%#			
16) 4-Terphenyl-d14	11.844	244	229512	818.15	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.45%#			

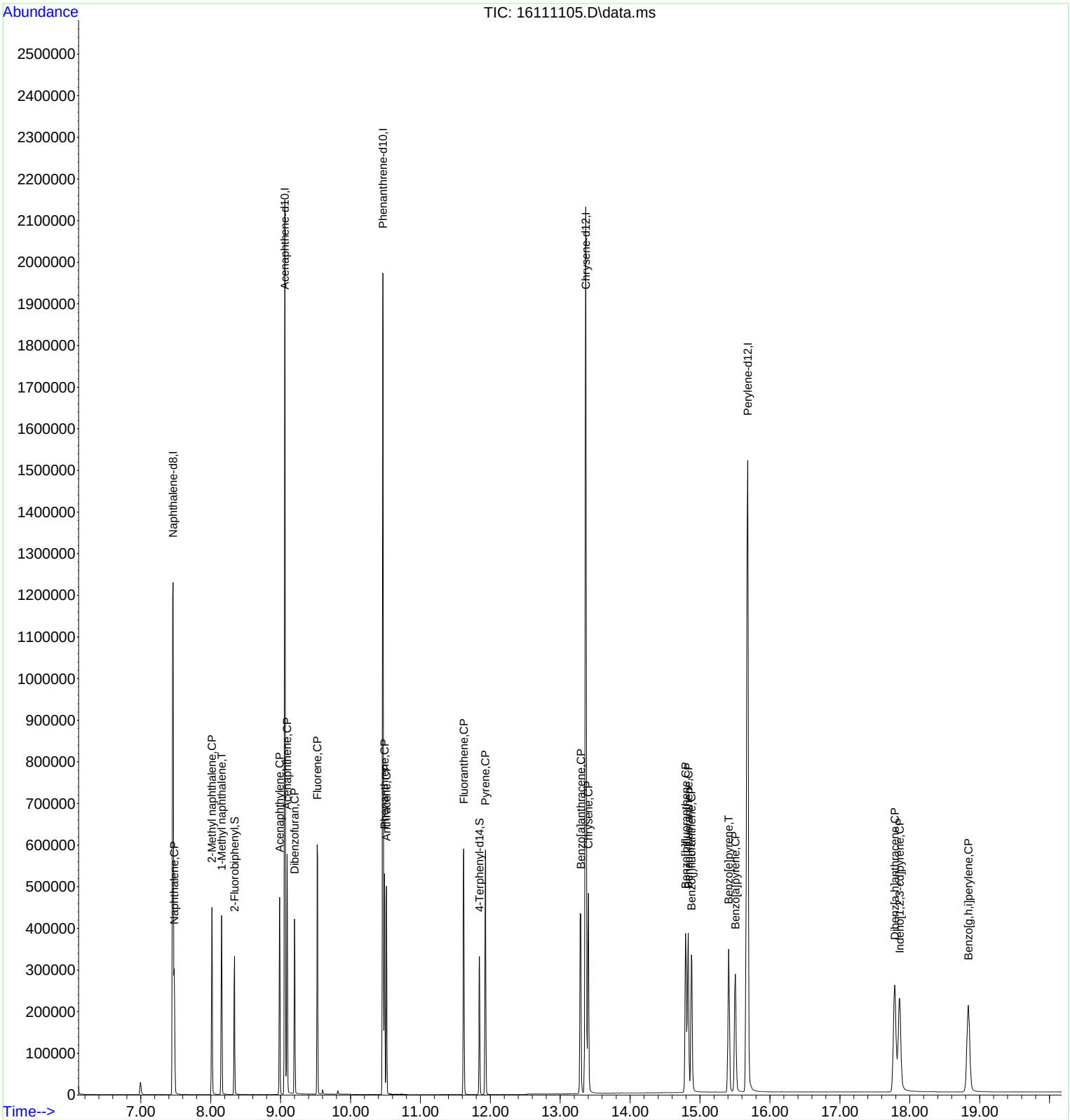
Target Compounds						Qvalue
2) Naphthalene	7.479	128	202963	856.68	ug/kg	99
3) 2-Methyl naphthalene	8.016	142	180566	688.71	ug/kg	95
4) 1-Methyl naphthalene	8.155	142	162483	686.44	ug/kg	95
6) Dibenzofuran	9.199	168	259457	901.26	ug/kg	99
8) Acenaphthylene	8.988	152	295898	896.02	ug/kg	98
9) Acenaphthene	9.091	154	169044	883.64	ug/kg	98
10) Fluorene	9.528	166	219239	914.97	ug/kg	97
12) Phenanthrene	10.486	178	302939	883.57	ug/kg	99
13) Anthracene	10.514	178	282041	808.05	ug/kg	99
14) Fluoranthene	11.620	202	353165	871.27	ug/kg	98
15) Pyrene	11.929	202	357380	858.74	ug/kg	99
18) Benzo[a]anthracene	13.293	228	372269	917.51	ug/kg	99
19) Chrysene	13.403	228	348466	947.30	ug/kg	99
21) Benzo[b]fluoranthene	14.794	252	388636	852.19	ug/kg	99
22) Benzo[k]fluoranthene	14.831	252	385293	934.70	ug/kg	100
23) Benzo(j)fluoranthene	14.875	252	352306	868.89	ug/kg	96
24) Benzo[e]pyrene	15.410	252	372437	911.10	ug/kg	97
25) Benzo[a]pyrene	15.505	252	351050	840.53	ug/kg	99
26) Dibenz[a,h]anthracene	17.783	278	379694	884.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.856	276	368152	878.86	ug/kg	100
28) Benzo[g,h,i]perylene	18.838	276	396295	893.28	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111105.D
Acq On : 11 Nov 2016 10:03 am
Operator :
Sample : LCS-77861
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 13:25:31 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111106.D
Acq On : 11 Nov 2016 10:32 am
Operator :
Sample : MB-77861
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 13:25:34 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1133312	4000.00	ug/kg	129
5) Acenaphthene-d10	9.062	164	787777	4000.00	ug/kg	100
11) Phenanthrene-d10	10.464	188	1417304	4000.00	ug/kg	100
17) Chrysene-d12	13.366	240	1693815	4000.00	ug/kg	101
20) Perylene-d12	15.681	264	1802523	4000.00	ug/kg	102

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	213680	835.09	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.88%#			
16) 4-Terphenyl-d14	11.842	244	252739	927.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 23.19%#			

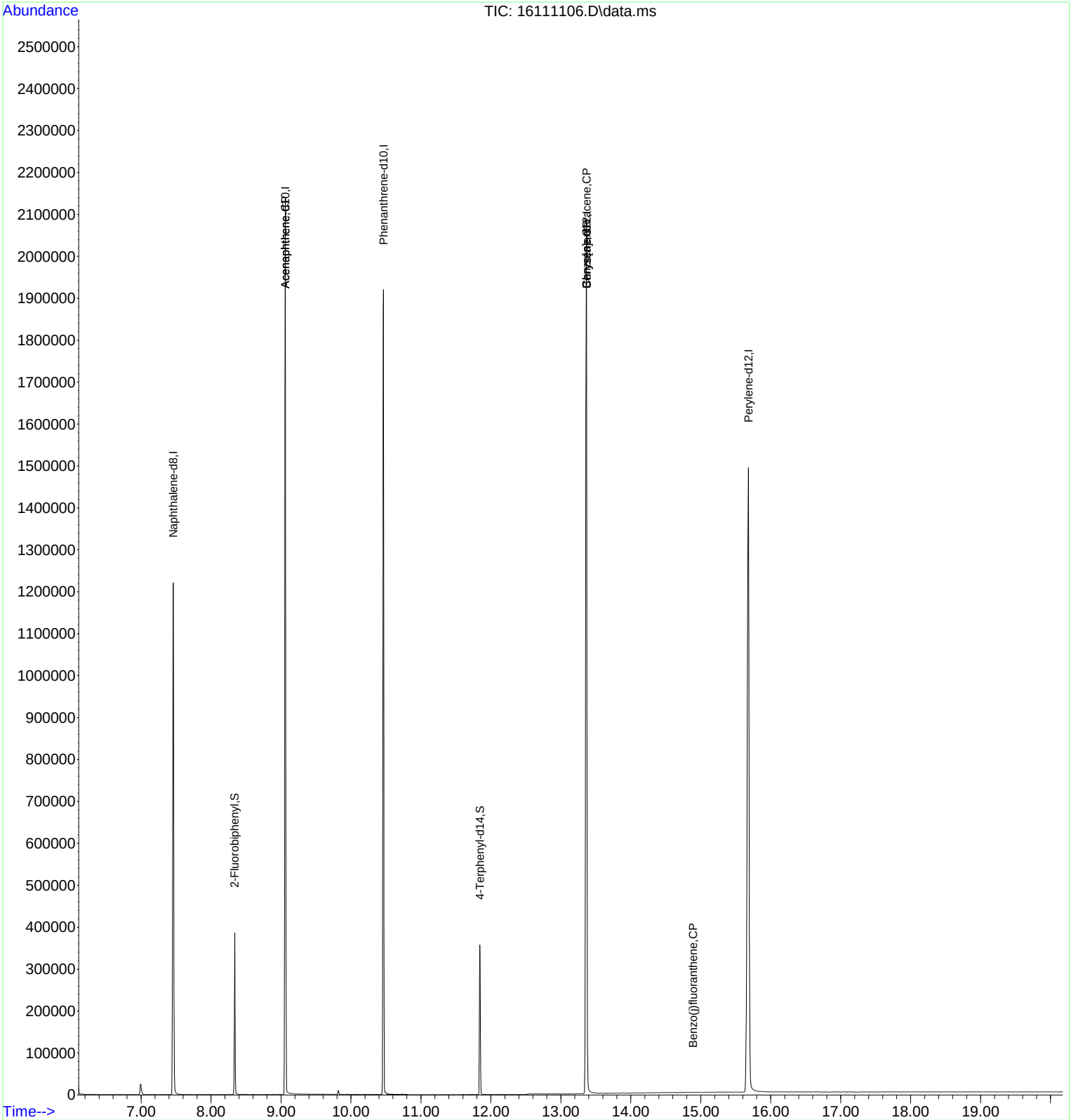
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2991	15.72	ug/kg#	11
18) Benzo[a]anthracene	13.366	228	4438	11.13	ug/kg	72
19) Chrysene	13.366	228	4450	12.31	ug/kg	68
23) Benzo(j)fluoranthene	14.882	252	57	0.14	ug/kg#	60

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111106.D
Acq On : 11 Nov 2016 10:32 am
Operator :
Sample : MB-77861
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 13:25:34 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111115.D
Acq On : 11 Nov 2016 2:52 pm
Operator :
Sample : ICV2-161111
Misc : ICV
ALS Vial : 13 Sample Multiplier: ~~10~~ 1X

Quant Time: Nov 14 13:25:37 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

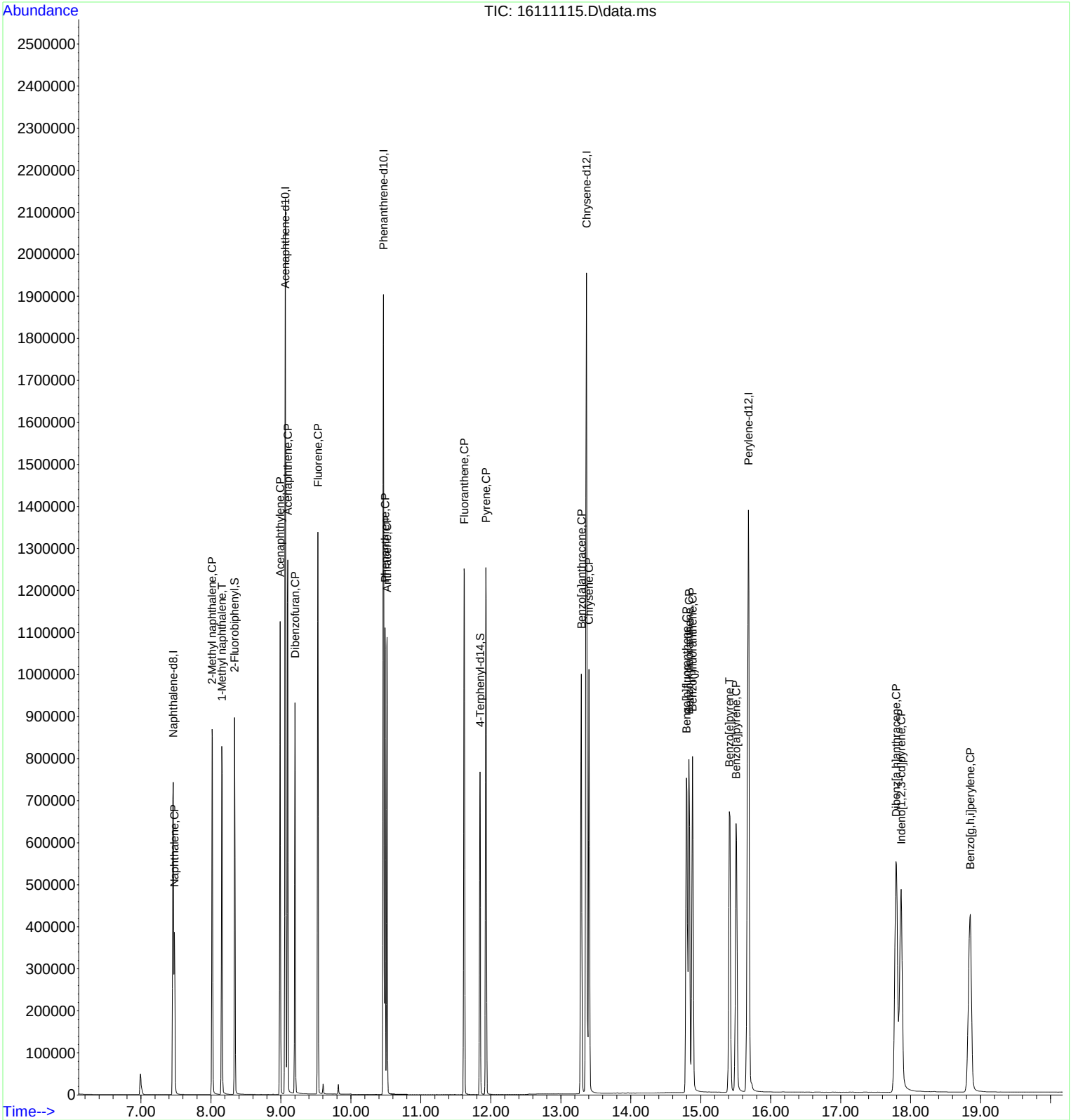
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	718113	4000.00	ug/kg	82
5) Acenaphthene-d10	9.062	164	771094	4000.00	ug/kg	97
11) Phenanthrene-d10	10.465	188	1393318	4000.00	ug/kg	99
17) Chrysene-d12	13.367	240	1593924	4000.00	ug/kg	95
20) Perylene-d12	15.682	264	1714288	4000.00	ug/kg	97
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	512635	2046.80	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.17%			
16) 4-Terphenyl-d14	11.845	244	545844	2038.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 50.95%			
Target Compounds						Qvalue
2) Naphthalene	7.477	128	281441	2018.11	ug/kg	99
3) 2-Methyl naphthalene	8.021	142	382374	2477.69	ug/kg	97
4) 1-Methyl naphthalene	8.159	142	346028	2483.51	ug/kg	96
6) Dibenzofuran	9.200	168	576464	2056.94	ug/kg	100
8) Acenaphthylene	8.989	152	654516	2035.92	ug/kg	99
9) Acenaphthene	9.097	154	384202	2063.02	ug/kg	95
10) Fluorene	9.529	166	474801	2035.48	ug/kg	98
12) Phenanthrene	10.488	178	635001	1939.95	ug/kg	99
13) Anthracene	10.517	178	636877	1911.22	ug/kg	100
14) Fluoranthene	11.621	202	723082	1868.48	ug/kg	99
15) Pyrene	11.930	202	739163	1860.37	ug/kg	100
18) Benzo[a]anthracene	13.294	228	777067	2070.29	ug/kg	100
19) Chrysene	13.403	228	723312	2125.57	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	869881	2033.82	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	750857	1942.20	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	776011	2040.64	ug/kg	98
24) Benzo[e]pyrene	15.418	252	781679	2038.91	ug/kg	96
25) Benzo[a]pyrene	15.506	252	781057	1993.99	ug/kg	98
26) Dibenz[a,h]anthracene	17.799	278	804820	1997.97	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.864	276	783716	1994.83	ug/kg	99
28) Benzo[g,h,i]perylene	18.853	276	832215	2000.13	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111115.D
Acq On : 11 Nov 2016 2:52 pm
Operator :
Sample : ICV2-161111
Misc : ICV
ALS Vial : 13 Sample Multiplier: ~~10~~ 1X

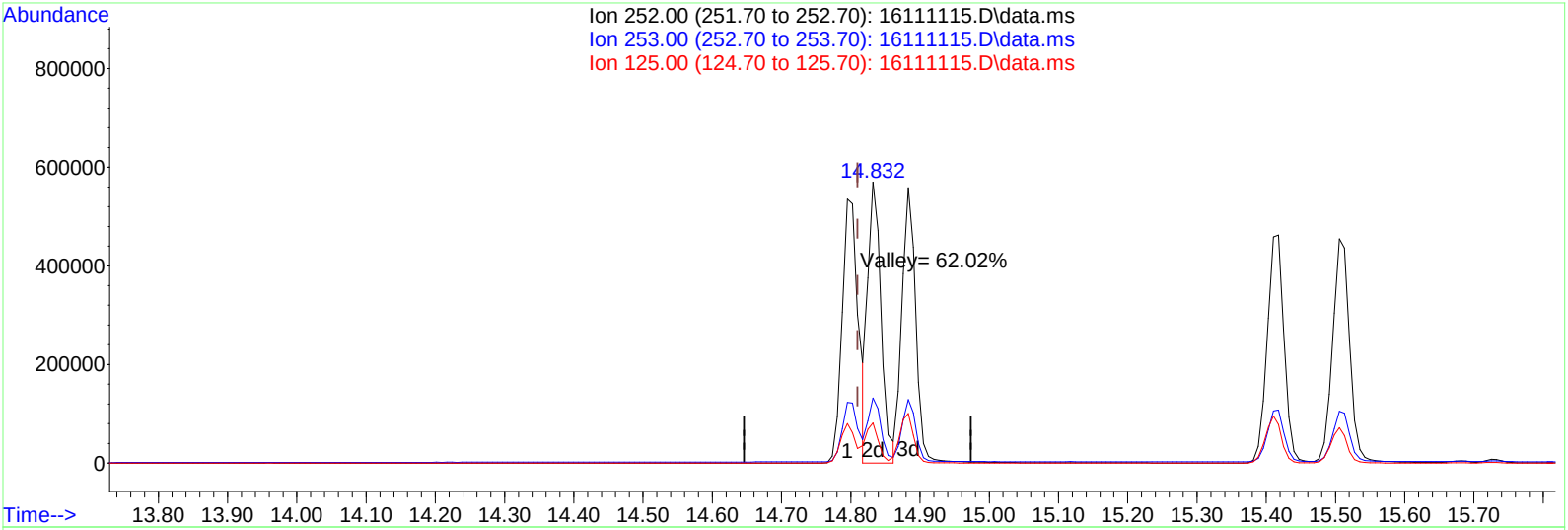
Quant Time: Nov 14 13:25:37 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

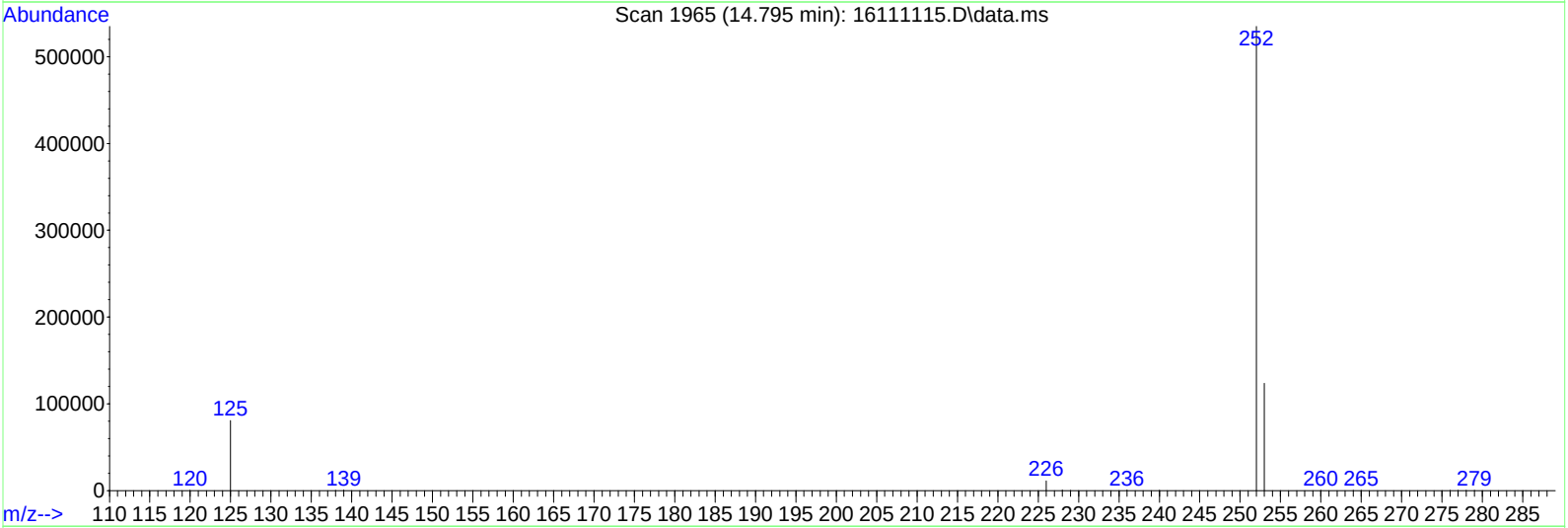


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111115.D
Acq On : 11 Nov 2016 2:52 pm
Operator :
Sample : ICV2-161111
Misc : ICV
ALS Vial : 13 Sample Multiplier: 10

Quant Time: Nov 14 13:25:37 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration





TIC: 16111115.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.795min (-0.015) 2033.82ug/kg

response 869881

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.59
125.00	12.90	15.03
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111116.D
Acq On : 11 Nov 2016 3:25 pm
Operator :
Sample : SB-161111
Misc : SBLK
ALS Vial : 14 Sample Multiplier: ~~10~~ 1X

Quant Time: Nov 14 13:25:40 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.465	136	1105843	4000.00	ug/kg	126
5) Acenaphthene-d10	9.066	164	700387	4000.00	ug/kg	89
11) Phenanthrene-d10	10.467	188	1223001	4000.00	ug/kg	87
17) Chrysene-d12	13.367	240	1459752	4000.00	ug/kg	87
20) Perylene-d12	15.682	264	1527363	4000.00	ug/kg	87

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	21	0.09	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.00%#			
16) 4-Terphenyl-d14	11.847	244	110	0.47	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.01%#			

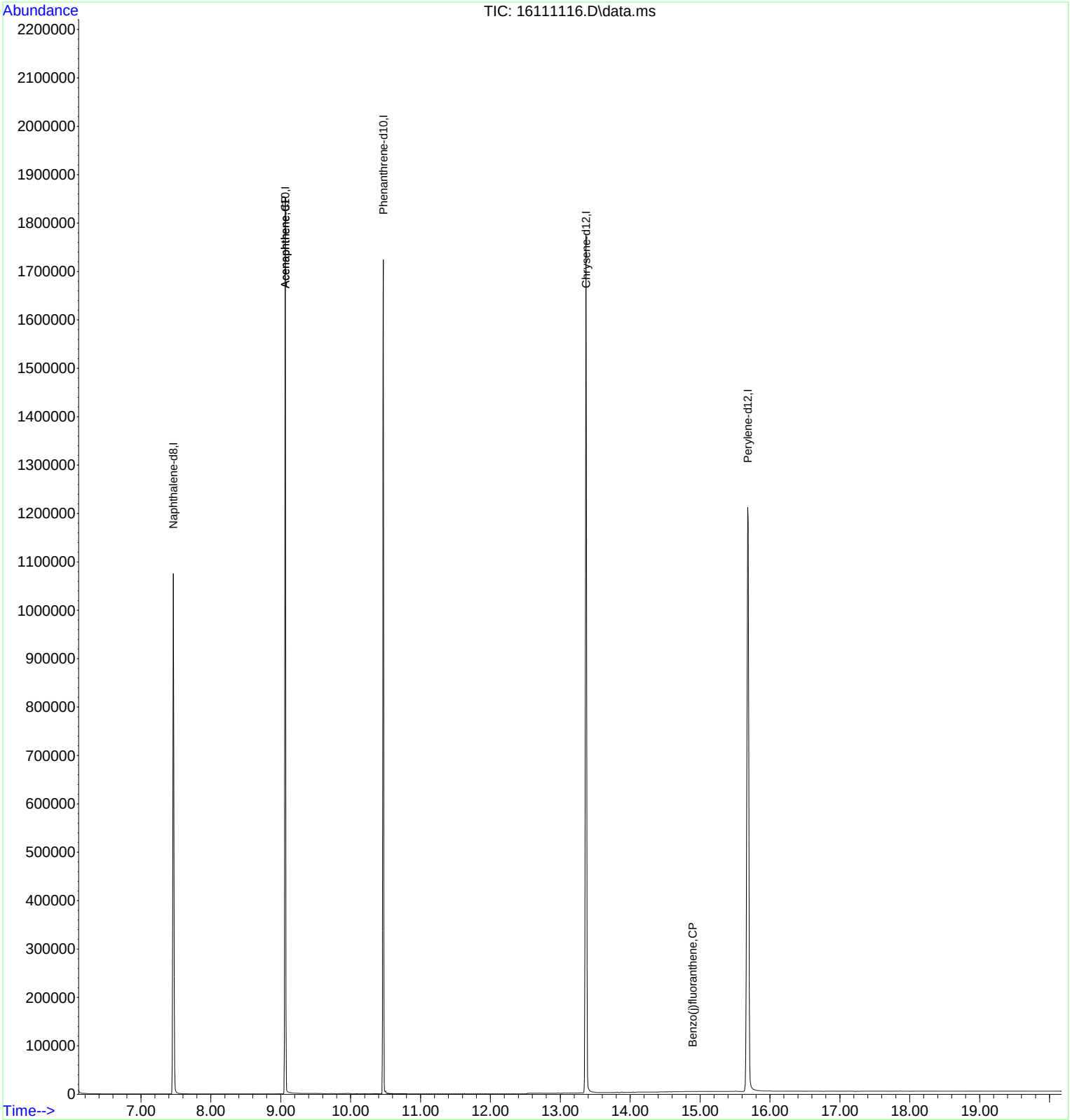
Target Compounds						Qvalue
9) Acenaphthene	9.066	154	2677	~~15.83~~	~~ug/kg#~~	~~13~~
23) Benzo(j)fluoranthene	14.883	252	109	0.32	ug/kg#	12

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111116.D
Acq On : 11 Nov 2016 3:25 pm
Operator :
Sample : SB-161111
Misc : SBLK
ALS Vial : 14 Sample Multiplier: ~~10~~ 1X

Quant Time: Nov 14 13:25:40 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111118.D
Acq On : 11 Nov 2016 4:23 pm
Operator :
Sample : 1611044-01A
Misc : SAMP
ALS Vial : 16 Sample Multiplier: 10

Quant Time: Nov 14 13:33:26 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	896861	4000.00	ug/kg	102
5) Acenaphthene-d10	9.062	164	714097	4000.00	ug/kg	90
11) Phenanthrene-d10	10.465	188	1250913	4000.00	ug/kg	89
17) Chrysene-d12	13.367	240	1495808	4000.00	ug/kg	89
20) Perylene-d12	15.681	264	1565975	4000.00	ug/kg	89

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	21890	94.38	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.36%#			
16) 4-Terphenyl-d14	11.844	244	24006	99.84	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.50%#			

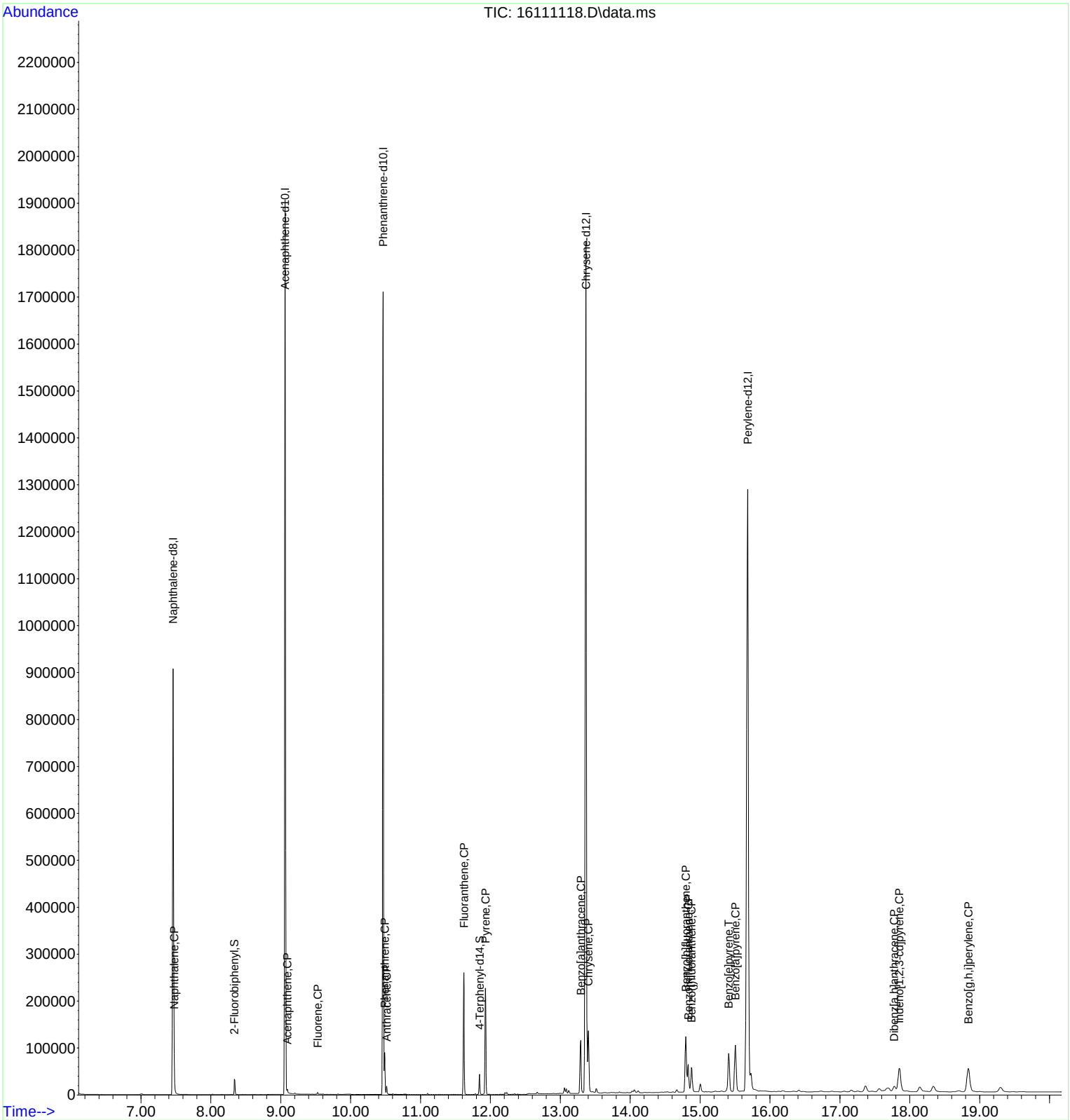
Target Compounds						Qvalue
2) Naphthalene	7.483	128	1583	9.09	ug/kg	99
9) Acenaphthene	9.096	154	1949	11.30	ug/kg	96
10) Fluorene	9.528	166	1383	6.40	ug/kg	94
12) Phenanthrene	10.488	178	47639	162.11	ug/kg	98
13) Anthracene	10.515	178	9957	33.28	ug/kg	98
14) Fluoranthene	11.620	202	150959	434.49	ug/kg	98
15) Pyrene	11.929	202	135329	379.38	ug/kg	99
18) Benzo[a]anthracene	13.293	228	95031	269.79	ug/kg	99
19) Chrysene	13.403	228	112882	353.48	ug/kg	98
21) Benzo[b]fluoranthene	14.795	252	125581	321.42	ug/kg	99
22) Benzo[k]fluoranthene	14.832	252	53087	150.32	ug/kg	91
23) Benzo(j)fluoranthene	14.876	252	53819	154.93	ug/kg	94
24) Benzo[e]pyrene	15.410	252	89282	254.94	ug/kg	97
25) Benzo[a]pyrene	15.506	252	121377	339.22	ug/kg	100
26) Dibenz[a,h]anthracene	17.776	278	13328	36.22	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.850	276	87037	242.52	ug/kg	99
28) Benzo[g,h,i]perylene	18.838	276	96429	253.71	ug/kg	98

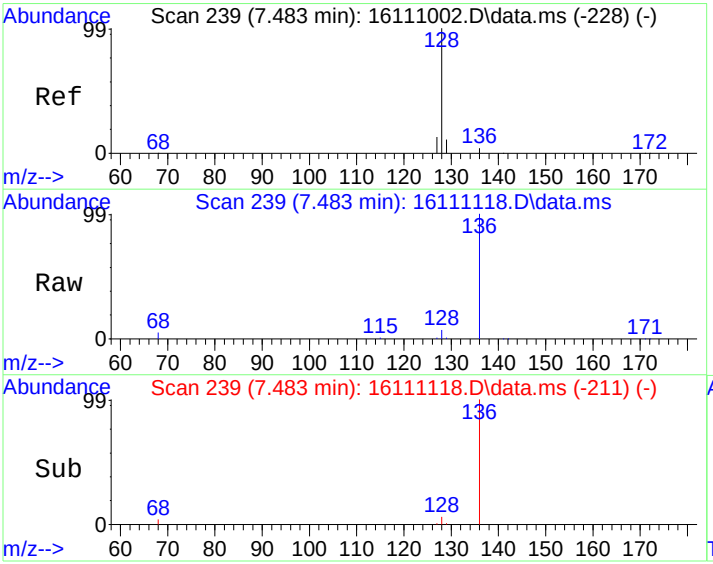
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111118.D
Acq On : 11 Nov 2016 4:23 pm
Operator :
Sample : 1611044-01A
Misc : SAMP
ALS Vial : 16 Sample Multiplier: 10

Quant Time: Nov 14 13:33:26 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

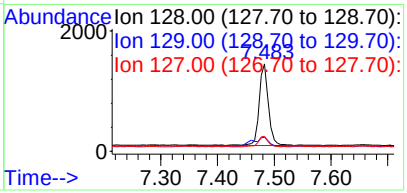


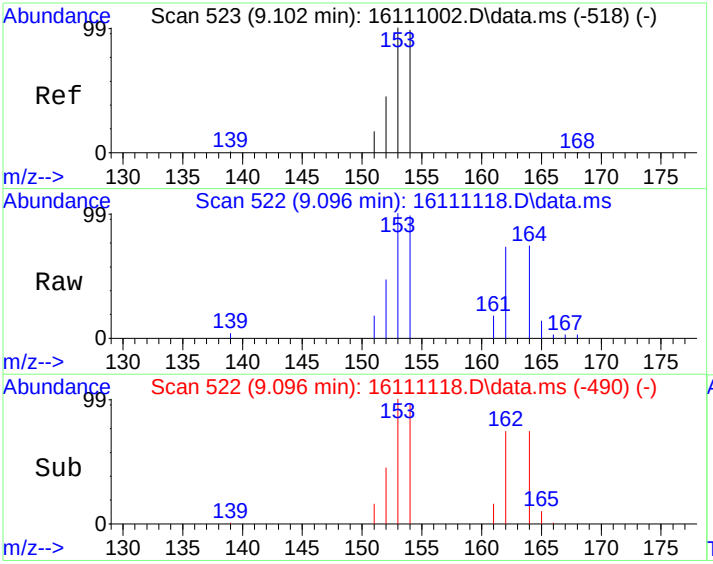


#2
Naphthalene
Concen: 9.09 ug/kg
RT: 7.483 min Scan# 239
Delta R.T. -0.000 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:128 Resp: 1583

Ion	Ratio	Lower	Upper
128	100		
129	11.3	0.0	41.4
127	12.7	0.0	43.3

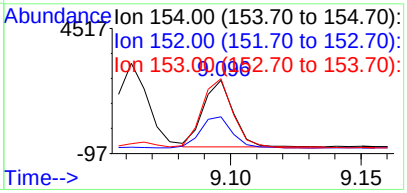


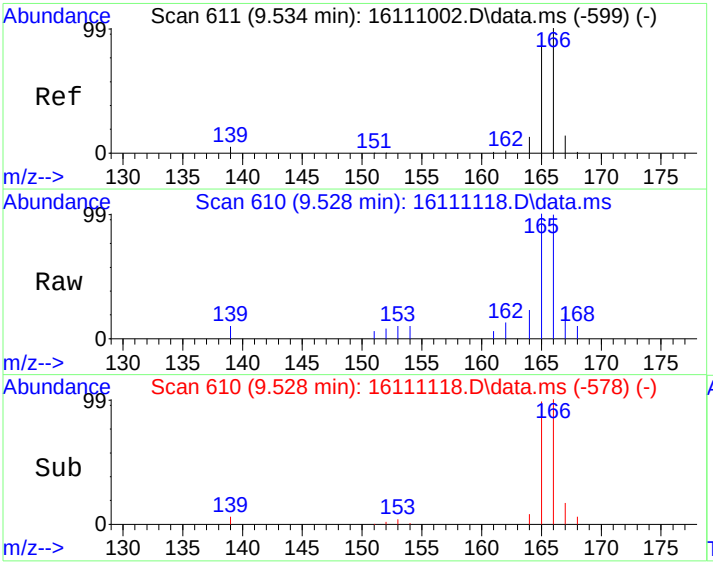


#9
Acenaphthene
Concen: 11.30 ug/kg
RT: 9.096 min Scan# 522
Delta R.T. -0.005 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:154 Resp: 1949

Ion	Ratio	Lower	Upper
154	100		
152	46.3	20.7	80.7
153	104.0	76.8	136.8

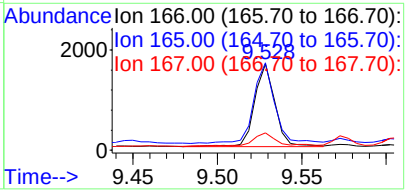


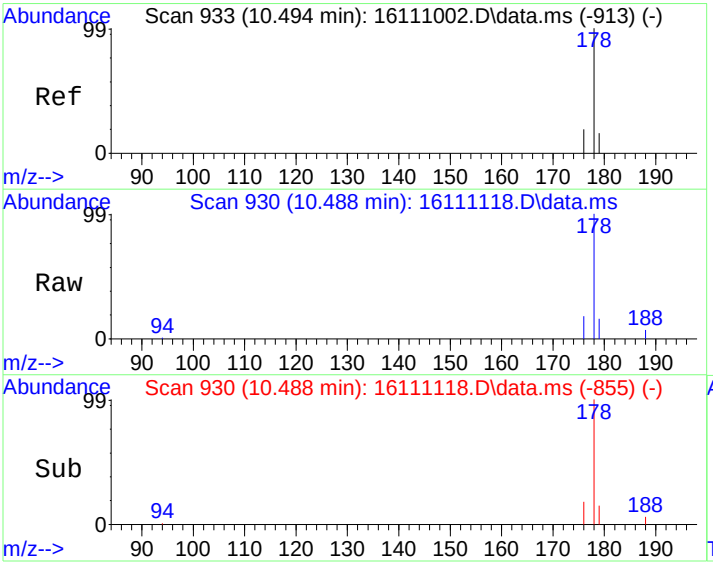


#10
Fluorene
Concen: 6.40 ug/kg
RT: 9.528 min Scan# 610
Delta R.T. -0.005 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:166 Resp: 1383

Ion	Ratio	Lower	Upper
166	100		
165	97.3	61.7	121.7
167	16.2	0.0	43.9

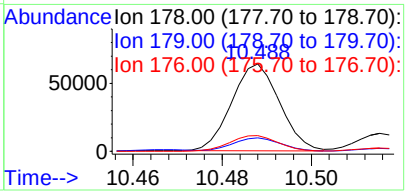


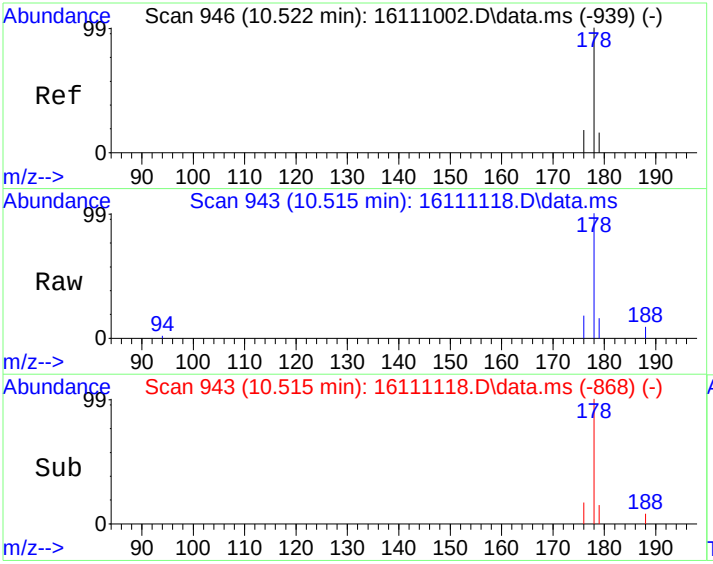


#12
Phenanthrene
Concen: 162.11 ug/kg
RT: 10.488 min Scan# 930
Delta R.T. -0.006 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:178 Resp: 47639

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	46.2
176	17.9	0.0	48.4

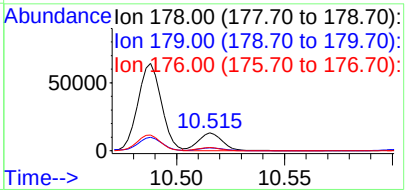


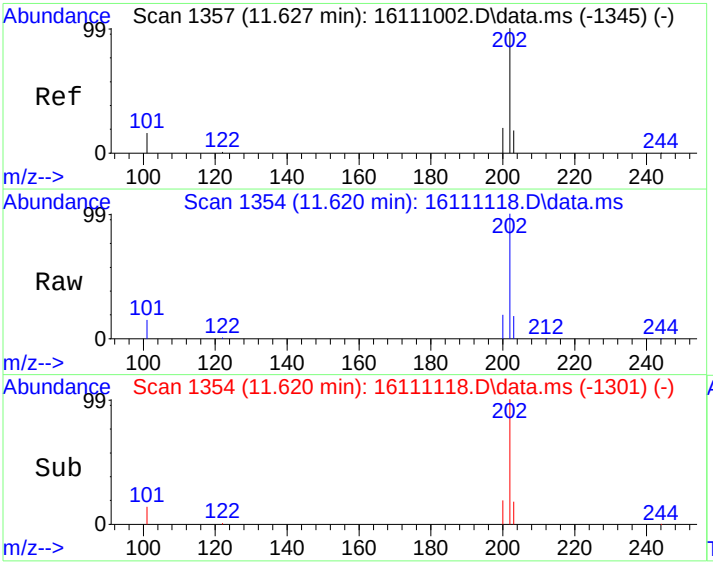


#13
Anthracene
Concen: 33.28 ug/kg
RT: 10.515 min Scan# 943
Delta R.T. -0.006 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:178 Resp: 9957

Ion	Ratio	Lower	Upper
178	100		
179	15.0	0.0	46.2
176	17.3	0.0	48.2

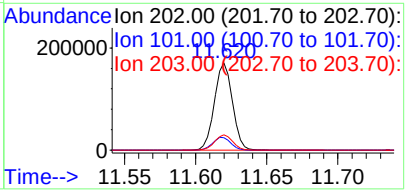


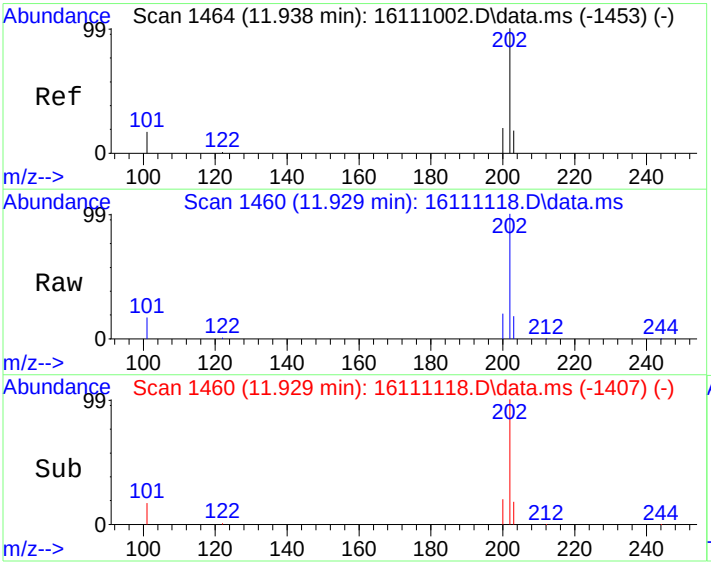


#14
Fluoranthene
Concen: 434.49 ug/kg
RT: 11.620 min Scan# 1354
Delta R.T. -0.006 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:202 Resp: 150959

Ion	Ratio	Lower	Upper
202	100		
101	14.5	0.0	45.8
203	17.7	0.0	48.2

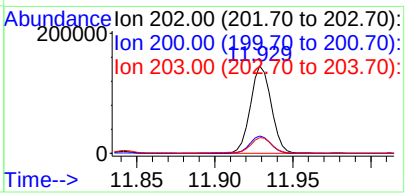


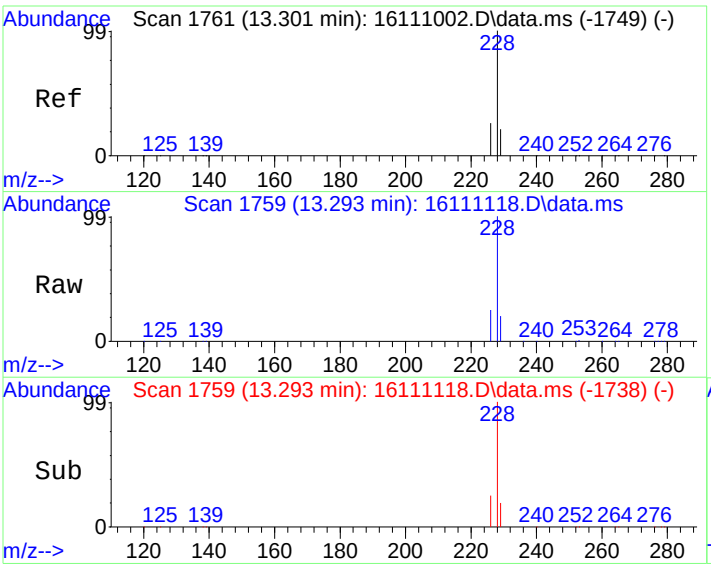


#15
Pyrene
Concen: 379.38 ug/kg
RT: 11.929 min Scan# 1460
Delta R.T. -0.009 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:202 Resp: 135329

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	50.3
203	18.0	0.0	48.2

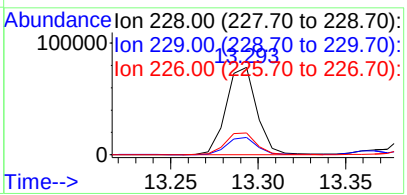


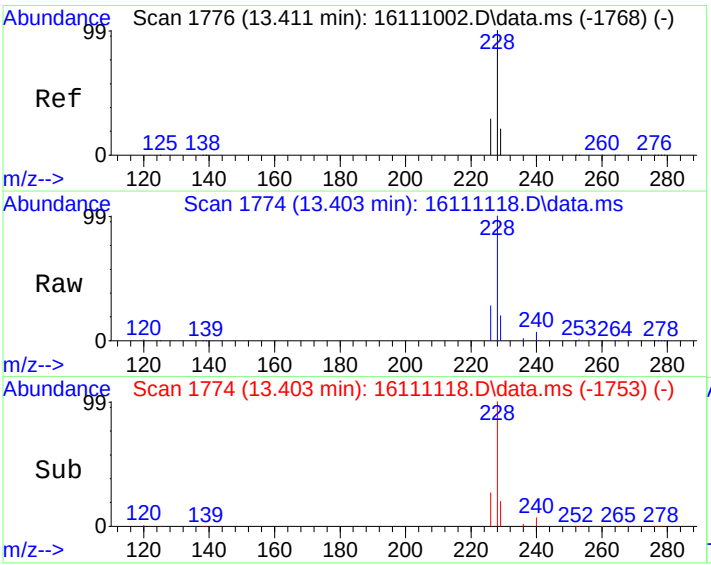


#18
Benzo[a]anthracene
Concen: 269.79 ug/kg
RT: 13.293 min Scan# 1759
Delta R.T. -0.008 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:228 Resp: 95031

Ion	Ratio	Lower	Upper
228	100		
229	19.8	0.0	50.8
226	25.0	0.0	55.5

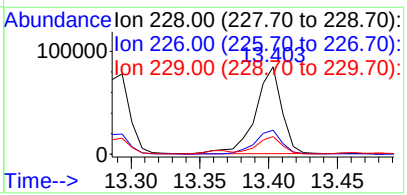


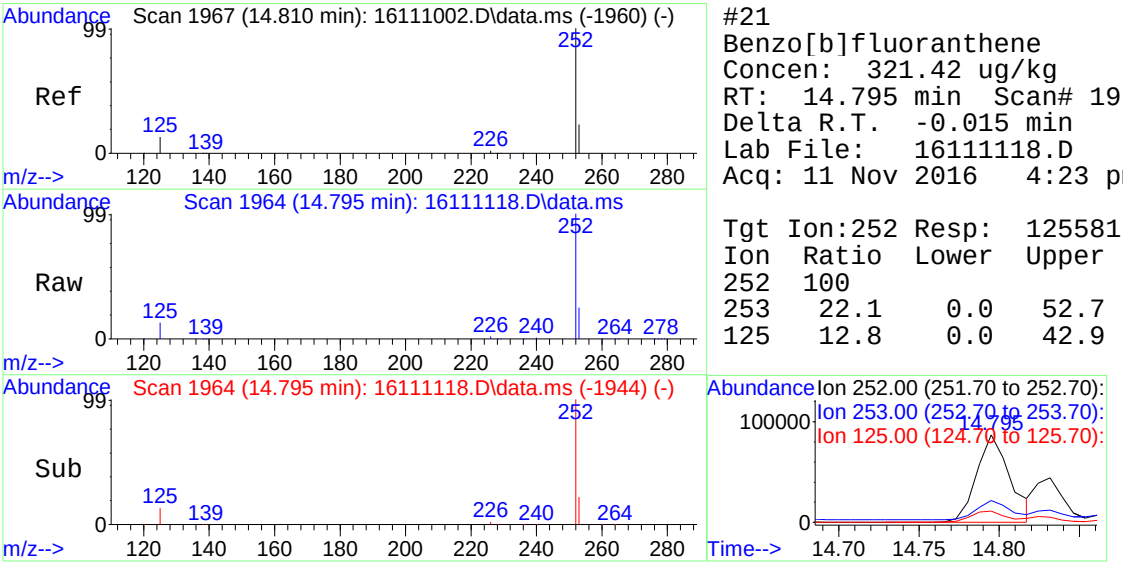


#19
Chrysene
Concen: 353.48 ug/kg
RT: 13.403 min Scan# 1774
Delta R.T. -0.008 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:228 Resp: 112882

Ion	Ratio	Lower	Upper
228	100		
226	27.5	0.0	58.7
229	20.1	0.0	50.4

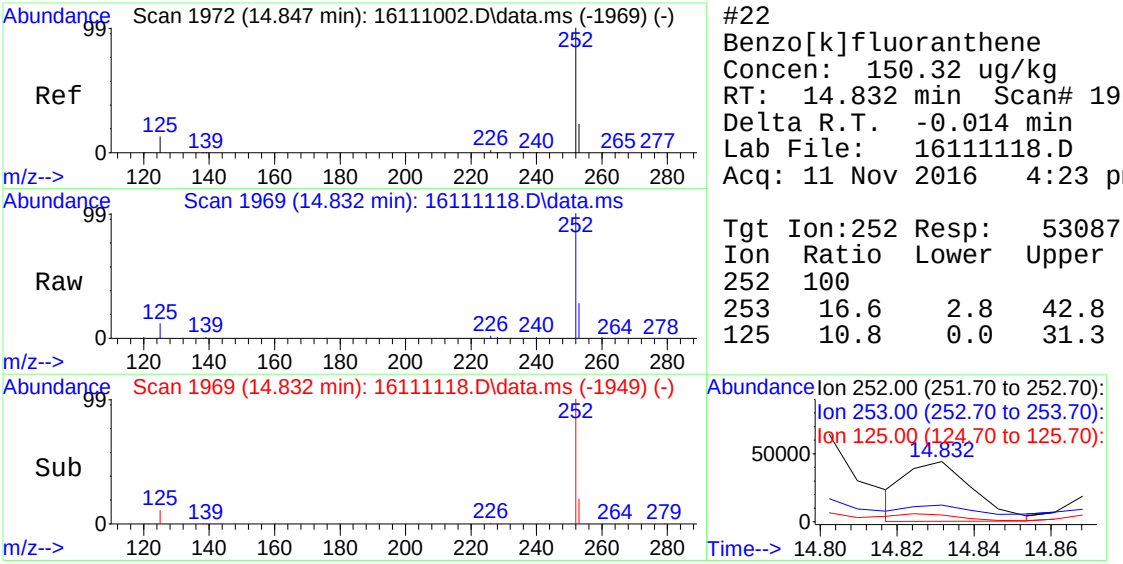




#21
Benzo[b]fluoranthene
Concen: 321.42 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:252 Resp: 125581

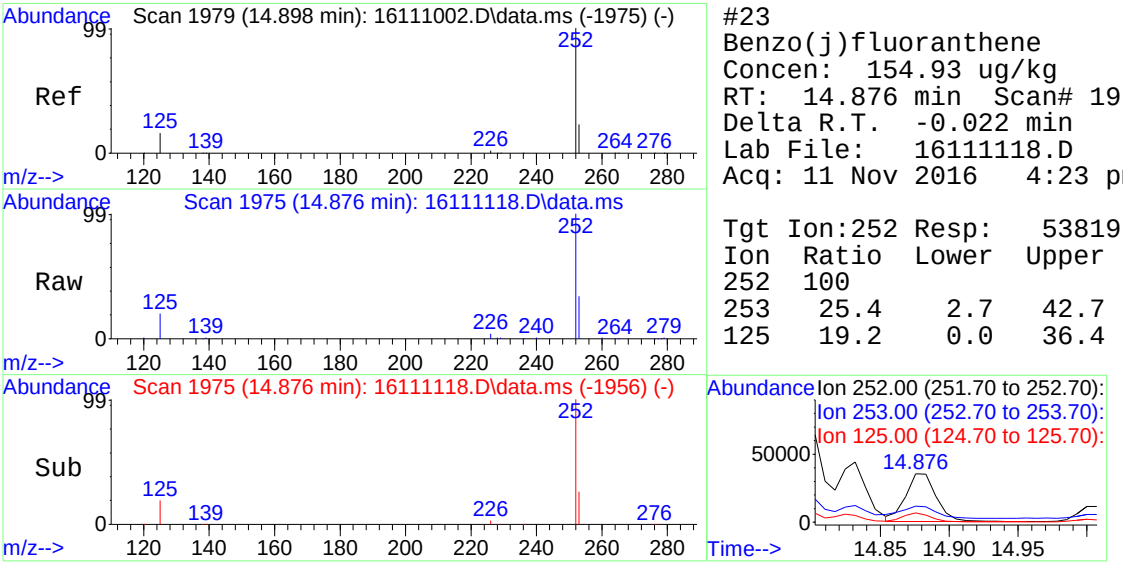
Ion	Ratio	Lower	Upper
252	100		
253	22.1	0.0	52.7
125	12.8	0.0	42.9



#22
Benzo[k]fluoranthene
Concen: 150.32 ug/kg
RT: 14.832 min Scan# 1969
Delta R.T. -0.014 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:252 Resp: 53087

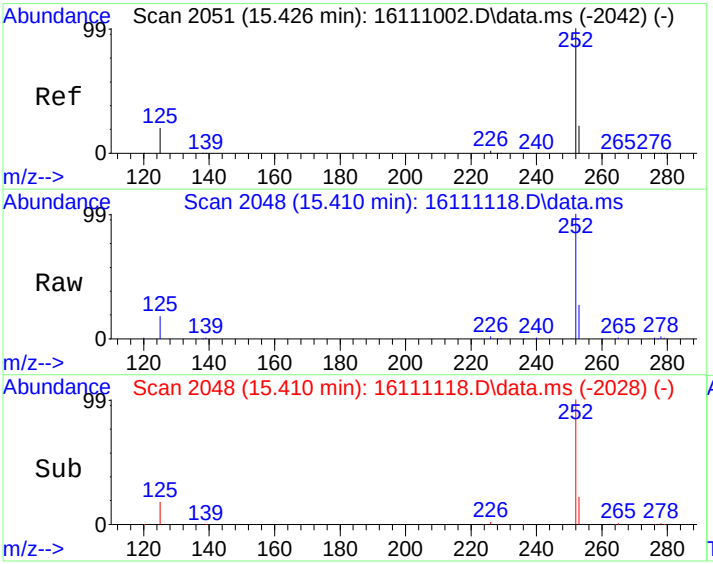
Ion	Ratio	Lower	Upper
252	100		
253	16.6	2.8	42.8
125	10.8	0.0	31.3



#23
Benzo(j)fluoranthene
Concen: 154.93 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:252 Resp: 53819

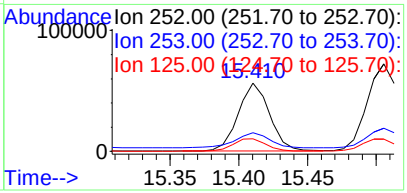
Ion	Ratio	Lower	Upper
252	100		
253	25.4	2.7	42.7
125	19.2	0.0	36.4

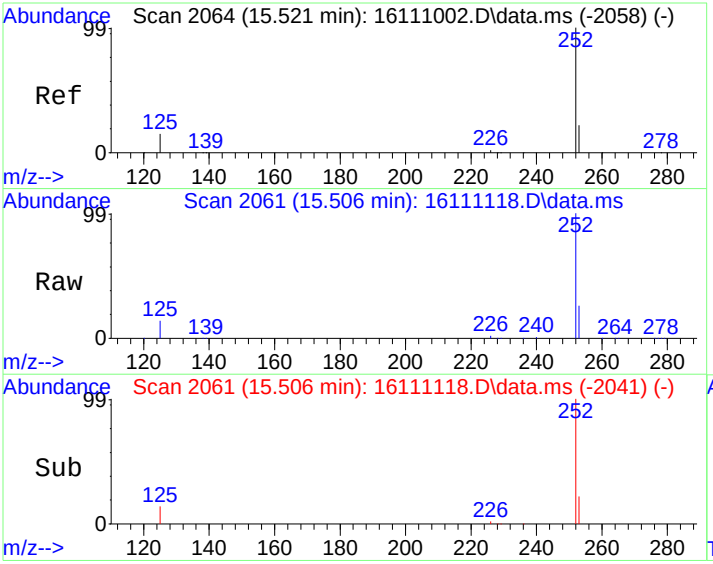


#24
Benzo[e]pyrene
Concen: 254.94 ug/kg
RT: 15.410 min Scan# 2048
Delta R.T. -0.015 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:252 Resp: 89282

Ion	Ratio	Lower	Upper
252	100		
253	22.0	2.5	42.5
125	18.2	0.9	40.9

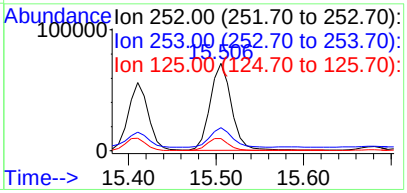


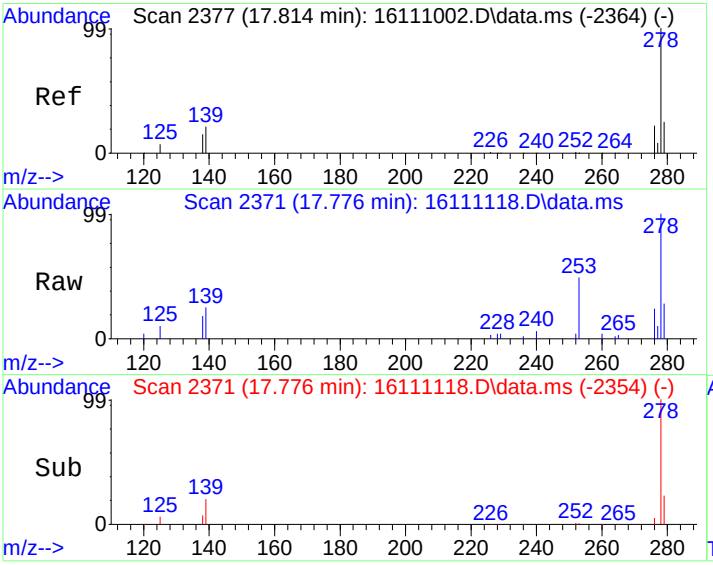


#25
Benzo[a]pyrene
Concen: 339.22 ug/kg
RT: 15.506 min Scan# 2061
Delta R.T. -0.014 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:252 Resp: 121377

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.7	42.7
125	13.8	0.0	33.9

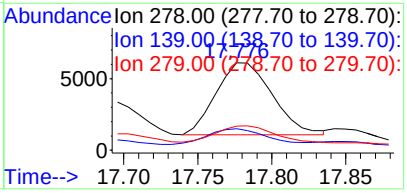


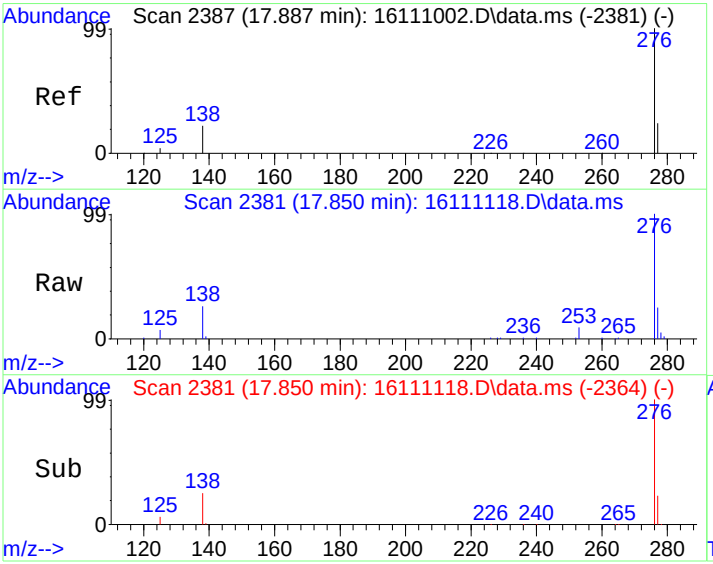


#26
Dibenz[a,h]anthracene
Concen: 36.22 ug/kg
RT: 17.776 min Scan# 2371
Delta R.T. -0.037 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:278 Resp: 13328

Ion	Ratio	Lower	Upper
278	100		
139	20.1	0.2	40.2
279	22.7	4.5	44.5

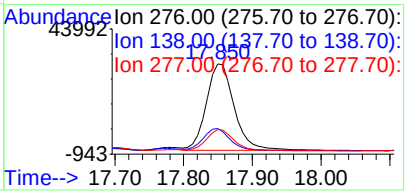


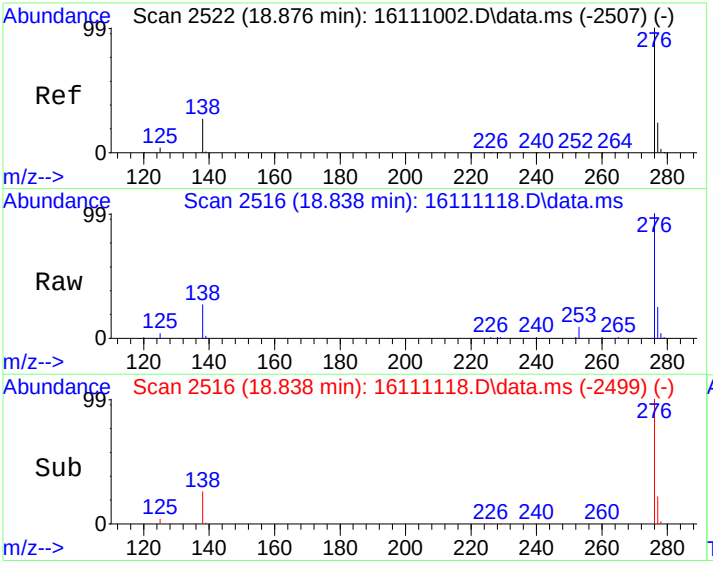


#27
Indeno[1,2,3-cd]pyrene
Concen: 242.52 ug/kg
RT: 17.850 min Scan# 2381
Delta R.T. -0.036 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:276 Resp: 87037

Ion	Ratio	Lower	Upper
276	100		
138	25.5	4.4	44.4
277	24.5	4.4	44.4

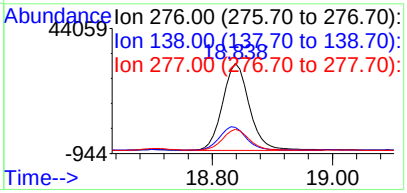




#28
Benzo[g,h,i]perylene
Concen: 253.71 ug/kg
RT: 18.838 min Scan# 2516
Delta R.T. -0.037 min
Lab File: 16111118.D
Acq: 11 Nov 2016 4:23 pm

Tgt Ion:276 Resp: 96429

Ion	Ratio	Lower	Upper
276	100		
138	26.3	7.7	47.7
277	23.9	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111119.D
Acq On : 11 Nov 2016 4:51 pm
Operator :
Sample : 1611044-02A
Misc : SAMP
ALS Vial : 17 Sample Multiplier: 10

Quant Time: Nov 14 13:33:35 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	837575	4000.00	ug/kg	95
5) Acenaphthene-d10	9.063	164	734446	4000.00	ug/kg	93
11) Phenanthrene-d10	10.465	188	1281282	4000.00	ug/kg	91
17) Chrysene-d12	13.367	240	1493705	4000.00	ug/kg	89
20) Perylene-d12	15.682	264	1573567	4000.00	ug/kg	89

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	21947	92.00	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.30%#			
16) 4-Terphenyl-d14	11.844	244	23574	95.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.39%#			

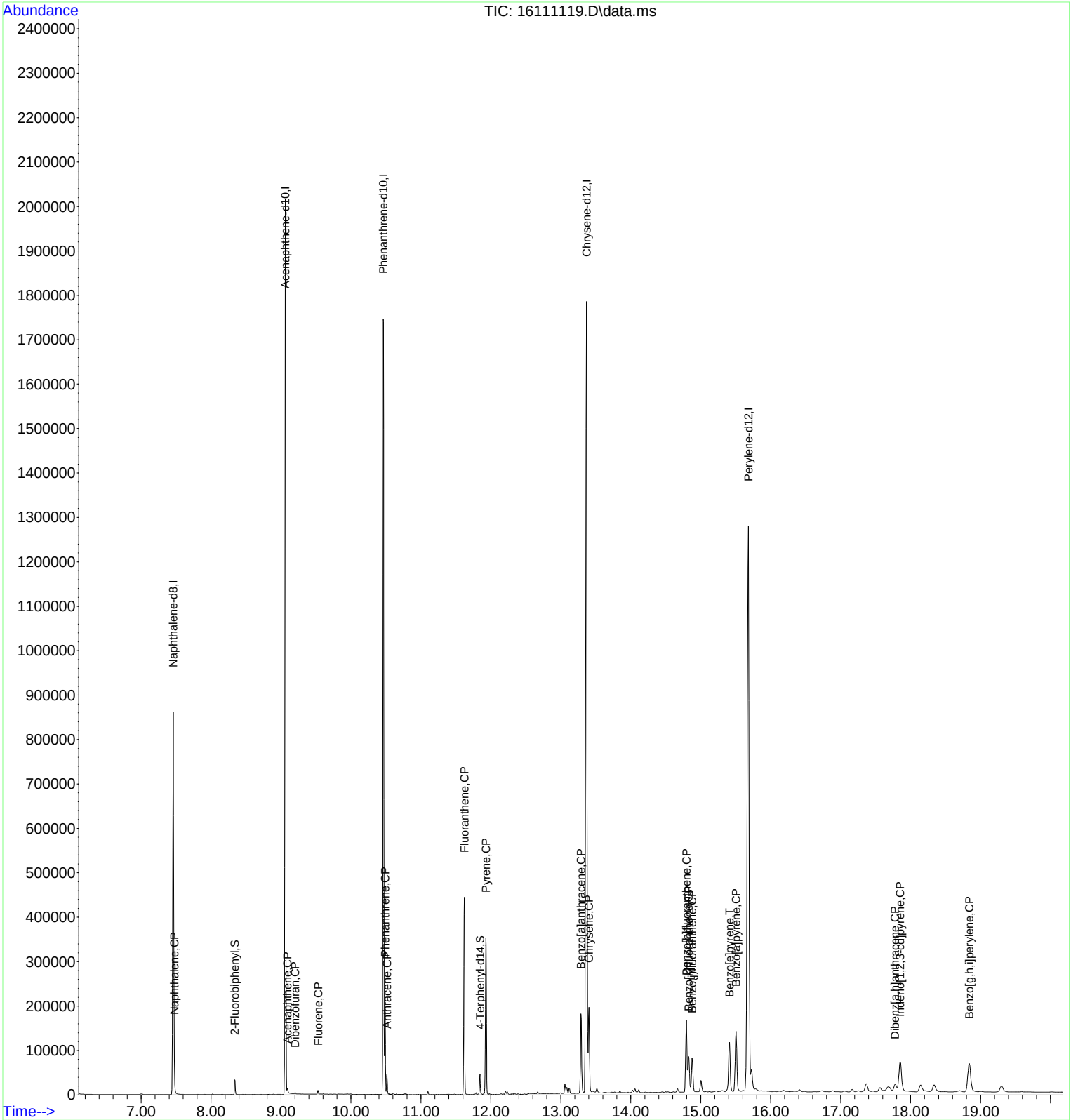
Target Compounds						Qvalue
2) Naphthalene	7.482	128	1348	8.29	ug/kg	100
6) Dibenzofuran	9.205	168	2043	7.65	ug/kg	98
9) Acenaphthene	9.092	154	2520	14.21	ug/kg	99
10) Fluorene	9.529	166	3210	14.45	ug/kg	99
12) Phenanthrene	10.486	178	115722	384.45	ug/kg	99
13) Anthracene	10.515	178	26342	85.96	ug/kg	98
14) Fluoranthene	11.619	202	253864	713.36	ug/kg	99
15) Pyrene	11.928	202	211112	577.80	ug/kg	100
18) Benzo[a]anthracene	13.286	228	147908	420.50	ug/kg	98
19) Chrysene	13.404	228	165421	518.73	ug/kg	98
21) Benzo[b]fluoranthene	14.795	252	178930	455.76	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	71797	202.32	ug/kg	88
23) Benzo(j)fluoranthene	14.876	252	75465	216.19	ug/kg	95
24) Benzo[e]pyrene	15.411	252	119609	339.89	ug/kg	96
25) Benzo[a]pyrene	15.506	252	165659	460.74	ug/kg	99
26) Dibenz[a,h]anthracene	17.784	278	19689	53.25	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.850	276	116191	322.19	ug/kg	98
28) Benzo[g,h,i]perylene	18.839	276	123910	324.44	ug/kg	99

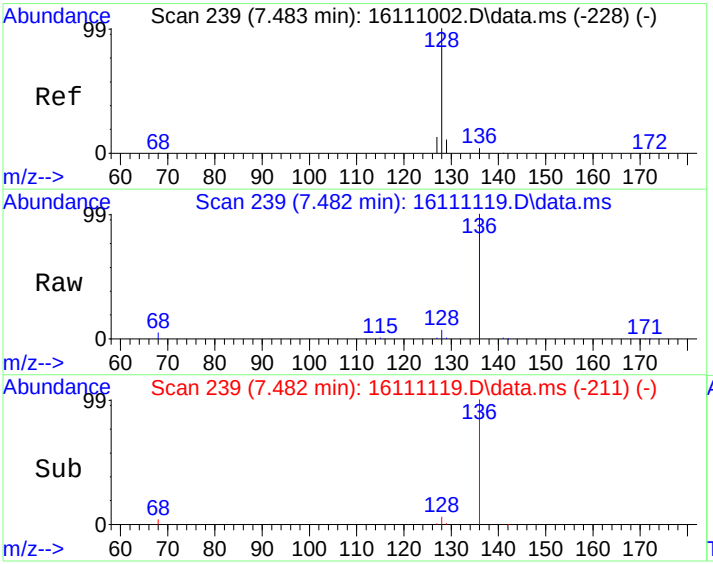
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111119.D
Acq On : 11 Nov 2016 4:51 pm
Operator :
Sample : 1611044-02A
Misc : SAMP
ALS Vial : 17 Sample Multiplier: 10

Quant Time: Nov 14 13:33:35 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

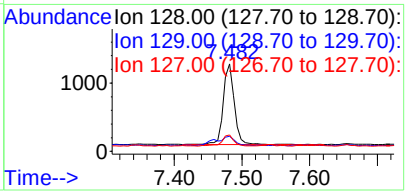


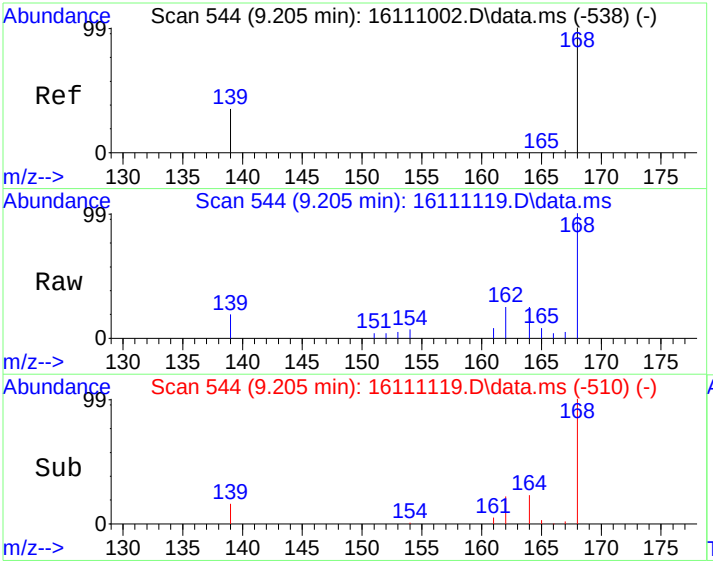


#2
Naphthalene
Concen: 8.29 ug/kg
RT: 7.482 min Scan# 239
Delta R.T. -0.001 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:128 Resp: 1348

Ion	Ratio	Lower	Upper
128	100		
129	11.3	0.0	41.4
127	13.1	0.0	43.3

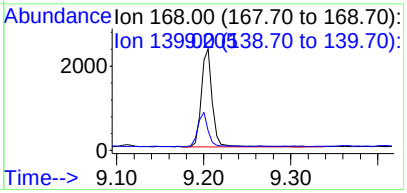


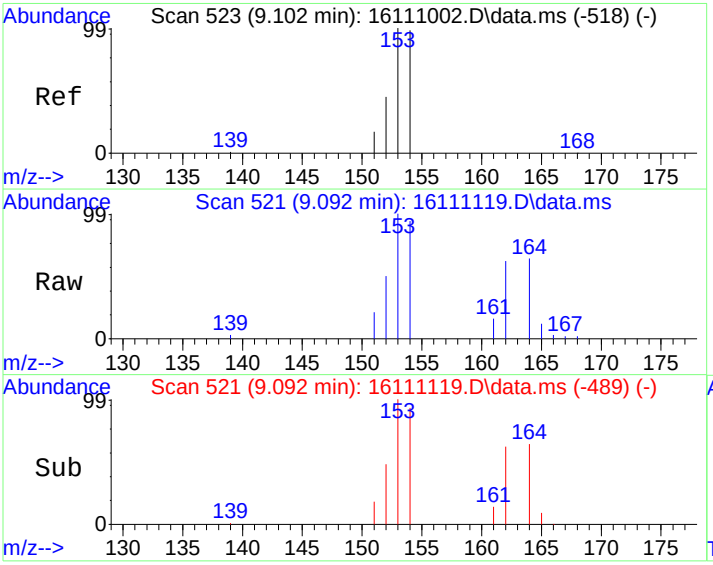


#6
Dibenzofuran
Concen: 7.65 ug/kg
RT: 9.205 min Scan# 544
Delta R.T. 0.001 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:168 Resp: 2043

Ion	Ratio	Lower	Upper
168	100		
139	35.2	27.1	40.7

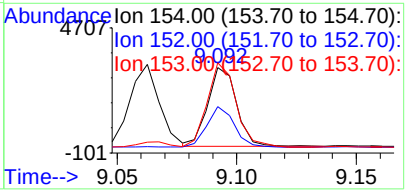


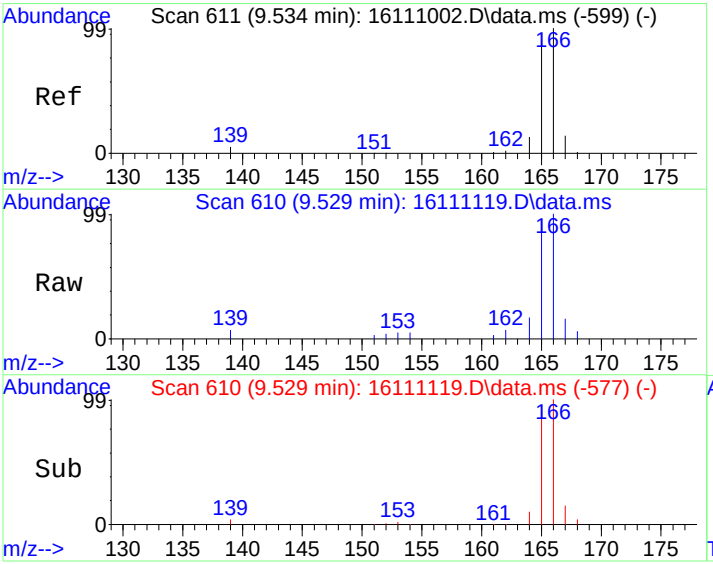


#9
Acenaphthene
Concen: 14.21 ug/kg
RT: 9.092 min Scan# 521
Delta R.T. -0.009 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:154 Resp: 2520

Ion	Ratio	Lower	Upper
154	100		
152	51.6	20.7	80.7
153	107.3	76.8	136.8

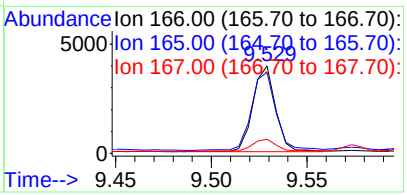


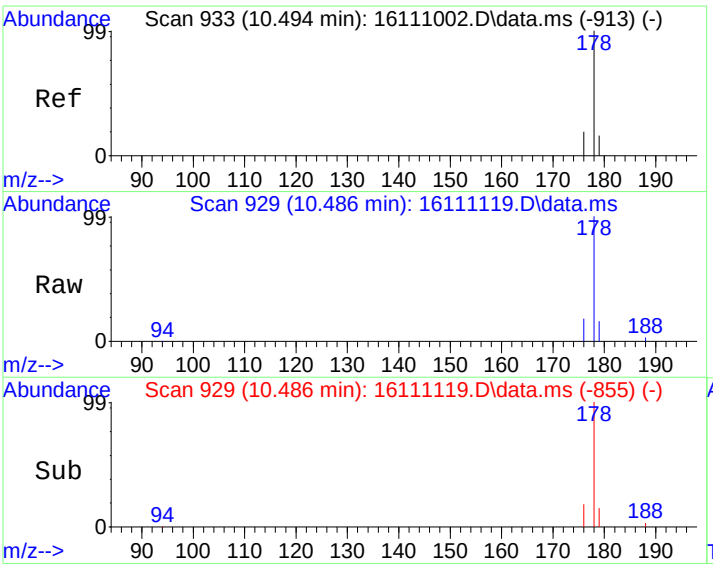


#10
Fluorene
Concen: 14.45 ug/kg
RT: 9.529 min Scan# 610
Delta R.T. -0.004 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:166 Resp: 3210

Ion	Ratio	Lower	Upper
166	100		
165	90.7	61.7	121.7
167	14.3	0.0	43.9

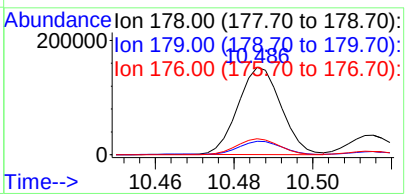


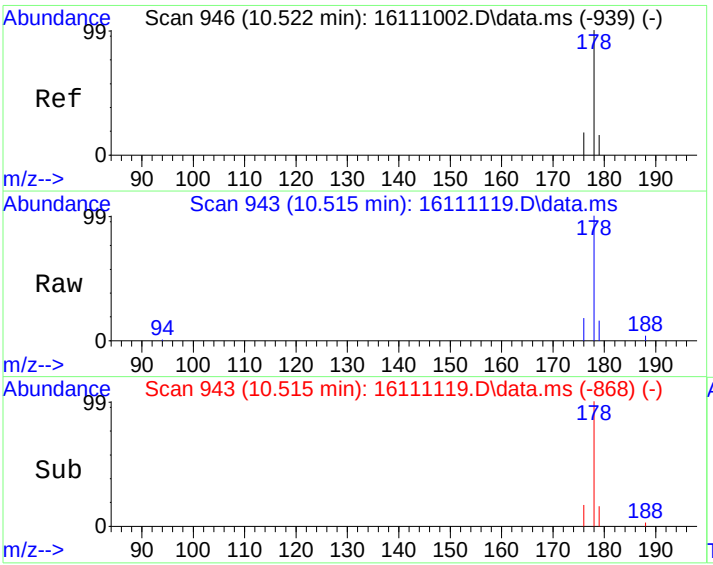


#12
Phenanthrene
Concen: 384.45 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:178 Resp: 115722

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	46.2
176	18.4	0.0	48.4

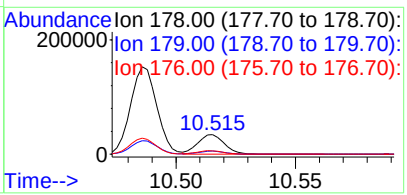


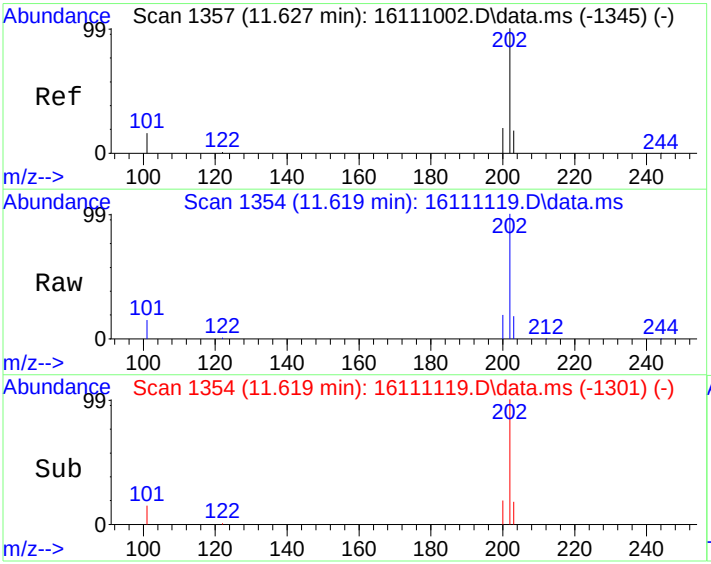


#13
Anthracene
Concen: 85.96 ug/kg
RT: 10.515 min Scan# 943
Delta R.T. -0.006 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:178 Resp: 26342

Ion	Ratio	Lower	Upper
178	100		
179	15.6	0.0	46.2
176	17.3	0.0	48.2

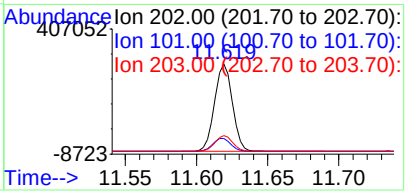


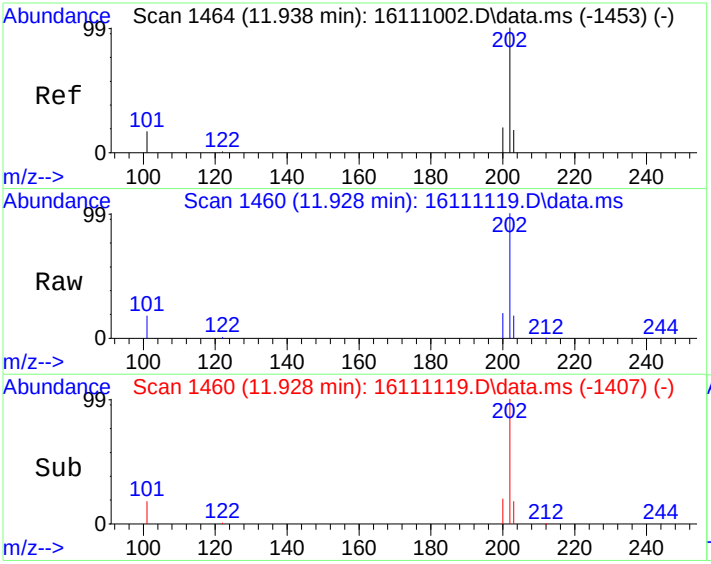


#14
Fluoranthene
Concen: 713.36 ug/kg
RT: 11.619 min Scan# 1354
Delta R.T. -0.007 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:202 Resp: 253864

Ion	Ratio	Lower	Upper
202	100		
101	14.9	0.0	45.8
203	17.9	0.0	48.2

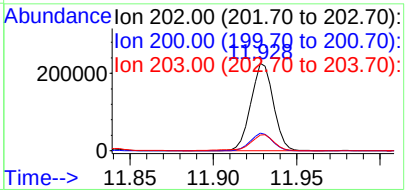


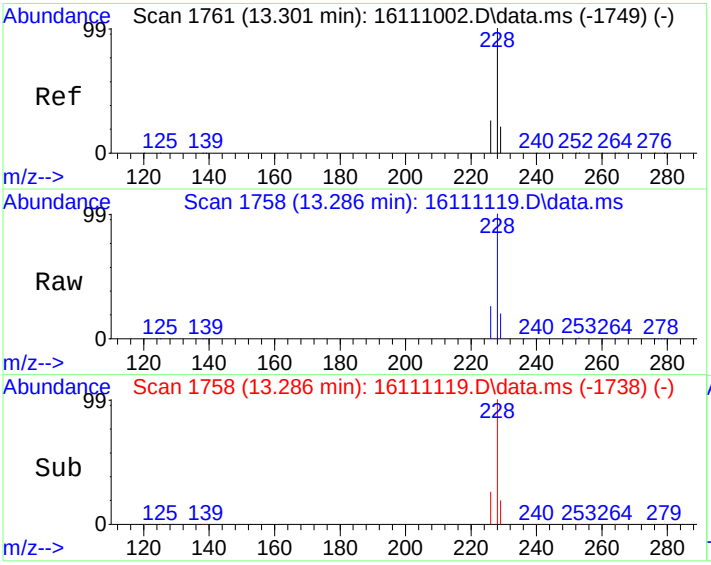


#15
Pyrene
Concen: 577.80 ug/kg
RT: 11.928 min Scan# 1460
Delta R.T. -0.010 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:202 Resp: 211112

Ion	Ratio	Lower	Upper
202	100		
200	20.1	0.0	50.3
203	18.1	0.0	48.2

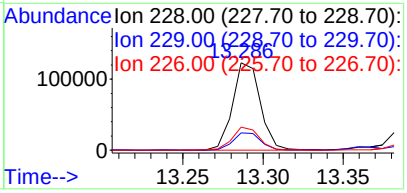


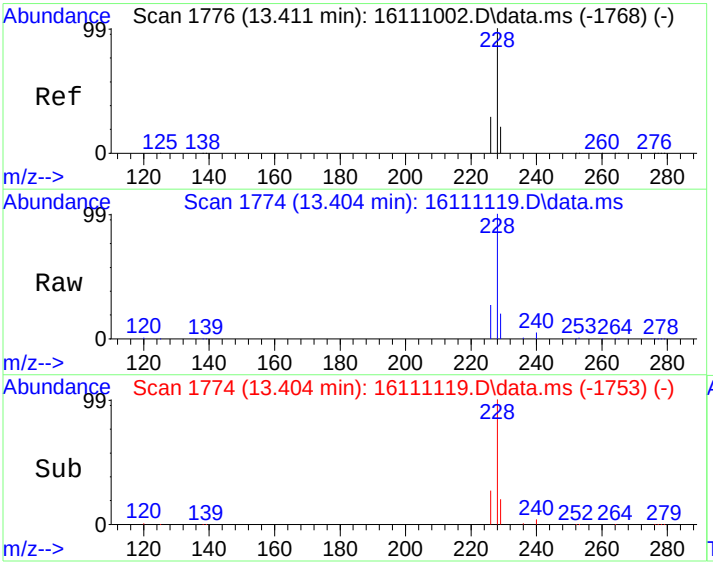


#18
Benzo[a]anthracene
Concen: 420.50 ug/kg
RT: 13.286 min Scan# 1758
Delta R.T. -0.015 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:228 Resp: 147908

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.8
226	26.2	0.0	55.5

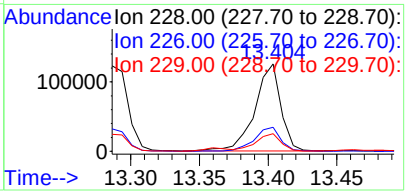


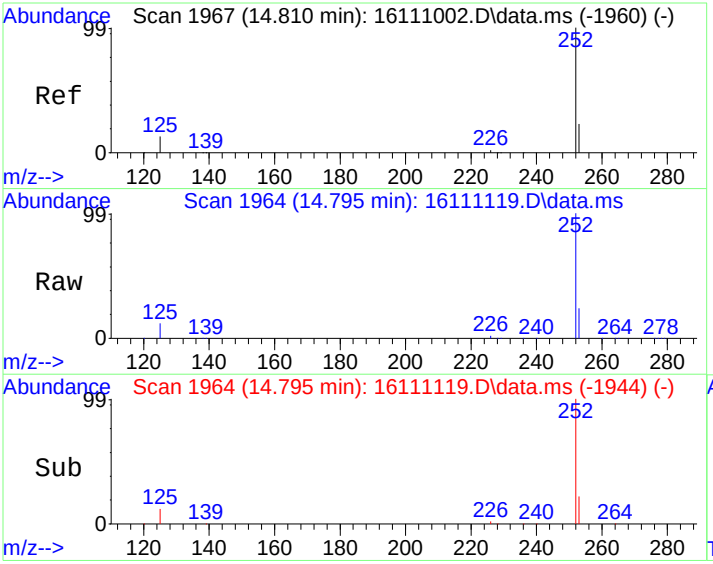


#19
Chrysene
Concen: 518.73 ug/kg
RT: 13.404 min Scan# 1774
Delta R.T. -0.007 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:228 Resp: 165421

Ion	Ratio	Lower	Upper
228	100		
226	27.4	0.0	58.7
229	20.2	0.0	50.4

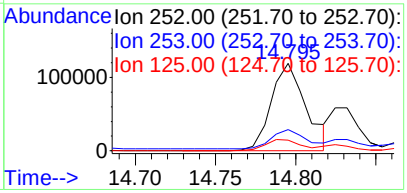


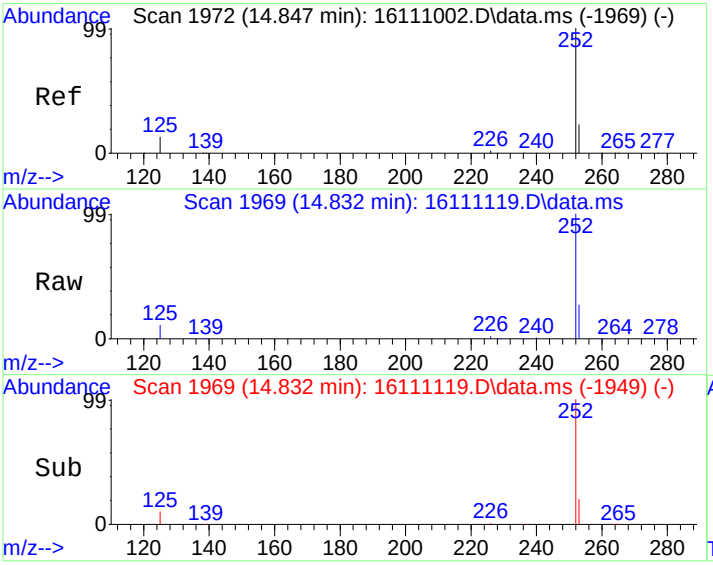


#21
Benzo[b]fluoranthene
Concen: 455.76 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:252 Resp: 178930

Ion	Ratio	Lower	Upper
252	100		
253	22.0	0.0	52.7
125	12.2	0.0	42.9

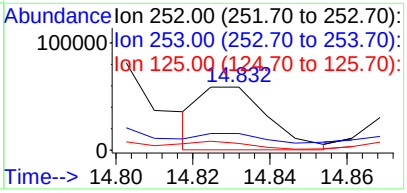


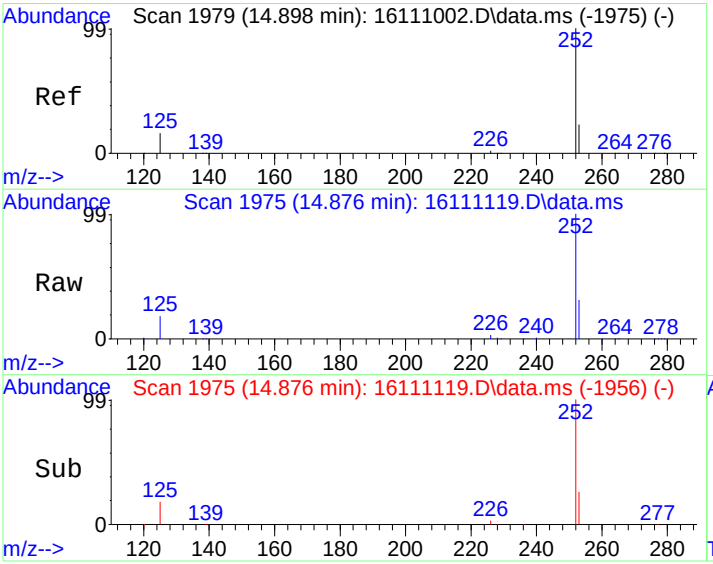


#22
Benzo[k]fluoranthene
Concen: 202.32 ug/kg
RT: 14.832 min Scan# 1969
Delta R.T. -0.014 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:252 Resp: 71797

Ion	Ratio	Lower	Upper
252	100		
253	15.1	2.8	42.8
125	9.6	0.0	31.3

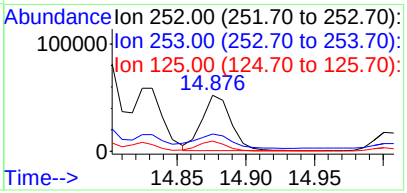


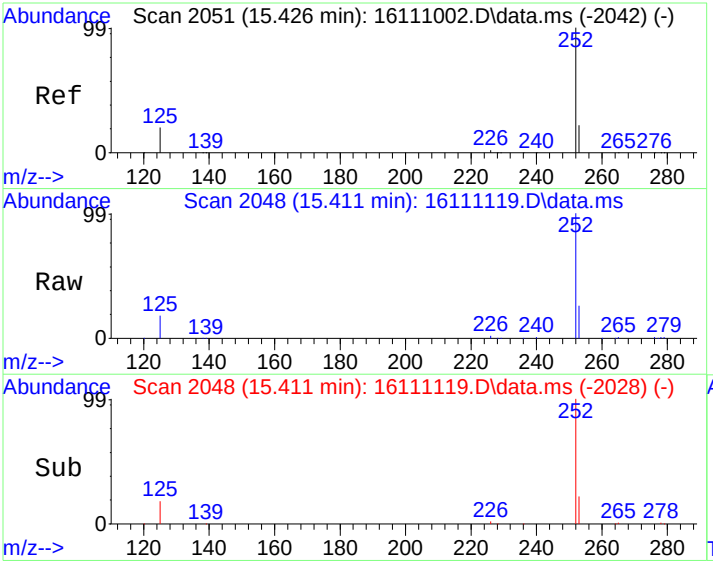


#23
Benzo(j)fluoranthene
Concen: 216.19 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:252 Resp: 75465

Ion	Ratio	Lower	Upper
252	100		
253	25.2	2.7	42.7
125	18.1	0.0	36.4

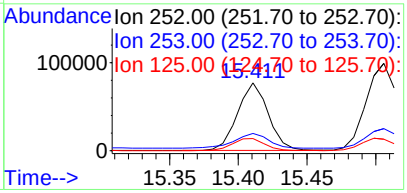


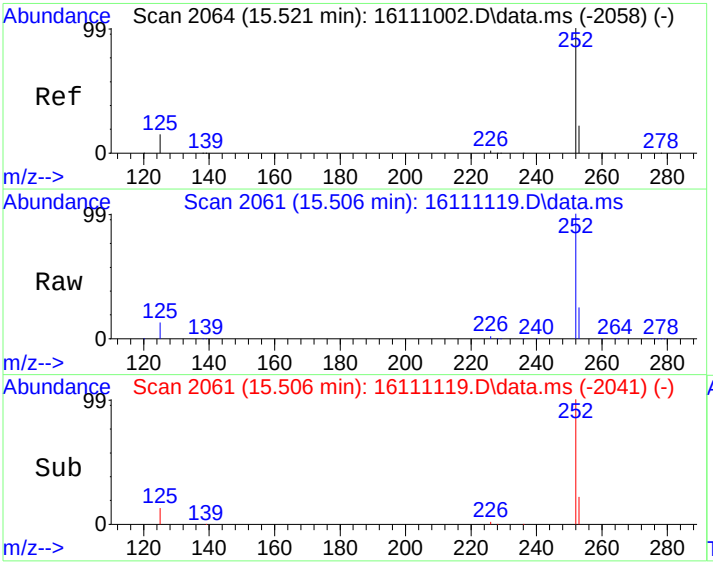


#24
Benzo[e]pyrene
Concen: 339.89 ug/kg
RT: 15.411 min Scan# 2048
Delta R.T. -0.014 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:252 Resp: 119609

Ion	Ratio	Lower	Upper
252	100		
253	22.1	2.5	42.5
125	17.8	0.9	40.9

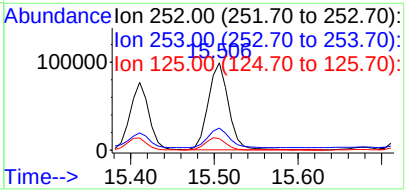


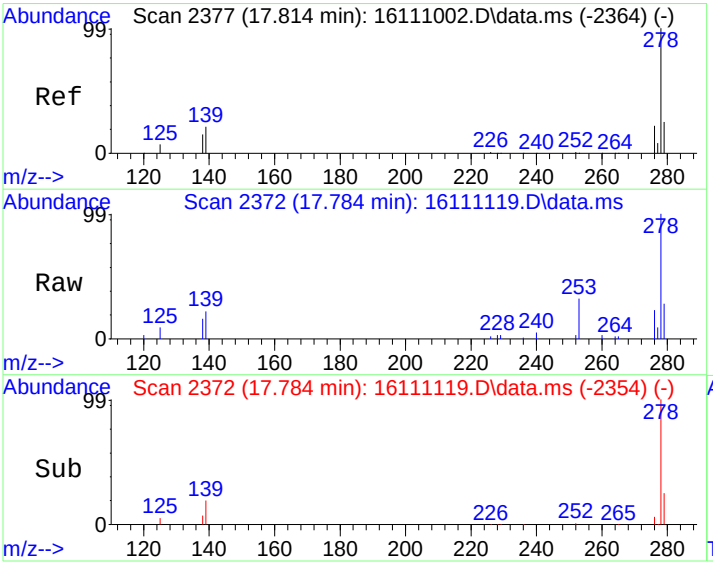


#25
Benzo[a]pyrene
Concen: 460.74 ug/kg
RT: 15.506 min Scan# 2061
Delta R.T. -0.014 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:252 Resp: 165659

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.7	42.7
125	13.1	0.0	33.9

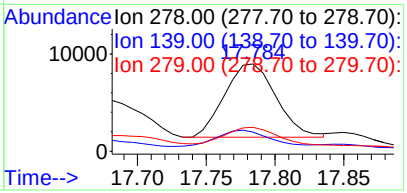


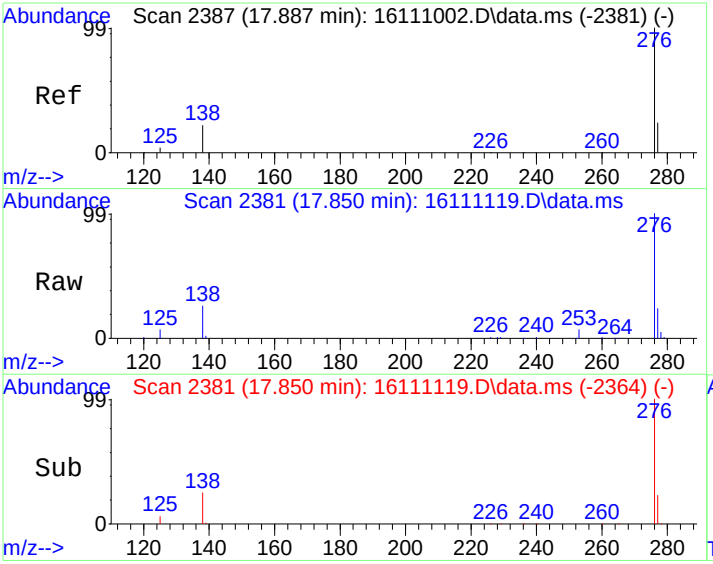


#26
Dibenz[a,h]anthracene
Concen: 53.25 ug/kg
RT: 17.784 min Scan# 2372
Delta R.T. -0.029 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:278 Resp: 19689

Ion	Ratio	Lower	Upper
278	100		
139	19.6	0.2	40.2
279	24.2	4.5	44.5

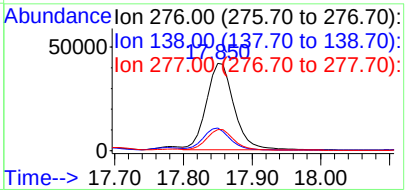


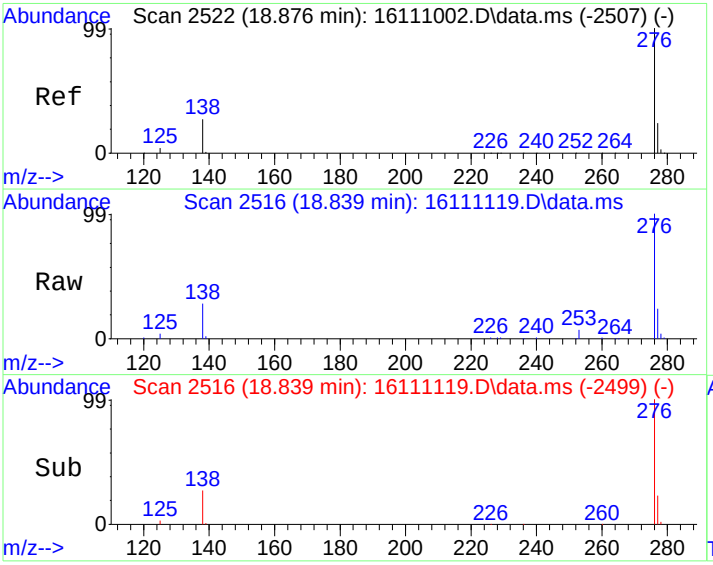


#27
Indeno[1,2,3-cd]pyrene
Concen: 322.19 ug/kg
RT: 17.850 min Scan# 2381
Delta R.T. -0.036 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:276 Resp: 116191

Ion	Ratio	Lower	Upper
276	100		
138	25.7	4.4	44.4
277	24.0	4.4	44.4

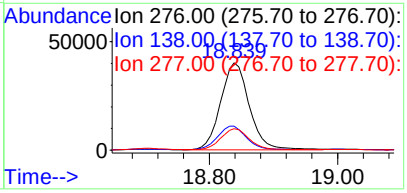




#28
Benzo[g,h,i]perylene
Concen: 324.44 ug/kg
RT: 18.839 min Scan# 2516
Delta R.T. -0.036 min
Lab File: 16111119.D
Acq: 11 Nov 2016 4:51 pm

Tgt Ion:276 Resp: 123910

Ion	Ratio	Lower	Upper
276	100		
138	27.1	7.7	47.7
277	23.9	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111120.D
Acq On : 11 Nov 2016 5:20 pm
Operator :
Sample : 1611044-03A
Misc : SAMP
ALS Vial : 18 Sample Multiplier: 10

Quant Time: Nov 14 13:33:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	806777	4000.00	ug/kg	92
5) Acenaphthene-d10	9.062	164	673415	4000.00	ug/kg	85
11) Phenanthrene-d10	10.463	188	1188174	4000.00	ug/kg	84
17) Chrysene-d12	13.367	240	1408804	4000.00	ug/kg	84
20) Perylene-d12	15.682	264	1457637	4000.00	ug/kg	83

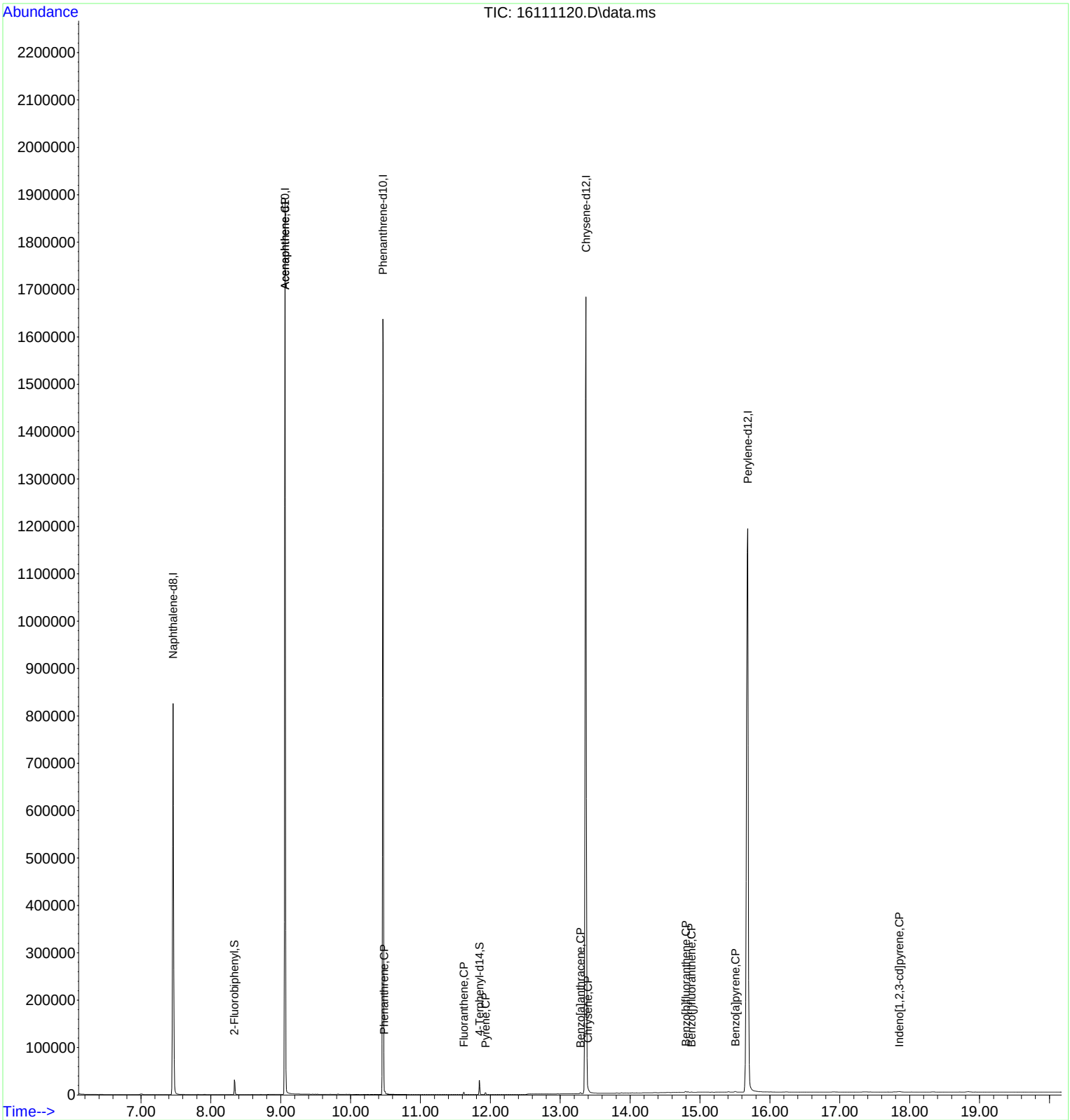
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	19258	88.04	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.20%#			
16) 4-Terphenyl-d14	11.844	244	21383	93.63	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.34%#			

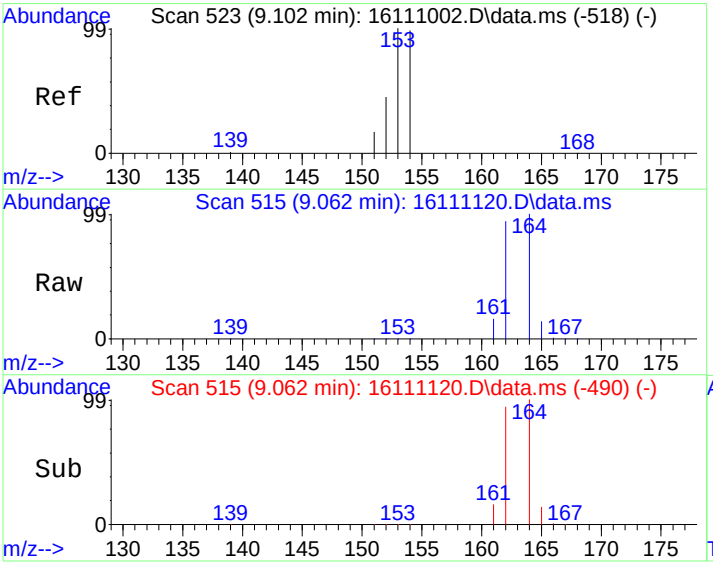
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2472	15.20	ug/kg#	11
12) Phenanthrene	10.486	178	1646	5.90	ug/kg	99
14) Fluoranthene	11.620	202	3251	9.85	ug/kg	98
15) Pyrene	11.928	202	2802	8.27	ug/kg	98
18) Benzo[a]anthracene	13.287	228	1940	5.85	ug/kg	97
19) Chrysene	13.404	228	1925	6.40	ug/kg	97
21) Benzo[b]fluoranthene	14.796	252	2173	5.98	ug/kg	97
23) Benzo(j)fluoranthene	14.876	252	890	2.75	ug/kg	99
25) Benzo[a]pyrene	15.506	252	2025	6.08	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.850	276	1865	5.58	ug/kg	88

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111120.D
Acq On : 11 Nov 2016 5:20 pm
Operator :
Sample : 1611044-03A
Misc : SAMP
ALS Vial : 18 Sample Multiplier: 10

Quant Time: Nov 14 13:33:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

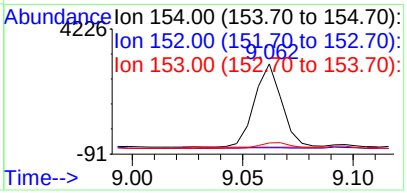


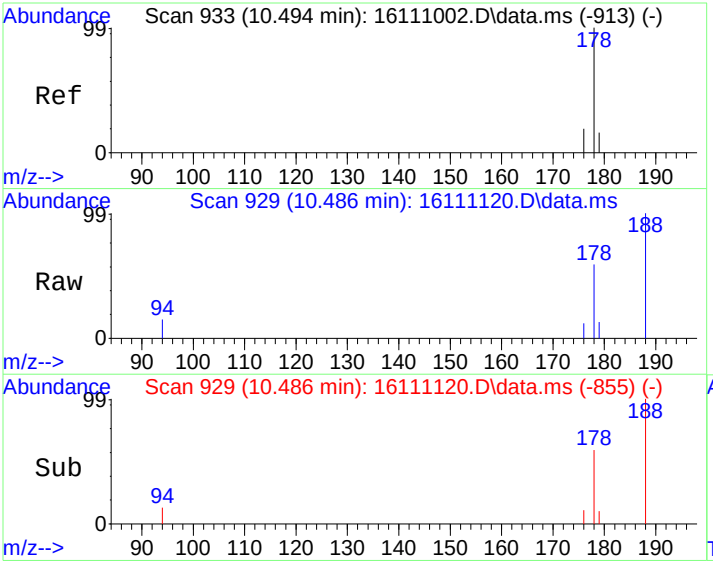


#9
Acenaphthene
Concen: 15.20 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:154 Resp: 2472

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	6.3	76.8	136.8#

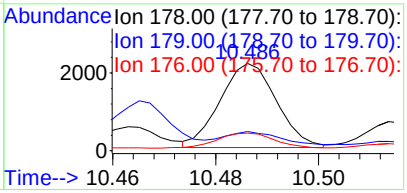


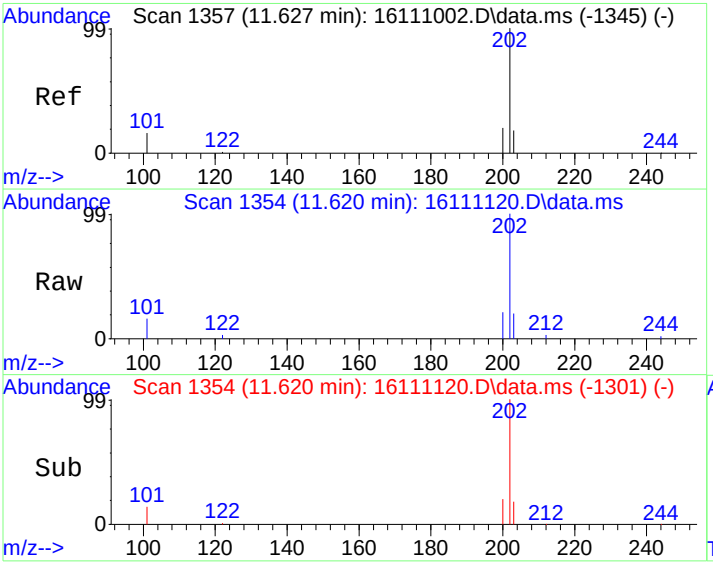


#12
Phenanthrene
Concen: 5.90 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:178 Resp: 1646

Ion	Ratio	Lower	Upper
178	100		
179	16.3	0.0	46.2
176	18.0	0.0	48.4

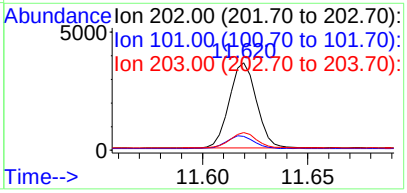


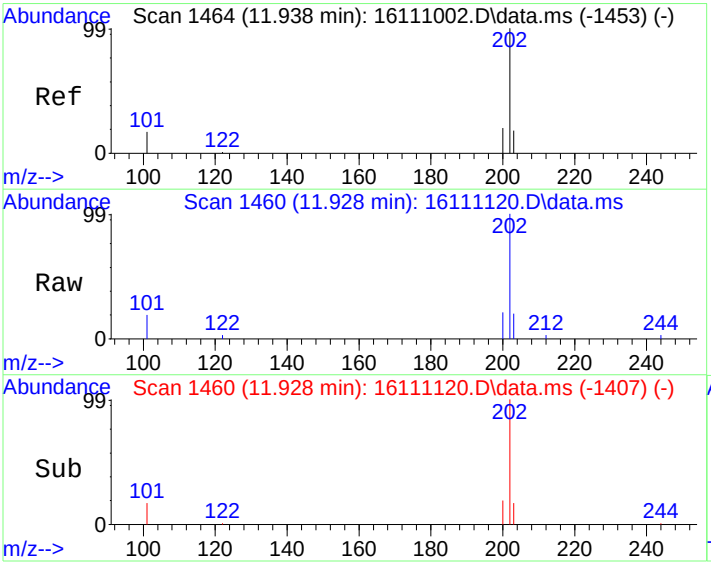


#14
Fluoranthene
Concen: 9.85 ug/kg
RT: 11.620 min Scan# 1354
Delta R.T. -0.006 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:202 Resp: 3251

Ion	Ratio	Lower	Upper
202	100		
101	14.2	0.0	45.8
203	18.1	0.0	48.2

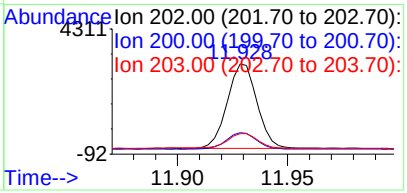


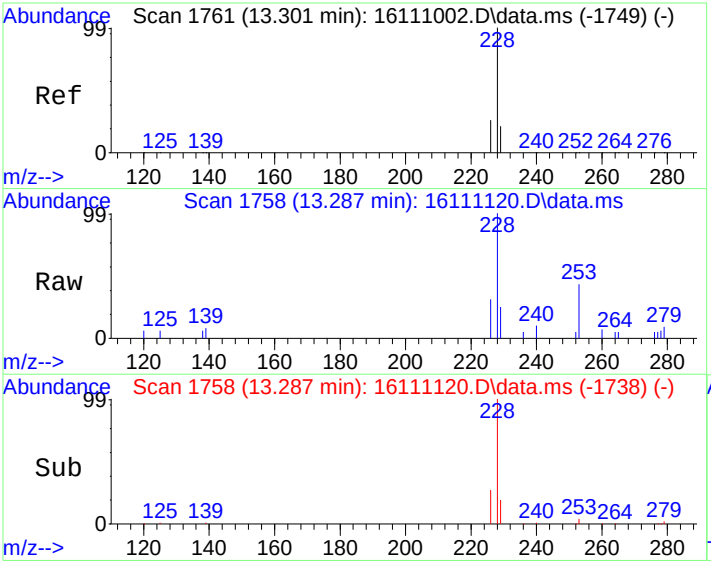


#15
Pyrene
Concen: 8.27 ug/kg
RT: 11.928 min Scan# 1460
Delta R.T. -0.010 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:202 Resp: 2802

Ion	Ratio	Lower	Upper
202	100		
200	19.4	0.0	50.3
203	17.6	0.0	48.2

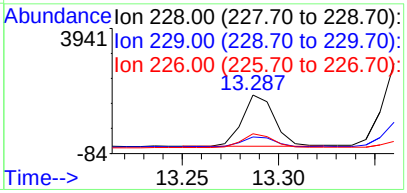


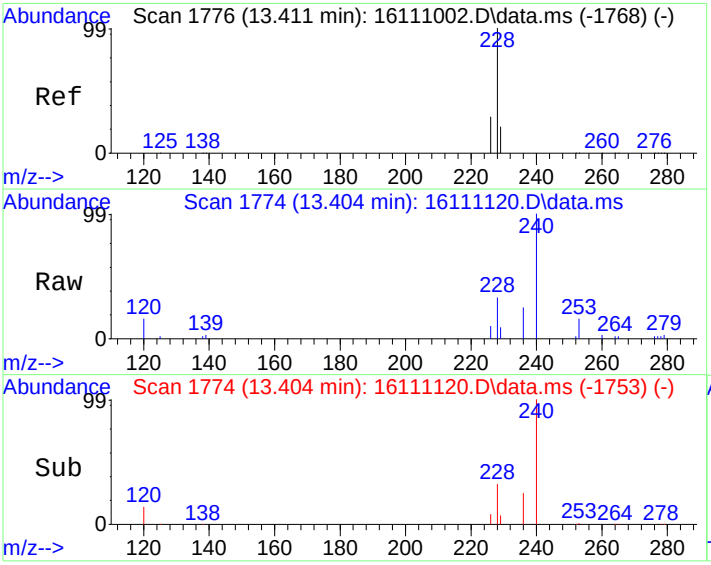


#18
Benzo[a]anthracene
Concen: 5.85 ug/kg
RT: 13.287 min Scan# 1758
Delta R.T. -0.014 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:228 Resp: 1940

Ion	Ratio	Lower	Upper
228	100		
229	19.5	0.0	50.8
226	26.7	0.0	55.5

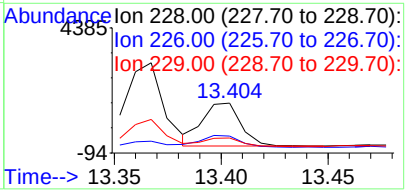


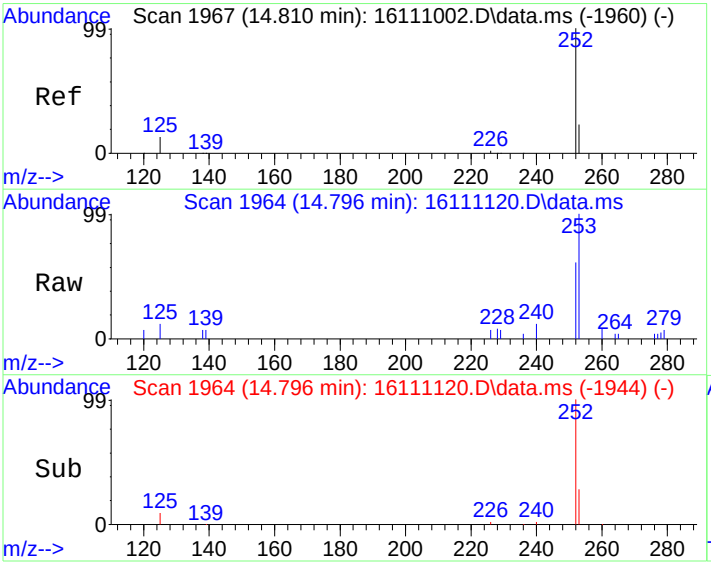


#19
Chrysene
Concen: 6.40 ug/kg
RT: 13.404 min Scan# 1774
Delta R.T. -0.007 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:228 Resp: 1925

Ion	Ratio	Lower	Upper
228	100		
226	25.8	0.0	58.7
229	20.4	0.0	50.4

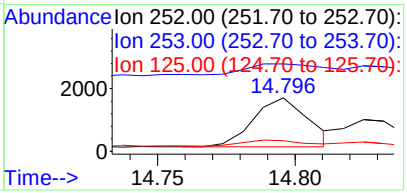


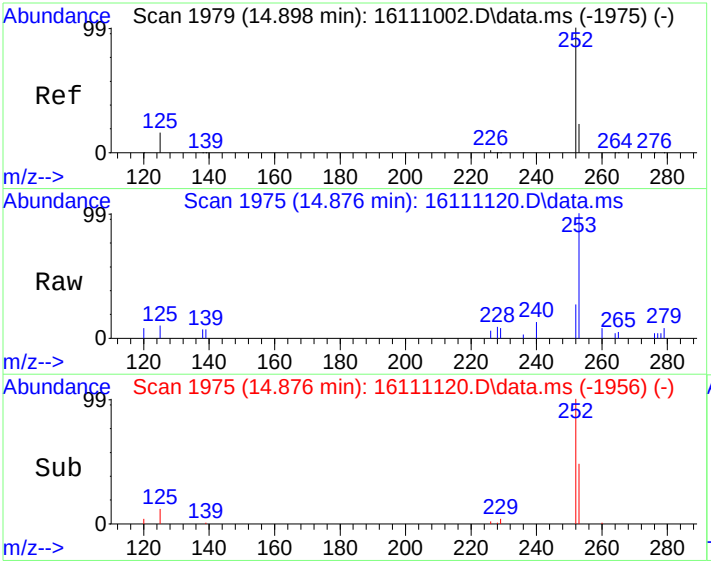


#21
Benzo[b]fluoranthene
Concen: 5.98 ug/kg
RT: 14.796 min Scan# 1964
Delta R.T. -0.014 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:252 Resp: 2173

Ion	Ratio	Lower	Upper
252	100		
253	21.8	0.0	52.7
125	10.8	0.0	42.9

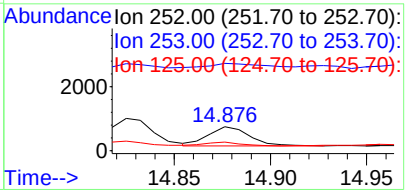


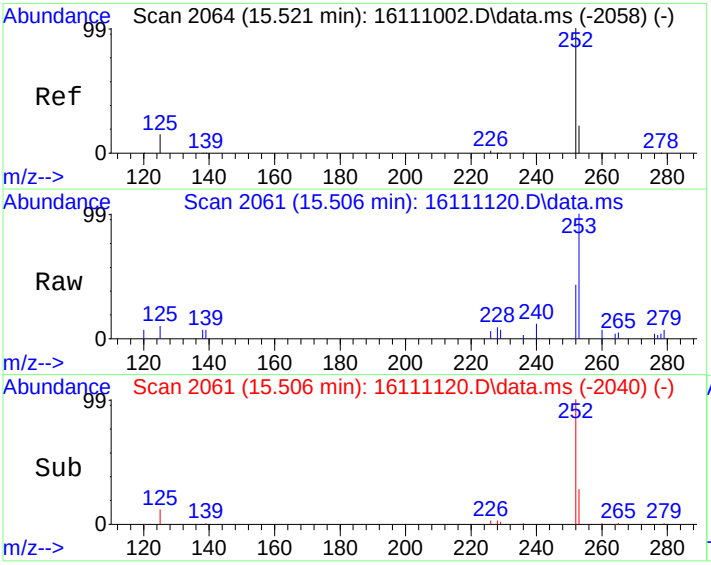


#23
Benzo(j)fluoranthene
Concen: 2.75 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:252 Resp: 890

Ion	Ratio	Lower	Upper
252	100		
253	22.4	2.7	42.7
125	16.9	0.0	36.4

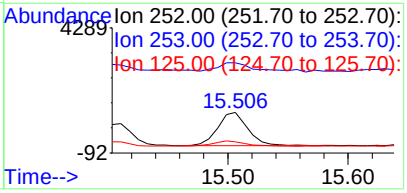


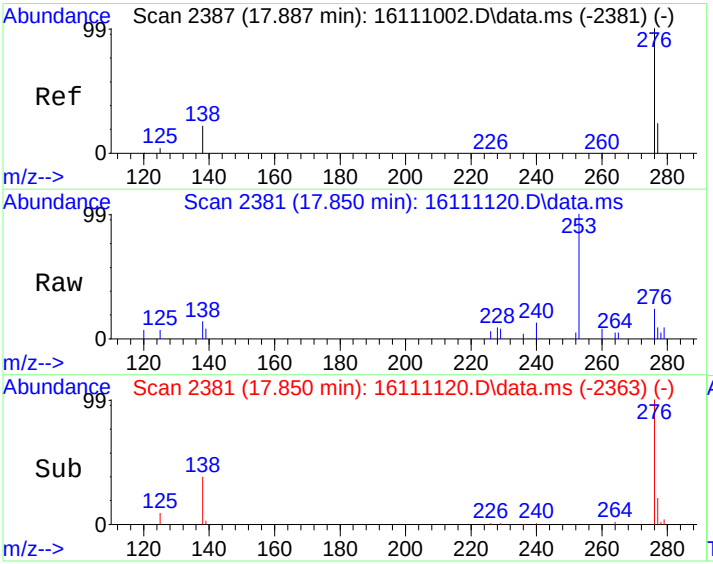


#25
Benzo[a]pyrene
Concen: 6.08 ug/kg
RT: 15.506 min Scan# 2061
Delta R.T. -0.014 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:252 Resp: 2025

Ion	Ratio	Lower	Upper
252	100		
253	25.1	2.7	42.7
125	13.1	0.0	33.9

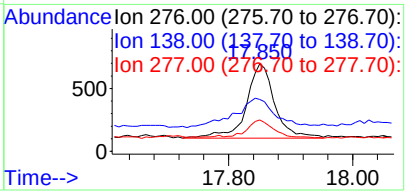




#27
Indeno[1,2,3-cd]pyrene
Concen: 5.58 ug/kg
RT: 17.850 min Scan# 2381
Delta R.T. -0.036 min
Lab File: 16111120.D
Acq: 11 Nov 2016 5:20 pm

Tgt Ion:276 Resp: 1865

Ion	Ratio	Lower	Upper
276	100		
138	36.3	4.4	44.4
277	24.6	4.4	44.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111121.D
Acq On : 11 Nov 2016 5:49 pm
Operator :
Sample : 1611044-04A
Misc : SAMP
ALS Vial : 19 Sample Multiplier: 10

Quant Time: Nov 14 13:33:50 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	920049	4000.00	ug/kg	105
5) Acenaphthene-d10	9.062	164	675418	4000.00	ug/kg	85
11) Phenanthrene-d10	10.463	188	1191894	4000.00	ug/kg	84
17) Chrysene-d12	13.367	240	1411776	4000.00	ug/kg	84
20) Perylene-d12	15.682	264	1465146	4000.00	ug/kg	83

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	20122	91.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.29%#			
16) 4-Terphenyl-d14	11.844	244	22197	96.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.42%#			

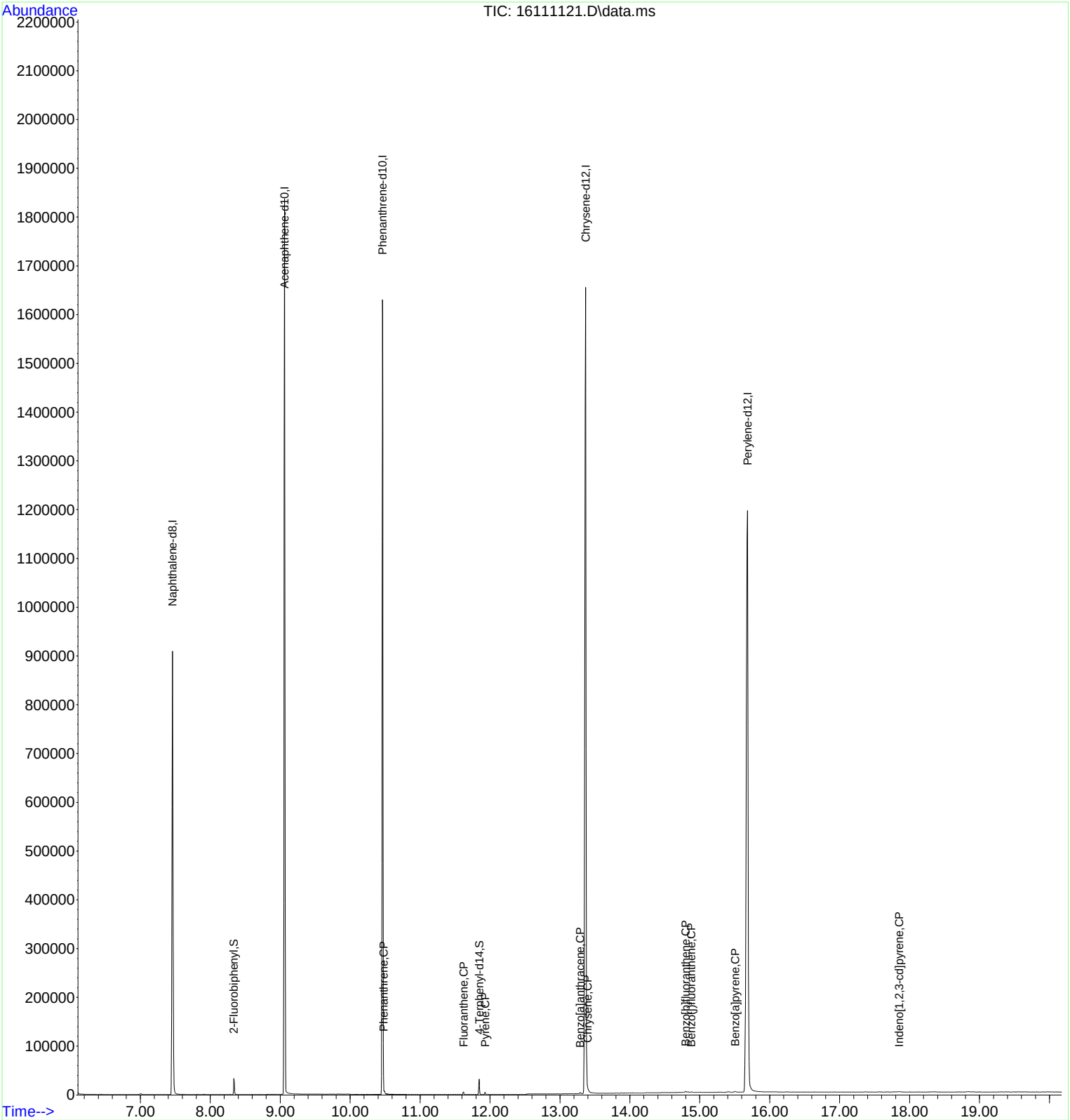
Target Compounds						Qvalue
12) Phenanthrene	10.486	178	1598	5.71	ug/kg	97
14) Fluoranthene	11.620	202	3486	10.53	ug/kg	98
15) Pyrene	11.929	202	3079	9.06	ug/kg	100
18) Benzo[a]anthracene	13.286	228	2075	6.24	ug/kg	99
19) Chrysene	13.404	228	2142	7.11	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	2579	7.06	ug/kg	94
23) Benzo(j)fluoranthene	14.876	252	1034	3.18	ug/kg	91
25) Benzo[a]pyrene	15.506	252	2256	6.74	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	17.850	276	1713	5.10	ug/kg	94

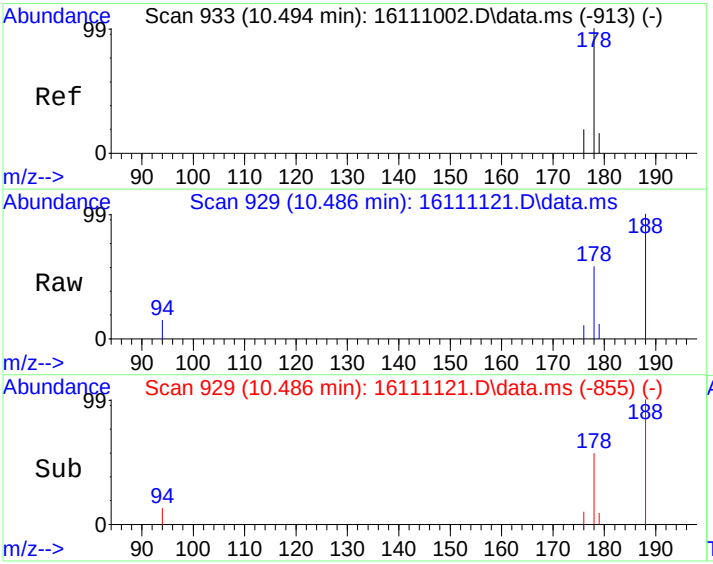
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111121.D
Acq On : 11 Nov 2016 5:49 pm
Operator :
Sample : 1611044-04A
Misc : SAMP
ALS Vial : 19 Sample Multiplier: 10

Quant Time: Nov 14 13:33:50 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

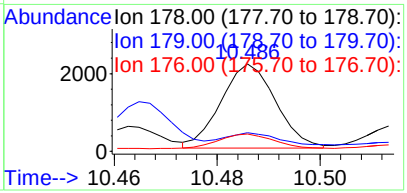


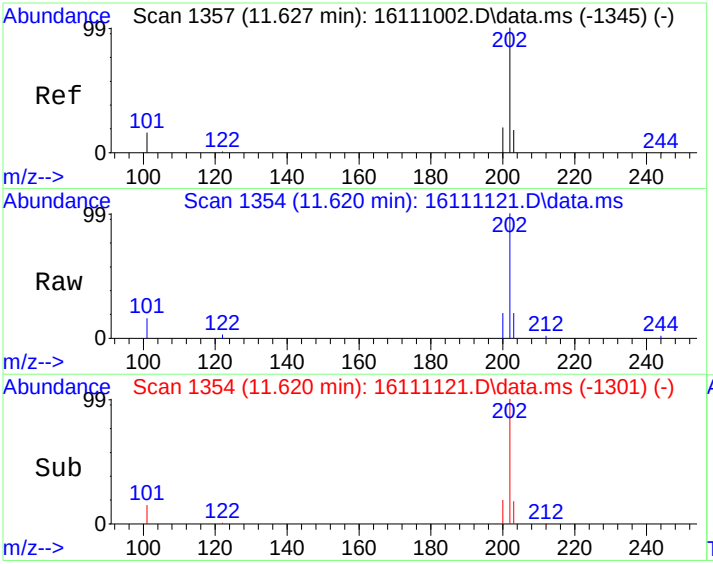


#12
Phenanthrene
Concen: 5.71 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:178 Resp: 1598

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	46.2
176	17.5	0.0	48.4

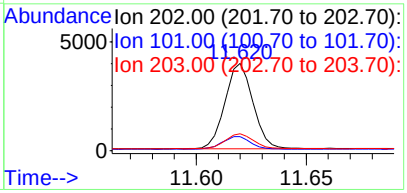


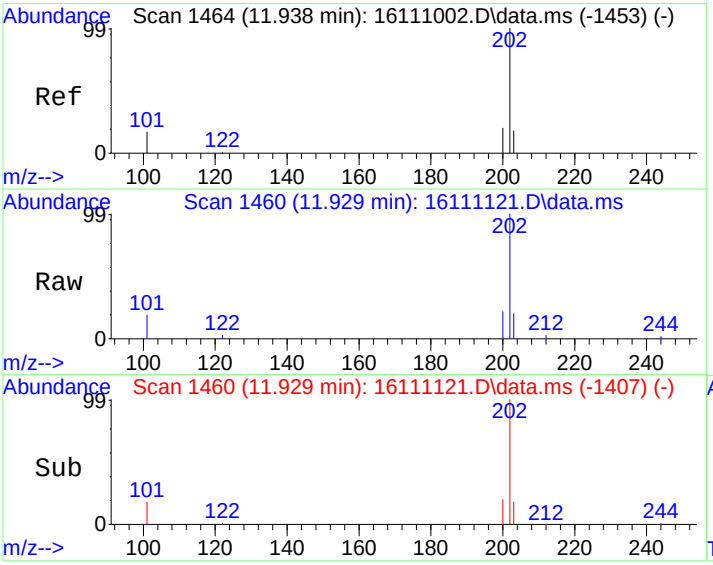


#14
Fluoranthene
Concen: 10.53 ug/kg
RT: 11.620 min Scan# 1354
Delta R.T. -0.006 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:202 Resp: 3486

Ion	Ratio	Lower	Upper
202	100		
101	14.5	0.0	45.8
203	17.5	0.0	48.2

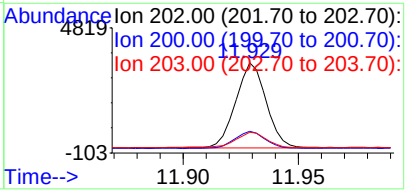


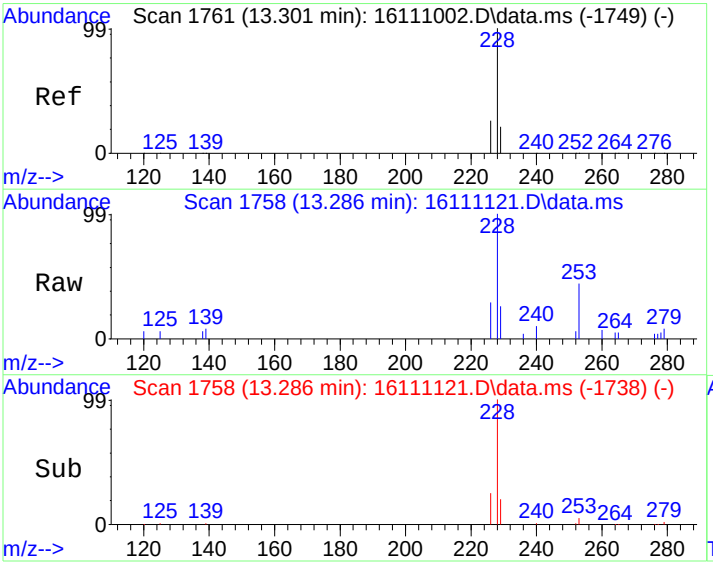


#15
Pyrene
Concen: 9.06 ug/kg
RT: 11.929 min Scan# 1460
Delta R.T. -0.009 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:202 Resp: 3079

Ion	Ratio	Lower	Upper
202	100		
200	20.2	0.0	50.3
203	17.9	0.0	48.2

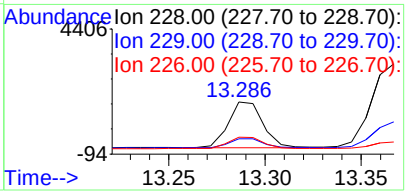


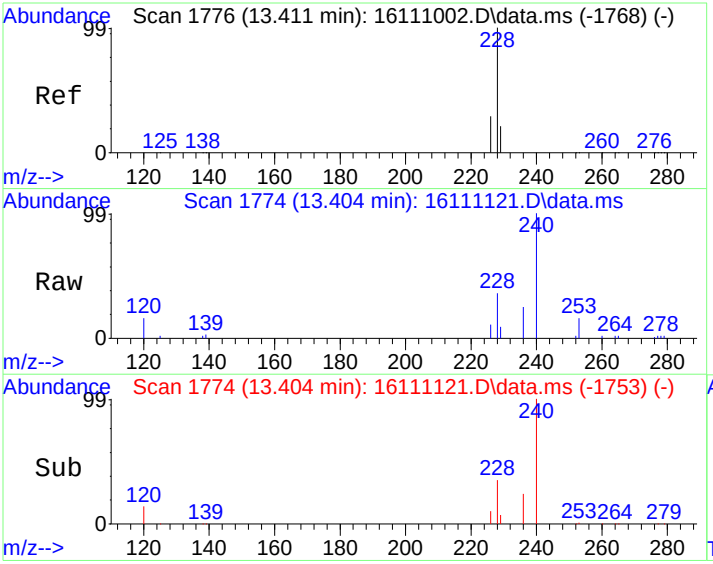


#18
Benzo[a]anthracene
Concen: 6.24 ug/kg
RT: 13.286 min Scan# 1758
Delta R.T. -0.015 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:228 Resp: 2075

Ion	Ratio	Lower	Upper
228	100		
229	19.9	0.0	50.8
226	24.9	0.0	55.5

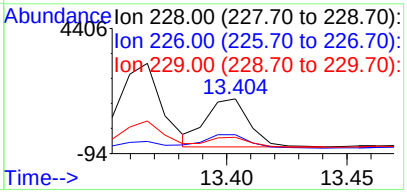


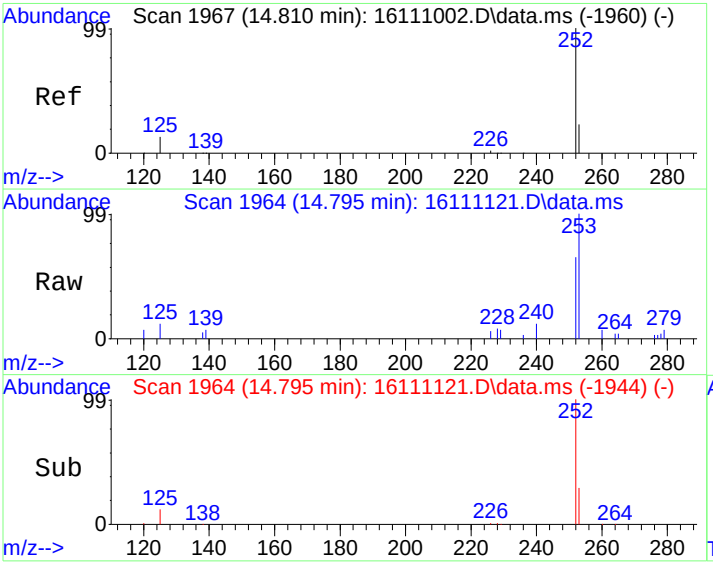


#19
Chrysene
Concen: 7.11 ug/kg
RT: 13.404 min Scan# 1774
Delta R.T. -0.007 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:228 Resp: 2142

Ion	Ratio	Lower	Upper
228	100		
226	27.9	0.0	58.7
229	20.2	0.0	50.4

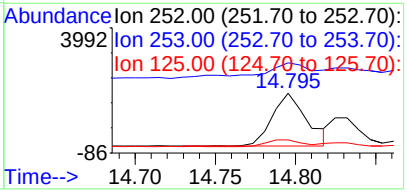


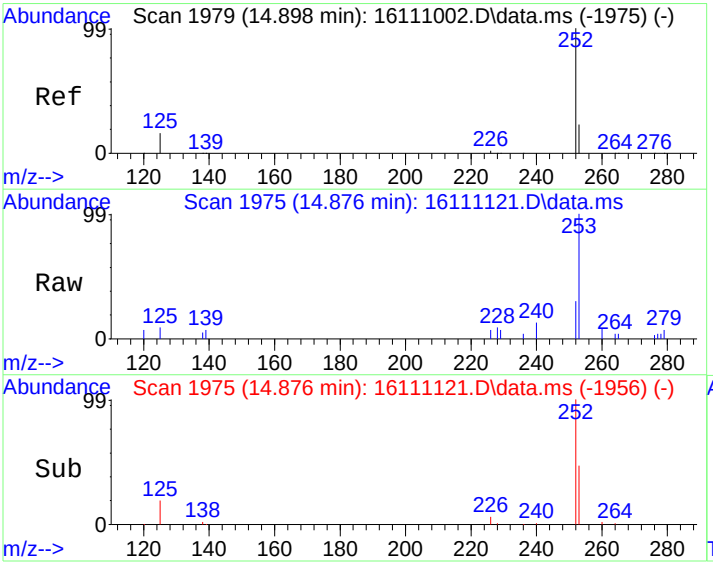


#21
Benzo[b]fluoranthene
Concen: 7.06 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:252 Resp: 2579

Ion	Ratio	Lower	Upper
252	100		
253	27.1	0.0	52.7
125	12.6	0.0	42.9

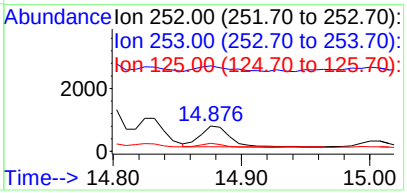


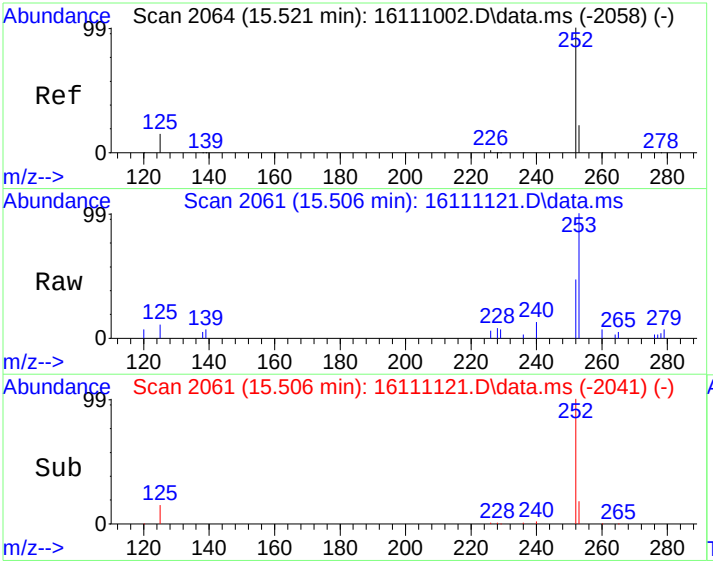


#23
Benzo(j)fluoranthene
Concen: 3.18 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:252 Resp: 1034

Ion	Ratio	Lower	Upper
252	100		
253	27.8	2.7	42.7
125	19.5	0.0	36.4

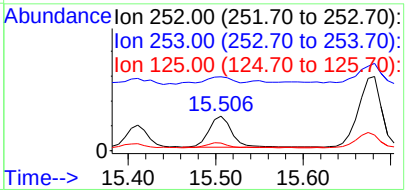


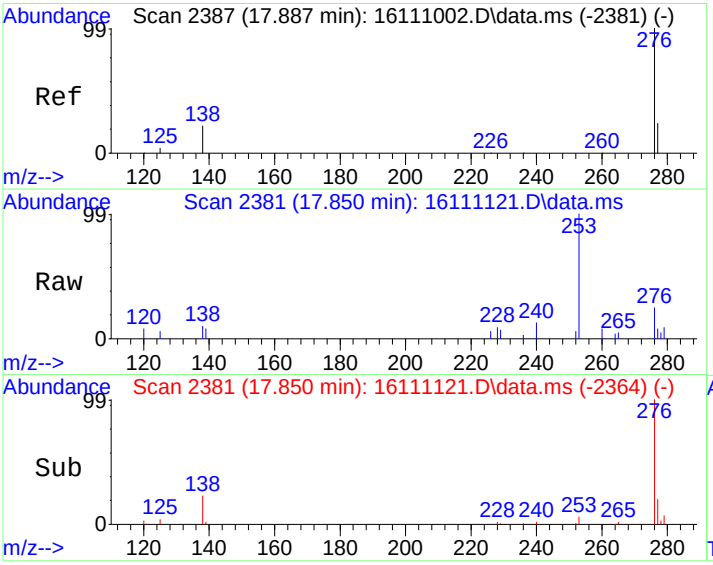


#25
Benzo[a]pyrene
Concen: 6.74 ug/kg
RT: 15.506 min Scan# 2061
Delta R.T. -0.014 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:252 Resp: 2256

Ion	Ratio	Lower	Upper
252	100		
253	19.7	2.7	42.7
125	15.6	0.0	33.9

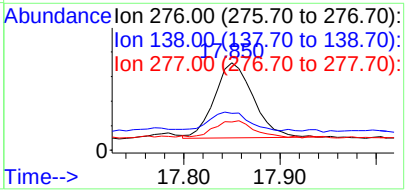




#27
Indeno[1,2,3-cd]pyrene
Concen: 5.10 ug/kg
RT: 17.850 min Scan# 2381
Delta R.T. -0.036 min
Lab File: 16111121.D
Acq: 11 Nov 2016 5:49 pm

Tgt Ion:276 Resp: 1713

Ion	Ratio	Lower	Upper
276	100		
138	25.2	4.4	44.4
277	19.5	4.4	44.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111122.D
Acq On : 11 Nov 2016 6:17 pm
Operator :
Sample : 1611044-05A
Misc : SAMP
ALS Vial : 20 Sample Multiplier: 10

Quant Time: Nov 14 13:33:56 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	866186	4000.00	ug/kg	98
5) Acenaphthene-d10	9.061	164	699524	4000.00	ug/kg	88
11) Phenanthrene-d10	10.463	188	1232853	4000.00	ug/kg	87
17) Chrysene-d12	13.366	240	1465282	4000.00	ug/kg	88
20) Perylene-d12	15.680	264	1528858	4000.00	ug/kg	87

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	19861	87.41	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.19%#			
16) 4-Terphenyl-d14	11.844	244	21409	90.34	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.26%#			

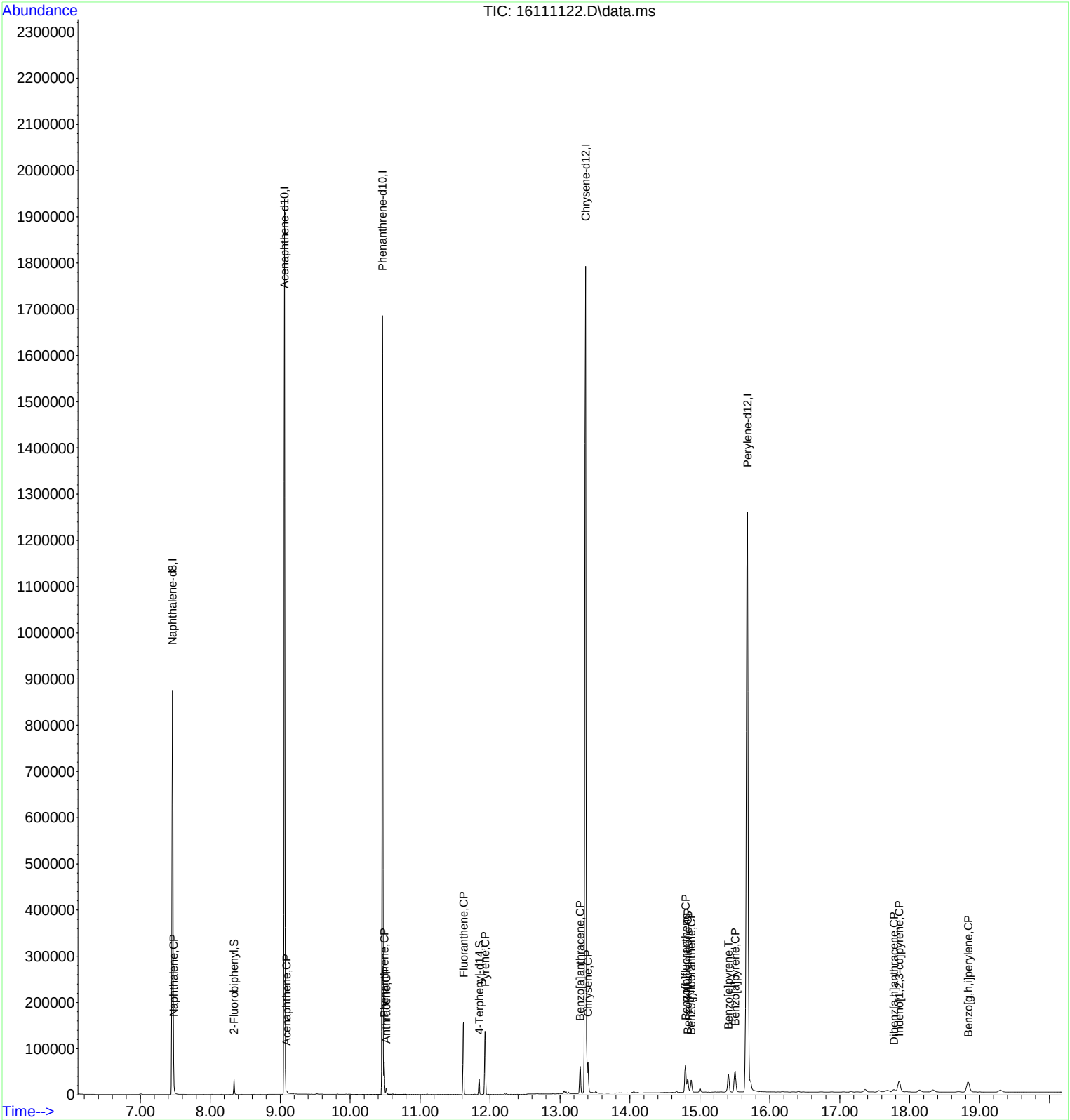
Target Compounds						Qvalue
2) Naphthalene	7.482	128	927	5.51	ug/kg	99
9) Acenaphthene	9.096	154	1019	6.03	ug/kg	98
12) Phenanthrene	10.486	178	36702	126.72	ug/kg	99
13) Anthracene	10.515	178	7511	25.47	ug/kg	98
14) Fluoranthene	11.620	202	91059	265.93	ug/kg	98
15) Pyrene	11.928	202	78621	223.63	ug/kg	99
18) Benzo[a]anthracene	13.285	228	48925	141.79	ug/kg	98
19) Chrysene	13.402	228	58951	188.45	ug/kg	98
21) Benzo[b]fluoranthene	14.794	252	63847	167.38	ug/kg	98
22) Benzo[k]fluoranthene	14.823	252	24974	72.43	ug/kg	88
23) Benzo(j)fluoranthene	14.875	252	26362	77.73	ug/kg	96
24) Benzo[e]pyrene	15.409	252	43047	125.90	ug/kg	96
25) Benzo[a]pyrene	15.505	252	58184	166.56	ug/kg	99
26) Dibenz[a,h]anthracene	17.775	278	6448	17.95	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	41429	118.24	ug/kg	99
28) Benzo[g,h,i]perylene	18.837	276	44674	120.39	ug/kg	97

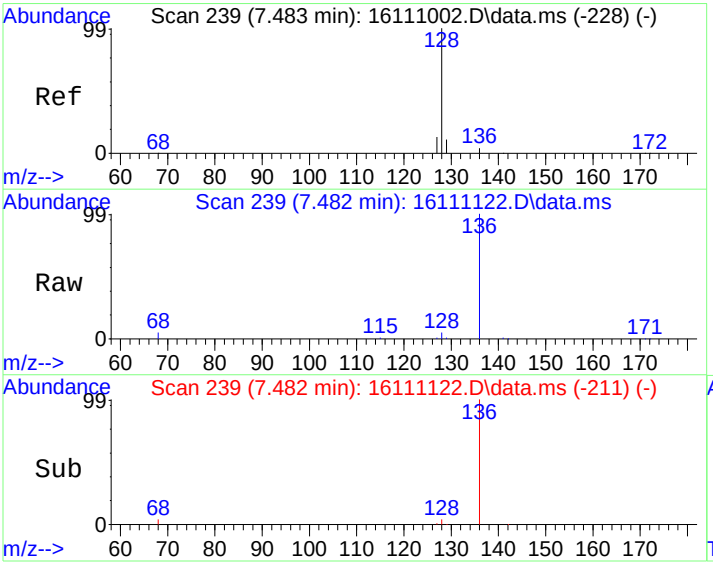
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111122.D
Acq On : 11 Nov 2016 6:17 pm
Operator :
Sample : 1611044-05A
Misc : SAMP
ALS Vial : 20 Sample Multiplier: 10

Quant Time: Nov 14 13:33:56 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

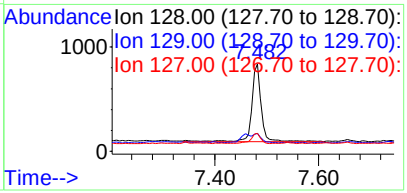


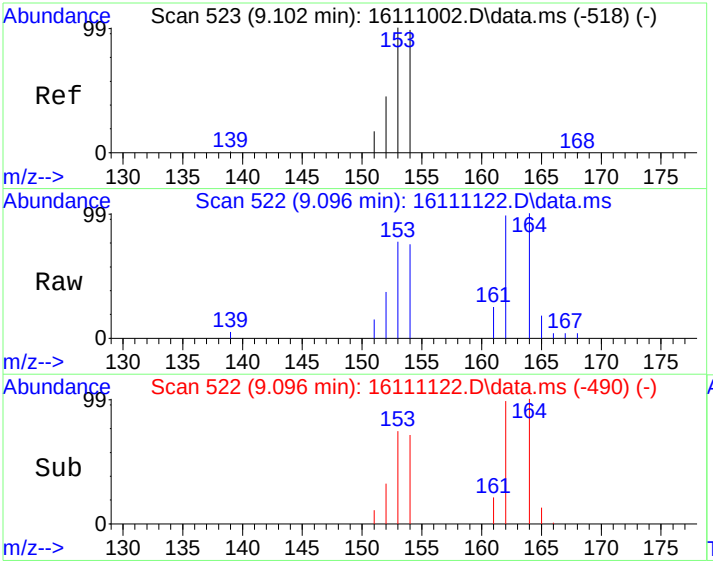


#2
Naphthalene
Concen: 5.51 ug/kg
RT: 7.482 min Scan# 239
Delta R.T. -0.001 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:128 Resp: 927

Ion	Ratio	Lower	Upper
128	100		
129	11.6	0.0	41.4
127	12.5	0.0	43.3

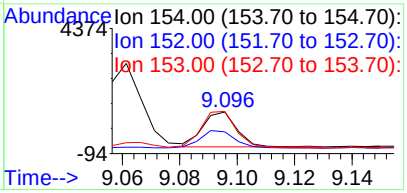


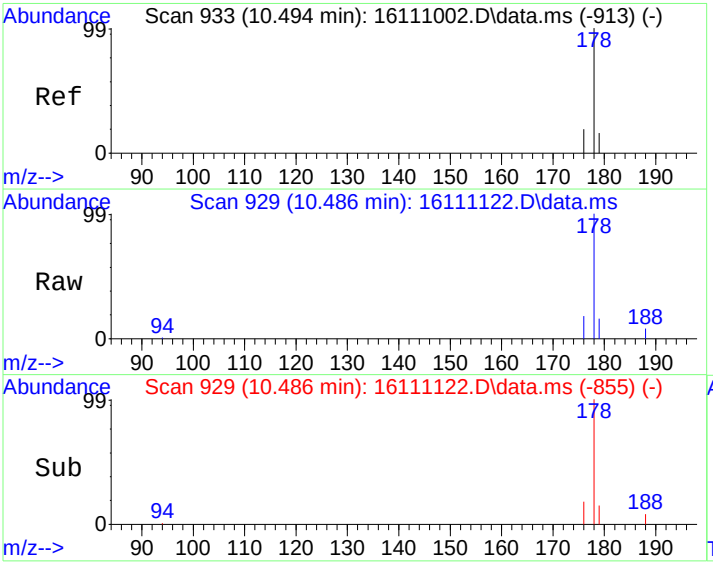


#9
Acenaphthene
Concen: 6.03 ug/kg
RT: 9.096 min Scan# 522
Delta R.T. -0.005 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:154 Resp: 1019

Ion	Ratio	Lower	Upper
154	100		
152	46.9	20.7	80.7
153	106.0	76.8	136.8

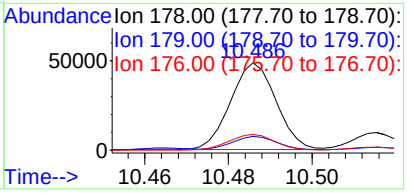


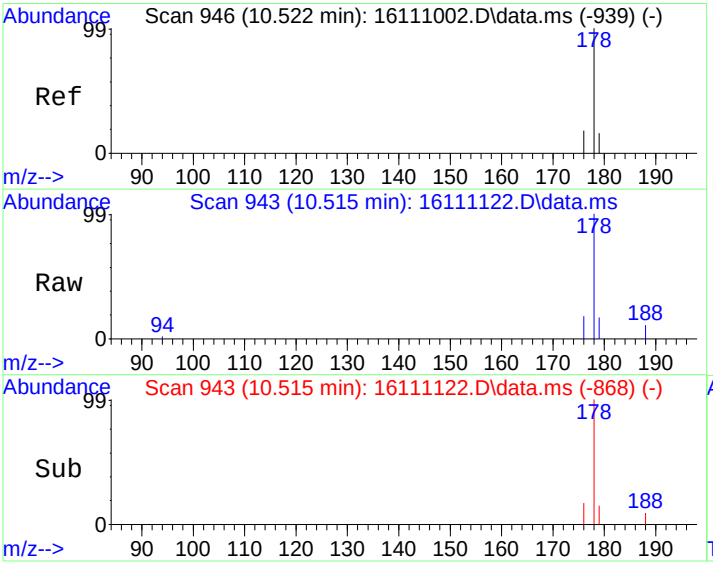


#12
Phenanthrene
Concen: 126.72 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:178 Resp: 36702

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	46.2
176	18.1	0.0	48.4

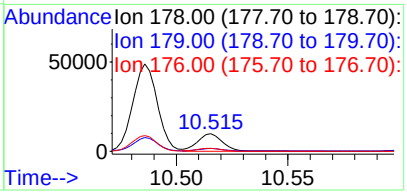


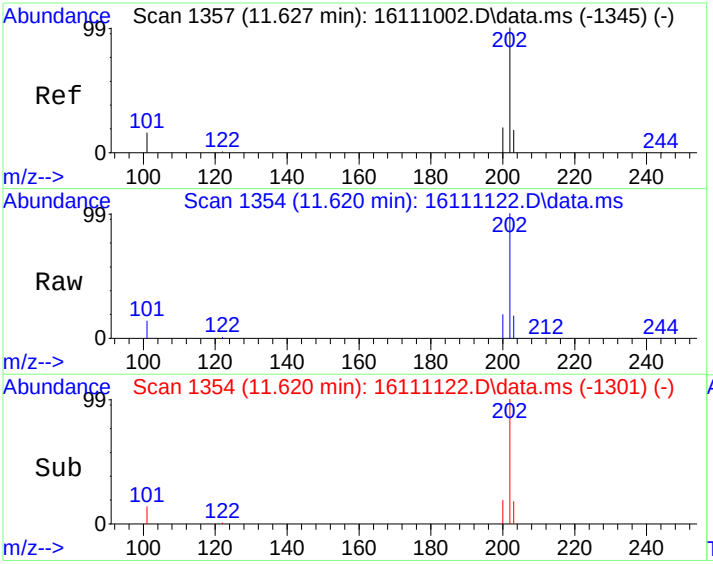


#13
Anthracene
Concen: 25.47 ug/kg
RT: 10.515 min Scan# 943
Delta R.T. -0.006 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:178 Resp: 7511

Ion	Ratio	Lower	Upper
178	100		
179	15.3	0.0	46.2
176	17.2	0.0	48.2

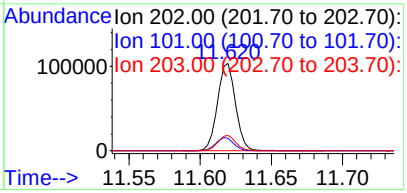


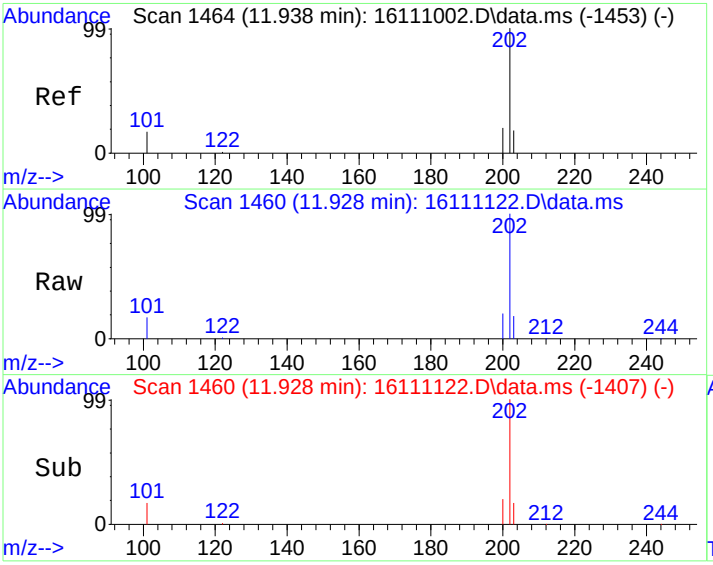


#14
Fluoranthene
Concen: 265.93 ug/kg
RT: 11.620 min Scan# 1354
Delta R.T. -0.006 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:202 Resp: 91059

Ion	Ratio	Lower	Upper
202	100		
101	14.2	0.0	45.8
203	17.7	0.0	48.2

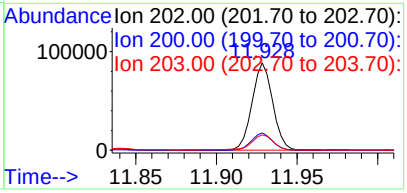


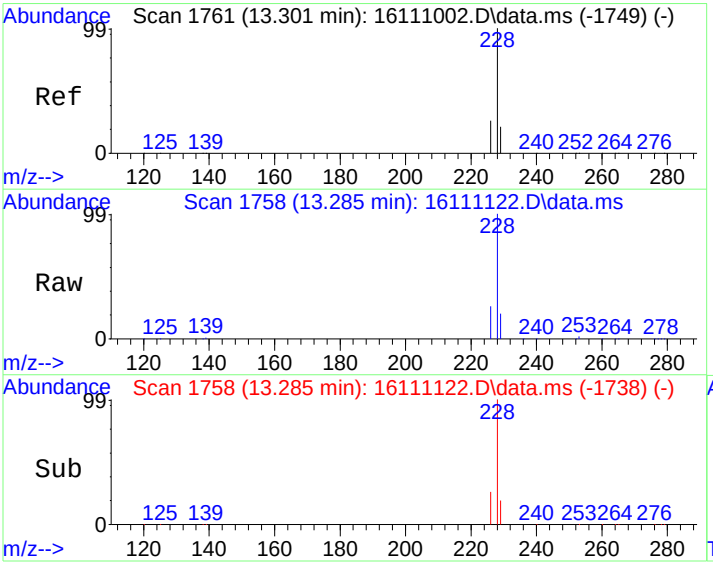


#15
Pyrene
Concen: 223.63 ug/kg
RT: 11.928 min Scan# 1460
Delta R.T. -0.010 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:202 Resp: 78621

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	50.3
203	17.7	0.0	48.2

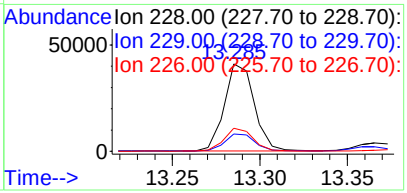


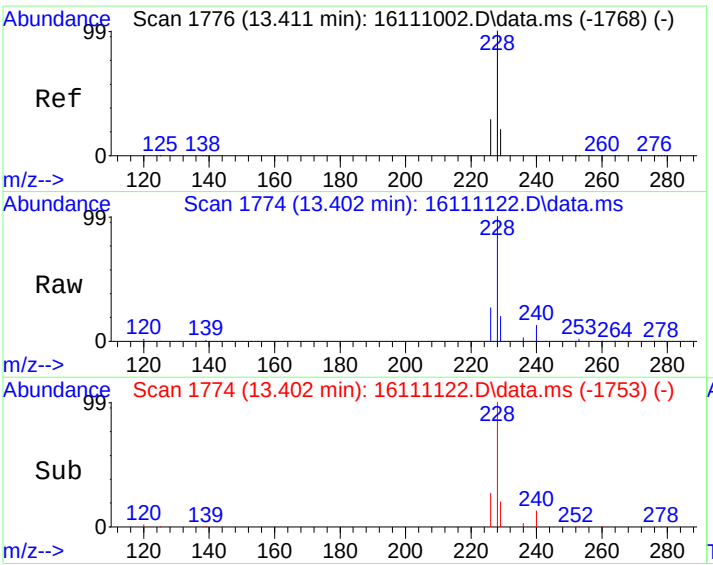


#18
Benzo[a]anthracene
Concen: 141.79 ug/kg
RT: 13.285 min Scan# 1758
Delta R.T. -0.016 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:228 Resp: 48925

Ion	Ratio	Lower	Upper
228	100		
229	19.5	0.0	50.8
226	26.1	0.0	55.5

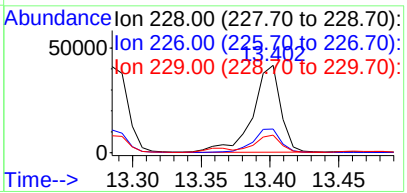


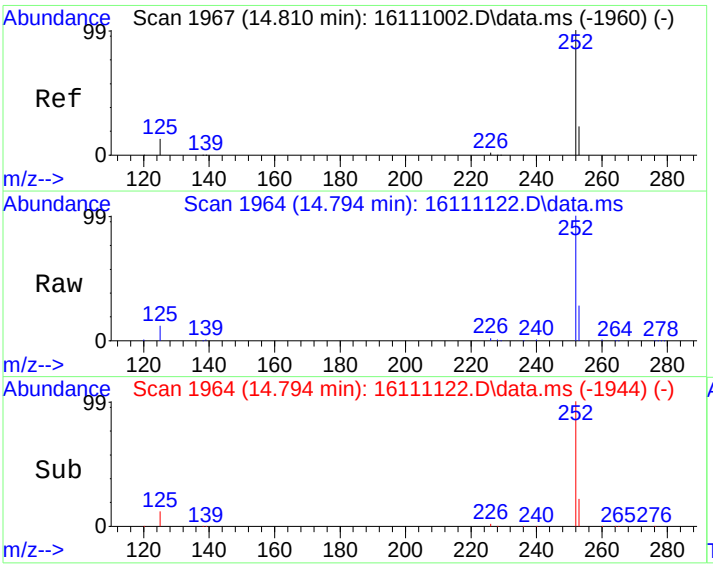


#19
Chrysene
Concen: 188.45 ug/kg
RT: 13.402 min Scan# 1774
Delta R.T. -0.009 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:228 Resp: 58951

Ion	Ratio	Lower	Upper
228	100		
226	27.1	0.0	58.7
229	20.0	0.0	50.4

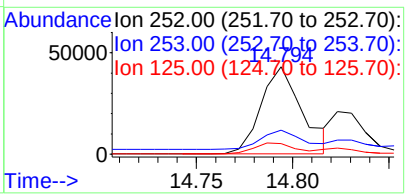


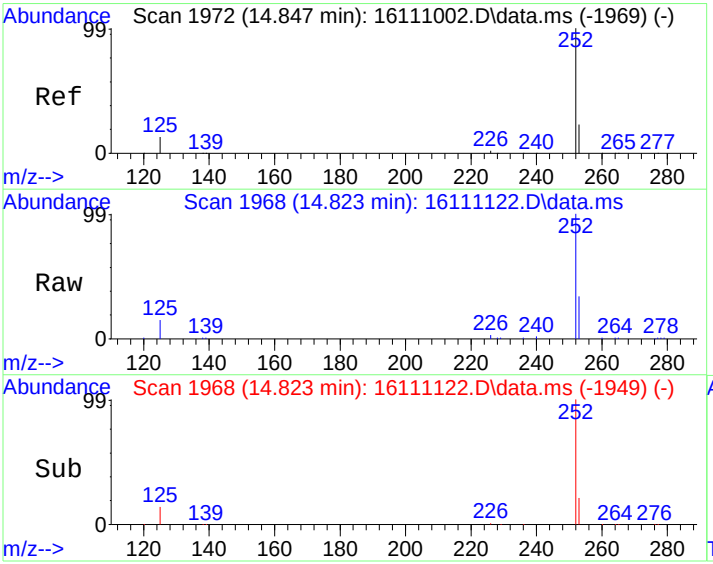


#21
Benzo[b]fluoranthene
Concen: 167.38 ug/kg
RT: 14.794 min Scan# 1964
Delta R.T. -0.016 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:252 Resp: 63847

Ion	Ratio	Lower	Upper
252	100		
253	22.0	0.0	52.7
125	12.0	0.0	42.9

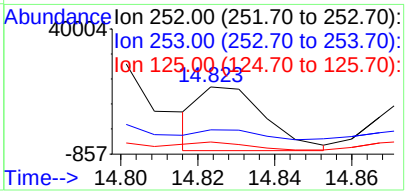


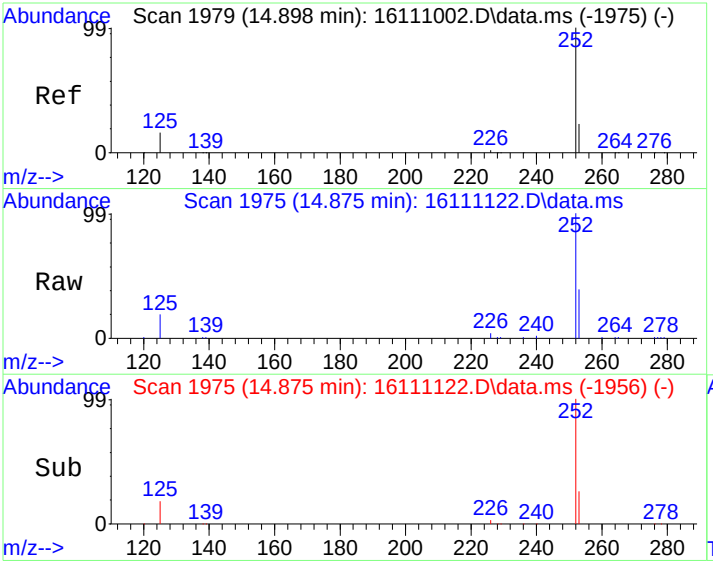


#22
Benzo[k]fluoranthene
Concen: 72.43 ug/kg
RT: 14.823 min Scan# 1968
Delta R.T. -0.023 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:252 Resp: 24974

Ion	Ratio	Lower	Upper
252	100		
253	15.5	2.8	42.8
125	13.8	0.0	31.3

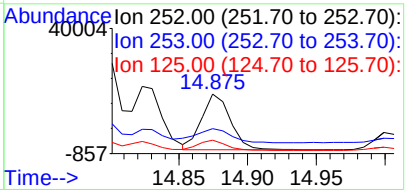


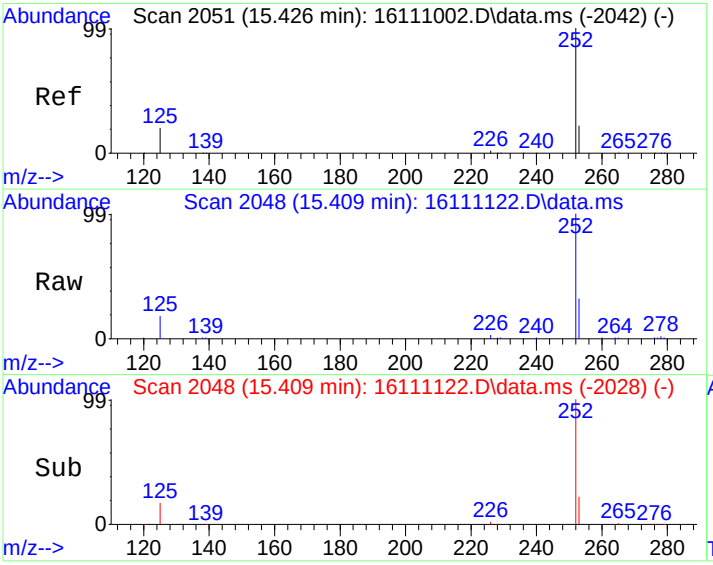


#23
Benzo(j)fluoranthene
Concen: 77.73 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:252 Resp: 26362

Ion	Ratio	Lower	Upper
252	100		
253	24.8	2.7	42.7
125	18.1	0.0	36.4

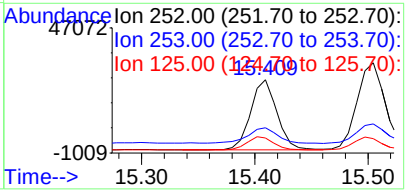


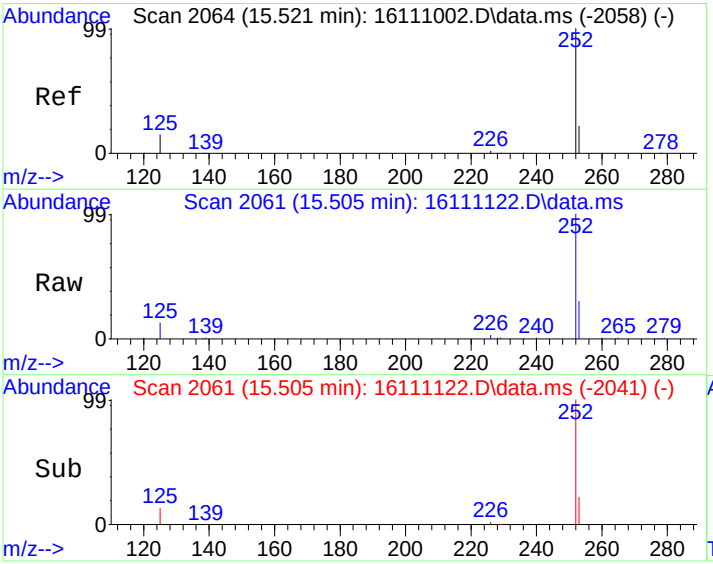


#24
Benzo[e]pyrene
Concen: 125.90 ug/kg
RT: 15.409 min Scan# 2048
Delta R.T. -0.016 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:252 Resp: 43047

Ion	Ratio	Lower	Upper
252	100		
253	22.2	2.5	42.5
125	17.0	0.9	40.9

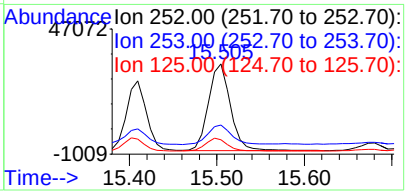


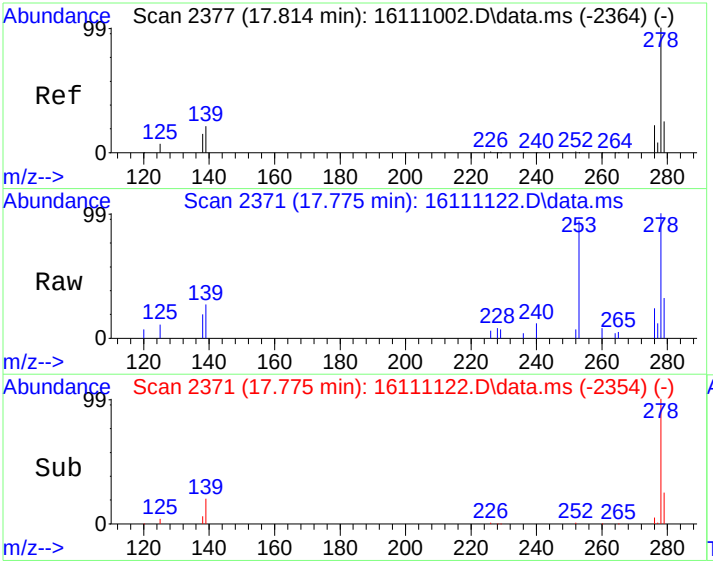


#25
Benzo[a]pyrene
Concen: 166.56 ug/kg
RT: 15.505 min Scan# 2061
Delta R.T. -0.015 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:252 Resp: 58184

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.7	42.7
125	13.0	0.0	33.9

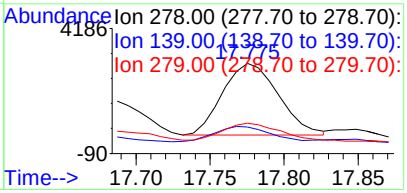


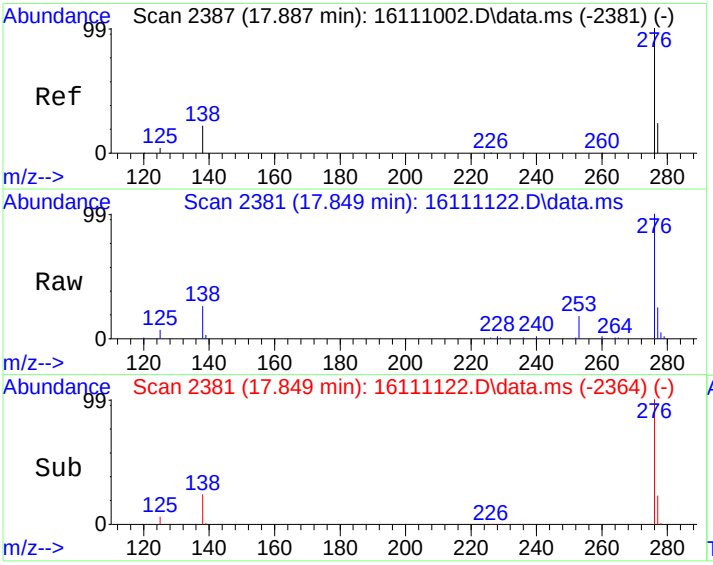


#26
Dibenz[a,h]anthracene
Concen: 17.95 ug/kg
RT: 17.775 min Scan# 2371
Delta R.T. -0.038 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:278 Resp: 6448

Ion	Ratio	Lower	Upper
278	100		
139	20.1	0.2	40.2
279	23.7	4.5	44.5

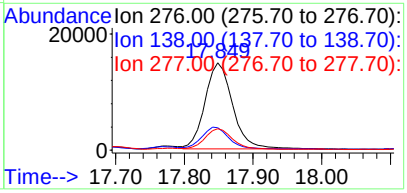


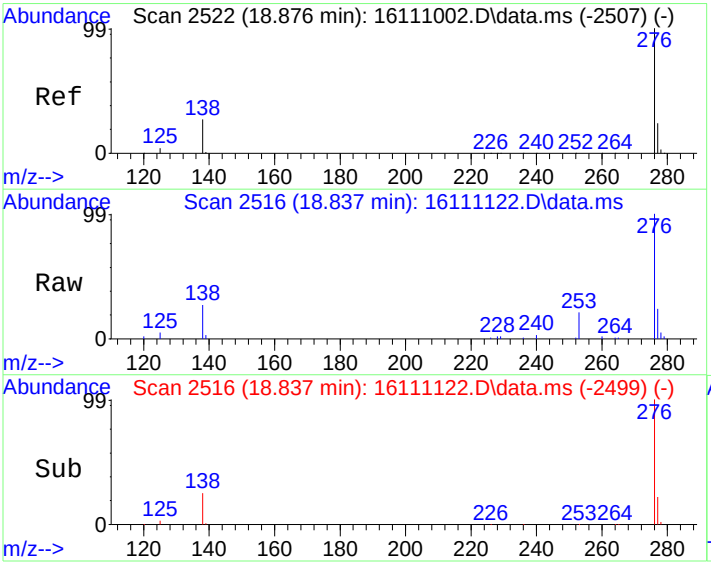


#27
Indeno[1,2,3-cd]pyrene
Concen: 118.24 ug/kg
RT: 17.849 min Scan# 2381
Delta R.T. -0.037 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:276 Resp: 41429

Ion	Ratio	Lower	Upper
276	100		
138	24.8	4.4	44.4
277	23.8	4.4	44.4

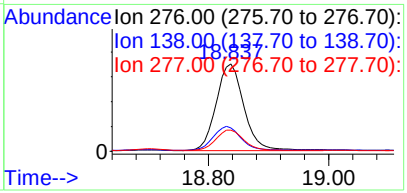




#28
Benzo[g,h,i]perylene
Concen: 120.39 ug/kg
RT: 18.837 min Scan# 2516
Delta R.T. -0.038 min
Lab File: 16111122.D
Acq: 11 Nov 2016 6:17 pm

Tgt Ion:276 Resp: 44674

Ion	Ratio	Lower	Upper
276	100		
138	25.8	7.7	47.7
277	23.4	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111123.D
Acq On : 11 Nov 2016 6:46 pm
Operator :
Sample : 1611044-06A
Misc : SAMP
ALS Vial : 21 Sample Multiplier: 10

Quant Time: Nov 14 13:34:05 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	890350	4000.00	ug/kg	101
5) Acenaphthene-d10	9.063	164	687833	4000.00	ug/kg	87
11) Phenanthrene-d10	10.463	188	1201283	4000.00	ug/kg	85
17) Chrysene-d12	13.367	240	1424256	4000.00	ug/kg	85
20) Perylene-d12	15.674	264	1488790	4000.00	ug/kg	85

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.337	172	19772	88.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.21%#			
16) 4-Terphenyl-d14	11.844	244	20894	90.49	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.26%#			

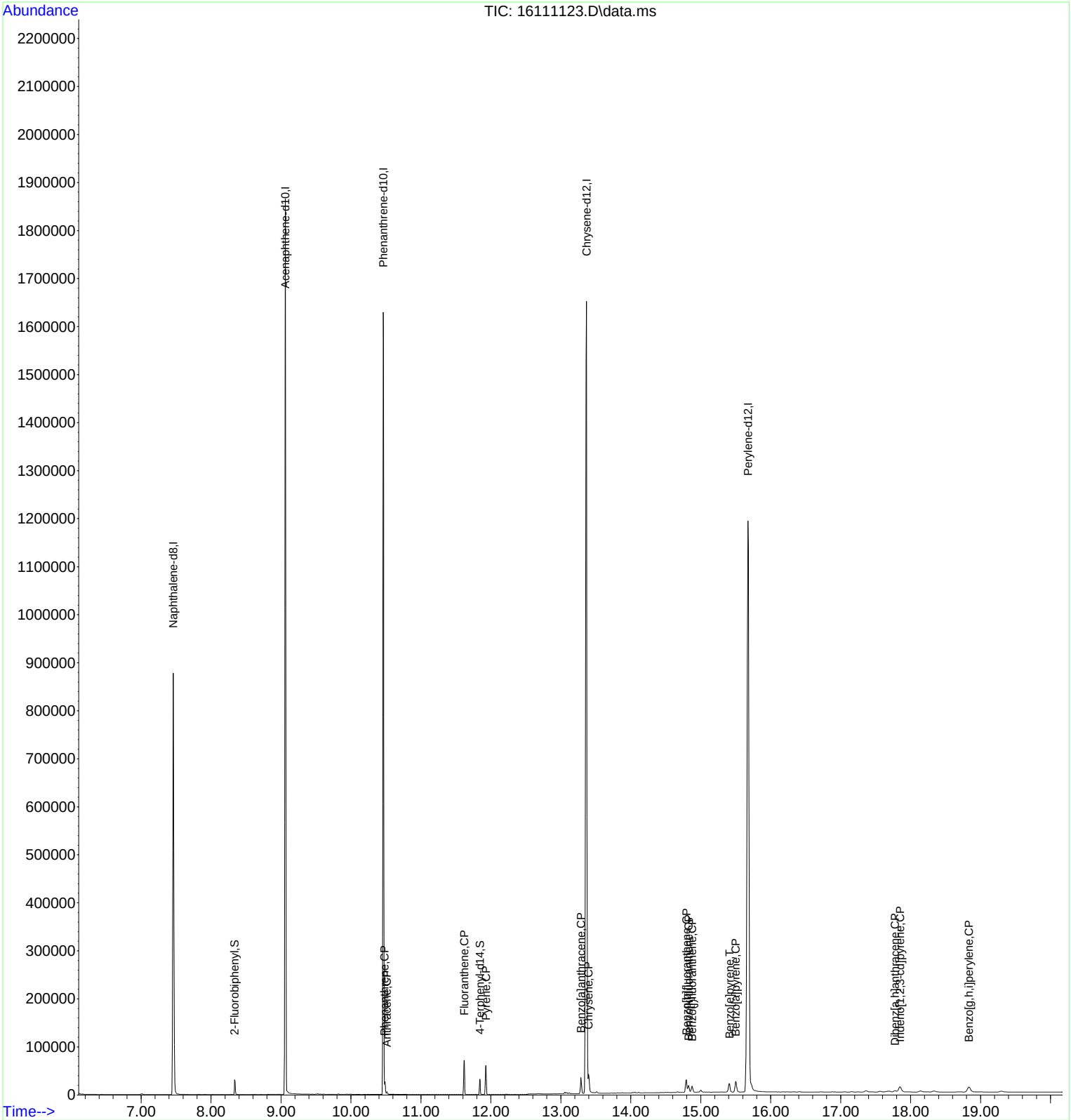
Target Compounds						Qvalue
12) Phenanthrene	10.486	178	12773	45.26	ug/kg	98
13) Anthracene	10.513	178	2839	9.88	ug/kg	98
14) Fluoranthene	11.616	202	41804	125.29	ug/kg	99
15) Pyrene	11.928	202	36231	105.77	ug/kg	99
18) Benzo[a]anthracene	13.286	228	25039	74.66	ug/kg	99
19) Chrysene	13.396	228	31388	103.23	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	28857	77.69	ug/kg	97
22) Benzo[k]fluoranthene	14.824	252	14464	43.08	ug/kg	89
23) Benzo(j)fluoranthene	14.876	252	12833	38.86	ug/kg	98
24) Benzo[e]pyrene	15.410	252	20547	61.71	ug/kg	94
25) Benzo[a]pyrene	15.498	252	28556	83.94	ug/kg	98
26) Dibenz[a,h]anthracene	17.776	278	3233	9.24	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.850	276	19864	58.22	ug/kg	99
28) Benzo[g,h,i]perylene	18.831	276	21621	59.83	ug/kg	99

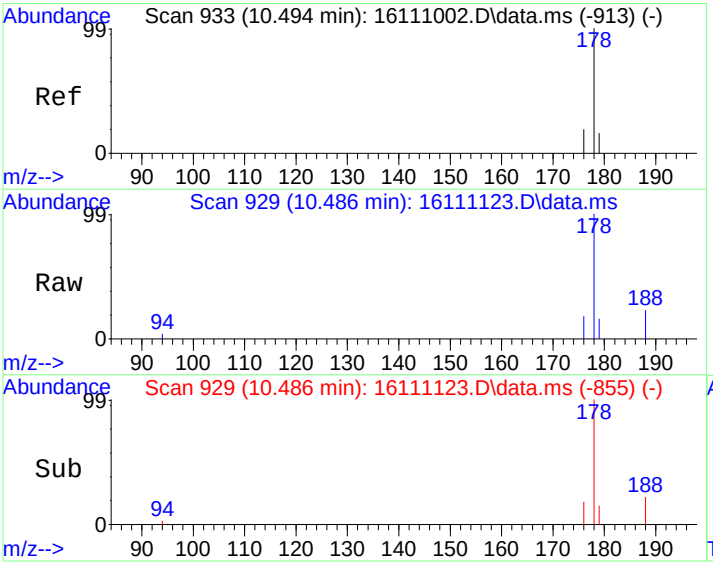
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111123.D
Acq On : 11 Nov 2016 6:46 pm
Operator :
Sample : 1611044-06A
Misc : SAMP
ALS Vial : 21 Sample Multiplier: 10

Quant Time: Nov 14 13:34:05 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

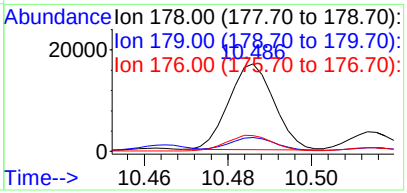


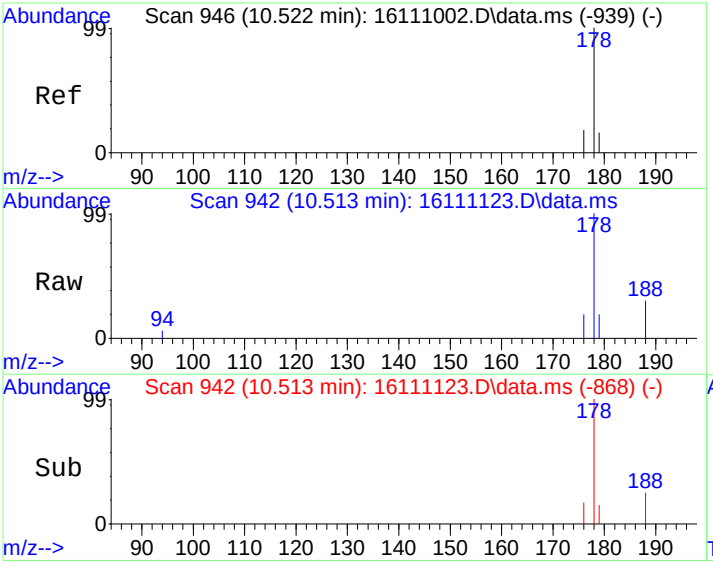


#12
Phenanthrene
Concen: 45.26 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:178 Resp: 12773

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	46.2
176	18.1	0.0	48.4

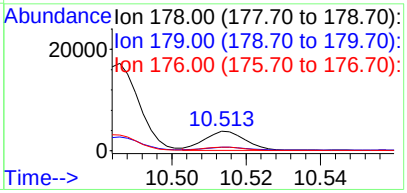


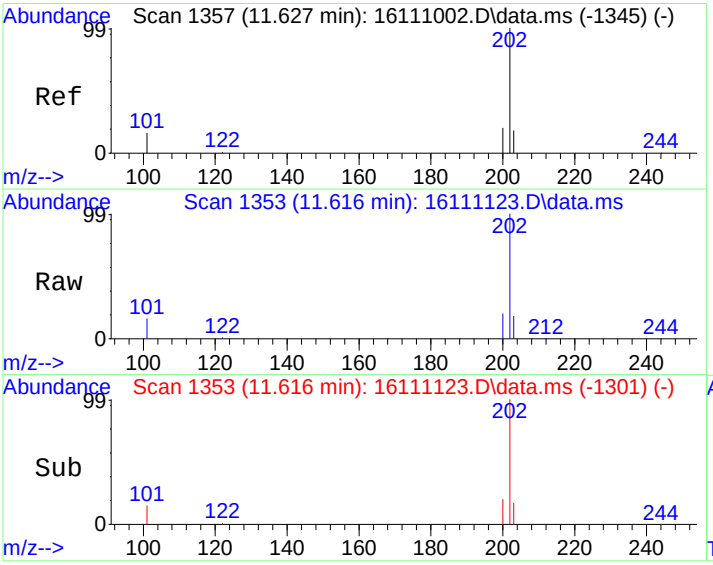


#13
Anthracene
Concen: 9.88 ug/kg
RT: 10.513 min Scan# 942
Delta R.T. -0.008 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:178 Resp: 2839

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	46.2
176	17.3	0.0	48.2

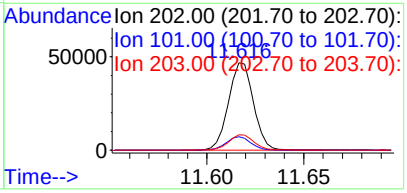


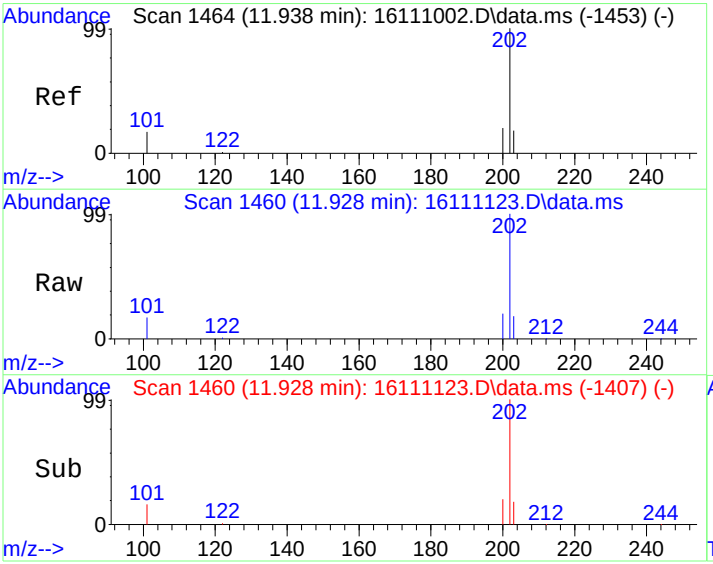


#14
Fluoranthene
Concen: 125.29 ug/kg
RT: 11.616 min Scan# 1353
Delta R.T. -0.010 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:202 Resp: 41804

Ion	Ratio	Lower	Upper
202	100		
101	15.5	0.0	45.8
203	17.4	0.0	48.2

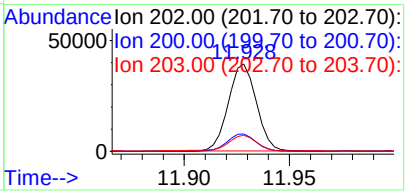


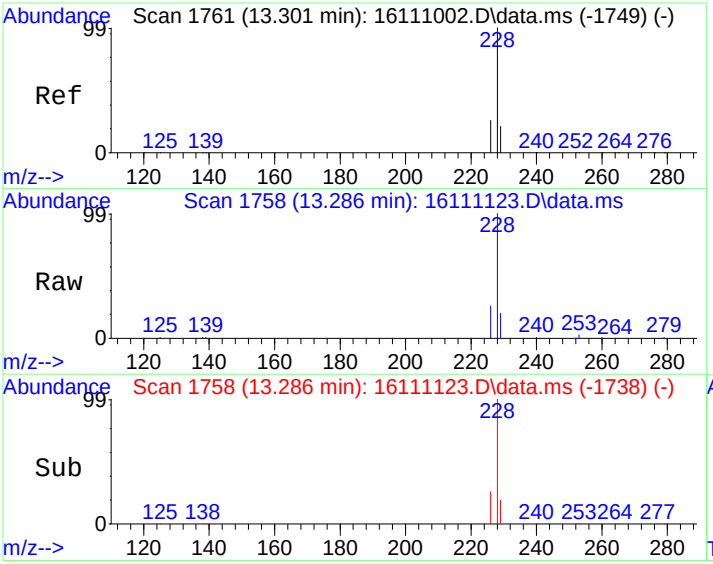


#15
Pyrene
Concen: 105.77 ug/kg
RT: 11.928 min Scan# 1460
Delta R.T. -0.010 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:202 Resp: 36231

Ion	Ratio	Lower	Upper
202	100		
200	19.7	0.0	50.3
203	18.0	0.0	48.2

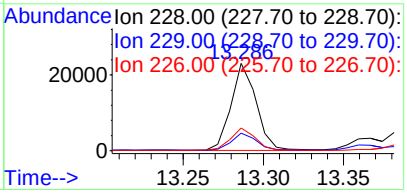


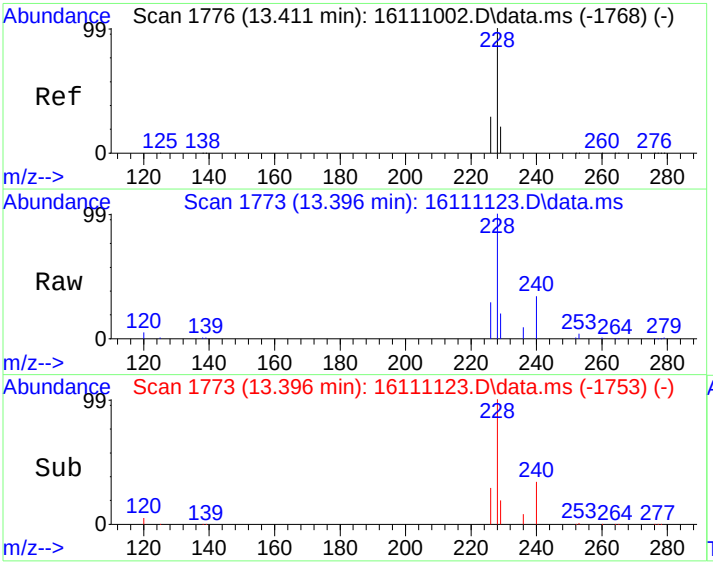


#18
Benzo[a]anthracene
Concen: 74.66 ug/kg
RT: 13.286 min Scan# 1758
Delta R.T. -0.015 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:228 Resp: 25039

Ion	Ratio	Lower	Upper
228	100		
229	19.7	0.0	50.8
226	25.6	0.0	55.5

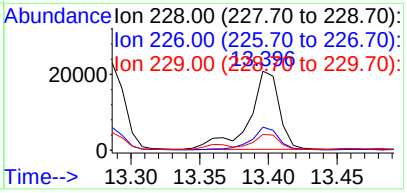


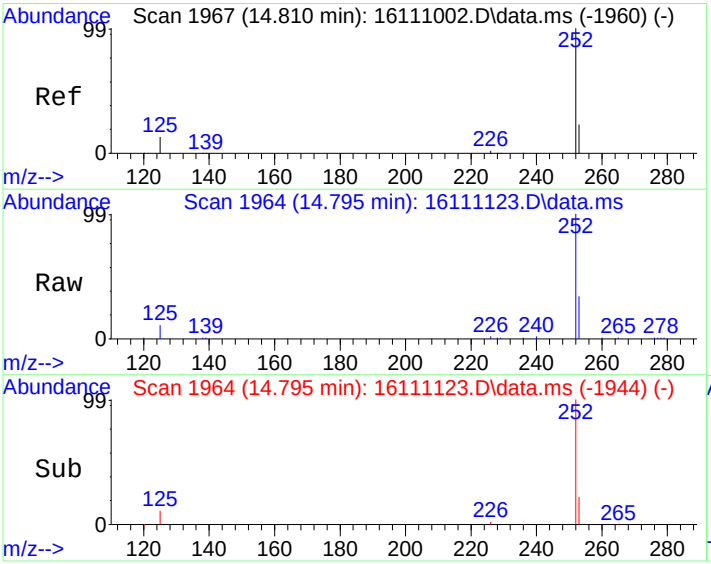


#19
Chrysene
Concen: 103.23 ug/kg
RT: 13.396 min Scan# 1773
Delta R.T. -0.015 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:228 Resp: 31388

Ion	Ratio	Lower	Upper
228	100		
226	29.1	0.0	58.7
229	19.5	0.0	50.4

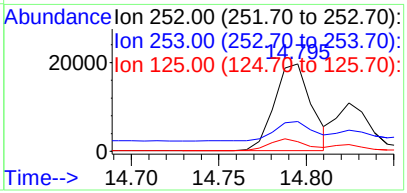


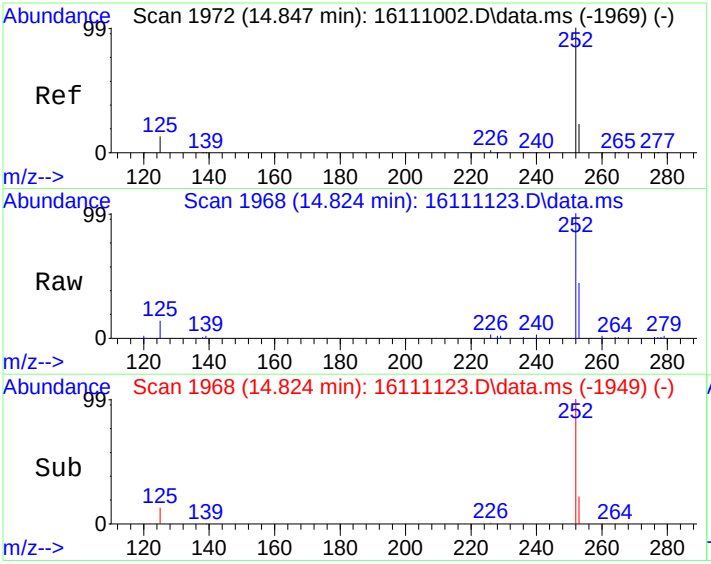


#21
Benzo[b]fluoranthene
Concen: 77.69 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:252 Resp: 28857

Ion	Ratio	Lower	Upper
252	100		
253	22.2	0.0	52.7
125	10.6	0.0	42.9

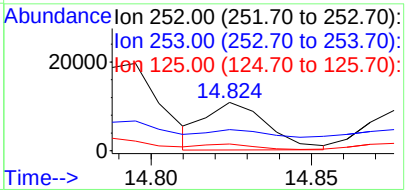


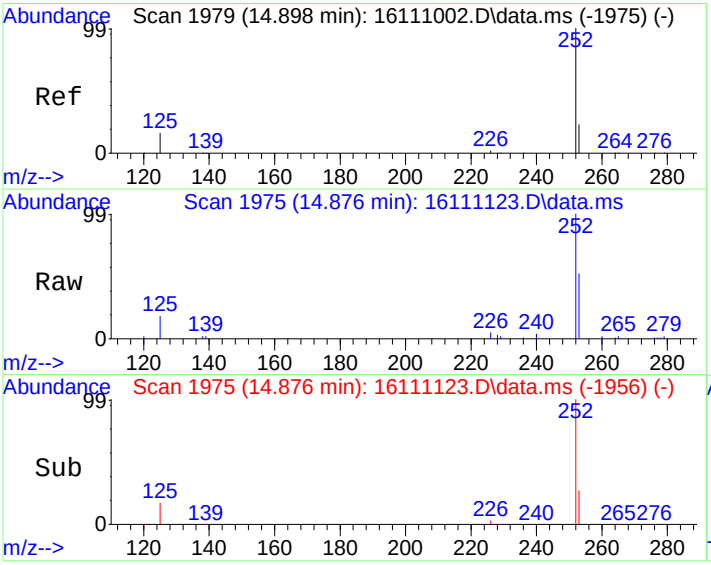


#22
Benzo[k]fluoranthene
Concen: 43.08 ug/kg
RT: 14.824 min Scan# 1968
Delta R.T. -0.022 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:252 Resp: 14464

Ion	Ratio	Lower	Upper
252	100		
253	15.4	2.8	42.8
125	11.8	0.0	31.3

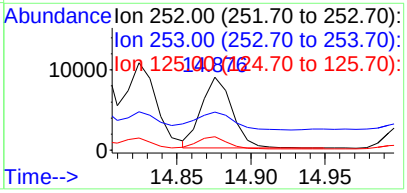


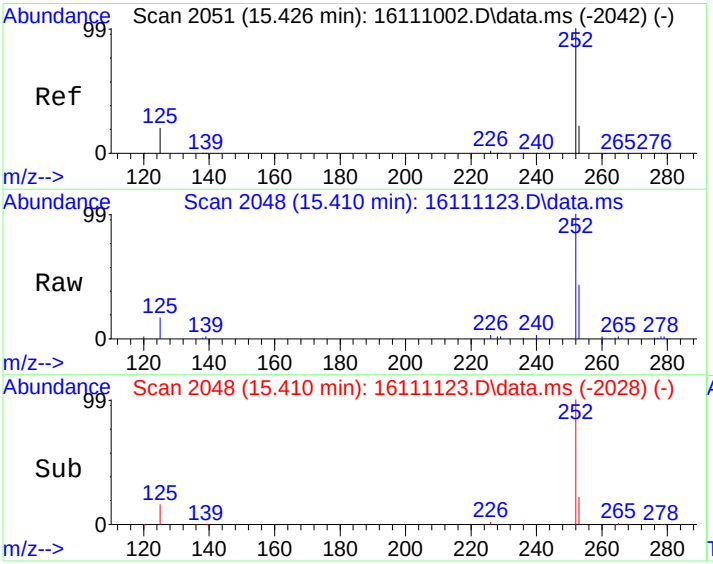


#23
Benzo(j)fluoranthene
Concen: 38.86 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:252 Resp: 12833

Ion	Ratio	Lower	Upper
252	100		
253	24.0	2.7	42.7
125	17.2	0.0	36.4

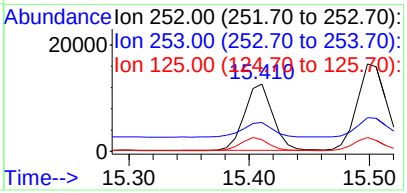


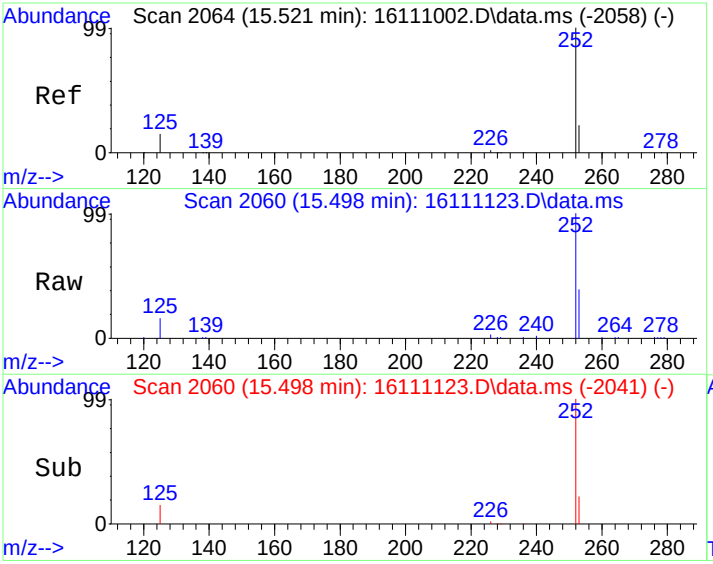


#24
Benzo[e]pyrene
Concen: 61.71 ug/kg
RT: 15.410 min Scan# 2048
Delta R.T. -0.015 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:252 Resp: 20547

Ion	Ratio	Lower	Upper
252	100		
253	21.5	2.5	42.5
125	16.4	0.9	40.9

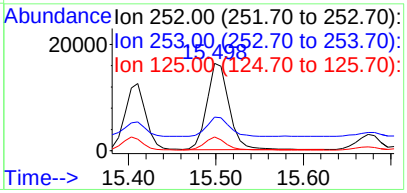


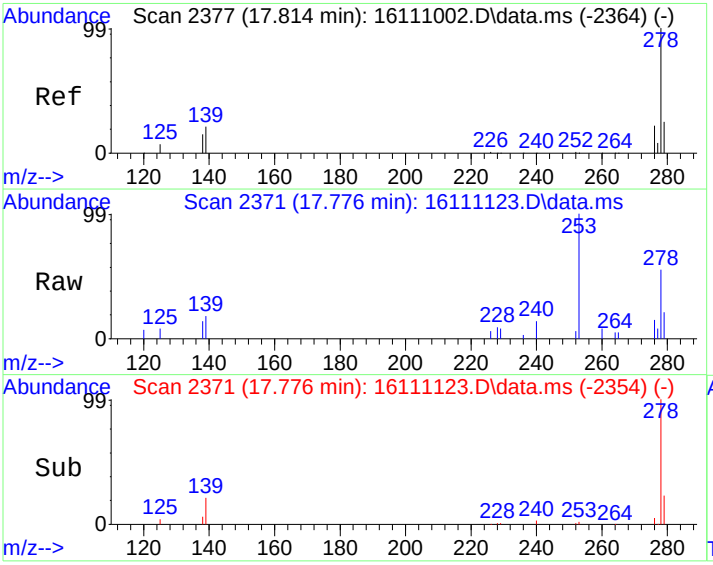


#25
Benzo[a]pyrene
Concen: 83.94 ug/kg
RT: 15.498 min Scan# 2060
Delta R.T. -0.022 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:252 Resp: 28556

Ion	Ratio	Lower	Upper
252	100		
253	22.3	2.7	42.7
125	15.0	0.0	33.9

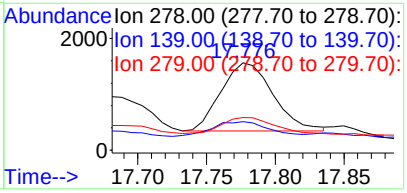


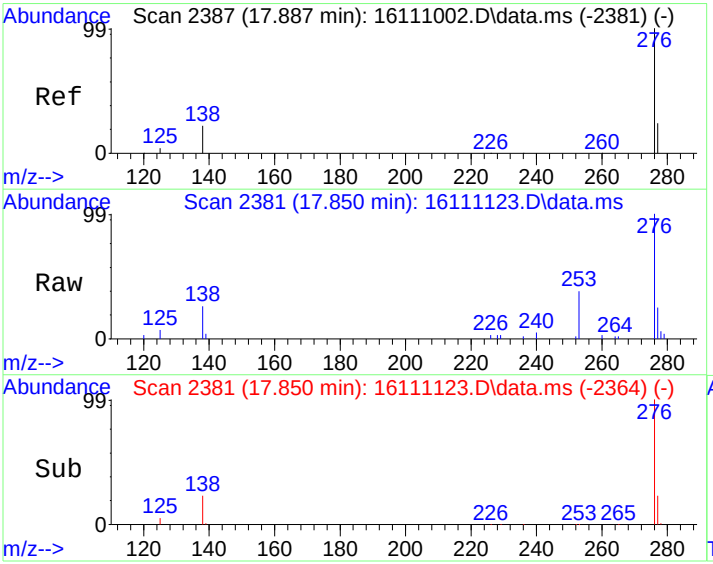


#26
Dibenz[a,h]anthracene
Concen: 9.24 ug/kg
RT: 17.776 min Scan# 2371
Delta R.T. -0.037 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:278 Resp: 3233

Ion	Ratio	Lower	Upper
278	100		
139	20.4	0.2	40.2
279	23.5	4.5	44.5

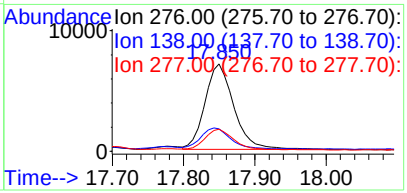


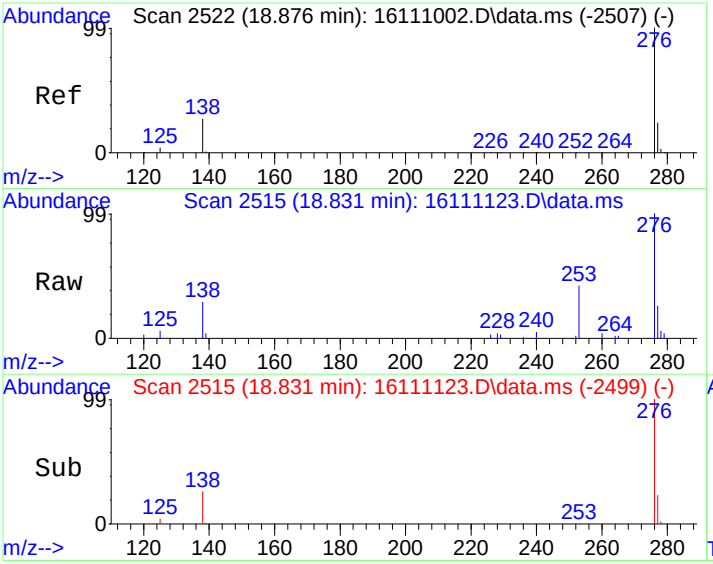


#27
Indeno[1,2,3-cd]pyrene
Concen: 58.22 ug/kg
RT: 17.850 min Scan# 2381
Delta R.T. -0.036 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:276 Resp: 19864

Ion	Ratio	Lower	Upper
276	100		
138	23.4	4.4	44.4
277	24.0	4.4	44.4

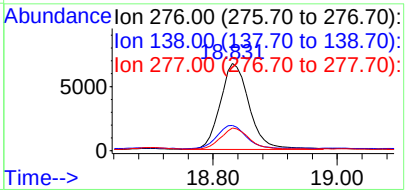




#28
Benzo[g,h,i]perylene
Concen: 59.83 ug/kg
RT: 18.831 min Scan# 2515
Delta R.T. -0.044 min
Lab File: 16111123.D
Acq: 11 Nov 2016 6:46 pm

Tgt Ion:276 Resp: 21621

Ion	Ratio	Lower	Upper
276	100		
138	26.9	7.7	47.7
277	24.4	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111124.D
Acq On : 11 Nov 2016 7:15 pm
Operator :
Sample : 1611044-07A
Misc : SAMP
ALS Vial : 22 Sample Multiplier: 10

Quant Time: Nov 14 13:34:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	862999	4000.00	ug/kg	98
5) Acenaphthene-d10	9.062	164	636562	4000.00	ug/kg	80
11) Phenanthrene-d10	10.462	188	1111804	4000.00	ug/kg	79
17) Chrysene-d12	13.366	240	1318442	4000.00	ug/kg	79
20) Perylene-d12	15.673	264	1376195	4000.00	ug/kg	78

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	17578	85.02	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.13%#			
16) 4-Terphenyl-d14	11.843	244	19255	90.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.25%#			

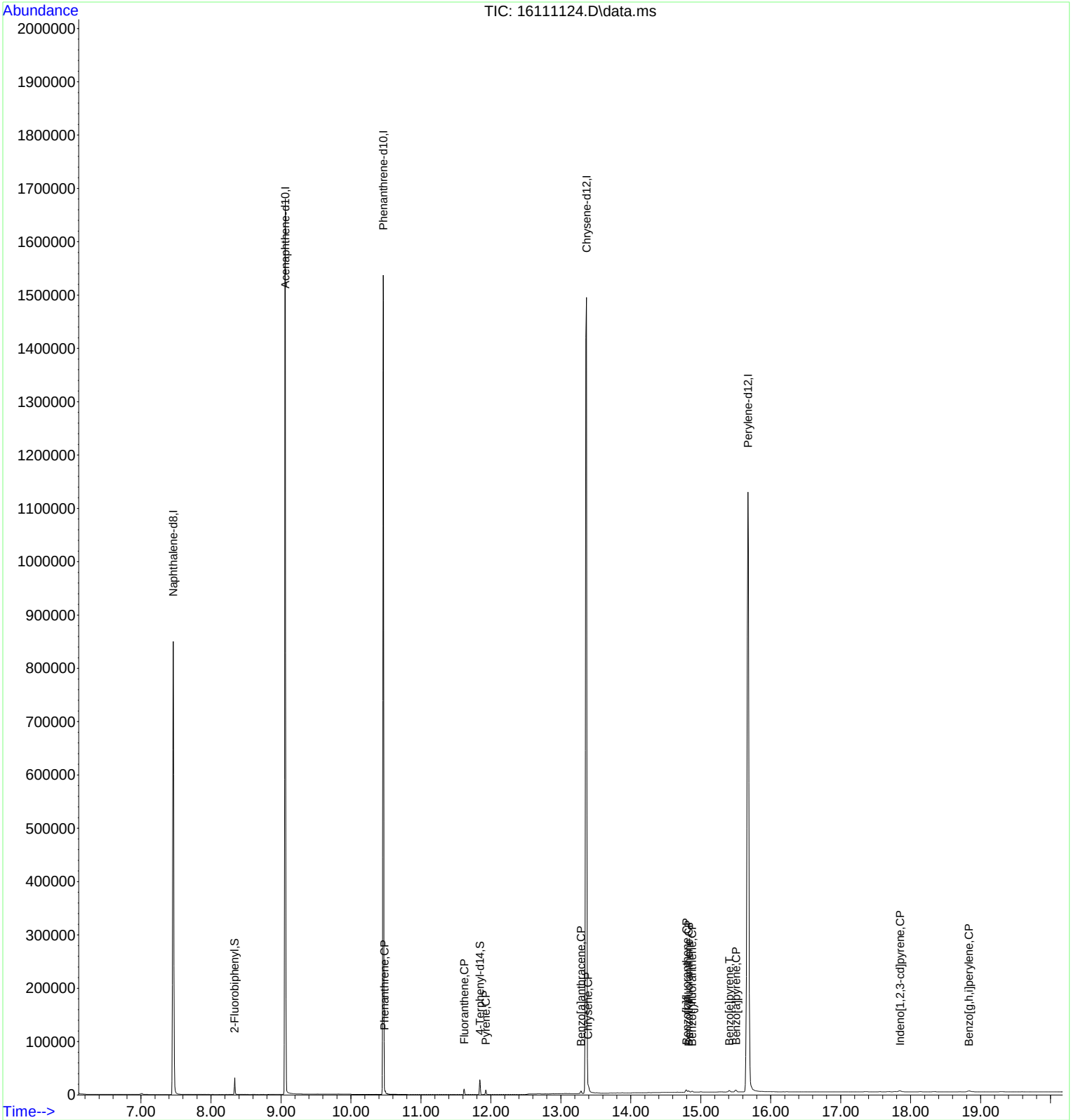
Target Compounds						Qvalue
12) Phenanthrene	10.485	178	1576	6.03	ug/kg	97
14) Fluoranthene	11.618	202	5960	19.30	ug/kg	98
15) Pyrene	11.927	202	5419	17.09	ug/kg	99
18) Benzo[a]anthracene	13.285	228	3975	12.80	ug/kg	99
19) Chrysene	13.395	228	4009	14.24	ug/kg	99
21) Benzo[b]fluoranthene	14.794	252	4784	13.93	ug/kg	97
22) Benzo[k]fluoranthene	14.824	252	2141	6.90	ug/kg	95
23) Benzo(j)fluoranthene	14.875	252	2048	6.71	ug/kg	97
24) Benzo[e]pyrene	15.410	252	3407	11.07	ug/kg	93
25) Benzo[a]pyrene	15.505	252	4824	15.34	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.849	276	3549	11.25	ug/kg	98
28) Benzo[g,h,i]perylene	18.838	276	3694	11.06	ug/kg	96

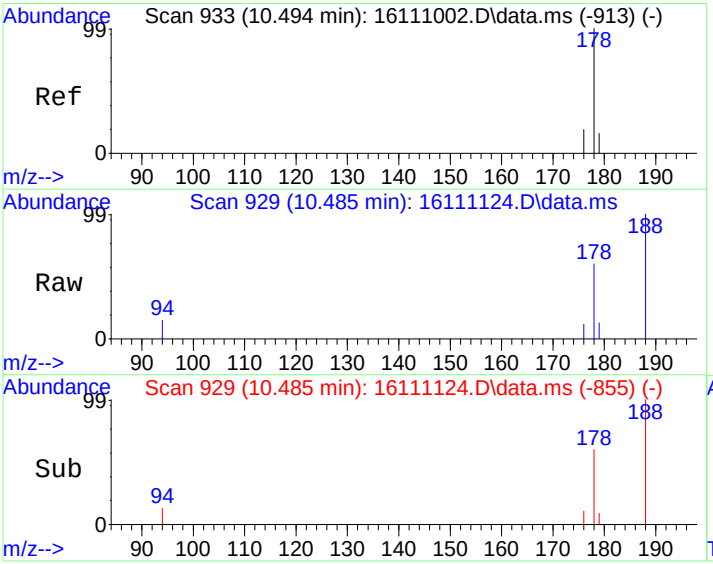
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111124.D
Acq On : 11 Nov 2016 7:15 pm
Operator :
Sample : 1611044-07A
Misc : SAMP
ALS Vial : 22 Sample Multiplier: 10

Quant Time: Nov 14 13:34:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

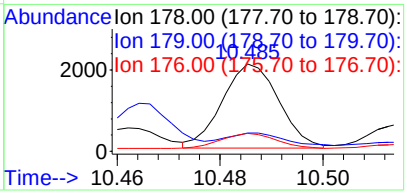


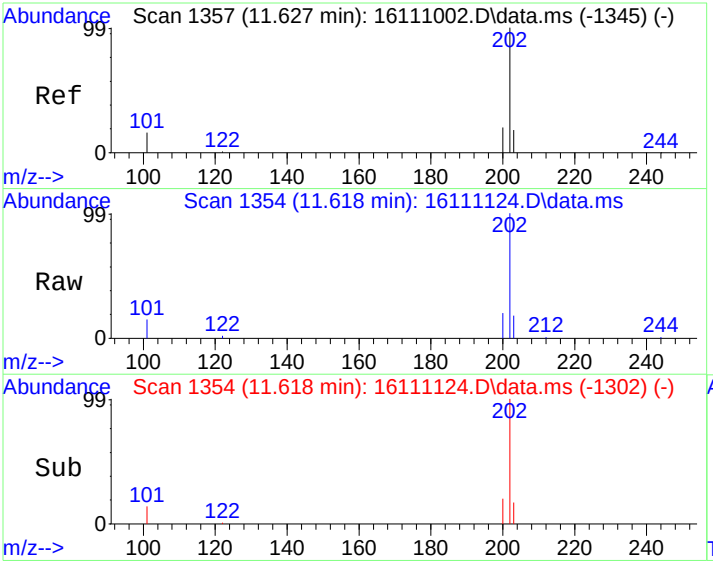


#12
Phenanthrene
Concen: 6.03 ug/kg
RT: 10.485 min Scan# 929
Delta R.T. -0.009 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:178 Resp: 1576

Ion	Ratio	Lower	Upper
178	100		
179	14.1	0.0	46.2
176	18.1	0.0	48.4

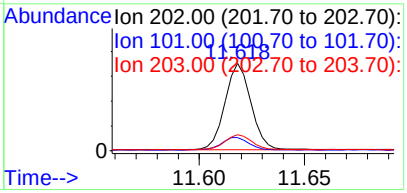


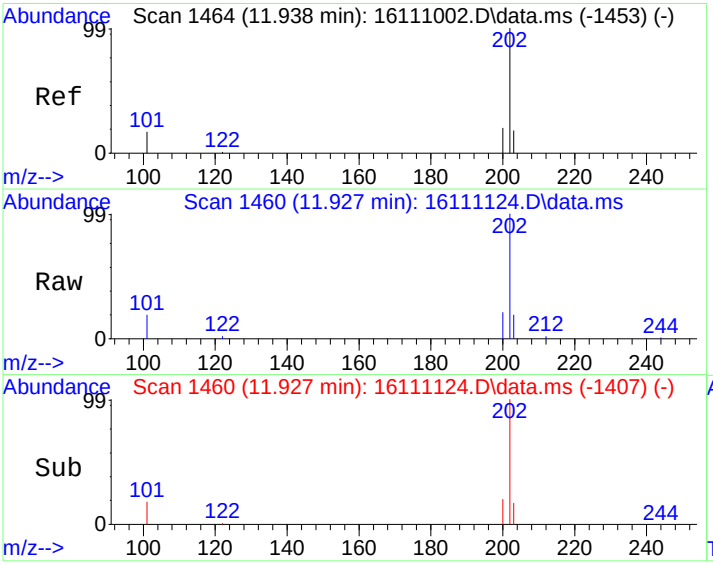


#14
Fluoranthene
Concen: 19.30 ug/kg
RT: 11.618 min Scan# 1354
Delta R.T. -0.008 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:202 Resp: 5960

Ion	Ratio	Lower	Upper
202	100		
101	14.5	0.0	45.8
203	17.3	0.0	48.2

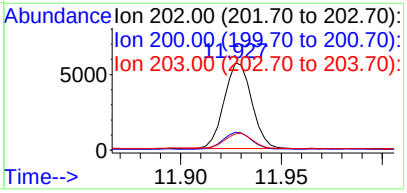


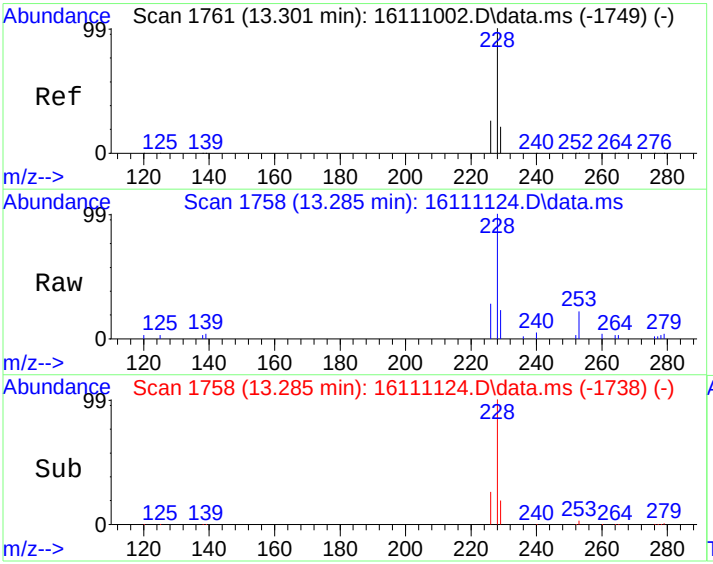


#15
Pyrene
Concen: 17.09 ug/kg
RT: 11.927 min Scan# 1460
Delta R.T. -0.011 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:202 Resp: 5419

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	50.3
203	17.4	0.0	48.2

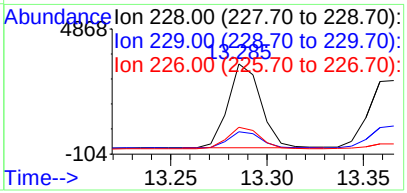


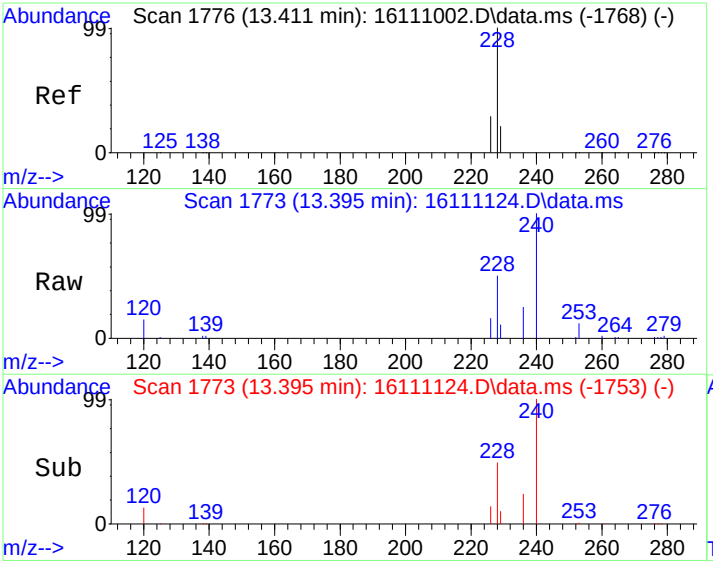


#18
Benzo[a]anthracene
Concen: 12.80 ug/kg
RT: 13.285 min Scan# 1758
Delta R.T. -0.016 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:228 Resp: 3975

Ion	Ratio	Lower	Upper
228	100		
229	19.5	0.0	50.8
226	25.5	0.0	55.5

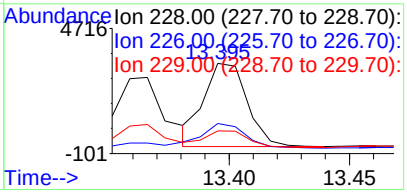


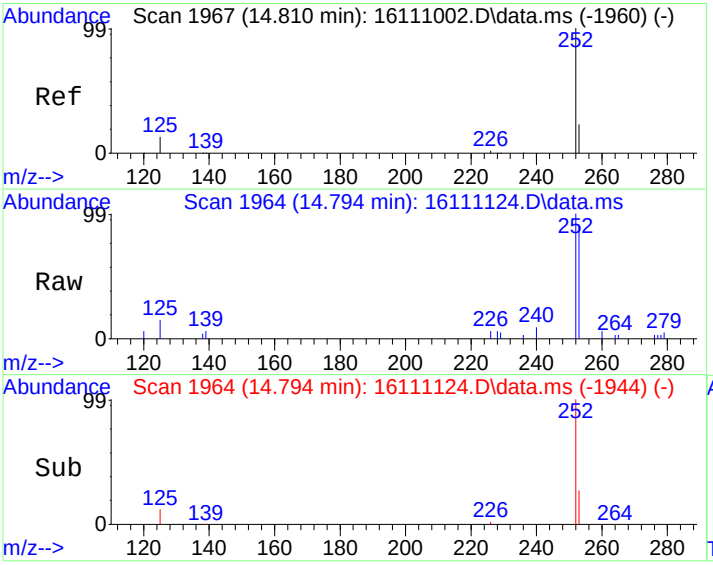


#19
Chrysene
Concen: 14.24 ug/kg
RT: 13.395 min Scan# 1773
Delta R.T. -0.016 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:228 Resp: 4009

Ion	Ratio	Lower	Upper
228	100		
226	29.5	0.0	58.7
229	19.9	0.0	50.4

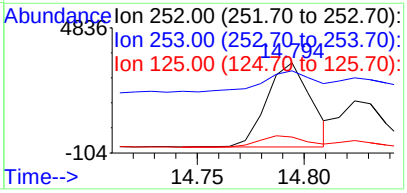


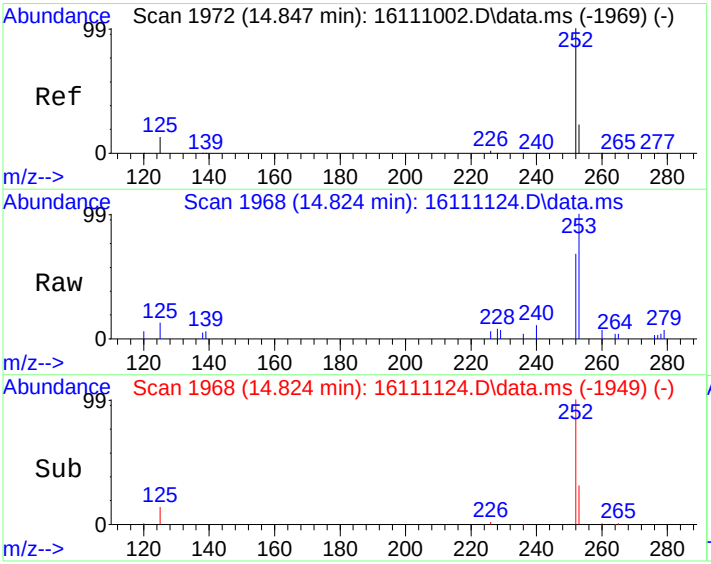


#21
Benzo[b]fluoranthene
Concen: 13.93 ug/kg
RT: 14.794 min Scan# 1964
Delta R.T. -0.016 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:252 Resp: 4784

Ion	Ratio	Lower	Upper
252	100		
253	24.2	0.0	52.7
125	12.0	0.0	42.9

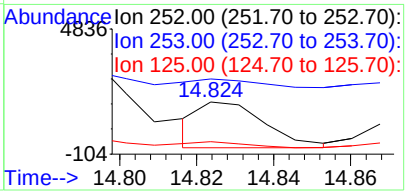


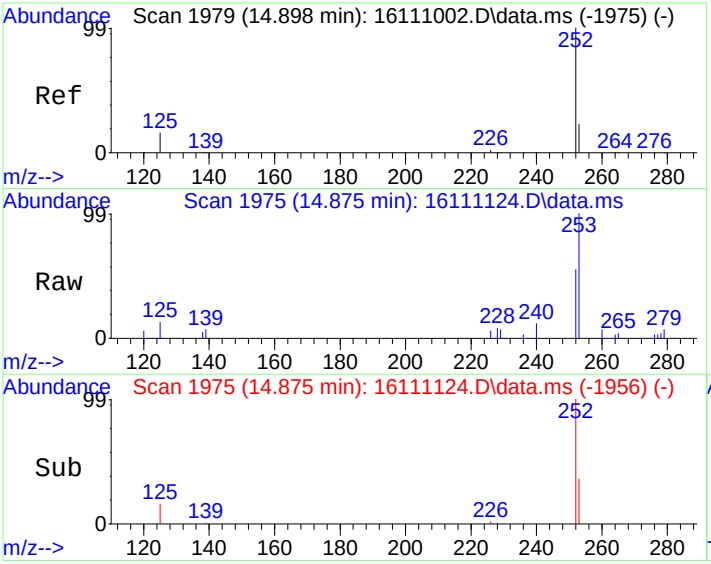


#22
Benzo[k]fluoranthene
Concen: 6.90 ug/kg
RT: 14.824 min Scan# 1968
Delta R.T. -0.022 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:252 Resp: 2141

Ion	Ratio	Lower	Upper
252	100		
253	20.9	2.8	42.8
125	13.6	0.0	31.3

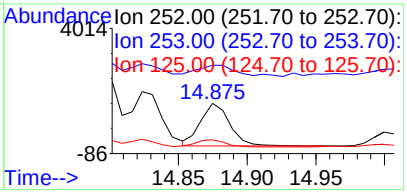


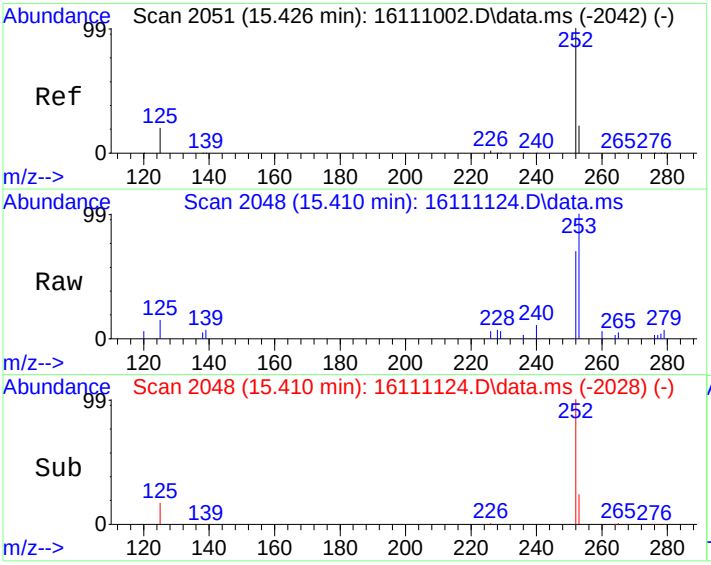


#23
Benzo(j)fluoranthene
Concen: 6.71 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:252 Resp: 2048

Ion	Ratio	Lower	Upper
252	100		
253	21.0	2.7	42.7
125	15.8	0.0	36.4

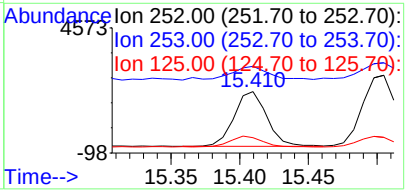


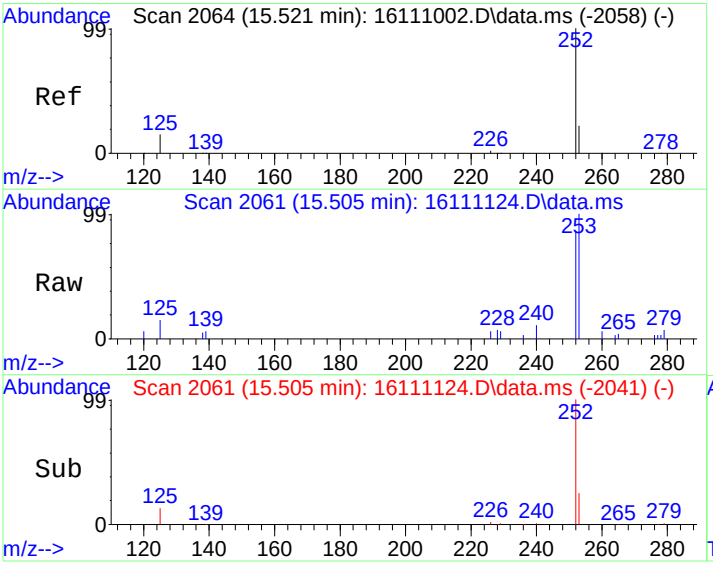


#24
Benzo[e]pyrene
Concen: 11.07 ug/kg
RT: 15.410 min Scan# 2048
Delta R.T. -0.015 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:252 Resp: 3407

Ion	Ratio	Lower	Upper
252	100		
253	25.2	2.5	42.5
125	16.5	0.9	40.9

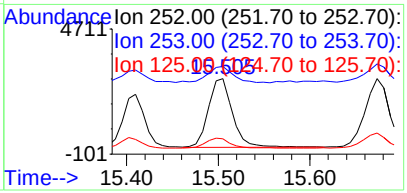


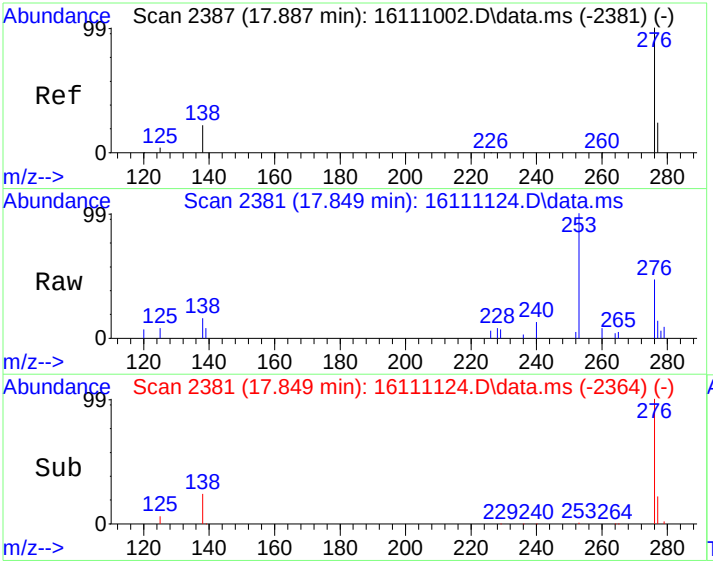


#25
Benzo[a]pyrene
Concen: 15.34 ug/kg
RT: 15.505 min Scan# 2061
Delta R.T. -0.015 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:252 Resp: 4824

Ion	Ratio	Lower	Upper
252	100		
253	21.7	2.7	42.7
125	13.6	0.0	33.9

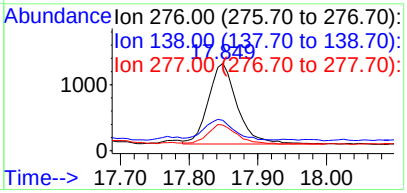


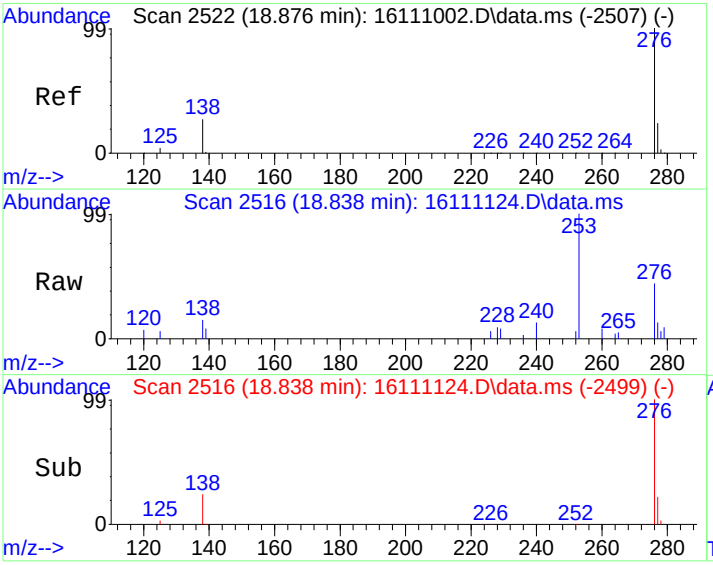


#27
Indeno[1,2,3-cd]pyrene
Concen: 11.25 ug/kg
RT: 17.849 min Scan# 2381
Delta R.T. -0.037 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:276 Resp: 3549

Ion	Ratio	Lower	Upper
276	100		
138	25.5	4.4	44.4
277	23.4	4.4	44.4

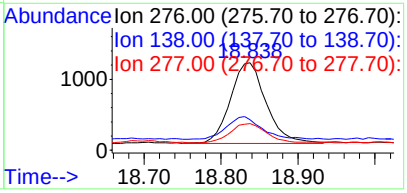




#28
Benzo[g,h,i]perylene
Concen: 11.06 ug/kg
RT: 18.838 min Scan# 2516
Delta R.T. -0.037 min
Lab File: 16111124.D
Acq: 11 Nov 2016 7:15 pm

Tgt Ion:276 Resp: 3694

Ion	Ratio	Lower	Upper
276	100		
138	24.1	7.7	47.7
277	23.7	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111125.D
Acq On : 11 Nov 2016 7:43 pm
Operator :
Sample : 1611044-08A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: Nov 14 13:34:20 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	947596	4000.00	ug/kg	108
5) Acenaphthene-d10	9.061	164	625344	4000.00	ug/kg	79
11) Phenanthrene-d10	10.462	188	1107720	4000.00	ug/kg	78
17) Chrysene-d12	13.366	240	1300869	4000.00	ug/kg	78
20) Perylene-d12	15.674	264	1355315	4000.00	ug/kg	77

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	19605	96.52	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.41%#			
16) 4-Terphenyl-d14	11.844	244	18512	86.94	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.17%#			

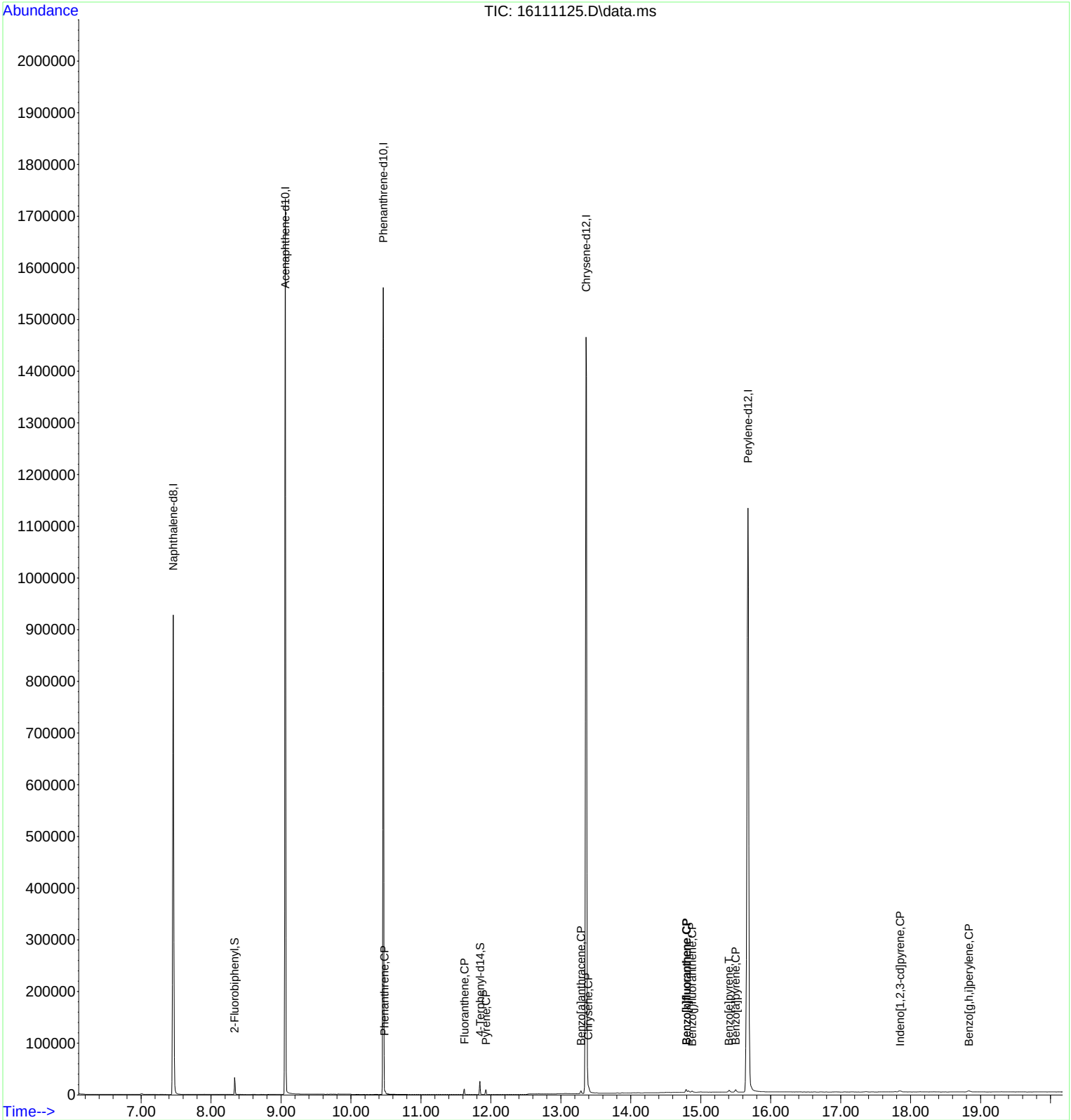
Target Compounds						Qvalue
12) Phenanthrene	10.485	178	1635	6.28	ug/kg	97
14) Fluoranthene	11.619	202	6480	21.06	ug/kg	98
15) Pyrene	11.928	202	5975	18.92	ug/kg	99
18) Benzo[a]anthracene	13.286	228	4402	14.37	ug/kg	98
19) Chrysene	13.396	228	4887	17.60	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	5679	16.79	ug/kg	95
22) Benzo[k]fluoranthene	14.795	252	5679	18.58	ug/kg	97
23) Benzo(j)fluoranthene	14.875	252	2357	7.84	ug/kg	100
24) Benzo[e]pyrene	15.403	252	3925	12.95	ug/kg	98
25) Benzo[a]pyrene	15.498	252	5588	18.04	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.849	276	4041	13.01	ug/kg	98
28) Benzo[g,h,i]perylene	18.831	276	4437	13.49	ug/kg	98

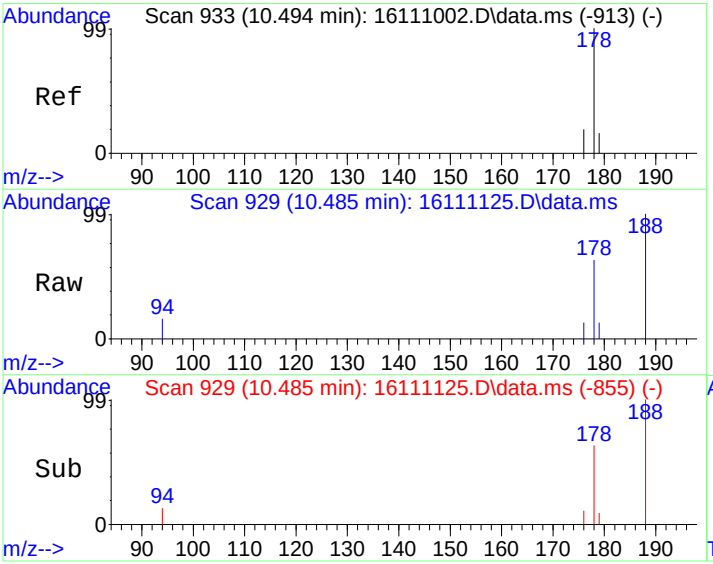
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111125.D
Acq On : 11 Nov 2016 7:43 pm
Operator :
Sample : 1611044-08A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: Nov 14 13:34:20 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

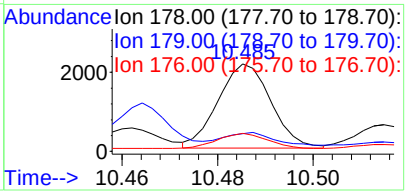


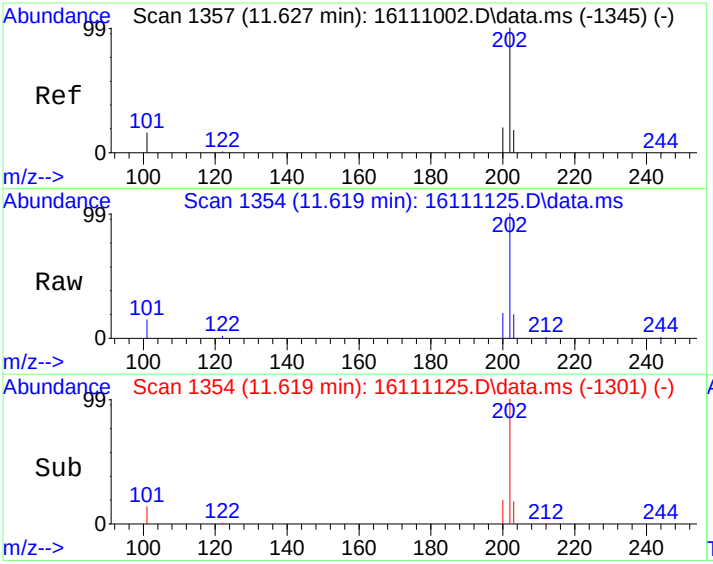


#12
Phenanthrene
Concen: 6.28 ug/kg
RT: 10.485 min Scan# 929
Delta R.T. -0.009 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:178 Resp: 1635

Ion	Ratio	Lower	Upper
178	100		
179	14.0	0.0	46.2
176	18.3	0.0	48.4

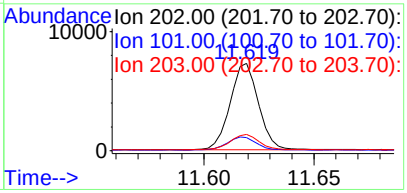


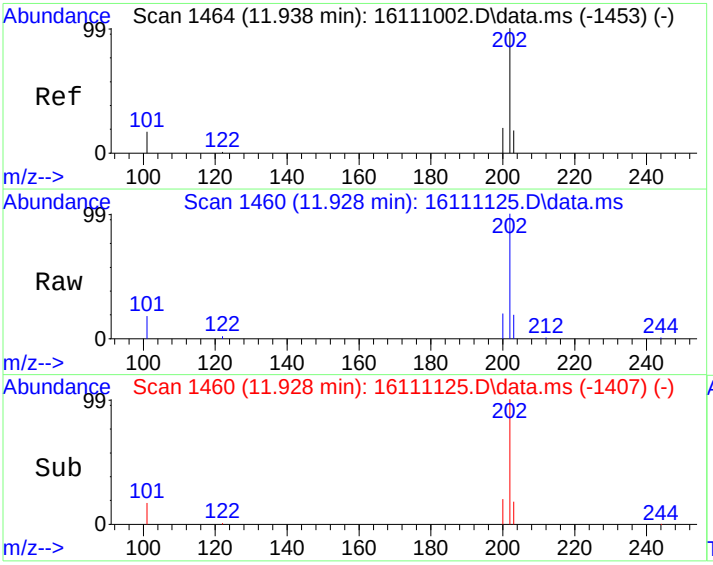


#14
Fluoranthene
Concen: 21.06 ug/kg
RT: 11.619 min Scan# 1354
Delta R.T. -0.007 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:202 Resp: 6480

Ion	Ratio	Lower	Upper
202	100		
101	14.2	0.0	45.8
203	17.7	0.0	48.2

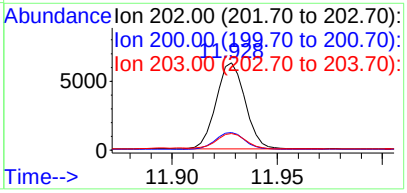


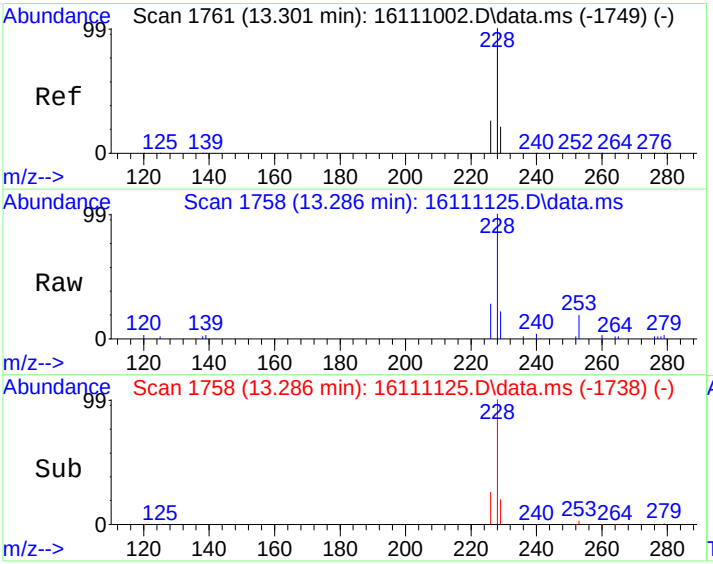


#15
Pyrene
Concen: 18.92 ug/kg
RT: 11.928 min Scan# 1460
Delta R.T. -0.010 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:202 Resp: 5975

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.3
203	17.9	0.0	48.2

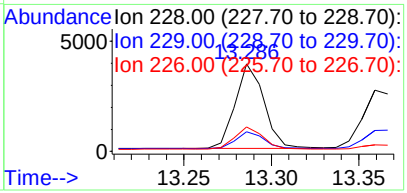


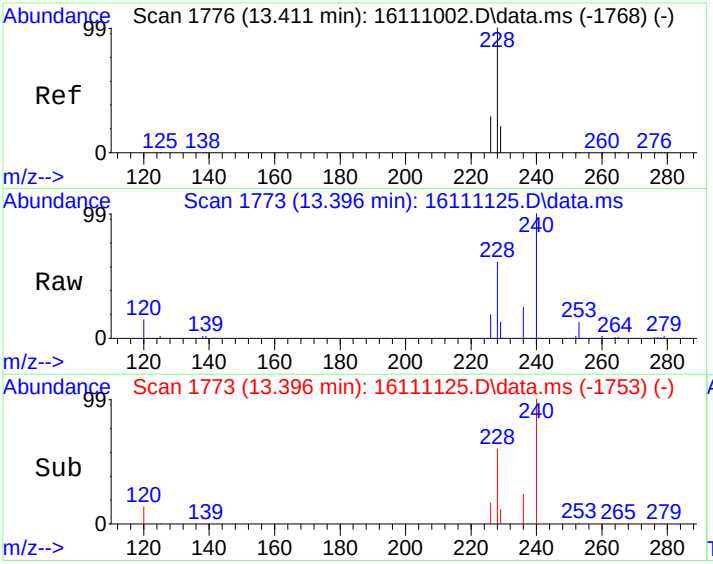


#18
Benzo[a]anthracene
Concen: 14.37 ug/kg
RT: 13.286 min Scan# 1758
Delta R.T. -0.015 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:228 Resp: 4402

Ion	Ratio	Lower	Upper
228	100		
229	19.7	0.0	50.8
226	26.1	0.0	55.5

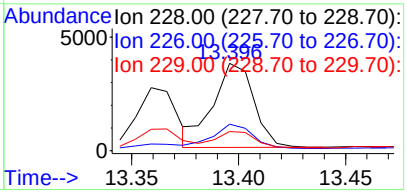


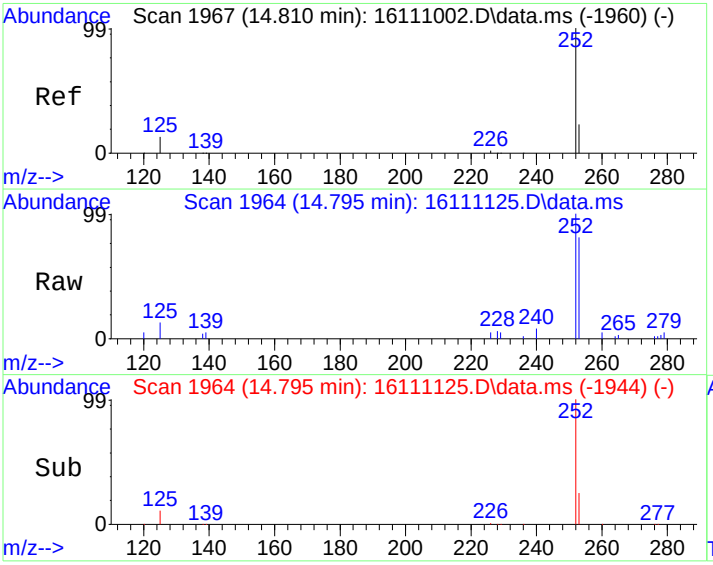


#19
Chrysene
Concen: 17.60 ug/kg
RT: 13.396 min Scan# 1773
Delta R.T. -0.015 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:228 Resp: 4887

Ion	Ratio	Lower	Upper
228	100		
226	29.0	0.0	58.7
229	19.4	0.0	50.4

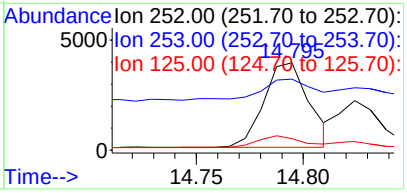


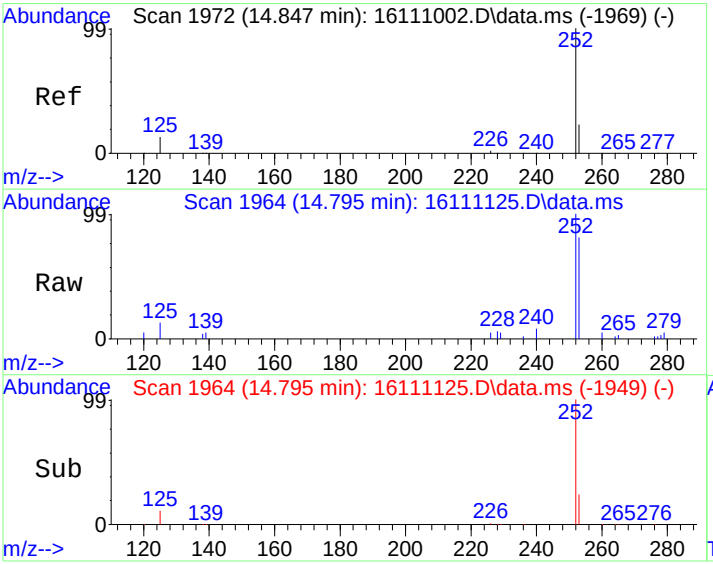


#21
Benzo[b]fluoranthene
Concen: 16.79 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:252 Resp: 5679

Ion	Ratio	Lower	Upper
252	100		
253	24.7	0.0	52.7
125	10.6	0.0	42.9

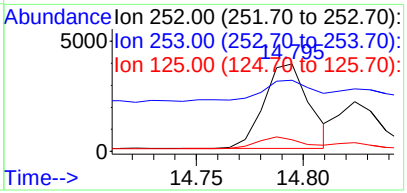




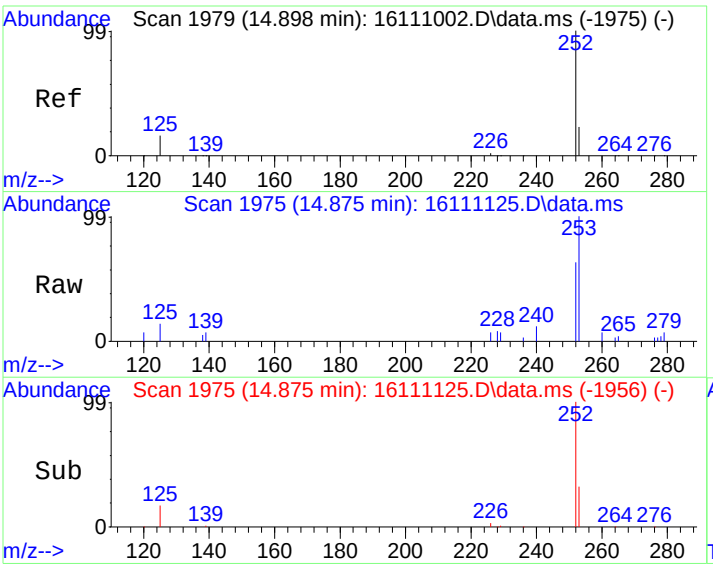
#22
Benzo[k]fluoranthene
Concen: 18.58 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.051 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:252 Resp: 5679

Ion	Ratio	Lower	Upper
252	100		
253	24.7	2.8	42.8
125	10.6	0.0	31.3



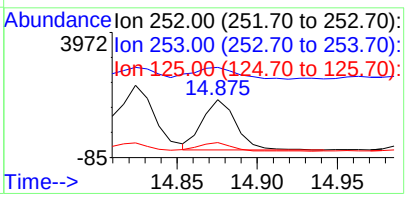
BEFORE MANUAL INTEGRATION
By Don Winston at 2:24:13 PM, 11/14/2016



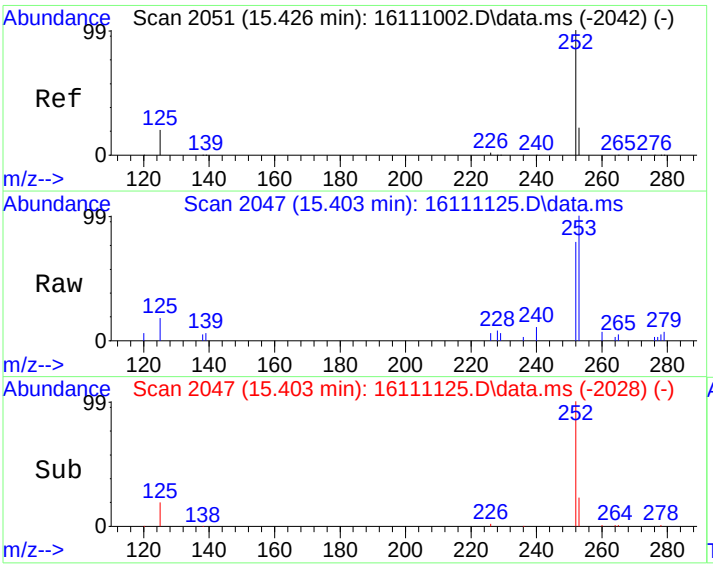
#23
Benzo(j)fluoranthene
Concen: 7.84 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:252 Resp: 2357

Ion	Ratio	Lower	Upper
252	100		
253	22.4	2.7	42.7
125	16.3	0.0	36.4



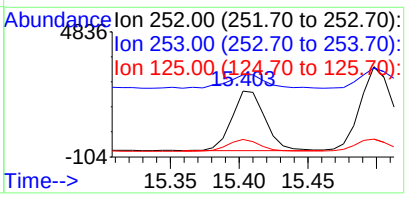
BEFORE MANUAL INTEGRATION
By Janice Whitt at 3:27:20 PM, 11/14/2016

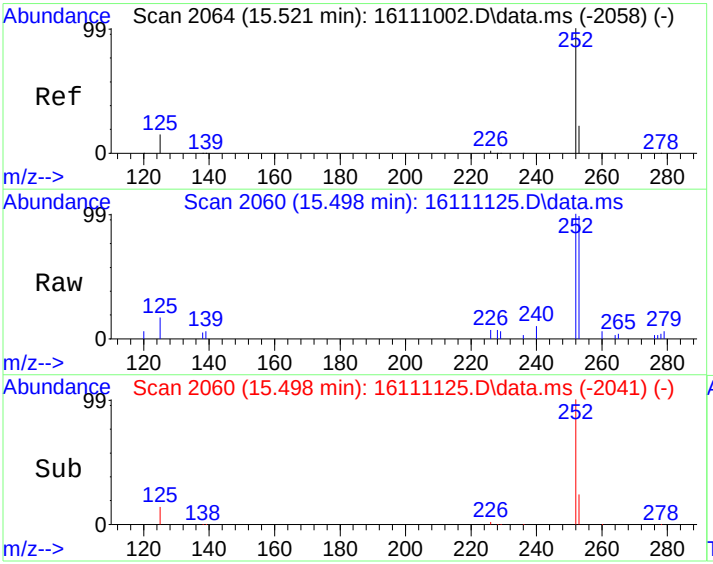


#24
Benzo[e]pyrene
Concen: 12.95 ug/kg
RT: 15.403 min Scan# 2047
Delta R.T. -0.022 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:252 Resp: 3925

Ion	Ratio	Lower	Upper
252	100		
253	22.8	2.5	42.5
125	19.7	0.9	40.9

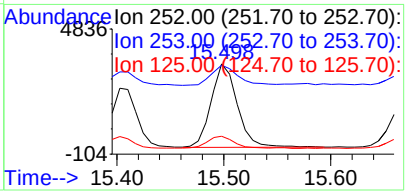


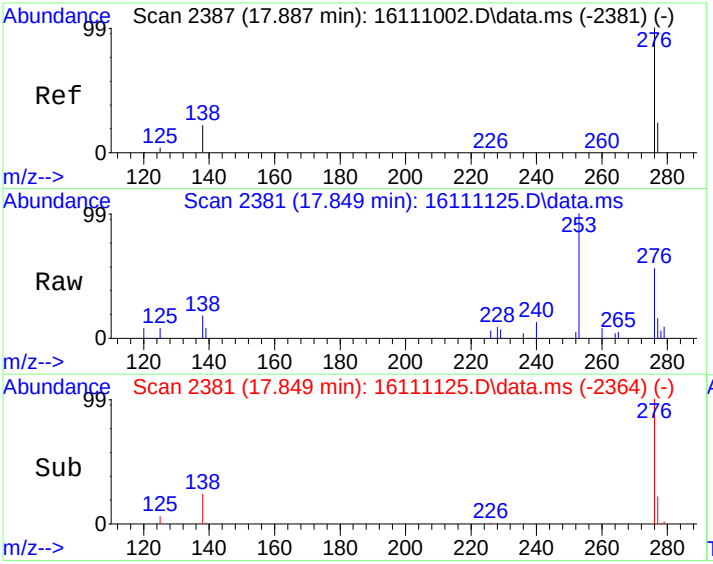


#25
Benzo[a]pyrene
Concen: 18.04 ug/kg
RT: 15.498 min Scan# 2060
Delta R.T. -0.022 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:252 Resp: 5588

Ion	Ratio	Lower	Upper
252	100		
253	24.0	2.7	42.7
125	14.3	0.0	33.9

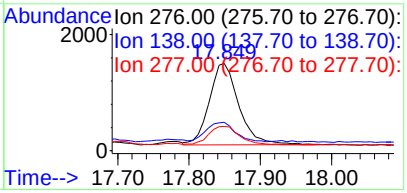


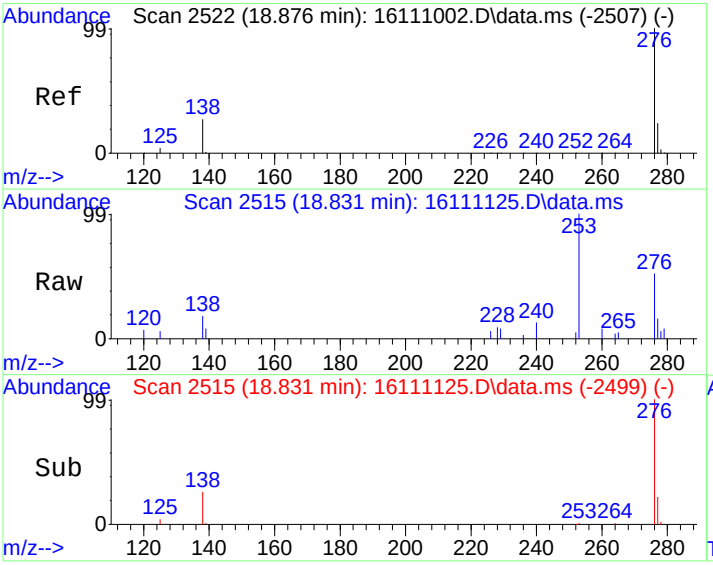


#27
Indeno[1,2,3-cd]pyrene
Concen: 13.01 ug/kg
RT: 17.849 min Scan# 2381
Delta R.T. -0.037 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:276 Resp: 4041

Ion	Ratio	Lower	Upper
276	100		
138	23.9	4.4	44.4
277	22.7	4.4	44.4

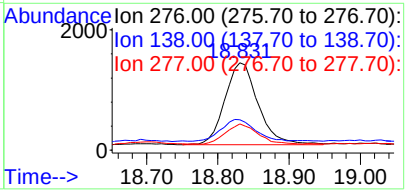




#28
Benzo[g,h,i]perylene
Concen: 13.49 ug/kg
RT: 18.831 min Scan# 2515
Delta R.T. -0.044 min
Lab File: 16111125.D
Acq: 11 Nov 2016 7:43 pm

Tgt Ion:276 Resp: 4437

Ion	Ratio	Lower	Upper
276	100		
138	26.3	7.7	47.7
277	24.3	4.1	44.1

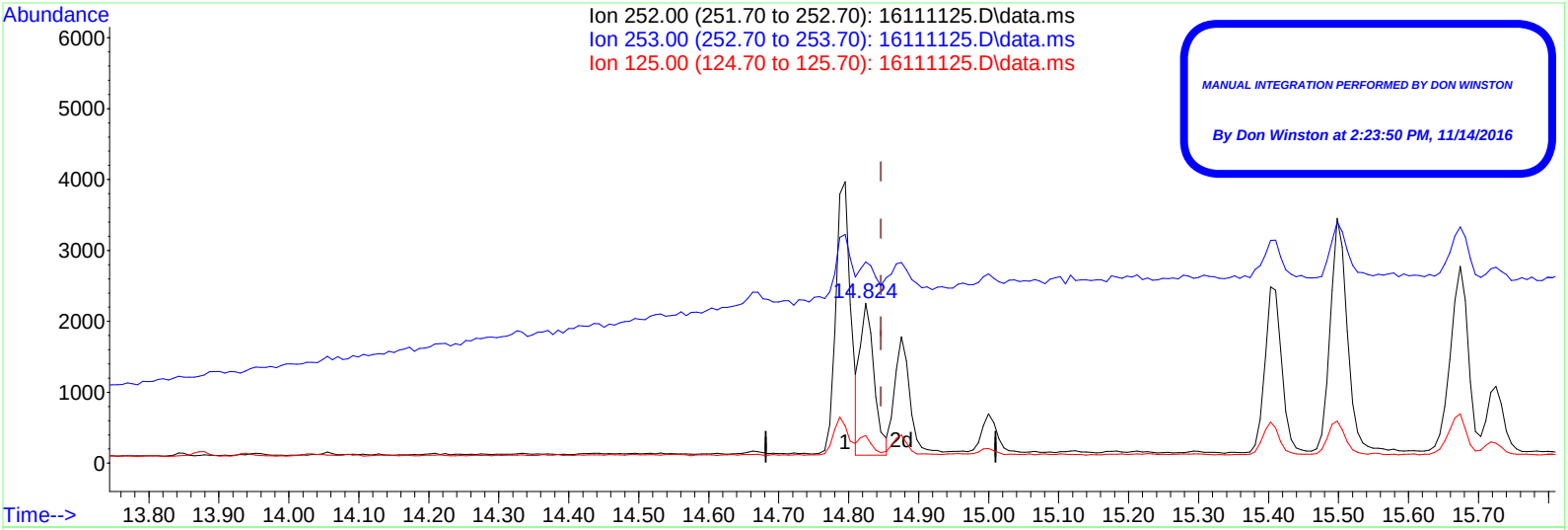


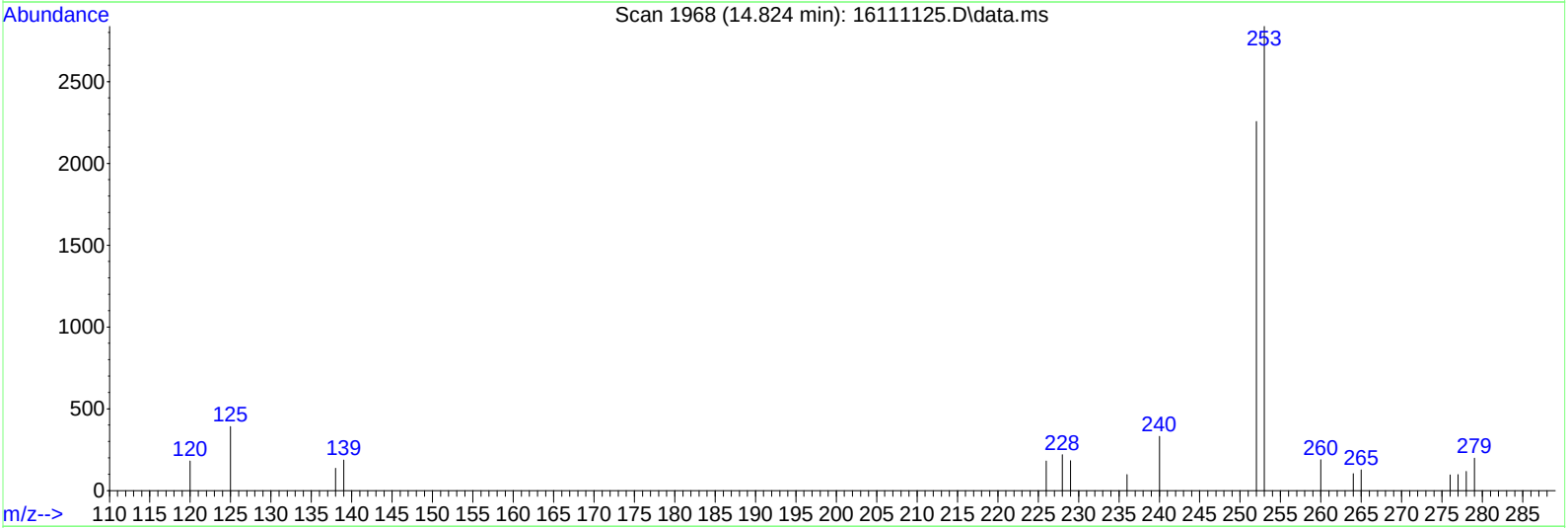
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111125.D
Acq On : 11 Nov 2016 7:43 pm
Operator :
Sample : 1611044-08A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: Nov 14 13:34:20 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Integrated Benzo[k] fluoranthene peak.





TIC: 16111125.D\data.ms

(22) Benzo[k]fluoranthene (CP)

14.824min (-0.022) 9.77ug/kg m

response 2987

Ion	Exp%	Act%
252.00	100	100
253.00	22.80	125.80#
125.00	11.30	17.33
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 3:27:27 PM, 11/14/2016

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111126.D
Acq On : 11 Nov 2016 8:12 pm
Operator :
Sample : 1611044-09A
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 10

Quant Time: Nov 14 13:34:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

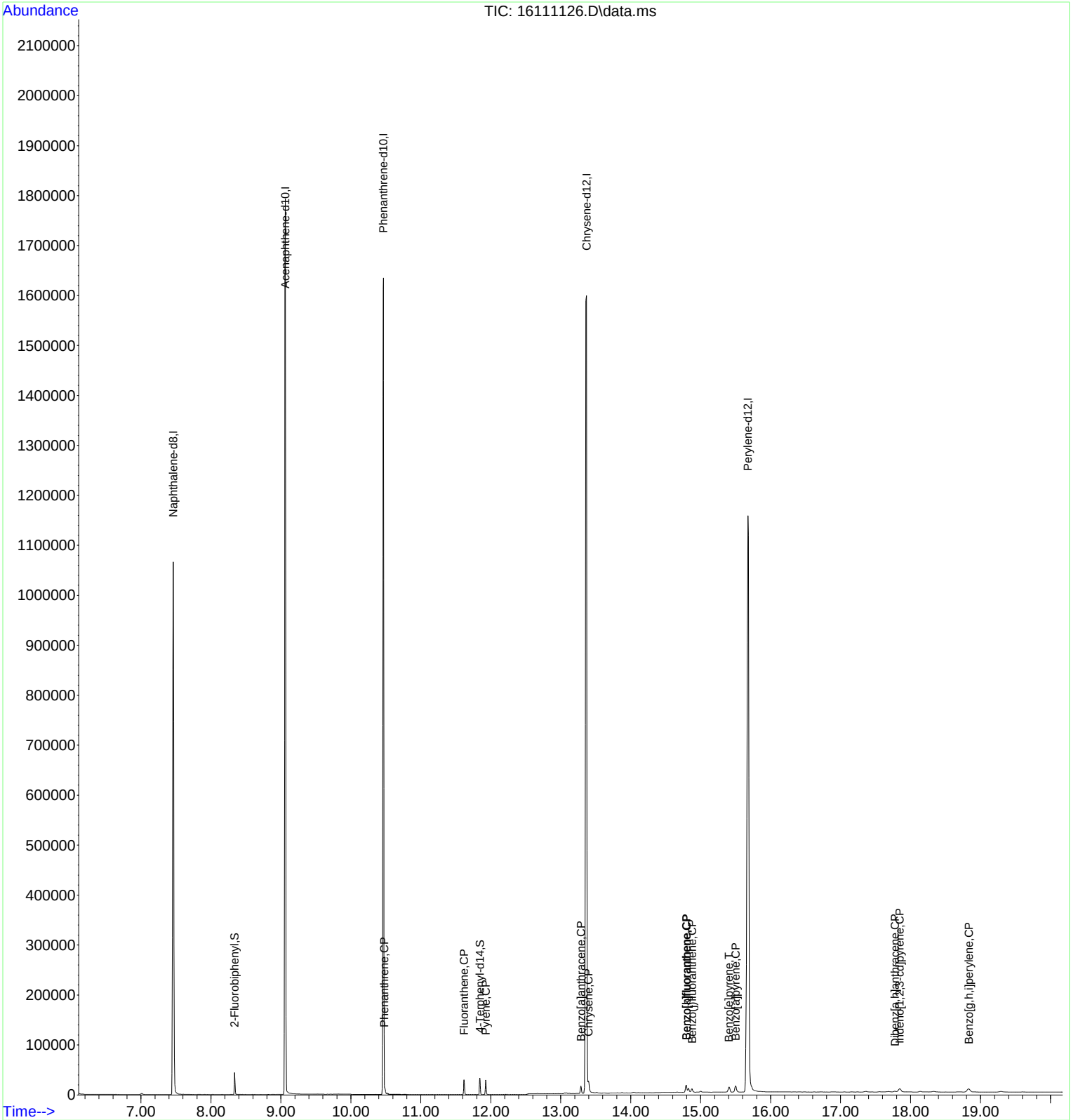
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1109580	4000.00	ug/kg	126
5) Acenaphthene-d10	9.063	164	686361	4000.00	ug/kg	87
11) Phenanthrene-d10	10.465	188	1196671	4000.00	ug/kg	85
17) Chrysene-d12	13.367	240	1423919	4000.00	ug/kg	85
20) Perylene-d12	15.675	264	1476940	4000.00	ug/kg	84
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	24746	111.00	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.77%#		
16) 4-Terphenyl-d14	11.844	244	22480	97.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.44%#		
Target Compounds						Qvalue
12) Phenanthrene	10.486	178	4970	17.68	ug/kg	98
14) Fluoranthene	11.619	202	18011	54.19	ug/kg	97
15) Pyrene	11.928	202	17093	50.09	ug/kg	99
18) Benzo[a]anthracene	13.287	228	11808	35.22	ug/kg	99
19) Chrysene	13.396	228	13654	44.92	ug/kg	99
21) Benzo[b]fluoranthene	14.796	252	15826	42.95	ug/kg	97
22) Benzo[k]fluoranthene	14.796	252	15826	47.51	ug/kg	99
23) Benzo(j)fluoranthene	14.876	252	6787	20.72	ug/kg	98
24) Benzo[e]pyrene	15.404	252	12044	36.46	ug/kg	97
25) Benzo[a]pyrene	15.499	252	15605	46.24	ug/kg	98
26) Dibenz[a,h]anthracene	17.777	278	1768	5.09	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.850	276	11492	33.95	ug/kg	97
28) Benzo[g,h,i]perylene	18.832	276	12960	36.15	ug/kg	98

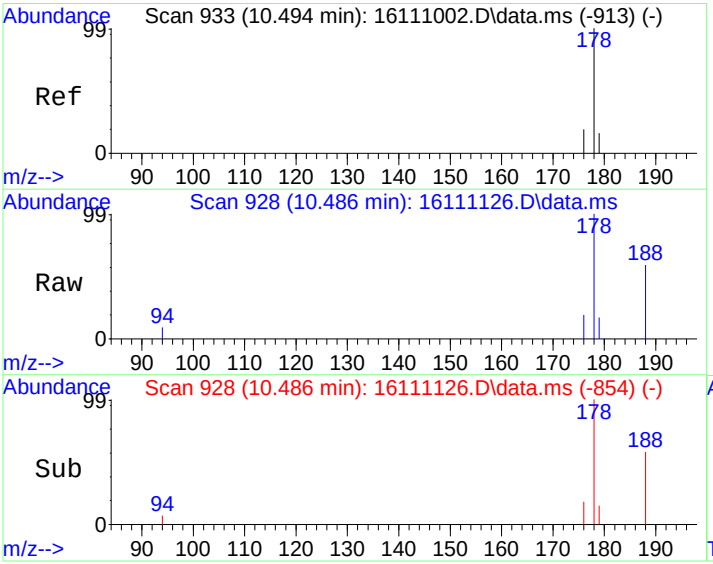
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111126.D
Acq On : 11 Nov 2016 8:12 pm
Operator :
Sample : 1611044-09A
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 10

Quant Time: Nov 14 13:34:27 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

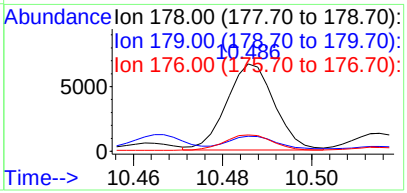


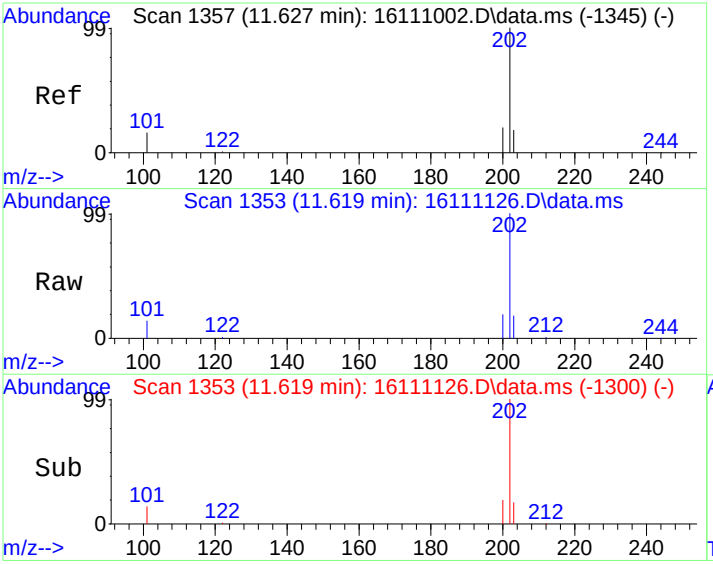


#12
Phenanthrene
Concen: 17.68 ug/kg
RT: 10.486 min Scan# 928
Delta R.T. -0.008 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:178 Resp: 4970

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	46.2
176	18.1	0.0	48.4

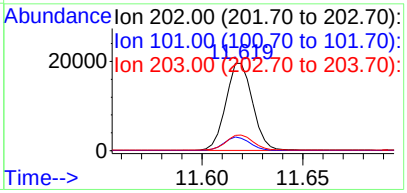


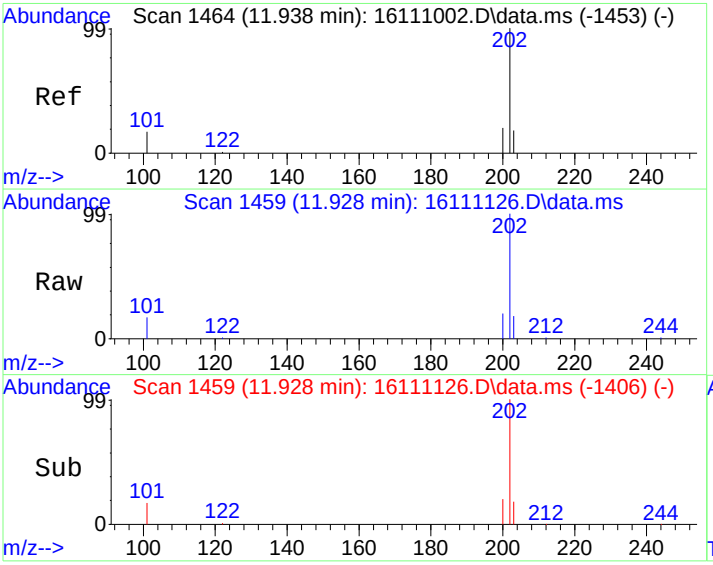


#14
Fluoranthene
Concen: 54.19 ug/kg
RT: 11.619 min Scan# 1353
Delta R.T. -0.007 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:202 Resp: 18011

Ion	Ratio	Lower	Upper
202	100		
101	13.9	0.0	45.8
203	17.4	0.0	48.2

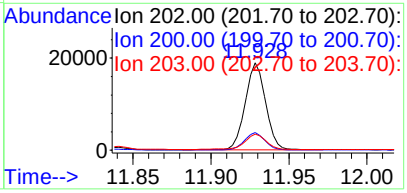


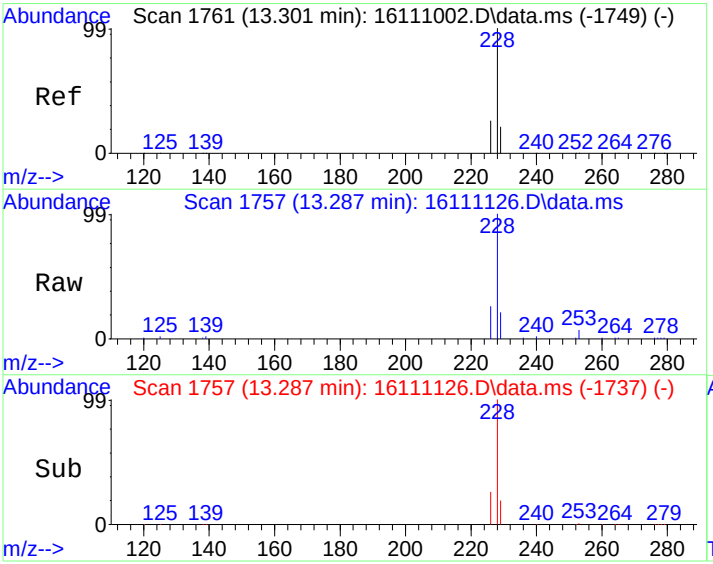


#15
Pyrene
Concen: 50.09 ug/kg
RT: 11.928 min Scan# 1459
Delta R.T. -0.010 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:202 Resp: 17093

Ion	Ratio	Lower	Upper
202	100		
200	19.7	0.0	50.3
203	17.8	0.0	48.2

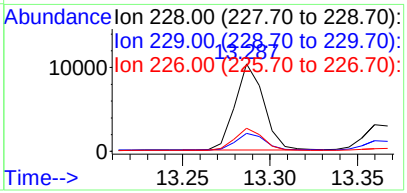


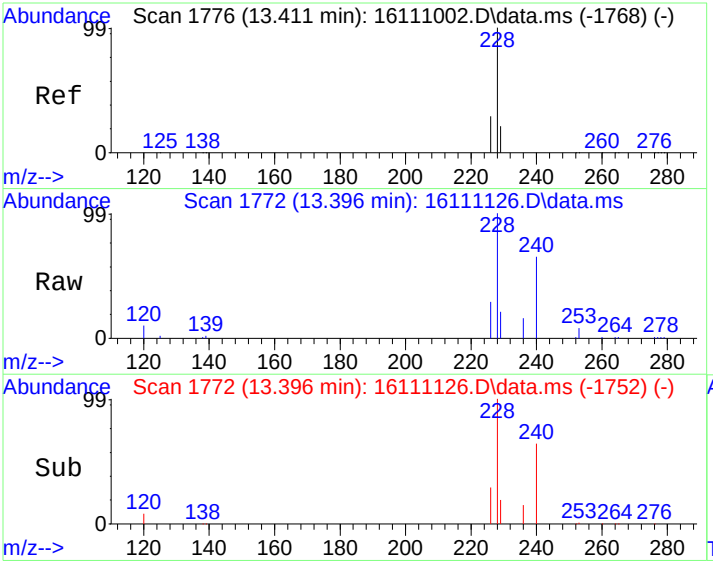


#18
Benzo[a]anthracene
Concen: 35.22 ug/kg
RT: 13.287 min Scan# 1757
Delta R.T. -0.014 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:228 Resp: 11808

Ion	Ratio	Lower	Upper
228	100		
229	19.4	0.0	50.8
226	25.6	0.0	55.5

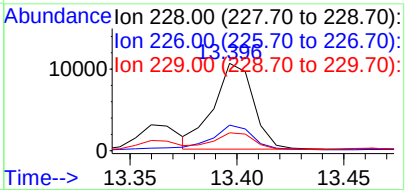


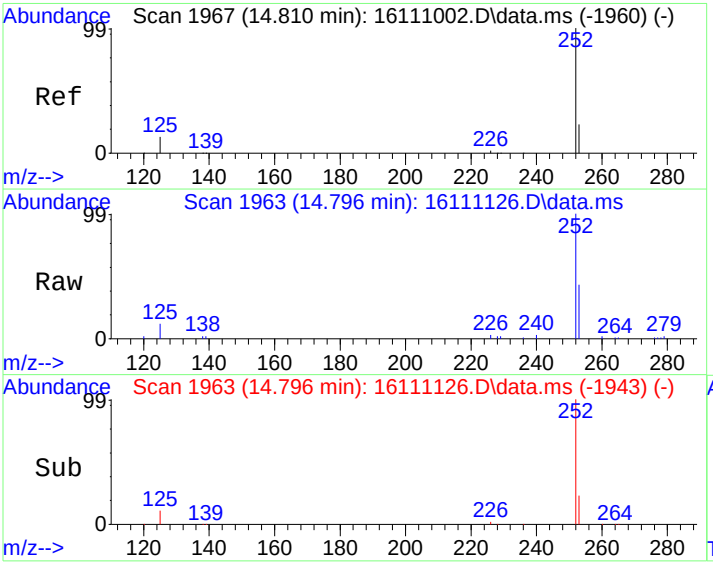


#19
Chrysene
Concen: 44.92 ug/kg
RT: 13.396 min Scan# 1772
Delta R.T. -0.015 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:228 Resp: 13654

Ion	Ratio	Lower	Upper
228	100		
226	28.5	0.0	58.7
229	19.4	0.0	50.4

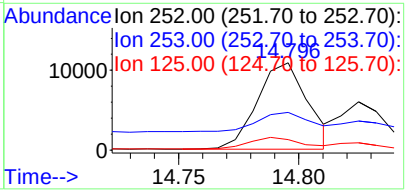


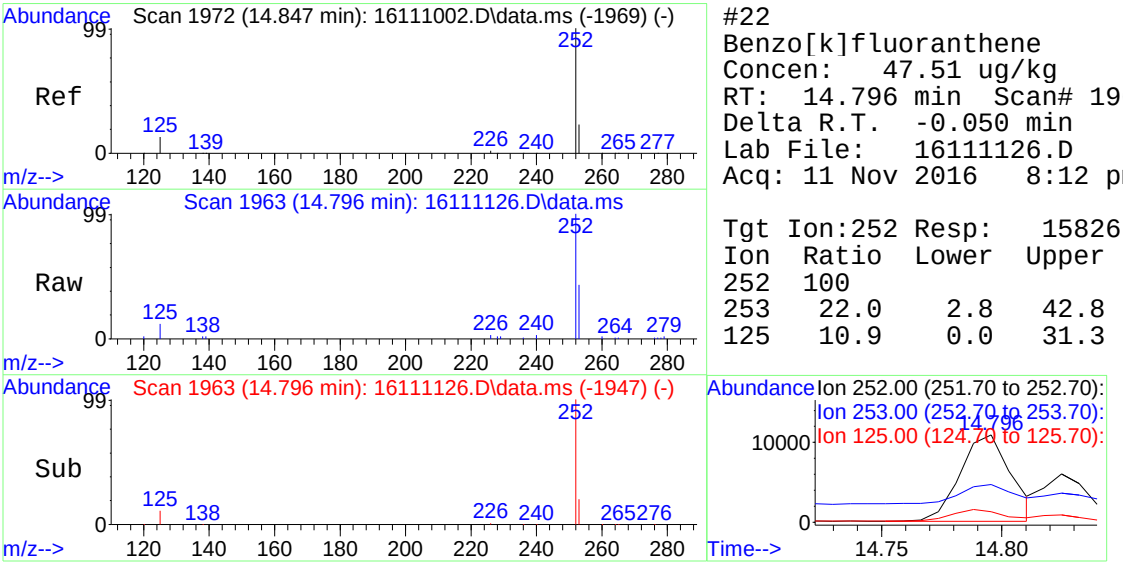


#21
Benzo[b]fluoranthene
Concen: 42.95 ug/kg
RT: 14.796 min Scan# 1963
Delta R.T. -0.014 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:252 Resp: 15826

Ion	Ratio	Lower	Upper
252	100		
253	22.0	0.0	52.7
125	10.9	0.0	42.9

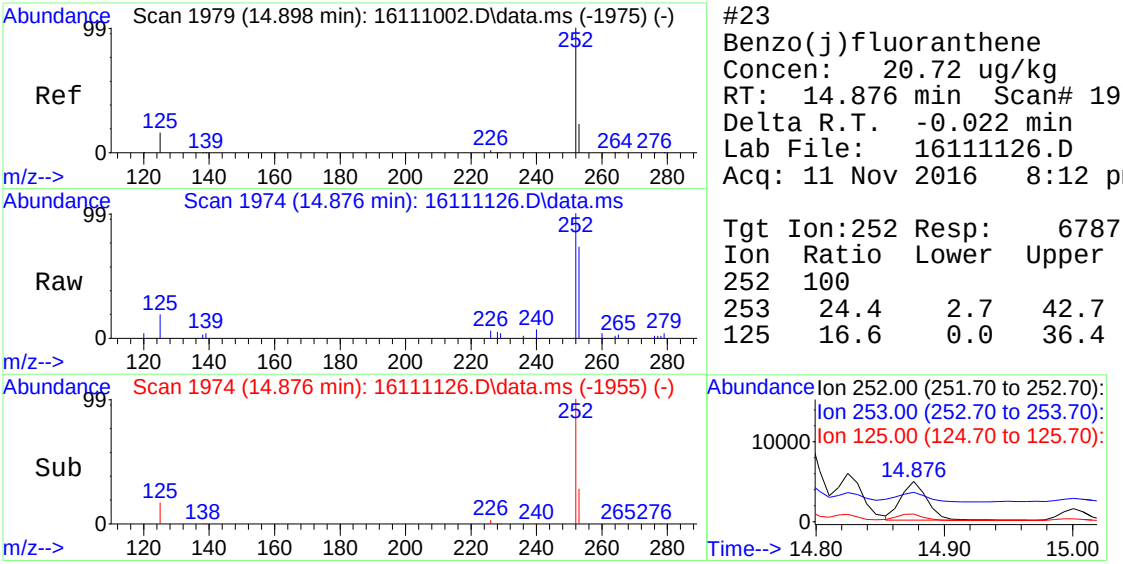




#22
Benzo[k]fluoranthene
Concen: 47.51 ug/kg
RT: 14.796 min Scan# 1963
Delta R.T. -0.050 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:252 Resp: 15826

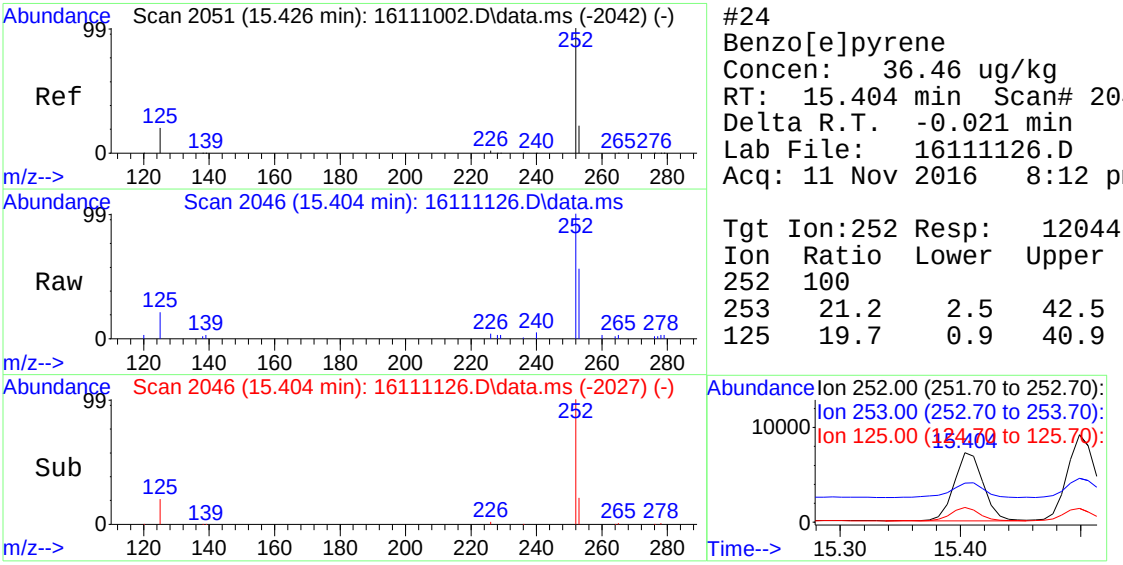
Ion	Ratio	Lower	Upper
252	100		
253	22.0	2.8	42.8
125	10.9	0.0	31.3



#23
Benzo(j)fluoranthene
Concen: 20.72 ug/kg
RT: 14.876 min Scan# 1974
Delta R.T. -0.022 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:252 Resp: 6787

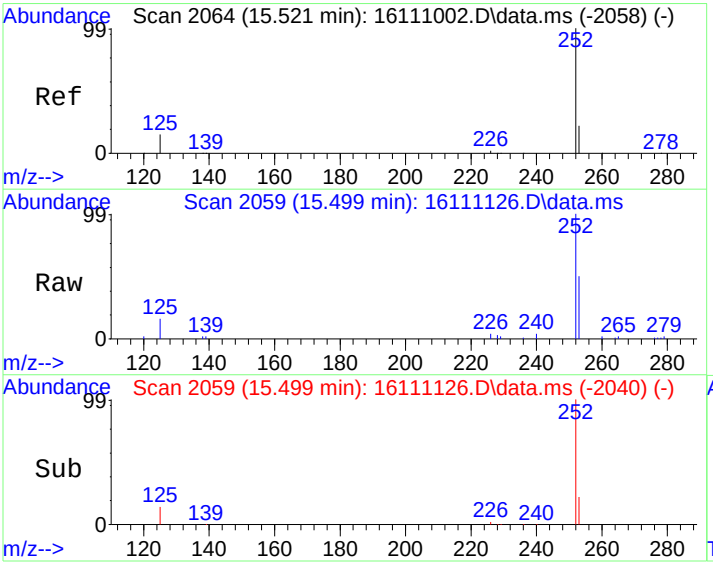
Ion	Ratio	Lower	Upper
252	100		
253	24.4	2.7	42.7
125	16.6	0.0	36.4



#24
Benzo[e]pyrene
Concen: 36.46 ug/kg
RT: 15.404 min Scan# 2046
Delta R.T. -0.021 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:252 Resp: 12044

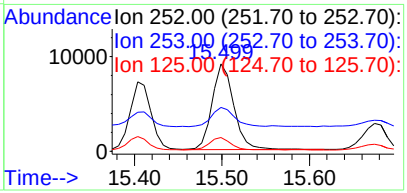
Ion	Ratio	Lower	Upper
252	100		
253	21.2	2.5	42.5
125	19.7	0.9	40.9

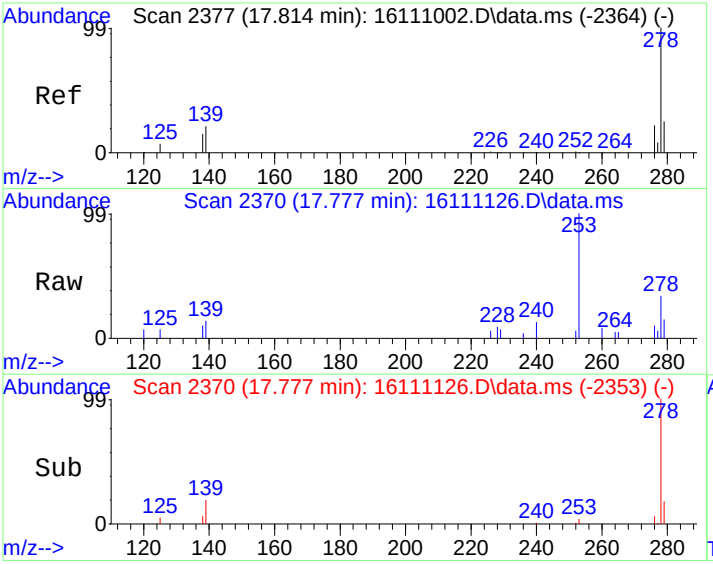


#25
Benzo[a]pyrene
Concen: 46.24 ug/kg
RT: 15.499 min Scan# 2059
Delta R.T. -0.021 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:252 Resp: 15605

Ion	Ratio	Lower	Upper
252	100		
253	21.8	2.7	42.7
125	14.6	0.0	33.9

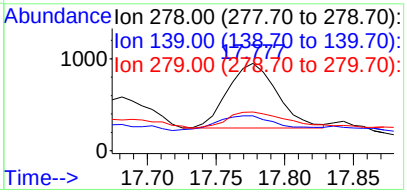


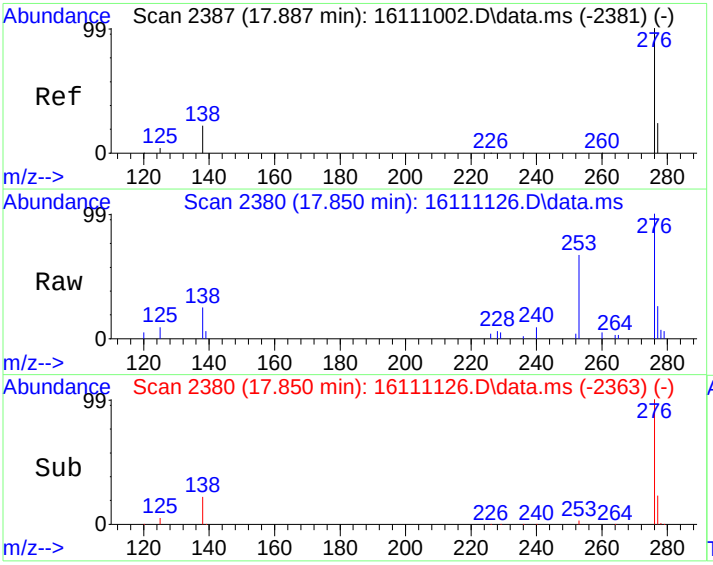


#26
Dibenz[a,h]anthracene
Concen: 5.09 ug/kg
RT: 17.777 min Scan# 2370
Delta R.T. -0.036 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:278 Resp: 1768

Ion	Ratio	Lower	Upper
278	100		
139	21.0	0.2	40.2
279	21.6	4.5	44.5

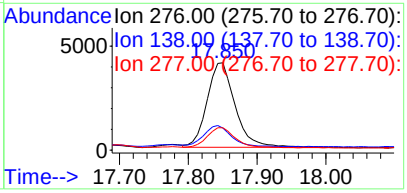


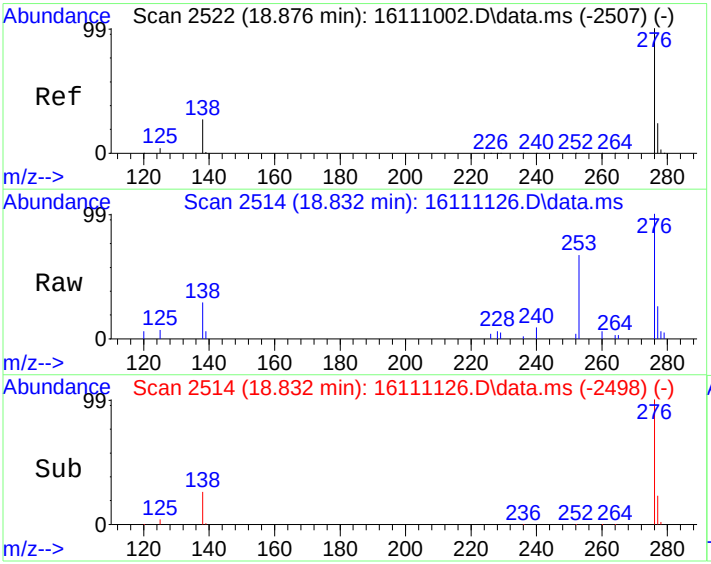


#27
Indeno[1,2,3-cd]pyrene
Concen: 33.95 ug/kg
RT: 17.850 min Scan# 2380
Delta R.T. -0.036 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:276 Resp: 11492

Ion	Ratio	Lower	Upper
276	100		
138	22.0	4.4	44.4
277	23.8	4.4	44.4

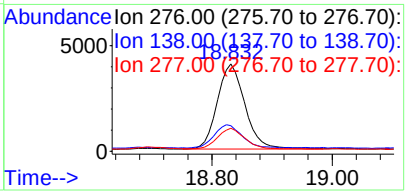




#28
Benzo[g,h,i]perylene
Concen: 36.15 ug/kg
RT: 18.832 min Scan# 2514
Delta R.T. -0.043 min
Lab File: 16111126.D
Acq: 11 Nov 2016 8:12 pm

Tgt Ion:276 Resp: 12960

Ion	Ratio	Lower	Upper
276	100		
138	25.8	7.7	47.7
277	24.1	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111127.D
Acq On : 11 Nov 2016 8:41 pm
Operator :
Sample : 1611044-10A
Misc : SAMP
ALS Vial : 25 Sample Multiplier: 10

Quant Time: Nov 14 13:34:34 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	1004930	4000.00	ug/kg	114
5) Acenaphthene-d10	9.062	164	631460	4000.00	ug/kg	80
11) Phenanthrene-d10	10.463	188	1105107	4000.00	ug/kg	78
17) Chrysene-d12	13.366	240	1440470	4000.00	ug/kg	86
20) Perylene-d12	15.673	264	1340913	4000.00	ug/kg	76

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	17971	87.62	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.19%#			
16) 4-Terphenyl-d14	11.844	244	19386	91.26	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.28%#			

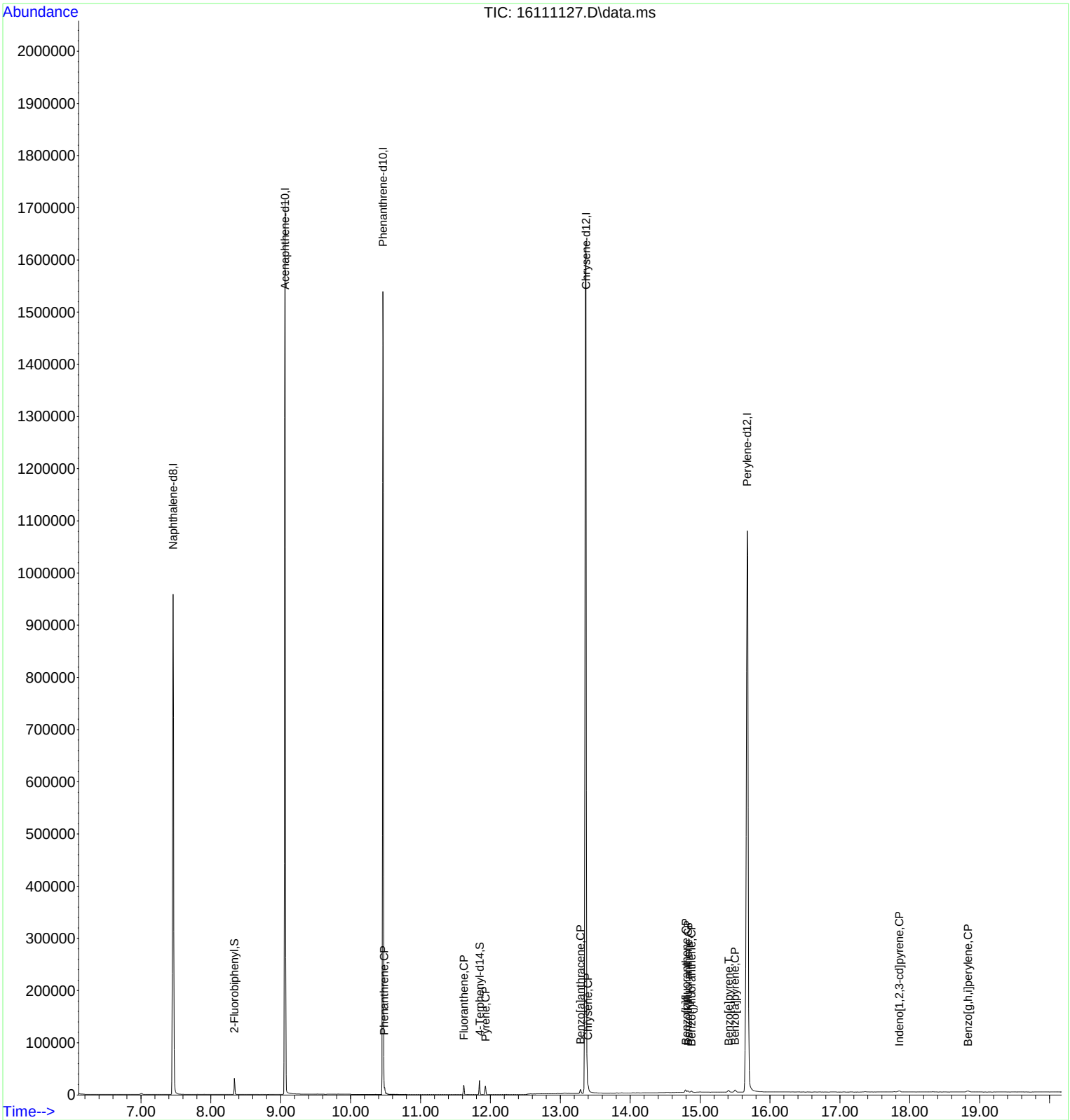
Target Compounds						Qvalue
12) Phenanthrene	10.486	178	5745	22.13	ug/kg	98
14) Fluoranthene	11.617	202	10941	35.65	ug/kg	98
15) Pyrene	11.929	202	9693	30.76	ug/kg	99
18) Benzo[a]anthracene	13.285	228	6460	19.04	ug/kg	99
19) Chrysene	13.403	228	5670	18.44	ug/kg	97
21) Benzo[b]fluoranthene	14.794	252	5268	15.75	ug/kg	98
22) Benzo[k]fluoranthene	14.824	252	3120	10.32	ug/kg	86
23) Benzo(j)fluoranthene	14.875	252	2565	8.62	ug/kg	95
24) Benzo[e]pyrene	15.410	252	3973	13.25	ug/kg	96
25) Benzo[a]pyrene	15.505	252	5540	18.08	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.849	276	3691	12.01	ug/kg	98
28) Benzo[g,h,i]perylene	18.830	276	3989	12.26	ug/kg	99

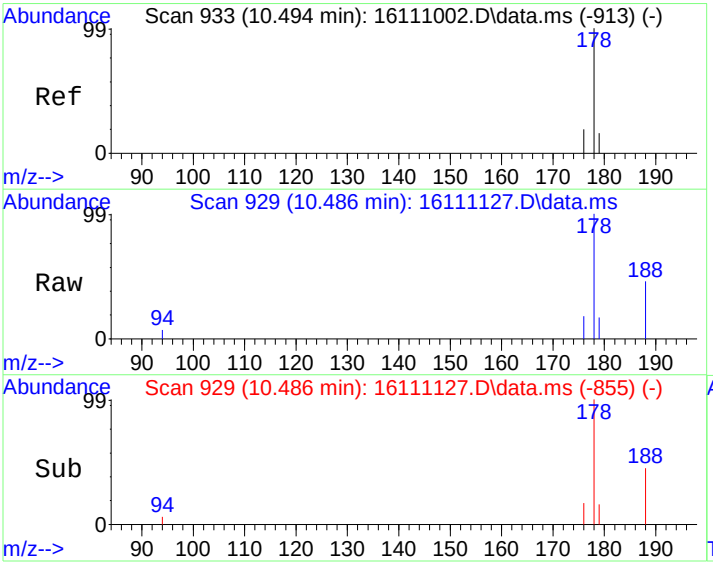
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111127.D
Acq On : 11 Nov 2016 8:41 pm
Operator :
Sample : 1611044-10A
Misc : SAMP
ALS Vial : 25 Sample Multiplier: 10

Quant Time: Nov 14 13:34:34 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

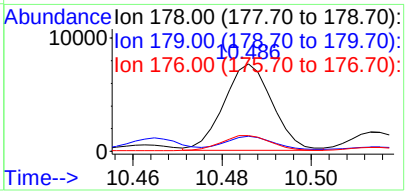


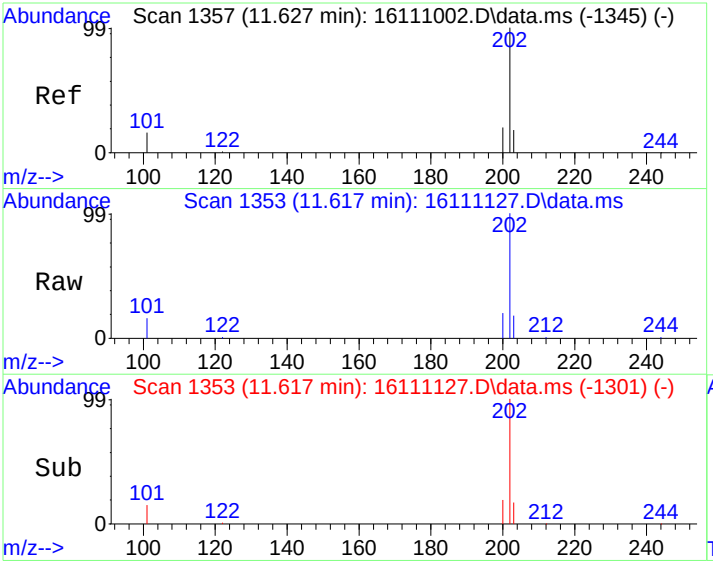


#12
Phenanthrene
Concen: 22.13 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:178 Resp: 5745

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	46.2
176	17.7	0.0	48.4

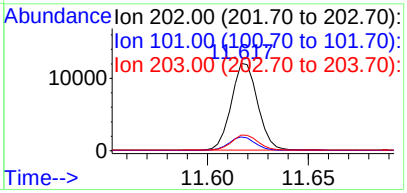


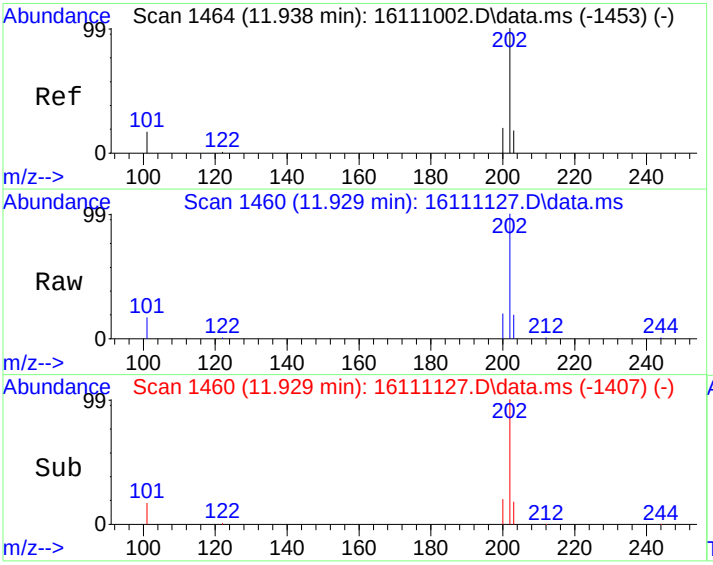


#14
Fluoranthene
Concen: 35.65 ug/kg
RT: 11.617 min Scan# 1353
Delta R.T. -0.009 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:202 Resp: 10941

Ion	Ratio	Lower	Upper
202	100		
101	15.3	0.0	45.8
203	17.3	0.0	48.2

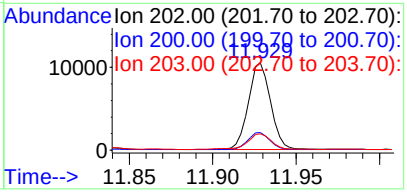


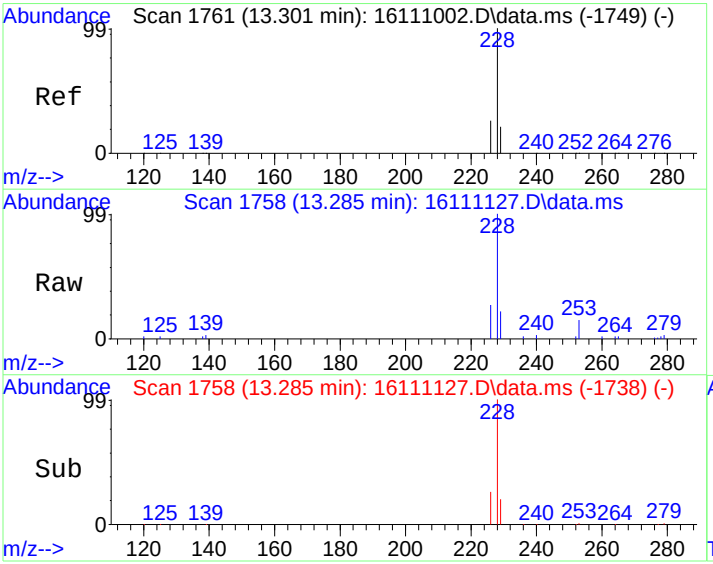


#15
Pyrene
Concen: 30.76 ug/kg
RT: 11.929 min Scan# 1460
Delta R.T. -0.010 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:202 Resp: 9693

Ion	Ratio	Lower	Upper
202	100		
200	19.7	0.0	50.3
203	17.9	0.0	48.2

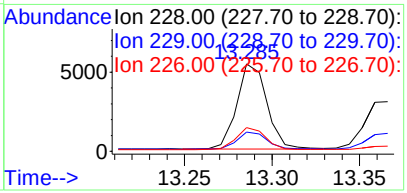


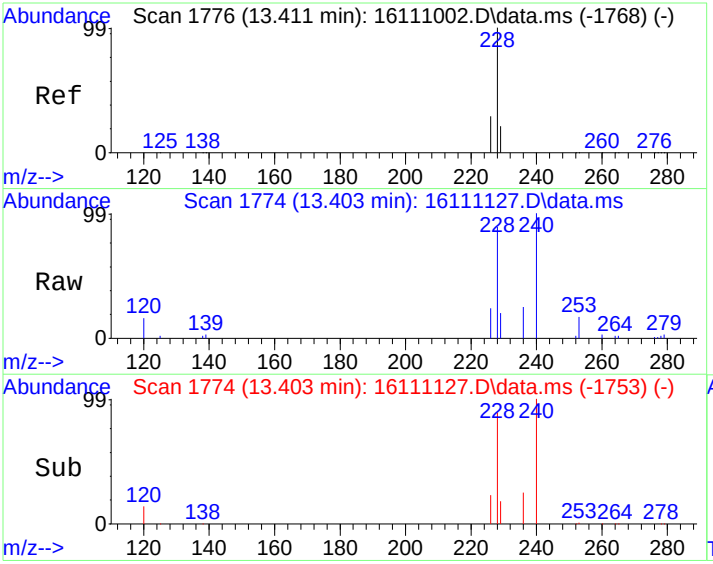


#18
Benzo[a]anthracene
Concen: 19.04 ug/kg
RT: 13.285 min Scan# 1758
Delta R.T. -0.016 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:228 Resp: 6460

Ion	Ratio	Lower	Upper
228	100		
229	20.1	0.0	50.8
226	26.1	0.0	55.5

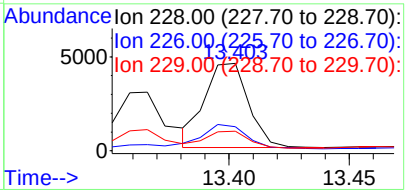


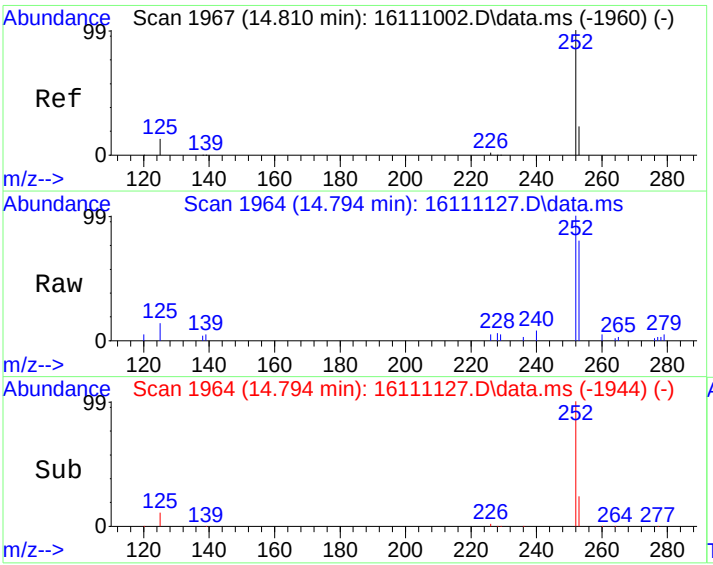


#19
Chrysene
Concen: 18.44 ug/kg
RT: 13.403 min Scan# 1774
Delta R.T. -0.008 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:228 Resp: 5670

Ion	Ratio	Lower	Upper
228	100		
226	26.0	0.0	58.7
229	20.2	0.0	50.4

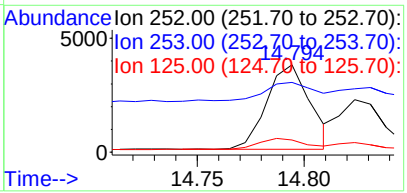


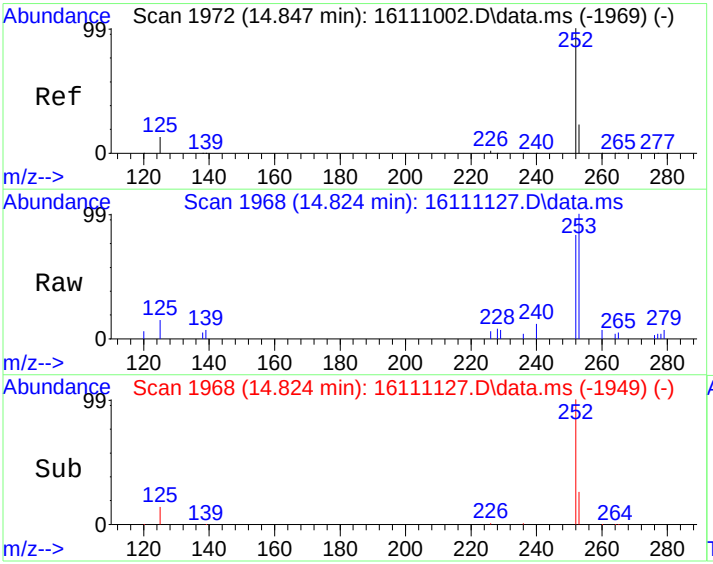


#21
Benzo[b]fluoranthene
Concen: 15.75 ug/kg
RT: 14.794 min Scan# 1964
Delta R.T. -0.016 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:252 Resp: 5268

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	52.7
125	11.1	0.0	42.9

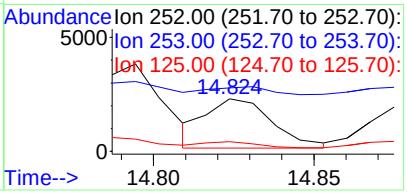


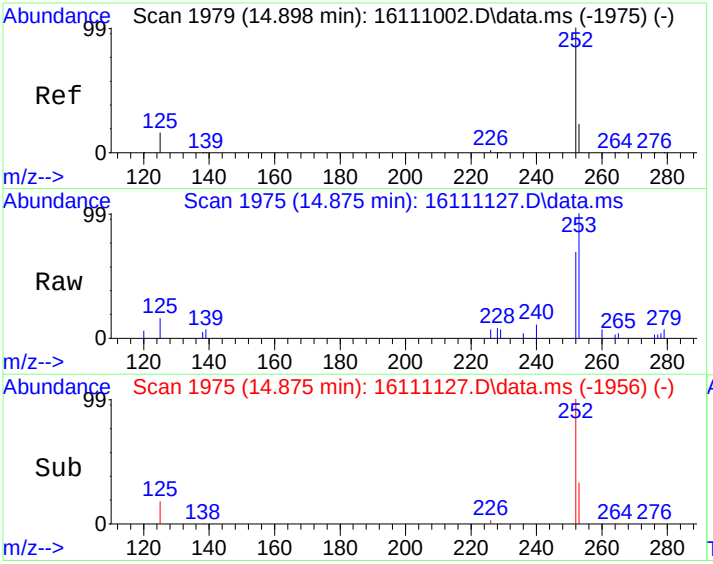


#22
Benzo[k]fluoranthene
Concen: 10.32 ug/kg
RT: 14.824 min Scan# 1968
Delta R.T. -0.022 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:252 Resp: 3120

Ion	Ratio	Lower	Upper
252	100		
253	14.6	2.8	42.8
125	13.7	0.0	31.3

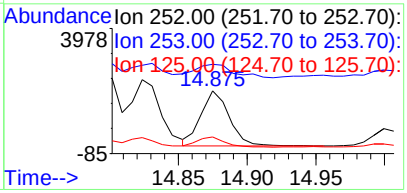


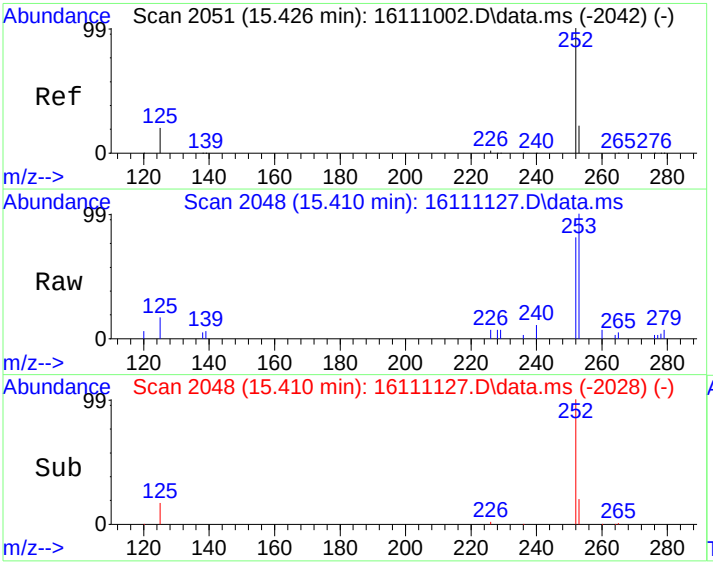


#23
Benzo(j)fluoranthene
Concen: 8.62 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:252 Resp: 2565

Ion	Ratio	Lower	Upper
252	100		
253	20.0	2.7	42.7
125	17.8	0.0	36.4

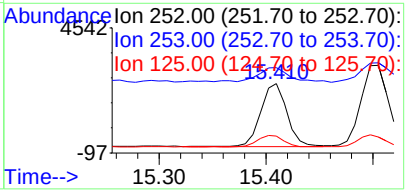


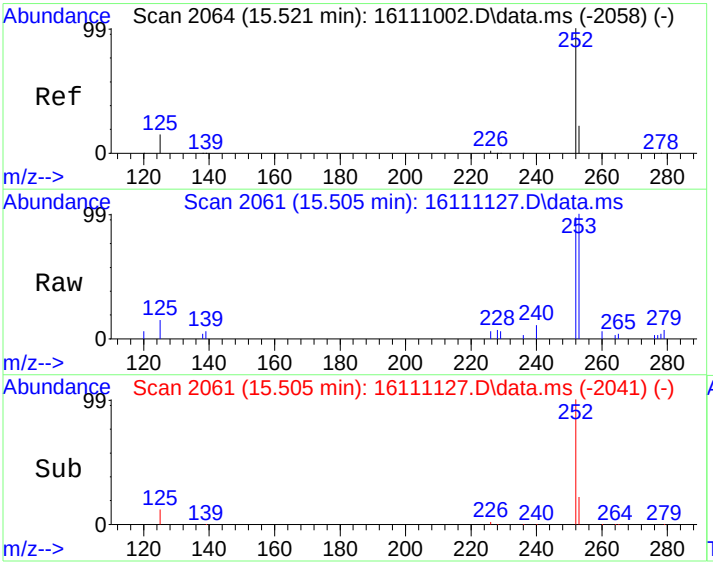


#24
Benzo[e]pyrene
Concen: 13.25 ug/kg
RT: 15.410 min Scan# 2048
Delta R.T. -0.015 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:252 Resp: 3973

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.5	42.5
125	16.7	0.9	40.9

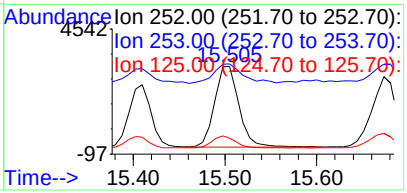


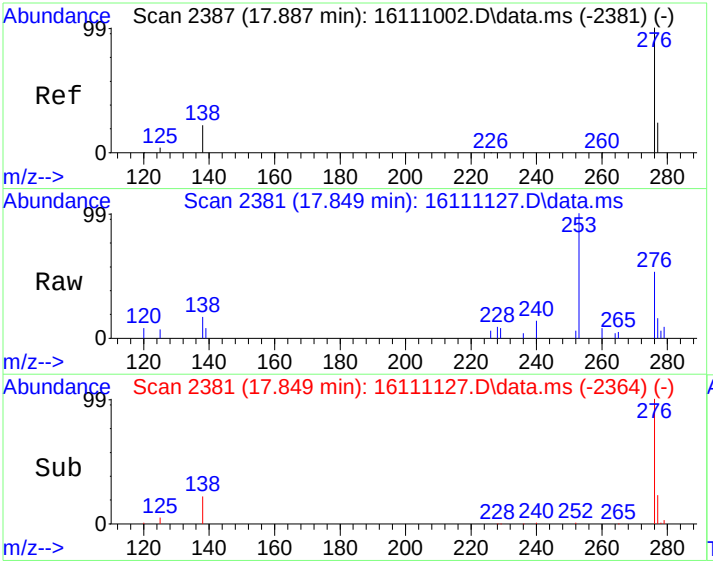


#25
Benzo[a]pyrene
Concen: 18.08 ug/kg
RT: 15.505 min Scan# 2061
Delta R.T. -0.015 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:252 Resp: 5540

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.7	42.7
125	12.1	0.0	33.9

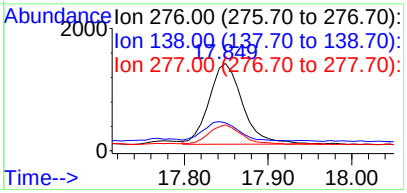


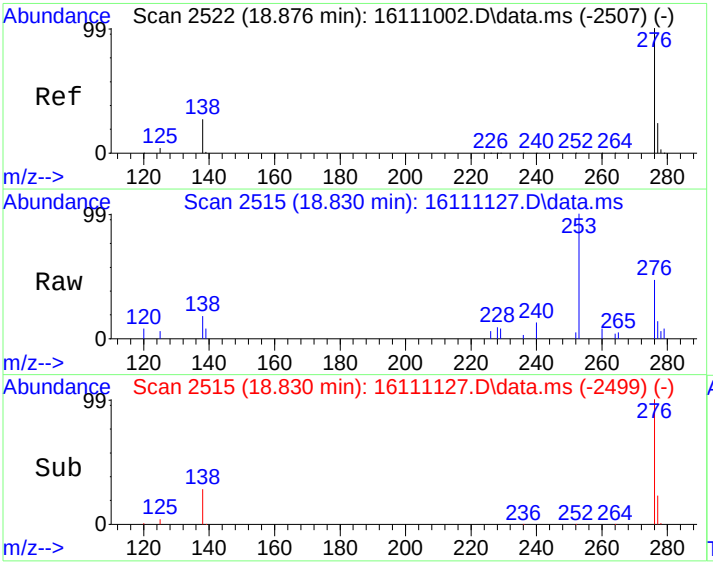


#27
Indeno[1,2,3-cd]pyrene
Concen: 12.01 ug/kg
RT: 17.849 min Scan# 2381
Delta R.T. -0.037 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:276 Resp: 3691

Ion	Ratio	Lower	Upper
276	100		
138	22.8	4.4	44.4
277	24.0	4.4	44.4

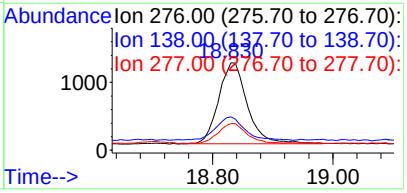




#28
Benzo[g,h,i]perylene
Concen: 12.26 ug/kg
RT: 18.830 min Scan# 2515
Delta R.T. -0.045 min
Lab File: 16111127.D
Acq: 11 Nov 2016 8:41 pm

Tgt Ion:276 Resp: 3989

Ion	Ratio	Lower	Upper
276	100		
138	28.1	7.7	47.7
277	24.6	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111128.D
Acq On : 11 Nov 2016 9:09 pm
Operator :
Sample : 1611044-11A
Misc : SAMP
ALS Vial : 26 Sample Multiplier: 10

Quant Time: Nov 14 13:34:41 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	1018985	4000.00	ug/kg	116
5) Acenaphthene-d10	9.062	164	608463	4000.00	ug/kg	77
11) Phenanthrene-d10	10.464	188	1066085	4000.00	ug/kg	76
17) Chrysene-d12	13.360	240	1285848	4000.00	ug/kg	77
20) Perylene-d12	15.675	264	1278093	4000.00	ug/kg	73

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	21959	111.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.78%#			
16) 4-Terphenyl-d14	11.844	244	19036	92.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.32%#			

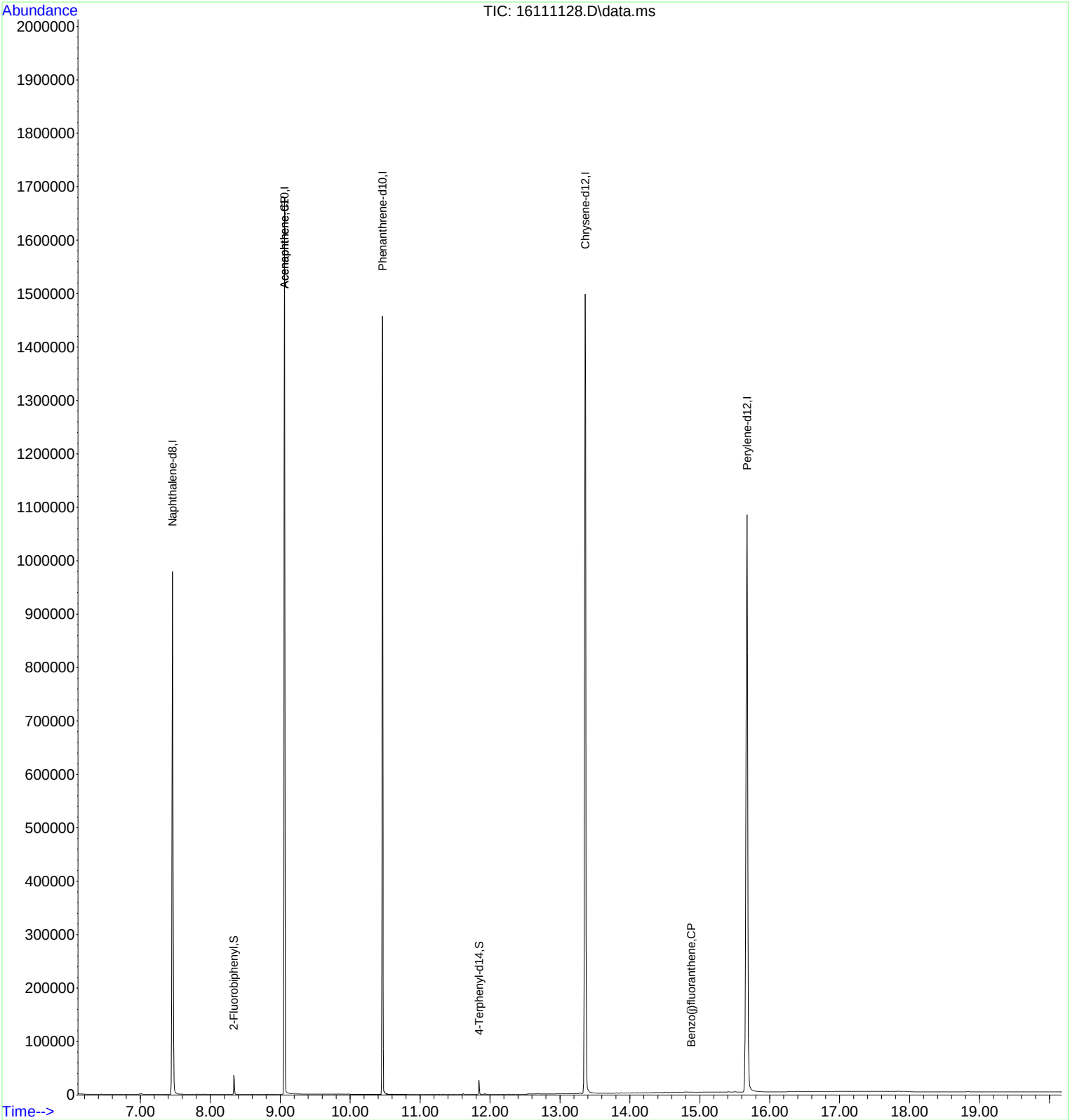
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2247	~~15.29~~	~~ug/kg#~~	~~11~~
23) Benzo(j)fluoranthene	14.876	252	419	1.48	ug/kg	81

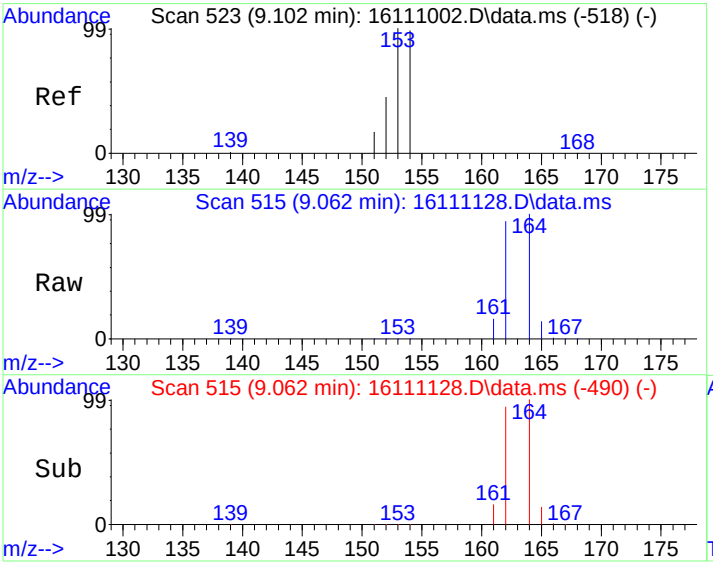
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111128.D
Acq On : 11 Nov 2016 9:09 pm
Operator :
Sample : 1611044-11A
Misc : SAMP
ALS Vial : 26 Sample Multiplier: 10

Quant Time: Nov 14 13:34:41 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

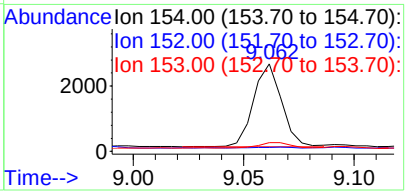


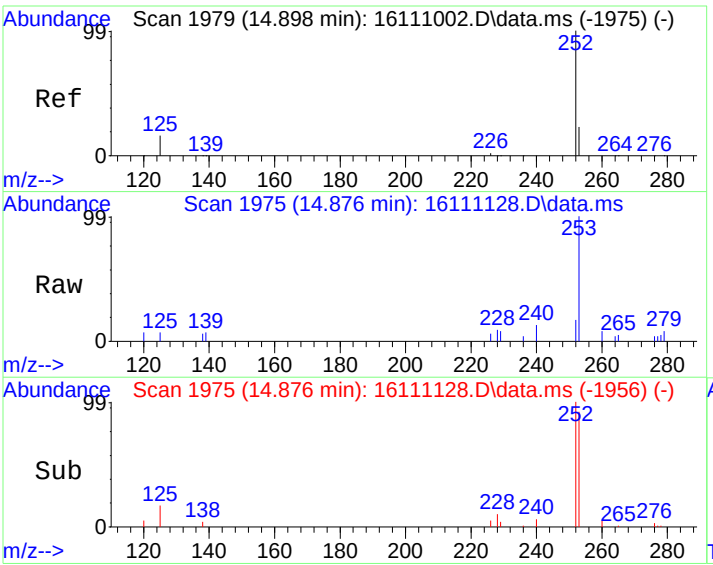


#9
Acenaphthene
Concen: 15.29 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111128.D
Acq: 11 Nov 2016 9:09 pm

Tgt Ion:154 Resp: 2247

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	6.3	76.8	136.8#

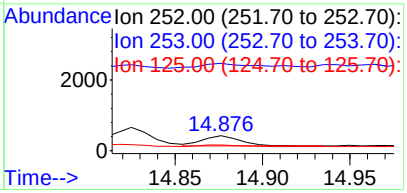




#23
Benzo(j)fluoranthene
Concen: 1.48 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111128.D
Acq: 11 Nov 2016 9:09 pm

Tgt Ion:252 Resp: 419

Ion	Ratio	Lower	Upper
252	100		
253	38.0	2.7	42.7
125	16.7	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111129.D
Acq On : 11 Nov 2016 9:38 pm
Operator :
Sample : 1611044-12A
Misc : SAMP
ALS Vial : 27 Sample Multiplier: 10

Quant Time: Nov 14 13:34:45 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1016396	4000.00	ug/kg	115
5) Acenaphthene-d10	9.062	164	667046	4000.00	ug/kg	84
11) Phenanthrene-d10	10.462	188	1427358	4000.00	ug/kg	101
17) Chrysene-d12	13.366	240	1377556	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1424754	4000.00	ug/kg	81

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	18756	86.57	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.16%#			
16) 4-Terphenyl-d14	11.842	244	24535	89.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.24%#			

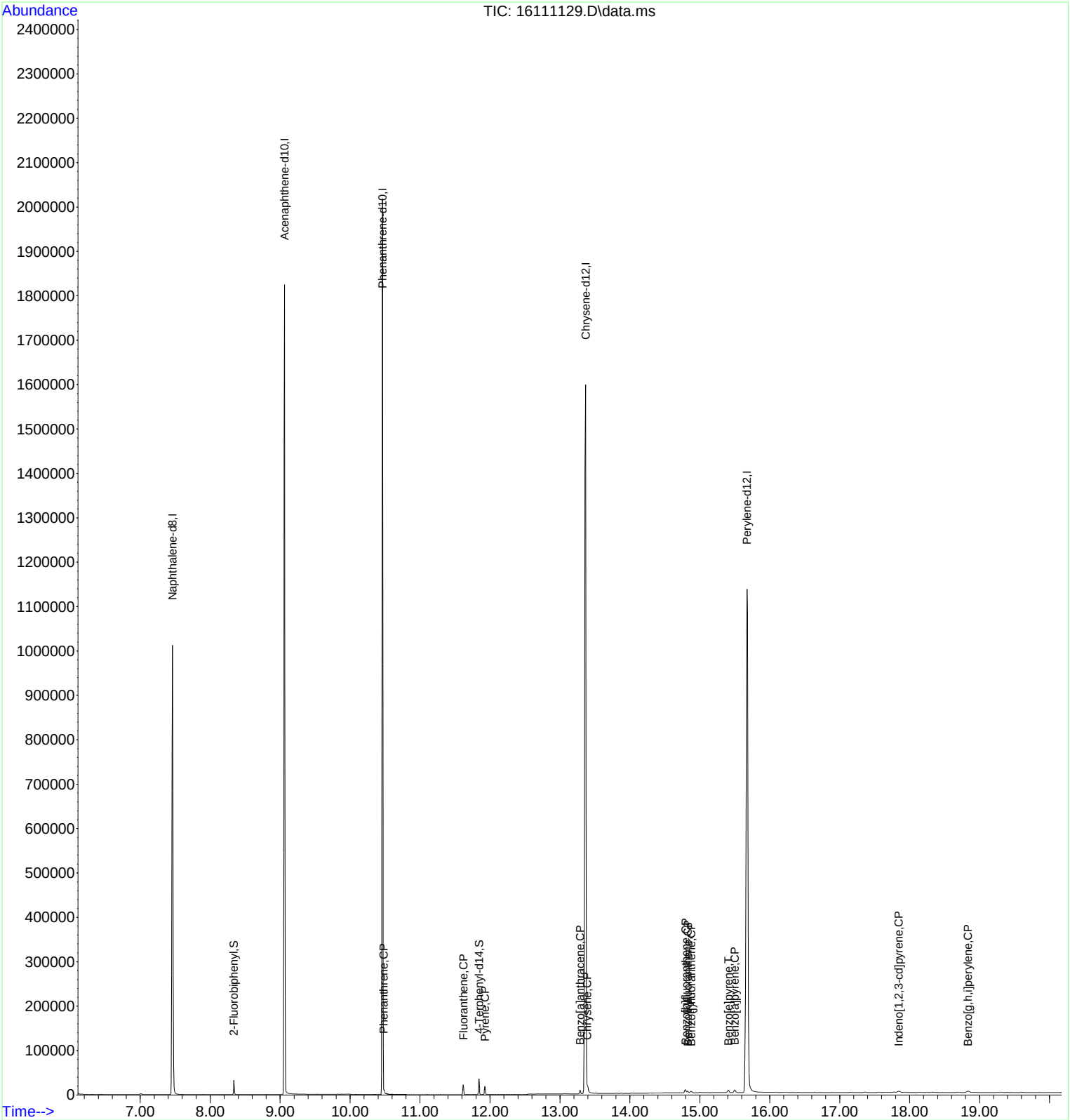
Target Compounds						Qvalue
12) Phenanthrene	10.486	178	3084	9.20	ug/kg	99
14) Fluoranthene	11.618	202	12856	32.43	ug/kg	99
15) Pyrene	11.927	202	11673	28.68	ug/kg	99
18) Benzo[a]anthracene	13.286	228	6680	20.59	ug/kg	98
19) Chrysene	13.396	228	7280	24.75	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	7792	21.92	ug/kg	97
22) Benzo[k]fluoranthene	14.824	252	3223	10.03	ug/kg	84
23) Benzo(j)fluoranthene	14.875	252	3426	10.84	ug/kg	94
24) Benzo[e]pyrene	15.410	252	5615	17.62	ug/kg	95
25) Benzo[a]pyrene	15.498	252	7658	23.52	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	5448	16.69	ug/kg	98
28) Benzo[g,h,i]perylene	18.831	276	5953	17.21	ug/kg	99

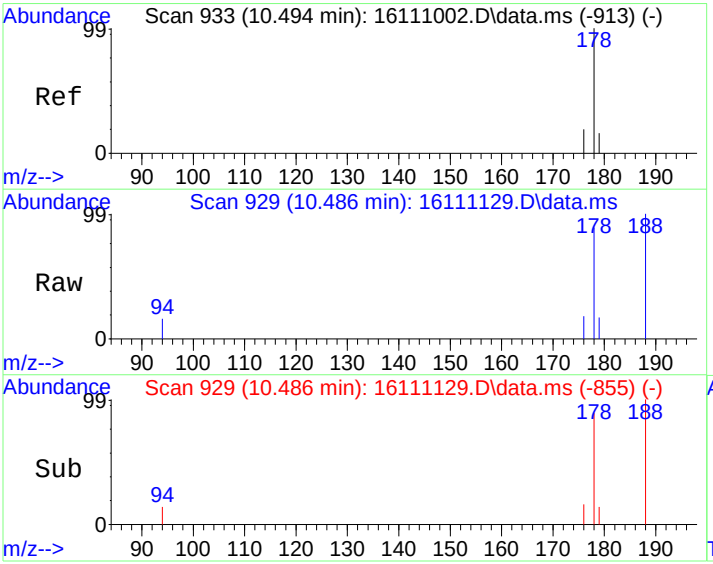
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111129.D
Acq On : 11 Nov 2016 9:38 pm
Operator :
Sample : 1611044-12A
Misc : SAMP
ALS Vial : 27 Sample Multiplier: 10

Quant Time: Nov 14 13:34:45 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

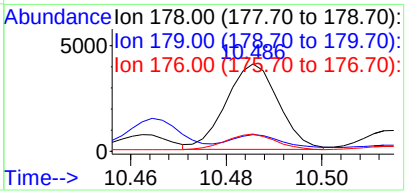


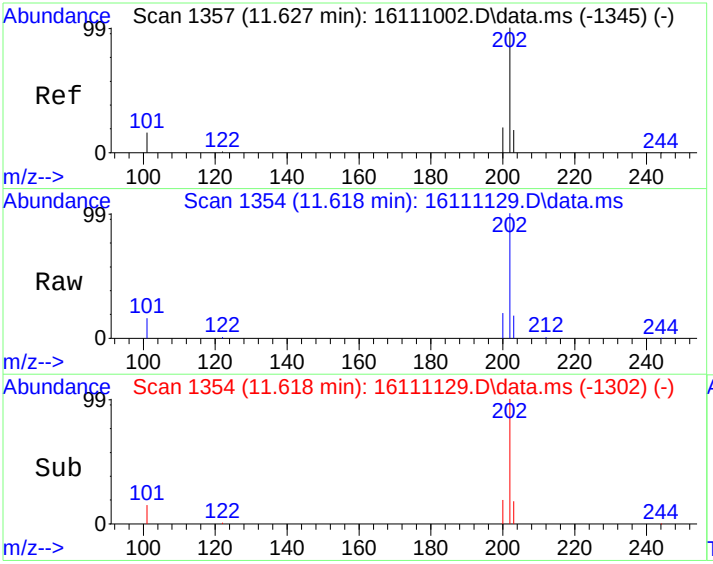


#12
Phenanthrene
Concen: 9.20 ug/kg
RT: 10.486 min Scan# 929
Delta R.T. -0.008 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:178 Resp: 3084

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	46.2
176	18.7	0.0	48.4

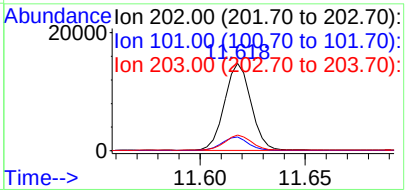


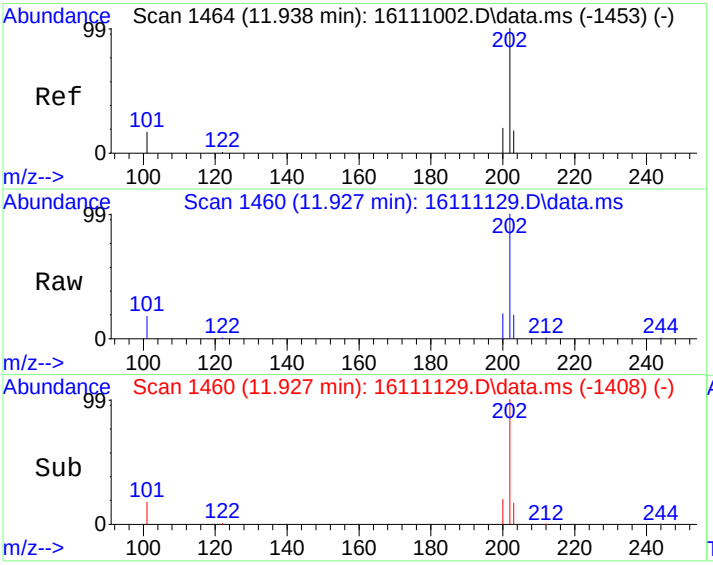


#14
Fluoranthene
Concen: 32.43 ug/kg
RT: 11.618 min Scan# 1354
Delta R.T. -0.008 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:202 Resp: 12856

Ion	Ratio	Lower	Upper
202	100		
101	15.3	0.0	45.8
203	17.6	0.0	48.2

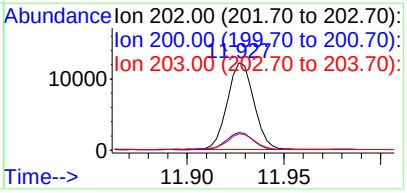


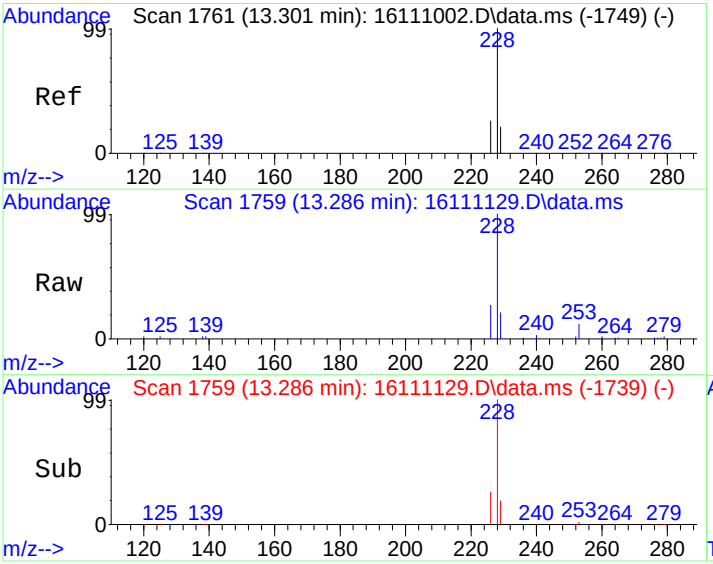


#15
Pyrene
Concen: 28.68 ug/kg
RT: 11.927 min Scan# 1460
Delta R.T. -0.011 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:202 Resp: 11673

Ion	Ratio	Lower	Upper
202	100		
200	19.9	0.0	50.3
203	17.9	0.0	48.2

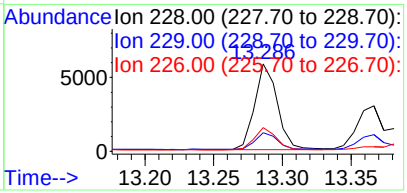


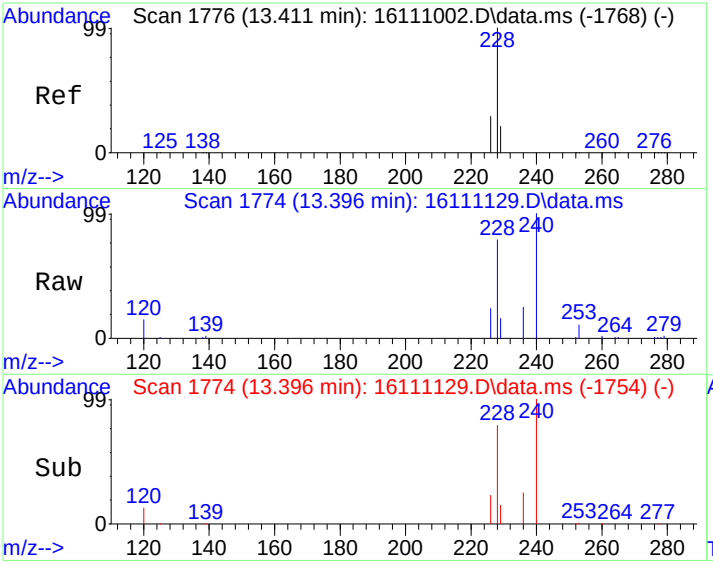


#18
Benzo[a]anthracene
Concen: 20.59 ug/kg
RT: 13.286 min Scan# 1759
Delta R.T. -0.015 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:228 Resp: 6680

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.8
226	26.0	0.0	55.5

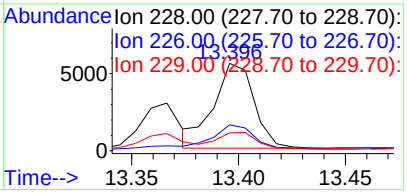


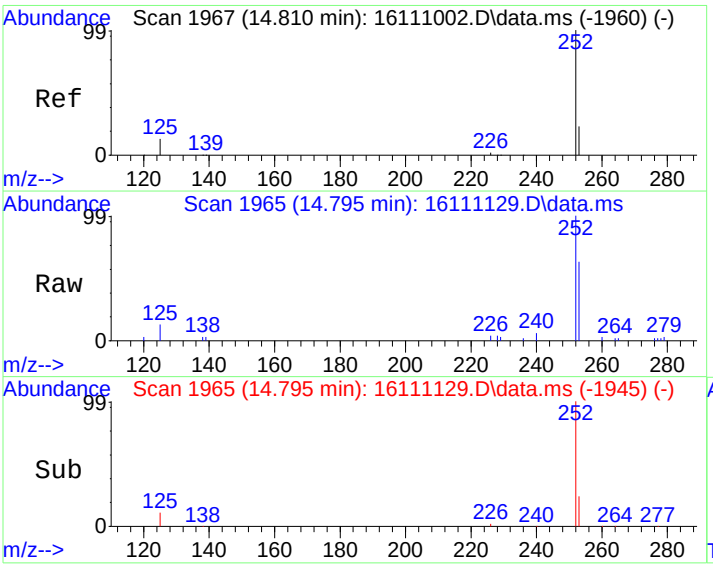


#19
Chrysene
Concen: 24.75 ug/kg
RT: 13.396 min Scan# 1774
Delta R.T. -0.015 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:228 Resp: 7280

Ion	Ratio	Lower	Upper
228	100		
226	28.8	0.0	58.7
229	19.0	0.0	50.4

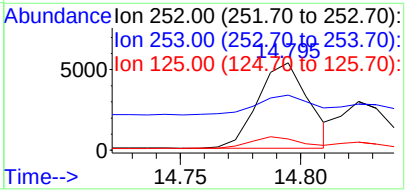


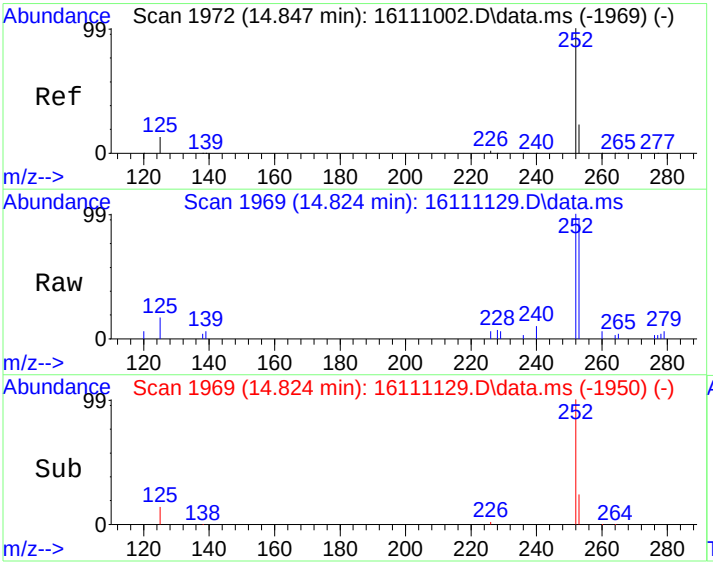


#21
Benzo[b]fluoranthene
Concen: 21.92 ug/kg
RT: 14.795 min Scan# 1965
Delta R.T. -0.015 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:252 Resp: 7792

Ion	Ratio	Lower	Upper
252	100		
253	23.5	0.0	52.7
125	11.0	0.0	42.9

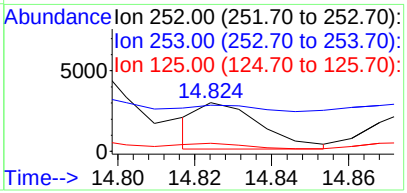


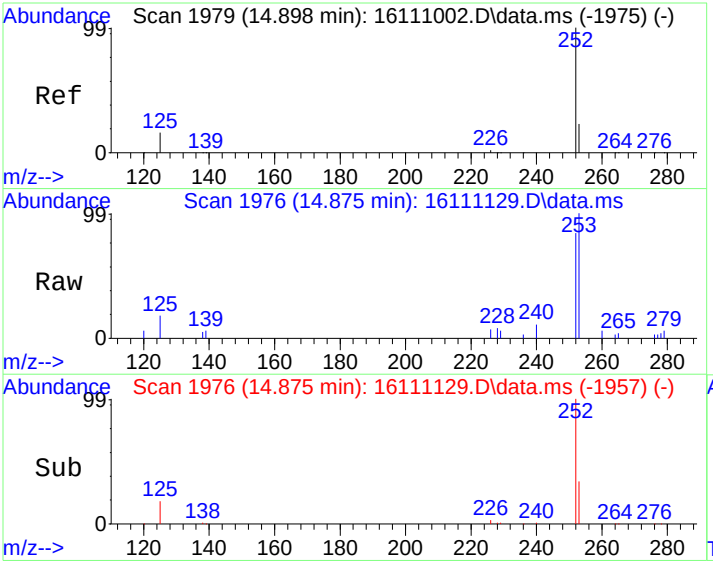


#22
Benzo[k]fluoranthene
Concen: 10.03 ug/kg
RT: 14.824 min Scan# 1969
Delta R.T. -0.022 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:252 Resp: 3223

Ion	Ratio	Lower	Upper
252	100		
253	12.6	2.8	42.8
125	13.1	0.0	31.3

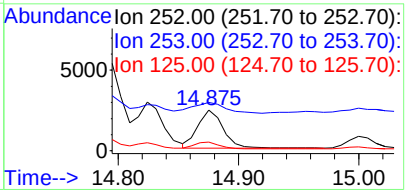


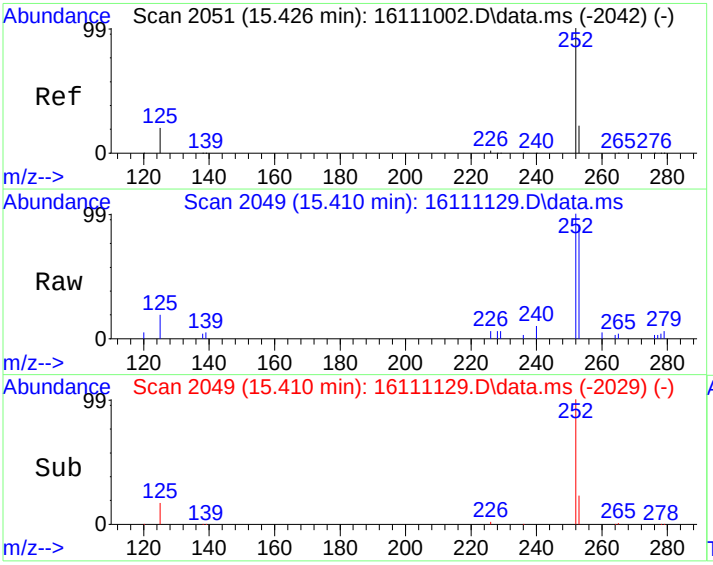


#23
Benzo(j)fluoranthene
Concen: 10.84 ug/kg
RT: 14.875 min Scan# 1976
Delta R.T. -0.023 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:252 Resp: 3426

Ion	Ratio	Lower	Upper
252	100		
253	26.9	2.7	42.7
125	17.7	0.0	36.4

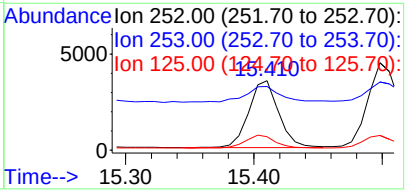


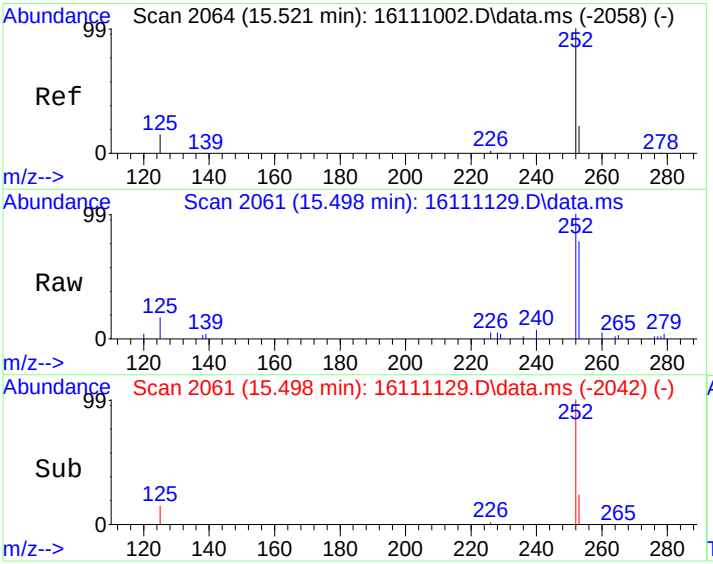


#24
Benzo[e]pyrene
Concen: 17.62 ug/kg
RT: 15.410 min Scan# 2049
Delta R.T. -0.015 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:252 Resp: 5615

Ion	Ratio	Lower	Upper
252	100		
253	23.2	2.5	42.5
125	16.6	0.9	40.9

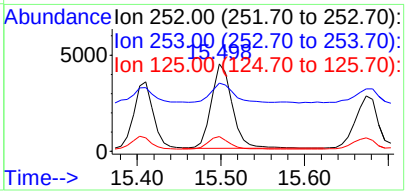


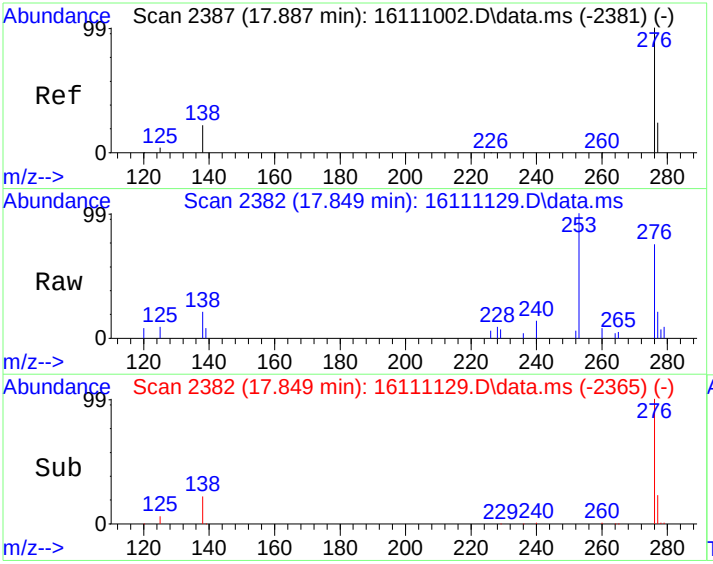


#25
Benzo[a]pyrene
Concen: 23.52 ug/kg
RT: 15.498 min Scan# 2061
Delta R.T. -0.022 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:252 Resp: 7658

Ion	Ratio	Lower	Upper
252	100		
253	23.2	2.7	42.7
125	14.7	0.0	33.9

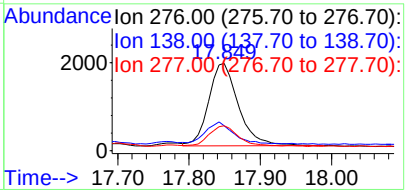


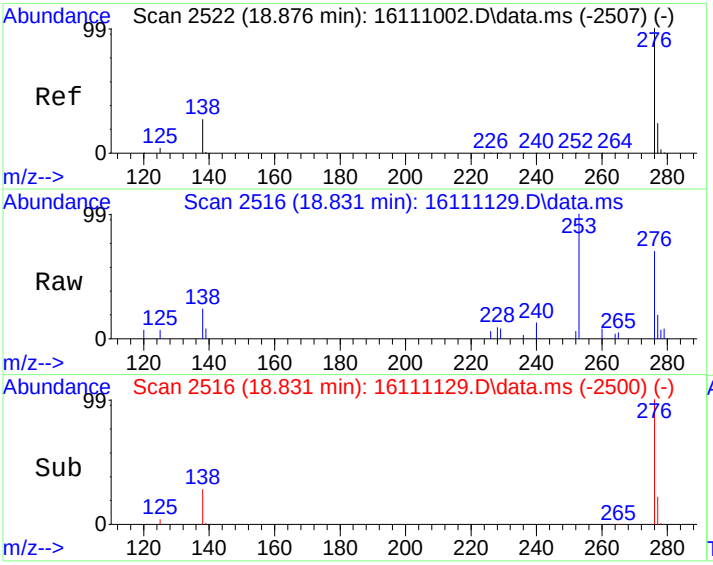


#27
Indeno[1,2,3-cd]pyrene
Concen: 16.69 ug/kg
RT: 17.849 min Scan# 2382
Delta R.T. -0.037 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:276 Resp: 5448

Ion	Ratio	Lower	Upper
276	100		
138	22.2	4.4	44.4
277	24.6	4.4	44.4

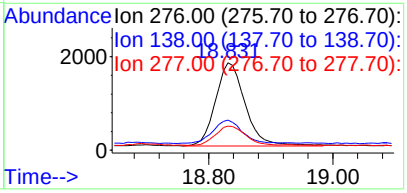




#28
Benzo[g,h,i]perylene
Concen: 17.21 ug/kg
RT: 18.831 min Scan# 2516
Delta R.T. -0.044 min
Lab File: 16111129.D
Acq: 11 Nov 2016 9:38 pm

Tgt Ion:276 Resp: 5953

Ion	Ratio	Lower	Upper
276	100		
138	27.5	7.7	47.7
277	22.9	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111130.D
Acq On : 11 Nov 2016 10:07 pm
Operator :
Sample : 1611044-01AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 13:25:43 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.462	136	1130077	4000.00	ug/kg	128
5) Acenaphthene-d10	9.062	164	670863	4000.00	ug/kg	85
11) Phenanthrene-d10	10.462	188	1181690	4000.00	ug/kg	84
17) Chrysene-d12	13.366	240	1373106	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1417050	4000.00	ug/kg	80

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	19768	90.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.27%#			
16) 4-Terphenyl-d14	11.842	244	21036	92.61	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.32%#			

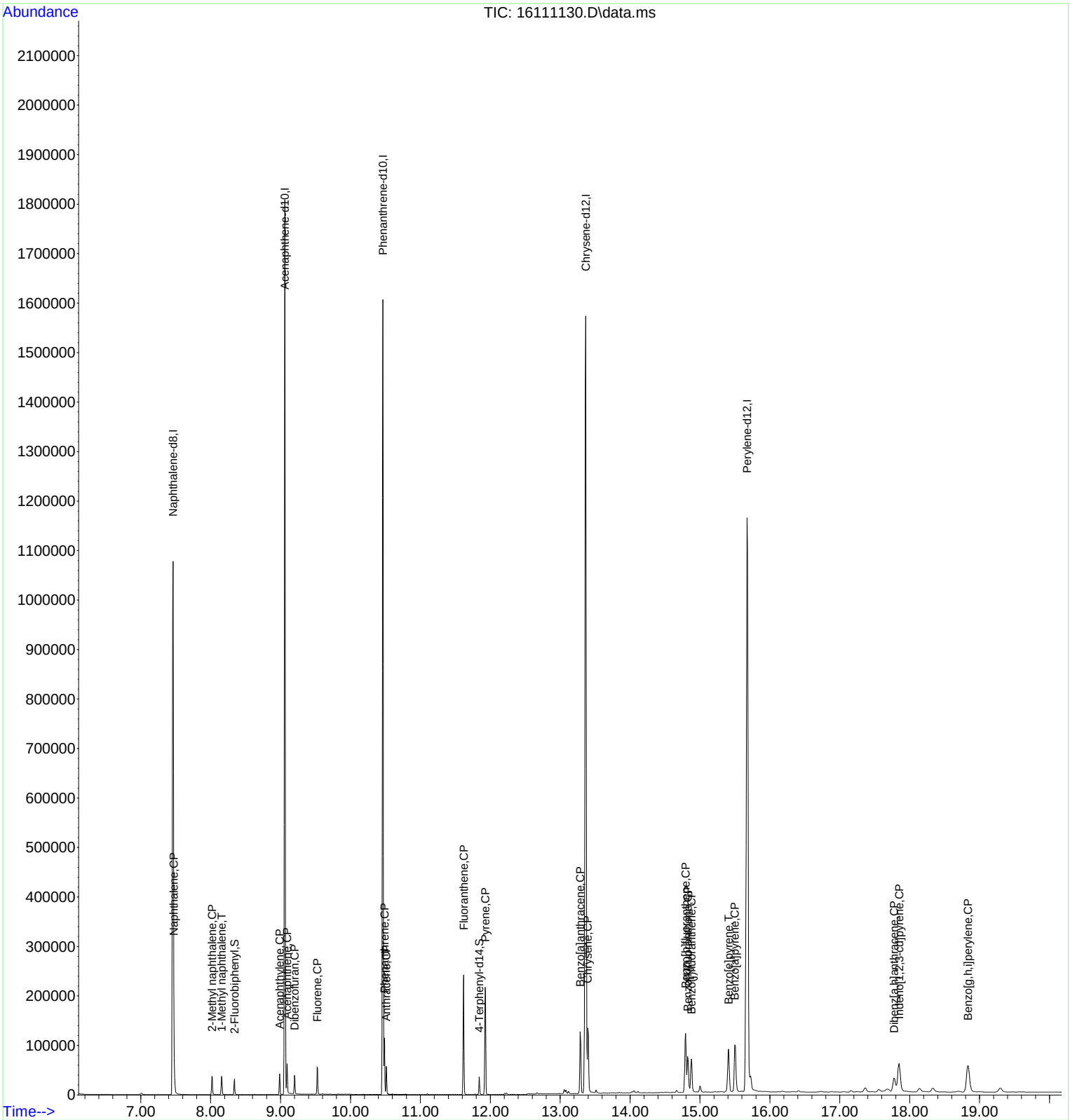
Target Compounds						Qvalue
2) Naphthalene	7.479	128	20227	92.17	ug/kg	99
3) 2-Methyl naphthalene	8.023	142	16105	66.31	ug/kg	96
4) 1-Methyl naphthalene	8.155	142	14800	67.50	ug/kg	91
6) Dibenzofuran	9.199	168	23753	97.42	ug/kg	97
8) Acenaphthylene	8.988	152	25853	92.43	ug/kg	97
9) Acenaphthene	9.091	154	16345	100.88	ug/kg	97
10) Fluorene	9.523	166	20018	98.64	ug/kg	94
12) Phenanthrene	10.485	178	63616	229.15	ug/kg	98
13) Anthracene	10.513	178	32952	116.60	ug/kg	98
14) Fluoranthene	11.618	202	139661	425.52	ug/kg	98
15) Pyrene	11.927	202	128666	381.83	ug/kg	99
18) Benzo[a]anthracene	13.286	228	96691	299.04	ug/kg	98
19) Chrysene	13.396	228	111181	379.27	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	124946	353.41	ug/kg	97
22) Benzo[k]fluoranthene	14.824	252	74751	233.91	ug/kg	92
23) Benzo(j)fluoranthene	14.875	252	67143	213.60	ug/kg	98
24) Benzo[e]pyrene	15.410	252	99508	314.00	ug/kg	95
25) Benzo[a]pyrene	15.498	252	121060	373.89	ug/kg	97
26) Dibenz[a,h]anthracene	17.776	278	43584	130.89	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	98867	304.44	ug/kg	98
28) Benzo[g,h,i]perylene	18.838	276	107633	312.94	ug/kg	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111130.D
Acq On : 11 Nov 2016 10:07 pm
Operator :
Sample : 1611044-01AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 13:25:43 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111131.D
Acq On : 11 Nov 2016 10:36 pm
Operator :
Sample : 1611044-01AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 13:25:46 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	956890	4000.00	ug/kg	109
5) Acenaphthene-d10	9.062	164	673440	4000.00	ug/kg	85
11) Phenanthrene-d10	10.463	188	1192905	4000.00	ug/kg	84
17) Chrysene-d12	13.359	240	1370228	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1423668	4000.00	ug/kg	81

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	19917	91.05	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.28%#			
16) 4-Terphenyl-d14	11.841	244	26180	114.17	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.85%#			

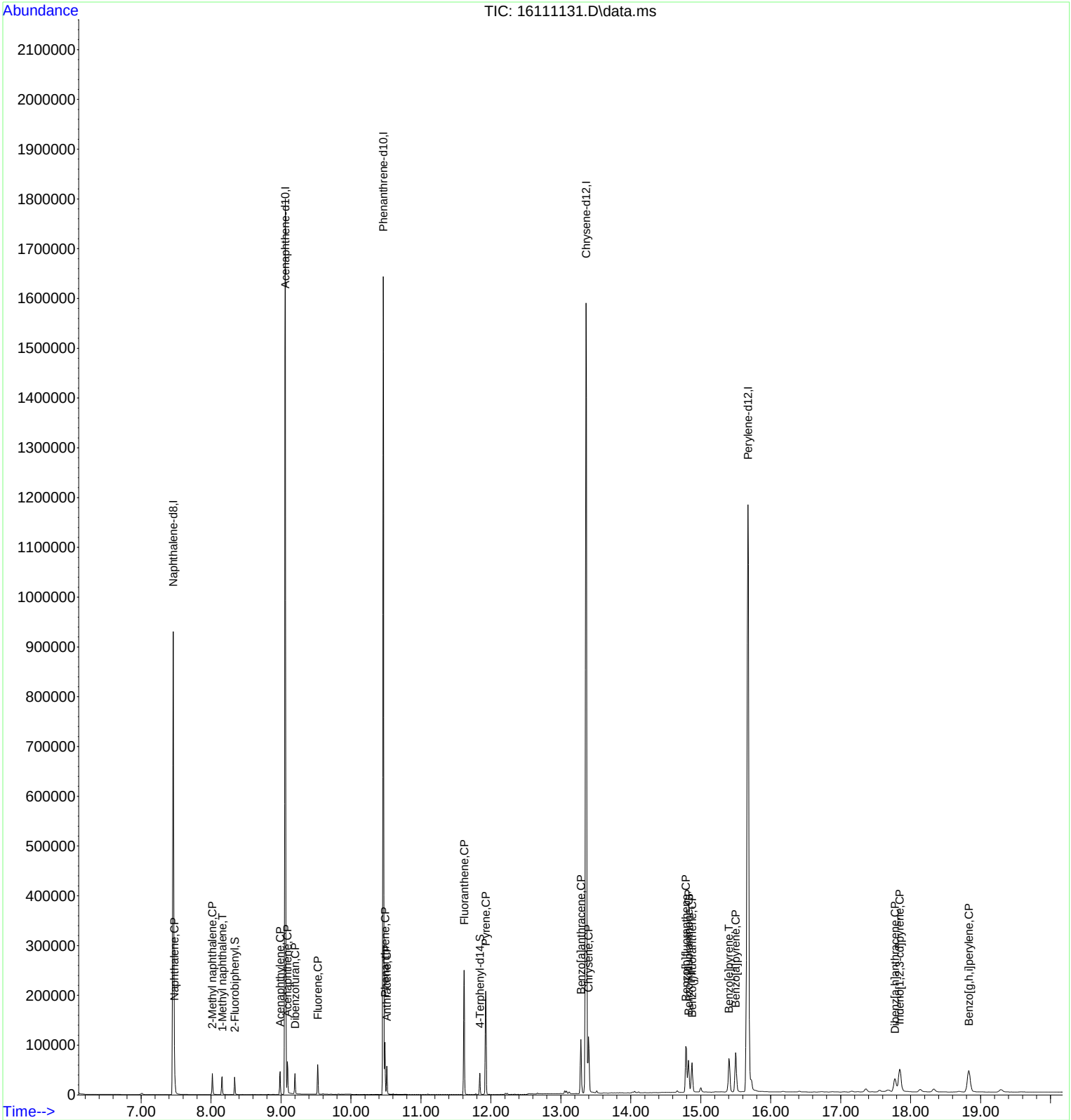
Target Compounds						Qvalue
2) Naphthalene	7.482	128	18386	98.94	ug/kg	99
3) 2-Methyl naphthalene	8.020	142	17404	84.63	ug/kg	98
4) 1-Methyl naphthalene	8.158	142	16006	86.21	ug/kg	98
6) Dibenzofuran	9.199	168	25187	102.90	ug/kg	98
8) Acenaphthylene	8.988	152	27906	99.39	ug/kg	97
9) Acenaphthene	9.091	154	17297	106.35	ug/kg	97
10) Fluorene	9.523	166	21101	103.58	ug/kg	95
12) Phenanthrene	10.486	178	56233	200.66	ug/kg	98
13) Anthracene	10.513	178	32583	114.21	ug/kg	98
14) Fluoranthene	11.617	202	140947	425.40	ug/kg	98
15) Pyrene	11.925	202	128562	377.93	ug/kg	99
18) Benzo[a]anthracene	13.286	228	81554	252.75	ug/kg	99
19) Chrysene	13.396	228	89310	305.30	ug/kg	99
21) Benzo[b]fluoranthene	14.788	252	101369	285.39	ug/kg	98
22) Benzo[k]fluoranthene	14.824	252	61821	192.55	ug/kg	94
23) Benzo(j)fluoranthene	14.876	252	56658	179.41	ug/kg	99
24) Benzo[e]pyrene	15.403	252	78589	246.84	ug/kg	98
25) Benzo[a]pyrene	15.498	252	94625	290.88	ug/kg	98
26) Dibenz[a,h]anthracene	17.776	278	40727	121.74	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	78095	239.36	ug/kg	98
28) Benzo[g,h,i]perylene	18.831	276	84356	244.13	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111131.D
Acq On : 11 Nov 2016 10:36 pm
Operator :
Sample : 1611044-01AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 13:25:46 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111132.D
Acq On : 11 Nov 2016 11:05 pm
Operator :
Sample : CCV1-161114
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 13:25:49 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

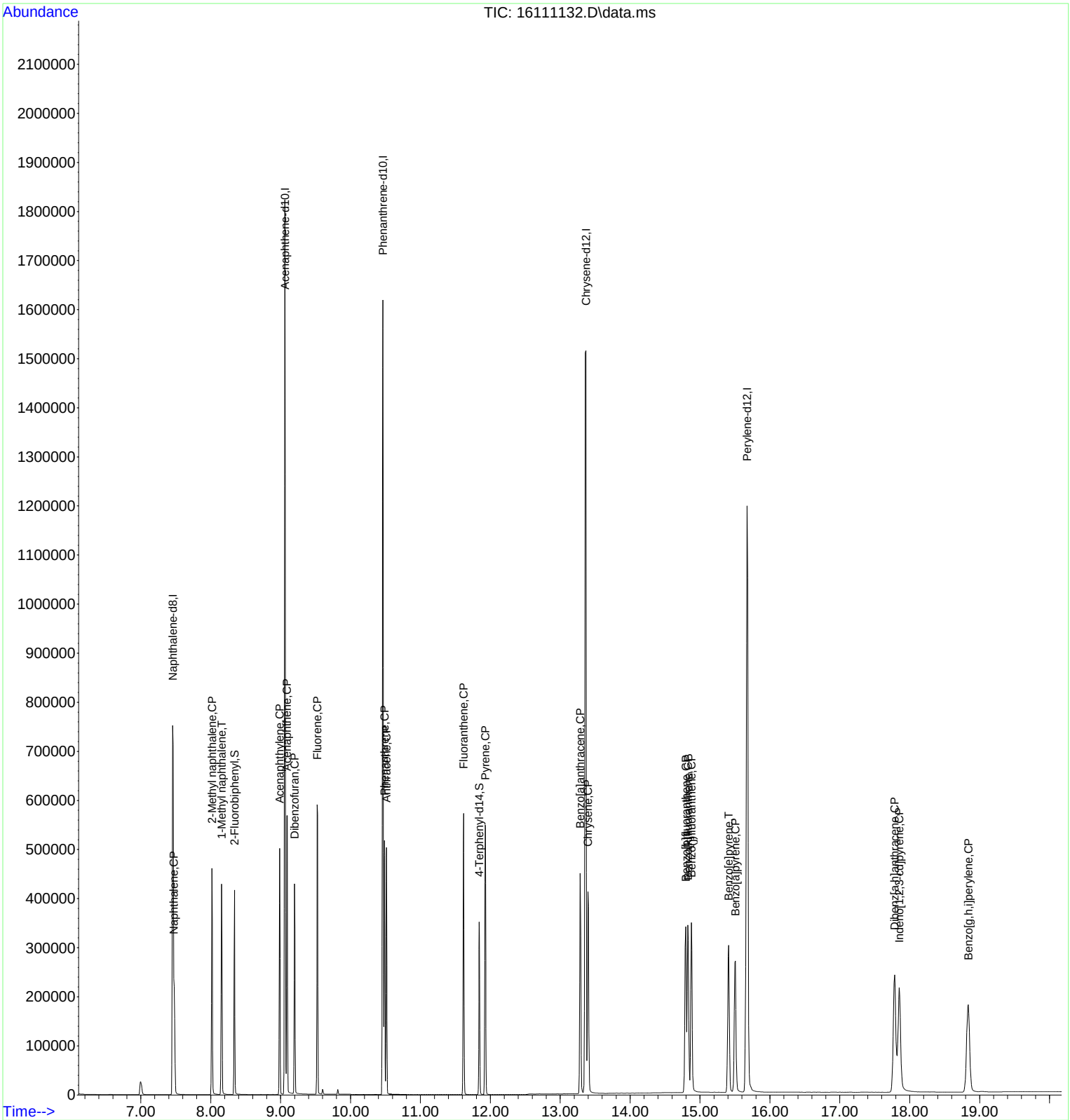
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.455	136	777817	4000.00	ug/kg	88
5) Acenaphthene-d10	9.061	164	670309	4000.00	ug/kg	85
11) Phenanthrene-d10	10.462	188	1195706	4000.00	ug/kg	85
17) Chrysene-d12	13.367	240	1364946	4000.00	ug/kg	82
20) Perylene-d12	15.674	264	1420546	4000.00	ug/kg	81
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	235192	1080.24	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.01%#			
16) 4-Terphenyl-d14	11.841	244	247608	1077.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 26.93%#			
Target Compounds						Qvalue
2) Naphthalene	7.478	128	158209	1047.38	ug/kg	99
3) 2-Methyl naphthalene	8.016	142	184453	1103.47	ug/kg	91
4) 1-Methyl naphthalene	8.155	142	164527	1090.20	ug/kg	93
6) Dibenzofuran	9.199	168	261406	1072.99	ug/kg	99
8) Acenaphthylene	8.987	152	301367	1078.37	ug/kg	99
9) Acenaphthene	9.095	154	174507	1077.93	ug/kg	95
10) Fluorene	9.528	166	216464	1067.51	ug/kg	97
12) Phenanthrene	10.486	178	290107	1032.76	ug/kg	100
13) Anthracene	10.513	178	286902	1003.26	ug/kg	99
14) Fluoranthene	11.617	202	328893	990.33	ug/kg	98
15) Pyrene	11.929	202	330170	968.33	ug/kg	99
18) Benzo[a]anthracene	13.286	228	343982	1070.19	ug/kg	99
19) Chrysene	13.396	228	322309	1106.05	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	366642	1034.48	ug/kg	99
22) Benzo[k]fluoranthene	14.824	252	344863	1076.49	ug/kg	97
23) Benzo(j)fluoranthene	14.876	252	343458	1089.94	ug/kg	97
24) Benzo[e]pyrene	15.410	252	339394	1068.32	ug/kg	96
25) Benzo[a]pyrene	15.506	252	337678	1040.33	ug/kg	98
26) Dibenz[a,h]anthracene	17.784	278	344178	1031.10	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.850	276	338958	1041.17	ug/kg	99
28) Benzo[g,h,i]perylene	18.839	276	358164	1038.80	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161111\
Data File : 16111132.D
Acq On : 11 Nov 2016 11:05 pm
Operator :
Sample : CCV1-161114
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 13:25:49 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



GCMS8
Calibration Curve
For

DHL Work Order
1611044

CAL ID: 707

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #8 **Calibration File Name:** PP161021.CAL

Target Concentration	Solvent Amount mL	Standard Preparation Stocks and Surrogate (µL/mL)	Final Volume mL
5 ppb	0.999	0.001 mL of 5000 ppb	1
10 ppb	0.998	0.002 mL of 5000 ppb	1
50 ppb	0.990	0.01 mL of 5000 ppb	1
100 ppb	0.980	0.02 mL of 5000 ppb	1
500 ppb	0.900	0.10 mL of 5000 ppb	1
1000 ppb	0.800	0.20 mL of 5000 ppb	1
2000 ppb	0.600	0.40 mL of 5000 ppb	1
5000 ppb	----	PAHCAL161020	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV161005-1	1
SSCV 2500 ppb	----	PAHSSCV161020-2	1

Standards Used for the Calibration Curve

1 uL Internal Standard SV160510-5 spiked in all.

Primary Stock STDs	DHL Standard ID	Second Source (SS) Stock STDs	DHL Standard ID
5 PPM (5000 PPB) PAH CAL STD	**PAHCAL161020**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV161005-1**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV161020-2**

Review Item	Acceptance Criteria	Yes	No	N/A	2nd Level Review
1. Are all standards within expiration dates?	Primary Stocks = 1 year Intermediate Standards = 6 months	X			X
2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)**	Manual Integration Tracking Form			X	
3. Does the tune and resolution check meet criteria?	Benzo(b) / Benzo(k)phenanthrene Valley > 50% See Tune Eval Report	X			
4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15%	%RSD < 15% COD ≥ 0.990	X			
5. Has the low point been reprocessed under the new ICAL curve and meets criteria?	70-130% recovery	X			
6. Has the SSCV been analyzed and meets criteria?	80-120% recovery	X			

Analyst: Dustin Beyer Karyn Lane Date: 11/01/2016

Second-Level Review: Date: 11/02/2016

CAL 2 is the reporting limit for PAH - all analytes meet the ± 30% acceptance criteria.

Response Factor Report GCMS #8

Method Path : C:\msdchem\1\METHODS\
Method File : PP161021.M
Title : PAH Calibration
Last Update : Tue Nov 01 15:45:22 2016
Response Via : Initial Calibration

Calibration Files
1 =16102106.D 2 =16102107.D 3 =16102108.D 4 =16102109.D 5 =16102110.D 6 =16102111.D 7 =16102112.D
8 =16102113.D

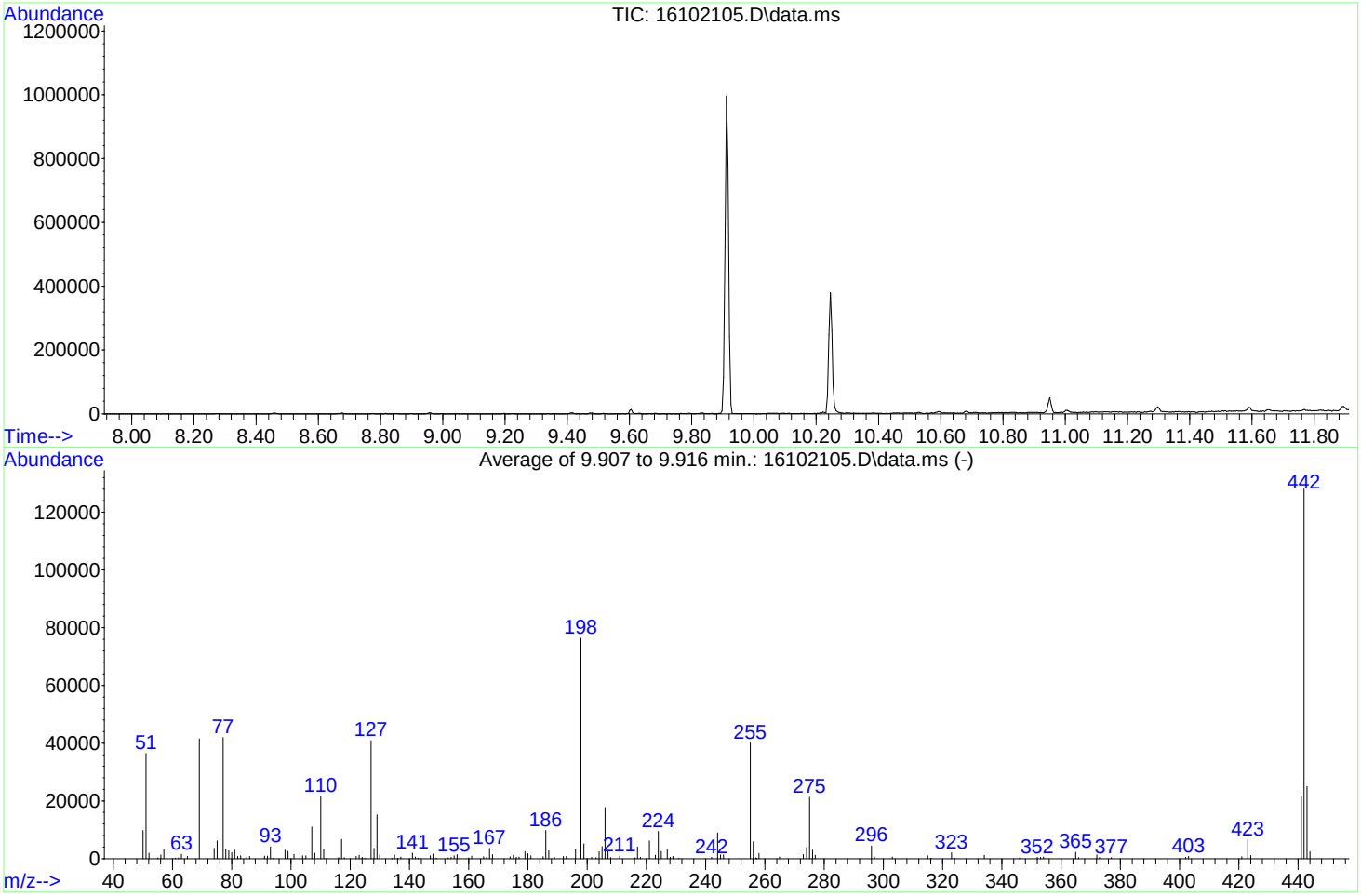
		Compound	1	2	3	4	5	6	7	8	Avg	%RSD	Fit	RSD/CF	Constant	Linear	Quad
1)	I	Naphthalene-d8	----------ISTD----------														
2)	CP	Naphthalene	0.915	0.744	0.777	0.767	0.765	0.755	0.751	0.740	0.777	7.38	A	0.0738	0.0000	0.7768	0.0000
3)	CP	2-Methyl napht...	0.837	0.783	0.874	0.922	0.909	0.878	0.874	0.801	0.860	5.71	A	0.0571	0.0000	0.8596	0.0000
4)	T	1-Methyl napht...	0.751	0.694	0.790	0.833	0.824	0.793	0.794	0.729	0.776	6.15	A	0.0615	0.0000	0.7761	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.606	1.389	1.511	1.446	1.498	1.451	1.404	1.326	1.454	5.90#	A	0.0590	0.0000	1.4538	0.0000
7)	S	2-Fluorobiphenyl	1.359	1.235	1.372	1.286	1.349	1.307	1.278	1.207	1.299	4.56	A	0.0456	0.0000	1.2992	0.0000
8)	CP	Acenaphthylene	1.785	1.538	1.704	1.762	1.718	1.673	1.622	1.540	1.668	5.63	A	0.0563	0.0000	1.6677	0.0000
9)	CP	Acenaphthene	1.013	0.906	0.995	1.016	0.979	0.963	0.951	0.906	0.966	4.48	A	0.0448	0.0000	0.9661	0.0000
10)	CP	Fluorene	1.344	1.132	1.241	1.298	1.242	1.193	1.147	1.083	1.210	7.24	A	0.0724	0.0000	1.2100	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	1.140	0.934	0.939	0.976	0.927	0.913	0.872	0.817	0.940	10.01	A	0.1001	0.0000	0.9397	0.0000
13)	CP	Anthracene	1.140	0.930	0.979	1.014	0.949	0.932	0.885	0.824	0.957	9.81	A	0.0981	0.0000	0.9567	0.0000
14)	CP	Fluoranthene	1.405	1.125	1.124	1.169	1.083	1.055	1.007	0.921	1.111	12.76	A	0.1276	0.0000	1.1110	0.0000
15)	CP	Pyrene	1.499	1.172	1.154	1.191	1.089	1.069	1.015	0.935	1.141	14.75	A	0.1475	0.0000	1.1406	0.0000
16)	S	4-Terphenyl-d14	0.867	0.761	0.806	0.766	0.782	0.772	0.727	0.670	0.769	7.41	A	0.0741	0.0000	0.7689	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...	1.078	0.899	0.950	0.988	0.942	0.923	0.906	0.849	0.942	7.26	A	0.0726	0.0000	0.9419	0.0000
19)	CP	Chrysene	0.922	0.817	0.848	0.902	0.877	0.850	0.843	0.772	0.854	5.54	A	0.0554	0.0000	0.8540	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	1.110	0.971	1.051	1.000	1.027	0.978	0.939	0.908	0.998	6.44	A	0.0644	0.0000	0.9980	0.0000
22)	CP	Benzo[k]fluora...	0.994	0.846	0.901	1.001	0.881	0.889	0.868	0.837	0.902	6.93	A	0.0693	0.0000	0.9021	0.0000
23)	CP	Benzo(j)fluora...	0.968	0.834	0.920	0.894	0.897	0.893	0.861	0.832	0.887	5.10	A	0.0510	0.0000	0.8873	0.0000
24)	T	Benzo[e]pyrene	0.989	0.860	0.923	0.866	0.911	0.892	0.871	0.844	0.895	5.22	A	0.0522	0.0000	0.8946	0.0000
25)	CP	Benzo[a]pyrene	1.018	0.864	0.933	0.967	0.911	0.894	0.875	0.851	0.914	6.18	A	0.0618	0.0000	0.9140	0.0000
26)	CP	Dibenz[a,h]ant...	1.008	0.910	0.933	0.978	0.942	0.925	0.914	0.909	0.940	3.80	A	0.0380	0.0000	0.9399	0.0000
27)	CP	Indeno[1,2,3-c...	0.983	0.867	0.932	0.964	0.920	0.909	0.887	0.871	0.917	4.59	A	0.0459	0.0000	0.9167	0.0000
28)	CP	Benzo[g,h,i]pe...	1.079	0.913	0.973	1.019	0.971	0.949	0.941	0.923	0.971	5.63	A	0.0563	0.0000	0.9709	0.0000

(#) = Out of Range

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102105.D
Acq On : 21 Oct 2016 3:47 pm
Operator :
Sample : DFTPP-161021
Misc : TUNE
ALS Vial : 2 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 812, 813, 814; Background Corrected with Scan 807

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	47.7	36437	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	54.4	41533	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	53.6	40938	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	76370	PASS
199	198	5	9	6.8	5158	PASS
275	198	10	60	27.9	21292	PASS
365	198	1	200	3.0	2258	PASS
441	442	0.01	24	16.9	21604	PASS
442	198	50	400	167.8	128112	PASS
443	442	15	24	19.5	25022	PASS

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102106.D
Acq On : 21 Oct 2016 4:15 pm
Operator :
Sample : CAL1 (5 ppb)
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 15:56:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	1007734	4000.00	ug/kg	114
5) Acenaphthene-d10	9.120	164	836003	4000.00	ug/kg	106
11) Phenanthrene-d10	10.532	188	1505356	4000.00	ug/kg	107
17) Chrysene-d12	13.462	240	1840981	4000.00	ug/kg	110
20) Perylene-d12	15.828	264	1946884	4000.00	ug/kg	111

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.396	172	1420	5.23	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.13%#			
16) 4-Terphenyl-d14	11.926	244	1632	5.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.14%#			

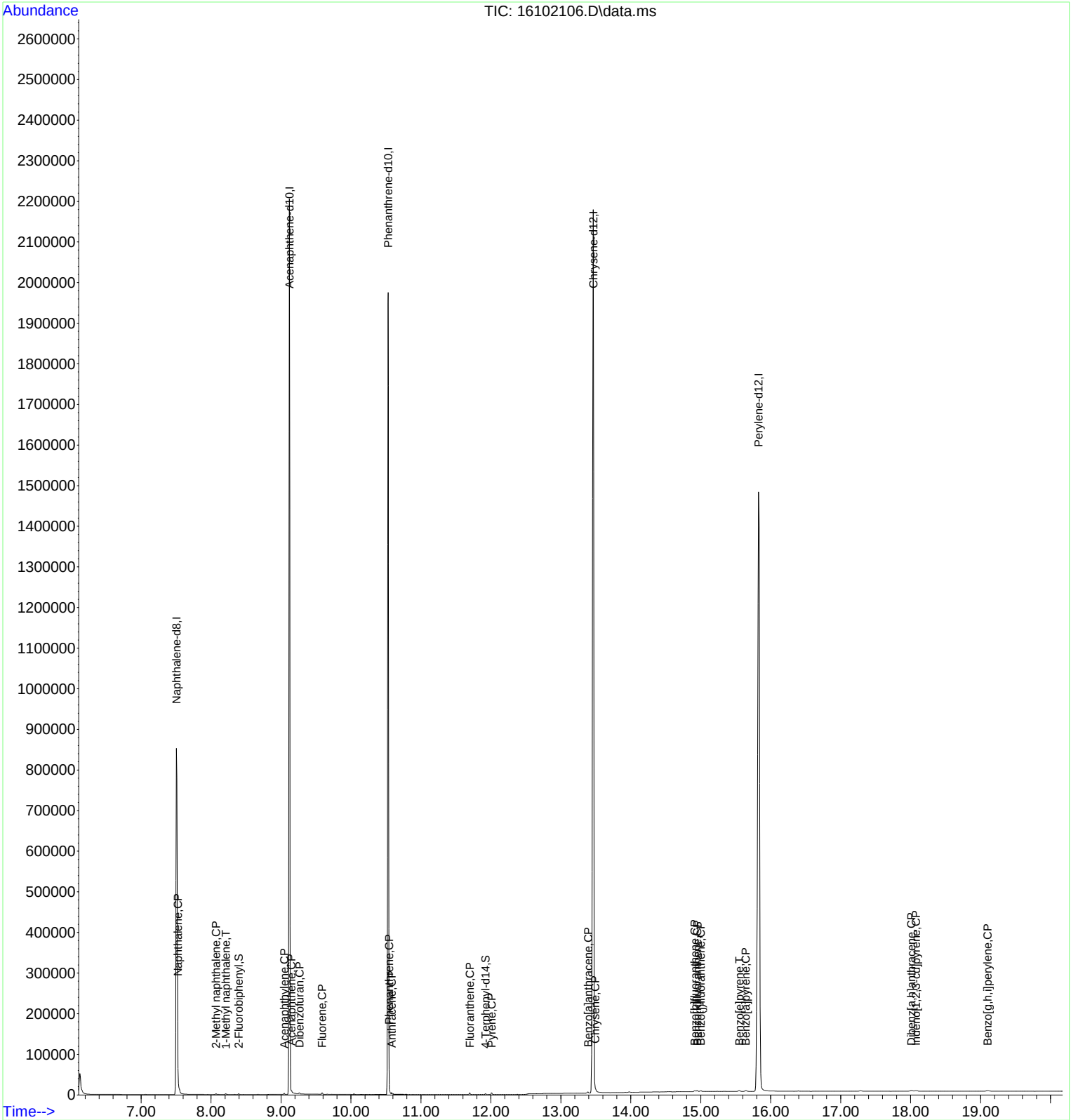
Target Compounds						Qvalue
2) Naphthalene	7.529	128	1153	5.89	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	1054	4.87	ug/kg	94
4) 1-Methyl naphthalene	8.211	142	946	4.84	ug/kg	99
6) Dibenzofuran	9.263	168	1678	5.52	ug/kg	88
8) Acenaphthylene	9.047	152	1865	5.35	ug/kg	97
9) Acenaphthene	9.155	154	1059	5.24	ug/kg	97
10) Fluorene	9.587	166	1404	5.55	ug/kg	95
12) Phenanthrene	10.553	178	2145	6.07	ug/kg	98
13) Anthracene	10.583	178	2146	5.96	ug/kg	96
14) Fluoranthene	11.698	202	2643	6.32	ug/kg	98
15) Pyrene	12.010	202	2821	6.57	ug/kg	99
18) Benzo[a]anthracene	13.389	228	2480	5.72	ug/kg	99
19) Chrysene	13.499	228	2121	5.40	ug/kg	96
21) Benzo[b]fluoranthene	14.920	252	2702	5.56	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	2420	5.51	ug/kg	95
23) Benzo(j)fluoranthene	15.000	252	2356	5.46	ug/kg	95
24) Benzo[e]pyrene	15.550	252	2408	5.53	ug/kg	97
25) Benzo[a]pyrene	15.645	252	2477	5.57	ug/kg	97
26) Dibenz[a,h]anthracene	18.011	278	2454	5.36	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	18.084	276	2393	5.36	ug/kg	98
28) Benzo[g,h,i]perylene	19.102	276	2625	5.56	ug/kg	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102106.D
Acq On : 21 Oct 2016 4:15 pm
Operator :
Sample : CAL1 (5 ppb)
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 15:56:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102107.D
Acq On : 21 Oct 2016 4:43 pm
Operator :
Sample : CAL2 (10 ppb)
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Reprocessed low point.

Quant Time: Nov 01 15:56:47 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

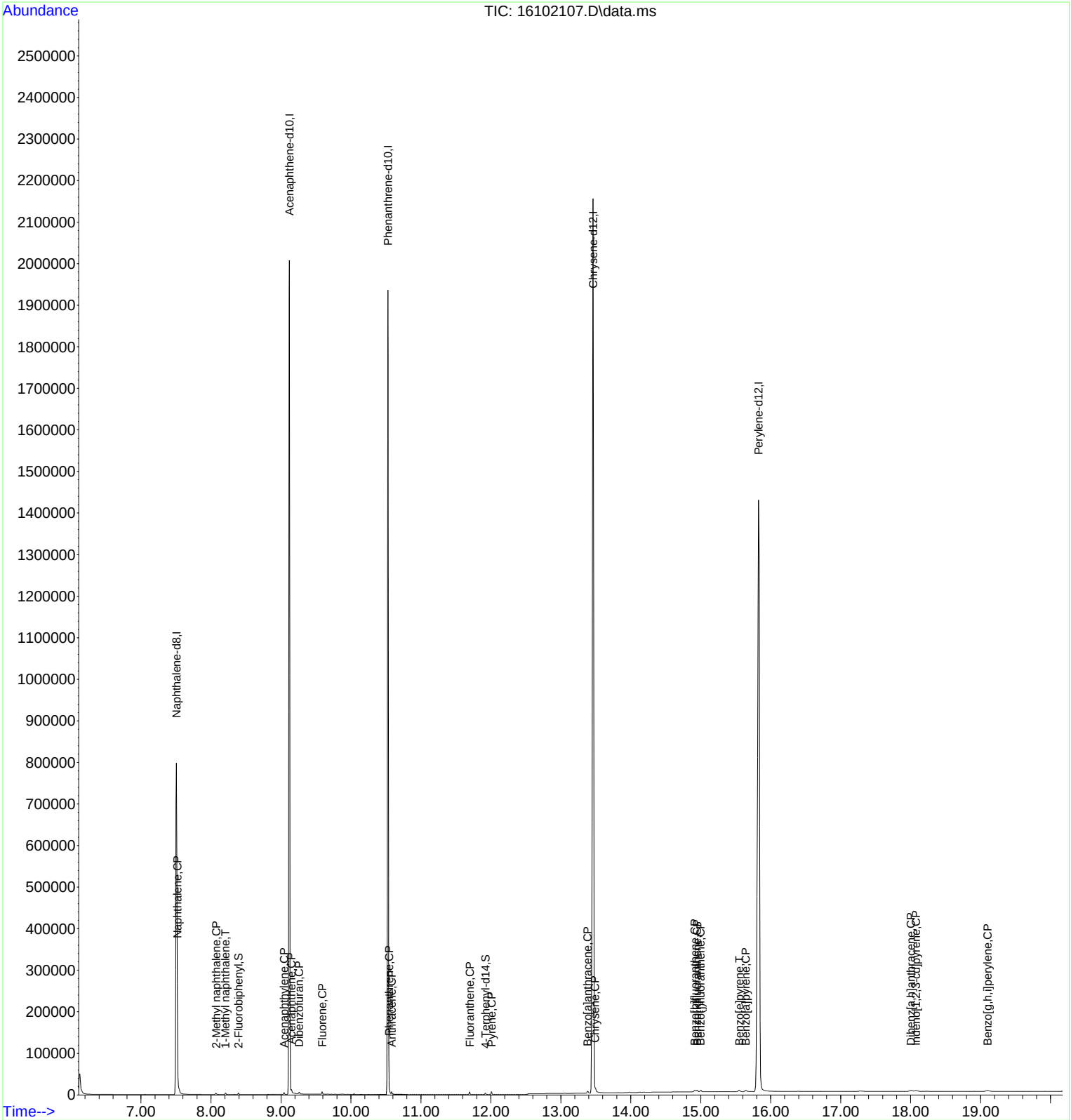
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	937897	4000.00	ug/kg	107
5) Acenaphthene-d10	9.121	164	819436	4000.00	ug/kg	104
11) Phenanthrene-d10	10.530	188	1470089	4000.00	ug/kg	104
17) Chrysene-d12	13.462	240	1782452	4000.00	ug/kg	107
20) Perylene-d12	15.828	264	1849102	4000.00	ug/kg	105
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	2530	9.51	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.24%#			
16) 4-Terphenyl-d14	11.924	244	2796	9.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.25%#			
Target Compounds						Qvalue
2) Naphthalene	7.524	128	1744	9.58	ug/kg	99
3) 2-Methyl naphthalene	8.073	142	1836	9.11	ug/kg	99
4) 1-Methyl naphthalene	8.212	142	1627	8.94	ug/kg	98
6) Dibenzofuran	9.264	168	2845	9.55	ug/kg	96
8) Acenaphthylene	9.043	152	3150	9.22	ug/kg	98
9) Acenaphthene	9.151	154	1857	9.38	ug/kg	99
10) Fluorene	9.588	166	2320	9.36	ug/kg	96
12) Phenanthrene	10.553	178	3433	9.94	ug/kg	98
13) Anthracene	10.580	178	3419	9.72	ug/kg	98
14) Fluoranthene	11.696	202	4133	10.12	ug/kg	97
15) Pyrene	12.008	202	4309	10.28	ug/kg	99
18) Benzo[a]anthracene	13.381	228	4007	9.55	ug/kg	97
19) Chrysene	13.498	228	3641	9.57	ug/kg	98
21) Benzo[b]fluoranthene	14.912	252	4488	9.73	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	3910	9.38	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	3855	9.40	ug/kg	95
24) Benzo[e]pyrene	15.549	252	3974	9.61	ug/kg	97
25) Benzo[a]pyrene	15.644	252	3994	9.45	ug/kg	96
26) Dibenz[a,h]anthracene	18.010	278	4207	9.68	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	18.076	276	4008	9.46	ug/kg	95
28) Benzo[g,h,i]perylene	19.102	276	4221	9.41	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102107.D
Acq On : 21 Oct 2016 4:43 pm
Operator :
Sample : CAL2 (10 ppb)
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 01 15:56:47 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102108.D
Acq On : 21 Oct 2016 5:12 pm
Operator :
Sample : CAL3 (50 ppb)
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 01 15:56:52 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	907873	4000.00	ug/kg	103
5) Acenaphthene-d10	9.120	164	805692	4000.00	ug/kg	102
11) Phenanthrene-d10	10.530	188	1436293	4000.00	ug/kg	102
17) Chrysene-d12	13.462	240	1731298	4000.00	ug/kg	104
20) Perylene-d12	15.828	264	1793721	4000.00	ug/kg	102

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.395	172	13819	52.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.32%#			
16) 4-Terphenyl-d14	11.923	244	14463	52.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.31%#			

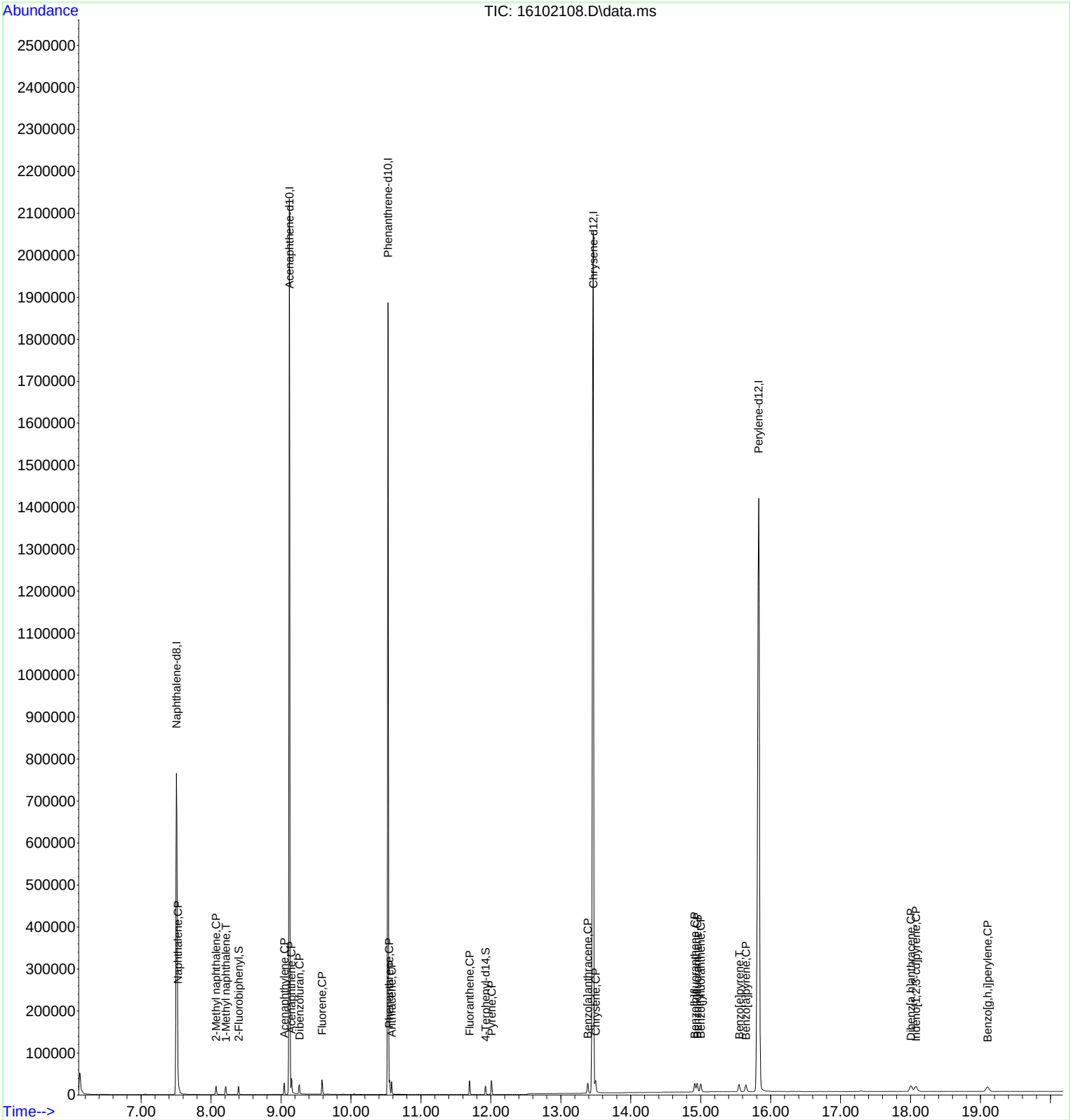
Target Compounds						Qvalue
2) Naphthalene	7.528	128	8818	50.01	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	9924	50.86	ug/kg	97
4) 1-Methyl naphthalene	8.210	142	8968	50.91	ug/kg	98
6) Dibenzofuran	9.263	168	15217	51.97	ug/kg	98
8) Acenaphthylene	9.047	152	17161	51.09	ug/kg	98
9) Acenaphthene	9.150	154	10017	51.48	ug/kg	98
10) Fluorene	9.587	166	12497	51.27	ug/kg	96
12) Phenanthrene	10.553	178	16863	49.98	ug/kg	98
13) Anthracene	10.582	178	17569	51.15	ug/kg	98
14) Fluoranthene	11.695	202	20181	50.59	ug/kg	98
15) Pyrene	12.010	202	20726	50.60	ug/kg	98
18) Benzo[a]anthracene	13.382	228	20559	50.43	ug/kg	98
19) Chrysene	13.499	228	18358	49.67	ug/kg	98
21) Benzo[b]fluoranthene	14.913	252	23556	52.64	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	20200	49.94	ug/kg	99
23) Benzo(j)fluoranthene	15.000	252	20621	51.82	ug/kg	97
24) Benzo[e]pyrene	15.550	252	20694	51.59	ug/kg	96
25) Benzo[a]pyrene	15.645	252	20917	51.04	ug/kg	98
26) Dibenz[a,h]anthracene	18.004	278	20925	49.65	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	18.077	276	20889	50.82	ug/kg	99
28) Benzo[g,h,i]perylene	19.102	276	21809	50.09	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102108.D
Acq On : 21 Oct 2016 5:12 pm
Operator :
Sample : CAL3 (50 ppb)
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 01 15:56:52 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102109.D
Acq On : 21 Oct 2016 5:39 pm
Operator :
Sample : CAL4 (100 ppb)
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 01 15:56:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

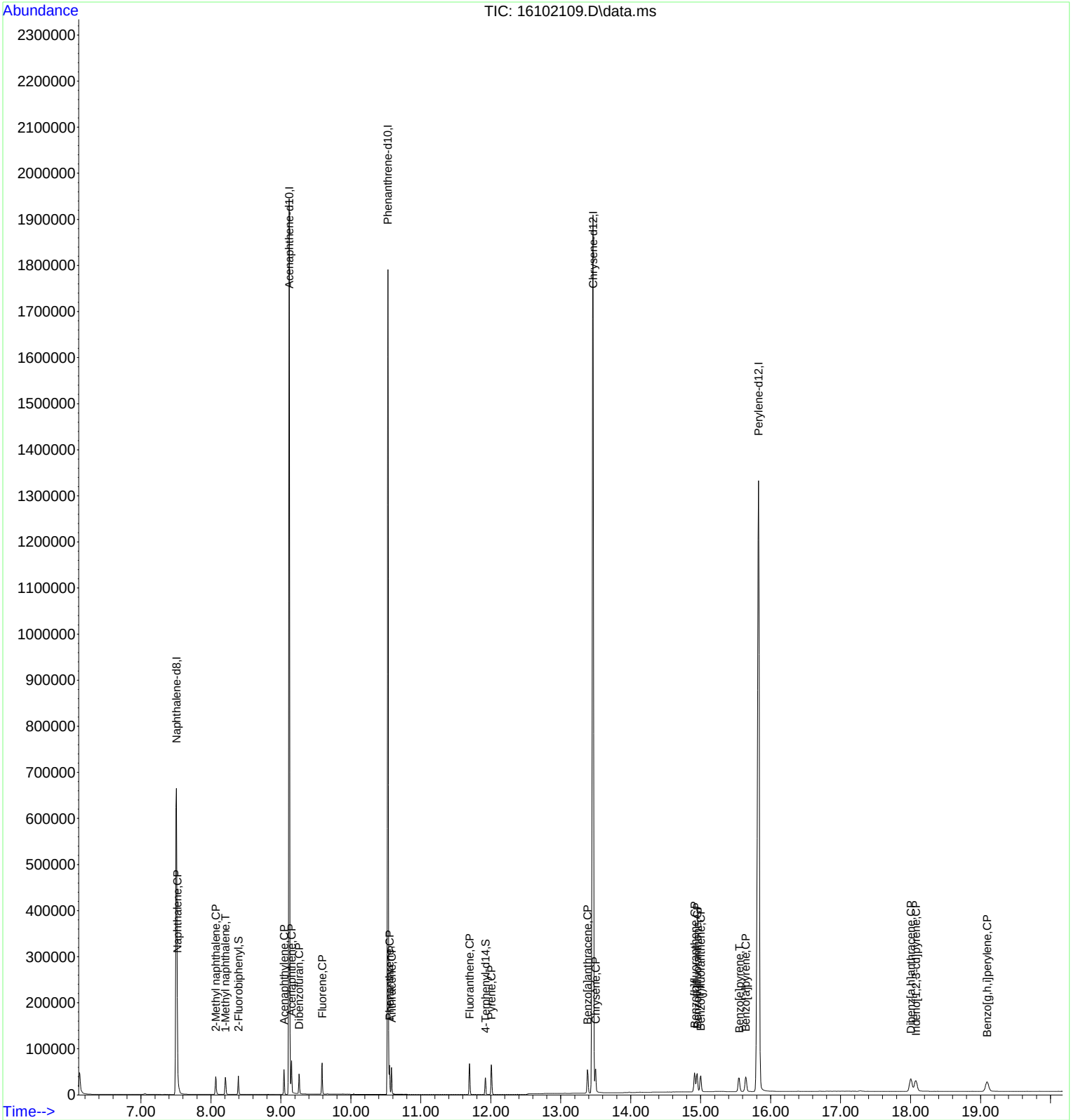
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.507	136	814464	4000.00	ug/kg	93
5) Acenaphthene-d10	9.117	164	764275	4000.00	ug/kg	97
11) Phenanthrene-d10	10.530	188	1364880	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1647563	4000.00	ug/kg	99
20) Perylene-d12	15.828	264	1699180	4000.00	ug/kg	96
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	24578	99.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.48%#			
16) 4-Terphenyl-d14	11.923	244	26128	99.59	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.49%#			
Target Compounds						Qvalue
2) Naphthalene	7.524	128	15623	98.77	ug/kg	99
3) 2-Methyl naphthalene	8.067	142	18767	107.22	ug/kg	92
4) 1-Methyl naphthalene	8.206	142	16967	107.37	ug/kg	92
6) Dibenzofuran	9.259	168	27637	99.49	ug/kg	97
8) Acenaphthylene	9.043	152	33668	105.66	ug/kg	98
9) Acenaphthene	9.151	154	19405	105.13	ug/kg	99
10) Fluorene	9.588	166	24795	107.25	ug/kg	99
12) Phenanthrene	10.551	178	33292	103.83	ug/kg	98
13) Anthracene	10.581	178	34602	106.00	ug/kg	98
14) Fluoranthene	11.695	202	39881	105.20	ug/kg	98
15) Pyrene	12.007	202	40645	104.43	ug/kg	99
18) Benzo[a]anthracene	13.381	228	40694	104.89	ug/kg	98
19) Chrysene	13.499	228	37157	105.64	ug/kg	98
21) Benzo[b]fluoranthene	14.912	252	42476	100.19	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	42502	110.91	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	37964	100.72	ug/kg	99
24) Benzo[e]pyrene	15.550	252	36769	96.76	ug/kg	95
25) Benzo[a]pyrene	15.645	252	41057	105.75	ug/kg	98
26) Dibenz[a,h]anthracene	18.003	278	41537	104.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.077	276	40950	105.16	ug/kg	99
28) Benzo[g,h,i]perylene	19.095	276	43273	104.93	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102109.D
Acq On : 21 Oct 2016 5:39 pm
Operator :
Sample : CAL4 (100 ppb)
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 01 15:56:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102110.D
Acq On : 21 Oct 2016 6:08 pm
Operator :
Sample : CAL5 (500 ppb)
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 01 15:56:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

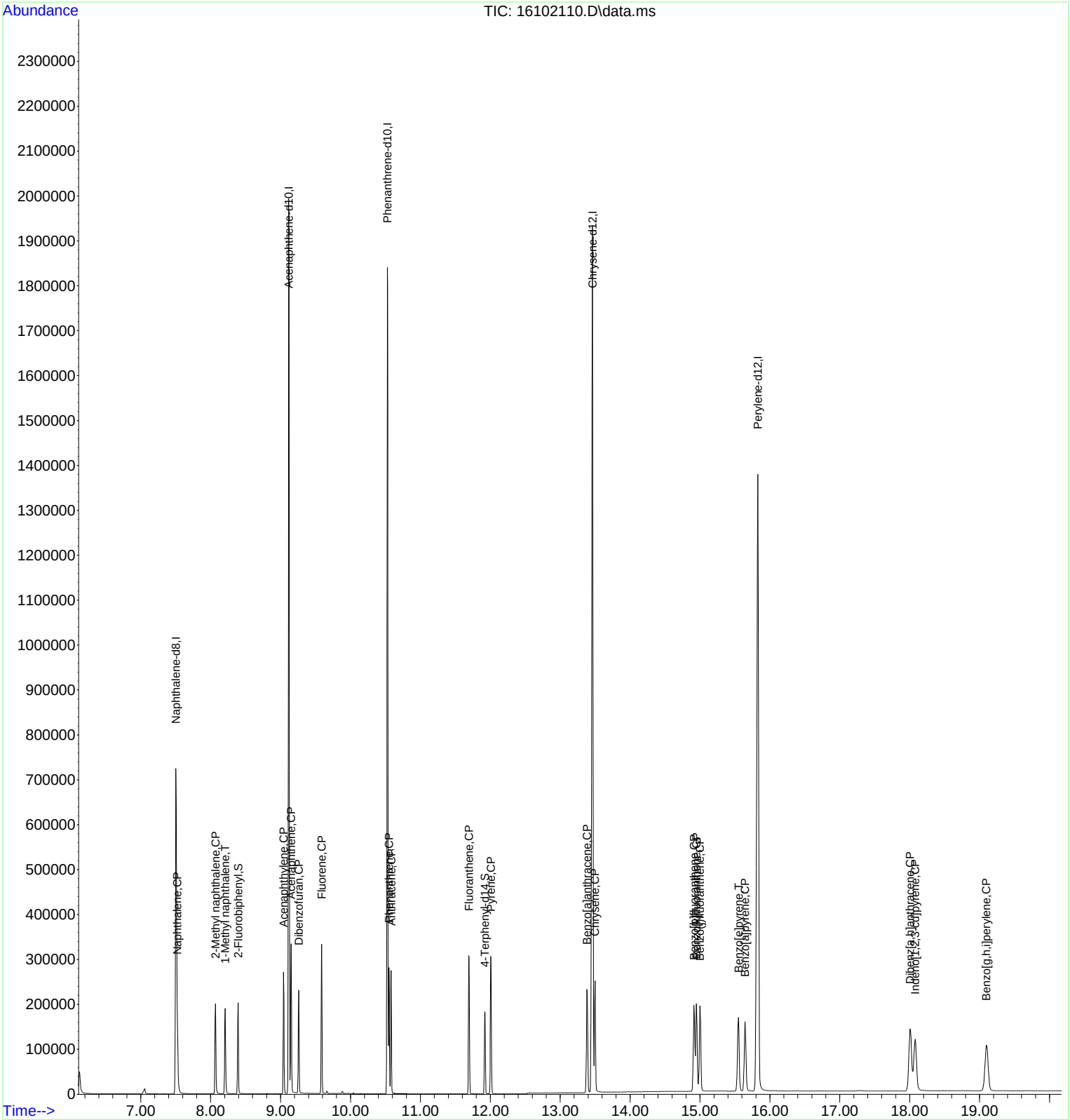
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.502	136	831350	4000.00	ug/kg	94
5) Acenaphthene-d10	9.117	164	772407	4000.00	ug/kg	98
11) Phenanthrene-d10	10.528	188	1391715	4000.00	ug/kg	99
17) Chrysene-d12	13.462	240	1670934	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1723109	4000.00	ug/kg	98
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.392	172	130253	519.18	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.98%#			
16) 4-Terphenyl-d14	11.924	244	136074	508.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.72%#			
Target Compounds						Qvalue
2) Naphthalene	7.525	128	79455	492.14	ug/kg	100
3) 2-Methyl naphthalene	8.069	142	94443	528.61	ug/kg	98
4) 1-Methyl naphthalene	8.207	142	85655	531.03	ug/kg	99
6) Dibenzofuran	9.259	168	144637	515.22	ug/kg	98
8) Acenaphthylene	9.043	152	165894	515.15	ug/kg	99
9) Acenaphthene	9.151	154	94522	506.68	ug/kg	99
10) Fluorene	9.588	166	119914	513.20	ug/kg	99
12) Phenanthrene	10.551	178	161199	493.04	ug/kg	99
13) Anthracene	10.581	178	165075	495.95	ug/kg	98
14) Fluoranthene	11.693	202	188351	487.27	ug/kg	98
15) Pyrene	12.008	202	189435	477.33	ug/kg	99
18) Benzo[a]anthracene	13.381	228	196787	500.12	ug/kg	98
19) Chrysene	13.498	228	183185	513.51	ug/kg	99
21) Benzo[b]fluoranthene	14.912	252	221293	514.74	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	189752	488.31	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	193224	505.51	ug/kg	97
24) Benzo[e]pyrene	15.549	252	196240	509.25	ug/kg	96
25) Benzo[a]pyrene	15.645	252	196298	498.57	ug/kg	98
26) Dibenz[a,h]anthracene	18.011	278	202882	501.08	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.077	276	198214	501.94	ug/kg	97
28) Benzo[g,h,i]perylene	19.102	276	209116	500.01	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102110.D
Acq On : 21 Oct 2016 6:08 pm
Operator :
Sample : CAL5 (500 ppb)
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 01 15:56:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102111.D
Acq On : 21 Oct 2016 6:36 pm
Operator :
Sample : CAL6 (1000 ppb)
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 01 15:57:01 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	901614	4000.00	ug/kg	102
5) Acenaphthene-d10	9.116	164	794582	4000.00	ug/kg	100
11) Phenanthrene-d10	10.530	188	1399389	4000.00	ug/kg	99
17) Chrysene-d12	13.461	240	1692646	4000.00	ug/kg	101
20) Perylene-d12	15.827	264	1757120	4000.00	ug/kg	100

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.390	172	259542	1005.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 25.14%#			
16) 4-Terphenyl-d14	11.923	244	269949	1003.58	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 25.09%#			

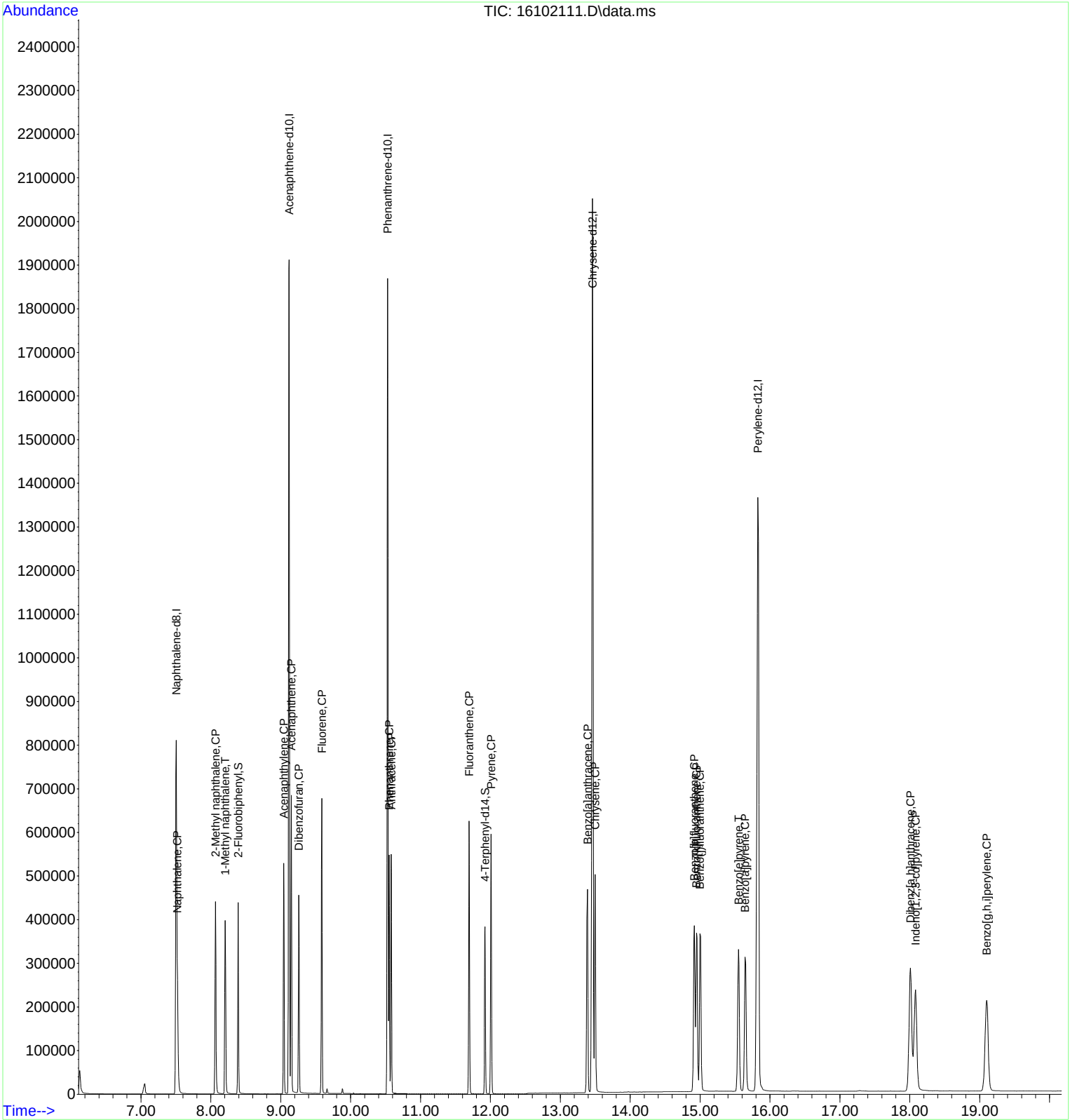
Target Compounds						Qvalue
2) Naphthalene	7.523	128	170246	972.31	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	197841	1021.05	ug/kg	95
4) 1-Methyl naphthalene	8.205	142	178787	1022.03	ug/kg	94
6) Dibenzofuran	9.258	168	288201	997.96	ug/kg	99
8) Acenaphthylene	9.042	152	332310	1003.12	ug/kg	99
9) Acenaphthene	9.150	154	191204	996.34	ug/kg	100
10) Fluorene	9.587	166	236963	985.84	ug/kg	99
12) Phenanthrene	10.551	178	319436	971.65	ug/kg	99
13) Anthracene	10.580	178	325965	973.95	ug/kg	99
14) Fluoranthene	11.695	202	369240	950.00	ug/kg	99
15) Pyrene	12.010	202	373880	936.92	ug/kg	99
18) Benzo[a]anthracene	13.387	228	390743	980.32	ug/kg	99
19) Chrysene	13.497	228	359880	995.88	ug/kg	99
21) Benzo[b]fluoranthene	14.918	252	429468	979.64	ug/kg	99
22) Benzo[k]fluoranthene	14.948	252	390453	985.34	ug/kg	96
23) Benzo(j)fluoranthene	15.006	252	392179	1006.16	ug/kg	98
24) Benzo[e]pyrene	15.548	252	392031	997.64	ug/kg	99
25) Benzo[a]pyrene	15.643	252	392501	977.60	ug/kg	97
26) Dibenz[a,h]anthracene	18.009	278	406240	983.91	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.083	276	399385	991.79	ug/kg	99
28) Benzo[g,h,i]perylene	19.101	276	416758	977.21	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102111.D
Acq On : 21 Oct 2016 6:36 pm
Operator :
Sample : CAL6 (1000 ppb)
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 01 15:57:01 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.501	136	880262	4000.00	ug/kg	100
5) Acenaphthene-d10	9.120	164	791347	4000.00	ug/kg	100
11) Phenanthrene-d10	10.527	188	1411842	4000.00	ug/kg	100
17) Chrysene-d12	13.462	240	1671788	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1761772	4000.00	ug/kg	100

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	505850	1968.02	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.20%			
16) 4-Terphenyl-d14	11.923	244	513510	1892.21	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 47.31%			

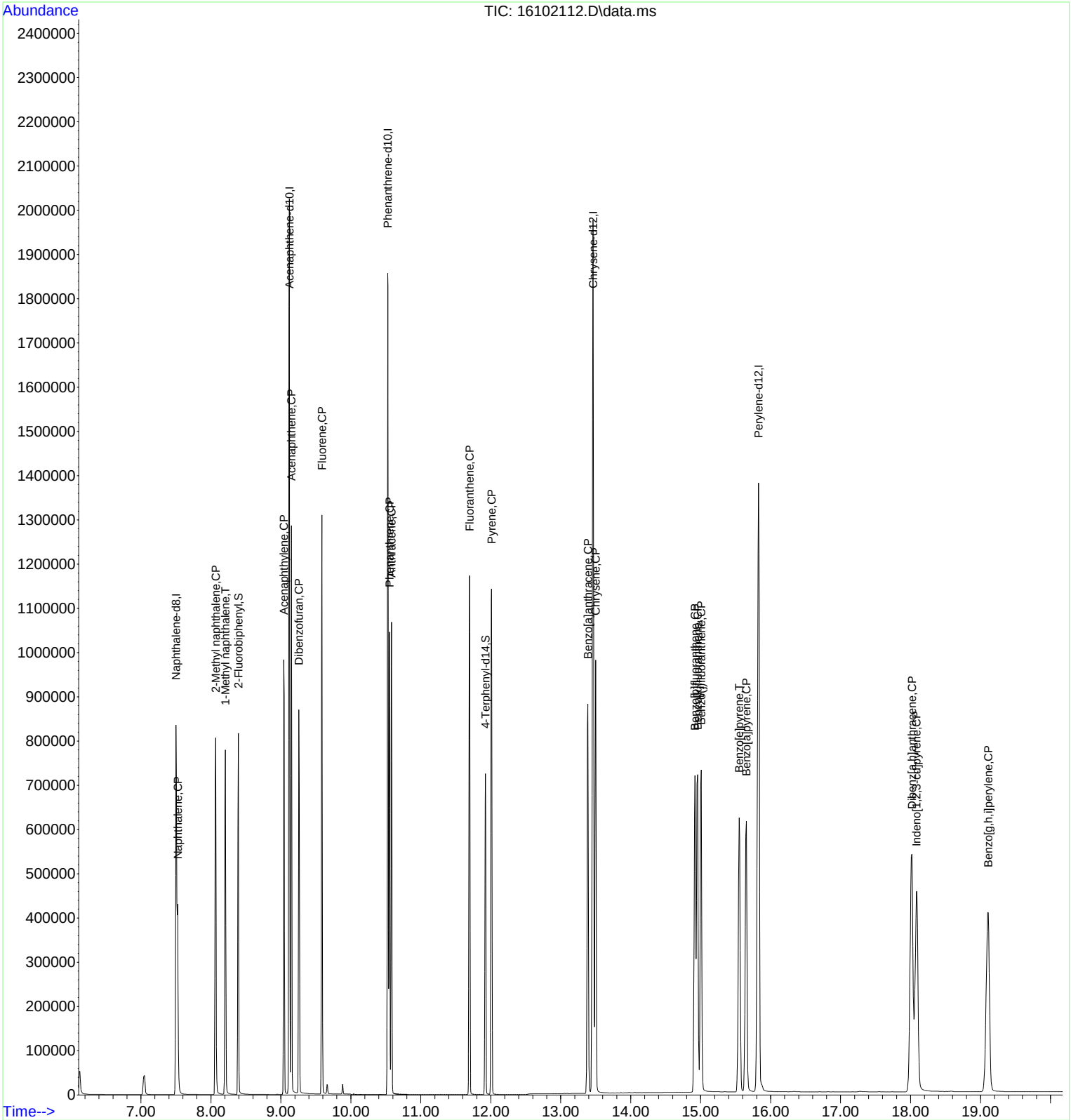
Target Compounds						Qvalue
2) Naphthalene	7.524	128	330707	1934.55	ug/kg	100
3) 2-Methyl naphthalene	8.068	142	384466	2032.34	ug/kg	100
4) 1-Methyl naphthalene	8.206	142	349288	2045.12	ug/kg	100
6) Dibenzofuran	9.258	168	555424	1931.14	ug/kg	100
8) Acenaphthylene	9.041	152	641652	1944.82	ug/kg	100
9) Acenaphthene	9.149	154	376319	1968.97	ug/kg	100
10) Fluorene	9.587	166	453958	1896.32	ug/kg	100
12) Phenanthrene	10.553	178	615418	1855.46	ug/kg	100
13) Anthracene	10.580	178	624605	1849.80	ug/kg	100
14) Fluoranthene	11.695	202	710697	1812.38	ug/kg	100
15) Pyrene	12.010	202	716680	1780.12	ug/kg	100
18) Benzo[a]anthracene	13.388	228	757231	1923.48	ug/kg	100
19) Chrysene	13.498	228	704842	1974.82	ug/kg	100
21) Benzo[b]fluoranthene	14.919	252	826991	1881.43	ug/kg	100
22) Benzo[k]fluoranthene	14.956	252	764441	1924.04	ug/kg	100
23) Benzo(j)fluoranthene	15.007	252	758348	1940.45	ug/kg	100
24) Benzo[e]pyrene	15.549	252	767440	1947.82	ug/kg	100
25) Benzo[a]pyrene	15.652	252	770646	1914.38	ug/kg	100
26) Dibenz[a,h]anthracene	18.018	278	805016	1944.59	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.091	276	781589	1935.80	ug/kg	100
28) Benzo[g,h,i]perylene	19.109	276	829323	1939.46	ug/kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

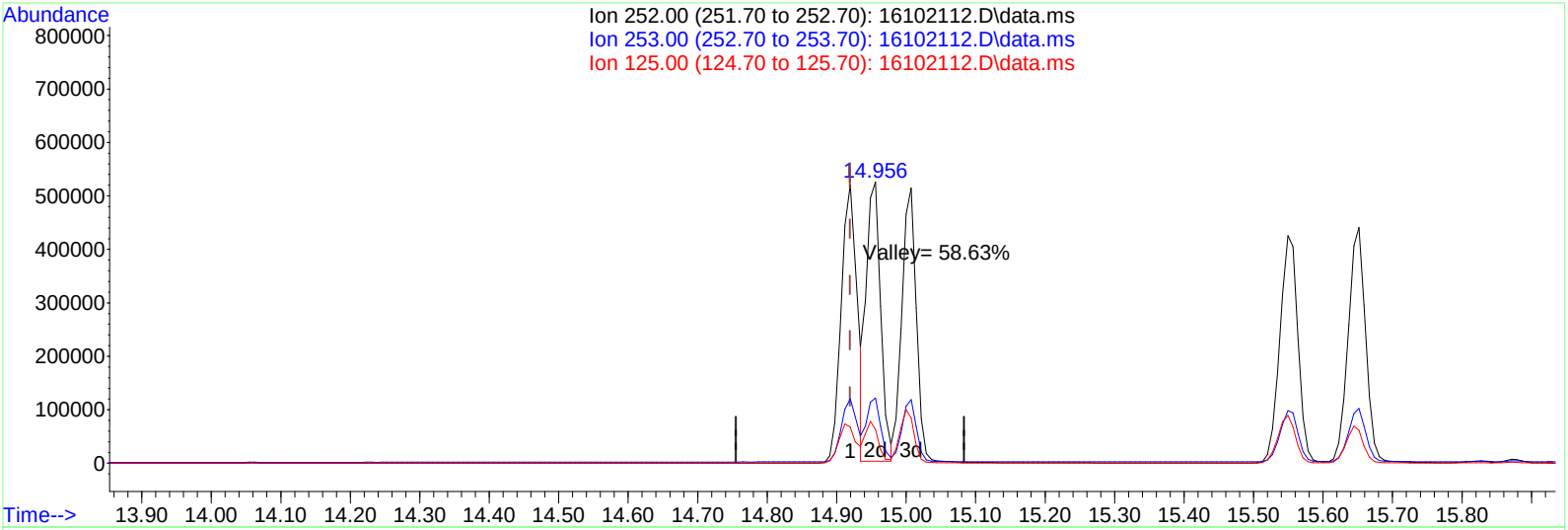
Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

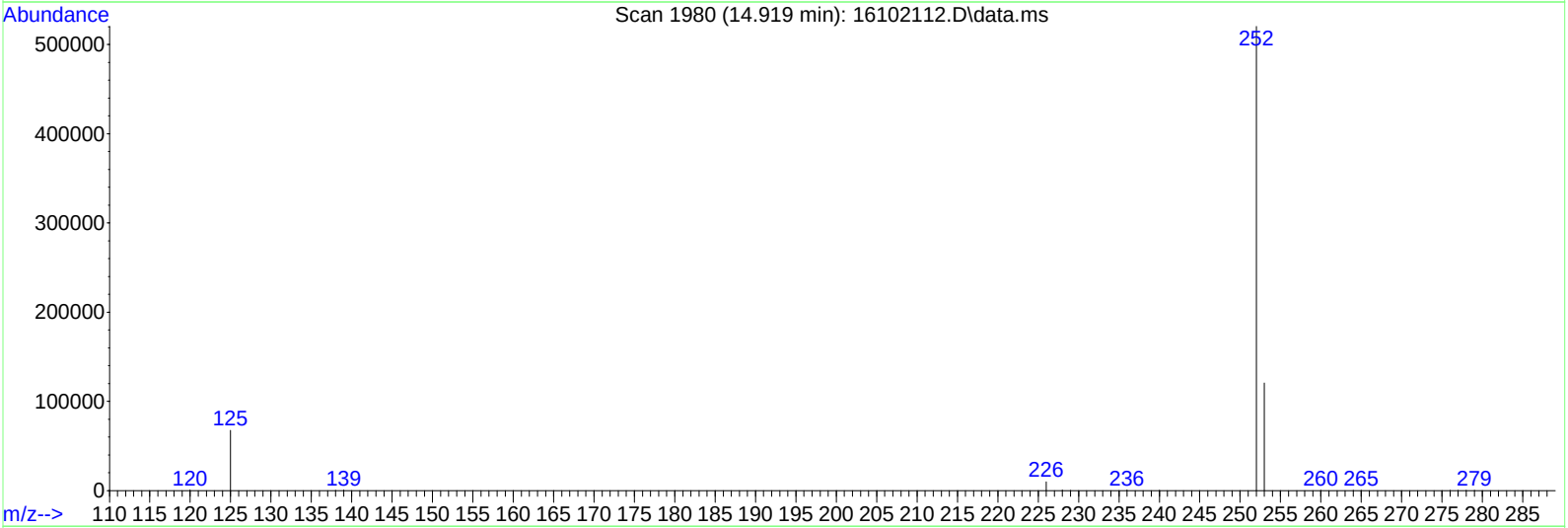


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration





TIC: 16102112.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.919min (0.000) 1881.43ug/kg

response 826991

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.68
125.00	12.90	12.93
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102113.D
Acq On : 21 Oct 2016 7:33 pm
Operator :
Sample : CAL8 (5000 ppb)
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 01 15:57:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	918505	4000.00	ug/kg	104
5) Acenaphthene-d10	9.120	164	761139	4000.00	ug/kg	96
11) Phenanthrene-d10	10.530	188	1363680	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1617869	4000.00	ug/kg	97
20) Perylene-d12	15.828	264	1675682	4000.00	ug/kg	95

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.389	172	1148781	4646.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 116.17%			
16) 4-Terphenyl-d14	11.925	244	1142675	4359.30	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 108.98%			

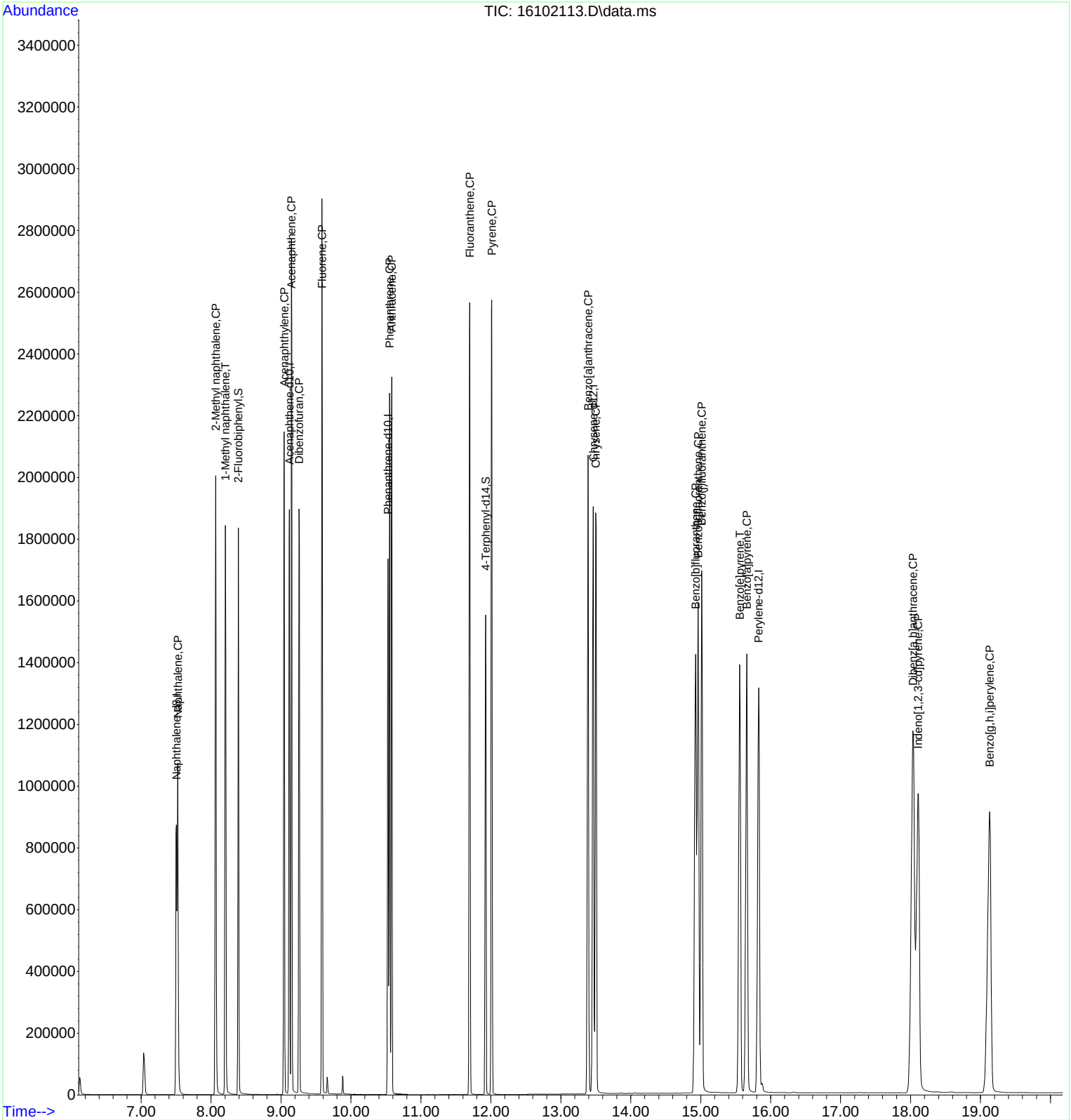
Target Compounds						Qvalue
2) Naphthalene	7.522	128	849321	4761.45	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	919664	4659.07	ug/kg	95
4) 1-Methyl naphthalene	8.204	142	837317	4698.46	ug/kg	93
6) Dibenzofuran	9.263	168	1261471	4560.05	ug/kg	97
8) Acenaphthylene	9.047	152	1465458	4618.04	ug/kg	99
9) Acenaphthene	9.150	154	861859	4688.38	ug/kg	99
10) Fluorene	9.587	166	1030857	4477.11	ug/kg	98
12) Phenanthrene	10.553	178	1393061	4348.35	ug/kg	97
13) Anthracene	10.582	178	1405259	4308.73	ug/kg	97
14) Fluoranthene	11.698	202	1569940	4144.98	ug/kg	97
15) Pyrene	12.013	202	1593940	4098.92	ug/kg	97
18) Benzo[a]anthracene	13.389	228	1717232	4507.40	ug/kg	97
19) Chrysene	13.499	228	1561030	4519.44	ug/kg	97
21) Benzo[b]fluoranthene	14.927	252	1902600	4550.84	ug/kg	97
22) Benzo[k]fluoranthene	14.964	252	1753695	4640.69	ug/kg	96
23) Benzo(j)fluoranthene	15.015	252	1743381	4690.11	ug/kg	95
24) Benzo[e]pyrene	15.557	252	1767858	4717.48	ug/kg	98
25) Benzo[a]pyrene	15.660	252	1782235	4654.76	ug/kg	97
26) Dibenz[a,h]anthracene	18.040	278	1904385	4836.56	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.114	276	1824269	4750.38	ug/kg	98
28) Benzo[g,h,i]perylene	19.132	276	1932569	4751.72	ug/kg	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102113.D
Acq On : 21 Oct 2016 7:33 pm
Operator :
Sample : CAL8 (5000 ppb)
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 01 15:57:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102114.D
Acq On : 21 Oct 2016 8:01 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 11 Sample Multiplier: 1

sscv for dibenzofuran & benzo (j) fluoranthene

Quant Time: Nov 01 15:57:10 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	1563492	4000.00	ug/kg	178
5) Acenaphthene-d10	9.117	164	794379	4000.00	ug/kg	100
11) Phenanthrene-d10	10.527	188	1388007	4000.00	ug/kg	98
17) Chrysene-d12	13.462	240	1693163	4000.00	ug/kg	101
20) Perylene-d12	15.828	264	1752733	4000.00	ug/kg	99

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	1298360	5032.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 125.80%			
16) 4-Terphenyl-d14	11.924	244	1298161	4865.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 121.64%			

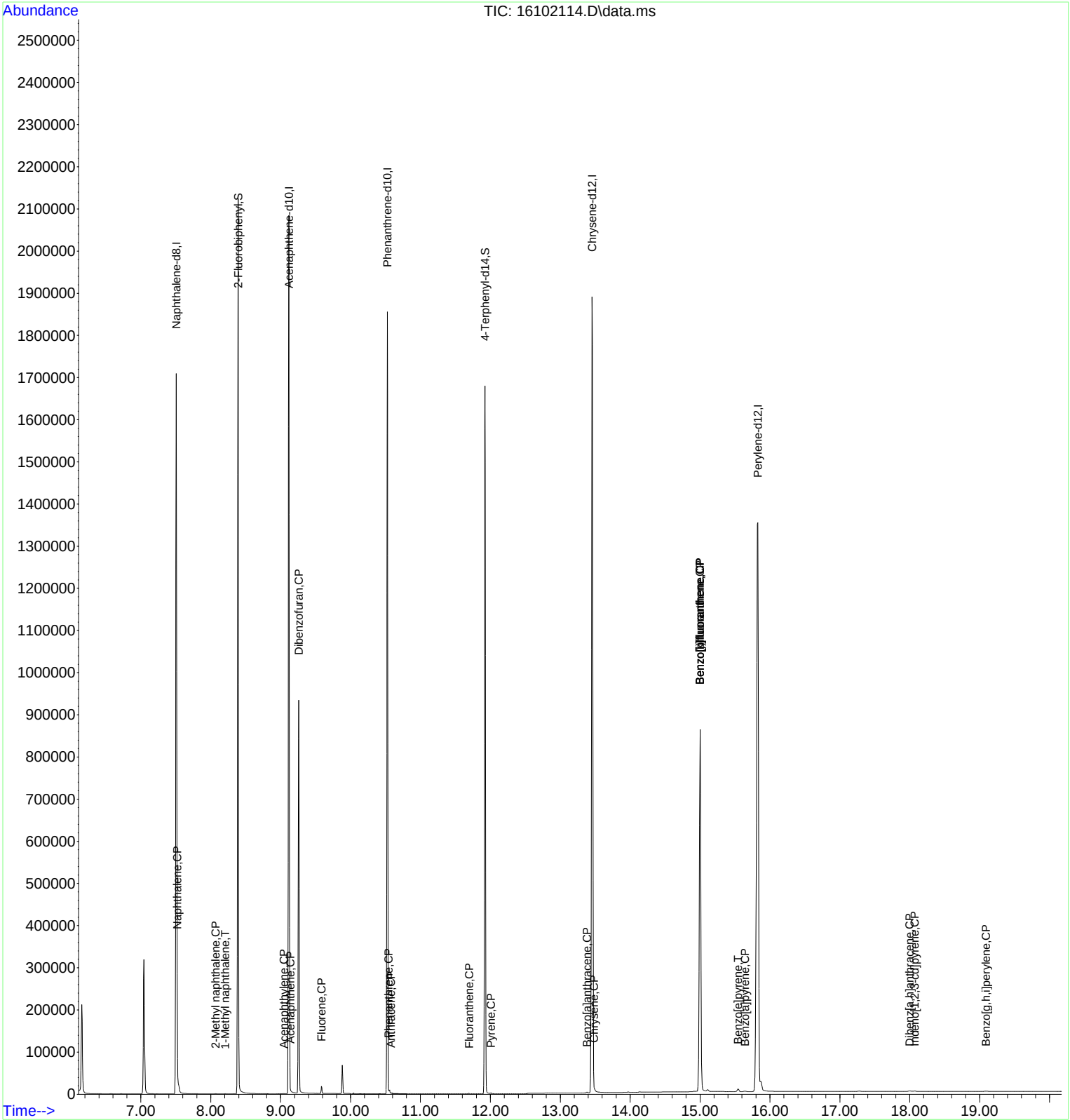
Target Compounds						Qvalue
2) Naphthalene	7.524	128	965	3.18	ug/kg#	1
3) 2-Methyl naphthalene	8.067	142	275	0.82	ug/kg	89
4) 1-Methyl naphthalene	8.206	142	169	0.56	ug/kg	93
6) Dibenzofuran	9.259	168	624874	2164.32	ug/kg	100
8) Acenaphthylene	9.043	152	414	1.25	ug/kg	95
9) Acenaphthene	9.146	154	322	1.68	ug/kg	97
10) Fluorene	9.583	166	6246	25.99	ug/kg	97
12) Phenanthrene	10.550	178	812	2.49	ug/kg	96
13) Anthracene	10.578	178	818	2.46	ug/kg	95
14) Fluoranthene	11.694	202	919	2.38	ug/kg	98
15) Pyrene	12.006	202	1080	2.73	ug/kg	98
18) Benzo[a]anthracene	13.381	228	1421	3.56	ug/kg	98
19) Chrysene	13.491	228	1285	3.55	ug/kg	98
21) Benzo[b]fluoranthene	15.000	252	903024	2065.00	ug/kg	94
22) Benzo[k]fluoranthene	15.000	252	905438	2290.67	ug/kg	93
23) Benzo(j)fluoranthene	15.000	252	905438	2328.76	ug/kg	97
24) Benzo[e]pyrene	15.542	252	7069	18.03	ug/kg	97
25) Benzo[a]pyrene	15.645	252	1594	3.98	ug/kg	91
26) Dibenz[a,h]anthracene	17.996	278	1752	4.25	ug/kg	90
27) Indeno[1,2,3-cd]pyrene	18.069	276	1462	3.64	ug/kg	98
28) Benzo[g,h,i]perylene	19.088	276	1627	3.82	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102114.D
Acq On : 21 Oct 2016 8:01 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 01 15:57:10 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102115.D
Acq On : 21 Oct 2016 8:30 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 01 15:57:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

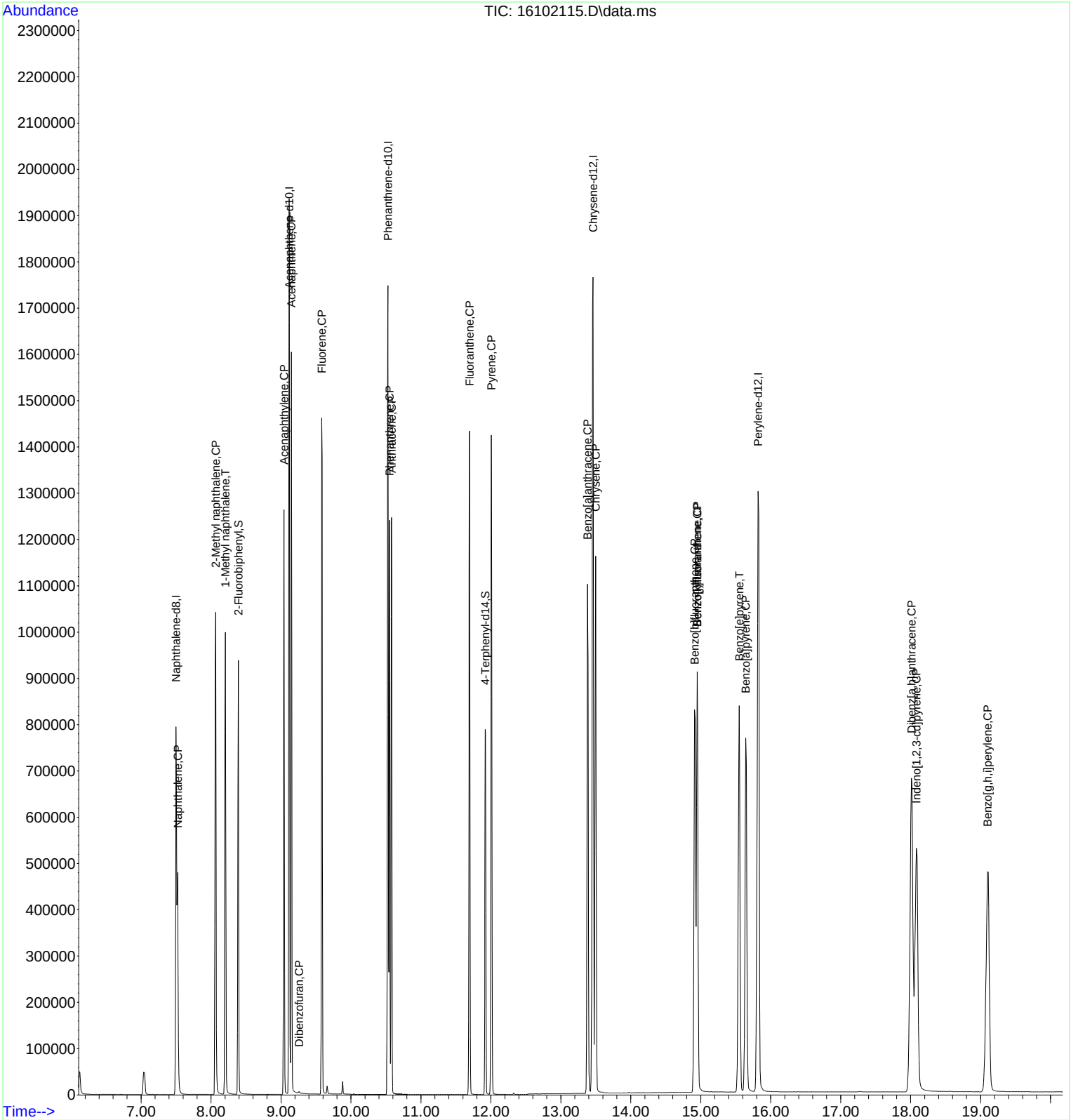
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.500	136	807543	4000.00	ug/kg	92
5) Acenaphthene-d10	9.116	164	750573	4000.00	ug/kg	95
11) Phenanthrene-d10	10.528	188	1351727	4000.00	ug/kg	96
17) Chrysene-d12	13.462	240	1612314	4000.00	ug/kg	96
20) Perylene-d12	15.820	264	1670522	4000.00	ug/kg	95
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.390	172	573032	2350.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 58.76%			
16) 4-Terphenyl-d14	11.923	244	585065	2251.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 56.29%			
Target Compounds						Qvalue
2) Naphthalene	7.523	128	388136	2474.96	ug/kg	100
3) 2-Methyl naphthalene	8.066	142	503626	2901.97	ug/kg	99
4) 1-Methyl naphthalene	8.205	142	443047	2827.68	ug/kg	99
6) Dibenzofuran	9.258	168	2021	7.41	ug/kg	98
8) Acenaphthylene	9.042	152	769105	2457.77	ug/kg	99
9) Acenaphthene	9.150	154	467331	2578.00	ug/kg	98
10) Fluorene	9.582	166	555684	2447.36	ug/kg	98
12) Phenanthrene	10.551	178	745409	2347.32	ug/kg	99
13) Anthracene	10.580	178	744165	2301.90	ug/kg	100
14) Fluoranthene	11.695	202	870665	2319.07	ug/kg	99
15) Pyrene	12.007	202	882139	2288.54	ug/kg	99
18) Benzo[a]anthracene	13.381	228	918996	2420.50	ug/kg	98
19) Chrysene	13.498	228	851866	2474.79	ug/kg	99
21) Benzo[b]fluoranthene	14.912	252	1042059	2500.21	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	879521	2334.61	ug/kg	97
23) Benzo(j)fluoranthene	14.949	252	882686	2381.97	ug/kg	99
24) Benzo[e]pyrene	15.549	252	1010441	2704.66	ug/kg	99
25) Benzo[a]pyrene	15.645	252	953973	2499.24	ug/kg	98
26) Dibenz[a,h]anthracene	18.018	278	1001809	2552.15	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.084	276	926742	2420.68	ug/kg	97
28) Benzo[g,h,i]perylene	19.109	276	967677	2386.63	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102115.D
Acq On : 21 Oct 2016 8:30 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 01 15:57:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



ICP-MS3
For

DHL Work Order
1611044

ICP-MS3_161116A
For

DHL Work Order
1611044

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS3_161116A SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			X
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			
P/A Factor	Before ICAL	Increasing trend	X			X
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			X
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X			
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125/80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			X
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted	X			
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: Cara Van Dyke Date of Completion: 11/16/2016

Second-Level Review: Angie O'Donnell Date Stamp: 11/18/2016

DHL Analytical, Inc.

Run ID: **ICP-MS3_161116A** **Run No.:** 89004

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS3

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TW	CAL	R89004	11/15/2016 11:08:00 AM		
L2-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:14:00 AM		
L-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:20:00 AM		
10X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:26:00 AM		
5X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:32:00 AM		
2X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:38:00 AM		
H-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:44:00 AM		
H2-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:50:00 AM		
ICSA-161115	1	ICPMS_TW	ICSA	R89004	11/15/2016 12:13:00 PM		
ICSAB-161115	1	ICPMS_TW	ICSB	R89004	11/15/2016 12:19:00 PM		
ICV1-161115	1	ICPMS_TW	ICV	R89004	11/15/2016 12:37:00 PM		
ICB1-161115	1	ICPMS_TW	ICB	R89004	11/15/2016 12:43:00 PM		
ILCVL-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 1:17:00 PM		
MB-77899	1	ICPMS_DW	MBLK	77899	11/15/2016 1:29:00 PM		
FB-77899	1	ICPMS_DW	MBLK	77899	11/15/2016 1:35:00 PM		
LCS-77899	1	ICPMS_DW	LCS	77899	11/15/2016 1:41:00 PM		
LCSD-77899	1	ICPMS_DW	LCSD	77899	11/15/2016 1:47:00 PM		
1611118-02E	1	ICPMS_DW	SAMP	77899	11/15/2016 1:59:00 PM		
1611118-02E SD	5	ICPMS_DW	SD	77899	11/15/2016 2:05:00 PM		
1611095-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:11:00 PM		
1611095-02E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:17:00 PM		
1611095-03E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:23:00 PM		
1611095-04E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:29:00 PM		
1611095-05E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:35:00 PM		
1611095-06E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:47:00 PM		
1611095-07E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:53:00 PM		
1611095-08E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:59:00 PM		
1611095-09E	1	ICPMS_DW	SAMP	77899	11/15/2016 3:05:00 PM		
1611118-02E PDS	1	ICPMS_DW	PDS	77899	11/15/2016 3:11:00 PM		
1611118-02E MS	1	ICPMS_DW	MS	77899	11/15/2016 3:17:00 PM		

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

1611118-02E MSD	1	ICPMS_DW	MSD	77899	11/15/2016 3:23:00 PM		
CCV1-161115	1	ICPMS_TW	CCV	R89004	11/15/2016 5:06:00 PM		
CCB1-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 5:12:00 PM		
LCVL1-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 5:18:00 PM		
1611118-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:25:00 PM		
1611118-03E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:31:00 PM		
1611118-04E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:37:00 PM		
1611118-05E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:43:00 PM		
1611118-06E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:49:00 PM		
1611118-07E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:55:00 PM		
1611118-10E	1	ICPMS_DW	SAMP	77899	11/15/2016 6:01:00 PM		
1611095-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 6:08:00 PM		
1611118-02E	5	ICPMS_DW	SAMP	77899	11/15/2016 6:14:00 PM		
1611118-02E SD	25	ICPMS_DW	SD	77899	11/15/2016 6:20:00 PM		
1611118-02E PDS	5	ICPMS_DW	PDS	77899	11/15/2016 6:26:00 PM		
CCV2-16115	1	ICPMS_TW	CCV	R89004	11/15/2016 6:32:00 PM		
CCB2-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 6:44:00 PM		
LCVL2-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 6:50:00 PM		
MB-77925	1	ICPMS_TW	MBLK	77925	11/15/2016 6:56:00 PM		
LCS-77925	1	ICPMS_TW	LCS	77925	11/15/2016 7:02:00 PM		
LCSD-77925	1	ICPMS_TW	LCSD	77925	11/15/2016 7:08:00 PM		
1611120-01A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:20:00 PM		
1611120-01A SD	5	ICPMS_TW	SD	77925	11/15/2016 7:26:00 PM		
1611120-02A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:32:00 PM		
1611120-03A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:39:00 PM		
1611120-04A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:45:00 PM		
1611120-05A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:51:00 PM		
1611120-06A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:57:00 PM		
1611120-07A	1	ICPMS_TW	SAMP	77925	11/15/2016 8:03:00 PM		
1611120-01A PDS	1	ICPMS_TW	PDS	77925	11/15/2016 8:09:00 PM		
CCV3-161115	1	ICPMS_TW	CCV	R89004	11/15/2016 8:15:00 PM		
LCVL3-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 8:27:00 PM		
CCB3-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 8:33:00 PM		

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS3

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:40:00 AM		
L2-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:46:00 AM		
L-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:52:00 AM		
10X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:58:00 AM		
5X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:04:00 AM		
2X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:10:00 AM		
H-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:16:00 AM		
H2-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:22:00 AM		
ICSA-161116	1	ICPMS_TWDOD	ICSA	R89004	11/16/2016 11:46:00 AM		
ICSAB-161116	1	ICPMS_TWDOD	ICSB	R89004	11/16/2016 11:52:00 AM		
ICV1-161116	1	ICPMS_TWDOD	ICV	R89004	11/16/2016 12:10:00 PM		
ILCVL-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 12:22:00 PM		
ICB1-161116	1	ICPMS_TWDOD	ICB	R89004	11/16/2016 12:28:00 PM		
CCV1-161116	1	ICPMS_TWDOD	CCV	R89004	11/16/2016 1:35:00 PM		
CCB1-161116	1	ICPMS_TWDOD	CCB	R89004	11/16/2016 1:41:00 PM		
LCVL1-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 1:47:00 PM		
MB-77913	1	ICPMS_TWDOD	MBLK	77913	11/16/2016 1:53:00 PM		
LCS-77913	1	ICPMS_TWDOD	LCS	77913	11/16/2016 1:59:00 PM		
LCSD-77913	1	ICPMS_TWDOD	LCSD	77913	11/16/2016 2:05:00 PM		
1611028-26A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:17:00 PM		
1611028-26A SD	5	ICPMS_TWDOD	SD	77913	11/16/2016 2:24:00 PM		
1611022-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:30:00 PM		
1611022-26A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:36:00 PM		
1611028-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:42:00 PM		
1611044-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:48:00 PM		
1611053-42A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:54:00 PM		
1611071-36A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 3:00:00 PM		
1611028-26A PDS	1	ICPMS_TWDOD	PDS	77913	11/16/2016 3:06:00 PM		
1611028-26A MS	1	ICPMS_TWDOD	MS	77913	11/16/2016 3:12:00 PM		
1611028-26A MSD	1	ICPMS_TWDOD	MSD	77913	11/16/2016 3:18:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICSA-160908	ICS-A Solution (Interference Che		12/27/2016
MET-ICSAB-16090	ICS-AB Solution (Interference Ch		12/27/2016
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161019	INTERNAL STANDARD 1 PPM		01/16/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016
MET-TUNECHECK	TUNE CHECK 100 PPB SOLUTI		12/22/2016
MET-TUNING-160	ICP-MS TUNING SOLUTION - 10		12/05/2016

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

CCV2-161116	1	ICPMS_TWDOD	CCV	R89004	11/16/2016 3:24:00 PM		
CCB2-161116	1	ICPMS_TWDOD	CCB	R89004	11/16/2016 3:36:00 PM		
LCVL2-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 3:43:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICSA-160908	ICS-A Solution (Interference Che		12/27/2016
MET-ICSAB-16090	ICS-AB Solution (Interference Ch		12/27/2016
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161019	INTERNAL STANDARD 1 PPM		01/16/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016
MET-TUNECHECK	TUNE CHECK 100 PPB SOLUTI		12/22/2016
MET-TUNING-160	ICP-MS TUNING SOLUTION - 10		12/05/2016

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
1		Keyword		CALBEG	Start of CALIB						
2	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
3	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
4	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
5	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalBlk	2101		BLANK STD 1	CAL ICPMS_TW	Level 1				
6	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2102		L2-161116	CAL ICPMS_TW	Level 2				
7	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2103		L-161116	CAL ICPMS_TW	Level 3				
8	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2104		10X-161116	CAL ICPMS_TW	Level 4				
9	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2105		5X-161116	CAL ICPMS_TW	Level 5				
10	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2106		2X-161116	CAL ICPMS_TW	Level 6				
11	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2107		H-161116	CAL ICPMS_TW	Level 7				
12	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2108		H2-161116	CAL ICPMS_TW	Level 8				
13	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
14	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
15		Keyword		CALEND	End of CALIB						
16		Keyword		ICSBEG	Start of ICS						
17	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		RINSE	CAL ICPMS_TW	1.000				
18	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICS-A	2109		ICSA-161116	ICSAICPMS_TW	1.000				
19	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICS-AB	2110		ICSAB-161116	ICSBICPMS_TW	1.000				
20	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		RINSE	CAL ICPMS_TW	1.000				
21	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		RINSE	CAL ICPMS_TW	1.000				
22		Keyword		ICSEND	End of ICS						
23		Keyword		SMPLBEG	Start of SMPL						
24	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICV	2111		ICV1-161116	ICV ICPMS_TW	1.000				
25	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICB	1104		ICB1-161116	ICB ICPMS_TW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
26	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2112		ILCVL-161116	LCVLICPMS_TW	1.000				
27	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICB	1104		ICB1-161116	ICB ICPMS_TW	1.000				
28	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2201		1611118-02E	SAMPICPMS_DW	5.000				
29	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2202		1611118-02E SD	SD_ICPMS_DW	25.00				
30	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2203		1611095-01E	SAMPICPMS_DW	5.000				
31	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2204		1611118-03E	SAMPICPMS_DW	1.000				
32	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2205		1611118-10E	SAMPICPMS_DW	1.000				
33	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2206		1611118-02E PDS	PDS ICPMS_DW	5.000				
34	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
35	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2207		1611120-01A	SAMPICPMS_TW	1.000				
36	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2208		1611120-01A SD	SD_ICPMS_TW	5.000				
37	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2209		1611120-01A PDS	PDS ICPMS_TW	1.000				
38	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV1-161116	CCV ICPMS_TW	1.000				
39	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB1-161116	CCB ICPMS_TW	1.000				
40	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL1-161116	LCVLICPMS_TW	1.000				
41	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PB W	2301		MB-77913	MBLKICPMS_TW	1.000				
42	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	2302		LCS-77913	LCS ICPMS_TW	1.000				
43	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	2303		LCSD-77913	LCSDICPMS_TW	1.000				
44	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
45	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2304		1611028-26A	SAMPICPMS_TW	1.000				
46	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2305		1611028-26A SD	SD_ICPMS_TW	5.000				
47	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2306		1611022-13A	SAMPICPMS_TW	1.000				
48	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2307		1611022-26A	SAMPICPMS_TW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
49	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2308		1611028-13A	SAMPICPMS_TW	1.000				
50	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2309		1611044-13A	SAMPICPMS_TW	1.000				
51	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2310		1611053-42A	SAMPICPMS_TW	1.000				
52	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2311		1611071-36A	SAMPICPMS_TW	1.000				
53	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2312		1611028-26A PDS	PDS ICPMS_TW	1.000				
54	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	2401		1610181-01C MS	MS_ICPMS_TW	1.000				
55	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	2402		1610181-01C MSD	MSD ICPMS_TW	1.000				
56	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV2-161116	CCV ICPMS_TW	1.000				
57	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB2-161116	CCB ICPMS_TW	1.000				
58	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB2-161116	CCB ICPMS_TW	1.000				
59	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL2-161116	LCVLICPMS_TW	1.000				
60	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PB W	3101		MB-77922	MBLKICPMS_DW	1.000				
61	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	3102		LCS-77922	LCS ICPMS_DW	1.000				
62	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	3103		LCSD-77922	LCSDICPMS_DW	1.000				
63	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
64	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	3104		1611091-01B	SAMPICPMS_DW	1.000				
65	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	3105		1611091-01B SD	SD_ICPMS_DW	5.000				
66	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3106		1611091-02B	SAMPICPMS_DW	1.000				
67	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3107		1611091-03B	SAMPICPMS_DW	1.000				
68	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3108		1611091-04B	SAMPICPMS_DW	1.000				
69	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3109		1611091-05B	SAMPICPMS_DW	1.000				
70	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3110		1611091-06B	SAMPICPMS_DW	1.000				
71	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3111		1611091-07B	SAMPICPMS_DW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
72	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3112		1611091-08B	SAMPICPMS_DW	1.000				
73	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3201		1611091-09B	SAMPICPMS_DW	1.000				
74	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3202		1611091-10B	SAMPICPMS_DW	1.000				
75	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	3203		1611091-01B PDS	PDS ICPMS_DW	1.000				
76	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3204		1611091-01B MS	MS_ICPMS_DW	1.000				
77	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3205		1611091-01B MSD	MSD ICPMS_DW	1.000				
78	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV3-161116	CCV ICPMS_TW	1.000				
79	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB3-161116	CCB ICPMS_TW	1.000				
80	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL3-161116	LCVLICPMS_TW	1.000				
81	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB3-161116	CCB ICPMS_TW	1.000				
82		Keyword		StandBy							
83	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3206		1611091-11B	SAMPICPMS_DW	1.000				
84	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3207		1611089-01B	SAMPICPMS_DW	1.000				
85	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3208		1611089-02B	SAMPICPMS_DW	1.000				
86	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV4-161116	CCV ICPMS_TW	1.000				
87	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB4-161116	CCB ICPMS_TW	1.000				
88	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL4-161116	LCVLICPMS_TW	1.000				
89	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB4-161116	CCB ICPMS_TW	1.000				
90	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	3301		1610181-01C	SAMPICPMS_DW	1.000				
91	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	3302		1610181-01C SD	SD_ICPMS_DW	5.000				
92	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	3303		1610181-01C PDS	PDS ICPMS_DW	1.000				
93	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3304		1610181-01C MS	MS_ICPMS_DW	1.000				
94	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3305		1610181-01C MSD	MSD ICPMS_DW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
95	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV5-161028	CCV ICPMS_TW	1.000				
96	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB5-161028	CCB ICPMS_TW	1.000				
97	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL5-161028	LCVLICPMS_TW	1.000				
98	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL5-161028	LCVLICPMS_TW	1.000				
99	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB5-161028	CCB ICPMS_TW	1.000				
100	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1102		BLANK	CAL ICPMS_TW	1.000				
101	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1103		BLANK	CAL ICPMS_TW	1.000				
102	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
103	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
104	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		BLANK	CAL ICPMS_TW	1.000				
105	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1102		BLANK	CAL ICPMS_TW	1.000				
106	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1103		BLANK	CAL ICPMS_TW	1.000				
107	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
108	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
109		Keyword		StandBy							
110		Keyword		SMPLEND	End of SMPL						
111		Keyword		End	End of Sequence						
112		Keyword		CCVBEG	Start of CCV						
113		Keyword		CCVEND	End of CCV						
114		Keyword		BLKBEG	Start of BLANK						
115		Keyword		BLKEND	End of BLANK						
116		Keyword		ERRBEG	Start of ERRTERM						
117		Keyword		ERREND	End of ERRTERM						

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/15/2016 9:08:38 AM**
Digestion:
Prep End Date:

Prep Batch **77913** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List
Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13A	Equip Blank		50	50	1.000	1 of 1	
1611022-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-13A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A MS/MSD	Equip Blank		50	50	1.000	1 of 1	
1611044-13A	Equip Blank		50	50	1.000	1 of 1	
1611053-42A	Equip Blank		50	50	1.000	1 of 1	
1611071-36A	Equip Blank		50	50	1.000	1 of 1	
LCS-77913	Aqueous		50	50	1.000	of	
LCSD-77913	Aqueous		50	50	1.000	of	
MB-77913	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	ml	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026

9:30 - 15:15

Spk ID	Spike Name	Samp Type	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.1	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	0.2	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

11/15/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/15/2016 9:08:38 AM**
Digestion: **Start: 11/15/2016 9:30:00 AM / Stop: 11/15/2016 3:15:00 PM**
Prep End Date: **11/15/2016 3:40:43 PM**

Prep Batch **77913** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List

Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13A	Equip Blank		50	50	1.000	1 of 1	
1611022-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-13A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A MS	Equip Blank		50	50	1.000	of	
1611028-26A MSD	Equip Blank		50	50	1.000	of	
1611028-26A PDS	Equip Blank		50	50	1.000	of	
1611028-26A SD	Equip Blank		50	50	1.000	of	
1611044-13A	Equip Blank		50	50	1.000	1 of 1	
1611053-42A	Equip Blank		50	50	1.000	1 of 1	
1611071-36A	Equip Blank		50	50	1.000	1 of 1	
LCS-77913	Aqueous		50	50	1.000	of	
LCSD-77913	Aqueous		50	50	1.000	of	
MB-77913	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	ml	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.1	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	0.2	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	BALANCE #:	26	
TEST DATE:	11/07/2016	Water is at Room Temperatue (70-73°F) / (21-23°C)		
PIPETTER LAB ID:	P-01, P-09	WATER TEMP (°C):	21-23°C	
TEST VOLUME:	See Below	WATER DENSITY:	0.998	(0.9980-0.9976)

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-01	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	5.00	5.0094	5.0194	100.39	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		5.0129	5.0229	100.46		
3		5.0114	5.0214	100.43		
AVERAGE (MEAN)		5.011	5.021	100.43		0.035
						PASS

PIPETTE ID: P-09	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	0.20	0.2014	0.2018	100.90	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.2021	0.2025	101.25		
3		0.2011	0.2015	100.75		
AVERAGE (MEAN)		0.202	0.202	100.97		0.255
						PASS

PIPETTE ID:	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1						RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2						
3						
AVERAGE (MEAN)						

11/7/16
Analyst / Date

11/18/2016
Review and Approved / Date

X:\LOGS\Syringe and Pipetter Cal Logbook\MET-HG PREP\Pipetter Accuracy Check-SP-11.7.16

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	11/16/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**2.50**	2.5077	2.5027	**100.11**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		2.4916	2.4866	**99.46**		
3		2.4988	2.4938	**99.75**		
AVERAGE (MEAN)		**2.499**	**2.494**	**99.77**		**0.323**
						PASS

PIPETTE ID: P-21	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**1.00**	1.0003	0.9983	**99.83**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		1.0023	1.0003	**100.03**		
3		1.0015	0.9995	**99.95**		
AVERAGE (MEAN)		**1.001**	**0.999**	**99.94**		**0.101**
						PASS

PIPETTE ID: P-39	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.200**	0.1994	0.1990	**99.50**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1998	0.1994	**99.70**		
3		0.1992	0.1988	**99.40**		
AVERAGE (MEAN)		**0.199**	**0.199**	**99.53**		**0.153**
						PASS

11/16/16
Analyst / Date

11/17/2016
Review and Approved / Date

Calibration Summary Report

Instrument: ICPMS3
Current Method: C:\ICPCHEM\1\METHODS\DHL_3Fe.M
Calibration: C:\ICPCHEM\1\CALIB\DHL_3Fe.c
Last Update: Nov 16 2016 11:25 am
Cal Type: Y=aX+[blank]

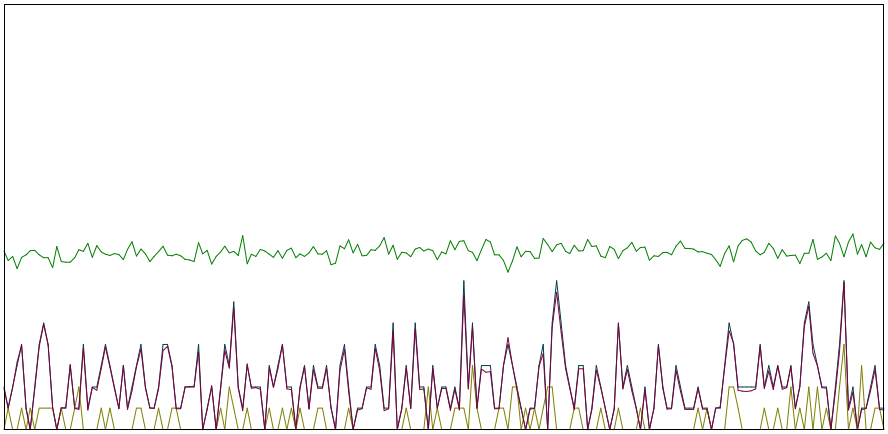
Standard	Date Acquired	File
BLANK STD 1	Nov 16 2016 10:40 am	c:\icpchem\1\data\16k16k01.b\004calb.d\
L2-161116	Nov 16 2016 10:46 am	c:\icpchem\1\data\16k16k01.b\005cals.d\
L-161116	Nov 16 2016 10:52 am	c:\icpchem\1\data\16k16k01.b\006cals.d\
10X-161116	Nov 16 2016 10:58 am	c:\icpchem\1\data\16k16k01.b\007cals.d\
5X-161116	Nov 16 2016 11:04 am	c:\icpchem\1\data\16k16k01.b\008cals.d\
2X-161116	Nov 16 2016 11:10 am	c:\icpchem\1\data\16k16k01.b\009cals.d\

Element Name	Corr Coef	Coef A	Coef B	Lvl 2	Lvl 6	Lvl 7	L7 %R	Lvl 8	L8 %R
Li	0.9999	0.3313	0.03237	1.02	264	527		1991	
Be	0.9998	0.09611	0.002377	1.03	261	541	108%	1,988	99%
B	0.9997	0.08221	0.1272	--------	245	539	108%	1,991	100%
Na	0.9998	0.4139	47.21	--------	5,281	10,310	103%	24,820	99%
Mg	1.0000	0.2117	0.3813	20.00	4,957	10,030	100%	--------	#VALUE!
Al	1.0000	0.05086	0.5022	20.00	5,059	9,975	100%	--------	#VALUE!
K	0.9999	0.06744	3.253	21.26	5,090	9,961	100%	--------	#VALUE!
Ca	1.0000	0.009243	0.2339	20.07	5,050	9,994	100%	--------	#VALUE!
Ti	1.0000	0.03191	0.001971	0.58	256	502	100%	1,999	100%
V	1.0000	1.437	0.07144	1.02	253	495	99%	2,001	100%
Cr	1.0000	1.887	0.1675	1.00	254	500	100%	2,000	100%
Mn	1.0000	0.6683	0.02252	1.05	262	513	103%	1,995	100%
Fe	0.9999	2.679	2.425	20.28	5,090	9,942	99%	--------	#VALUE!
Co	1.0000	7.139	0.07247	1.02	259	512	102%	1,996	100%
Ni	0.9999	2.115	0.3363	1.01	264	518	104%	1,993	100%
Cu	1.0000	6.009	1.191	1.07	262	514	103%	1,995	100%
Zn	0.9999	0.4809	0.1951	1.29	269	520	104%	1,992	100%
As	1.0000	0.2175	0.0223	1.02	260	506	101%	1,997	100%
Se	0.9999	0.009772	0.002323	1.16	264	516	103%	1,994	100%
Sr	1.0000	0.3182	0.03494	0.98	255	505	101%	1,998	100%
Mo	1.0000	0.05912	0.001576	1.00	249	501	100%	--------	#VALUE!
Ag	1.0000	0.1615	0.0008623	1.00	253	499	100%	--------	#VALUE!
Cd	1.0000	0.03376	0.0006484	0.97	251	497	99%	2,001	100%
Sn	0.9999	0.09384	0.01935	1.69	252	526	105%	1,993	100%
Sb	0.9999	0.1124	0.005881	1.00	245	504	101%	--------	#VALUE!
Ba	1.0000	0.04764	0.001721	0.91	244	488	98%	2,004	100%
Tl	1.0000	0.3456	0.005299	0.95	256	506	101%	1,998	100%
Pb	1.0000	0.4662	0.01099	0.98	253	516	103%	1,996	100%

REVIEWED BY
By Janice Whitt at 9:05:54 AM, 11/17/2016

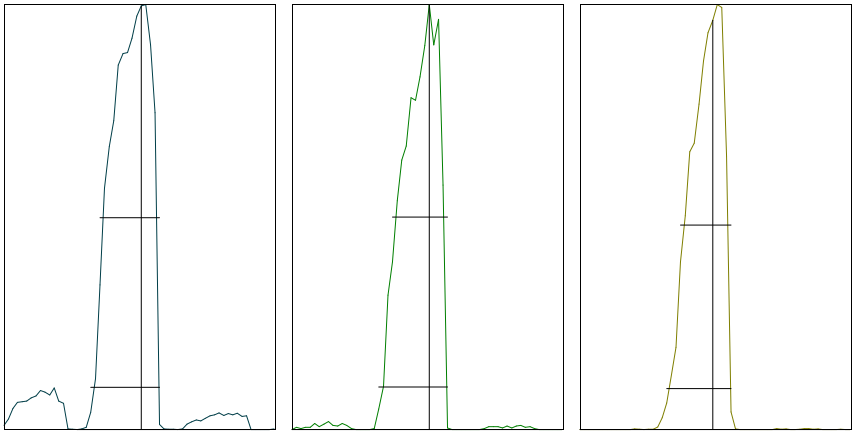
Tune Report

Tune File : He.U
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.3100 sec	
n:	200	
Oxide:	156/140	0.151%
Doubly Charged:	70/140	4.162%

m/z	Range	Count	Mean	RSD%	Background
51	20	1.0	2.2	67.60	0.20
59	5,000	2192.0	2087.9	3.80	0.10
75	20	0.0	0.4	160.53	0.10
51/59	1	0.046%	0.104%	67.38	



m/z:	59	89	205
Height:	2,169	652	1,868
Axis:	59.05	89.05	205.00
W-50%:	0.65	0.60	0.55
W-10%:	0.7500	0.7500	0.700

Integration Time:	0.1000 sec
Acquisition Time:	22.5600 sec

Y axis : Linear

Generated : Nov 16, 2016 09:52:48
Printed : Nov 16, 2016 09:52:50

Tune Report

Tune File : He.U
Comment :

Tuning Parameters

===Plasma Condition===				===Ion Lenses===				===Q-Pole Parameters===		
RF Power	:	1600	W	Extract 1	:	0	V	AMU Gain	:	124
RF Matching	:	1.6	V	Extract 2	:	-130	V	AMU Offset	:	120
Smpl Depth	:	9	mm	Omega Bias-ce	:	-20	V	Axis Gain	:	0.9993
Torch-H	:	0.2	mm	Omega Lens-ce	:	0	V	Axis Offset	:	-0.03
Torch-V	:	0.8	mm	Cell Entrance	:	-40	V	QP Bias	:	-16.5 V
Carrier Gas	:	1.15	L/min	QP Focus	:	-10	V			
Makeup Gas	:	0	L/min	Cell Exit	:	-40	V	===Detector Parameters===		
Optional Gas	:	---	%					Discriminator	:	8 mV
Nebulizer Pump	:	0.1	rps	===Octopole Parameters===				Analog HV	:	1720 V
Sample Pump	:	---	rps	OctP RF	:	170	V	Pulse HV	:	1570 V
S/C Temp	:	2	degC	OctP Bias	:	-21.4	V			

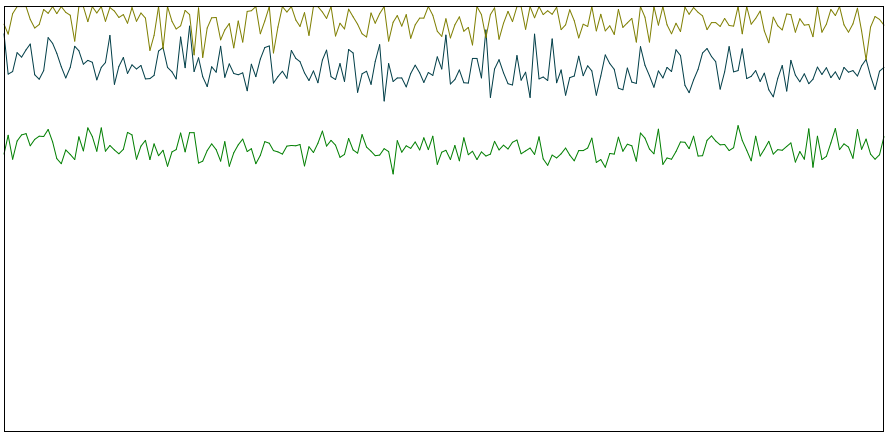
===Reaction Cell===

Reaction Mode	:	ON								
H2 Gas	:	0	mL/min	He Gas	:	5	mL/min	Optional Gas	:	--- %

Generated : Nov 16, 2016 09:52:48
Printed : Nov 16, 2016 09:52:52

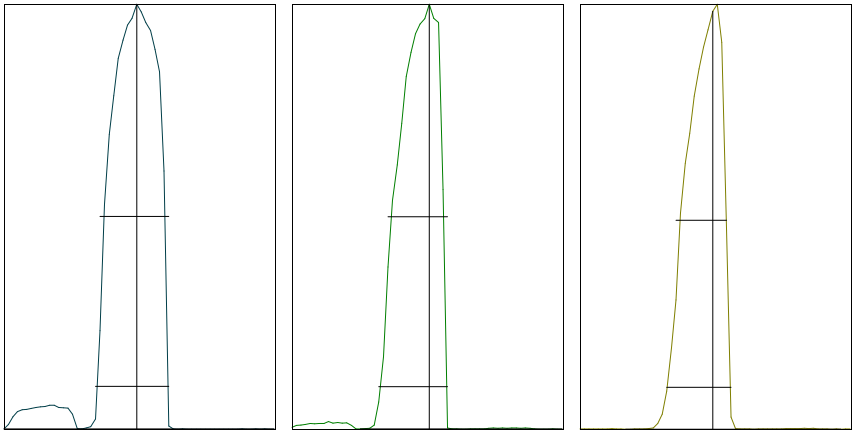
Tune Report

Tune File : nogas.u
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.8200 sec	
n:	200	
Oxide:	156/140	0.968%
Doubly Charged:	70/140	2.530%

m/z	Range	Count	Mean	RSD%	Background
7	10,000	8565.0	8520.6	3.96	1.70
89	20,000	13881.0	13317.4	3.35	3.90
205	10,000	9563.0	9688.1	3.44	9.10
156/140	2	0.887%	0.917%	12.72	
70/140	10	6.063%	3.723%	70.43	
63	5,000	2809.0	2640.3	3.81	3.20
23	100,000	75583.0	75359.3	3.15	1.90



m/z:	7	89	205
Height:	8,748	13,674	9,778
Axis:	7.00	89.05	205.00
W-50%:	0.75	0.65	0.55
W-10%:	0.800	0.7500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 16, 2016 09:47:34
Printed : Nov 16, 2016 09:47:36

Tune Report

Tune File : nogas.u
Comment :

Tuning Parameters

===Plasma Condition===				===Ion Lenses===				===Q-Pole Parameters===		
RF Power	:	1600	W	Extract 1	:	0	V	AMU Gain	:	124
RF Matching	:	1.6	V	Extract 2	:	-130	V	AMU Offset	:	120
Smpl Depth	:	9	mm	Omega Bias-ce	:	-30	V	Axis Gain	:	0.9993
Torch-H	:	0.2	mm	Omega Lens-ce	:	0.2	V	Axis Offset	:	-0.03
Torch-V	:	0.8	mm	Cell Entrance	:	-26	V	QP Bias	:	-3 V
Carrier Gas	:	1.15	L/min	QP Focus	:	0	V			
Makeup Gas	:	0	L/min	Cell Exit	:	-40	V	===Detector Parameters===		
Optional Gas	:	---	%					Discriminator	:	8 mV
Nebulizer Pump	:	0.1	rps	===Octopole Parameters===				Analog HV	:	1720 V
Sample Pump	:	---	rps	OctP RF	:	170	V	Pulse HV	:	1570 V
S/C Temp	:	2	degC	OctP Bias	:	-6	V			

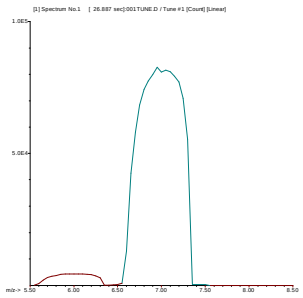
===Reaction Cell===										
Reaction Mode	:	OFF								
H2 Gas	:	0	mL/min	He Gas	:	0	mL/min	Optional Gas	:	--- %

6020 QC Tune Report

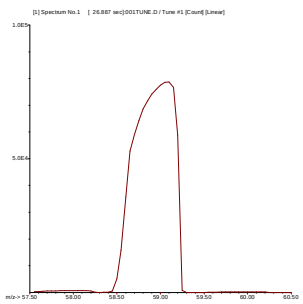
Data File: C:\ICPCHEM\1\DATA\16K16k00.B\001TUNE.D
Date Acquired: Nov 16 2016 10:02 am
Acq. Method: TN6020.M
Operator: CVD
Sample Name: TUNE CHECK
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020.M

RSD (%)

Element	Actual	Required	Flag
7 Li	2.25	5.00	
59 Co	1.98	5.00	
115 In	1.34	5.00	
205 Tl	2.26	5.00	



7 Li
Mass Calib.
Actual: 7.00
Required: 6.90 - 7.10
Flag:
Peak Width
Actual: 0.70
Required: 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.05
Required: 58.90 - 59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

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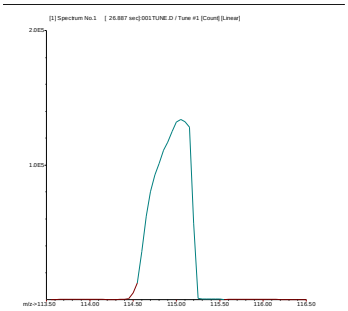
By Janice Whitt at 9:06:08 AM, 11/17/2016



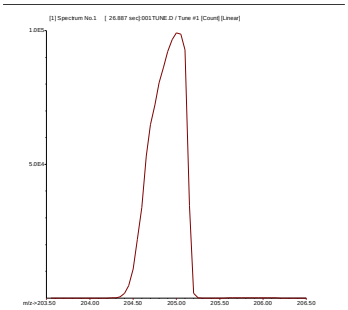
115 In

Mass Calib.

Actual:	115.05	
Required:	114.90 -	115.10
Flag:		

Peak Width

Actual:	0.60
Required:	0.90
Flag:	



205 Tl

Mass Calib.

Actual:	205.00	
Required:	204.90 -	205.10
Flag:		

Peak Width

Actual:	0.60
Required:	0.90
Flag:	

REVIEWED BY
By Janice Whitt at 9:06:14 AM, 11/17/2016

P/A Factor Tuning Report

Acquired:Nov 16 2016 09:56 am

Mass[amu]	Element	P/A Factor
6	Li	0.071848
9		0.081564
23	Na	0.088525
24	Mg	0.092232
27	Al	0.095169
39	K	0.095731
44	Ca	Sensitivity too low
45	Sc	0.096357
47	Ti	Sensitivity too low
51	V	0.098514
52	Cr	0.100915
55	Mn	0.102208
59	Co	0.105372
60	Ni	0.107449
63	Cu	0.109136
66	Zn	0.108745
72	Ge	0.107766
75	As	0.107197
78	Se	Sensitivity too low
88	Sr	0.108184
95	Mo	0.107211
106	(Cd)	0.112742
107	Ag	Sensitivity too low
108	(Cd)	0.113093
111	Cd	0.114248
115	In	0.113847
118	Sn	0.113428
121	Sb	0.113141
137	Ba	Sensitivity too low
205	Tl	0.121389
206	(Pb)	0.121400
207	(Pb)	0.121442
208	Pb	0.121598
209	Bi	0.121204
238		0.121002

===Detector Parameters===
Discriminator: 8.0 mV
Analog HV: 1720 V
Pulse HV: 1570 V

REVIEWED BY
By Janice Whitt at 9:06:19 AM, 11/17/2016

Calibration Blank QC Report

Acq. Method: DHL_3Fe.M Sample Name: BLANK STD 1
Operator: CVD Instrument: ICPMS3
Last Cal. Update: Nov 16 2016 10:44 am
Date Acquired: Nov 16 2016 10:40 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)
6	Li	2	---	23.38	P	18.49	79.07
7	Li	2	45	663.38	P	121.20	18.27
9	Be	2	45	48.89	P	44.26	90.53
11	B	2	45	2605.93	P	94.62	3.63
23	Na	1	45	21422.32	P	256.70	1.20
24	Mg	1	45	173.34	P	37.86	21.84
27	Al	1	45	228.01	P	17.49	7.67
39	K	1	45	1475.71	P	60.04	4.07
44	Ca	2	45	4791.12	P	138.70	2.89
45	Sc	1	---	90770.48	P	1026.00	1.13
45	Sc	2	---	4095698.00	A	29570.00	0.72
47	Ti	1	45	0.89	P	0.77	86.60
51	V	1	45	32.45	P	4.07	12.55
51	V	2	---		P		
52	Cr	1	45	76.00	P	14.85	19.54
55	Mn	1	45	10.22	P	0.77	7.53
56	Fe	1	72	580.02	P	20.96	3.61
59	Co	1	72	17.33	P	5.81	33.53
60	Ni	1	72	80.45	P	27.74	34.48
60	Ni	2	---		P		
63	Cu	1	72	284.90	P	16.13	5.66
63	Cu	2	---		P		
66	Zn	1	72	46.67	P	4.00	8.57
66	Zn	2	---		P		
72	Ge	1	---	47835.73	P	48.72	0.10
72	Ge	2	---		P		
75	As	1	72	5.33	P	0.67	12.50
78	Se	1	72	0.56	P	0.11	20.00
88	Sr	2	###	1082.32	P	83.83	7.75
95	Mo	2	###	48.89	P	25.02	51.18
107	Ag	2	###	26.67	P	6.67	25.00
111	Cd	2	###	20.29	P	32.60	160.69
115	In	2	---	6191712.00	A	62140.00	1.00
118	Sn	2	###	598.93	P	36.57	6.11
121	Sb	2	###	182.23	P	26.94	14.78
137	Ba	2	###	53.34	P	8.82	16.54
205	Tl	2	###	148.90	P	95.83	64.36
208	Pb	2	###	308.91	P	120.10	38.88
209	Bi	2	---	5622254.00	A	32120.00	0.57

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L2-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:46 am
Last Cal. Update: Nov 16 2016 10:44 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-325.11	P	23.49	7.23	ISFail
7	Li	2	45	7637.06	P	169.90	2.22	
9	Be	2	45	2088.04	P	152.70	7.31	
11	B	2	45	4444.30	P	87.64	1.97	
23	Na	1	45	25685.93	P	483.20	1.88	
24	Mg	1	45	2114.71	P	58.73	2.78	
27	Al	1	45	696.03	P	19.37	2.78	
39	K	1	45	2146.94	P	39.31	1.83	
44	Ca	2	45	8680.06	P	226.10	2.60	
45	Sc	1	---	91628.10	P	1045.00	1.14	
45	Sc	2	---	4139009.00	A	24110.00	0.58	
47	Ti	1	45	9.33	P	1.33	14.28	
51	V	1	45	707.14	P	23.49	3.32	
51	V	2	---		P			
52	Cr	1	45	942.27	P	12.60	1.34	
55	Mn	1	45	331.57	P	16.99	5.12	
56	Fe	1	72	13712.25	P	130.50	0.95	
59	Co	1	72	1784.16	P	41.06	2.30	
60	Ni	1	72	598.69	P	19.91	3.33	
60	Ni	2	---		P			
63	Cu	1	72	1835.28	P	48.62	2.65	
63	Cu	2	---		P			
66	Zn	1	72	196.89	P	6.16	3.13	
66	Zn	2	---		P			
72	Ge	1	---	48321.38	P	161.80	0.33	
72	Ge	2	---		P			
75	As	1	72	59.19	P	2.04	3.44	
78	Se	1	72	3.30	P	0.80	24.39	
88	Sr	2	115	10816.41	P	333.80	3.09	
95	Mo	2	115	1893.56	P	152.20	8.04	
107	Ag	2	115	5106.87	P	185.40	3.63	
111	Cd	2	115	1046.65	P	24.53	2.34	
115	In	2	---	6265959.00	A	89250.00	1.42	
118	Sn	2	115	5535.18	P	3561.00	64.33	
121	Sb	2	115	3716.29	P	126.10	3.39	
137	Ba	2	115	1413.48	P	96.45	6.82	
205	Tl	2	209	9389.83	P	188.10	2.00	
208	Pb	2	209	13092.45	P	339.80	2.60	
209	Bi	2	---	5605939.00	A	42190.00	0.75	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-325.11	7.23	23.38	-1390.3	70 - 120	ISFail
45	Sc	1	91628.10	1.14	90770.48	100.9	70 - 120	
45	Sc	2	4139008.80	0.58	4095698.00	101.1	70 - 120	
72	Ge	1	48321.38	0.33	47835.73	101.0	70 - 120	
115	In	2	6265959.50	1.42	6191712.50	101.2	70 - 120	
209	Bi	2	5605938.50	0.75	5622254.50	99.7	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:52 am
Last Cal. Update: Nov 16 2016 10:50 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-3466.32	P	91.44	2.64	ISFail
7	Li	2	45	73685.96	P	1379.00	1.87	Fail
9	Be	2	45	21490.11	P	249.70	1.16	Fail
11	B	2	45	19995.60	P	214.70	1.07	
23	Na	1	45	62713.27	P	1249.00	1.99	
24	Mg	1	45	20505.31	P	367.70	1.79	Fail
27	Al	1	45	5019.75	P	71.78	1.43	Fail
39	K	1	45	8126.31	P	175.70	2.16	Fail
44	Ca	2	45	43140.82	P	572.40	1.33	Fail
45	Sc	1	---	96059.89	P	883.40	0.92	
45	Sc	2	---	4243062.00	A	52280.00	1.23	
47	Ti	1	45	161.34	P	18.52	11.48	Fail
51	V	1	45	6940.73	P	71.84	1.04	Fail
51	V	2	---		P			
52	Cr	1	45	9225.80	P	36.79	0.40	Fail
55	Mn	1	45	3300.95	P	136.40	4.13	Fail
56	Fe	1	72	136367.80	P	798.20	0.59	Fail
59	Co	1	72	18291.57	P	318.80	1.74	
60	Ni	1	72	5553.34	P	61.23	1.10	Fail
60	Ni	2	---		P			
63	Cu	1	72	16096.53	P	166.30	1.03	Fail
63	Cu	2	---		P			
66	Zn	1	72	1388.99	P	36.41	2.62	Fail
66	Zn	2	---		P			
72	Ge	1	---	49867.77	P	90.84	0.18	
72	Ge	2	---		P			
75	As	1	72	575.05	P	4.10	0.71	Fail
78	Se	1	72	26.74	P	2.28	8.54	Fail
88	Sr	2	115	100132.50	P	2415.00	2.41	Fail
95	Mo	2	115	18322.39	P	411.60	2.25	Fail
107	Ag	2	115	50894.10	P	682.00	1.34	Fail
111	Cd	2	115	11204.70	P	362.40	3.23	Fail
115	In	2	---	6443397.00	A	70110.00	1.09	
118	Sn	2	115	30983.53	P	891.90	2.88	Fail
121	Sb	2	115	35373.87	P	621.70	1.76	Fail
137	Ba	2	115	14844.39	P	337.80	2.28	Fail
205	Tl	2	209	96034.58	P	951.50	0.99	Fail
208	Pb	2	209	132055.50	P	2442.00	1.85	Fail
209	Bi	2	---	5744355.00	A	38890.00	0.68	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-3466.32	2.64	23.38	-14823.3	70 - 120	ISFail
45	Sc	1	96059.88	0.92	90770.48	105.8	70 - 120	
45	Sc	2	4243062.00	1.23	4095698.00	103.6	70 - 120	
72	Ge	1	49867.77	0.18	47835.73	104.2	70 - 120	
115	In	2	6443397.50	1.09	6191712.50	104.1	70 - 120	
209	Bi	2	5744355.00	0.68	5622254.50	102.2	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 10X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:58 am
Last Cal. Update: Nov 16 2016 10:56 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-16021.90	P	543.90	3.39	ISFail
7	Li	2	45	356781.50	P	5955.00	1.67	Fail
9	Be	2	45	102766.00	P	2134.00	2.08	Fail
11	B	2	45	86211.03	P	809.10	0.94	Fail
23	Na	1	45	220366.41	P	3312.00	1.50	Fail
24	Mg	1	45	99222.16	P	1186.00	1.20	
27	Al	1	45	24296.22	P	324.60	1.34	Fail
39	K	1	45	33140.80	P	734.00	2.21	Fail
44	Ca	2	45	185075.30	P	1505.00	0.81	Fail
45	Sc	1	---	94419.48	P	101.50	0.11	
45	Sc	2	---	4032744.00	A	1666.00	0.04	
47	Ti	1	45	786.26	P	28.67	3.65	
51	V	1	45	33501.97	P	161.10	0.48	
51	V	2	---		P			
52	Cr	1	45	45286.06	P	99.36	0.22	
55	Mn	1	45	16324.34	P	302.70	1.85	
56	Fe	1	72	669114.00	P	3608.00	0.54	
59	Co	1	72	90960.04	P	927.60	1.02	
60	Ni	1	72	27493.59	P	389.30	1.42	
60	Ni	2	---		P			
63	Cu	1	72	77490.97	P	1014.00	1.31	
63	Cu	2	---		P			
66	Zn	1	72	6531.18	P	174.70	2.67	Fail
66	Zn	2	---		P			
72	Ge	1	---	48776.45	P	147.60	0.30	
72	Ge	2	---		P			
75	As	1	72	2757.94	P	5.54	0.20	
78	Se	1	72	129.41	P	3.09	2.39	Fail
88	Sr	2	115	480478.00	P	2789.00	0.58	Fail
95	Mo	2	115	89495.32	P	958.50	1.07	Fail
107	Ag	2	115	247555.70	P	4646.00	1.88	Fail
111	Cd	2	115	52293.60	P	861.80	1.65	Fail
115	In	2	---	6117921.00	A	74920.00	1.22	
118	Sn	2	115	144122.30	P	1135.00	0.79	Fail
121	Sb	2	115	167770.00	P	2049.00	1.22	Fail
137	Ba	2	115	70270.03	P	375.30	0.53	Fail
205	Tl	2	209	458581.91	P	7224.00	1.58	Fail
208	Pb	2	209	629293.69	P	9458.00	1.50	Fail
209	Bi	2	---	5485656.00	A	9765.00	0.18	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-16021.91	3.39	23.38	-68515.5	70 - 120	ISFail
45	Sc	1	94419.48	0.11	90770.48	104.0	70 - 120	
45	Sc	2	4032744.30	0.04	4095698.00	98.5	70 - 120	
72	Ge	1	48776.45	0.30	47835.73	102.0	70 - 120	
115	In	2	6117920.50	1.22	6191712.50	98.8	70 - 120	
209	Bi	2	5485656.00	0.18	5622254.50	97.6	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 5X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:04 am
Last Cal. Update: Nov 16 2016 11:02 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-33695.50	P	260.10	0.77	ISFail
7	Li	2	45	716696.38	A	4826.00	0.67	Fail
9	Be	2	45	203307.41	P	1638.00	0.81	Fail
11	B	2	45	165872.70	P	1185.00	0.71	Fail
23	Na	1	45	409738.69	P	3574.00	0.87	Fail
24	Mg	1	45	193141.09	P	2624.00	1.36	
27	Al	1	45	46901.11	P	234.40	0.50	Fail
39	K	1	45	63235.13	P	487.60	0.77	Fail
44	Ca	2	45	361474.00	P	3689.00	1.02	Fail
45	Sc	1	---	92753.74	P	547.10	0.59	
45	Sc	2	---	4012334.00	A	50760.00	1.27	
47	Ti	1	45	1458.33	P	84.72	5.81	
51	V	1	45	65307.82	P	978.10	1.50	
51	V	2	---		P			
52	Cr	1	45	88147.01	P	1566.00	1.78	
55	Mn	1	45	31759.30	P	214.70	0.68	
56	Fe	1	72	1325957.00	A	18650.00	1.41	
59	Co	1	72	176644.20	P	2408.00	1.36	
60	Ni	1	72	53601.22	P	415.90	0.78	
60	Ni	2	---		P			
63	Cu	1	72	151988.00	P	879.70	0.58	
63	Cu	2	---		P			
66	Zn	1	72	12386.86	P	120.70	0.97	
66	Zn	2	---		P			
72	Ge	1	---	48172.42	P	152.60	0.32	
72	Ge	2	---		P			
75	As	1	72	5384.89	P	32.02	0.59	
78	Se	1	72	244.00	P	3.63	1.49	
88	Sr	2	115	970970.63	M	8519.00	0.88	Fail
95	Mo	2	115	178060.30	P	2033.00	1.14	Fail
107	Ag	2	115	488002.41	P	7122.00	1.46	Fail
111	Cd	2	115	105026.50	P	1792.00	1.71	Fail
115	In	2	---	6177524.00	A	100100.00	1.62	
118	Sn	2	115	288260.41	P	3751.00	1.30	Fail
121	Sb	2	115	335841.59	P	3816.00	1.14	Fail
137	Ba	2	115	141232.91	P	3656.00	2.59	Fail
205	Tl	2	209	919560.00	P	7513.00	0.82	Fail
208	Pb	2	209	1253953.00	P	12380.00	0.99	Fail
209	Bi	2	---	5438235.00	A	68080.00	1.25	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2		-33695.51	0.77	23.38	-144094.4	70 -		120	ISFail
45	Sc	1		92753.74	0.59	90770.48	102.2	70 -		120	
45	Sc	2		4012334.30	1.27	4095698.00	98.0	70 -		120	
72	Ge	1		48172.42	0.32	47835.73	100.7	70 -		120	
115	In	2		6177524.50	1.62	6191712.50	99.8	70 -		120	
209	Bi	2		5438235.50	1.25	5622254.50	96.7	70 -		120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 2X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:10 am
Last Cal. Update: Nov 16 2016 11:08 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-82197.35	P	1684.00	2.05	ISFail
7	Li	2	45	1756272.00	A	31650.00	1.80	Fail
9	Be	2	45	502819.41	P	8910.00	1.77	Fail
11	B	2	45	405599.19	P	4942.00	1.22	Fail
23	Na	1	45	1055851.00	A	4522.00	0.43	Fail
24	Mg	1	45	496209.69	P	2495.00	0.50	
27	Al	1	45	121898.90	P	1265.00	1.04	
39	K	1	45	163821.30	P	485.00	0.30	Fail
44	Ca	2	45	940867.00	A	20390.00	2.17	Fail
45	Sc	1	---	94557.81	P	202.60	0.21	
45	Sc	2	---	4010890.00	A	56170.00	1.40	
47	Ti	1	45	3858.43	P	80.43	2.08	
51	V	1	45	171838.59	P	403.90	0.24	
51	V	2	---		A			
52	Cr	1	45	226800.41	P	1205.00	0.53	
55	Mn	1	45	82836.01	P	276.30	0.33	
56	Fe	1	72	3346696.00	A	46230.00	1.38	
59	Co	1	72	453934.91	P	4584.00	1.01	
60	Ni	1	72	137166.59	P	905.40	0.66	
60	Ni	2	---		P			
63	Cu	1	72	386972.19	P	1514.00	0.39	
63	Cu	2	---		P			
66	Zn	1	72	31840.18	P	133.30	0.42	
66	Zn	2	---		P			
72	Ge	1	---	49081.54	P	383.60	0.78	
72	Ge	2	---		P			
75	As	1	72	13864.30	P	70.98	0.51	
78	Se	1	72	634.50	P	11.11	1.75	
88	Sr	2	115	2445578.00	A	59740.00	2.44	Fail
95	Mo	2	115	444199.59	P	4321.00	0.97	Fail
107	Ag	2	115	1231442.00	A	12290.00	1.00	
111	Cd	2	115	255518.50	P	4962.00	1.94	Fail
115	In	2	---	6036126.00	A	110900.00	1.84	
118	Sn	2	115	713190.19	P	10830.00	1.52	Fail
121	Sb	2	115	829296.13	P	13890.00	1.67	Fail
137	Ba	2	115	351025.41	P	6241.00	1.78	Fail
205	Tl	2	209	2387211.00	A	37530.00	1.57	Fail
208	Pb	2	209	3181300.00	A	59360.00	1.87	Fail
209	Bi	2	---	5393114.00	A	83250.00	1.54	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-82197.36	2.05	23.38	-351506.1	70 - 120	ISFail
45	Sc	1	94557.81	0.21	90770.48	104.2	70 - 120	
45	Sc	2	4010890.30	1.40	4095698.00	97.9	70 - 120	
72	Ge	1	49081.54	0.78	47835.73	102.6	70 - 120	
115	In	2	6036126.00	1.84	6191712.50	97.5	70 - 120	
209	Bi	2	5393113.50	1.54	5622254.50	95.9	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:16 am
Last Cal. Update: Nov 16 2016 11:14 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-155470.70	P	1205.00	0.78	ISFail
7	Li	2	45	3392275.00	A	33330.00	0.98	Fail
9	Be	2	45	1010402.00	A	18590.00	1.84	
11	B	2	45	863696.19	A	7873.00	0.91	Fail
23	Na	1	45	2003555.00	A	6466.00	0.32	Fail
24	Mg	1	45	985613.31	A	3201.00	0.32	
27	Al	1	45	235728.00	P	1513.00	0.64	
39	K	1	45	313337.50	P	1816.00	0.58	Fail
44	Ca	2	45	1798666.00	A	17970.00	1.00	Fail
45	Sc	1	---	92840.94	P	582.10	0.63	
45	Sc	2	---	3884529.00	A	41680.00	1.07	
47	Ti	1	45	7432.11	P	115.80	1.56	
51	V	1	45	330007.59	P	3950.00	1.20	
51	V	2	---		A			
52	Cr	1	45	437879.41	P	2230.00	0.51	
55	Mn	1	45	159267.20	P	54.81	0.03	
56	Fe	1	72	6365510.00	A	29600.00	0.47	
59	Co	1	72	873256.00	P	3607.00	0.41	
60	Ni	1	72	261953.41	P	529.90	0.20	
60	Ni	2	---		P			
63	Cu	1	72	738468.81	P	3867.00	0.52	
63	Cu	2	---		A			
66	Zn	1	72	59796.74	P	159.10	0.27	
66	Zn	2	---		P			
72	Ge	1	---	47795.27	P	120.60	0.25	
72	Ge	2	---		P			
75	As	1	72	26333.29	P	99.58	0.38	
78	Se	1	72	1205.91	P	15.04	1.25	
88	Sr	2	115	4681398.00	A	81770.00	1.75	Fail
95	Mo	2	115	863108.00	P	10710.00	1.24	Fail
107	Ag	2	115	2348615.00	A	18460.00	0.79	
111	Cd	2	115	488805.59	P	7036.00	1.44	Fail
115	In	2	---	5826379.00	A	47830.00	0.82	
118	Sn	2	115	1438582.00	A	27750.00	1.93	Fail
121	Sb	2	115	1648562.00	A	21790.00	1.32	Fail
137	Ba	2	115	676808.69	P	6959.00	1.03	Fail
205	Tl	2	209	4508400.00	A	62690.00	1.39	
208	Pb	2	209	6208421.00	A	53970.00	0.87	Fail
209	Bi	2	---	5160738.00	A	67330.00	1.30	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-155470.75	0.78	23.38	-664850.0	70 - 120	ISFail
45	Sc	1	92840.94	0.63	90770.48	102.3	70 - 120	
45	Sc	2	3884529.30	1.07	4095698.00	94.8	70 - 120	
72	Ge	1	47795.27	0.25	47835.73	99.9	70 - 120	
115	In	2	5826379.50	0.82	6191712.50	94.1	70 - 120	
209	Bi	2	5160738.00	1.30	5622254.50	91.8	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H2-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:22 am
Last Cal. Update: Nov 16 2016 11:20 am

QC&ISTD Elements

Element		CPS Mean			SD	RSD(%)	Flag
6 Li	2 ---	-605384.88	P		15520.00	2.56	ISFail
7 Li	2 45	13240260.00	A		197000.00	1.49	Fail
9 Be	2 45	3835686.00	A		44780.00	1.17	
11 B	2 45	3287995.00	A		33210.00	1.01	Fail
23 Na	1 45	4644786.00	A		51300.00	1.10	Fail
24 Mg	1 45	2325867.00	A		25180.00	1.08	
27 Al	1 45	405.35	P		153.80	37.94	Fail
39 K	1 45	761738.81	P		2725.00	0.36	
44 Ca	2 45	4566148.00	A		14220.00	0.31	Fail
45 Sc	1 ---	90018.81	P		830.80	0.92	
45 Sc	2 ---	4015165.00	A		32510.00	0.81	
47 Ti	1 45	28712.13	P		502.20	1.75	
51 V	1 45	1294073.00	A		10700.00	0.83	
51 V	2 ---		A				
52 Cr	1 45	1698758.00	A		22000.00	1.30	
55 Mn	1 45	600121.31	P		3756.00	0.63	
56 Fe	1 72	205006.30	P		1697.00	0.83	
59 Co	1 72	3304110.00	A		44490.00	1.35	
60 Ni	1 72	977508.88	P		8334.00	0.85	
60 Ni	2 ---		A				
63 Cu	1 72	2779555.00	A		25970.00	0.93	
63 Cu	2 ---		A				
66 Zn	1 72	222215.41	P		2192.00	0.99	
66 Zn	2 ---		A				
72 Ge	1 ---	46379.17	P		402.60	0.87	
72 Ge	2 ---		P				
75 As	1 72	100746.40	P		956.50	0.95	
78 Se	1 72	4518.73	P		34.17	0.76	
88 Sr	2 115	18704270.00	A		20310.00	0.11	Fail
95 Mo	2 115	3602003.00	A		45470.00	1.26	
107 Ag	2 115	1491.28	P		262.80	17.62	Fail
111 Cd	2 115	1986643.00	A		12650.00	0.64	
115 In	2 ---	5882654.00	A		30820.00	0.52	
118 Sn	2 115	5502601.00	A		11170.00	0.20	Fail
121 Sb	2 115	2212.54	P		94.57	4.27	Fail
137 Ba	2 115	2808326.00	A		20530.00	0.73	
205 Tl	2 209	17466340.00	A		182100.00	1.04	
208 Pb	2 209	23536200.00	A		157200.00	0.67	
209 Bi	2 ---	5059584.00	A		51510.00	1.02	

ISTD Elements

Element		CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	2	-605385.00	2.56	23.38	#########	70 - 120	ISFail
45 Sc	1	90018.81	0.92	90770.48	99.2	70 - 120	
45 Sc	2	4015165.00	0.81	4095698.00	98.0	70 - 120	
72 Ge	1	46379.17	0.87	47835.73	97.0	70 - 120	
115 In	2	5882654.50	0.52	6191712.50	95.0	70 - 120	
209 Bi	2	5059583.50	1.02	5622254.50	90.0	70 - 120	

ICSA QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\015ICSA.D\015ICSA.D#

Date Acquired:	Nov 16 2016 11:46 am	Sample Name:	**ICSA-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSAICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	RL S	RL Aq	Flag
7	Li	2	45	0.199	ppb	18.55	8.00	5.00	
9	Be	2	45	0.106	ppb	27.36	0.32	0.80	
11	B	2	45	6.528	ppb	4.53	30.00	30.00	
23	Na	1	45	99240.000	ppb	1.25	#######	#######	
24	Mg	1	45	84750.000	ppb	1.11	#######	#######	
27	Al	1	45	95800.000	ppb	2.34	#######	#######	
39	K	1	45	94500.000	ppb	1.12	#######	#######	
44	Ca	2	45	89820.000	ppb	2.12	#######	#######	
47	Ti	1	45	1919.000	ppb	0.88	10.00	10.00	
51	V	1	45	0.132	ppb	32.00	10.00	10.00	
52	Cr	1	45	0.886	ppb	4.70	8.00	5.00	
55	Mn	1	45	1.463	ppb	7.33	8.00	10.00	
56	Fe	1	72	93160.000	ppb	1.55	#######	#######	
59	Co	1	72	1.326	ppb	4.65	8.00	10.00	
60	Ni	1	72	0.500	ppb	8.10	8.00	10.00	
63	Cu	1	72	2.255	ppb	0.29	8.00	10.00	
66	Zn	1	72	2.274	ppb	3.23	10.00	5.00	
75	As	1	72	0.440	ppb	9.49	4.00	5.00	
78	Se	1	72	0.387	ppb	22.79	2.00	5.00	
88	Sr	2	115	1.245	ppb	3.79	10.00	10.00	
95	Mo	2	115	1941.000	ppb	2.64	8.00	5.00	
107	Ag	2	115	0.103	ppb	6.19	0.80	2.00	
111	Cd	2	115	0.443	ppb	0.27	1.20	1.00	
118	Sn	2	115	0.624	ppb	8.97	10.00	10.00	
121	Sb	2	115	0.083	ppb	17.08	4.00	2.50	
137	Ba	2	115	0.587	ppb	8.62	8.00	10.00	
205	Tl	2	209	0.218	ppb	18.06	4.00	1.50	
208	Pb	2	209	0.294	ppb	10.72	1.20	1.00	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-50.57	115.37	23.38	-216.2	70 - 120	ISFail
45	Sc	1	90887.23	0.27	90770.48	100.1	70 - 120	
45	Sc	2	3822910.80	1.56	4095698.00	93.3	70 - 120	
72	Ge	1	46142.36	1.14	47835.73	96.5	70 - 120	
115	In	2	5535271.00	1.34	6191712.50	89.4	70 - 120	
209	Bi	2	4601251.50	1.38	5622254.50	81.8	70 - 120	

ICS-AB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\016ICSB.D\016ICSB.D#

Date Acquired:	Nov 16 2016 11:52 am	Sample Name:	**ICSAB-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSBICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)			Flag
7	Li	2	45	0.17	ppb	14.77	---	80 -	120		
9	Be	2	45	0.07	ppb	44.97	---	80 -	120		
11	B	2	45	5.33	ppb	1.84	---	80 -	120		
23	Na	1	45	93340.00	ppb	0.80	100000.00	80 -	120		
24	Mg	1	45	87090.00	ppb	0.75	100000.00	80 -	120		
27	Al	1	45	96280.00	ppb	0.21	100000.00	80 -	120		
39	K	1	45	94390.00	ppb	0.93	100000.00	80 -	120		
44	Ca	2	45	88670.00	ppb	1.50	100000.00	80 -	120		
47	Ti	1	45	1899.00	ppb	1.14	---	80 -	120		
51	V	1	45	38.02	ppb	1.10	40.00	80 -	120		
52	Cr	1	45	20.10	ppb	1.66	20.00	80 -	120		
55	Mn	1	45	20.08	ppb	2.66	20.00	80 -	120		
56	Fe	1	72	93980.00	ppb	0.49	100000.00	80 -	120		
59	Co	1	72	38.61	ppb	0.81	40.00	80 -	120		
60	Ni	1	72	36.69	ppb	0.52	40.00	80 -	120		
63	Cu	1	72	20.28	ppb	1.91	20.00	80 -	120		
66	Zn	1	72	20.31	ppb	0.96	20.00	80 -	120		
75	As	1	72	19.24	ppb	0.54	20.00	80 -	120		
78	Se	1	72	19.78	ppb	4.19	20.00	80 -	120		
88	Sr	2	115	1.21	ppb	2.82	---	80 -	120		
95	Mo	2	115	1974.00	ppb	1.95	---	80 -	120		
107	Ag	2	115	18.01	ppb	1.78	20.00	80 -	120		
111	Cd	2	115	8.95	ppb	4.08	10.00	80 -	120		
118	Sn	2	115	0.40	ppb	8.80	---	80 -	120		
121	Sb	2	115	0.02	ppb	21.91	---	80 -	120		
137	Ba	2	115	1.73	ppb	0.51	---	80 -	120		
205	Tl	2	209	0.13	ppb	27.92	---	80 -	120		
208	Pb	2	209	0.31	ppb	11.45	---	80 -	120		

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-0.37	######	23.38	-1.6	70 -	120		ISFail
45	Sc	1	92230.56	0.29	90770.48	101.6	70 -	120		
45	Sc	2	3819958.80	0.94	4095698.00	93.3	70 -	120		
72	Ge	1	46357.60	0.45	47835.73	96.9	70 -	120		
115	In	2	5557602.50	0.90	6191712.50	89.8	70 -	120		
209	Bi	2	4692885.00	1.07	5622254.50	83.5	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\019ICV.D\019ICV.D#

Date Acquired:	Nov 16 2016 12:10 pm	Sample Name:	**ICV1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	98.58	ppb	1.17	100.00	90 -	110	98.6	
9	Be	2	45	101.90	ppb	1.39	100.00	90 -	110	101.9	
11	B	2	45	98.60	ppb	1.62	100.00	90 -	110	98.6	
23	Na	1	45	2579.00	ppb	1.25	2500.00	90 -	110	103.2	
24	Mg	1	45	2500.00	ppb	1.04	2500.00	90 -	110	100.0	
27	Al	1	45	2559.00	ppb	0.14	2500.00	90 -	110	102.4	
39	K	1	45	2542.00	ppb	0.97	2500.00	90 -	110	101.7	
44	Ca	2	45	2346.00	ppb	1.43	2500.00	90 -	110	93.8	
47	Ti	1	45	102.80	ppb	5.00	100.00	90 -	110	102.8	
51	V	1	45	99.29	ppb	0.35	100.00	90 -	110	99.3	
52	Cr	1	45	103.20	ppb	0.86	100.00	90 -	110	103.2	
55	Mn	1	45	102.60	ppb	0.43	100.00	90 -	110	102.6	
56	Fe	1	72	2602.00	ppb	1.91	2500.00	90 -	110	104.1	
59	Co	1	72	101.70	ppb	1.10	100.00	90 -	110	101.7	
60	Ni	1	72	103.10	ppb	0.88	100.00	90 -	110	103.1	
63	Cu	1	72	101.30	ppb	1.11	100.00	90 -	110	101.3	
66	Zn	1	72	105.40	ppb	1.23	100.00	90 -	110	105.4	
75	As	1	72	100.50	ppb	0.74	100.00	90 -	110	100.5	
78	Se	1	72	103.30	ppb	1.93	100.00	90 -	110	103.3	
88	Sr	2	115	97.18	ppb	3.43	100.00	90 -	110	97.2	
95	Mo	2	115	95.21	ppb	2.05	100.00	90 -	110	95.2	
107	Ag	2	115	100.40	ppb	1.98	100.00	90 -	110	100.4	
111	Cd	2	115	98.26	ppb	1.31	100.00	90 -	110	98.3	
118	Sn	2	115	99.88	ppb	2.10	100.00	90 -	110	99.9	
121	Sb	2	115	97.31	ppb	1.95	100.00	90 -	110	97.3	
137	Ba	2	115	96.86	ppb	1.47	100.00	90 -	110	96.9	
205	Tl	2	209	95.89	ppb	1.24	100.00	90 -	110	95.9	
208	Pb	2	209	97.93	ppb	1.10	100.00	90 -	110	97.9	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-18452.37	3.78	23.38	-78909.1	70 -	120		ISFail
45	Sc	1	100059.49	0.81	90770.48	110.2	70 -	120		
45	Sc	2	3808175.30	1.10	4095698.00	93.0	70 -	120		
72	Ge	1	51962.61	0.51	47835.73	108.6	70 -	120		
115	In	2	6057315.00	0.73	6191712.50	97.8	70 -	120		
209	Bi	2	5531796.50	0.46	5622254.50	98.4	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\021LCVL.D\021LCVL.D#

Date Acquired:	Nov 16 2016 12:22 pm	Sample Name:	**ILCVL-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.83	ppb	1.77	10.00	70 -	130	98.3	
9	Be	2	45	1.04	ppb	4.57	1.00	70 -	130	104.2	
11	B	2	45	20.76	ppb	0.72	20.00	70 -	130	103.8	
23	Na	1	45	104.20	ppb	2.54	100.00	70 -	130	104.2	
24	Mg	1	45	104.70	ppb	3.66	100.00	70 -	130	104.7	
27	Al	1	45	112.30	ppb	1.73	100.00	70 -	130	112.3	
39	K	1	45	111.80	ppb	5.72	100.00	70 -	130	111.8	
44	Ca	2	45	100.80	ppb	4.71	100.00	70 -	130	100.8	
47	Ti	1	45	5.25	ppb	1.56	5.00	70 -	130	104.9	
51	V	1	45	1.05	ppb	2.94	1.00	70 -	130	104.5	
52	Cr	1	45	5.26	ppb	1.24	5.00	70 -	130	105.2	
55	Mn	1	45	5.74	ppb	1.32	5.00	70 -	130	114.8	
56	Fe	1	72	112.70	ppb	2.97	100.00	70 -	130	112.7	
59	Co	1	72	5.21	ppb	1.16	5.00	70 -	130	104.2	
60	Ni	1	72	5.39	ppb	1.46	5.00	70 -	130	107.7	
63	Cu	1	72	5.34	ppb	0.74	5.00	70 -	130	106.8	
66	Zn	1	72	5.96	ppb	3.72	5.00	70 -	130	119.2	
75	As	1	72	5.34	ppb	1.81	5.00	70 -	130	106.7	
78	Se	1	72	5.50	ppb	9.83	5.00	70 -	130	110.0	
88	Sr	2	115	4.96	ppb	1.55	5.00	70 -	130	99.1	
95	Mo	2	115	5.06	ppb	3.18	5.00	70 -	130	101.1	
107	Ag	2	115	2.03	ppb	1.91	2.00	70 -	130	101.3	
111	Cd	2	115	1.00	ppb	5.38	1.00	70 -	130	100.0	
118	Sn	2	115	5.33	ppb	1.28	5.00	70 -	130	106.5	
121	Sb	2	115	2.00	ppb	0.10	2.00	70 -	130	100.2	
137	Ba	2	115	4.92	ppb	3.10	5.00	70 -	130	98.3	
205	Tl	2	209	1.05	ppb	2.64	1.00	70 -	130	105.4	
208	Pb	2	209	1.04	ppb	3.51	1.00	70 -	130	103.8	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigh	-1756.23	16.43	23.38	-7510.3	70 -	120	ISFail
45	Sc	1		100736.46	1.05	90770.48	111.0	70 -	120	
45	Sc	2		3951775.00	0.28	4095698.00	96.5	70 -	120	
72	Ge	1		52685.69	0.74	47835.73	110.1	70 -	120	
115	In	2		6229485.50	0.14	6191712.50	100.6	70 -	120	
209	Bi	2		5626409.50	1.10	5622254.50	100.1	70 -	120	

ICB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\022_ICB.D\022_ICB.D#

Date Acquired:	Nov 16 2016 12:28 pm	Sample Name:	**ICB1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Instrument:	ICPMS3

QC Elements

Element				Conc.		RSD(%)	High Limit	Flag
7	Li	2	45	0.07	ppb	6.74	2.00	
9	Be	2	45	0.03	ppb	8.27	0.40	
11	B	2	45	1.12	ppb	1.34	10.00	
23	Na	1	45	3.11	ppb	1.93	50.00	
24	Mg	1	45	3.18	ppb	44.76	50.00	
27	Al	1	45	13.72	ppb	9.63	50.00	Failaq
39	K	1	45	0.53	ppb	4.24	50.00	
44	Ca	2	45	-2.97	ppb	8.71	50.00	
47	Ti	1	45	0.10	ppb	86.59	4.00	
51	V	1	45	0.06	ppb	18.96	4.00	
52	Cr	1	45	0.04	ppb	12.40	2.00	
55	Mn	1	45	0.08	ppb	24.14	2.00	
56	Fe	1	72	3.12	ppb	41.56	50.00	
59	Co	1	72	0.04	ppb	30.04	2.00	
60	Ni	1	72	-0.05	ppb	13.97	2.00	
63	Cu	1	72	-0.03	ppb	6.90	2.00	
66	Zn	1	72	0.21	ppb	22.62	4.00	
75	As	1	72	0.07	ppb	5.55	2.00	
78	Se	1	72	0.30	ppb	39.97	0.60	
88	Sr	2	115	0.01	ppb	13.91	4.00	
95	Mo	2	115	0.16	ppb	18.27	2.00	
107	Ag	2	115	0.03	ppb	35.78	0.40	
111	Cd	2	115	0.02	ppb	9.31	0.40	
118	Sn	2	115	0.05	ppb	12.84	20.00	
121	Sb	2	115	0.01	ppb	16.37	2.00	
137	Ba	2	115	0.03	ppb	30.74	2.00	
205	Tl	2	209	0.06	ppb	9.03	2.00	
208	Pb	2	209	0.05	ppb	11.52	0.40	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2 RHig	-4.19	######	23.38	-17.9	70 - 120	ISFail
45	Sc	1	105863.35	0.92	90770.48	116.6	70 - 120	
45	Sc	2	3961297.00	0.29	4095698.00	96.7	70 - 120	
72	Ge	1	54610.23	0.56	47835.73	114.2	70 - 120	
115	In	2	6298239.50	1.06	6191712.50	101.7	70 - 120	
209	Bi	2	5745486.50	0.89	5622254.50	102.2	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\033CCV1.D\033CCV1.D#

Date Acquired:	Nov 16 2016 01:35 pm	Sample Name:	**CCV1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	221.30	ppb	1.98	200.00	90 -	110	110.7	Fail
9	Be	2	45	208.70	ppb	1.77	200.00	90 -	110	104.4	
11	B	2	45	197.80	ppb	0.59	200.00	90 -	110	98.9	
23	Na	1	45	5550.00	ppb	0.31	5000.00	90 -	110	111.0	Fail
24	Mg	1	45	5094.00	ppb	1.24	5000.00	90 -	110	101.9	
27	Al	1	45	5319.00	ppb	0.75	5000.00	90 -	110	106.4	
39	K	1	45	5369.00	ppb	0.86	5000.00	90 -	110	107.4	
44	Ca	2	45	5082.00	ppb	0.86	5000.00	90 -	110	101.6	
47	Ti	1	45	205.90	ppb	0.84	200.00	90 -	110	103.0	
51	V	1	45	207.40	ppb	0.74	200.00	90 -	110	103.7	
52	Cr	1	45	210.30	ppb	0.61	200.00	90 -	110	105.2	
55	Mn	1	45	219.60	ppb	0.21	200.00	90 -	110	109.8	
56	Fe	1	72	5327.00	ppb	1.42	5000.00	90 -	110	106.5	
59	Co	1	72	209.80	ppb	0.80	200.00	90 -	110	104.9	
60	Ni	1	72	211.90	ppb	0.90	200.00	90 -	110	106.0	
63	Cu	1	72	211.20	ppb	0.56	200.00	90 -	110	105.6	
66	Zn	1	72	223.50	ppb	1.33	200.00	90 -	110	111.8	Fail
75	As	1	72	217.60	ppb	0.84	200.00	90 -	110	108.8	
78	Se	1	72	228.00	ppb	1.97	200.00	90 -	110	114.0	Fail
88	Sr	2	115	215.90	ppb	0.31	200.00	90 -	110	108.0	
95	Mo	2	115	208.90	ppb	0.84	200.00	90 -	110	104.5	
107	Ag	2	115	211.20	ppb	1.16	200.00	90 -	110	105.6	
111	Cd	2	115	208.80	ppb	1.28	200.00	90 -	110	104.4	
118	Sn	2	115	212.20	ppb	1.60	200.00	90 -	110	106.1	
121	Sb	2	115	209.10	ppb	1.13	200.00	90 -	110	104.6	
137	Ba	2	115	205.30	ppb	0.66	200.00	90 -	110	102.7	
205	Tl	2	209	215.60	ppb	1.55	200.00	90 -	110	107.8	
208	Pb	2	209	211.30	ppb	0.45	200.00	90 -	110	105.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-54481.09	2.40	23.38	-232981.1	70 -	120		ISFail
45	Sc	1	75101.60	0.94	90770.48	82.7	70 -	120		
45	Sc	2	3128611.30	0.31	4095698.00	76.4	70 -	120		
72	Ge	1	39785.70	0.79	47835.73	83.2	70 -	120		
115	In	2	4811983.50	1.99	6191712.50	77.7	70 -	120		
209	Bi	2	4366653.50	0.54	5622254.50	77.7	70 -	120		

CCB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\034_CCB.D\034_CCB.D#

Date Acquired:	Nov 16 2016 01:41 pm	Sample Name:	**CCB1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.232	ppb	2.72	2.00	2.00	
9	Be	2	45	0.192	ppb	14.94	0.40	0.30	
11	B	2	45	4.617	ppb	1.72	10.00	10.00	
23	Na	1	45	145.400	ppb	3.38	50.00	#####	Failsoil
24	Mg	1	45	5.221	ppb	9.33	50.00	#####	
27	Al	1	45	16.290	ppb	2.60	50.00	10.00	FailAq
39	K	1	45	9.520	ppb	4.06	50.00	#####	
44	Ca	2	45	7.488	ppb	3.20	50.00	#####	
47	Ti	1	45	0.125	ppb	173.20	4.00	3.00	
51	V	1	45	0.206	ppb	2.94	4.00	3.00	
52	Cr	1	45	0.202	ppb	11.75	2.00	2.00	
55	Mn	1	45	0.275	ppb	10.22	2.00	3.00	
56	Fe	1	72	5.460	ppb	4.33	50.00	30.00	
59	Co	1	72	0.219	ppb	0.85	2.00	3.00	
60	Ni	1	72	0.102	ppb	2.52	2.00	3.00	
63	Cu	1	72	0.171	ppb	9.48	2.00	2.00	
66	Zn	1	72	0.665	ppb	17.04	4.00	2.00	
75	As	1	72	0.252	ppb	15.07	2.00	2.00	
78	Se	1	72	0.408	ppb	10.19	0.60	2.00	
88	Sr	2	115	0.197	ppb	5.20	4.00	3.00	
95	Mo	2	115	0.410	ppb	7.08	2.00	2.00	
107	Ag	2	115	0.168	ppb	7.57	0.40	1.00	
111	Cd	2	115	0.203	ppb	9.05	0.40	0.30	
118	Sn	2	115	0.341	ppb	6.09	20.00	3.00	
121	Sb	2	115	0.546	ppb	3.34	2.00	0.80	
137	Ba	2	115	0.193	ppb	15.11	2.00	3.00	
205	Tl	2	209	0.411	ppb	2.67	2.00	0.50	
208	Pb	2	209	0.191	ppb	7.93	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-39.26	20.31	23.38	-167.9	70 - 120	ISFail
45	Sc	1		73997.24	1.42	90770.48	81.5	70 - 120	
45	Sc	2		3061413.00	1.31	4095698.00	74.7	70 - 120	
72	Ge	1		39921.27	1.06	47835.73	83.5	70 - 120	
115	In	2		4756063.00	0.57	6191712.50	76.8	70 - 120	
209	Bi	2		4354632.00	1.12	5622254.50	77.5	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\035LCVL.D\035LCVL.D#

Date Acquired:	Nov 16 2016 01:47 pm	Sample Name:	**LCVL1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	10.14	ppb	1.28	10.00	70 -	130	101.4	
9	Be	2	45	1.09	ppb	6.17	1.00	70 -	130	109.2	
11	B	2	45	21.56	ppb	1.99	20.00	70 -	130	107.8	
23	Na	1	45	211.60	ppb	1.36	100.00	70 -	130	211.6	Fail
24	Mg	1	45	101.30	ppb	1.29	100.00	70 -	130	101.3	
27	Al	1	45	100.90	ppb	3.89	100.00	70 -	130	100.9	
39	K	1	45	110.50	ppb	1.53	100.00	70 -	130	110.5	
44	Ca	2	45	104.00	ppb	0.21	100.00	70 -	130	104.0	
47	Ti	1	45	5.07	ppb	2.13	5.00	70 -	130	101.3	
51	V	1	45	1.13	ppb	2.40	1.00	70 -	130	113.2	
52	Cr	1	45	5.29	ppb	2.07	5.00	70 -	130	105.7	
55	Mn	1	45	5.52	ppb	2.44	5.00	70 -	130	110.5	
56	Fe	1	72	102.30	ppb	1.35	100.00	70 -	130	102.3	
59	Co	1	72	5.08	ppb	1.48	5.00	70 -	130	101.6	
60	Ni	1	72	5.21	ppb	1.33	5.00	70 -	130	104.3	
63	Cu	1	72	5.24	ppb	0.53	5.00	70 -	130	104.8	
66	Zn	1	72	5.61	ppb	2.33	5.00	70 -	130	112.3	
75	As	1	72	5.33	ppb	2.44	5.00	70 -	130	106.5	
78	Se	1	72	6.12	ppb	3.95	5.00	70 -	130	122.3	
88	Sr	2	115	5.12	ppb	3.15	5.00	70 -	130	102.5	
95	Mo	2	115	5.12	ppb	2.22	5.00	70 -	130	102.4	
107	Ag	2	115	2.07	ppb	5.31	2.00	70 -	130	103.3	
111	Cd	2	115	1.12	ppb	8.34	1.00	70 -	130	112.0	
118	Sn	2	115	5.39	ppb	2.15	5.00	70 -	130	107.8	
121	Sb	2	115	2.33	ppb	0.78	2.00	70 -	130	116.3	
137	Ba	2	115	5.00	ppb	1.88	5.00	70 -	130	100.1	
205	Tl	2	209	1.14	ppb	3.62	1.00	70 -	130	113.6	
208	Pb	2	209	1.07	ppb	3.09	1.00	70 -	130	107.2	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigl -1612.30	9.05	23.38	-6894.8	70 -	120	ISFail
45	Sc	1	76576.46	0.81	90770.48	84.4	70 -	120	
45	Sc	2	3110479.00	0.96	4095698.00	75.9	70 -	120	
72	Ge	1	41515.24	0.80	47835.73	86.8	70 -	120	
115	In	2	4836370.50	1.36	6191712.50	78.1	70 -	120	
209	Bi	2	4455664.00	1.55	5622254.50	79.3	70 -	120	

PB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\036__PB.D\036__PB.D#

Date Acquired:	Nov 16 2016 01:53 pm	Sample Name:	MB-77913
Acq. Method:	DHL_3Fe.M	Misc Info:	MBLKICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	MDL	RL	Flag
7	Li	2	45	0.143	ppb	6.80	2.0	5.00	
9	Be	2	45	0.029	ppb	15.02	0.3	1.00	
11	B	2	45	23.090	ppb	4.39	10.0	30.00	J
23	Na	1	45	86.320	ppb	3.78	100.0	#####	
24	Mg	1	45	16.490	ppb	6.40	100.0	#####	
27	Al	1	45	140.400	ppb	2.73	10.0	30.00	Fail
39	K	1	45	18.660	ppb	1.81	100.0	#####	
44	Ca	2	45	301.200	ppb	0.92	100.0	#####	Fail
47	Ti	1	45	0.256	ppb	57.72	3.0	10.00	
51	V	1	45	0.144	ppb	15.48	3.0	10.00	
52	Cr	1	45	0.198	ppb	6.70	2.0	5.00	
55	Mn	1	45	0.333	ppb	4.22	3.0	10.00	
56	Fe	1	72	5.643	ppb	3.52	30.0	#####	
59	Co	1	72	0.048	ppb	15.64	3.0	10.00	
60	Ni	1	72	-0.034	ppb	16.50	3.0	10.00	
63	Cu	1	72	0.085	ppb	7.12	2.0	10.00	
66	Zn	1	72	2.415	ppb	5.56	2.0	5.00	J
75	As	1	72	0.074	ppb	30.59	2.0	5.00	
78	Se	1	72	0.175	ppb	71.84	2.0	5.00	
88	Sr	2	115	2.063	ppb	2.11	3.0	10.00	
95	Mo	2	115	0.092	ppb	9.55	2.0	5.00	
107	Ag	2	115	0.038	ppb	8.55	1.0	2.00	
111	Cd	2	115	0.030	ppb	30.41	0.3	1.00	
118	Sn	2	115	0.058	ppb	5.52	3.0	10.00	
121	Sb	2	115	0.163	ppb	10.43	0.8	2.50	
137	Ba	2	115	0.456	ppb	7.87	3.0	10.00	
205	Tl	2	209	0.069	ppb	2.52	0.5	1.50	
208	Pb	2	209	0.083	ppb	2.33	0.3	1.00	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHig	-23.25	60.04	23.38	-99.4	70 - 120	ISFail
45	Sc	1		78779.15	0.59	90770.48	86.8	70 - 120	
45	Sc	2		3126302.80	0.62	4095698.00	76.3	70 - 120	
72	Ge	1		42207.38	0.46	47835.73	88.2	70 - 120	
115	In	2		4894609.50	1.47	6191712.50	79.1	70 - 120	
209	Bi	2		4485356.50	0.45	5622254.50	79.8	70 - 120	

LCS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\037_LCS.D\037_LCS.D#

Date Acquired:	Nov 16 2016 01:59 pm	Sample Name:	**LCS-77913**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.70	ppb	0.66	200.00	80 -	120	97.9	
9	Be	2	45	190.70	ppb	0.51	200.00	80 -	120	95.4	
11	B	2	45	193.70	ppb	1.62	200.00	80 -	120	96.9	
23	Na	1	45	5152.00	ppb	1.29	5000.00	80 -	120	103.0	
24	Mg	1	45	4827.00	ppb	0.95	5000.00	80 -	120	96.5	
27	Al	1	45	5060.00	ppb	0.67	5000.00	80 -	120	101.2	
39	K	1	45	4987.00	ppb	0.39	5000.00	80 -	120	99.7	
44	Ca	2	45	4988.00	ppb	1.72	5000.00	80 -	120	99.8	
47	Ti	1	45	200.30	ppb	3.05	200.00	80 -	120	100.2	
51	V	1	45	195.80	ppb	0.52	200.00	80 -	120	97.9	
52	Cr	1	45	196.90	ppb	1.04	200.00	80 -	120	98.5	
55	Mn	1	45	205.00	ppb	0.89	200.00	80 -	120	102.5	
56	Fe	1	72	4946.00	ppb	1.49	5000.00	80 -	120	98.9	
59	Co	1	72	194.80	ppb	1.17	200.00	80 -	120	97.4	
60	Ni	1	72	197.10	ppb	1.52	200.00	80 -	120	98.6	
63	Cu	1	72	197.80	ppb	0.68	200.00	80 -	120	98.9	
66	Zn	1	72	210.60	ppb	1.44	200.00	80 -	120	105.3	
75	As	1	72	201.90	ppb	0.68	200.00	80 -	120	101.0	
78	Se	1	72	212.40	ppb	1.24	200.00	80 -	120	106.2	
88	Sr	2	115	202.10	ppb	1.55	200.00	80 -	120	101.1	
95	Mo	2	115	194.00	ppb	0.94	200.00	80 -	120	97.0	
107	Ag	2	115	189.90	ppb	0.59	200.00	80 -	120	95.0	
111	Cd	2	115	194.00	ppb	1.87	200.00	80 -	120	97.0	
118	Sn	2	115	195.90	ppb	1.93	200.00	80 -	120	98.0	
121	Sb	2	115	191.10	ppb	1.83	200.00	80 -	120	95.6	
137	Ba	2	115	193.30	ppb	0.89	200.00	80 -	120	96.7	
205	Tl	2	209	201.10	ppb	0.56	200.00	80 -	120	100.6	
208	Pb	2	209	192.60	ppb	0.78	200.00	80 -	120	96.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47051.68	1.35	23.38	-201210.2	70 -	120	ISFail
45	Sc	1	76791.60	0.33	90770.48	84.6	70 -	120	
45	Sc	2	3089002.30	0.73	4095698.00	75.4	70 -	120	
72	Ge	1	40839.87	0.92	47835.73	85.4	70 -	120	
115	In	2	4794189.50	1.15	6191712.50	77.4	70 -	120	
209	Bi	2	4398718.50	0.41	5622254.50	78.2	70 -	120	

LCS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\038_LCS.D\038_LCS.D#

Date Acquired:	Nov 16 2016 02:05 pm	Sample Name:	**LCSD-77913**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCSDICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.60	ppb	1.27	200.00	80 -	120	97.8	
9	Be	2	45	192.30	ppb	1.18	200.00	80 -	120	96.2	
11	B	2	45	190.40	ppb	0.75	200.00	80 -	120	95.2	
23	Na	1	45	5154.00	ppb	1.38	5000.00	80 -	120	103.1	
24	Mg	1	45	4876.00	ppb	1.33	5000.00	80 -	120	97.5	
27	Al	1	45	5013.00	ppb	1.07	5000.00	80 -	120	100.3	
39	K	1	45	5054.00	ppb	0.60	5000.00	80 -	120	101.1	
44	Ca	2	45	4970.00	ppb	1.99	5000.00	80 -	120	99.4	
47	Ti	1	45	195.90	ppb	2.18	200.00	80 -	120	98.0	
51	V	1	45	194.20	ppb	1.00	200.00	80 -	120	97.1	
52	Cr	1	45	194.30	ppb	1.04	200.00	80 -	120	97.2	
55	Mn	1	45	202.70	ppb	1.96	200.00	80 -	120	101.4	
56	Fe	1	72	4880.00	ppb	1.27	5000.00	80 -	120	97.6	
59	Co	1	72	191.90	ppb	0.62	200.00	80 -	120	96.0	
60	Ni	1	72	195.90	ppb	1.15	200.00	80 -	120	98.0	
63	Cu	1	72	195.50	ppb	0.62	200.00	80 -	120	97.8	
66	Zn	1	72	207.90	ppb	2.36	200.00	80 -	120	104.0	
75	As	1	72	201.00	ppb	0.63	200.00	80 -	120	100.5	
78	Se	1	72	205.90	ppb	0.74	200.00	80 -	120	103.0	
88	Sr	2	115	199.70	ppb	1.81	200.00	80 -	120	99.9	
95	Mo	2	115	193.80	ppb	1.78	200.00	80 -	120	96.9	
107	Ag	2	115	190.20	ppb	1.33	200.00	80 -	120	95.1	
111	Cd	2	115	193.00	ppb	1.50	200.00	80 -	120	96.5	
118	Sn	2	115	196.80	ppb	1.69	200.00	80 -	120	98.4	
121	Sb	2	115	193.20	ppb	1.77	200.00	80 -	120	96.6	
137	Ba	2	115	191.20	ppb	2.34	200.00	80 -	120	95.6	
205	Tl	2	209	196.80	ppb	2.73	200.00	80 -	120	98.4	
208	Pb	2	209	191.70	ppb	2.96	200.00	80 -	120	95.9	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47734.52	3.69	23.38	-204130.3	70 -	120	ISFail
45	Sc	1	78607.66	0.85	90770.48	86.6	70 -	120	
45	Sc	2	3078442.00	2.00	4095698.00	75.2	70 -	120	
72	Ge	1	41923.94	1.66	47835.73	87.6	70 -	120	
115	In	2	4774978.50	1.25	6191712.50	77.1	70 -	120	
209	Bi	2	4418151.50	2.45	5622254.50	78.6	70 -	120	

DT QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\041DT1.D\041DT1.D#

Date Acquired:	Nov 16 2016 02:24 pm	Sample Name:	**1611028-26A SD**
Acq. Method:	DHL_3Fe.M	Misc Info:	SD ICPMS_TW
Operator:	CVD	Bench Diln:	5.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)	Rec(%)	Flag
7	Li	2	45	0.06	ppb	10.79	-2.71	90 - 110	-10.6	
9	Be	2	45	0.02	ppb	18.94	0.05	90 - 110	232.7	
11	B	2	45	6.99	ppb	2.32	24.49	90 - 110	142.7	
23	Na	1	45	51.81	ppb	0.98	100.00	90 - 110	259.1	
24	Mg	1	45	1.63	ppb	11.89	4.56	90 - 110	179.0	
27	Al	1	45	2.30	ppb	7.65	10.14	90 - 110	113.6	
39	K	1	45	11.19	ppb	1.13	9.76	90 - 110	573.3	
44	Ca	2	45	6.24	ppb	0.90	20.25	90 - 110	154.2	
47	Ti	1	45	-0.03	ppb	173.20	0.08	90 - 110	-178.4	
51	V	1	45	0.06	ppb	7.22	0.12	90 - 110	254.3	
52	Cr	1	45	0.08	ppb	13.03	0.11	90 - 110	344.4	
55	Mn	1	45	1.20	ppb	11.44	0.19	90 - 110	3179.4	
56	Fe	1	72	16.92	ppb	0.86	4.56	90 - 110	1855.7	
59	Co	1	72	0.04	ppb	14.40	0.09	90 - 110	243.1	
60	Ni	1	72	0.13	ppb	15.89	0.03	90 - 110	2418.9	
63	Cu	1	72	0.91	ppb	2.22	0.08	90 - 110	5947.2	
66	Zn	1	72	0.24	ppb	16.04	0.38	90 - 110	312.6	
75	As	1	72	0.06	ppb	22.50	0.11	90 - 110	266.8	
78	Se	1	72	0.33	ppb	9.09	0.35	90 - 110	472.8	
88	Sr	2	115	0.05	ppb	7.25	0.17	90 - 110	140.2	
95	Mo	2	115	0.14	ppb	12.55	0.34	90 - 110	207.3	
107	Ag	2	115	0.03	ppb	19.63	0.05	90 - 110	309.5	
111	Cd	2	115	0.02	ppb	36.97	0.05	90 - 110	186.1	
118	Sn	2	115	0.08	ppb	1.61	0.06	90 - 110	670.0	
121	Sb	2	115	0.12	ppb	12.84	0.16	90 - 110	361.9	
137	Ba	2	115	0.03	ppb	31.24	0.09	90 - 110	192.3	
205	Tl	2	209	0.09	ppb	9.90	0.14	90 - 110	343.3	
208	Pb	2	209	0.04	ppb	22.71	0.07	90 - 110	258.1	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHig	-2.71	696.51	23.38	-11.6	70 -	120	ISFail
45	Sc	1		81710.48	1.31	90770.48	90.0	70 -	120	
45	Sc	2		3181941.80	1.12	4095698.00	77.7	70 -	120	
72	Ge	1		43990.27	0.86	47835.73	92.0	70 -	120	
115	In	2		4971032.00	0.64	6191712.50	80.3	70 -	120	
209	Bi	2		4608186.00	1.31	5622254.50	82.0	70 -	120	

Sample QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\045SMPL.D\045SMPL.D#

Date Acquired:	Nov 16 2016 02:48 pm	Sample Name:	**1611044-13A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TW
Operator:	CVD	Bench Diln:	1
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	0.030	ppb	#REF!	1.34	2000.00	ND
9	Be	2	45	-0.012	ppb	#REF!	50.94	2000.00	ND
11	B	2	45	17.320	ppb	#REF!	0.20	2000.00	J
23	Na	1	45	84.440	ppb	#REF!	0.28	25000.00	ND
24	Mg	1	45	2.992	ppb	#REF!	6.49	25000.00	ND
27	Al	1	45	15.200	ppb	#REF!	5.47	10000.00	J
39	K	1	45	5.940	ppb	#REF!	2.38	25000.00	ND
44	Ca	2	45	42.620	ppb	#REF!	1.87	25000.00	ND
47	Ti	1	45	0.070	ppb	#REF!	43.30	2000.00	ND
51	V	1	45	0.033	ppb	#REF!	24.67	2000.00	ND
52	Cr	1	45	0.069	ppb	#REF!	7.52	2000.00	ND
55	Mn	1	45	0.075	ppb	#REF!	26.45	2000.00	ND
56	Fe	1	72	4.043	ppb	#REF!	2.48	10000.00	ND
59	Co	1	72	0.000	ppb	#REF!	28.48	2000.00	ND
60	Ni	1	72	-0.053	ppb	#REF!	27.64	2000.00	ND
63	Cu	1	72	-0.057	ppb	#REF!	12.37	2000.00	ND
66	Zn	1	72	0.401	ppb	#REF!	19.50	2000.00	ND
75	As	1	72	0.018	ppb	#REF!	12.37	2000.00	ND
78	Se	1	72	0.301	ppb	#REF!	46.25	2000.00	ND
88	Sr	2	115	0.257	ppb	#REF!	1.77	2000.00	ND
95	Mo	2	115	0.128	ppb	#REF!	10.49	2000.00	ND
107	Ag	2	115	0.008	ppb	#REF!	41.03	500.00	ND
111	Cd	2	115	-0.009	ppb	#REF!	82.06	2000.00	ND
118	Sn	2	115	-0.054	ppb	#REF!	14.41	2000.00	ND
121	Sb	2	115	0.047	ppb	#REF!	3.04	500.00	ND
137	Ba	2	115	0.054	ppb	#REF!	11.09	2000.00	ND
205	Tl	2	209	0.020	ppb	#REF!	3.65	2000.00	ND
208	Pb	2	209	0.018	ppb	#REF!	4.43	2000.00	ND

ISTD Elements

Element			CPS Mean	RSD(%)		Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-4.12	286.29	RHigh	23.38	-17.6	70 - 120	ISFail
45	Sc	1	84311.33	0.87		90770.48	92.9	70 - 120	
45	Sc	2	3110384.80	0.15		4095698.00	75.9	70 - 120	
72	Ge	1	44947.25	0.82		47835.73	94.0	70 - 120	
115	In	2	4919141.00	0.64		6191712.50	79.4	70 - 120	
209	Bi	2	4565763.00	0.41		5622254.50	81.2	70 - 120	

PDS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\048_PDS.D\048_PDS.D#

Date Acquired:	Nov 16 2016 03:06 pm	Sample Name:	**1611028-26A PDS**
Acq. Method:	DHL_3Fe.M	Misc Info:	PDS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	198.40	ppb	1.25	-31101.69	200	75-125	######	Fail
9	Be	2	45	196.10	ppb	0.44	0.05	200	75-125	98.0	
11	B	2	45	199.40	ppb	2.54	24.49	200	75-125	87.5	
23	Na	1	45	5188.00	ppb	1.53	100.00	5000	75-125	101.8	
24	Mg	1	45	4804.00	ppb	1.17	4.56	5000	75-125	96.0	
27	Al	1	45	5030.00	ppb	1.38	10.14	5000	75-125	100.4	
39	K	1	45	5115.00	ppb	1.08	9.76	5000	75-125	102.1	
44	Ca	2	45	4657.00	ppb	3.52	20.25	5000	75-125	92.7	
47	Ti	1	45	195.50	ppb	3.29	0.08	200	75-125	97.7	
51	V	1	45	196.40	ppb	0.68	0.12	200	75-125	98.1	
52	Cr	1	45	203.10	ppb	1.17	0.11	200	75-125	101.5	
55	Mn	1	45	205.10	ppb	1.09	0.19	200	75-125	102.5	
56	Fe	1	72	4984.00	ppb	1.32	4.56	5000	75-125	99.6	
59	Co	1	72	194.40	ppb	1.06	0.09	200	75-125	97.2	
60	Ni	1	72	196.50	ppb	0.75	0.03	200	75-125	98.2	
63	Cu	1	72	190.80	ppb	0.55	0.08	200	75-125	95.4	
66	Zn	1	72	204.80	ppb	0.88	0.38	200	75-125	102.2	
75	As	1	72	199.30	ppb	1.05	0.11	200	75-125	99.6	
78	Se	1	72	205.30	ppb	1.45	0.35	200	75-125	102.5	
88	Sr	2	115	200.50	ppb	1.81	0.17	200	75-125	100.2	
95	Mo	2	115	190.10	ppb	2.07	0.34	200	75-125	94.9	
107	Ag	2	115	186.80	ppb	2.47	0.05	200	75-125	93.4	
111	Cd	2	115	192.30	ppb	3.06	0.05	200	75-125	96.1	
118	Sn	2	115	202.40	ppb	2.19	0.06	200	75-125	101.2	
121	Sb	2	115	189.80	ppb	1.76	0.16	200	75-125	94.8	
137	Ba	2	115	194.40	ppb	2.62	0.09	200	75-125	97.2	
205	Tl	2	209	202.80	ppb	2.31	0.14	200	75-125	101.3	
208	Pb	2	209	196.60	ppb	2.95	0.07	200	75-125	98.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-31101.69	4.76	23.38	-133002.2	70 - 120	ISFail
45	Sc	1	83978.49	0.79	90770.48	92.5	70 - 120	
45	Sc	2	3107189.80	2.26	4095698.00	75.9	70 - 120	
72	Ge	1	44375.64	0.41	47835.73	92.8	70 - 120	
115	In	2	4842685.00	1.74	6191712.50	78.2	70 - 120	
209	Bi	2	4457390.50	1.49	5622254.50	79.3	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\049_MS.D\049_MS.D#

1611028-26A MS

Date Acquired:	Nov 16 2016 03:12 pm	Sample Name:	~~1610181-01C MS~~
Acq. Method:	DHL_3Fe.M	Misc Info:	MS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	196.80	ppb	0.66	########	200	80-120	######	Fail
9	Be	2	45	193.20	ppb	1.29	0.05	200	80-120	96.6	
11	B	2	45	212.40	ppb	3.14	24.49	200	80-120	94.0	
23	Na	1	45	5220.00	ppb	1.68	100.00	5000	80-120	102.4	
24	Mg	1	45	4791.00	ppb	1.38	4.56	5000	80-120	95.7	
27	Al	1	45	4991.00	ppb	1.42	10.14	5000	80-120	99.6	
39	K	1	45	5055.00	ppb	1.30	9.76	5000	80-120	100.9	
44	Ca	2	45	4893.00	ppb	3.49	20.25	5000	80-120	97.5	
47	Ti	1	45	188.30	ppb	2.41	0.08	200	80-120	94.1	
51	V	1	45	189.20	ppb	0.78	0.12	200	80-120	94.5	
52	Cr	1	45	190.70	ppb	1.17	0.11	200	80-120	95.3	
55	Mn	1	45	201.10	ppb	1.18	0.19	200	80-120	100.5	
56	Fe	1	72	4880.00	ppb	2.03	4.56	5000	80-120	97.5	
59	Co	1	72	190.20	ppb	1.18	0.09	200	80-120	95.1	
60	Ni	1	72	191.40	ppb	1.44	0.03	200	80-120	95.7	
63	Cu	1	72	191.30	ppb	0.95	0.08	200	80-120	95.6	
66	Zn	1	72	200.10	ppb	1.00	0.38	200	80-120	99.9	
75	As	1	72	196.50	ppb	1.11	0.11	200	80-120	98.2	
78	Se	1	72	205.90	ppb	2.13	0.35	200	80-120	102.8	
88	Sr	2	115	199.70	ppb	2.35	0.17	200	80-120	99.8	
95	Mo	2	115	191.50	ppb	1.78	0.34	200	80-120	95.6	
107	Ag	2	115	191.20	ppb	2.10	0.05	200	80-120	95.6	
111	Cd	2	115	191.20	ppb	2.12	0.05	200	80-120	95.6	
118	Sn	2	115	197.60	ppb	1.29	0.06	200	80-120	98.8	
121	Sb	2	115	191.90	ppb	2.00	0.16	200	80-120	95.9	
137	Ba	2	115	190.40	ppb	1.30	0.09	200	80-120	95.2	
205	Tl	2	209	199.40	ppb	0.67	0.14	200	80-120	99.6	
208	Pb	2	209	193.10	ppb	3.00	0.07	200	80-120	96.5	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-46741.06	0.98	23.38	########	70 - 120	ISFail
45	Sc	1	84787.74	0.31	90770.48	93.4	70 - 120	
45	Sc	2	3060665.80	1.99	4095698.00	74.7	70 - 120	
72	Ge	1	44533.09	0.64	47835.73	93.1	70 - 120	
115	In	2	4815742.00	1.01	6191712.50	77.8	70 - 120	
209	Bi	2	4452220.50	0.81	5622254.50	79.2	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\050_MS.D\050_MS.D#

1611028-26A MSD

Date Acquired:	Nov 16 2016 03:18 pm	Sample Name:	~~1610181-01C MSD~~
Acq. Method:	DHL_3Fe.M	Misc Info:	MSD ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	195.20	ppb	1.14	########	200	80-120	######	Fail
9	Be	2	45	190.50	ppb	1.55	0.05	200	80-120	95.2	
11	B	2	45	205.90	ppb	2.24	24.49	200	80-120	90.7	
23	Na	1	45	5188.00	ppb	0.78	100.00	5000	80-120	101.8	
24	Mg	1	45	4813.00	ppb	0.62	4.56	5000	80-120	96.2	
27	Al	1	45	4975.00	ppb	0.90	10.14	5000	80-120	99.3	
39	K	1	45	5062.00	ppb	0.54	9.76	5000	80-120	101.0	
44	Ca	2	45	4881.00	ppb	2.27	20.25	5000	80-120	97.2	
47	Ti	1	45	196.00	ppb	1.98	0.08	200	80-120	98.0	
51	V	1	45	191.50	ppb	0.59	0.12	200	80-120	95.7	
52	Cr	1	45	194.00	ppb	0.24	0.11	200	80-120	96.9	
55	Mn	1	45	201.30	ppb	0.50	0.19	200	80-120	100.6	
56	Fe	1	72	4958.00	ppb	0.81	4.56	5000	80-120	99.1	
59	Co	1	72	195.00	ppb	0.30	0.09	200	80-120	97.5	
60	Ni	1	72	195.80	ppb	0.62	0.03	200	80-120	97.9	
63	Cu	1	72	195.10	ppb	0.08	0.08	200	80-120	97.5	
66	Zn	1	72	204.60	ppb	1.55	0.38	200	80-120	102.1	
75	As	1	72	199.80	ppb	0.23	0.11	200	80-120	99.8	
78	Se	1	72	208.10	ppb	1.95	0.35	200	80-120	103.9	
88	Sr	2	115	197.50	ppb	2.89	0.17	200	80-120	98.7	
95	Mo	2	115	191.00	ppb	1.70	0.34	200	80-120	95.3	
107	Ag	2	115	189.60	ppb	1.97	0.05	200	80-120	94.8	
111	Cd	2	115	191.10	ppb	2.17	0.05	200	80-120	95.5	
118	Sn	2	115	197.70	ppb	1.78	0.06	200	80-120	98.8	
121	Sb	2	115	190.80	ppb	2.08	0.16	200	80-120	95.3	
137	Ba	2	115	189.30	ppb	1.20	0.09	200	80-120	94.6	
205	Tl	2	209	200.50	ppb	2.04	0.14	200	80-120	100.2	
208	Pb	2	209	191.70	ppb	1.45	0.07	200	80-120	95.8	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-46453.83	1.84	23.38	########	70 - 120	ISFail
45	Sc	1	81711.51	0.43	90770.48	90.0	70 - 120	
45	Sc	2	3042212.80	2.19	4095698.00	74.3	70 - 120	
72	Ge	1	42633.91	0.49	47835.73	89.1	70 - 120	
115	In	2	4811446.50	1.27	6191712.50	77.7	70 - 120	
209	Bi	2	4385258.00	0.90	5622254.50	78.0	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\051CCV1.D\051CCV1.D#

Date Acquired:	Nov 16 2016 03:24 pm	Sample Name:	**CCV2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	207.70	ppb	0.35	200.00	90 -	110	103.9	
9	Be	2	45	205.30	ppb	0.83	200.00	90 -	110	102.7	
11	B	2	45	190.50	ppb	2.10	200.00	90 -	110	95.3	
23	Na	1	45	5446.00	ppb	1.83	5000.00	90 -	110	108.9	
24	Mg	1	45	5071.00	ppb	1.69	5000.00	90 -	110	101.4	
27	Al	1	45	5298.00	ppb	1.34	5000.00	90 -	110	106.0	
39	K	1	45	5422.00	ppb	1.69	5000.00	90 -	110	108.4	
44	Ca	2	45	5027.00	ppb	2.35	5000.00	90 -	110	100.5	
47	Ti	1	45	212.30	ppb	1.92	200.00	90 -	110	106.2	
51	V	1	45	208.30	ppb	1.07	200.00	90 -	110	104.2	
52	Cr	1	45	210.20	ppb	1.07	200.00	90 -	110	105.1	
55	Mn	1	45	219.60	ppb	1.48	200.00	90 -	110	109.8	
56	Fe	1	72	5261.00	ppb	2.06	5000.00	90 -	110	105.2	
59	Co	1	72	206.20	ppb	1.04	200.00	90 -	110	103.1	
60	Ni	1	72	207.70	ppb	1.07	200.00	90 -	110	103.9	
63	Cu	1	72	208.10	ppb	1.11	200.00	90 -	110	104.1	
66	Zn	1	72	218.80	ppb	1.05	200.00	90 -	110	109.4	
75	As	1	72	215.60	ppb	1.11	200.00	90 -	110	107.8	
78	Se	1	72	220.70	ppb	2.39	200.00	90 -	110	110.4	Fail
88	Sr	2	115	215.80	ppb	1.83	200.00	90 -	110	107.9	
95	Mo	2	115	209.40	ppb	2.13	200.00	90 -	110	104.7	
107	Ag	2	115	213.90	ppb	2.17	200.00	90 -	110	107.0	
111	Cd	2	115	212.40	ppb	1.28	200.00	90 -	110	106.2	
118	Sn	2	115	215.30	ppb	2.03	200.00	90 -	110	107.7	
121	Sb	2	115	213.90	ppb	1.11	200.00	90 -	110	107.0	
137	Ba	2	115	210.40	ppb	1.01	200.00	90 -	110	105.2	
205	Tl	2	209	215.40	ppb	1.56	200.00	90 -	110	107.7	
208	Pb	2	209	211.30	ppb	2.81	200.00	90 -	110	105.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-48540.40	1.53	23.38	-207576.6	70 -	120		ISFail
45	Sc	1	82595.88	1.16	90770.48	91.0	70 -	120		
45	Sc	2	3021088.80	2.40	4095698.00	73.8	70 -	120		
72	Ge	1	43802.78	1.36	47835.73	91.6	70 -	120		
115	In	2	4699487.00	2.10	6191712.50	75.9	70 -	120		
209	Bi	2	4394438.50	1.36	5622254.50	78.2	70 -	120		

CCB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\053_CCB.D\053_CCB.D#

Date Acquired:	Nov 16 2016 03:36 pm	Sample Name:	**CCB2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.164	ppb	20.76	2.00	2.00	
9	Be	2	45	0.134	ppb	14.38	0.40	0.30	
11	B	2	45	2.530	ppb	2.12	10.00	10.00	
23	Na	1	45	36.990	ppb	1.31	50.00	#####	
24	Mg	1	45	3.605	ppb	13.62	50.00	#####	
27	Al	1	45	15.900	ppb	4.48	50.00	10.00	FailAq
39	K	1	45	9.372	ppb	4.23	50.00	#####	
44	Ca	2	45	0.901	ppb	2.04	50.00	#####	
47	Ti	1	45	0.005	ppb	86.60	4.00	3.00	
51	V	1	45	0.154	ppb	18.39	4.00	3.00	
52	Cr	1	45	0.168	ppb	18.58	2.00	2.00	
55	Mn	1	45	0.219	ppb	28.75	2.00	3.00	
56	Fe	1	72	3.709	ppb	22.32	50.00	30.00	
59	Co	1	72	0.145	ppb	23.14	2.00	3.00	
60	Ni	1	72	0.036	ppb	19.40	2.00	3.00	
63	Cu	1	72	0.070	ppb	17.40	2.00	2.00	
66	Zn	1	72	0.240	ppb	16.11	4.00	2.00	
75	As	1	72	0.169	ppb	28.47	2.00	2.00	
78	Se	1	72	0.564	ppb	25.79	0.60	2.00	
88	Sr	2	115	0.105	ppb	12.62	4.00	3.00	
95	Mo	2	115	0.202	ppb	19.12	2.00	2.00	
107	Ag	2	115	0.112	ppb	20.66	0.40	1.00	
111	Cd	2	115	0.093	ppb	13.50	0.40	0.30	
118	Sn	2	115	0.173	ppb	7.18	20.00	3.00	
121	Sb	2	115	0.268	ppb	12.56	2.00	0.80	
137	Ba	2	115	0.120	ppb	14.70	2.00	3.00	
205	Tl	2	209	0.214	ppb	8.17	2.00	0.50	
208	Pb	2	209	0.136	ppb	17.50	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-41.11	37.85	23.38	-175.8	70 - 120	ISFail
45	Sc	1		83184.97	0.95	90770.48	91.6	70 - 120	
45	Sc	2		3064456.80	0.50	4095698.00	74.8	70 - 120	
72	Ge	1		44409.53	0.79	47835.73	92.8	70 - 120	
115	In	2		4842320.00	1.15	6191712.50	78.2	70 - 120	
209	Bi	2		4498236.50	0.41	5622254.50	80.0	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\054LCVL.D\054LCVL.D#

Date Acquired:	Nov 16 2016 03:43 pm	Sample Name:	**LCVL2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.77	ppb	0.89	10.00	70 -	130	97.7	
9	Be	2	45	1.04	ppb	2.99	1.00	70 -	130	103.7	
11	B	2	45	20.70	ppb	2.05	20.00	70 -	130	103.5	
23	Na	1	45	129.30	ppb	0.61	100.00	70 -	130	129.3	
24	Mg	1	45	98.44	ppb	1.58	100.00	70 -	130	98.4	
27	Al	1	45	103.00	ppb	1.39	100.00	70 -	130	103.0	
39	K	1	45	113.60	ppb	3.31	100.00	70 -	130	113.6	
44	Ca	2	45	98.83	ppb	0.90	100.00	70 -	130	98.8	
47	Ti	1	45	5.91	ppb	18.93	5.00	70 -	130	118.3	
51	V	1	45	1.07	ppb	7.04	1.00	70 -	130	106.9	
52	Cr	1	45	5.24	ppb	2.35	5.00	70 -	130	104.7	
55	Mn	1	45	5.72	ppb	1.82	5.00	70 -	130	114.4	
56	Fe	1	72	101.80	ppb	0.80	100.00	70 -	130	101.8	
59	Co	1	72	5.00	ppb	0.66	5.00	70 -	130	99.9	
60	Ni	1	72	5.17	ppb	2.72	5.00	70 -	130	103.4	
63	Cu	1	72	4.98	ppb	2.25	5.00	70 -	130	99.5	
66	Zn	1	72	5.81	ppb	6.81	5.00	70 -	130	116.2	
75	As	1	72	5.37	ppb	1.86	5.00	70 -	130	107.4	
78	Se	1	72	5.64	ppb	8.49	5.00	70 -	130	112.8	
88	Sr	2	115	4.98	ppb	1.61	5.00	70 -	130	99.6	
95	Mo	2	115	4.96	ppb	2.42	5.00	70 -	130	99.3	
107	Ag	2	115	2.04	ppb	2.57	2.00	70 -	130	102.0	
111	Cd	2	115	1.05	ppb	7.89	1.00	70 -	130	105.0	
118	Sn	2	115	5.29	ppb	1.48	5.00	70 -	130	105.8	
121	Sb	2	115	2.16	ppb	3.05	2.00	70 -	130	107.9	
137	Ba	2	115	5.03	ppb	3.01	5.00	70 -	130	100.5	
205	Tl	2	209	1.09	ppb	0.52	1.00	70 -	130	109.0	
208	Pb	2	209	1.04	ppb	1.93	1.00	70 -	130	104.2	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigh	-1331.39	6.76	23.38	-5693.5	70 -	120	ISFail
45	Sc	1		83820.43	1.91	90770.48	92.3	70 -	120	
45	Sc	2		3092937.80	1.04	4095698.00	75.5	70 -	120	
72	Ge	1		44883.67	0.58	47835.73	93.8	70 -	120	
115	In	2		4854223.00	1.97	6191712.50	78.4	70 -	120	
209	Bi	2		4527704.00	1.02	5622254.50	80.5	70 -	120	

ICP-MS4
For

DHL Work Order
1611044

ICP-MS4_161111D
For

DHL Work Order
1611044

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS4_161111D SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			x
P/A Factor	Before ICAL	Increasing trend	X			
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			x
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			x
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X			
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125/80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			x
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted			X	
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	x
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: _____ Date of Completion: 11/14/2016

Second-Level Review: Janice Whitt Date Stamp: 11/14/2016

REVIEWED BY
By Janice Whitt at 10:30:06 AM, 11/14/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161111D **Run No.:** 88958

Analytical Run Date: 11/11/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:49:00 AM		
L2-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:51:00 AM		
L-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:53:00 AM		
10X-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:55:00 AM		
5X-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:57:00 AM		
2X-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:59:00 AM		
H-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 10:01:00 AM		
H2-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 10:03:00 AM		
ICSA-161111	1	ICPMS_TWDOD	ICSA	R88958	11/11/2016 10:09:00 AM		
ICSAB-161111	1	ICPMS_TWDOD	ICSB	R88958	11/11/2016 10:11:00 AM		
ICV-161111	1	ICPMS_TWDOD	ICV	R88958	11/11/2016 10:18:00 AM		
LCVL-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 10:24:00 AM		
ICB-161111	1	ICPMS_TWDOD	ICB	R88958	11/11/2016 10:29:00 AM		
CCV4-161111	1	ICPMS_TWDOD	CCV	R88958	11/11/2016 1:11:00 PM		
LCVL4-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 1:15:00 PM		
CCB4-161111	1	ICPMS_TWDOD	CCB	R88958	11/11/2016 1:20:00 PM		
MB-77842	5	ICPMS_TSDOD1	MBLK	77842	11/11/2016 1:22:00 PM		
LCS-77842	5	ICPMS_TSDOD1	LCS	77842	11/11/2016 1:24:00 PM		
LCSD-77842	5	ICPMS_TSDOD1	LCSD	77842	11/11/2016 1:26:00 PM		
1611053-16A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:30:00 PM		
1611053-16A SD	25	ICPMS_TSDOD1	SD	77842	11/11/2016 1:32:00 PM		
1611044-14A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:34:00 PM		
1611044-15A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:36:00 PM		
1611044-18A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:38:00 PM		
1611044-21A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:40:00 PM		
1611053-01A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:42:00 PM		
1611053-06A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:44:00 PM		
1611053-11A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:46:00 PM		
1611053-21A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:48:00 PM		
1611053-26A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:50:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		11/21/2016
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161111D **Run No.:** 88958

1611053-16A PDS	5	ICPMS_TSDOD1	PDS	77842	11/11/2016 1:52:00 PM		
1611053-16A MS	5	ICPMS_TSDOD1	MS	77842	11/11/2016 1:54:00 PM		
1611053-16A MSD	5	ICPMS_TSDOD1	MSD	77842	11/11/2016 1:56:00 PM		
CCV5-161111	1	ICPMS_TWDOD	CCV	R88958	11/11/2016 1:58:00 PM		
LCVL5-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 2:02:00 PM		
CCB5-161111	1	ICPMS_TWDOD	CCB	R88958	11/11/2016 2:11:00 PM		
1611053-31A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:13:00 PM		
1611053-36A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:15:00 PM		
1611053-41A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:17:00 PM		
1611071-01A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:19:00 PM		
1611071-04A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:21:00 PM		
1611071-08A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:23:00 PM		
1611071-11A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:25:00 PM		
1611071-16A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:27:00 PM		
1611071-21A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:29:00 PM		
CCV6-161111	1	ICPMS_TWDOD	CCV	R88958	11/11/2016 2:31:00 PM		
LCVL6-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 2:35:00 PM		
CCB6-161111	1	ICPMS_TWDOD	CCB	R88958	11/11/2016 2:55:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		11/21/2016
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\161111.b

Acquisition Order

#	Sequence Flow
1	Calibration Standards
2	Unknown Samples
3	Blank Samples

Calibration Standards:

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
1	CCB		CAL ICPMS_TW		1101	
2	CCB		CAL ICPMS_TW		1101	
3	CCB		CAL ICPMS_TW		1101	
4	CCB		CAL ICPMS_TW		1102	
5	CCB		CAL ICPMS_TW		1102	
6	CCB		CAL ICPMS_TW		1102	
7	CCB		CAL ICPMS_TW		1102	
8	CCB		CAL ICPMS_TW		1103	
9	CCB		CAL ICPMS_TW		1103	
10	CCB		CAL ICPMS_TW		1103	
11	CCB		CAL ICPMS_TW		1103	
12	CalBlk	BLANK STD 1	CAL ICPMS_TW	1	2101	
13	CalStd	L2-161111	CAL ICPMS_TW	2	2102	
14	CalStd	L-161111	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161111	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161111	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161111	CAL ICPMS_TW	6	2106	
18	CalStd	H-161111	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161111	CAL ICPMS_TW	8	2108	
20	ICB	BLANK	CCB ICPMS_TW		1101	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
21	ICB	BLANK	CCB ICPMS_TW		1102	
22	ICSA	ICSA-161111	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-161111	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-161111	ICV ICPMS_TW		2111	
27	ICB	ICB-161111	ICB ICPMS_TW		1101	
28	ICB	ICB-161111	ICB ICPMS_TW		1103	
29	LLICV	LCVL-161111	LCVLICPMS_TW		2112	
30	ICB	ICB-161111	ICB ICPMS_TW		1102	
31	ICB	ICB-161111	ICB ICPMS_TW		1103	
32	PB_W	MB-77850	MBLKTCLP_MET		2201	1
33	PB_W	MB-77840-TCLP	MBLKTCLP_MET		2202	1
34	LCS_W	LCS-77850	LCS TCLP_MET		2203	1
35	LCS_W	LCSD-77850	LCSDTCLP_MET		2204	1
36	CCB	RINSE	CCB ICPMS_TW		1101	
37	AllRef	1611031-01A	SAMPTCLP_MET		2205	1
38	SD	1611031-01A SD	SD TCLP_MET		2206	5
39	SAMP_W	1611072-01A	SAMPTCLP_MET		2207	1
40	PDS	1611031-01A PDS	PDS TCLP_MET		2208	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	MS_W	1611031-01A MS	MS TCLP_MET		2209	1
42	MS_W	1611031-01A MSD	MSD TCLP_MET		2210	1
43	CCB	RINSE	CCB ICPMS_TW		1101	
44	CCB	RINSE	CCB ICPMS_TW		1102	
45	CCB	RINSE	CCB ICPMS_TW		1103	
46	SAMP_W	1611026-08B	SAMPICPMS_DW		2301	100
47	SAMP_W	1611026-09B	SAMPICPMS_DW		2302	100

Sample List

48	SAMP_W	1611026-10B	SAMPICPMS_DW		2303	500
49	SAMP_W	1611026-10B	SAMPICPMS_DW		2304	100
50	SAMP_W	1611026-11B	SAMPICPMS_DW		2305	100
51	CCV	CCV1-161111	CCV ICPMS_TW		1207	
52	CCB	CCB1-161111	CCB ICPMS_TW		1102	
53	LLCCV	LCVL1-161111	LCVLICPMS_TW		2112	
54	CCB	CCB1-161111	CCB ICPMS_TW		1103	
55	PB_W	MB-77843	MBLK6020A_W		3101	1
56	LCS_W	LCS-77843	LCS 6020A_W		3102	1
57	LCS_W	LCSD-77843	LCSD6020A_W		3103	1
58	CCB	RINSE	CCB ICPMS_TW		1101	
59	AllRef	1611070-12A	SAMP6020A_W		3104	1
60	SD	1611070-12A SD	SD 6020A_W		3105	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	SAMP_W	1611067-01A	SAMPICPMS_TW		3106	10
62	SAMP_W	1611067-02A	SAMPICPMS_TW		3107	100
63	SAMP_W	1611067-03A	SAMPICPMS_TW		3108	10
64	SAMP_W	1611083-01A	SAMPICPMS_TW		3109	10
65	SAMP_W	1611070-01A	SAMP6020A_W		3110	1
66	SAMP_W	1611070-02A	SAMP6020A_W		3111	1
67	SAMP_W	1611070-03A	SAMP6020A_W		3112	1
68	SAMP_W	1611070-04A	SAMP6020A_W		3201	1
69	SAMP_W	1611070-05A	SAMP6020A_W		3202	1
70	PDS	1611070-12A PDS	PDS 6020A_W		3203	1
71	MS_W	1611070-12A MS	MS 6020A_W		3204	1
72	MS_W	1611070-12A MSD	MSD 6020A_W		3205	1
73	CCV	CCV2-161111	CCV ICPMS_TW		1207	
74	CCB	CCB2-161111	CCB ICPMS_TW		1102	
75	LLCCV	LCVL2-161111	LCVLICPMS_TW		2112	
76	CCB	CCB2-161111	CCB ICPMS_TW		1103	

Sample List

77	SAMP_W	1611083-01A	SAMPICPMS_TW		2401	1
78	SAMP_W	1611070-06A	SAMP6020A_W		3206	1
79	SAMP_W	1611070-07A	SAMP6020A_W		3207	1
80	SAMP_W	1611070-08A	SAMP6020A_W		3208	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	SAMP_W	1611070-09A	SAMP6020A_W		3209	1
82	SAMP_W	1611070-10A	SAMP6020A_W		3210	1
83	SAMP_W	1611070-11A	SAMP6020A_W		3211	1
84	SAMP_W	1611070-13A	SAMP6020A_W		3212	1
85	SAMP_W	1611070-14A	SAMP6020A_W		3301	1
86	SAMP_W	1611070-15A	SAMP6020A_W		3302	1
87	CCB	RINSE	CCB ICPMS_TW		1102	
88	CCB	RINSE	CCB ICPMS_TW		1103	
89	CCV	CCV3-161111	CCV ICPMS_TW		1207	
90	CCB	CCB3-161111	CCB ICPMS_TW		1102	
91	LLCCV	LCVL3-161111	LCVLICPMS_TW		2512	
92	CCB	CCB3-161111	CCB ICPMS_TW		1103	
93	SAMP_W	1611070-16A	SAMP6020A_W		3303	1
94	CCV	CCV4-161111	CCV ICPMS_TW		1207	
95	CCB	CCB4-161111	CCB ICPMS_TW		1102	
96	LLCCV	LCVL4-161111	LCVLICPMS_TW		2512	
97	CCB	CCB4-161111	CCB ICPMS_TW		1103	
98	PB	MB-77842	MBLKICPMS_TSDOD1		4101	5
99	LCS_S	LCS-77842	LCS ICPMS_TSDOD1		4102	5
100	LCS_S	LCSD-77842	LCSDICPMS_TSDOD1		4103	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	CCB	RINSE	CCB ICPMS_TW		1101	
102	AllRef	1611053-16A	SAMPICPMS_TSDOD1		4104	5
103	SD	1611053-16A SD	SD ICPMS_TSDOD1		4105	25
104	Sample	1611044-14A	SAMPICPMS_TSDOD1		4106	5
105	Sample	1611044-15A	SAMPICPMS_TSDOD1		4107	5
106	Sample	1611044-18A	SAMPICPMS_TSDOD1		4108	5
107	Sample	1611044-21A	SAMPICPMS_TSDOD1		4109	5
108	Sample	1611053-01A	SAMPICPMS_TSDOD1		4110	5
109	Sample	1611053-06A	SAMPICPMS_TSDOD1		4111	5
110	Sample	1611053-11A	SAMPICPMS_TSDOD1		4112	5
111	Sample	1611053-21A	SAMPICPMS_TSDOD1		4201	5
112	Sample	1611053-26A	SAMPICPMS_TSDOD1		4202	5
113	PDS	1611053-16A PDS	PDS ICPMS_TSDOD1		4203	5
114	MS_S	1611053-16A MS	MS ICPMS_TSDOD1		4204	5
115	MS_S	1611053-16A MSD	MSD ICPMS_TSDOD1		4205	5
116	CCV	CCV5-161111	CCV ICPMS_TW		1207	
117	CCB	CCB5-161111	CCB ICPMS_TW		1102	
118	LLCCV	LCVL5-161111	LCVLICPMS_TW		2511	
119	CCB	CCB5-161111	CCB ICPMS_TW		1102	
120	Sample	1611053-31A	SAMPICPMS_TSDOD1		4206	5

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101	Skip
102	Skip
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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1611053-36A	SAMPICPMS_TSDOD1		4207	5
122	Sample	1611053-41A	SAMPICPMS_TSDOD1		4208	5
123	Sample	1611071-01A	SAMPICPMS_TSDOD1		4209	5
124	Sample	1611071-04A	SAMPICPMS_TSDOD1		4210	5
125	Sample	1611071-08A	SAMPICPMS_TSDOD1		4211	5
126	Sample	1611071-11A	SAMPICPMS_TSDOD1		4212	5
127	Sample	1611071-16A	SAMPICPMS_TSDOD1		4301	5
128	Sample	1611071-21A	SAMPICPMS_TSDOD1		4302	5
129	CCV	CCV6-161111	CCV ICPMS_TW		1207	
130	CCB	CCB6-161111	CCB ICPMS_TW		1102	
131	LLCCV	LCVL6-161111	LCVLICPMS_TW		2511	
132	CCB	CCB6-161111	CCB ICPMS_TW		1102	
133	CCB	CCB6-161111	CCB ICPMS_TW		1102	
134	CCB	CCB6-161111	CCB ICPMS_TW		1102	
135	CCB	CCB6-161111	CCB ICPMS_TW		1102	
136	CCB	CCB6-161111	CCB ICPMS_TW		1103	
137	CCB	CCB6-161111	CCB ICPMS_TW		1103	
138	CCB	CCB6-161111	CCB ICPMS_TW		1103	
139	CCB	CCB6-161111	CCB ICPMS_TW		1103	

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Unknown Samples:

Sample List

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 2:30:25 PM**
Digestion:
Prep End Date:

Prep Batch **77842** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List
Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		1.12	50	50.000	1 of 1	
1611044-15A	Soil		1.04	50	50.000	1 of 1	
1611044-18A	Soil		1.05	50	50.000	1 of 1	
1611044-21A	Soil		1.08	50	50.000	1 of 1	
1611053-01A	Soil		1.08	50	50.000	1 of 1	
1611053-06A	Soil		1.09	50	50.000	1 of 1	
1611053-11A	Soil		1.03	50	50.000	1 of 1	
1611053-16A MS/MSD	Soil		1.10	50	50.000	1 of 1	
1611053-21A	Soil		1.03	50	50.000	1 of 1	
1611053-26A	Soil		1.10	50	50.000	1 of 1	
1611053-31A	Soil		1.14	50	50.000	1 of 1	
1611053-36A	Soil		1.07	50	50.000	1 of 1	
1611053-41A	Soil		1.01	50	50.000	1 of 1	
1611071-01A	Soil		1.12	50	50.000	1 of 1	
1611071-04A	Soil		1.09	50	50.000	1 of 1	
1611071-08A	Soil		1.08	50	50.000	1 of 1	
1611071-11A	Soil		1.10	50	50.000	1 of 1	
1611071-16A	Soil		1.07	50	50.000	1 of 1	
1611071-21A	Soil		1.05	50	50.000	1 of 1	
LCS-77842	Soil		1	50	50.000	of	
LCSD-77842	Soil		1	50	50.000	of	
MB-77842	Soil		1	50	50.000	of	

053-16A MS 1.08
053-16A MSD 1.09

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

8:30 - 8:40
8:45 - 10:45
11:00 - 13:00
13:15 - 13:30

11/10/16

REVIEWED BY
By Janice Whitt at 10:19:44 AM, 11/14/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	11/10/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	P-01, P-09	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-01	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	5.00	4.9913	5.0013	100.03	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		4.9827	4.9927	99.85		
3		4.9901	5.0001	100.00		
AVERAGE (MEAN)		**4.988**	**4.998**	**99.96**		**0.093**
						PASS

PIPETTE ID: P-09	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	0.20	0.1992	0.1996	99.80	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.1986	0.1990	99.50		
3		0.1998	0.2002	100.10		
AVERAGE (MEAN)		**0.199**	**0.200**	**99.80**		**0.301**
						PASS

PIPETTE ID:	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1						RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2						
3						
AVERAGE (MEAN)						

Check done by Sydney Powers see initials above.

Analyst / Date

REVIEWED BY
By Janice Whitt at 10:19:56 AM, 11/14/2016

Review and Approved / Date

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	RO	**BALANCE #:**	30
TEST DATE:	11/11/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**	
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998** **(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	4.00	3.9940	3.9860	99.65	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		3.9899	3.9819	99.55		
3		3.9879	3.9799	99.50		
AVERAGE (MEAN)		3.991	3.983	99.57		0.078
						PASS

PIPETTE ID: P-21	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	1.00	1.0004	0.9984	99.84	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.9992	0.9972	99.72		
3		1.0004	0.9984	99.84		
AVERAGE (MEAN)		1.000	0.998	99.80		0.069
						PASS

PIPETTE ID: P-39	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	0.500	0.5014	0.5004	100.08	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.4999	0.4989	99.78		
3		0.5019	0.5009	100.18		
AVERAGE (MEAN)		0.501	0.500	100.01		0.208
						PASS

11/12/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:20:47 AM, 11/14/2016
Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 2:30:25 PM**
Digestion: **Start: 11/10/2016 8:30:00 AM / Stop: 11/10/2016 1:30:00 PM**
Prep End Date: **11/10/2016 2:00:00 PM**

Prep Batch **77842** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

- Thermometer #71
- Pipette#-P-09
- Pipette #P-01
- Hot Block #3
- Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		1.12	50	44.643	1 of 1	
1611044-15A	Soil		1.04	50	48.077	1 of 1	
1611044-18A	Soil		1.05	50	47.619	1 of 1	
1611044-21A	Soil		1.08	50	46.296	1 of 1	
1611053-01A	Soil		1.08	50	46.296	1 of 1	
1611053-06A	Soil		1.09	50	45.872	1 of 1	
1611053-11A	Soil		1.03	50	48.544	1 of 1	
1611053-16A	Soil		1.1	50	45.455	1 of 1	
1611053-16A MS	Soil		1.08	50	46.296	of	
1611053-16A MSD	Soil		1.09	50	45.872	of	
1611053-16A PDS	Soil		1.1	50	45.455	of	
1611053-16A SD	Soil		1.1	50	45.455	of	
1611053-21A	Soil		1.03	50	48.544	1 of 1	
1611053-26A	Soil		1.1	50	45.455	1 of 1	
1611053-31A	Soil		1.14	50	43.860	1 of 1	
1611053-36A	Soil		1.07	50	46.729	1 of 1	
1611053-41A	Soil		1.01	50	49.505	1 of 1	
1611071-01A	Soil		1.12	50	44.643	1 of 1	
1611071-04A	Soil		1.09	50	45.872	1 of 1	
1611071-08A	Soil		1.08	50	46.296	1 of 1	
1611071-11A	Soil		1.1	50	45.455	1 of 1	
1611071-16A	Soil		1.07	50	46.729	1 of 1	
1611071-21A	Soil		1.05	50	47.619	1 of 1	
LCS-77842	Soil		1	50	50.000	of	
LCSD-77842	Soil		1	50	50.000	of	
MB-77842	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

REVIEWED BY
By Janice Whitt at 10:19:48 AM, 11/14/2016

Calibration Summary Report

Date Acquired 11/11/2016 9:49
Data Batch 161111.b

Level	Calibration File Name
1	012CALB.d
2	013CALS.d
3	014CALS.d
4	015CALS.d
5	016CALS.d
6	017CALS.d
7	018CALS.d
8	019CALS.d

Calibration Table

Ele	Corr Coef	Curve Equation
As	0.9999	y = 0.0010 * x + 2.4683E-004
Be	0.9998	y = 3.7123E-005 * x + 2.1508E-006
B	1.0000	y = 1.5658E-005 * x + 7.5707E-005
Na	0.9999	y = 7.5738E-004 * x + 0.0807
Mg	0.9999	y = 3.9367E-004 * x + 5.2268E-004
Al	1.0000	y = 1.6433E-004 * x + 5.2738E-004
K	1.0000	y = 4.3092E-004 * x + 0.0576
Ca	1.0000	y = 2.3767E-005 * x + 6.9871E-004
Ti	1.0000	y = 1.3784E-004 * x + 2.3919E-006
V	0.9999	y = 0.0040 * x + 0.0016
Cr	0.9999	y = 0.0045 * x + 0.0011
Mn	1.0000	y = 0.0029 * x + 2.8525E-004
Fe	0.9999	y = 0.0040 * x + 0.0061
Co	0.9999	y = 0.0106 * x + 1.8809E-004
Ni	0.9999	y = 0.0028 * x + 5.7883E-004
Cu	0.9999	y = 0.0076 * x + 0.0022
Zn	0.9999	y = 0.0013 * x + 4.1461E-004
Se	0.9999	y = 7.4437E-005 * x + 2.3691E-004
Sr	0.9999	y = 6.7918E-004 * x + 3.4359E-005
Mo	0.9999	y = 4.7325E-004 * x + 1.1558E-005
Ag	1.0000	y = 0.0014 * x + 9.8961E-006
Cd	0.9998	y = 2.1397E-004 * x + 2.4996E-006
Sn	0.9999	y = 4.9787E-004 * x + 1.0201E-004
Sb	1.0000	y = 7.3876E-004 * x + 6.1766E-005
Tl	0.9999	y = 0.0016 * x + 7.5789E-006
Ba	0.9998	y = 2.4614E-004 * x + 4.1672E-006
Pb	0.9999	y = 0.0011 * x + 7.0139E-005
Li	1.0000	y = 2.8193E-005 * x + 9.0842E-006

REVIEWED BY
By Janice Whitt at 10:20:53 AM, 11/14/2016

Calibration Summary Report

Level 7 Cal

Ele	Conc	Calc	%Rec
As	500	518.34	104
Be	500	529.80	106
B	500	508.04	102
Na	10000	10293.16	103
Mg	10000	10232.26	102
Al	10000	9970.91	100
K	10000	10029.72	100
Ca	10000	9978.30	100
Ti	500	517.41	103
V	500	522.47	104
Cr	500	528.12	106
Mn	500	516.07	103
Fe	10000	9945.33	99
Co	500	528.95	106
Ni	500	528.54	106
Cu	500	524.16	105
Zn	500	523.99	105
Se	500	519.56	104
Sr	500	527.06	105
Mo	500	530.67	106
Ag	500	500.99	100
Cd	500	533.16	107
Sn	500	528.43	106
Sb	500	501.18	100
Tl	500	529.93	106
Ba	500	537.02	107
Pb	500	524.94	105

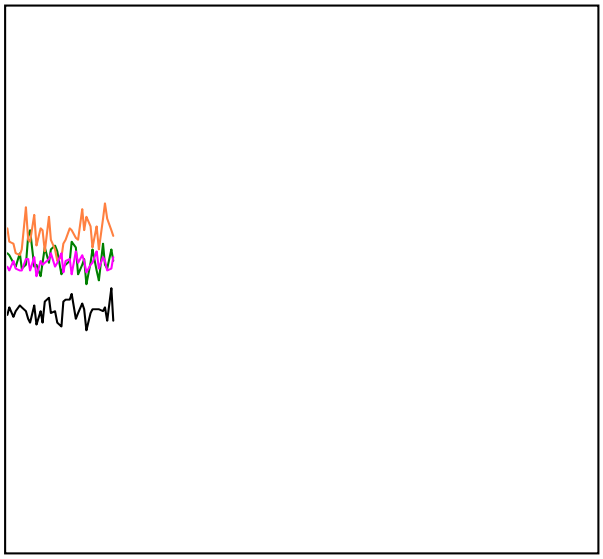
Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1993.94	100
Be	2000	1990.39	100
B	2000	1995.94	100
Na	25000	24876.04	100
Mg	25000	24879.39	100
K	25000	24966.47	100
Ca	25000		#DIV/0!
Ti	2000	1994.53	100
V	2000	1992.63	100
Cr	2000	1990.50	100
Mn	2000	1994.31	100
Co	2000	1990.09	100
Ni	2000	1990.04	101
Cu	2000	1991.29	100
Zn	2000	1991.66	100
Se	2000	1993.06	100
Sr	2000	1991.52	100
Mo	2000	1990.96	100
Cd	2000	1989.71	101
Sn	2000	1991.06	100
Tl	2000	1991.15	100
Ba	2000	1988.83	101
Pb	2000	1992.05	100
Li	2000	1995.50	100

Use Level 7 Cal. jw 11/14/2016

REVIEWED BY
By Janice Whitt at 10:20:59 AM, 11/14/2016

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	212	213.0	8.98
59	2000	1069	1072.0	4.10
89	2000	1158	1162.3	4.70
140	5000	2702	2646.3	2.31
205	5000	2129	2209.0	3.94
156/140	1	0.407 %	0.340 %	42.69
51	200	108	103.6	16.35
56	5000	2155	2138.1	3.24
75	20	9	8.0	44.68
78	50	22	20.8	33.66

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.50
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.3
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	0.4		

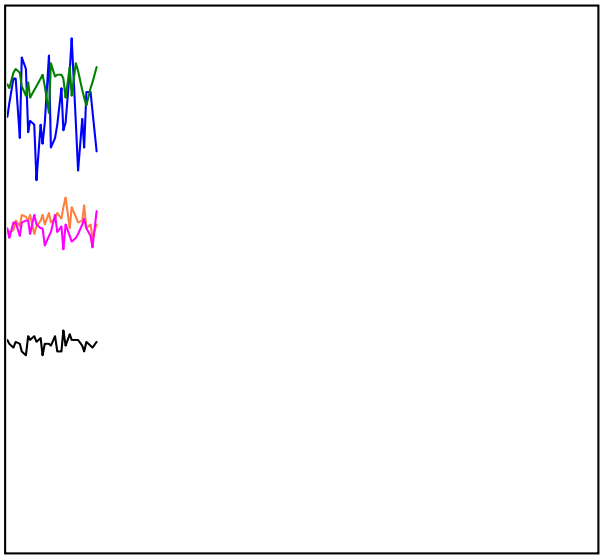
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.44E+2	Pa	Carrier Gas(BP)	1.01E+2	kPa
Analyzer Press	1.44E-4	Pa	Reflected Power	4	W
Forward Power	1549	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	367	402.6	7.83
59	2000	1784	1722.0	2.67
89	5000	2996	3041.8	2.74
140	5000	3133	2954.7	3.07
205	5000	1927	1912.3	2.84
156/140	2	0.575 %	0.862 %	25.15
51	20000	15545	15666.6	1.83
56	200000	175375	181391.2	2.23
75	5000	4009	4142.5	2.71
78	5000	2756	2735.3	2.78

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.50
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.3
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	7.0		

Cell Parameters

Use Gas	false	3rd Gas Flow	0
He Flow	4.2	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.42E+2	Pa	Carrier Gas(BP)	1.01E+2	kPa
Analyzer Press	9.01E-5	Pa	Reflected Power	5	W
Forward Power	1548	W			

US EPA Tune Check Sample Report

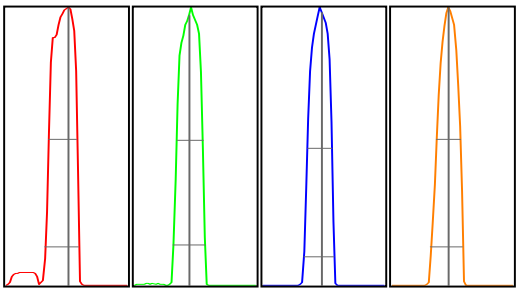
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	460461	0.32	5.00	
59	1074757	0.75	5.00	
115	1541357	0.80	5.00	
205	1116203	1.67	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	459524	460987	458756	460432	462603
59	1062304	1071951	1077509	1083063	1078961
115	1531949	1537368	1537699	1536754	1563017
205	1088791	1108327	1117743	1132973	1133182

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	69118	7.05	6.9 - 7.1		0.821	0.850	
59	176774	58.90	58.9 - 59.1		0.759	0.850	
115	275275	115.00	114.9 - 115.1		0.736	0.850	
205	204508	204.95	204.9 - 205.1		0.766	0.850	

X% = 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Nebulizer Pump	0.10	rps
RF Matching	1.90	V	S/C Temp	2	℃
Smpl Depth	8.0	mm	Gas Switch	Dilution Gas	
Carrier Gas	0.50	L/min	Makeup/Dilution Gas	0.55	L/min
Option Gas	0.0	%			

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Cell Entrance	-40	V
Extract 2	-200.0	V	Cell Exit	-60	V
Omega Bias	-100	V	Deflect	7.0	V
Omega Lens	8.3	V	Plate Bias	-60	V

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	200	V
H2 Flow	0.0	mL/min	Energy Discrimination	3.0	V
3rd Gas Flow	0	%			

REVIEWED BY
By Janice Whitt at 10:21:25 AM, 11/14/2016

P/A Factor Tuning Report

Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 11/11/2016 09:49:21

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1930 V
PulseHV: 1013 V

Acquired: 11/11/2016 09:16:00

Mass[u]	Element	P/A Factor
6	Li	0.099872
9	Be	0.111288
23	Na	0.118621
24	Mg	0.123657
27	Al	0.127665
39	K	0.129853
45	Sc	0.131498
48		0.131938
51	V	0.133676
52	Cr	0.136806
55	Mn	0.138422
59	Co	0.141372
60	Ni	0.141787
63	Cu	0.145417
66	Zn	0.145154
72		0.143869
74	Ge	0.144163
75	As	0.143674
88	Sr	0.144503
89		0.143200
95		0.143330
97	Mo	0.143661
98	Mo	0.144023
99	[Mo]	0.145465
101		0.146070
105		0.149197
111	Cd	0.149887
114	Cd	0.149951
115	In	0.150494
118	Sn	0.149882
121		0.149969
123	Sb	0.149862
135	Ba	0.148531
138		0.150708
175		0.156726
193		0.156699
205	Tl	0.156943
206	[Pb]	0.157009
207	[Pb]	0.157080
208	Pb	0.157818
209	Bi	0.158185
232		0.158459
238	U	0.158262
44	Ca	Signal too low
78	Se	Signal too low
107	Ag	Signal too low
172		Signal too low

REVIEWED BY
By Janice Whitt at 10:21:28 AM, 11/14/2016

Calibration Blank Report

Date Acquired	11/11/2016 9:49	Sample Name	BLANK STD 1
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	13	4.56
9	Be	45	3	33.33
11	B	45	106	7.94
23	Na	45	112520	0.79
24	Mg	45	729	4.67
27	Al	45	736	6.35
39	K	45	80299	0.74
44	Ca	45	974	4.62
47	Ti	45	3	100.05
51	V	45	2195	4.00
52	Cr	45	1603	3.61
55	Mn	45	398	23.24
56	Fe	45	8470	2.02
59	Co	72	168	8.27
60	Ni	72	517	12.31
63	Cu	72	1987	2.86
66	Zn	72	370	2.38
75	As	72	220	4.88
78	Se	72	211	2.64
88	Sr	115	274	11.98
95	Mo	115	92	23.24
107	Ag	115	79	24.39
111	Cd	115	20	44.10
118	Sn	115	814	6.55
121	Sb	115	493	9.46
137	Ba	115	33	52.92
205	Tl	209	112	32.72
208	Pb	209	1042	6.21

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1394564	0.44
72	Ge	892468	0.89
115	In	7983264	0.91
209	Bi	14868144	2.25

Calibration Standard Report

Date Acquired	11/11/2016 9:51	Sample Name	L2-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	52	6.93
9	Be	45	62	10.80
11	B	45	147	30.07
23	Na	45	133206	0.73
24	Mg	45	12272	1.44
27	Al	45	5262	2.46
39	K	45	92237	0.55
44	Ca	45	1568	1.91
47	Ti	45	220	2.62
51	V	45	7995	6.84
52	Cr	45	8368	2.32
55	Mn	45	4674	1.87
56	Fe	45	119617	1.01
59	Co	72	10423	2.54
60	Ni	72	3099	4.37
63	Cu	72	9321	1.46
66	Zn	72	1503	5.98
75	As	72	1155	7.27
78	Se	72	254	14.80
88	Sr	115	5884	0.75
95	Mo	115	3994	2.83
107	Ag	115	11348	2.16
111	Cd	115	1871	2.96
118	Sn	115	4729	2.39
121	Sb	115	6414	3.02
137	Ba	115	2086	5.17
205	Tl	209	24217	2.55
208	Pb	209	18332	1.86

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1390372	0.12	1394564	99.70	70	120	
72	Ge	890224	0.54	892468	99.75	70	120	
115	In	7962643	1.38	7983264	99.74	70	120	
209	Bi	14955346	1.82	14868144	100.59	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:53	Sample Name	L-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	415	6.75
9	Be	45	559	9.19
11	B	45	321	10.40
23	Na	45	323081	0.43
24	Mg	45	113106	0.53
27	Al	45	46375	2.18
39	K	45	200931	0.81
44	Ca	45	7581	3.71
47	Ti	45	1905	4.20
51	V	45	60620	2.23
52	Cr	45	67951	0.83
55	Mn	45	43557	0.68
56	Fe	45	1121018	0.84
59	Co	72	101107	0.97
60	Ni	72	27515	1.67
63	Cu	72	74844	0.72
66	Zn	72	12427	2.01
75	As	72	9912	2.04
78	Se	72	835	5.73
88	Sr	115	57192	0.87
95	Mo	115	39767	0.76
107	Ag	115	112575	0.85
111	Cd	115	17926	2.27
118	Sn	115	42431	2.25
121	Sb	115	58691	0.57
137	Ba	115	20621	1.60
205	Tl	209	242462	0.73
208	Pb	209	173486	0.87

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1391848	0.47	1394564	99.81	70	120	
72	Ge	883624	0.30	892468	99.01	70	120	
115	In	8111244	1.16	7983264	101.60	70	120	
209	Bi	14960651	0.38	14868144	100.62	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:55	Sample Name	10X-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2008	1.87
9	Be	45	2684	2.11
11	B	45	1206	9.81
23	Na	45	1171850	0.39
24	Mg	45	550464	0.49
27	Al	45	229977	0.37
39	K	45	682649	0.53
44	Ca	45	33730	1.07
47	Ti	45	9767	0.73
51	V	45	290022	1.49
52	Cr	45	335604	1.25
55	Mn	45	212681	1.02
56	Fe	45	5619370	0.95
59	Co	72	497957	1.69
60	Ni	72	132395	1.18
63	Cu	72	362037	1.44
66	Zn	72	61185	0.45
75	As	72	47834	0.83
78	Se	72	3625	2.82
88	Sr	115	282925	0.88
95	Mo	115	193690	1.29
107	Ag	115	570107	0.27
111	Cd	115	90544	0.15
118	Sn	115	206250	1.51
121	Sb	115	290675	0.91
137	Ba	115	102936	1.40
205	Tl	209	1229254	0.74
208	Pb	209	875046	0.71

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1389200	0.40	1394564	99.62	70	120	
72	Ge	872627	0.12	892468	97.78	70	120	
115	In	8023801	1.15	7983264	100.51	70	120	
209	Bi	15131406	1.40	14868144	101.77	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:57	Sample Name	5X-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	3959	1.56
9	Be	45	5219	4.47
11	B	45	2400	6.50
23	Na	45	2230543	0.93
24	Mg	45	1108006	0.71
27	Al	45	454227	0.68
39	K	45	1282612	0.76
44	Ca	45	66756	0.09
47	Ti	45	19364	0.60
51	V	45	576456	0.20
52	Cr	45	659967	0.52
55	Mn	45	421702	0.46
56	Fe	45	11268390	0.44
59	Co	72	996572	0.88
60	Ni	72	262548	1.19
63	Cu	72	714861	0.67
66	Zn	72	122164	1.13
75	As	72	95146	0.24
78	Se	72	7069	2.19
88	Sr	115	564810	0.79
95	Mo	115	389227	0.35
107	Ag	115	1133919	0.37
111	Cd	115	180398	1.23
118	Sn	115	415000	0.46
121	Sb	115	581167	0.50
137	Ba	115	205309	0.54
205	Tl	209	2444934	0.97
208	Pb	209	1732858	0.79

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1381641	0.56	1394564	99.07	70	120	
72	Ge	870338	0.32	892468	97.52	70	120	
115	In	7961075	1.31	7983264	99.72	70	120	
209	Bi	14916823	1.42	14868144	100.33	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:59	Sample Name	2X-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	9969	1.84
9	Be	45	13466	0.91
11	B	45	5731	1.62
23	Na	45	5292784	2.57
24	Mg	45	2748619	0.80
27	Al	45	1133304	0.66
39	K	45	3072045	1.00
44	Ca	45	164282	0.83
47	Ti	45	48475	0.50
51	V	45	1440395	0.38
52	Cr	45	1653269	0.28
55	Mn	45	1047618	0.63
56	Fe	45	27840771	0.91
59	Co	72	2444397	0.34
60	Ni	72	647152	0.21
63	Cu	72	1763163	0.13
66	Zn	72	299388	0.47
75	As	72	235128	0.94
78	Se	72	17143	0.10
88	Sr	115	1398149	0.89
95	Mo	115	966194	0.99
107	Ag	115	2783209	0.70
111	Cd	115	442877	0.18
118	Sn	115	1029253	0.50
121	Sb	115	1444121	0.64
137	Ba	115	509282	0.46
205	Tl	209	6132280	0.28
208	Pb	209	4367122	0.20

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1362532	0.56	1394564	97.70	70	120	
72	Ge	863428	0.61	892468	96.75	70	120	
115	In	7851590	0.36	7983264	98.35	70	120	
209	Bi	14928413	0.79	14868144	100.41	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 10:01	Sample Name	H-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	19496	1.08
9	Be	45	26499	0.97
11	B	45	10818	1.69
23	Na	45	10610889	2.01
24	Mg	45	5427202	2.20
27	Al	45	2208012	0.44
39	K	45	5899956	1.58
44	Ca	45	320425	0.88
47	Ti	45	96083	1.03
51	V	45	2833503	0.37
52	Cr	45	3230195	0.58
55	Mn	45	2044110	0.92
56	Fe	45	53727270	2.64
59	Co	72	4773197	0.76
60	Ni	72	1256863	0.83
63	Cu	72	3407609	0.74
66	Zn	72	583599	0.06
75	As	72	462980	0.41
78	Se	72	33160	1.23
88	Sr	115	2731530	1.09
95	Mo	115	1916243	1.28
107	Ag	115	5449949	0.45
111	Cd	115	870491	0.69
118	Sn	115	2008242	0.80
121	Sb	115	2825541	0.03
137	Ba	115	1008596	0.15
205	Tl	209	12238835	1.61
208	Pb	209	8549251	0.91

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1347146	0.06	1394564	96.60	70	120	
72	Ge	852207	0.26	892468	95.49	70	120	
115	In	7600312	0.49	7983264	95.20	70	120	
209	Bi	14579984	1.74	14868144	98.06	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 10:03	Sample Name	H2-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	74131	0.59
9	Be	45	97351	0.74
11	B	45	41269	2.34
23	Na	45	24928719	0.91
24	Mg	45	12905387	2.45
27	Al	45	2337	14.10
39	K	45	14249124	1.00
44	Ca	45	804034	0.89
47	Ti	45	362210	0.42
51	V	45	10561500	2.30
52	Cr	45	11901501	1.21
55	Mn	45	7723646	0.72
56	Fe	45	1471836	0.67
59	Co	72	17590199	0.64
60	Ni	72	4633947	0.60
63	Cu	72	12675430	0.94
66	Zn	72	2171799	0.44
75	As	72	1743900	0.25
78	Se	72	124038	0.87
88	Sr	115	10332492	1.25
95	Mo	115	7198029	2.15
107	Ag	115	2244	26.00
111	Cd	115	3252145	0.97
118	Sn	115	7572707	0.71
121	Sb	115	6449	10.70
137	Ba	115	3739295	0.73
205	Tl	209	45285962	1.07
208	Pb	209	31949321	0.45

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1317501	0.89	1394564	94.47	70	120	
72	Ge	834747	0.36	892468	93.53	70	120	
115	In	7525878	0.93	7983264	94.27	70	120	
209	Bi	14356406	0.80	14868144	96.56	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	11/11/2016 10:09	Sample Name	ICSA-161111
Data Batch	161111.b	Comment	ICSAICPMS_TW
Data File Name	022ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.071	6	55.5	1.2	0.8	
11	B	22.557	568	5.5	30	30	
51	V	0.039	2291	6.3	10	10	
52	Cr	0.862	6701	1.6	8	5	
55	Mn	0.466	2192	3.6	8	10	
59	Co	1.313	11709	0.7	8	10	
60	Ni	0.456	1538	7.5	8	10	
63	Cu	2.344	16698	1.4	8	10	
66	Zn	2.486	3043	3.6	10	5	
75	As	0.472	616	5.5	4	5	
78	Se	0.459	225	12.7	2	5	
88	Sr	1.184	6158	4.9	10	10	
107	Ag	0.117	1292	4.2	0.8	2	
111	Cd	0.654	1047	8.9	1.2	1	
118	Sn	1.220	5205	4.2	10	10	
121	Sb	0.174	1397	2.8	4	2.5	
137	Ba	0.544	1013	6.0	8	10	
205	Tl	0.111	2475	5.2	4	1.5	
208	Pb	0.393	6878	1.3	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1323813	0.97	1394564	94.93	70	120	
72	Ge	830874	0.61	892468	93.10	70	120	
115	In	7341247	0.87	7983264	91.96	70	120	
209	Bi	13503243	0.70	14868144	90.82	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	11/11/2016 10:11	Sample Name	ICSAB-161111
Data Batch	161111.b	Comment	ICSBICPMS_TW
Data File Name	023ICSB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
51	V	45	39.072	211013	0.45	40	97.7	80	120	
52	Cr	45	20.937	127827	0.87	20	104.7	80	120	
55	Mn	45	19.717	77423	2.08	20	98.6	80	120	
59	Co	72	39.827	353915	0.71	40	99.6	80	120	
60	Ni	72	38.048	89507	1.92	40	95.1	80	120	
63	Cu	72	21.274	137931	1.08	20	106.4	80	120	
66	Zn	72	21.685	24107	0.88	20	108.4	80	120	
75	As	72	19.535	17375	1.82	20	97.7	80	120	
78	Se	72	19.460	1414	7.03	20	97.3	80	120	
107	Ag	115	18.564	197913	0.15	20	92.8	80	120	
111	Cd	115	9.895	15845	0.75	10	98.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1329225	0.14	1394564	95.31	70	120	
72	Ge	838862	0.37	892468	93.99	70	120	
115	In	7474949	0.15	7983264	93.63	70	120	
209	Bi	13592596	0.77	14868144	91.42	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	11/11/2016 10:18	Sample Name	ICV-161111
Data Batch	161111.b	Comment	ICV ICPMS_TW
Data File Name	026_ICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	97.194	3784	1.28	100	97.2	90	110	
9	Be	45	102.326	5232	0.70	100	102.3	90	110	
11	B	45	110.399	2484	1.76	100	110.4	90	110	Fail
23	Na	45	2483.518	2700170	0.94	2500	99.3	90	110	
24	Mg	45	2484.909	1347252	0.68	2500	99.4	90	110	
27	Al	45	2489.357	563820	0.95	2500	99.6	90	110	
39	K	45	2428.558	1519805	0.96	2500	97.1	90	110	
44	Ca	45	2389.297	79132	1.65	2500	95.6	90	110	
47	Ti	45	101.577	19276	2.53	100	101.6	90	110	
51	V	45	102.904	571981	0.99	100	102.9	90	110	
52	Cr	45	106.543	667117	0.28	100	106.5	90	110	
55	Mn	45	100.243	406028	1.09	100	100.2	90	110	
56	Fe	45	2526.334	13951838	0.96	2500	101.1	90	110	
59	Co	72	105.498	972900	0.18	100	105.5	90	110	
60	Ni	72	106.090	258181	0.93	100	106.1	90	110	
63	Cu	72	104.910	698464	0.91	100	104.9	90	110	
66	Zn	72	104.645	119381	1.30	100	104.6	90	110	
75	As	72	101.837	93114	0.51	100	101.8	90	110	
78	Se	72	104.161	6958	1.90	100	104.2	90	110	
88	Sr	115	102.200	559246	0.18	100	102.2	90	110	
95	Mo	115	99.903	380863	1.05	100	99.9	90	110	
107	Ag	115	97.847	1123573	1.28	100	97.8	90	110	
111	Cd	115	100.980	174020	0.27	100	101.0	90	110	
118	Sn	115	102.238	410760	1.48	100	102.2	90	110	
121	Sb	115	97.112	578236	0.79	100	97.1	90	110	
137	Ba	115	102.057	202341	1.02	100	102.1	90	110	
205	Tl	209	98.227	2369140	1.23	100	98.2	90	110	
208	Pb	209	101.162	1721660	0.75	100	101.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1376505	0.68	1394564	98.71	70	120	
72	Ge	870780	0.42	892468	97.57	70	120	
115	In	8047896	1.52	7983264	100.81	70	120	
209	Bi	15224587	1.17	14868144	102.40	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 10:24	Sample Name	LCVL-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	029LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.503	379	7.51	1	950.3	70	130	Fail
9	Be	45	1.033	55	36.20	1	103.3	70	130	
11	B	45	26.095	662	2.77	20	130.5	70	130	Fail
23	Na	45	97.332	211120	0.52	100	97.3	70	130	
24	Mg	45	99.435	54239	0.19	100	99.4	70	130	
27	Al	45	97.909	22722	2.82	100	97.9	70	130	
39	K	45	93.150	133613	1.16	100	93.1	70	130	
44	Ca	45	97.771	4133	2.05	100	97.8	70	130	
47	Ti	45	4.929	932	4.33	5	98.6	70	130	
51	V	45	1.033	7835	2.09	1	103.3	70	130	
52	Cr	45	5.251	34157	0.84	5	105.0	70	130	
55	Mn	45	5.462	22345	0.16	5	109.2	70	130	
56	Fe	45	100.623	559967	0.29	100	100.6	70	130	
59	Co	72	5.246	49076	0.11	5	104.9	70	130	
60	Ni	72	5.170	13208	1.33	5	103.4	70	130	
63	Cu	72	5.208	36926	1.82	5	104.2	70	130	
66	Zn	72	5.240	6391	1.92	5	104.8	70	130	
75	As	72	5.202	5016	1.52	5	104.0	70	130	
78	Se	72	4.849	526	3.72	5	97.0	70	130	
88	Sr	115	5.092	27916	1.50	5	101.8	70	130	
95	Mo	115	5.238	19904	0.83	5	104.8	70	130	
107	Ag	115	1.980	22653	2.63	2	99.0	70	130	
111	Cd	115	1.073	1856	4.16	1	107.3	70	130	
118	Sn	115	5.328	22020	1.81	5	106.6	70	130	
121	Sb	115	1.967	12109	5.10	2	98.4	70	130	
137	Ba	115	5.171	10210	3.00	5	103.4	70	130	
205	Tl	209	1.004	23853	1.89	1	100.4	70	130	
208	Pb	209	1.112	19590	1.96	1	111.2	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1367356	0.46	1394564	98.05	70	120	
72	Ge	880582	0.45	892468	98.67	70	120	
115	In	7993884	1.57	7983264	100.13	70	120	
209	Bi	14928212	0.66	14868144	100.40	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	11/11/2016 10:29	Sample Name	ICB-161111
Data Batch	161111.b	Comment	ICB ICPMS_TW
Data File Name	031_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.166	6	28.9	2	5	
9	Be	45	0.034	5	101.3	0.4	0.3	
11	B	45	4.406	198	1.0	10	10	
23	Na	45	-2.497	107694	1.1	50	100	
24	Mg	45	0.004	717	2.8	50	100	
27	Al	45	1.224	996	10.7	50	10	
39	K	45	-6.074	75125	1.0	50	100	
44	Ca	45	-2.142	886	7.8	50	100	
47	Ti	45	0.012	6	124.9	4	3	
51	V	45	0.017	2246	5.3	4	3	
52	Cr	45	-0.021	1443	6.6	2	2	
55	Mn	45	0.022	477	12.6	2	3	
56	Fe	45	0.527	11186	4.7	50	50	
59	Co	72	-0.003	139	22.8	2	3	
60	Ni	72	-0.063	352	3.8	2	3	
63	Cu	72	-0.028	1756	1.0	2	2	
66	Zn	72	-0.060	293	23.7	4	2	
75	As	72	-0.007	208	7.1	2	2	
78	Se	72	-0.356	183	10.2	1	2	
88	Sr	115	0.006	311	20.9	4	3	
95	Mo	115	0.122	559	13.7	2	2	
107	Ag	115	0.007	162	1.2	0.4	1	
111	Cd	115	0.001	22	48.2	0.4	0.3	
118	Sn	115	0.186	1573	5.9	4	3	
121	Sb	115	0.006	533	8.9	2	0.8	
137	Ba	115	0.017	67	15.0	2	3	
205	Tl	209	0.002	172	2.2	2	0.5	
208	Pb	209	0.048	1867	0.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1366837	0.34	1394564	98.01	70	120	
72	Ge	871195	0.25	892468	97.62	70	120	
115	In	8079229	1.58	7983264	101.20	70	120	
209	Bi	15139673	1.31	14868144	101.83	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/11/2016 13:11	Sample Name	CCV4-161111
Data Batch	161111.b	Comment	CCV ICPMS_TW
Data File Name	094_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	206.881	7287	0.70	200	103.4	90	110	
9	Be	45	210.646	9757	0.54	200	105.3	90	110	
11	B	45	246.330	4906	3.82	200	123.2	90	110	Fail
23	Na	45	5295.642	5103668	0.35	5000	105.9	90	110	
24	Mg	45	5026.427	2469032	1.09	5000	100.5	90	110	
27	Al	45	4958.641	1017080	0.21	5000	99.2	90	110	
39	K	45	4942.631	2728621	0.75	5000	98.9	90	110	
44	Ca	45	4622.923	137928	0.77	5000	92.5	90	110	
47	Ti	45	196.632	33811	1.02	200	98.3	90	110	
51	V	45	200.090	1005980	0.86	200	100.0	90	110	
52	Cr	45	202.985	1150493	0.38	200	101.5	90	110	
55	Mn	45	200.402	735221	0.42	200	100.2	90	110	
56	Fe	45	5096.854	25497242	2.79	5000	101.9	90	110	
59	Co	72	206.609	1713685	1.20	200	103.3	90	110	
60	Ni	72	208.771	456553	0.62	200	104.4	90	110	
63	Cu	72	209.657	1253763	0.97	200	104.8	90	110	
66	Zn	72	208.048	213168	1.52	200	104.0	90	110	
75	As	72	205.316	168667	0.85	200	102.7	90	110	
78	Se	72	206.369	12218	1.24	200	103.2	90	110	
88	Sr	115	199.046	1006715	0.87	200	99.5	90	110	
95	Mo	115	197.538	696064	0.29	200	98.8	90	110	
107	Ag	115	192.769	2046071	0.32	200	96.4	90	110	
111	Cd	115	200.755	319823	0.52	200	100.4	90	110	
118	Sn	115	197.198	731764	1.36	200	98.6	90	110	
121	Sb	115	192.139	1057231	0.40	200	96.1	90	110	
137	Ba	115	199.899	366339	0.99	200	99.9	90	110	
205	Tl	209	193.606	4416167	0.63	200	96.8	90	110	
208	Pb	209	195.477	3145612	1.02	200	97.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1247424	0.61	1394564	89.45	70	120	
72	Ge	783257	0.58	892468	87.76	70	120	
115	In	7445653	1.40	7983264	93.27	70	120	
209	Bi	14403840	2.73	14868144	96.88	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 13:15	Sample Name	LCVL4-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	096LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.861	362	8.77	1	986.1	70	130	Fail
9	Be	45	1.092	54	33.49	1	109.2	70	130	
11	B	45	40.578	898	9.32	20	202.9	70	130	Fail
23	Na	45	135.478	231457	0.52	100	135.5	70	130	Fail
24	Mg	45	101.363	51053	1.33	100	101.4	70	130	
27	Al	45	99.075	21225	1.76	100	99.1	70	130	
39	K	45	103.276	128913	1.16	100	103.3	70	130	
44	Ca	45	90.206	3590	2.45	100	90.2	70	130	
47	Ti	45	5.312	928	4.20	5	106.2	70	130	
51	V	45	1.160	7878	0.53	1	116.0	70	130	
52	Cr	45	5.260	31593	0.20	5	105.2	70	130	
55	Mn	45	5.541	20926	1.77	5	110.8	70	130	
56	Fe	45	101.029	519184	1.10	100	101.0	70	130	
59	Co	72	5.292	44925	0.30	5	105.8	70	130	
60	Ni	72	5.549	12828	1.06	5	111.0	70	130	
63	Cu	72	5.422	34806	0.44	5	108.4	70	130	
66	Zn	72	5.642	6219	0.75	5	112.8	70	130	
75	As	72	5.322	4652	4.63	5	106.4	70	130	
78	Se	72	5.460	514	2.67	5	109.2	70	130	
88	Sr	115	5.208	27027	2.36	5	104.2	70	130	
95	Mo	115	5.085	18295	0.62	5	101.7	70	130	
107	Ag	115	1.929	20886	0.79	2	96.5	70	130	
111	Cd	115	1.000	1639	2.89	1	100.0	70	130	
118	Sn	115	5.188	20312	1.72	5	103.8	70	130	
121	Sb	115	1.921	11205	2.40	2	96.1	70	130	
137	Ba	115	5.228	9765	3.32	5	104.6	70	130	
205	Tl	209	0.989	23049	1.60	1	98.9	70	130	
208	Pb	209	0.981	17076	1.61	1	98.1	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1262846	0.90	1394564	90.55	70	120	
72	Ge	798979	0.48	892468	89.52	70	120	
115	In	7567165	1.45	7983264	94.79	70	120	
209	Bi	14646243	0.82	14868144	98.51	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/11/2016 13:20	Sample Name	CCB4-161111
Data Batch	161111.b	Comment	CCB ICPMS_TW
Data File Name	097_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.073	9	29.4	2	5	
9	Be	45	-0.030	1	86.6	0.4	0.3	
11	B	45	20.054	500	16.3	10	10	FailAq FailSoil
23	Na	45	24.709	127484	0.2	50	100	
24	Mg	45	-0.252	543	6.6	50	100	
27	Al	45	2.521	1208	5.6	50	10	
39	K	45	4.149	76146	1.4	50	100	
44	Ca	45	-3.762	781	9.3	50	100	
47	Ti	45	0.008	4	86.6	4	3	
51	V	45	0.058	2317	3.6	4	3	
52	Cr	45	-0.029	1307	7.3	2	2	
55	Mn	45	0.042	526	9.2	2	3	
56	Fe	45	0.004	7812	1.9	50	50	
59	Co	72	-0.006	106	14.2	2	3	
60	Ni	72	-0.041	379	4.3	2	3	
63	Cu	72	-0.034	1606	2.9	2	2	
66	Zn	72	0.138	486	2.6	4	2	
75	As	72	-0.014	190	11.8	2	2	
78	Se	72	0.017	194	11.2	1	2	
88	Sr	115	0.034	437	21.4	4	3	
95	Mo	115	0.040	231	3.6	2	2	
107	Ag	115	0.004	119	35.5	0.4	1	
111	Cd	115	-0.006	10	57.7	0.4	0.3	
118	Sn	115	-0.041	624	9.2	4	3	
121	Sb	115	-0.022	349	22.4	2	0.8	
137	Ba	115	0.009	48	22.4	2	3	
205	Tl	209	0.006	252	6.8	2	0.5	
208	Pb	209	-0.026	608	7.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1282563	0.36	1394564	91.97	70	120	
72	Ge	816044	0.90	892468	91.44	70	120	
115	In	7633862	1.59	7983264	95.62	70	120	
209	Bi	14945897	1.42	14868144	100.52	70	120	

Method Blank Report

Date Acquired	11/11/16 1:22 PM	Sample Name	MB-77842
Data Batch	161111.b	Comment	MBLKICPMS_TSDOD1
Data File Name	098_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.026	11	10.83		
9	Be	45	-0.051	0	173.21		
11	B	45	21.420	524	11.76		J
23	Na	45	31.925	133800	0.63		
24	Mg	45	3.851	2601	2.98		
27	Al	45	2.591	1216	6.99		
39	K	45	8.846	78332	0.27		
44	Ca	45	13.859	1312	3.58		
47	Ti	45	0.600	108	138.41		
51	V	45	0.074	2387	4.34		
52	Cr	45	0.568	4755	8.52		
55	Mn	45	0.188	1070	6.83		
56	Fe	45	4.630	31435	1.06		
59	Co	72	0.006	203	32.91		
60	Ni	72	0.080	654	7.06		
63	Cu	72	0.039	2059	9.32		
66	Zn	72	0.757	1146	2.64		
75	As	72	-0.038	169	7.62		
78	Se	72	-0.010	193	3.23		
88	Sr	115	0.084	701	10.33		
95	Mo	115	0.044	250	1.33		
107	Ag	115	0.007	151	4.59		
111	Cd	115	-0.006	10	88.20		
118	Sn	115	3.864	15556	1.84		
121	Sb	115	-0.038	257	7.23		
137	Ba	115	0.039	107	19.52		
205	Tl	209	0.006	263	12.85		
208	Pb	209	0.052	1958	9.88		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1275964	0.91	1394564	91.50	70	120	
72	Ge	816401	0.30	892468	91.48	70	120	
115	In	7681692	1.74	7983264	96.22	70	120	
209	Bi	15223458	2.93	14868144	102.39	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/11/2016 13:24	Sample Name	LCS-77842
Data Batch	161111.b	Comment	LCS ICPMS_TSDOD1
Data File Name	099_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	210.227	7597	2.62	200	105.1	80	120	
9	Be	45	209.259	9943	1.62	200	104.6	80	120	
11	B	45	220.198	4508	2.81	200	110.1	80	120	
23	Na	45	5201.931	5145412	1.28	1000	520.2	80	120	Fail
24	Mg	45	5064.506	2552044	0.45	1000	506.5	80	120	Fail
27	Al	45	985.311	207880	0.50	1000	98.5	80	120	
39	K	45	4976.586	2818052	0.67	1000	497.7	80	120	Fail
44	Ca	45	4547.141	139195	1.09	1000	454.7	80	120	Fail
47	Ti	45	200.816	35426	0.32	200	100.4	80	120	
51	V	45	202.572	1044835	0.44	200	101.3	80	120	
52	Cr	45	206.899	1203007	0.46	200	103.4	80	120	
55	Mn	45	200.189	753424	0.77	200	100.1	80	120	
56	Fe	45	991.313	5093983	0.71	1000	99.1	80	120	
59	Co	72	207.133	1787058	1.16	200	103.6	80	120	
60	Ni	72	207.812	472725	1.29	200	103.9	80	120	
63	Cu	72	207.950	1293523	0.19	200	104.0	80	120	
66	Zn	72	204.476	217923	0.59	200	102.2	80	120	
75	As	72	203.642	174013	0.70	200	101.8	80	120	
78	Se	72	200.880	12374	1.61	200	100.4	80	120	
88	Sr	115	195.861	1024425	0.59	200	97.9	80	120	
95	Mo	115	198.980	725048	0.18	200	99.5	80	120	
107	Ag	115	192.042	2108139	1.17	200	96.0	80	120	
111	Cd	115	197.640	325604	0.66	200	98.8	80	120	
118	Sn	115	203.395	780466	1.09	200	101.7	80	120	
121	Sb	115	193.151	1099069	0.89	200	96.6	80	120	
137	Ba	115	199.036	377196	0.60	200	99.5	80	120	
205	Tl	209	194.214	4545248	1.43	200	97.1	80	120	
208	Pb	209	196.462	3243673	0.59	200	98.2	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1279749	0.85	1394564	91.77	70	120	
72	Ge	814713	0.52	892468	91.29	70	120	
115	In	7700025	1.77	7983264	96.45	70	120	
209	Bi	14775006	1.40	14868144	99.37	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/11/2016 13:26	Sample Name	LCSD-77842
Data Batch	161111.b	Comment	LCSDICPMS_TSDOD1
Data File Name	100_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	209.150	7569	1.05	200	104.6	80	120	
9	Be	45	210.225	10005	0.62	200	105.1	80	120	
11	B	45	227.968	4672	4.11	200	114.0	80	120	
23	Na	45	5141.704	5094379	1.05	1000	514.2	80	120	Fail
24	Mg	45	5010.932	2528786	1.41	1000	501.1	80	120	Fail
27	Al	45	990.790	209343	1.36	1000	99.1	80	120	
39	K	45	4958.571	2812321	0.14	1000	495.9	80	120	Fail
44	Ca	45	4581.295	140447	1.81	1000	458.1	80	120	Fail
47	Ti	45	198.649	35099	1.72	200	99.3	80	120	
51	V	45	201.964	1043291	0.41	200	101.0	80	120	
52	Cr	45	205.795	1198422	0.77	200	102.9	80	120	
55	Mn	45	200.249	754814	1.33	200	100.1	80	120	
56	Fe	45	989.248	5091341	0.76	1000	98.9	80	120	
59	Co	72	205.557	1769588	0.62	200	102.8	80	120	
60	Ni	72	206.600	468938	0.90	200	103.3	80	120	
63	Cu	72	207.602	1288587	1.55	200	103.8	80	120	
66	Zn	72	205.238	218259	1.16	200	102.6	80	120	
75	As	72	203.776	173747	0.58	200	101.9	80	120	
78	Se	72	200.906	12350	1.20	200	100.5	80	120	
88	Sr	115	195.986	1024592	0.80	200	98.0	80	120	
95	Mo	115	199.756	727578	0.16	200	99.9	80	120	
107	Ag	115	191.348	2099185	1.25	200	95.7	80	120	
111	Cd	115	198.647	327121	0.29	200	99.3	80	120	
118	Sn	115	203.161	779202	0.20	200	101.6	80	120	
121	Sb	115	194.079	1103770	1.25	200	97.0	80	120	
137	Ba	115	198.521	376079	0.33	200	99.3	80	120	
205	Tl	209	196.993	4567374	0.42	200	98.5	80	120	
208	Pb	209	198.603	3248402	1.05	200	99.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1281647	0.41	1394564	91.90	70	120	
72	Ge	812943	0.74	892468	91.09	70	120	
115	In	7697218	1.79	7983264	96.42	70	120	
209	Bi	14636024	1.20	14868144	98.44	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/11/2016 13:32	Sample Name	1611053-16A SD
Data Batch	161111.b	Comment	SD ICPMS_TSDOD1
Data File Name	103_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	8.697	325	10.20	41.5	104.7	110	90	Good
9	Be	45	0.342	19	18.23	2.0	84.8	110	90	
11	B	45	19.148	480	6.84	43.7	218.9	110	90	
23	Na	45	176.646	274131	0.18	818.3	107.9	110	90	Good
24	Mg	45	2042.398	1028344	0.32	10114.0	101.0	110	90	Good
27	Al	45	7924.125	1665030	0.58	39253.5	100.9	110	90	Good
39	K	45	1648.359	981479	0.30	8013.9	102.8	110	90	Good
44	Ca	45	22876.581	695842	0.89	111460.9	102.6	110	90	Good
47	Ti	45	189.356	33364	1.32	922.4	102.6	110	90	Good
51	V	45	17.832	93699	0.51	87.9	101.5	110	90	Good
52	Cr	45	7.938	47513	1.91	38.9	101.9	110	90	Good
55	Mn	45	147.325	553918	0.30	716.0	102.9	110	90	Good
56	Fe	45	9648.239	49453628	0.25	46614.3	103.5	110	90	Good
59	Co	72	3.315	27898	2.77	16.0	103.5	110	90	Good
60	Ni	72	6.015	13718	2.43	29.3	102.8	110	90	Good
63	Cu	72	4.402	28282	1.00	21.2	104.0	110	90	Good
66	Zn	72	39.472	41074	0.18	187.0	105.5	110	90	Good
75	As	72	3.462	3061	0.45	16.6	104.3	110	90	Good
78	Se	72	0.833	236	12.62	3.8	108.8	110	90	Good
88	Sr	115	99.393	508669	1.29	492.7	100.9	110	90	Good
95	Mo	115	0.311	1193	4.23	1.4	108.8	110	90	Good
107	Ag	115	0.046	564	8.27	0.2	127.6	110	90	
111	Cd	115	0.107	192	23.54	0.5	107.6	110	90	Good
118	Sn	115	1.005	4535	2.17	5.4	93.9	110	90	Good
121	Sb	115	0.557	3564	6.67	2.9	97.7	110	90	Good
137	Ba	115	109.209	202436	0.21	538.7	101.4	110	90	Good
205	Tl	209	0.121	2926	1.69	0.5	116.7	110	90	
208	Pb	209	6.832	113050	0.25	33.9	100.7	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1278158	0.17	1394564	91.65	70	120	
72	Ge	790368	0.56	892468	88.56	70	120	
115	In	7533108	2.66	7983264	94.36	70	120	
209	Bi	14679620	1.88	14868144	98.73	70	120	

Sample Report

Date Acquired	11/11/16 1:34 PM	Sample Name	1611044-14A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	104SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	42.025	1500	4.17	2000	>RL
9	Be	45	1.571	76	8.63	2000	>RL
11	B	45	128.866	2630	0.96	2000	>RL
23	Na	45	26196.710	25031501	2.26	25000	OUTCAL
24	Mg	45	16228.851	8027354	1.57	25000	>RL
27	Al	45	68917.520	14229994	0.52	10000	OUTCAL
39	K	45	8877.027	4878577	0.47	25000	>RL
44	Ca	45	76190.606	2276069	0.36	25000	OUTCAL
47	Ti	45	164.249	28451	3.93	2000	>RL
51	V	45	70.226	356914	0.59	2000	>RL
52	Cr	45	58.784	336609	1.01	2000	>RL
55	Mn	45	115.518	427016	0.63	2000	>RL
56	Fe	45	31046.521	156405767	1.24	10000	OUTCAL
59	Co	72	5.301	43784	0.88	2000	>RL
60	Ni	72	18.198	39910	1.59	2000	>RL
63	Cu	72	22.834	137072	0.64	2000	>RL
66	Zn	72	67.733	69095	1.40	2000	>RL
75	As	72	7.331	6163	1.46	2000	>RL
78	Se	72	4.001	416	10.03	2000	>RL
88	Sr	115	4247.460	20896496	1.66	2000	OUTCAL
95	Mo	115	0.581	2076	2.22	2000	
107	Ag	115	0.026	343	7.58	500	
111	Cd	115	0.034	71	36.41	2000	
118	Sn	115	6.365	23694	0.64	2000	>RL
121	Sb	115	0.040	663	10.31	500	
137	Ba	115	166.166	296297	0.25	2000	>RL
205	Tl	209	0.370	8151	0.15	2000	
208	Pb	209	29.343	451444	1.07	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1256440	0.42	1394564	90.10	70	120	
72	Ge	777395	0.21	892468	87.11	70	120	
115	In	7243946	0.90	7983264	90.74	70	120	
209	Bi	13744685	2.21	14868144	92.44	70	120	

Sample Report

Date Acquired	11/11/16 1:36 PM	Sample Name	1611044-15A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	105SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	55.456	2030	2.44	2000	>RL
9	Be	45	3.110	152	11.53	2000	>RL
11	B	45	85.307	1822	3.66	2000	>RL
23	Na	45	13005.317	12823228	1.75	25000	>RL
24	Mg	45	12431.530	6321272	1.05	25000	>RL
27	Al	45	63129.179	13398469	0.65	10000	OUTCAL
39	K	45	9179.848	5183825	2.44	25000	>RL
44	Ca	45	9548.826	293998	0.28	25000	>RL
47	Ti	45	69.284	12337	1.99	2000	>RL
51	V	45	75.164	392486	1.12	2000	>RL
52	Cr	45	56.478	332501	0.52	2000	>RL
55	Mn	45	82.260	312634	1.49	2000	>RL
56	Fe	45	91797.323	475285119	2.18	10000	OUTCAL
59	Co	72	29.121	243370	0.85	2000	>RL
60	Ni	72	39.147	86584	0.23	2000	>RL
63	Cu	72	18.166	111005	0.79	2000	>RL
66	Zn	72	194.826	201041	0.75	2000	>RL
75	As	72	21.928	18314	1.27	2000	>RL
78	Se	72	5.434	506	3.23	2000	>RL
88	Sr	115	226.785	1143054	0.41	2000	>RL
95	Mo	115	1.111	3987	6.76	2000	
107	Ag	115	0.018	263	10.81	500	
111	Cd	115	0.051	100	20.27	2000	
118	Sn	115	5.977	22836	1.26	2000	>RL
121	Sb	115	0.117	1101	5.15	500	
137	Ba	115	45.513	83146	1.48	2000	>RL
205	Tl	209	0.655	14501	1.04	2000	
208	Pb	209	68.359	1059845	0.30	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1291569	1.20	1394564	92.61	70	120	
72	Ge	788772	0.32	892468	88.38	70	120	
115	In	7419790	0.83	7983264	92.94	70	120	
209	Bi	13865275	0.70	14868144	93.25	70	120	

Sample Report

Date Acquired	11/11/16 1:38 PM	Sample Name	1611044-18A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	106SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	39.857	1478	0.12	2000	>RL
9	Be	45	1.319	67	21.55	2000	>RL
11	B	45	137.239	2902	4.35	2000	>RL
23	Na	45	16855.051	16763189	1.91	25000	>RL
24	Mg	45	11855.309	6090616	1.26	25000	>RL
27	Al	45	55719.264	11948296	2.00	10000	OUTCAL
39	K	45	9595.871	5470812	1.22	25000	>RL
44	Ca	45	3650.427	114123	1.12	25000	>RL
47	Ti	45	86.728	15602	1.77	2000	>RL
51	V	45	61.725	326058	1.21	2000	>RL
52	Cr	45	57.297	340798	1.95	2000	>RL
55	Mn	45	35.519	136620	1.32	2000	>RL
56	Fe	45	37494.495	196182454	2.49	10000	OUTCAL
59	Co	72	4.770	40892	0.80	2000	>RL
60	Ni	72	15.554	35463	0.36	2000	>RL
63	Cu	72	18.662	116577	0.97	2000	>RL
66	Zn	72	59.149	62655	1.79	2000	>RL
75	As	72	6.719	5878	1.08	2000	>RL
78	Se	72	4.556	465	2.98	2000	>RL
88	Sr	115	218.959	1122636	1.28	2000	>RL
95	Mo	115	0.730	2695	4.09	2000	
107	Ag	115	0.021	298	3.23	500	
111	Cd	115	0.006	28	42.13	2000	
118	Sn	115	5.823	22645	1.11	2000	>RL
121	Sb	115	0.025	604	15.46	500	
137	Ba	115	71.896	133594	1.37	2000	>RL
205	Tl	209	0.421	9618	3.70	2000	
208	Pb	209	33.556	535637	0.90	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1304858	0.23	1394564	93.57	70	120	
72	Ge	806685	0.48	892468	90.39	70	120	
115	In	7548176	1.76	7983264	94.55	70	120	
209	Bi	14263668	1.66	14868144	95.93	70	120	

Sample Report

Date Acquired	11/11/16 1:40 PM	Sample Name	1611044-21A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	107SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	64.268	2412	0.50	2000	>RL
9	Be	45	2.620	132	7.02	2000	>RL
11	B	45	85.573	1875	6.39	2000	>RL
23	Na	45	15206.755	15358826	1.68	25000	>RL
24	Mg	45	14007.933	7303351	1.53	25000	>RL
27	Al	45	71827.632	15631126	1.53	10000	OUTCAL
39	K	45	9791.305	5663876	1.24	25000	>RL
44	Ca	45	10843.709	342231	0.30	25000	>RL
47	Ti	45	79.091	14441	2.48	2000	>RL
51	V	45	67.241	360298	0.56	2000	>RL
52	Cr	45	60.445	364793	0.70	2000	>RL
55	Mn	45	99.897	389280	0.58	2000	>RL
56	Fe	45	63950.656	339598938	2.33	10000	OUTCAL
59	Co	72	39.469	335028	0.83	2000	>RL
60	Ni	72	48.236	108265	1.06	2000	>RL
63	Cu	72	14.648	91275	0.89	2000	>RL
66	Zn	72	205.693	215597	0.27	2000	>RL
75	As	72	14.000	11950	0.71	2000	>RL
78	Se	72	4.868	480	9.37	2000	>RL
88	Sr	115	245.527	1255577	0.73	2000	>RL
95	Mo	115	0.814	2988	4.80	2000	
107	Ag	115	0.020	290	17.36	500	
111	Cd	115	0.025	59	18.19	2000	
118	Sn	115	6.179	23927	1.80	2000	>RL
121	Sb	115	0.069	851	1.85	500	
137	Ba	115	49.025	90865	0.23	2000	>RL
205	Tl	209	0.676	15207	2.45	2000	
208	Pb	209	31.674	499820	1.47	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1324314	0.42	1394564	94.96	70	120	
72	Ge	801297	0.89	892468	89.78	70	120	
115	In	7527777	0.69	7983264	94.29	70	120	
209	Bi	14097479	0.63	14868144	94.82	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/11/2016 13:52	Sample Name	1611053-16A PDS
Data Batch	161111.b	Comment	PDS ICPMS_TSDOD1
Data File Name	113_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	241.654	8844	1.08	41.5	200	100.1	75	125	
9	Be	45	206.992	9966	3.00	2.0	200	102.5	75	125	
11	B	45	241.203	4994	1.53	43.7	200	98.7	75	125	
23	Na	45	5858.081	5856503	1.33	818.3	5000	100.8	75	125	
24	Mg	45	15270.376	7793784	1.89	10114.0	5000	103.1	75	125	
27	Al	45	45447.715	9682711	2.35	39253.5	5000	123.9	75	125	
39	K	45	13278.052	7492452	0.48	8013.9	5000	105.3	75	125	
44	Ca	45	########	3617559	0.54	111460.9	5000	118.3	75	125	
47	Ti	45	1139.650	203663	0.64	922.4	200	108.6	75	125	
51	V	45	290.430	1516690	0.49	87.9	200	101.3	75	125	
52	Cr	45	245.441	1445516	0.40	38.9	200	103.3	75	125	
55	Mn	45	917.856	3498397	0.64	716.0	200	100.9	75	125	
56	Fe	45	51607.089	268271243	0.93	46614.3	5000	99.9	75	125	
59	Co	72	218.543	1857730	0.67	16.0	200	101.3	75	125	
60	Ni	72	228.983	513174	1.40	29.3	200	99.9	75	125	
63	Cu	72	217.064	1330305	1.18	21.2	200	97.9	75	125	
66	Zn	72	386.935	406017	0.31	187.0	200	100.0	75	125	
75	As	72	218.673	184093	0.41	16.6	200	101.0	75	125	
78	Se	72	199.846	12131	1.19	3.8	200	98.0	75	125	
88	Sr	115	695.254	3511078	0.24	492.7	200	101.3	75	125	
95	Mo	115	196.843	692723	0.63	1.4	200	97.7	75	125	
107	Ag	115	181.265	1921589	0.70	0.2	200	90.5	75	125	
111	Cd	115	191.458	304612	0.39	0.5	200	95.5	75	125	
118	Sn	115	206.469	765060	0.35	5.4	200	100.6	75	125	
121	Sb	115	200.317	1100761	0.35	2.9	200	98.7	75	125	
137	Ba	115	743.914	1361453	0.61	538.7	200	102.6	75	125	
205	Tl	209	191.653	4296002	0.88	0.5	200	95.6	75	125	
208	Pb	209	227.680	3600031	0.56	33.9	200	96.9	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1296458	0.47	1394564	92.97	70	120	
72	Ge	802735	0.47	892468	89.95	70	120	
115	In	7435509	1.02	7983264	93.14	70	120	
209	Bi	14149775	0.65	14868144	95.17	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/11/2016 13:54	Sample Name	1611053-16A MS
Data Batch	161111.b	Comment	MS ICPMS_TSDOD1
Data File Name	114_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	238.741	8643	1.85	41.5	200	98.6	80	120	
9	Be	45	204.667	9746	0.76	2.0	200	101.3	80	120	
11	B	45	239.191	4900	5.06	43.7	200	97.7	80	120	
23	Na	45	5637.854	5579079	0.73	818.3	1000	482.0	80	120	Fail
24	Mg	45	14910.697	7527854	1.57	10114.0	1000	479.7	80	120	Fail
27	Al	45	41830.000	8815320	0.99	39253.5	1000	257.6	80	120	Fail
39	K	45	13166.927	7349705	1.82	8013.9	1000	515.3	80	120	Fail
44	Ca	45	########	3369432	0.75	111460.9	1000	-93.5	80	120	Fail
47	Ti	45	1183.572	209211	0.25	922.4	200	130.6	80	120	Fail
51	V	45	282.233	1457916	0.14	87.9	200	97.2	80	120	
52	Cr	45	235.454	1371678	0.37	38.9	200	98.3	80	120	
55	Mn	45	881.596	3323676	0.68	716.0	200	82.8	80	120	
56	Fe	45	46092.588	236998399	0.42	46614.3	1000	-52.2	80	120	Fail
59	Co	72	217.965	1828993	0.60	16.0	200	101.0	80	120	
60	Ni	72	228.310	505073	0.29	29.3	200	99.5	80	120	
63	Cu	72	218.386	1321135	1.03	21.2	200	98.6	80	120	
66	Zn	72	379.371	392966	0.20	187.0	200	96.2	80	120	
75	As	72	212.971	176991	0.24	16.6	200	98.2	80	120	
78	Se	72	199.071	11930	1.90	3.8	200	97.6	80	120	
88	Sr	115	682.333	3371732	0.50	492.7	200	94.8	80	120	
95	Mo	115	193.401	665969	0.32	1.4	200	96.0	80	120	
107	Ag	115	189.767	1968431	0.13	0.2	200	94.8	80	120	
111	Cd	115	196.518	305937	0.30	0.5	200	98.0	80	120	
118	Sn	115	205.359	744593	0.25	5.4	200	100.0	80	120	
121	Sb	115	80.831	434898	0.42	2.9	200	39.0	80	120	Fail
137	Ba	115	733.588	1313713	0.76	538.7	200	97.4	80	120	
205	Tl	209	193.750	4316348	0.03	0.5	200	96.6	80	120	
208	Pb	209	225.088	3537103	0.31	33.9	200	95.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1282337	0.17	1394564	91.95	70	120	
72	Ge	792411	0.48	892468	88.79	70	120	
115	In	7275596	0.83	7983264	91.14	70	120	
209	Bi	14062720	0.86	14868144	94.58	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/11/2016 13:56	Sample Name	1611053-16A MSD
Data Batch	161111.b	Comment	MSD ICPMS_TSDOD1
Data File Name	115_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	239.961	8562	2.58	41.5	200	99.2	80	120	
9	Be	45	205.228	9632	1.63	2.0	200	101.6	80	120	
11	B	45	233.923	4725	3.50	43.7	200	95.1	80	120	
23	Na	45	5940.876	5788073	3.63	818.3	1000	512.3	80	120	Fail
24	Mg	45	15331.971	7629190	2.00	10114.0	1000	521.8	80	120	Fail
27	Al	45	42983.625	8927776	0.99	39253.5	1000	373.0	80	120	Fail
39	K	45	13321.587	7328331	2.35	8013.9	1000	530.8	80	120	Fail
44	Ca	45	########	3569331	0.41	111460.9	1000	733.8	80	120	Fail
47	Ti	45	1212.216	211191	1.12	922.4	200	144.9	80	120	Fail
51	V	45	282.498	1438293	1.37	87.9	200	97.3	80	120	
52	Cr	45	233.810	1342483	0.24	38.9	200	97.4	80	120	
55	Mn	45	893.668	3320662	0.67	716.0	200	88.8	80	120	
56	Fe	45	46452.950	235393920	1.90	46614.3	1000	-16.1	80	120	Fail
59	Co	72	216.474	1770309	0.61	16.0	200	100.2	80	120	
60	Ni	72	229.811	495473	1.36	29.3	200	100.3	80	120	
63	Cu	72	219.969	1296913	1.09	21.2	200	99.4	80	120	
66	Zn	72	380.639	384259	1.19	187.0	200	96.8	80	120	
75	As	72	215.306	174380	0.30	16.6	200	99.4	80	120	
78	Se	72	197.310	11525	1.51	3.8	200	96.7	80	120	
88	Sr	115	712.523	3447327	0.24	492.7	200	109.9	80	120	
95	Mo	115	192.117	647758	0.80	1.4	200	95.3	80	120	
107	Ag	115	190.267	1932301	0.16	0.2	200	95.0	80	120	
111	Cd	115	196.153	299008	1.04	0.5	200	97.8	80	120	
118	Sn	115	206.933	734627	0.57	5.4	200	100.8	80	120	
121	Sb	115	77.857	410164	0.62	2.9	200	37.5	80	120	Fail
137	Ba	115	757.616	1328290	0.68	538.7	200	109.5	80	120	
205	Tl	209	194.900	4199859	1.23	0.5	200	97.2	80	120	
208	Pb	209	228.941	3480050	0.35	33.9	200	97.5	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1263870	0.48	1394564	90.63	70	120	
72	Ge	772256	0.20	892468	86.53	70	120	
115	In	7124822	2.04	7983264	89.25	70	120	
209	Bi	13602340	0.39	14868144	91.49	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/11/2016 13:58	Sample Name	CCV5-161111
Data Batch	161111.b	Comment	CCV ICPMS_TW
Data File Name	116_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.258	7324	2.10	200	101.6	90	110	
9	Be	45	206.510	9785	2.40	200	103.3	90	110	
11	B	45	226.167	4615	3.19	200	113.1	90	110	Fail
23	Na	45	5125.106	5055899	0.44	5000	102.5	90	110	
24	Mg	45	5032.134	2528388	0.77	5000	100.6	90	110	
27	Al	45	4969.662	1042715	0.04	5000	99.4	90	110	
39	K	45	4973.398	2808071	0.61	5000	99.5	90	110	
44	Ca	45	4624.706	141142	0.98	5000	92.5	90	110	
47	Ti	45	198.270	34876	1.81	200	99.1	90	110	
51	V	45	199.943	1028309	0.26	200	100.0	90	110	
52	Cr	45	203.564	1180226	0.42	200	101.8	90	110	
55	Mn	45	199.569	748940	0.31	200	99.8	90	110	
56	Fe	45	5004.305	25610601	0.50	5000	100.1	90	110	
59	Co	72	208.543	1757910	1.30	200	104.3	90	110	
60	Ni	72	210.480	467777	0.91	200	105.2	90	110	
63	Cu	72	211.135	1283030	0.85	200	105.6	90	110	
66	Zn	72	207.532	216080	0.22	200	103.8	90	110	
75	As	72	206.546	172431	0.58	200	103.3	90	110	
78	Se	72	208.542	12543	1.60	200	104.3	90	110	
88	Sr	115	200.870	1015080	0.52	200	100.4	90	110	
95	Mo	115	200.235	704990	0.94	200	100.1	90	110	
107	Ag	115	194.178	2059363	0.56	200	97.1	90	110	
111	Cd	115	202.037	321594	0.78	200	101.0	90	110	
118	Sn	115	200.350	742757	0.29	200	100.2	90	110	
121	Sb	115	196.262	1078966	0.71	200	98.1	90	110	
137	Ba	115	203.418	372480	0.53	200	101.7	90	110	
205	Tl	209	193.791	4448260	0.43	200	96.9	90	110	
208	Pb	209	194.507	3149892	0.81	200	97.3	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1275989	0.13	1394564	91.50	70	120	
72	Ge	796003	1.07	892468	89.19	70	120	
115	In	7438775	0.57	7983264	93.18	70	120	
209	Bi	14494407	2.25	14868144	97.49	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 14:02	Sample Name	LCVL5-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	118LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.418	394	5.71	1	1041.8	70	130	Fail
9	Be	45	1.274	64	10.11	1	127.4	70	130	
11	B	45	35.462	821	3.50	20	177.3	70	130	Fail
23	Na	45	115.084	218435	0.89	100	115.1	70	130	
24	Mg	45	100.790	52317	1.42	100	100.8	70	130	
27	Al	45	101.104	22308	2.05	100	101.1	70	130	
39	K	45	102.117	132199	0.19	100	102.1	70	130	
44	Ca	45	89.120	3666	7.66	100	89.1	70	130	
47	Ti	45	5.123	922	9.97	5	102.5	70	130	
51	V	45	1.031	7443	1.37	1	103.1	70	130	
52	Cr	45	5.240	32441	0.11	5	104.8	70	130	
55	Mn	45	5.380	20951	2.38	5	107.6	70	130	
56	Fe	45	102.353	541973	0.26	100	102.4	70	130	
59	Co	72	5.358	46879	1.33	5	107.2	70	130	
60	Ni	72	5.297	12644	4.03	5	105.9	70	130	
63	Cu	72	5.348	35415	0.55	5	107.0	70	130	
66	Zn	72	5.716	6490	2.20	5	114.3	70	130	
75	As	72	5.326	4799	2.09	5	106.5	70	130	
78	Se	72	5.144	510	6.12	5	102.9	70	130	
88	Sr	115	5.226	27327	1.29	5	104.5	70	130	
95	Mo	115	5.159	18706	2.04	5	103.2	70	130	
107	Ag	115	1.970	21487	1.22	2	98.5	70	130	
111	Cd	115	0.960	1585	6.26	1	96.0	70	130	
118	Sn	115	5.272	20791	2.66	5	105.4	70	130	
121	Sb	115	2.012	11806	2.41	2	100.6	70	130	
137	Ba	115	5.266	9915	1.23	5	105.3	70	130	
205	Tl	209	1.060	24324	0.59	1	106.0	70	130	
208	Pb	209	1.033	17655	1.01	1	103.3	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1301378	0.34	1394564	93.32	70	120	
72	Ge	823577	0.19	892468	92.28	70	120	
115	In	7624964	0.42	7983264	95.51	70	120	
209	Bi	14426429	1.88	14868144	97.03	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/11/2016 14:11	Sample Name	CCB5-161111
Data Batch	161111.b	Comment	CCB ICPMS_TW
Data File Name	119_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.063	14	31.5	2	5	
9	Be	45	-0.010	2	65.5	0.4	0.3	
11	B	45	11.892	346	5.3	10	10	FailAq FailSoil
23	Na	45	8.881	115339	1.2	50	100	
24	Mg	45	-0.489	436	11.6	50	100	
27	Al	45	4.334	1636	8.8	50	10	
39	K	45	1.037	76568	0.4	50	100	
44	Ca	45	-2.654	839	6.0	50	100	
47	Ti	45	0.019	7	86.6	4	3	
51	V	45	-0.015	1995	2.7	4	3	
52	Cr	45	-0.041	1273	16.3	2	2	
55	Mn	45	0.019	449	7.9	2	3	
56	Fe	45	0.461	10455	2.7	50	50	
59	Co	72	-0.002	137	33.0	2	3	
60	Ni	72	-0.044	377	11.6	2	3	
63	Cu	72	-0.038	1603	3.6	2	2	
66	Zn	72	0.144	498	10.3	4	2	
75	As	72	-0.028	179	3.8	2	2	
78	Se	72	0.220	209	3.8	1	2	
88	Sr	115	0.015	343	7.9	4	3	
95	Mo	115	0.034	213	12.5	2	2	
107	Ag	115	0.010	186	1.0	0.4	1	
111	Cd	115	-0.002	16	12.4	0.4	0.3	
118	Sn	115	-0.018	718	4.1	4	3	
121	Sb	115	-0.018	374	18.3	2	0.8	
137	Ba	115	0.014	59	34.6	2	3	
205	Tl	209	0.015	460	11.2	2	0.5	
208	Pb	209	-0.011	864	3.5	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1319528	0.38	1394564	94.62	70	120	
72	Ge	826892	1.10	892468	92.65	70	120	
115	In	7733075	0.94	7983264	96.87	70	120	
209	Bi	14813750	1.18	14868144	99.63	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/11/2016 14:31	Sample Name	CCV6-161111
Data Batch	161111.b	Comment	CCV ICPMS_TW
Data File Name	129_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	202.408	7642	1.11	200	101.2	90	110	
9	Be	45	205.232	10190	1.43	200	102.6	90	110	
11	B	45	215.841	4621	3.64	200	107.9	90	110	
23	Na	45	5043.240	5214893	0.90	5000	100.9	90	110	
24	Mg	45	4934.663	2598149	1.19	5000	98.7	90	110	
27	Al	45	4914.346	1080457	0.94	5000	98.3	90	110	
39	K	45	4951.601	2929912	0.19	5000	99.0	90	110	
44	Ca	45	4586.692	146688	0.52	5000	91.7	90	110	
47	Ti	45	197.685	36435	1.39	200	98.8	90	110	
51	V	45	200.020	1077913	1.57	200	100.0	90	110	
52	Cr	45	202.335	1229197	1.09	200	101.2	90	110	
55	Mn	45	198.238	779543	0.58	200	99.1	90	110	
56	Fe	45	5038.808	27019968	1.20	5000	100.8	90	110	
59	Co	72	208.504	1819066	0.68	200	104.3	90	110	
60	Ni	72	210.258	483678	0.51	200	105.1	90	110	
63	Cu	72	210.476	1324121	1.64	200	105.2	90	110	
66	Zn	72	209.649	225960	1.00	200	104.8	90	110	
75	As	72	207.713	179498	1.08	200	103.9	90	110	
78	Se	72	205.822	12818	0.44	200	102.9	90	110	
88	Sr	115	201.991	1056638	0.75	200	101.0	90	110	
95	Mo	115	202.250	737074	1.18	200	101.1	90	110	
107	Ag	115	195.094	2141948	0.27	200	97.5	90	110	
111	Cd	115	201.781	332507	0.81	200	100.9	90	110	
118	Sn	115	198.601	762239	0.47	200	99.3	90	110	
121	Sb	115	195.056	1110184	0.60	200	97.5	90	110	
137	Ba	115	202.087	383060	0.74	200	101.0	90	110	
205	Tl	209	193.330	4507514	0.36	200	96.7	90	110	
208	Pb	209	197.301	3245430	1.14	200	98.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1337106	0.71	1394564	95.88	70	120	
72	Ge	823946	1.00	892468	92.32	70	120	
115	In	7701612	1.40	7983264	96.47	70	120	
209	Bi	14720452	1.85	14868144	99.01	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 14:35	Sample Name	LCVL6-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	131LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.639	412	1.82	1	1063.9	70	130	Fail
9	Be	45	1.149	60	7.74	1	114.9	70	130	
11	B	45	34.209	814	8.27	20	171.0	70	130	Fail
23	Na	45	105.079	213505	0.24	100	105.1	70	130	
24	Mg	45	100.700	53506	1.32	100	100.7	70	130	
27	Al	45	100.041	22602	1.00	100	100.0	70	130	
39	K	45	102.744	135693	0.77	100	102.7	70	130	
44	Ca	45	89.934	3778	0.79	100	89.9	70	130	
47	Ti	45	5.023	926	6.16	5	100.5	70	130	
51	V	45	1.048	7711	2.70	1	104.8	70	130	
52	Cr	45	5.251	33273	1.32	5	105.0	70	130	
55	Mn	45	5.358	21366	2.62	5	107.2	70	130	
56	Fe	45	102.738	556886	1.05	100	102.7	70	130	
59	Co	72	5.290	47386	1.56	5	105.8	70	130	
60	Ni	72	5.524	13477	2.18	5	110.5	70	130	
63	Cu	72	5.344	36225	0.48	5	106.9	70	130	
66	Zn	72	5.769	6701	2.62	5	115.4	70	130	
75	As	72	5.376	4956	0.99	5	107.5	70	130	
78	Se	72	5.748	560	1.66	5	115.0	70	130	
88	Sr	115	5.149	27942	0.78	5	103.0	70	130	
95	Mo	115	5.003	18825	0.73	5	100.1	70	130	
107	Ag	115	1.916	21691	2.84	2	95.8	70	130	
111	Cd	115	0.975	1670	6.03	1	97.5	70	130	
118	Sn	115	5.079	20814	0.64	5	101.6	70	130	
121	Sb	115	1.941	11831	2.78	2	97.0	70	130	
137	Ba	115	5.123	10010	2.87	5	102.5	70	130	
205	Tl	209	1.011	23806	1.71	1	101.1	70	130	
208	Pb	209	1.030	18067	2.88	1	103.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1332215	0.68	1394564	95.53	70	120	
72	Ge	843042	0.71	892468	94.46	70	120	
115	In	7911940	0.11	7983264	99.11	70	120	
209	Bi	14800673	2.09	14868144	99.55	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/11/2016 14:55	Sample Name	CCB6-161111
Data Batch	161111.b	Comment	CCB ICPMS_TW
Data File Name	139_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.011	12	46.1	2	5	
9	Be	45	-0.017	2	100.0	0.4	0.3	
11	B	45	7.066	244	18.6	10	10	
23	Na	45	3.519	109339	0.7	50	100	
24	Mg	45	-0.648	351	19.4	50	100	
27	Al	45	2.812	1298	4.6	50	10	
39	K	45	3.670	77610	0.9	50	100	
44	Ca	45	-3.158	818	1.1	50	100	
47	Ti	45	0.007	4	114.6	4	3	
51	V	45	-0.009	2018	4.0	4	3	
52	Cr	45	-0.047	1228	0.8	2	2	
55	Mn	45	-0.011	331	1.2	2	3	
56	Fe	45	0.301	9553	3.7	50	50	
59	Co	72	-0.008	84	43.5	2	3	
60	Ni	72	-0.049	366	9.5	2	3	
63	Cu	72	-0.041	1585	5.8	2	2	
66	Zn	72	0.092	442	4.8	4	2	
75	As	72	-0.043	167	12.7	2	2	
78	Se	72	0.286	214	10.7	1	2	
88	Sr	115	0.002	278	8.7	4	3	
95	Mo	115	0.007	116	4.4	2	2	
107	Ag	115	0.006	146	27.6	0.4	1	
111	Cd	115	-0.009	4	43.4	0.4	0.3	
118	Sn	115	-0.075	502	7.1	4	3	
121	Sb	115	-0.041	244	21.7	2	0.8	
137	Ba	115	0.015	61	8.3	2	3	
205	Tl	209	0.003	181	3.8	2	0.5	
208	Pb	209	0.008	1166	3.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1311813	0.38	1394564	94.07	70	120	
72	Ge	827634	0.28	892468	92.74	70	120	
115	In	7782058	1.74	7983264	97.48	70	120	
209	Bi	14738696	0.27	14868144	99.13	70	120	

ICP-MS4_161116B
For

DHL Work Order
1611044

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS4_161116B SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			X
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			
P/A Factor	Before ICAL	Increasing trend	X			X
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			X
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			X
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X	X		
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125 / 80-120 (6020A)	X			

Lab Data Review Check List

EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			X
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted			X	
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: [signature] Date of Completion: 11/17/2016

Second-Level Review: [signature] Date Stamp: 11/18/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161116B **Run No.:** 89029

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:34:00 AM		
L2-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:36:00 AM		
L-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:38:00 AM		
10X-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:40:00 AM		
5X-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:42:00 AM		
2X-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:44:00 AM		
H-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:46:00 AM		
H2-161116	1	ICPMS_TWDOD	CAL	R89029	11/16/2016 10:48:00 AM		
ICSA-161116	1	ICPMS_TWDOD	ICSA	R89029	11/16/2016 10:56:00 AM		
ICSAB-161116	1	ICPMS_TWDOD	ICSB	R89029	11/16/2016 10:58:00 AM		
ICV-161116	1	ICPMS_TWDOD	ICV	R89029	11/16/2016 11:07:00 AM		
LCVL-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 11:14:00 AM		
ICB-161116	1	ICPMS_TWDOD	ICB	R89029	11/16/2016 11:25:00 AM		
CCV3-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 1:23:00 PM		
LCVL3-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 2:01:00 PM		
CCB3-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 2:16:00 PM		
MB-77902	5	ICPMS_TSDOD1	MBLK	77902	11/16/2016 2:18:00 PM		
LCS-77902	5	ICPMS_TSDOD1	LCS	77902	11/16/2016 2:21:00 PM		
LCSD-77902	5	ICPMS_TSDOD1	LCSD	77902	11/16/2016 2:23:00 PM		
1611028-10A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:27:00 PM		
1611028-10A SD	25	ICPMS_TSDOD1	SD	77902	11/16/2016 2:29:00 PM		
1611022-22A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:31:00 PM		
1611022-23A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:33:00 PM		
1611022-24A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:35:00 PM		
1611022-25A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:37:00 PM		
1611028-01A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:38:00 PM		
1611028-02A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:40:00 PM		
1611028-03A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:42:00 PM		
1611028-04A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:44:00 PM		
1611028-05A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 2:46:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Run ID: ICP-MS4_161116B **Run No.:** 89029

1611028-10A PDS	5	ICPMS_TSDOD1	PDS	77902	11/16/2016 2:53:00 PM		
1611028-10A MS	5	ICPMS_TSDOD1	MS	77902	11/16/2016 2:55:00 PM		
1611028-10A MSD	5	ICPMS_TSDOD1	MSD	77902	11/16/2016 2:57:00 PM		
CCV4-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 2:59:00 PM		
LCVL4-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 3:06:00 PM		
CCB4-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 3:12:00 PM		
1611028-06A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:14:00 PM		
1611028-07A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:16:00 PM		
1611028-08A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:18:00 PM		
1611028-09A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:20:00 PM		
1611028-11A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:22:00 PM		
1611028-12A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:24:00 PM		
1611028-14A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:26:00 PM		
1611028-15A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:28:00 PM		
1611028-16A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:30:00 PM		
1611028-17A	5	ICPMS_TSDOD1	SAMP	77902	11/16/2016 3:32:00 PM		
CCV5-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 3:34:00 PM		
LCVL5-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 3:39:00 PM		
CCB5-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 3:41:00 PM		
MB-77903	5	ICPMS_TSDOD1	MBLK	77903	11/16/2016 3:43:00 PM		
LCS-77903	5	ICPMS_TSDOD1	LCS	77903	11/16/2016 3:45:00 PM		
LCSD-77903	5	ICPMS_TSDOD1	LCSD	77903	11/16/2016 3:47:00 PM		
1611044-01A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:51:00 PM		
1611044-01A SD	25	ICPMS_TSDOD1	SD	77903	11/16/2016 3:53:00 PM		
1611028-18A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:55:00 PM		
1611028-19A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:57:00 PM		
1611028-20A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 3:59:00 PM		
1611028-21A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:01:00 PM		
1611028-22A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:03:00 PM		
1611028-23A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:05:00 PM		
1611028-24A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:07:00 PM		
1611028-25A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:09:00 PM		
1611044-02A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:11:00 PM		
1611044-01A PDS	5	ICPMS_TSDOD1	PDS	77903	11/16/2016 4:13:00 PM		
1611044-01A MS	5	ICPMS_TSDOD1	MS	77903	11/16/2016 4:15:00 PM		S-flag Pb- High

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161116B **Run No.:** 89029

1611044-01A MSD	5	ICPMS_TSDOD1	MSD	77903	11/16/2016 4:17:00 PM		S-flag Pb- High
CCV6-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 4:19:00 PM		
LCVL6-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 4:30:00 PM		
CCB6-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 4:32:00 PM		
1611044-03A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:34:00 PM		
1611044-04A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:36:00 PM		
1611044-05A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:38:00 PM		
1611044-06A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:40:00 PM		
1611044-07A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:42:00 PM		
1611044-08A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:44:00 PM		
1611044-09A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:46:00 PM		
1611044-10A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:48:00 PM		
1611044-11A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:50:00 PM		
1611044-12A	5	ICPMS_TSDOD1	SAMP	77903	11/16/2016 4:52:00 PM		
CCV7-161116	1	ICPMS_TWDOD	CCV	R89029	11/16/2016 4:54:00 PM		
LCVL7-161116	1	ICPMS_TWDOD	LCVL	R89029	11/16/2016 4:59:00 PM		
CCB7-161116	1	ICPMS_TWDOD	CCB	R89029	11/16/2016 5:08:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\161116.b

Acquisition Order

#	Sequence Flow
1	Calibration Standards
2	Unknown Samples
3	Blank Samples

Calibration Standards:

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
1	CCB		CAL ICPMS_TW		1101	
2	CCB		CAL ICPMS_TW		1101	
3	CCB		CAL ICPMS_TW		1101	
4	CCB		CAL ICPMS_TW		1102	
5	CCB		CAL ICPMS_TW		1102	
6	CCB		CAL ICPMS_TW		1102	
7	CCB		CAL ICPMS_TW		1102	
8	CCB		CAL ICPMS_TW		1103	
9	CCB		CAL ICPMS_TW		1103	
10	CCB		CAL ICPMS_TW		1103	
11	CCB		CAL ICPMS_TW		1103	
12	CalBlk	BLANK STD 1	CAL ICPMS_TW	1	2101	
13	CalStd	L2-161116	CAL ICPMS_TW	2	2102	
14	CalStd	L-161116	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161116	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161116	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161116	CAL ICPMS_TW	6	2106	
18	CalStd	H-161116	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161116	CAL ICPMS_TW	8	2108	
20	ICB	BLANK	CCB ICPMS_TW		1101	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
21	ICB	BLANK	CCB ICPMS_TW		1102	
22	ICB	BLANK	CCB ICPMS_TW		1103	
23	ICSA	ICSA-161116	ICSAICPMS_TW		2109	
24	ICSB	ICSAB-161116	ICSBICPMS_TW		2110	
25	ICB	BLANK	CCB ICPMS_TW		1101	
26	ICB	BLANK	CCB ICPMS_TW		1102	
27	ICB	BLANK	CCB ICPMS_TW		1103	
28	ICV	ICV-161116	ICV ICPMS_TW		2111	
29	ICB	ICB-161116	ICB ICPMS_TW		1101	
30	ICB	ICB-161116	ICB ICPMS_TW		1103	
31	LLICV	LCVL-161116	LCVLICPMS_TW		2112	
32	ICB	ICB-161116	ICB ICPMS_TW		1101	
33	ICB	ICB-161116	ICB ICPMS_TW		1103	
34	LLICV	LCVL-161116	LCVLICPMS_TW		2112	
35	ICB	ICB-161116	ICB ICPMS_TW		1102	
36	ICB	ICB-161116	ICB ICPMS_TW		1103	
37	PB_W	MB-77886	MBLKICPMS_TW		2201	1
38	LCS_W	LCS-77886	LCS ICPMS_TW		2202	1
39	LCS_W	LCSD-77886	LCSDICPMS_TW		2203	1
40	CCB	RINSE	CCB ICPMS_TW		1101	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	AllRef	1611126-01A	SAMPICPMS_TW		2204	10
42	SD	1611126-01A SD	SD ICPMS_TW		2205	50
43	PDS	1611126-01A PDS	PDS ICPMS_TW		2206	10
44	CCB	RINSE	CCB ICPMS_TW		1102	
45	AllRef	1611126-01A	SAMPICPMS_TW		2207	1
46	SD	1611126-01A SD	SD ICPMS_TW		2208	5
47	SAMP_W	1611126-02A	SAMPICPMS_TW		2209	1

Sample List

48	PDS	1611126-01A PDS	PDS ICPMS_TW		2210	1
49	MS_W	1611126-01A MS	MS ICPMS_TW		2211	1
50	MS_W	1611126-01A MSD	MSD ICPMS_TW		2212	1
51	CCB	RINSE	CCB ICPMS_TW		1102	
52	CCB	RINSE	CCB ICPMS_TW		1103	
53	CCB	RINSE	CCB ICPMS_TW		1102	
54	CCB	RINSE	CCB ICPMS_TW		1102	
55	CCB	RINSE	CCB ICPMS_TW		1103	
56	CCB	RINSE	CCB ICPMS_TW		1103	
57	SAMP_W	1611089-01A	SAMPICPMS_TW		2301	10
58	SAMP_W	1611089-02A	SAMPICPMS_TW		2302	10
59	SAMP_W	1611088-11B	SAMPICPMS_DW		2403	50
60	SAMP_W	1611088-12B	SAMPICPMS_DW		2404	50

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	SAMP_W	1611088-13B	SAMPICPMS_DW		2405	50
62	CCV	CCV1-161116	CCV ICPMS_TW		1207	
63	CCB	CCB1-161116	CCB ICPMS_TW		1102	
64	LLCCV	LCVL1-161116	LCVLICPMS_TW		2112	
65	CCB	CCB1-161116	CCB ICPMS_TW		1103	
66	AllRef	1611081-22A	SAMPICPMS_TW		2303	50
67	SD	1611081-22A SD	SD ICPMS_TW		2304	250
68	SAMP_W	1611091-02A	SAMPICPMS_TW		2305	10
69	SAMP_W	1611091-03A	SAMPICPMS_TW		2306	10
70	SAMP_W	1611091-04A	SAMPICPMS_TW		2307	50
71	SAMP_W	1611091-05A	SAMPICPMS_TW		2308	50
72	SAMP_W	1611091-06A	SAMPICPMS_TW		2309	10
73	SAMP_W	1611091-07A	SAMPICPMS_TW		2310	10
74	SAMP_W	1611091-08A	SAMPICPMS_TW		2311	10
75	SAMP_W	1611091-09A	SAMPICPMS_TW		2312	10
76	SAMP_W	1611091-11A	SAMPICPMS_TW		2401	10

Sample List

77	PDS	1611081-22A PDS	PDS ICPMS_TW		2402	50
78	CCV	CCV2-161116	CCV ICPMS_TW		1207	
79	CCB	CCB2-161116	CCB ICPMS_TW		1102	
80	LLCCV	LCVL2-161116	LCVLICPMS_TW		2112	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	CCB	CCB2-161116	CCB ICPMS_TW		1103	
82	AllRef	1611088-01B	SAMPICPMS_DW		3101	50
83	SD	1611088-01B SD	SD ICPMS_DW		3102	250
84	SAMP_W	1611088-02B	SAMPICPMS_DW		3103	50
85	SAMP_W	1611088-03B	SAMPICPMS_DW		3104	50
86	SAMP_W	1611088-04B	SAMPICPMS_DW		3105	10
87	SAMP_W	1611088-05B	SAMPICPMS_DW		3106	10
88	SAMP_W	1611088-06B	SAMPICPMS_DW		3107	100
89	SAMP_W	1611088-07B	SAMPICPMS_DW		3108	50
90	SAMP_W	1611088-08B	SAMPICPMS_DW		3109	100
91	SAMP_W	1611088-09B	SAMPICPMS_DW		3110	50
92	SAMP_W	1611088-10B	SAMPICPMS_DW		3111	100
93	PDS	1611088-01B PDS	PDS ICPMS_DW		3112	50
94	CCV	CCV3-161116	CCV ICPMS_TW		1207	
95	CCB	CCB3-161116	CCB ICPMS_TW		1102	
96	LLCCV	LCVL3-161116	LCVLICPMS_TW		2512	
97	CCB	CCB3-161116	CCB ICPMS_TW		1103	
98	PB	MB-77902	MBLKICPMS_TSDOD1		3201	5
99	LCS_S	LCS-77902	LCS ICPMS_TSDOD1		3202	5
100	LCS_S	LCSD-77902	LCSDICPMS_TSDOD1		3203	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	CCB	RINSE	CCB ICPMS_TW		1101	
102	AllRef	1611028-10A	SAMPICPMS_TSDOD1		3204	5
103	SD	1611028-10A SD	SD ICPMS_TSDOD1		3205	25
104	Sample	1611022-22A	SAMPICPMS_TSDOD1		3206	5
105	Sample	1611022-23A	SAMPICPMS_TSDOD1		3207	5
106	Sample	1611022-24A	SAMPICPMS_TSDOD1		3208	5
107	Sample	1611022-25A	SAMPICPMS_TSDOD1		3209	5
108	Sample	1611028-01A	SAMPICPMS_TSDOD1		3210	5
109	Sample	1611028-02A	SAMPICPMS_TSDOD1		3211	5
110	Sample	1611028-03A	SAMPICPMS_TSDOD1		3212	5
111	Sample	1611028-04A	SAMPICPMS_TSDOD1		3301	5
112	Sample	1611028-05A	SAMPICPMS_TSDOD1		3302	5
113	PDS	1611028-10A PDS	PDS ICPMS_TSDOD1		3303	5
114	PDS	1611028-10A PDS	PDS ICPMS_TSDOD1		3303	5
115	MS_S	1611028-10A MS	MS ICPMS_TSDOD1		3304	5
116	MS_S	1611028-10A MSD	MSD ICPMS_TSDOD1		3305	5
117	CCV	CCV4-161116	CCV ICPMS_TW		1207	
118	CCB	CCB4-161116	CCB ICPMS_TW		1102	
119	LLCCV	LCVL4-161116	LCVLICPMS_TW		2512	
120	CCB	CCB4-161116	CCB ICPMS_TW		1103	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1611028-06A	SAMPICPMS_TSDOD1		3306	5
122	Sample	1611028-07A	SAMPICPMS_TSDOD1		3307	5
123	Sample	1611028-08A	SAMPICPMS_TSDOD1		3308	5
124	Sample	1611028-09A	SAMPICPMS_TSDOD1		3309	5
125	Sample	1611028-11A	SAMPICPMS_TSDOD1		3310	5
126	Sample	1611028-12A	SAMPICPMS_TSDOD1		3311	5
127	Sample	1611028-14A	SAMPICPMS_TSDOD1		3312	5
128	Sample	1611028-15A	SAMPICPMS_TSDOD1		3401	5
129	Sample	1611028-16A	SAMPICPMS_TSDOD1		3402	5
130	Sample	1611028-17A	SAMPICPMS_TSDOD1		3403	5
131	CCV	CCV5-161116	CCV ICPMS_TW		1207	
132	CCB	CCB5-161116	CCB ICPMS_TW		1102	
133	LLCCV	LCVL5-161116	LCVLICPMS_TW		2511	
134	CCB	CCB5-161116	CCB ICPMS_TW		1103	
135	PB	MB-77903	MBLKICPMS_TSDOD1		4101	5
136	LCS_S	LCS-77903	LCS ICPMS_TSDOD1		4102	5
137	LCS_S	LCSD-77903	LCSDICPMS_TSDOD1		4103	5
138	CCB	RINSE	CCB ICPMS_TW		1101	
139	AllRef	1611044-01A	SAMPICPMS_TSDOD1		4104	5
140	SD	1611044-01A SD	SD ICPMS_TSDOD1		4105	25

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	Sample	1611028-18A	SAMPICPMS_TSDOD1		4106	5
142	Sample	1611028-19A	SAMPICPMS_TSDOD1		4107	5
143	Sample	1611028-20A	SAMPICPMS_TSDOD1		4108	5
144	Sample	1611028-21A	SAMPICPMS_TSDOD1		4109	5
145	Sample	1611028-22A	SAMPICPMS_TSDOD1		4110	5
146	Sample	1611028-23A	SAMPICPMS_TSDOD1		4111	5
147	Sample	1611028-24A	SAMPICPMS_TSDOD1		4112	5
148	Sample	1611028-25A	SAMPICPMS_TSDOD1		4201	5
149	Sample	1611044-02A	SAMPICPMS_TSDOD1		4202	5
150	PDS	1611044-01A PDS	PDS ICPMS_TSDOD1		4203	5
151	MS_S	1611044-01A MS	MS ICPMS_TSDOD1		4204	5
152	MS_S	1611044-01A MSD	MSD ICPMS_TSDOD1		4205	5
153	CCV	CCV6-161116	CCV ICPMS_TW		1207	
154	CCB	CCB6-161116	CCB ICPMS_TW		1102	
155	LLCCV	LCVL6-161116	LCVLICPMS_TW		2511	
156	CCB	CCB6-161116	CCB ICPMS_TW		1103	
157	Sample	1611044-03A	SAMPICPMS_TSDOD1		4206	5
158	Sample	1611044-04A	SAMPICPMS_TSDOD1		4207	5
159	Sample	1611044-05A	SAMPICPMS_TSDOD1		4208	5
160	Sample	1611044-06A	SAMPICPMS_TSDOD1		4209	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
161	Sample	1611044-07A	SAMPICPMS_TSDOD1		4210	5
162	Sample	1611044-08A	SAMPICPMS_TSDOD1		4211	5
163	Sample	1611044-09A	SAMPICPMS_TSDOD1		4212	5
164	Sample	1611044-10A	SAMPICPMS_TSDOD1		4301	5
165	Sample	1611044-11A	SAMPICPMS_TSDOD1		4302	5
166	Sample	1611044-12A	SAMPICPMS_TSDOD1		4303	5
167	CCV	CCV7-161116	CCV ICPMS_TW		1207	
168	CCB	CCB7-161116	CCB ICPMS_TW		1102	

Sample List

169	LLCCV	LCVL7-161116	LCVLICPMS_TW	2511	
170	CCB	CCB7-161116	CCB ICPMS_TW	1102	
171	PB	MB-77903	MBLKICPMS_TS	4101	5
172	LCS_S	LCS-77903	LCS ICPMS_TS	4102	5
173	LCS_S	LCSD-77903	LCSDICPMS_TS	4103	5
174	CCB	RINSE	CCB ICPMS_TW	1101	
175	AllRef	1611142-01A	SAMPICPMS_TS	4104	5
176	SD	1611142-01A SD	SD ICPMS_TS	4105	25
177	Sample	1611142-02A	SAMPICPMS_TS	4106	5
178	Sample	1611142-03A	SAMPICPMS_TS	4107	5
179	Sample	1611142-04A	SAMPICPMS_TS	4108	5
180	Sample	1611142-05A	SAMPICPMS_TS	4109	5

#	Skip
161	
162	
163	
164	
165	
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167	
168	
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173	
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176	
177	
178	
179	
180	

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
181	Sample	1611142-06A	SAMPICPMS_TS		4110	5
182	Sample	1611142-07A	SAMPICPMS_TS		4111	5
183	Sample	1611114-06B	SAMPICPMS_TS		4112	5
184	Sample	1611115-01A	SAMPICPMS_TS		4201	5
185	Sample	1611153-01B	SAMPICPMS_TS		4202	5
186	PDS	1611142-01A PDS	PDS ICPMS_TS		4203	5
187	MS_S	1611142-01A MS	MS ICPMS_TS		4204	5
188	MS_S	1611142-01A MSD	MSD ICPMS_TS		4205	5
189	CCV	CCV8-161116	CCV ICPMS_TW		1207	
190	CCB	CCB8-161116	CCB ICPMS_TW		1102	
191	LLCCV	LCVL8-161116	LCVLICPMS_TW		2511	
192	CCB	CCB8-161116	CCB ICPMS_TW		1102	
193	Sample	1611130-01B	SAMPICPMS_TS		4206	5
194	CCV	CCV9-161116	CCV ICPMS_TW		1207	
195	CCB	CCB9-161116	CCB ICPMS_TW		1102	
196	LLCCV	LCVL9-161116	LCVLICPMS_TW		2511	
197	CCB	CCB9-161116	CCB ICPMS_TW		1102	

Sample List

198	CCB	CCB9-161116	CCB ICPMS_TW		1102
199	CCB	CCB9-161116	CCB ICPMS_TW		1102
200	CCB	CCB9-161116	CCB ICPMS_TW		1102

#	Skip
181	
182	
183	
184	
185	
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188	
189	
190	
191	
192	
193	
194	
195	
196	
197	
198	
199	
200	

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
201	CCB	CCB9-161116	CCB ICPMS_TW		1103	
202	CCB	CCB9-161116	CCB ICPMS_TW		1103	
203	CCB	CCB9-161116	CCB ICPMS_TW		1103	
204	CCB	CCB9-161116	CCB ICPMS_TW		1103	

#	Skip
201	
202	
203	
204	

Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/14/2016 3:32:19 PM**
Digestion:
Prep End Date:

Prep Batch **77903** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List
Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		1.01	50	50.000	1 of 1	
1611028-19A	Soil		1.07	50	50.000	1 of 1	
1611028-20A	Soil		1.09	50	50.000	1 of 1	
1611028-21A	Soil		1.06	50	50.000	1 of 1	
1611028-22A	Soil		1.03	50	50.000	1 of 1	
1611028-23A	Soil		1.06	50	50.000	1 of 1	
1611028-24A	Soil		1.02	50	50.000	1 of 1	
1611028-25A	Soil		1.02	50	50.000	1 of 1	
1611044-01A	Soil		1.03	50	50.000	of 3	
1611044-01A MS	Soil		1.02	50	50.000	of	
1611044-01A MSD	Soil		1.04	50	50.000	of	
1611044-02A	Soil		1.02	50	50.000	1 of 1	
1611044-03A	Soil		1.02	50	50.000	1 of 1	
1611044-04A	Soil		1.12	50	50.000	1 of 1	
1611044-05A	Soil		1.01	50	50.000	1 of 1	
1611044-06A	Soil		1.10	50	50.000	1 of 1	
1611044-07A	Soil		1.03	50	50.000	1 of 1	
1611044-08A	Soil		1.11	50	50.000	1 of 1	
1611044-09A	Soil		1.03	50	50.000	1 of 1	
1611044-10A	Soil		1.09	50	50.000	1 of 1	
1611044-11A	Soil		1.03	50	50.000	1 of 1	
1611044-12A	Soil		1.07	50	50.000	1 of 1	
LCS-77903	Soil		1	50	50.000	of	
LCSD-77903	Soil		1	50	50.000	of	
MB-77903	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. D
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

8:40 - 8:50
8:55 - 10:55
11:15 - 13:15
13:30 - 13:45

11/15/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-01A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-03A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-04A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-06A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-07A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-08A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-09A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-10A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1611028-11A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-12A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-14A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/3/2016 11:00:00 AM**
Digestion: **Start: 11/3/2016 11:30:00 AM / Stop: 11/8/2016 8:50:00 AM**
Prep End Date: **11/8/2016 5:30:00 PM**

Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-15A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-16A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-17A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-18A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-19A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-20A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-21A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-22A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-23A	Soil		0	0	#Num!	1 of 1	
SS							
1611028-24A	Soil		0	0	#Num!	1 of 1	
Sieve Only - Hard Clay							
1611028-25A	Soil		0	0	#Num!	1 of 1	
SS							

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/4/2016 10:00:00 AM**
Digestion: **Start: 11/4/2016 10:20:00 AM / Stop: 11/9/2016 9:00:00 AM**
Prep End Date: **11/9/2016 1:00:00 PM**

Prep Batch **77804** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-01A	Soil		0	0	#Num!	of 3	
	SS MS/MSD						
1611044-02A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-03A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-04A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-05A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-06A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-07A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-08A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-09A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-10A	Soil		0	0	#Num!	1 of 1	
	SS						
1611044-11A	Soil		0	0	#Num!	1 of 1	
	Sieve Only - Hard Clay						
1611044-12A	Soil		0	0	#Num!	1 of 1	
	SS						

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/14/2016 3:32:19 PM**
Digestion: **Start: 11/15/2016 8:40:00 AM / Stop: 11/15/2016 1:45:00 PM**
Prep End Date: **11/15/2016 3:01:57 PM**

Prep Batch **77903** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611028-18A	Soil		1.01	50	49.505	1 of 1	
1611028-19A	Soil		1.07	50	46.729	1 of 1	
1611028-20A	Soil		1.09	50	45.872	1 of 1	
1611028-21A	Soil		1.06	50	47.170	1 of 1	
1611028-22A	Soil		1.03	50	48.544	1 of 1	
1611028-23A	Soil		1.06	50	47.170	1 of 1	
1611028-24A	Soil		1.02	50	49.020	1 of 1	
1611028-25A	Soil		1.02	50	49.020	1 of 1	
1611044-01A	Soil		1.03	50	48.544	of 3	
1611044-01A MS	Soil		1.02	50	49.020	of	
1611044-01A MSD	Soil		1.04	50	48.077	of	
1611044-01A PDS	Soil		1.03	50	48.544	of	
1611044-01A SD	Soil		1.03	50	48.544	of	
1611044-02A	Soil		1.02	50	49.020	1 of 1	
1611044-03A	Soil		1.02	50	49.020	1 of 1	
1611044-04A	Soil		1.12	50	44.643	1 of 1	
1611044-05A	Soil		1.01	50	49.505	1 of 1	
1611044-06A	Soil		1.1	50	45.455	1 of 1	
1611044-07A	Soil		1.03	50	48.544	1 of 1	
1611044-08A	Soil		1.11	50	45.045	1 of 1	
1611044-09A	Soil		1.03	50	48.544	1 of 1	
1611044-10A	Soil		1.09	50	45.872	1 of 1	
1611044-11A	Soil		1.03	50	48.544	1 of 1	
1611044-12A	Soil		1.07	50	46.729	1 of 1	
LCS-77903	Soil		1	50	50.000	of	
LCSD-77903	Soil		1	50	50.000	of	
MB-77903	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

Calibration Summary Report

Date Acquired 11/16/2016 10:34
Data Batch 161116.b

Level	Calibration File Name
1	012CALB.d
2	013CALS.d
3	014CALS.d
4	015CALS.d
5	016CALS.d
6	017CALS.d
7	018CALS.d
8	019CALS.d

Calibration Table

Ele	Corr Coef	Curve Equation
As	1.0000	y = 0.0011 * x + 3.5702E-004
Be	1.0000	y = 4.5756E-005 * x + 0.0000E+000
B	1.0000	y = 2.0296E-005 * x + 9.0650E-005
Na	0.9999	y = 7.9095E-004 * x + 0.0602
Mg	1.0000	y = 4.2309E-004 * x + 6.4007E-004
Al	1.0000	y = 1.7079E-004 * x + 0.0017
K	1.0000	y = 4.1812E-004 * x + 0.0590
Ca	1.0000	y = 2.2444E-005 * x + 4.9157E-004
Ti	1.0000	y = 1.3940E-004 * x + 7.0437E-006
V	1.0000	y = 0.0041 * x + 0.0035
Cr	1.0000	y = 0.0047 * x + 0.0013
Mn	1.0000	y = 0.0030 * x + 2.1304E-004
Fe	1.0000	y = 0.0041 * x + 0.0081
Co	0.9999	y = 0.0111 * x + 1.3587E-004
Ni	0.9999	y = 0.0029 * x + 4.5627E-004
Cu	0.9999	y = 0.0080 * x + 0.0026
Zn	0.9999	y = 0.0014 * x + 0.0012
Se	0.9999	y = 7.8955E-005 * x + 1.4362E-004
Sr	1.0000	y = 6.8507E-004 * x + 7.6599E-005
Mo	1.0000	y = 4.8588E-004 * x + 1.1895E-005
Ag	1.0000	y = 0.0015 * x + 1.0019E-005
Cd	1.0000	y = 2.2660E-004 * x + 1.3057E-006
Sn	1.0000	y = 5.1960E-004 * x + 1.1420E-004
Sb	1.0000	y = 7.4811E-004 * x + 6.0525E-005
Tl	1.0000	y = 0.0016 * x + 6.2086E-006
Ba	1.0000	y = 2.5419E-004 * x + 7.0977E-006
Pb	1.0000	y = 0.0021 * x + 1.2273E-004
Li	1.0000	y = 3.6944E-005 * x + 1.6630E-005

Calibration Summary Report

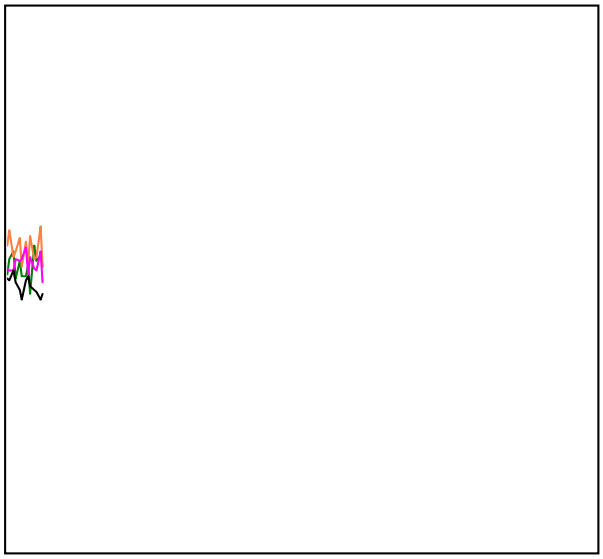
Level 7 Cal

Ele	Conc	Calc	%Rec
As	500	512.37	102
Be	500	510.13	102
B	500	497.98	100
Na	10000	10215.56	102
Mg	10000	9910.04	99
Al	10000	9977.80	100
K	10000	9948.16	99
Ca	10000	9532.78	95
Ti	500	504.72	101
V	500	501.44	100
Cr	500	504.01	101
Mn	500	495.48	99
Fe	10000	9973.55	100
Co	500	523.32	105
Ni	500	520.72	104
Cu	500	523.47	105
Zn	500	518.11	104
Se	500	519.79	104
Sr	500	500.82	100
Mo	500	508.71	102
Ag	500	498.46	100
Cd	500	511.42	102
Sn	500	499.06	100
Sb	500	498.48	100
Tl	500	507.44	101
Ba	500	507.08	101
Pb	500	503.90	101

Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1996.04	100
Be	2000	1996.38	100
B	2000	1999.86	100
Na	25000	24896.71	100
Mg	25000	25036.62	100
K	25000	25009.82	100
Ca	25000	25238.14	99
Ti	2000	1998.24	100
V	2000	1999.14	100
Cr	2000	1998.02	100
Mn	2000	2000.57	100
Co	2000	1992.22	100
Ni	2000	1992.94	100
Cu	2000	1991.83	100
Zn	2000	1993.75	100
Se	2000	1993.77	100
Sr	2000	1998.93	100
Mo	2000	1996.80	100
Cd	2000	1995.80	100
Sn	2000	1999.62	100
Tl	2000	1997.54	100
Ba	2000	1997.20	100
Pb	2000	1997.81	100
Li	2000	1999.71	100

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	196	214.0	6.49
59	2000	1047	1046.2	4.62
89	2000	1045	1110.2	4.63
140	5000	2469	2634.2	3.35
205	5000	2368	2437.3	3.40
156/140	1	0.081 %	0.235 %	43.94
51	500	242	245.6	7.85
56	5000	3651	3592.1	2.93
75	50	7	11.9	34.83
78	20	11	10.8	42.73

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.53
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.4
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	0.2		

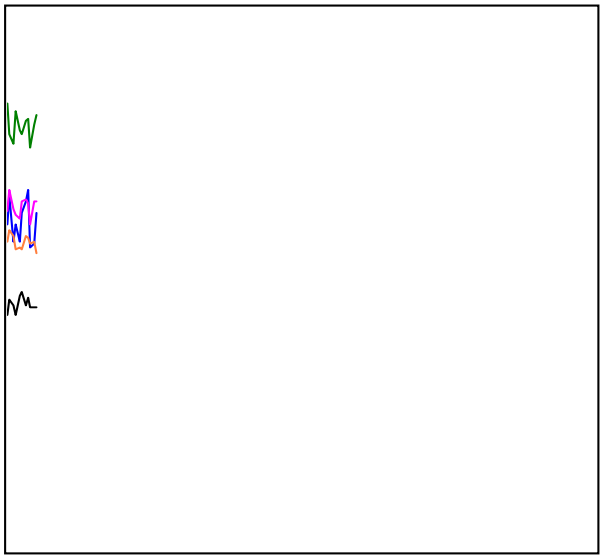
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.51E+2	Pa	Carrier Gas(BP)	1.29E+2	kPa
Analyzer Press	1.50E-4	Pa	Reflected Power	4	W
Forward Power	1550	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	311	302.8	6.27
59	2000	1602	1565.3	3.19
89	5000	2737	2839.3	2.30
140	5000	3213	3165.0	2.90
205	5000	2248	2272.6	2.96
156/140	2	0.654 %	0.814 %	29.83
51	50000	34385	33801.6	1.85
56	200000	146698	148876.5	2.22
75	10000	6042	5976.8	1.85
78	2000	1779	1751.8	3.73

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.53
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.4
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	7.0		

Cell Parameters

Use Gas	false	3rd Gas Flow	0
He Flow	4.2	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.51E+2	Pa	Carrier Gas(BP)	1.28E+2	kPa
Analyzer Press	1.00E-4	Pa	Reflected Power	4	W
Forward Power	1548	W			

US EPA Tune Check Sample Report

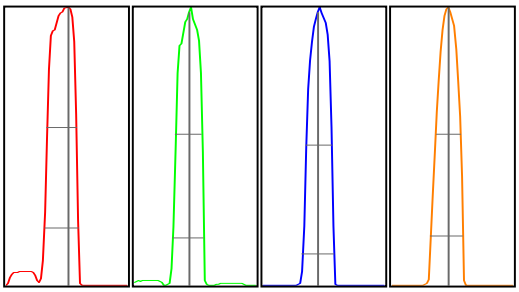
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	601460	0.88	5.00	
59	1019240	0.29	5.00	
115	1676786	0.45	5.00	
205	1517024	1.13	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	593673	598297	604307	605827	605194
59	1017220	1023688	1020133	1018952	1016207
115	1677958	1670812	1668488	1678961	1687712
205	1544562	1516803	1517163	1507903	1498688

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	87802	7.05	6.9 - 7.1		0.823	0.850	
59	166666	58.90	58.9 - 59.1		0.747	0.850	
115	288246	114.90	114.9 - 115.1	[F]	0.754	0.850	
205	263240	204.95	204.9 - 205.1		0.775	0.850	

X% = 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Nebulizer Pump	0.10	rps
RF Matching	1.90	V	S/C Temp	2	℃
Smpl Depth	8.0	mm	Gas Switch	Dilution Gas	
Carrier Gas	0.53	L/min	Makeup/Dilution Gas	0.52	L/min
Option Gas	0.0	%			

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Cell Entrance	-40	V
Extract 2	-200.0	V	Cell Exit	-60	V
Omega Bias	-100	V	Deflect	7.0	V
Omega Lens	8.4	V	Plate Bias	-60	V

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	200	V
H2 Flow	0.0	mL/min	Energy Discrimination	3.0	V
3rd Gas Flow	0	%			

P/A Factor Tuning Report

Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 11/16/2016 10:34:39

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1917 V
PulseHV: 1023 V

Acquired: 11/16/2016 10:00:51

Mass[u]	Element	P/A Factor
6	Li	0.100093
9	Be	0.112123
23	Na	0.119567
24	Mg	0.124271
27	Al	0.128188
39	K	0.129434
45	Sc	0.131520
48		0.132301
51	V	0.134015
52	Cr	0.137565
55	Mn	0.139173
59	Co	0.141567
60	Ni	0.142178
63	Cu	0.143668
66	Zn	0.145239
72		0.143867
74	Ge	0.144558
75	As	0.144007
88	Sr	0.144961
89		0.144543
95		0.143026
97	Mo	0.143242
98	Mo	0.144318
99	[Mo]	0.145279
101		0.146225
105		0.149204
111	Cd	0.150438
114	Cd	0.150721
115	In	0.150763
118	Sn	0.150348
121		0.149772
123	Sb	0.149915
135	Ba	0.148881
138		0.151128
175		0.157134
193		0.156588
205	Tl	0.157829
206	[Pb]	0.157479
207	[Pb]	0.157648
208	Pb	0.157894
209	Bi	0.158567
232		0.158277
238	U	0.158746
44	Ca	Signal too low
78	Se	Signal too low
107	Ag	Signal too low
172		Signal too low

Calibration Blank Report

Date Acquired	11/16/2016 10:34	Sample Name	BLANK STD 1
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	21	40.69
9	Be	45	0	#DIV/0!
11	B	45	114	19.82
23	Na	45	75936	0.33
24	Mg	45	808	8.70
27	Al	45	2156	4.88
39	K	45	74433	1.30
44	Ca	45	624	9.08
47	Ti	45	9	21.63
51	V	45	4466	2.64
52	Cr	45	1686	8.00
55	Mn	45	269	14.53
56	Fe	45	10192	4.90
59	Co	72	109	24.75
60	Ni	72	366	13.10
63	Cu	72	2052	3.44
66	Zn	72	949	12.13
75	As	72	286	7.92
78	Se	72	115	9.19
88	Sr	115	587	14.51
95	Mo	115	91	31.96
107	Ag	115	77	26.09
111	Cd	115	10	0.00
118	Sn	115	874	5.82
121	Sb	115	463	10.60
137	Ba	115	54	34.82
205	Tl	209	98	36.45
208	Pb	209	1050	2.40

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1262119	0.32
72	Ge	801025	0.50
115	In	7659162	0.66
209	Bi	15802225	1.35

Calibration Standard Report

Date Acquired	11/16/2016 10:36	Sample Name	L2-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	53	10.66
9	Be	45	63	9.65
11	B	45	120	17.35
23	Na	45	103481	1.91
24	Mg	45	12219	1.05
27	Al	45	6592	2.04
39	K	45	86913	0.01
44	Ca	45	1369	3.13
47	Ti	45	186	7.26
51	V	45	9469	1.37
52	Cr	45	7804	4.30
55	Mn	45	4182	1.41
56	Fe	45	112851	0.80
59	Co	72	9475	3.13
60	Ni	72	2877	4.10
63	Cu	72	11634	1.11
66	Zn	72	2265	1.47
75	As	72	1212	4.34
78	Se	72	193	12.09
88	Sr	115	5772	3.20
95	Mo	115	3704	3.43
107	Ag	115	11042	2.12
111	Cd	115	1785	7.67
118	Sn	115	4926	1.77
121	Sb	115	6184	3.25
137	Ba	115	1969	5.85
205	Tl	209	25211	2.15
208	Pb	209	18551	0.22

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1249815	0.26	1262119	99.03	70	120	
72	Ge	788961	0.95	801025	98.49	70	120	
115	In	7569652	2.05	7659162	98.83	70	120	
209	Bi	15398153	0.53	15802225	97.44	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:38	Sample Name	L-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	499	2.39
9	Be	45	622	5.44
11	B	45	320	11.74
23	Na	45	277274	0.51
24	Mg	45	107600	1.06
27	Al	45	44910	1.06
39	K	45	178944	0.48
44	Ca	45	6693	2.07
47	Ti	45	1852	1.50
51	V	45	56410	1.30
52	Cr	45	62585	2.29
55	Mn	45	38571	2.82
56	Fe	45	1032928	1.78
59	Co	72	92883	0.36
60	Ni	72	24742	1.34
63	Cu	72	74233	1.00
66	Zn	72	12775	2.37
75	As	72	9288	0.67
78	Se	72	791	8.01
88	Sr	115	51825	1.44
95	Mo	115	35698	0.49
107	Ag	115	110342	1.53
111	Cd	115	17257	3.69
118	Sn	115	39330	0.94
121	Sb	115	56665	0.76
137	Ba	115	19062	1.22
205	Tl	209	244870	0.11
208	Pb	209	178137	0.14

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1246249	0.44	1262119	98.74	70	120	
72	Ge	784663	0.52	801025	97.96	70	120	
115	In	7479861	2.15	7659162	97.66	70	120	
209	Bi	15688204	1.40	15802225	99.28	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:40	Sample Name	10X-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2436	3.08
9	Be	45	2923	1.05
11	B	45	1471	8.98
23	Na	45	1090379	0.07
24	Mg	45	534666	0.62
27	Al	45	218114	1.26
39	K	45	601412	1.20
44	Ca	45	29937	0.38
47	Ti	45	8868	2.08
51	V	45	260017	0.31
52	Cr	45	305088	1.21
55	Mn	45	193501	0.54
56	Fe	45	5160147	0.48
59	Co	72	460615	0.59
60	Ni	72	122846	0.37
63	Cu	72	336496	0.72
66	Zn	72	59576	1.34
75	As	72	44851	1.23
78	Se	72	3198	1.36
88	Sr	115	256980	0.54
95	Mo	115	182952	1.58
107	Ag	115	549499	1.21
111	Cd	115	87487	0.93
118	Sn	115	195572	0.47
121	Sb	115	281386	0.18
137	Ba	115	95633	1.90
205	Tl	209	1249106	0.98
208	Pb	209	889136	0.43

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1246141	0.30	1262119	98.73	70	120	
72	Ge	782929	0.78	801025	97.74	70	120	
115	In	7455783	1.90	7659162	97.34	70	120	
209	Bi	15316808	1.27	15802225	96.93	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:42	Sample Name	5X-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	4636	2.10
9	Be	45	5940	0.29
11	B	45	2648	2.47
23	Na	45	2080001	0.66
24	Mg	45	1060982	0.81
27	Al	45	431629	0.30
39	K	45	1129881	0.27
44	Ca	45	59650	0.78
47	Ti	45	18068	1.29
51	V	45	517502	0.73
52	Cr	45	604506	0.36
55	Mn	45	382614	0.60
56	Fe	45	10384585	1.65
59	Co	72	919380	0.28
60	Ni	72	242817	0.43
63	Cu	72	667589	0.99
66	Zn	72	119160	1.16
75	As	72	89072	1.06
78	Se	72	6634	1.22
88	Sr	115	516081	1.10
95	Mo	115	363725	0.82
107	Ag	115	1099804	0.44
111	Cd	115	173516	0.51
118	Sn	115	389013	0.50
121	Sb	115	563111	1.38
137	Ba	115	191497	0.88
205	Tl	209	2508210	0.23
208	Pb	209	1789787	0.64

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1259848	0.82	1262119	99.82	70	120	
72	Ge	780849	0.76	801025	97.48	70	120	
115	In	7448409	1.77	7659162	97.25	70	120	
209	Bi	15641797	1.33	15802225	98.98	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:44	Sample Name	2X-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	11494	0.44
9	Be	45	14558	0.58
11	B	45	6511	2.21
23	Na	45	5039080	1.82
24	Mg	45	2616806	0.44
27	Al	45	1067450	0.88
39	K	45	2684960	1.03
44	Ca	45	146453	0.56
47	Ti	45	43681	0.94
51	V	45	1285064	0.36
52	Cr	45	1504347	0.90
55	Mn	45	956137	0.67
56	Fe	45	25666351	0.72
59	Co	72	2273614	0.57
60	Ni	72	596805	0.73
63	Cu	72	1650247	0.46
66	Zn	72	292001	0.14
75	As	72	220278	0.98
78	Se	72	15975	1.26
88	Sr	115	1292532	1.46
95	Mo	115	921475	0.34
107	Ag	115	2729186	0.15
111	Cd	115	432050	0.66
118	Sn	115	974230	0.33
121	Sb	115	1408447	0.17
137	Ba	115	481647	0.63
205	Tl	209	6330122	0.49
208	Pb	209	4505730	1.35

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1236961	0.33	1262119	98.01	70	120	
72	Ge	778871	0.35	801025	97.23	70	120	
115	In	7466607	0.83	7659162	97.49	70	120	
209	Bi	15285064	1.55	15802225	96.73	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:46	Sample Name	H-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	23033	1.60
9	Be	45	29048	1.50
11	B	45	12693	3.65
23	Na	45	10130691	1.87
24	Mg	45	5218901	0.81
27	Al	45	2122957	1.82
39	K	45	5250230	1.88
44	Ca	45	292587	1.94
47	Ti	45	87574	1.50
51	V	45	2548294	0.72
52	Cr	45	2966126	0.44
55	Mn	45	1874077	0.44
56	Fe	45	50991826	1.25
59	Co	72	4485291	0.61
60	Ni	72	1174876	0.70
63	Cu	72	3225706	0.83
66	Zn	72	572969	0.33
75	As	72	437103	0.36
78	Se	72	31758	0.52
88	Sr	115	2573639	1.05
95	Mo	115	1853853	0.22
107	Ag	115	5488460	0.70
111	Cd	115	869182	0.39
118	Sn	115	1945571	0.59
121	Sb	115	2828318	1.16
137	Ba	115	966682	1.07
205	Tl	209	12734625	1.04
208	Pb	209	8861030	0.55

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1244514	0.59	1262119	98.61	70	120	
72	Ge	771151	0.39	801025	96.27	70	120	
115	In	7580845	1.33	7659162	98.98	70	120	
209	Bi	15471243	1.74	15802225	97.91	70	120	

Calibration Standard Report

Date Acquired	11/16/2016 10:48	Sample Name	H2-161116
Data Batch	161116.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	90440	0.69
9	Be	45	111803	0.89
11	B	45	49791	1.27
23	Na	45	24176108	1.62
24	Mg	45	12965396	0.17
27	Al	45	2327	13.04
39	K	45	12871871	2.38
44	Ca	45	760771	0.37
47	Ti	45	340948	1.06
51	V	45	9978883	1.58
52	Cr	45	11559908	2.68
55	Mn	45	7440641	0.63
56	Fe	45	1608451	0.56
59	Co	72	17156547	1.15
60	Ni	72	4517142	0.68
63	Cu	72	12327513	0.82
66	Zn	72	2212811	0.93
75	As	72	1710209	0.65
78	Se	72	122086	0.80
88	Sr	115	10114978	4.39
95	Mo	115	7164698	1.47
107	Ag	115	2591	24.71
111	Cd	115	3339976	1.25
118	Sn	115	7673875	1.51
121	Sb	115	5699	8.96
137	Ba	115	3749114	0.82
205	Tl	209	49617307	1.05
208	Pb	209	34769086	2.12

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1223927	0.57	1262119	96.97	70	120	
72	Ge	774846	0.30	801025	96.73	70	120	
115	In	7378190	0.71	7659162	96.33	70	120	
209	Bi	15308743	0.89	15802225	96.88	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	11/16/2016 10:56	Sample Name	ICSA-161116
Data Batch	161116.b	Comment	ICSAICPMS_TW
Data File Name	023ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.079	4	58.1	1.2	0.8	
11	B	18.381	556	12.0	30	30	
51	V	-0.243	3051	7.1	10	10	
52	Cr	0.819	6237	4.6	8	5	
55	Mn	0.486	2026	4.0	8	10	
59	Co	1.264	10651	0.8	8	10	
60	Ni	0.463	1359	3.7	8	10	
63	Cu	2.363	16101	2.7	8	10	
66	Zn	2.510	3589	6.9	10	5	
75	As	0.400	601	5.0	4	5	
78	Se	0.043	110	5.2	2	5	
88	Sr	1.070	5689	5.0	10	10	
107	Ag	0.107	1175	2.9	0.8	2	
111	Cd	0.643	1032	8.4	1.2	1	
118	Sn	0.836	3863	6.1	10	10	
121	Sb	0.108	1002	4.7	4	2.5	
137	Ba	0.464	878	1.6	8	10	
205	Tl	0.088	2135	7.7	4	1.5	
208	Pb	0.459	8425	1.8	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1197965	0.11	1262119	94.92	70	120	
72	Ge	751139	0.24	801025	93.77	70	120	
115	In	7121246	0.74	7659162	92.98	70	120	
209	Bi	14335552	1.90	15802225	90.72	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	11/16/2016 10:58	Sample Name	ICSAB-161116
Data Batch	161116.b	Comment	ICSBICPMS_TW
Data File Name	024ICSB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
51	V	45	38.263	190433	1.18	40	95.7	80	120	
52	Cr	45	20.332	116313	1.75	20	101.7	80	120	
55	Mn	45	19.230	70014	1.00	20	96.1	80	120	
59	Co	72	39.132	326214	0.83	40	97.8	80	120	
60	Ni	72	37.230	81999	1.51	40	93.1	80	120	
63	Cu	72	21.247	129154	0.92	20	106.2	80	120	
66	Zn	72	21.941	24443	1.48	20	109.7	80	120	
75	As	72	19.601	16518	1.54	20	98.0	80	120	
78	Se	72	19.229	1246	1.38	20	96.1	80	120	
107	Ag	115	19.047	193401	0.21	20	95.2	80	120	
111	Cd	115	10.024	15714	1.76	10	100.2	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1193784	0.18	1262119	94.59	70	120	
72	Ge	749851	0.75	801025	93.61	70	120	
115	In	7014400	0.39	7659162	91.58	70	120	
209	Bi	14282886	1.79	15802225	90.39	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	11/16/2016 11:07	Sample Name	ICV-161116
Data Batch	161116.b	Comment	ICV ICPMS_TW
Data File Name	028_ICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	96.017	4483	3.39	100	96.0	90	110	
9	Be	45	102.773	5915	1.25	100	102.8	90	110	
11	B	45	101.173	2697	1.72	100	101.2	90	110	
23	Na	45	2511.408	2574106	0.73	2500	100.5	90	110	
24	Mg	45	2460.567	1310247	0.57	2500	98.4	90	110	
27	Al	45	2476.200	534058	1.27	2500	99.0	90	110	
39	K	45	2485.304	1381250	0.76	2500	99.4	90	110	
44	Ca	45	2269.808	70892	1.79	2500	90.8	90	110	
47	Ti	45	100.023	17546	1.10	100	100.0	90	110	
51	V	45	101.199	523357	0.23	100	101.2	90	110	
52	Cr	45	105.626	629603	0.42	100	105.6	90	110	
55	Mn	45	99.548	380745	1.01	100	99.5	90	110	
56	Fe	45	2605.521	13471301	1.67	2500	104.2	90	110	
59	Co	72	105.825	926022	0.54	100	105.8	90	110	
60	Ni	72	104.413	240790	0.46	100	104.4	90	110	
63	Cu	72	104.365	658186	0.63	100	104.4	90	110	
66	Zn	72	103.821	117961	0.59	100	103.8	90	110	
75	As	72	100.769	87987	0.36	100	100.8	90	110	
78	Se	72	101.312	6410	1.58	100	101.3	90	110	
88	Sr	115	98.854	517738	0.14	100	98.9	90	110	
95	Mo	115	97.799	362976	0.29	100	97.8	90	110	
107	Ag	115	100.269	1124341	0.86	100	100.3	90	110	
111	Cd	115	100.940	174683	0.09	100	100.9	90	110	
118	Sn	115	99.700	396502	0.48	100	99.7	90	110	
121	Sb	115	100.328	580134	0.96	100	100.3	90	110	
137	Ba	115	101.080	196259	0.27	100	101.1	90	110	
205	Tl	209	98.270	2504189	0.48	100	98.3	90	110	
208	Pb	209	100.842	1801419	0.80	100	100.8	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1257944	1.12	1262119	99.67	70	120	
72	Ge	787304	0.94	801025	98.29	70	120	
115	In	7744751	2.40	7659162	101.12	70	120	
209	Bi	15707190	1.39	15802225	99.40	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 11:14	Sample Name	LCVL-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	031LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.847	475	1.91	1	984.7	70	130	Fail
9	Be	45	1.126	64	10.58	1	112.6	70	130	
11	B	45	26.256	778	7.07	20	131.3	70	130	Fail
23	Na	45	106.528	180204	1.24	100	106.5	70	130	
24	Mg	45	100.109	53647	1.34	100	100.1	70	130	
27	Al	45	100.089	23460	2.54	100	100.1	70	130	
39	K	45	95.117	123205	0.57	100	95.1	70	130	
44	Ca	45	98.755	3649	2.29	100	98.8	70	130	
47	Ti	45	4.887	859	3.50	5	97.7	70	130	
51	V	45	0.866	8820	4.01	1	86.6	70	130	
52	Cr	45	5.120	31858	0.81	5	102.4	70	130	
55	Mn	45	5.287	20311	2.14	5	105.7	70	130	
56	Fe	45	102.199	533817	0.47	100	102.2	70	130	
59	Co	72	5.319	46377	1.26	5	106.4	70	130	
60	Ni	72	5.254	12387	1.88	5	105.1	70	130	
63	Cu	72	5.389	35691	0.33	5	107.8	70	130	
66	Zn	72	5.129	6676	1.54	5	102.6	70	130	
75	As	72	5.176	4759	1.87	5	103.5	70	130	
78	Se	72	5.573	457	2.24	5	111.5	70	130	
88	Sr	115	5.090	26746	1.14	5	101.8	70	130	
95	Mo	115	5.128	18788	1.68	5	102.6	70	130	
107	Ag	115	2.031	22453	1.34	2	101.6	70	130	
111	Cd	115	1.002	1713	5.15	1	100.2	70	130	
118	Sn	115	5.344	21705	0.56	5	106.9	70	130	
121	Sb	115	2.018	11915	0.99	2	100.9	70	130	
137	Ba	115	5.144	9865	0.80	5	102.9	70	130	
205	Tl	209	0.980	25274	1.71	1	98.0	70	130	
208	Pb	209	1.097	20802	1.82	1	109.7	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1247713	0.55	1262119	98.86	70	120	
72	Ge	782785	0.36	801025	97.72	70	120	
115	In	7613232	0.85	7659162	99.40	70	120	
209	Bi	15835545	0.87	15802225	100.21	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	11/16/2016 11:25	Sample Name	ICB-161116
Data Batch	161116.b	Comment	ICB ICPMS_TW
Data File Name	036_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.219	11	42.3	2	5	
9	Be	45	0.018	1	173.2	0.4	0.3	
11	B	45	3.101	192	3.6	10	10	
23	Na	45	0.437	75728	1.3	50	100	
24	Mg	45	-0.739	410	18.6	50	100	
27	Al	45	8.621	3980	5.4	50	10	
39	K	45	-4.099	71663	1.5	50	100	
44	Ca	45	-0.561	602	11.4	50	100	
47	Ti	45	-0.025	4	43.4	4	3	
51	V	45	-0.165	3589	2.7	4	3	
52	Cr	45	-0.064	1290	5.0	2	2	
55	Mn	45	-0.017	202	17.2	2	3	
56	Fe	45	4.636	33938	1.0	50	50	
59	Co	72	-0.001	96	10.7	2	3	
60	Ni	72	-0.077	183	28.6	2	3	
63	Cu	72	-0.058	1668	9.5	2	2	
66	Zn	72	14.692	17666	1.0	4	2	FailAq FailSoil
75	As	72	-0.076	217	4.8	2	2	
78	Se	72	0.498	145	5.1	1	2	
88	Sr	115	0.000	581	9.3	4	3	
95	Mo	115	0.067	334	17.0	2	2	
107	Ag	115	0.006	138	20.1	0.4	1	
111	Cd	115	-0.001	9	57.3	0.4	0.3	
118	Sn	115	0.109	1288	9.5	4	3	
121	Sb	115	-0.027	307	10.0	2	0.8	
137	Ba	115	-0.008	38	13.5	2	3	
205	Tl	209	-0.001	84	41.5	2	0.5	
208	Pb	209	0.055	2031	1.9	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1251513	0.54	1262119	99.16	70	120	
72	Ge	795049	0.52	801025	99.25	70	120	
115	In	7578172	1.09	7659162	98.94	70	120	
209	Bi	15770829	1.03	15802225	99.80	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 13:23	Sample Name	CCV3-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	094_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	209.068	8911	1.85	200	104.5	90	110	
9	Be	45	215.671	11361	1.11	200	107.8	90	110	
11	B	45	241.041	5738	2.76	200	120.5	90	110	Fail
23	Na	45	5163.609	4771642	0.80	5000	103.3	90	110	
24	Mg	45	5113.074	2491439	0.22	5000	102.3	90	110	
27	Al	45	5454.501	1074489	0.16	5000	109.1	90	110	
39	K	45	5147.905	2546184	0.80	5000	103.0	90	110	
44	Ca	45	4848.745	137964	1.73	5000	97.0	90	110	
47	Ti	45	203.528	32675	0.62	200	101.8	90	110	
51	V	45	205.337	967854	0.91	200	102.7	90	110	
52	Cr	45	208.836	1137958	0.65	200	104.4	90	110	
55	Mn	45	204.329	715140	0.46	200	102.2	90	110	
56	Fe	45	5183.222	24522039	1.07	5000	103.7	90	110	
59	Co	72	212.337	1724327	0.64	200	106.2	90	110	
60	Ni	72	211.749	452857	1.27	200	105.9	90	110	
63	Cu	72	213.218	1245973	0.70	200	106.6	90	110	
66	Zn	72	213.245	223941	0.28	200	106.6	90	110	
75	As	72	211.311	170956	0.99	200	105.7	90	110	
78	Se	72	208.270	12120	1.15	200	104.1	90	110	
88	Sr	115	200.788	978689	0.94	200	100.4	90	110	
95	Mo	115	203.170	702036	0.64	200	101.6	90	110	
107	Ag	115	200.533	2093646	0.57	200	100.3	90	110	
111	Cd	115	206.672	333032	0.54	200	103.3	90	110	
118	Sn	115	202.185	747855	0.44	200	101.1	90	110	
121	Sb	115	206.573	1111632	0.73	200	103.3	90	110	
137	Ba	115	204.851	370332	0.34	200	102.4	90	110	
205	Tl	209	199.087	4844578	0.32	200	99.5	90	110	
208	Pb	209	204.360	3484947	0.48	200	102.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1151377	0.78	1262119	91.23	70	120	
72	Ge	730635	0.47	801025	91.21	70	120	
115	In	7203753	0.79	7659162	94.05	70	120	
209	Bi	14998352	1.16	15802225	94.91	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 14:01	Sample Name	LCVL3-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	096LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.427	460	5.18	1	1042.7	70	130	Fail
9	Be	45	0.980	51	25.72	1	98.0	70	130	
11	B	45	33.911	892	2.54	20	169.6	70	130	Fail
23	Na	45	110.077	168621	0.18	100	110.1	70	130	
24	Mg	45	100.418	49391	1.52	100	100.4	70	130	
27	Al	45	103.073	22116	1.24	100	103.1	70	130	
39	K	45	106.152	118374	0.49	100	106.2	70	130	
44	Ca	45	99.198	3363	2.64	100	99.2	70	130	
47	Ti	45	5.430	874	8.43	5	108.6	70	130	
51	V	45	0.918	8338	1.74	1	91.8	70	130	
52	Cr	45	5.179	29559	1.16	5	103.6	70	130	
55	Mn	45	5.440	19177	3.74	5	108.8	70	130	
56	Fe	45	102.906	493340	1.06	100	102.9	70	130	
59	Co	72	5.220	42838	1.79	5	104.4	70	130	
60	Ni	72	5.329	11817	3.52	5	106.6	70	130	
63	Cu	72	5.228	32644	1.26	5	104.6	70	130	
66	Zn	72	4.921	6063	1.25	5	98.4	70	130	
75	As	72	5.084	4404	2.92	5	101.7	70	130	
78	Se	72	4.874	389	6.54	5	97.5	70	130	
88	Sr	115	5.109	25145	1.27	5	102.2	70	130	
95	Mo	115	4.977	17080	2.28	5	99.5	70	130	
107	Ag	115	2.000	20711	2.05	2	100.0	70	130	
111	Cd	115	0.997	1597	3.62	1	99.7	70	130	
118	Sn	115	5.068	19322	1.08	5	101.4	70	130	
121	Sb	115	1.991	11017	3.63	2	99.6	70	130	
137	Ba	115	5.007	8996	1.40	5	100.1	70	130	
205	Tl	209	0.992	24172	0.87	1	99.2	70	130	
208	Pb	209	0.959	17308	3.50	1	95.9	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1145376	1.02	1262119	90.75	70	120	
72	Ge	736770	1.03	801025	91.98	70	120	
115	In	7130168	0.35	7659162	93.09	70	120	
209	Bi	14963097	0.35	15802225	94.69	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 14:16	Sample Name	CCB3-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	097_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.260	8	25.0	2	5	
9	Be	45	0.032	2	91.7	0.4	0.3	
11	B	45	9.362	320	7.5	10	10	
23	Na	45	2.309	70710	1.5	50	100	
24	Mg	45	-0.826	331	7.3	50	100	
27	Al	45	19.443	5733	4.5	50	10	FailAq
39	K	45	1.688	68066	0.8	50	100	
44	Ca	45	-0.041	563	3.9	50	100	
47	Ti	45	-0.008	7	86.6	4	3	
51	V	45	-0.115	3504	1.8	4	3	
52	Cr	45	-0.093	1020	3.3	2	2	
55	Mn	45	0.013	287	23.6	2	3	
56	Fe	45	-0.444	7134	3.6	50	50	
59	Co	72	-0.005	61	30.0	2	3	
60	Ni	72	-0.095	129	25.9	2	3	
63	Cu	72	-0.067	1472	5.8	2	2	
66	Zn	72	-0.533	307	8.5	4	2	
75	As	72	-0.025	240	1.8	2	2	
78	Se	72	0.247	119	4.4	1	2	
88	Sr	115	0.005	566	3.9	4	3	
95	Mo	115	0.009	113	10.6	2	2	
107	Ag	115	0.005	122	31.6	0.4	1	
111	Cd	115	-0.004	3	100.1	0.4	0.3	
118	Sn	115	-0.109	413	4.3	4	3	
121	Sb	115	-0.010	374	13.0	2	0.8	
137	Ba	115	-0.004	43	20.4	2	3	
205	Tl	209	-0.001	70	9.5	2	0.5	
208	Pb	209	-0.040	308	5.1	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1140631	1.11	1262119	90.37	70	120	
72	Ge	727134	0.21	801025	90.78	70	120	
115	In	7081679	0.57	7659162	92.46	70	120	
209	Bi	14958890	0.67	15802225	94.66	70	120	

Method Blank Report

Date Acquired	11/16/16 2:18 PM	Sample Name	MB-77902
Data Batch	161116.b	Comment	MBLKICPMS_TSDOD1
Data File Name	098_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.201	11	19.52		
9	Be	45	0.000	0	#DIV/0!		
11	B	45	10.106	342	22.09		J
23	Na	45	8.016	76938	1.00		
24	Mg	45	4.914	3146	5.82		
27	Al	45	-4.590	1069	4.68		
39	K	45	7.258	71737	0.23		
44	Ca	45	11.116	889	7.71		
47	Ti	45	0.080	21	32.88		
51	V	45	-0.132	3470	3.21		
52	Cr	45	0.258	2957	9.89		
55	Mn	45	0.153	783	3.21		
56	Fe	45	1.748	17647	2.22		
59	Co	72	0.003	120	33.80		
60	Ni	72	0.040	417	12.32		
63	Cu	72	-0.007	1823	1.28		
66	Zn	72	3.304	4309	6.39		
75	As	72	-0.052	218	5.40		
78	Se	72	0.153	113	3.50		
88	Sr	115	-0.022	442	19.37		
95	Mo	115	0.016	140	18.60		
107	Ag	115	0.007	144	16.37		
111	Cd	115	0.001	11	86.60		
118	Sn	115	3.759	14626	1.42		
121	Sb	115	-0.007	396	14.21		
137	Ba	115	0.037	118	24.07		
205	Tl	209	-0.001	78	4.95		
208	Pb	209	0.012	1199	14.68		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1156848	0.18	1262119	91.66	70	120	
72	Ge	728396	0.59	801025	90.93	70	120	
115	In	7171776	0.51	7659162	93.64	70	120	
209	Bi	15091706	1.53	15802225	95.50	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 14:21	Sample Name	LCS-77902
Data Batch	161116.b	Comment	LCS ICPMS_TSDOD1
Data File Name	099_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	206.307	8773	0.75	200	103.2	80	120	
9	Be	45	207.377	10898	2.30	200	103.7	80	120	
11	B	45	215.623	5130	3.43	200	107.8	80	120	
23	Na	45	5118.280	4718667	0.61	1000	511.8	80	120	Fail
24	Mg	45	5068.078	2463397	0.18	1000	506.8	80	120	Fail
27	Al	45	1007.415	199570	0.78	1000	100.7	80	120	
39	K	45	5069.954	2502341	0.55	1000	507.0	80	120	Fail
44	Ca	45	4694.112	133233	1.52	1000	469.4	80	120	Fail
47	Ti	45	197.031	31552	0.88	200	98.5	80	120	
51	V	45	198.601	933925	0.69	200	99.3	80	120	
52	Cr	45	200.423	1089456	0.36	200	100.2	80	120	
55	Mn	45	198.482	692968	0.34	200	99.2	80	120	
56	Fe	45	1005.123	4750879	0.47	1000	100.5	80	120	
59	Co	72	205.093	1649463	0.22	200	102.5	80	120	
60	Ni	72	205.136	434504	0.92	200	102.6	80	120	
63	Cu	72	204.127	1181443	0.08	200	102.1	80	120	
66	Zn	72	204.321	212538	0.74	200	102.2	80	120	
75	As	72	202.170	161997	0.73	200	101.1	80	120	
78	Se	72	203.273	11717	1.76	200	101.6	80	120	
88	Sr	115	198.157	942824	0.91	200	99.1	80	120	
95	Mo	115	200.470	676171	1.21	200	100.2	80	120	
107	Ag	115	197.567	2013440	0.47	200	98.8	80	120	
111	Cd	115	198.554	312314	0.25	200	99.3	80	120	
118	Sn	115	202.862	732436	0.66	200	101.4	80	120	
121	Sb	115	201.494	1058453	0.13	200	100.7	80	120	
137	Ba	115	200.164	353206	0.62	200	100.1	80	120	
205	Tl	209	191.245	4595781	0.39	200	95.6	80	120	
208	Pb	209	195.269	3288400	0.19	200	97.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1148527	0.63	1262119	91.00	70	120	
72	Ge	723605	0.47	801025	90.33	70	120	
115	In	7031599	0.62	7659162	91.81	70	120	
209	Bi	14810588	0.56	15802225	93.72	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 14:23	Sample Name	LCSD-77902
Data Batch	161116.b	Comment	LCSDICPMS_TSDOD1
Data File Name	100_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	208.045	8834	1.20	200	104.0	80	120	
9	Be	45	212.085	11130	1.87	200	106.0	80	120	
11	B	45	228.898	5432	1.83	200	114.4	80	120	
23	Na	45	5215.887	4800188	1.05	1000	521.6	80	120	Fail
24	Mg	45	5142.580	2496017	1.18	1000	514.3	80	120	Fail
27	Al	45	1018.524	201453	1.09	1000	101.9	80	120	
39	K	45	5113.051	2519509	0.22	1000	511.3	80	120	Fail
44	Ca	45	4732.646	134136	0.74	1000	473.3	80	120	Fail
47	Ti	45	203.357	32520	0.77	200	101.7	80	120	
51	V	45	200.281	940425	0.48	200	100.1	80	120	
52	Cr	45	203.314	1103556	0.77	200	101.7	80	120	
55	Mn	45	200.441	698826	0.90	200	100.2	80	120	
56	Fe	45	1019.144	4810192	0.47	1000	101.9	80	120	
59	Co	72	203.498	1666344	1.13	200	101.7	80	120	
60	Ni	72	203.222	438261	1.41	200	101.6	80	120	
63	Cu	72	204.470	1204946	0.87	200	102.2	80	120	
66	Zn	72	202.214	214183	0.43	200	101.1	80	120	
75	As	72	202.097	164884	0.77	200	101.0	80	120	
78	Se	72	199.713	11723	1.58	200	99.9	80	120	
88	Sr	115	200.293	959954	0.49	200	100.1	80	120	
95	Mo	115	202.193	686995	0.93	200	101.1	80	120	
107	Ag	115	201.951	2073196	0.70	200	101.0	80	120	
111	Cd	115	204.440	323934	0.49	200	102.2	80	120	
118	Sn	115	204.773	744769	0.92	200	102.4	80	120	
121	Sb	115	203.193	1075201	0.43	200	101.6	80	120	
137	Ba	115	202.482	359926	0.78	200	101.2	80	120	
205	Tl	209	193.455	4719289	0.81	200	96.7	80	120	
208	Pb	209	196.632	3361372	0.20	200	98.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1146903	0.72	1262119	90.87	70	120	
72	Ge	736758	0.46	801025	91.98	70	120	
115	In	7082885	0.20	7659162	92.48	70	120	
209	Bi	15035352	1.03	15802225	95.15	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/16/2016 14:29	Sample Name	1611028-10A SD
Data Batch	161116.b	Comment	SD ICPMS_TSDOD1
Data File Name	103_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	21.697	898	2.60	105.7	102.7	110	90	Good
9	Be	45	0.504	25	9.93	1.9	134.9	110	90	
11	B	45	34.334	864	3.58	116.6	147.2	110	90	
23	Na	45	515.878	514111	0.52	2456.8	105.0	110	90	Good
24	Mg	45	3131.652	1455701	0.89	14999.1	104.4	110	90	Good
27	Al	45	12619.937	2368663	0.73	63204.2	99.8	110	90	Good
39	K	45	2039.680	1001223	0.25	9719.1	104.9	110	90	Good
44	Ca	45	83597.072	2259659	0.76	404160.1	103.4	110	90	Good
47	Ti	45	39.198	6009	2.06	197.0	99.5	110	90	Good
51	V	45	20.357	95012	0.64	99.0	102.8	110	90	Good
52	Cr	45	10.535	56151	2.00	50.3	104.7	110	90	Good
55	Mn	45	90.281	301487	0.41	430.0	105.0	110	90	Good
56	Fe	45	12162.309	54864624	0.61	57557.0	105.7	110	90	Good
59	Co	72	2.925	22744	2.31	14.2	103.0	110	90	Good
60	Ni	72	4.827	10153	1.52	22.9	105.3	110	90	Good
63	Cu	72	3.141	19258	1.84	14.7	107.1	110	90	Good
66	Zn	72	23.915	24683	2.82	111.8	107.0	110	90	Good
75	As	72	4.337	3589	2.06	21.9	99.0	110	90	Good
78	Se	72	0.965	153	16.30	3.8	126.5	110	90	
88	Sr	115	601.596	2828235	1.05	3087.6	97.4	110	90	Good
95	Mo	115	0.516	1802	4.34	2.5	105.3	110	90	Good
107	Ag	115	0.043	502	4.98	0.1	214.2	110	90	
111	Cd	115	0.043	77	15.68	0.2	116.0	110	90	
118	Sn	115	1.001	4363	6.33	5.4	92.4	110	90	Good
121	Sb	115	0.062	744	6.05	0.4	81.2	110	90	
137	Ba	115	104.839	182883	0.76	513.8	102.0	110	90	Good
205	Tl	209	0.096	2364	1.25	0.4	110.3	110	90	
208	Pb	209	5.564	93209	0.36	27.6	101.0	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1098214	1.59	1262119	87.01	70	120	
72	Ge	696690	0.93	801025	86.97	70	120	
115	In	6961475	1.58	7659162	90.89	70	120	
209	Bi	14584639	0.35	15802225	92.29	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/16/2016 14:53	Sample Name	1611028-10A PDS
Data Batch	161116.b	Comment	PDS ICPMS_TSDOD1
Data File Name	114_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	282.073	10920	1.93	105.7	200	88.2	75	125	
9	Be	45	192.613	9220	1.02	1.9	200	95.4	75	125	
11	B	45	301.887	6509	5.49	116.6	200	92.6	75	125	
23	Na	45	7267.251	6076703	1.67	2456.8	5000	96.2	75	125	
24	Mg	45	19334.470	8558847	1.48	14999.1	5000	86.7	75	125	
27	Al	45	67600.563	12079514	1.14	63204.2	5000	87.9	75	125	
39	K	45	15037.823	6641851	3.45	9719.1	5000	106.4	75	125	
44	Ca	45	########	10781335	2.53	404160.1	5000	290.1	75	125	Fail
47	Ti	45	387.872	56582	2.15	197.0	200	95.4	75	125	
51	V	45	291.453	1246863	2.17	99.0	200	96.2	75	125	
52	Cr	45	242.001	1198138	2.17	50.3	200	95.8	75	125	
55	Mn	45	614.060	1952571	1.85	430.0	200	92.0	75	125	
56	Fe	45	61723.367	265240461	1.59	57557.0	5000	83.3	75	125	
59	Co	72	206.772	1480609	0.87	14.2	200	96.3	75	125	
60	Ni	72	211.017	397953	1.22	22.9	200	94.1	75	125	
63	Cu	72	198.878	1024911	0.89	14.7	200	92.1	75	125	
66	Zn	72	296.405	274187	1.09	111.8	200	92.3	75	125	
75	As	72	221.692	158153	1.62	21.9	200	99.9	75	125	
78	Se	72	200.924	10314	1.69	3.8	200	98.6	75	125	
88	Sr	115	3390.593	14433509	2.93	3087.6	200	151.5	75	125	Fail
95	Mo	115	191.873	579271	1.86	2.5	200	94.7	75	125	
107	Ag	115	185.714	1693892	1.56	0.1	200	92.8	75	125	
111	Cd	115	183.660	258573	2.03	0.2	200	91.7	75	125	
118	Sn	115	198.879	642676	1.62	5.4	200	96.7	75	125	
121	Sb	115	188.122	884401	0.85	0.4	200	93.9	75	125	
137	Ba	115	723.014	1141746	1.53	513.8	200	104.6	75	125	
205	Tl	209	187.176	3863529	1.83	0.4	200	93.4	75	125	
208	Pb	209	216.826	3136525	2.12	27.6	200	94.6	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1046329	2.23	1262119	82.90	70	120	
72	Ge	644331	1.75	801025	80.44	70	120	
115	In	6293872	2.06	7659162	82.17	70	120	
209	Bi	12722266	2.06	15802225	80.51	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 14:55	Sample Name	1611028-10A MS
Data Batch	161116.b	Comment	MS ICPMS_TSDOD1
Data File Name	115_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	266.488	10749	3.59	105.7	200	80.4	80	120	
9	Be	45	195.690	9763	5.34	1.9	200	96.9	80	120	
11	B	45	289.083	6494	3.96	116.6	200	86.2	80	120	
23	Na	45	7201.585	6274445	3.88	2456.8	1000	474.5	80	120	Fail
24	Mg	45	17732.327	8176474	2.87	14999.1	1000	273.3	80	120	Fail
27	Al	45	57680.169	10740003	4.06	63204.2	1000	-552.4	80	120	Fail
39	K	45	14829.700	6822899	3.64	9719.1	1000	511.1	80	120	Fail
44	Ca	45	########	13338692	3.36	404160.1	1000	9314.4	80	120	Fail
47	Ti	45	338.916	51515	4.44	197.0	200	71.0	80	120	Fail
51	V	45	295.708	1318062	4.41	99.0	200	98.4	80	120	
52	Cr	45	238.612	1231003	4.66	50.3	200	94.1	80	120	
55	Mn	45	567.188	1878833	3.47	430.0	200	68.6	80	120	Fail
56	Fe	45	60988.448	273083065	4.00	57557.0	1000	343.1	80	120	Fail
59	Co	72	205.682	1553875	3.75	14.2	200	95.7	80	120	
60	Ni	72	210.926	419642	3.61	22.9	200	94.0	80	120	
63	Cu	72	203.511	1106495	4.13	14.7	200	94.4	80	120	
66	Zn	72	292.024	285072	4.74	111.8	200	90.1	80	120	
75	As	72	231.488	174263	5.22	21.9	200	104.8	80	120	
78	Se	72	206.768	11199	5.39	3.8	200	101.5	80	120	
88	Sr	115	3568.897	15918491	4.72	3087.6	200	240.7	80	120	Fail
95	Mo	115	194.421	614950	3.84	2.5	200	96.0	80	120	
107	Ag	115	184.003	1758789	4.51	0.1	200	92.0	80	120	
111	Cd	115	190.219	280626	4.57	0.2	200	95.0	80	120	
118	Sn	115	202.419	685378	4.02	5.4	200	98.5	80	120	
121	Sb	115	101.419	499760	3.70	0.4	200	50.5	80	120	Fail
137	Ba	115	594.067	982991	4.08	513.8	200	40.1	80	120	Fail
205	Tl	209	191.429	4168670	3.45	0.4	200	95.5	80	120	
208	Pb	209	227.255	3467773	3.41	27.6	200	99.8	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1090023	3.75	1262119	86.36	70	120	
72	Ge	679703	3.69	801025	84.85	70	120	
115	In	6594922	4.47	7659162	86.10	70	120	
209	Bi	13419445	2.96	15802225	84.92	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 14:57	Sample Name	1611028-10A MSD
Data Batch	161116.b	Comment	MSD ICPMS_TSDOD1
Data File Name	116_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	267.850	10398	0.55	105.7	200	81.1	80	120	
9	Be	45	193.889	9310	2.28	1.9	200	96.0	80	120	
11	B	45	295.979	6402	6.12	116.6	200	89.7	80	120	
23	Na	45	7277.805	6103551	2.35	2456.8	1000	482.1	80	120	Fail
24	Mg	45	18765.773	8334207	3.79	14999.1	1000	376.7	80	120	Fail
27	Al	45	59645.030	10690771	2.27	63204.2	1000	-355.9	80	120	Fail
39	K	45	13856.627	6142353	3.08	9719.1	1000	413.8	80	120	Fail
44	Ca	45	########	13552344	2.18	404160.1	1000	#####	80	120	Fail
47	Ti	45	368.971	53986	2.86	197.0	200	86.0	80	120	
51	V	45	286.467	1229216	2.55	99.0	200	93.7	80	120	
52	Cr	45	239.646	1189994	2.56	50.3	200	94.7	80	120	
55	Mn	45	549.865	1753443	1.65	430.0	200	59.9	80	120	Fail
56	Fe	45	50089.847	215863911	1.26	57557.0	1000	-746.7	80	120	Fail
59	Co	72	204.776	1501061	2.23	14.2	200	95.3	80	120	
60	Ni	72	210.483	406303	1.79	22.9	200	93.8	80	120	
63	Cu	72	200.067	1055452	2.33	14.7	200	92.7	80	120	
66	Zn	72	287.551	272321	2.56	111.8	200	87.9	80	120	
75	As	72	220.481	161013	2.82	21.9	200	99.3	80	120	
78	Se	72	206.929	10868	1.16	3.8	200	101.6	80	120	
88	Sr	115	3796.113	16410344	1.24	3087.6	200	354.3	80	120	Fail
95	Mo	115	193.650	593923	2.18	2.5	200	95.6	80	120	
107	Ag	115	184.817	1712626	1.58	0.1	200	92.4	80	120	
111	Cd	115	189.478	271046	2.38	0.2	200	94.6	80	120	
118	Sn	115	202.122	663701	2.31	5.4	200	98.4	80	120	
121	Sb	115	99.357	474784	1.57	0.4	200	49.5	80	120	Fail
137	Ba	115	552.663	886715	1.55	513.8	200	19.4	80	120	Fail
205	Tl	209	192.727	4037849	1.82	0.4	200	96.1	80	120	
208	Pb	209	217.315	3190820	2.27	27.6	200	94.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1049407	2.51	1262119	83.15	70	120	
72	Ge	659498	2.01	801025	82.33	70	120	
115	In	6395344	2.62	7659162	83.50	70	120	
209	Bi	12913901	2.22	15802225	81.72	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 14:59	Sample Name	CCV4-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	117_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	204.103	8295	1.36	200	102.1	90	110	
9	Be	45	216.934	10896	0.48	200	108.5	90	110	
11	B	45	232.951	5290	3.44	200	116.5	90	110	Fail
23	Na	45	5241.325	4616594	0.72	5000	104.8	90	110	
24	Mg	45	5151.857	2393396	0.50	5000	103.0	90	110	
27	Al	45	5501.546	1033302	1.01	5000	110.0	90	110	Fail
39	K	45	5270.844	2483963	0.58	5000	105.4	90	110	
44	Ca	45	5122.072	138916	0.98	5000	102.4	90	110	
47	Ti	45	208.798	31963	2.45	200	104.4	90	110	
51	V	45	210.215	944564	0.41	200	105.1	90	110	
52	Cr	45	211.752	1099991	1.29	200	105.9	90	110	
55	Mn	45	209.141	697891	0.26	200	104.6	90	110	
56	Fe	45	5286.055	23845676	1.77	5000	105.7	90	110	
59	Co	72	211.702	1653893	0.63	200	105.9	90	110	
60	Ni	72	212.491	437202	0.88	200	106.2	90	110	
63	Cu	72	212.457	1194427	0.42	200	106.2	90	110	
66	Zn	72	218.048	220277	0.42	200	109.0	90	110	
75	As	72	219.001	170438	0.21	200	109.5	90	110	
78	Se	72	216.995	12144	0.84	200	108.5	90	110	
88	Sr	115	208.627	967959	0.57	200	104.3	90	110	
95	Mo	115	207.402	682174	0.58	200	103.7	90	110	
107	Ag	115	205.001	2037408	0.46	200	102.5	90	110	
111	Cd	115	211.140	323869	0.77	200	105.6	90	110	
118	Sn	115	206.631	727572	0.58	200	103.3	90	110	
121	Sb	115	209.999	1075835	0.83	200	105.0	90	110	
137	Ba	115	210.420	362088	0.07	200	105.2	90	110	
205	Tl	209	199.422	4652184	0.37	200	99.7	90	110	
208	Pb	209	204.384	3341287	0.65	200	102.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1097801	0.98	1262119	86.98	70	120	
72	Ge	702929	0.92	801025	87.75	70	120	
115	In	6858628	2.13	7659162	89.55	70	120	
209	Bi	14381082	2.19	15802225	91.01	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 15:06	Sample Name	LCVL4-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	119LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.179	440	5.80	1	1017.9	70	130	Fail
9	Be	45	1.232	63	30.34	1	123.2	70	130	
11	B	45	34.155	879	7.75	20	170.8	70	130	Fail
23	Na	45	111.631	166547	0.86	100	111.6	70	130	
24	Mg	45	101.344	48821	1.00	100	101.3	70	130	
27	Al	45	107.524	22512	2.39	100	107.5	70	130	
39	K	45	114.089	119663	0.84	100	114.1	70	130	
44	Ca	45	111.087	3622	3.70	100	111.1	70	130	
47	Ti	45	4.988	788	3.00	5	99.8	70	130	
51	V	45	0.765	7470	1.16	1	76.5	70	130	
52	Cr	45	5.308	29641	0.84	5	106.2	70	130	
55	Mn	45	5.565	19210	1.03	5	111.3	70	130	
56	Fe	45	107.043	502288	0.57	100	107.0	70	130	
59	Co	72	5.330	43154	1.91	5	106.6	70	130	
60	Ni	72	5.559	12151	1.45	5	111.2	70	130	
63	Cu	72	5.378	33081	1.26	5	107.6	70	130	
66	Zn	72	5.002	6068	3.69	5	100.0	70	130	
75	As	72	5.347	4557	2.65	5	106.9	70	130	
78	Se	72	5.581	425	12.74	5	111.6	70	130	
88	Sr	115	5.454	26061	0.41	5	109.1	70	130	
95	Mo	115	5.198	17338	2.49	5	104.0	70	130	
107	Ag	115	2.062	20755	1.81	2	103.1	70	130	
111	Cd	115	1.063	1655	2.44	1	106.3	70	130	
118	Sn	115	5.331	19716	3.22	5	106.6	70	130	
121	Sb	115	2.185	11712	1.18	2	109.2	70	130	
137	Ba	115	5.483	9571	3.18	5	109.7	70	130	
205	Tl	209	1.028	24529	3.14	1	102.8	70	130	
208	Pb	209	1.060	18630	1.79	1	106.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1121864	1.07	1262119	88.89	70	120	
72	Ge	726913	0.64	801025	90.75	70	120	
115	In	6931832	0.59	7659162	90.50	70	120	
209	Bi	14658152	0.26	15802225	92.76	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 15:12	Sample Name	CCB4-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	120_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.044	17	21.1	2	5	
9	Be	45	0.052	3	78.1	0.4	0.3	
11	B	45	10.022	327	4.7	10	10	FailAq FailSoil
23	Na	45	5.845	71962	1.2	50	100	
24	Mg	45	-0.430	509	12.5	50	100	
27	Al	45	21.704	6014	1.2	50	10	FailAq
39	K	45	9.435	69890	0.4	50	100	
44	Ca	45	3.470	644	2.4	50	100	
47	Ti	45	-0.036	2	173.2	4	3	
51	V	45	-0.246	2815	5.7	4	3	
52	Cr	45	-0.089	1014	2.9	2	2	
55	Mn	45	0.001	240	10.5	2	3	
56	Fe	45	0.424	10906	2.7	50	50	
59	Co	72	0.003	120	35.5	2	3	
60	Ni	72	-0.076	168	17.8	2	3	
63	Cu	72	-0.070	1431	4.8	2	2	
66	Zn	72	-0.545	289	11.6	4	2	
75	As	72	-0.060	208	8.8	2	2	
78	Se	72	0.557	134	14.8	1	2	
88	Sr	115	0.056	794	15.1	4	3	
95	Mo	115	0.024	164	20.8	2	2	
107	Ag	115	0.010	174	5.8	0.4	1	
111	Cd	115	0.003	13	90.2	0.4	0.3	
118	Sn	115	-0.078	517	7.2	4	3	
121	Sb	115	0.038	618	7.4	2	0.8	
137	Ba	115	0.006	60	43.4	2	3	
205	Tl	209	0.007	243	27.5	2	0.5	
208	Pb	209	0.007	1073	2.8	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1110771	0.48	1262119	88.01	70	120	
72	Ge	714341	0.96	801025	89.18	70	120	
115	In	6952244	1.43	7659162	90.77	70	120	
209	Bi	14447457	0.44	15802225	91.43	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 15:34	Sample Name	CCV5-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	131_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.035	8260	1.56	200	101.5	90	110	
9	Be	45	211.671	10641	0.28	200	105.8	90	110	
11	B	45	222.975	5073	4.50	200	111.5	90	110	Fail
23	Na	45	5175.161	4563446	0.71	5000	103.5	90	110	
24	Mg	45	5093.757	2368593	0.92	5000	101.9	90	110	
27	Al	45	5467.716	1027864	1.00	5000	109.4	90	110	
39	K	45	5255.967	2479471	1.29	5000	105.1	90	110	
44	Ca	45	4946.496	134305	2.43	5000	98.9	90	110	
47	Ti	45	206.119	31578	1.96	200	103.1	90	110	
51	V	45	208.624	938356	1.50	200	104.3	90	110	
52	Cr	45	210.664	1095381	0.29	200	105.3	90	110	
55	Mn	45	207.376	692617	0.74	200	103.7	90	110	
56	Fe	45	5220.958	23567651	1.17	5000	104.4	90	110	
59	Co	72	208.984	1639058	1.04	200	104.5	90	110	
60	Ni	72	209.812	433376	1.77	200	104.9	90	110	
63	Cu	72	212.186	1197581	1.78	200	106.1	90	110	
66	Zn	72	214.005	217049	0.70	200	107.0	90	110	
75	As	72	214.540	167626	1.28	200	107.3	90	110	
78	Se	72	212.509	11941	1.82	200	106.3	90	110	
88	Sr	115	206.048	959513	1.02	200	103.0	90	110	
95	Mo	115	205.201	677452	0.62	200	102.6	90	110	
107	Ag	115	202.368	2018616	0.94	200	101.2	90	110	
111	Cd	115	209.201	322072	1.09	200	104.6	90	110	
118	Sn	115	205.163	725000	0.94	200	102.6	90	110	
121	Sb	115	206.070	1059531	1.10	200	103.0	90	110	
137	Ba	115	210.537	363637	1.02	200	105.3	90	110	
205	Tl	209	197.725	4604198	0.50	200	98.9	90	110	
208	Pb	209	202.666	3307160	0.45	200	101.3	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1098738	1.01	1262119	87.06	70	120	
72	Ge	705634	0.48	801025	88.09	70	120	
115	In	6882115	0.84	7659162	89.85	70	120	
209	Bi	14351831	0.75	15802225	90.82	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 15:39	Sample Name	LCVL5-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	133LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.107	426	4.09	1	1010.7	70	130	Fail
9	Be	45	1.109	55	23.59	1	110.9	70	130	
11	B	45	29.766	759	5.07	20	148.8	70	130	Fail
23	Na	45	107.771	158828	0.63	100	107.8	70	130	
24	Mg	45	98.884	46399	0.87	100	98.9	70	130	
27	Al	45	159.675	31656	1.61	100	159.7	70	130	Fail
39	K	45	109.090	114252	1.67	100	109.1	70	130	
44	Ca	45	115.492	3645	2.30	100	115.5	70	130	
47	Ti	45	4.815	741	8.49	5	96.3	70	130	
51	V	45	0.678	6884	1.99	1	67.8	70	130	Fail
52	Cr	45	5.166	28123	1.47	5	103.3	70	130	
55	Mn	45	5.448	18316	2.00	5	109.0	70	130	
56	Fe	45	107.253	490051	1.55	100	107.3	70	130	
59	Co	72	5.114	40007	1.21	5	102.3	70	130	
60	Ni	72	5.073	10740	2.66	5	101.5	70	130	
63	Cu	72	5.228	31120	0.88	5	104.6	70	130	
66	Zn	72	5.262	6122	1.42	5	105.2	70	130	
75	As	72	5.240	4319	2.57	5	104.8	70	130	
78	Se	72	6.051	436	4.28	5	121.0	70	130	
88	Sr	115	5.098	24194	0.74	5	102.0	70	130	
95	Mo	115	4.929	16315	2.48	5	98.6	70	130	
107	Ag	115	1.943	19388	3.05	2	97.1	70	130	
111	Cd	115	1.070	1652	4.09	1	107.0	70	130	
118	Sn	115	5.052	18572	0.74	5	101.0	70	130	
121	Sb	115	2.021	10776	2.20	2	101.0	70	130	
137	Ba	115	5.083	8806	2.66	5	101.7	70	130	
205	Tl	209	1.012	23187	0.48	1	101.2	70	130	
208	Pb	209	1.012	17119	0.82	1	101.2	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1092377	1.38	1262119	86.55	70	120	
72	Ge	702254	0.75	801025	87.67	70	120	
115	In	6875779	1.68	7659162	89.77	70	120	
209	Bi	14065448	1.70	15802225	89.01	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 15:41	Sample Name	CCB5-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	134_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.026	17	21.8	2	5	
9	Be	45	0.053	3	43.3	0.4	0.3	
11	B	45	11.025	348	4.7	10	10	FailAq FailSoil
23	Na	45	5.156	71059	1.0	50	100	
24	Mg	45	-0.036	691	12.0	50	100	
27	Al	45	24.490	6516	4.4	50	10	FailAq
39	K	45	6.975	68457	0.4	50	100	
44	Ca	45	8.874	789	6.2	50	100	
47	Ti	45	-0.022	4	114.6	4	3	
51	V	45	-0.324	2452	5.4	4	3	
52	Cr	45	-0.079	1066	9.5	2	2	
55	Mn	45	0.013	278	10.2	2	3	
56	Fe	45	3.064	22853	4.4	50	50	
59	Co	72	0.006	141	13.0	2	3	
60	Ni	72	-0.072	176	24.0	2	3	
63	Cu	72	-0.079	1381	8.2	2	2	
66	Zn	72	-0.430	408	3.7	4	2	
75	As	72	-0.090	184	9.1	2	2	
78	Se	72	0.707	143	6.7	1	2	
88	Sr	115	0.093	951	7.6	4	3	
95	Mo	115	0.073	320	3.8	2	2	
107	Ag	115	0.020	262	25.5	0.4	1	
111	Cd	115	0.005	17	0.0	0.4	0.3	
118	Sn	115	-0.026	689	7.7	4	3	
121	Sb	115	0.011	469	4.7	2	0.8	
137	Ba	115	0.024	90	16.1	2	3	
205	Tl	209	0.016	462	8.4	2	0.5	
208	Pb	209	0.015	1206	11.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1106075	0.32	1262119	87.64	70	120	
72	Ge	716142	0.46	801025	89.40	70	120	
115	In	6834634	0.84	7659162	89.23	70	120	
209	Bi	14367921	0.97	15802225	90.92	70	120	

Method Blank Report

Date Acquired	11/16/16 3:43 PM	Sample Name	MB-77903
Data Batch	161116.b	Comment	MBLKICPMS_TSDOD1
Data File Name	135_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.100	14	17.56		
9	Be	45	0.053	3	21.65		
11	B	45	10.689	341	22.97		J
23	Na	45	14.823	79654	0.49		
24	Mg	45	3.320	2266	5.84		
27	Al	45	-1.759	1559	5.30		
39	K	45	17.299	73363	0.25		
44	Ca	45	13.697	921	10.17		
47	Ti	45	0.064	18	57.27		
51	V	45	-0.292	2600	7.03		
52	Cr	45	0.093	1970	10.15		
55	Mn	45	0.128	666	1.76		
56	Fe	45	7.347	42386	6.74		
59	Co	72	0.010	180	23.21		
60	Ni	72	0.047	428	1.96		
63	Cu	72	0.011	1906	5.31		
66	Zn	72	0.357	1220	4.40		
75	As	72	-0.073	198	5.89		
78	Se	72	0.396	126	6.49		
88	Sr	115	0.041	741	13.39		
95	Mo	115	0.048	248	8.11		
107	Ag	115	0.012	193	26.93		
111	Cd	115	0.017	37	39.62		
118	Sn	115	3.802	14656	1.19		
121	Sb	115	-0.009	384	3.28		
137	Ba	115	0.036	114	10.23		
205	Tl	209	0.010	336	26.85		
208	Pb	209	0.031	1510	7.66		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1108103	0.99	1262119	87.80	70	120	
72	Ge	719256	0.79	801025	89.79	70	120	
115	In	7111949	3.18	7659162	92.86	70	120	
209	Bi	14867186	0.73	15802225	94.08	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 15:45	Sample Name	LCS-77903
Data Batch	161116.b	Comment	LCS ICPMS_TSDOD1
Data File Name	136_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.250	8385	1.04	200	99.6	80	120	
9	Be	45	207.216	10776	2.33	200	103.6	80	120	
11	B	45	207.793	4896	3.20	200	103.9	80	120	
23	Na	45	5095.075	4648520	2.33	1000	509.5	80	120	Fail
24	Mg	45	4980.447	2395580	1.09	1000	498.0	80	120	Fail
27	Al	45	986.463	193416	1.50	1000	98.6	80	120	
39	K	45	5069.397	2476007	0.72	1000	506.9	80	120	Fail
44	Ca	45	4703.766	132120	0.62	1000	470.4	80	120	Fail
47	Ti	45	200.990	31851	1.50	200	100.5	80	120	
51	V	45	200.926	934919	0.41	200	100.5	80	120	
52	Cr	45	203.378	1093946	0.33	200	101.7	80	120	
55	Mn	45	199.723	690007	0.15	200	99.9	80	120	
56	Fe	45	1011.947	4733060	0.41	1000	101.2	80	120	
59	Co	72	203.488	1640951	0.53	200	101.7	80	120	
60	Ni	72	203.722	432673	0.92	200	101.9	80	120	
63	Cu	72	205.377	1191867	0.33	200	102.7	80	120	
66	Zn	72	202.789	211521	0.29	200	101.4	80	120	
75	As	72	207.061	166352	0.40	200	103.5	80	120	
78	Se	72	203.221	11746	0.84	200	101.6	80	120	
88	Sr	115	199.229	947535	0.46	200	99.6	80	120	
95	Mo	115	200.622	676425	0.23	200	100.3	80	120	
107	Ag	115	200.015	2037820	1.01	200	100.0	80	120	
111	Cd	115	201.804	317326	0.71	200	100.9	80	120	
118	Sn	115	205.199	740664	1.26	200	102.6	80	120	
121	Sb	115	204.649	1074678	0.86	200	102.3	80	120	
137	Ba	115	203.973	359733	1.03	200	102.0	80	120	
205	Tl	209	195.261	4609836	0.36	200	97.6	80	120	
208	Pb	209	198.031	3276167	0.64	200	99.0	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1136505	0.16	1262119	90.05	70	120	
72	Ge	725551	0.51	801025	90.58	70	120	
115	In	7030545	2.18	7659162	91.79	70	120	
209	Bi	14550601	0.91	15802225	92.08	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/16/2016 15:47	Sample Name	LCSD-77903
Data Batch	161116.b	Comment	LCSDICPMS_TSDOD1
Data File Name	137_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.042	8349	1.21	200	99.5	80	120	
9	Be	45	207.044	10731	2.09	200	103.5	80	120	
11	B	45	214.190	5027	3.63	200	107.1	80	120	
23	Na	45	5100.727	4638485	0.93	1000	510.1	80	120	Fail
24	Mg	45	5027.227	2410226	0.63	1000	502.7	80	120	Fail
27	Al	45	997.673	194956	0.62	1000	99.8	80	120	
39	K	45	5123.212	2493495	0.38	1000	512.3	80	120	Fail
44	Ca	45	4728.858	132391	0.05	1000	472.9	80	120	Fail
47	Ti	45	201.929	31894	1.92	200	101.0	80	120	
51	V	45	203.436	943467	1.05	200	101.7	80	120	
52	Cr	45	204.407	1095908	0.76	200	102.2	80	120	
55	Mn	45	200.020	688809	0.89	200	100.0	80	120	
56	Fe	45	1024.356	4775589	0.57	1000	102.4	80	120	
59	Co	72	204.284	1653779	1.44	200	102.1	80	120	
60	Ni	72	204.378	435766	0.26	200	102.2	80	120	
63	Cu	72	205.009	1194446	0.57	200	102.5	80	120	
66	Zn	72	202.345	211888	0.33	200	101.2	80	120	
75	As	72	205.514	165763	0.08	200	102.8	80	120	
78	Se	72	201.142	11672	1.44	200	100.6	80	120	
88	Sr	115	199.392	950262	1.28	200	99.7	80	120	
95	Mo	115	202.903	685424	0.84	200	101.5	80	120	
107	Ag	115	200.421	2045375	1.20	200	100.2	80	120	
111	Cd	115	201.708	317782	1.04	200	100.9	80	120	
118	Sn	115	205.693	743839	0.88	200	102.8	80	120	
121	Sb	115	204.658	1076873	1.17	200	102.3	80	120	
137	Ba	115	202.259	357438	1.01	200	101.1	80	120	
205	Tl	209	194.148	4618683	0.90	200	97.1	80	120	
208	Pb	209	198.027	3301354	0.92	200	99.0	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1132847	0.54	1262119	89.76	70	120	
72	Ge	728421	0.64	801025	90.94	70	120	
115	In	7044696	2.40	7659162	91.98	70	120	
209	Bi	14662232	0.73	15802225	92.79	70	120	

Sample Report

Date Acquired	11/16/16 3:51 PM	Sample Name	1611044-01A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	139_ARF.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	58.317	2382	1.03	2000	>RL
9	Be	45	2.850	143	9.46	2000	>RL
11	B	45	80.720	1897	10.55	2000	>RL
23	Na	45	1096.641	1017426	0.54	25000	>RL
24	Mg	45	13177.120	6115910	0.67	25000	>RL
27	Al	45	67621.411	12669049	2.49	10000	OUTCAL
39	K	45	15795.244	7308661	1.46	25000	>RL
44	Ca	45	65809.980	1776956	1.32	25000	OUTCAL
47	Ti	45	361.921	55347	1.05	2000	>RL
51	V	45	101.364	457124	0.76	2000	>RL
52	Cr	45	61.835	322030	0.18	2000	>RL
55	Mn	45	672.504	2241818	0.39	2000	>RL
56	Fe	45	64493.921	290571251	1.28	10000	OUTCAL
59	Co	72	24.313	184836	0.86	2000	>RL
60	Ni	72	40.514	81332	0.12	2000	>RL
63	Cu	72	39.068	215075	0.81	2000	>RL
66	Zn	72	270.329	265436	0.43	2000	>RL
75	As	72	25.639	19625	0.57	2000	>RL
78	Se	72	4.672	350	4.13	2000	>RL
88	Sr	115	350.206	1556057	0.39	2000	>RL
95	Mo	115	2.204	7023	0.15	2000	>RL
107	Ag	115	0.216	2119	3.80	500	
111	Cd	115	0.807	1193	7.08	2000	>RL
118	Sn	115	6.135	21417	1.98	2000	>RL
121	Sb	115	10.750	53130	0.91	500	>RL
137	Ba	115	442.547	729403	0.51	2000	>RL
205	Tl	209	0.660	14985	1.12	2000	
208	Pb	209	401.977	6360154	2.93	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1096896	0.38	1262119	86.91	70	120	
72	Ge	683726	0.71	801025	85.36	70	120	
115	In	6578368	0.90	7659162	85.89	70	120	
209	Bi	13917146	1.01	15802225	88.07	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/16/2016 15:53	Sample Name	1611044-01A SD
Data Batch	161116.b	Comment	SD ICPMS_TSDOD1
Data File Name	140_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	12.814	544	3.86	58.3	109.9	110	90	Good
9	Be	45	0.636	32	9.45	2.8	111.7	110	90	
11	B	45	24.126	644	7.25	80.7	149.4	110	90	
23	Na	45	240.302	277972	0.75	1096.6	109.6	110	90	Good
24	Mg	45	2760.133	1297914	0.64	13177.1	104.7	110	90	Good
27	Al	45	13666.637	2594721	0.66	67621.4	101.1	110	90	Good
39	K	45	3318.653	1606915	0.58	15795.2	105.1	110	90	Good
44	Ca	45	13852.121	379239	1.52	65810.0	105.2	110	90	Good
47	Ti	45	77.065	11940	2.40	361.9	106.5	110	90	Good
51	V	45	20.971	98901	1.24	101.4	103.4	110	90	Good
52	Cr	45	13.309	71361	1.00	61.8	107.6	110	90	Good
55	Mn	45	142.518	481322	0.69	672.5	106.0	110	90	Good
56	Fe	45	13555.929	61860342	0.79	64493.9	105.1	110	90	Good
59	Co	72	5.066	39931	1.94	24.3	104.2	110	90	Good
60	Ni	72	8.524	17962	0.91	40.5	105.2	110	90	Good
63	Cu	72	8.245	48403	1.00	39.1	105.5	110	90	Good
66	Zn	72	58.597	60200	0.20	270.3	108.4	110	90	Good
75	As	72	5.225	4340	0.96	25.6	101.9	110	90	Good
78	Se	72	1.315	175	9.54	4.7	140.8	110	90	
88	Sr	115	69.582	329969	1.55	350.2	99.3	110	90	Good
95	Mo	115	0.494	1743	9.98	2.2	112.0	110	90	
107	Ag	115	0.068	760	18.56	0.2	157.1	110	90	
111	Cd	115	0.167	270	5.38	0.8	103.3	110	90	Good
118	Sn	115	1.108	4779	2.87	6.1	90.3	110	90	Good
121	Sb	115	2.116	11487	0.62	10.8	98.4	110	90	Good
137	Ba	115	89.161	156727	1.32	442.5	100.7	110	90	Good
205	Tl	209	0.135	3309	1.56	0.7	102.4	110	90	Good
208	Pb	209	79.029	1319455	0.80	402.0	98.3	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1110857	0.70	1262119	88.02	70	120	
72	Ge	707564	0.59	801025	88.33	70	120	
115	In	7014865	2.12	7659162	91.59	70	120	
209	Bi	14676662	0.57	15802225	92.88	70	120	

Sample Report

Date Acquired	11/16/16 4:11 PM	Sample Name	1611044-02A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	149SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	64.427	2645	1.53	2000	>RL
9	Be	45	2.687	136	1.53	2000	>RL
11	B	45	93.223	2188	5.91	2000	>RL
23	Na	45	3751.813	3341030	0.58	25000	>RL
24	Mg	45	13705.993	6399800	3.21	25000	>RL
27	Al	45	74812.541	14101342	1.73	10000	OUTCAL
39	K	45	16386.752	7625924	1.29	25000	>RL
44	Ca	45	45326.162	1231447	1.19	25000	OUTCAL
47	Ti	45	280.159	43104	1.46	2000	>RL
51	V	45	110.705	501914	0.44	2000	>RL
52	Cr	45	67.358	352778	0.90	2000	>RL
55	Mn	45	617.782	2071870	0.21	2000	>RL
56	Fe	45	73926.792	335089587	0.60	10000	OUTCAL
59	Co	72	26.265	203349	0.24	2000	>RL
60	Ni	72	43.633	89179	0.47	2000	>RL
63	Cu	72	24.653	138878	0.65	2000	>RL
66	Zn	72	220.526	220685	0.54	2000	>RL
75	As	72	27.644	21532	1.36	2000	>RL
78	Se	72	4.253	334	5.71	2000	>RL
88	Sr	115	270.709	1239005	0.11	2000	>RL
95	Mo	115	1.903	6251	5.48	2000	
107	Ag	115	0.145	1485	3.29	500	
111	Cd	115	0.484	742	4.95	2000	>RL
118	Sn	115	5.888	21200	1.62	2000	>RL
121	Sb	115	14.422	73252	1.69	500	>RL
137	Ba	115	422.910	717999	0.80	2000	>RL
205	Tl	209	0.609	13785	1.68	2000	
208	Pb	209	499.496	7875133	1.48	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1103507	0.03	1262119	87.43	70	120	
72	Ge	696361	1.12	801025	86.93	70	120	
115	In	6777226	2.17	7659162	88.49	70	120	
209	Bi	13867683	0.87	15802225	87.76	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/16/2016 16:13	Sample Name	1611044-01A PDS
Data Batch	161116.b	Comment	PDS ICPMS_TSDOD1
Data File Name	150_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	235.824	9713	0.52	58.3	200	88.8	75	125	
9	Be	45	196.173	9989	0.90	2.8	200	96.7	75	125	
11	B	45	268.430	6163	1.34	80.7	200	93.9	75	125	
23	Na	45	5810.443	5181040	0.76	1096.6	5000	94.3	75	125	
24	Mg	45	17533.574	8255668	0.98	13177.1	5000	87.1	75	125	
27	Al	45	70876.037	13471873	0.71	67621.4	5000	65.1	75	125	Fail
39	K	45	20678.197	9686773	1.04	15795.2	5000	97.7	75	125	
44	Ca	45	70231.001	1923861	0.34	65810.0	5000	88.4	75	125	
47	Ti	45	545.462	84622	0.69	361.9	200	91.8	75	125	
51	V	45	290.146	1320180	1.04	101.4	200	94.4	75	125	
52	Cr	45	256.420	1350119	0.59	61.8	200	97.3	75	125	
55	Mn	45	854.383	2889446	0.68	672.5	200	90.9	75	125	
56	Fe	45	69061.598	315672556	0.55	64493.9	5000	91.4	75	125	
59	Co	72	218.418	1683033	0.88	24.3	200	97.1	75	125	
60	Ni	72	230.823	468386	1.10	40.5	200	95.2	75	125	
63	Cu	72	225.430	1249904	0.32	39.1	200	93.2	75	125	
66	Zn	72	461.438	458859	0.69	270.3	200	95.6	75	125	
75	As	72	223.486	171547	0.50	25.6	200	98.9	75	125	
78	Se	72	197.226	10895	1.62	4.7	200	96.3	75	125	
88	Sr	115	542.327	2443165	0.64	350.2	200	96.1	75	125	
95	Mo	115	191.441	611620	0.20	2.2	200	94.6	75	125	
107	Ag	115	193.980	1872413	0.47	0.2	200	96.9	75	125	
111	Cd	115	190.641	284021	0.77	0.8	200	94.9	75	125	
118	Sn	115	202.132	691261	0.39	6.1	200	98.0	75	125	
121	Sb	115	209.911	1044402	0.39	10.8	200	99.6	75	125	
137	Ba	115	642.104	1073091	0.51	442.5	200	99.8	75	125	
205	Tl	209	186.192	4158815	1.02	0.7	200	92.8	75	125	
208	Pb	209	590.555	9242732	1.34	402.0	200	94.3	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1112813	0.34	1262119	88.17	70	120	
72	Ge	693306	0.54	801025	86.55	70	120	
115	In	6660033	0.44	7659162	86.96	70	120	
209	Bi	13767003	1.28	15802225	87.12	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 16:15	Sample Name	1611044-01A MS
Data Batch	161116.b	Comment	MS ICPMS_TSDOD1
Data File Name	151_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	246.185	10002	1.52	58.3	200	93.9	80	120	
9	Be	45	199.490	10019	1.58	2.8	200	98.3	80	120	
11	B	45	288.241	6520	2.51	80.7	200	103.8	80	120	
23	Na	45	6070.371	5336113	0.88	1096.6	1000	497.4	80	120	Fail
24	Mg	45	18244.996	8474202	1.28	13177.1	1000	506.8	80	120	Fail
27	Al	45	75591.905	14172862	0.49	67621.4	1000	797.0	80	120	Fail
39	K	45	22564.514	10420934	1.05	15795.2	1000	676.9	80	120	Fail
44	Ca	45	74446.032	2011514	0.66	65810.0	1000	863.6	80	120	Fail
47	Ti	45	649.938	99454	0.81	361.9	200	144.0	80	120	Fail
51	V	45	307.271	1378755	1.01	101.4	200	103.0	80	120	
52	Cr	45	264.826	1375317	0.25	61.8	200	101.5	80	120	
55	Mn	45	891.072	2972315	1.19	672.5	200	109.3	80	120	
56	Fe	45	70610.144	318336672	2.04	64493.9	1000	611.6	80	120	Fail
59	Co	72	224.744	1721532	1.25	24.3	200	100.2	80	120	
60	Ni	72	238.420	480977	0.34	40.5	200	99.0	80	120	
63	Cu	72	235.741	1299435	0.69	39.1	200	98.3	80	120	
66	Zn	72	470.031	464679	1.38	270.3	200	99.9	80	120	
75	As	72	232.405	177333	0.58	25.6	200	103.4	80	120	
78	Se	72	203.842	11191	0.24	4.7	200	99.6	80	120	
88	Sr	115	567.495	2557337	0.84	350.2	200	108.6	80	120	
95	Mo	115	191.166	610911	0.46	2.2	200	94.5	80	120	
107	Ag	115	192.682	1860441	1.09	0.2	200	96.2	80	120	
111	Cd	115	199.173	296828	0.67	0.8	200	99.2	80	120	
118	Sn	115	206.119	705134	1.36	6.1	200	100.0	80	120	
121	Sb	115	101.430	505004	0.33	10.8	200	45.3	80	120	Fail
137	Ba	115	635.397	1062317	1.59	442.5	200	96.4	80	120	
205	Tl	209	188.708	4292576	0.87	0.7	200	94.0	80	120	
208	Pb	209	786.979	12541345	1.30	402.0	200	192.5	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1097682	0.70	1262119	86.97	70	120	
72	Ge	689340	1.50	801025	86.06	70	120	
115	In	6662775	1.82	7659162	86.99	70	120	
209	Bi	14019464	0.72	15802225	88.72	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/16/2016 16:17	Sample Name	1611044-01A MSD
Data Batch	161116.b	Comment	MSD ICPMS_TSDOD1
Data File Name	152_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	246.985	10121	0.68	58.3	200	94.3	80	120	
9	Be	45	203.693	10317	2.15	2.8	200	100.4	80	120	
11	B	45	285.764	6525	4.29	80.7	200	102.5	80	120	
23	Na	45	6094.298	5404306	3.51	1096.6	1000	499.8	80	120	Fail
24	Mg	45	18801.462	8809047	1.84	13177.1	1000	562.4	80	120	Fail
27	Al	45	75006.010	14183622	1.14	67621.4	1000	738.5	80	120	Fail
39	K	45	22613.342	10535233	1.35	15795.2	1000	681.8	80	120	Fail
44	Ca	45	72912.358	1987391	0.89	65810.0	1000	710.2	80	120	Fail
47	Ti	45	648.921	100186	2.35	361.9	200	143.5	80	120	Fail
51	V	45	307.818	1393478	1.44	101.4	200	103.2	80	120	
52	Cr	45	262.653	1376042	0.94	61.8	200	100.4	80	120	
55	Mn	45	890.846	2997733	1.15	672.5	200	109.2	80	120	
56	Fe	45	69304.561	315220387	0.99	64493.9	1000	481.1	80	120	Fail
59	Co	72	221.901	1709438	0.58	24.3	200	98.8	80	120	
60	Ni	72	238.062	482928	0.24	40.5	200	98.8	80	120	
63	Cu	72	235.004	1302585	0.36	39.1	200	98.0	80	120	
66	Zn	72	475.749	472930	0.46	270.3	200	102.7	80	120	
75	As	72	232.599	178490	0.60	25.6	200	103.5	80	120	
78	Se	72	202.847	11199	0.69	4.7	200	99.1	80	120	
88	Sr	115	564.070	2561096	0.55	350.2	200	106.9	80	120	
95	Mo	115	190.565	613614	0.35	2.2	200	94.2	80	120	
107	Ag	115	192.081	1868806	0.84	0.2	200	95.9	80	120	
111	Cd	115	197.204	296131	1.03	0.8	200	98.2	80	120	
118	Sn	115	205.168	707125	0.64	6.1	200	99.5	80	120	
121	Sb	115	99.977	501562	0.17	10.8	200	44.6	80	120	Fail
137	Ba	115	655.637	1104400	0.64	442.5	200	106.5	80	120	
205	Tl	209	190.211	4314933	0.47	0.7	200	94.8	80	120	
208	Pb	209	780.876	12411040	0.18	402.0	200	189.4	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1107370	1.51	1262119	87.74	70	120	
72	Ge	693183	1.43	801025	86.54	70	120	
115	In	6712774	1.09	7659162	87.64	70	120	
209	Bi	13981650	0.89	15802225	88.48	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 16:19	Sample Name	CCV6-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	153_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	202.529	8264	1.29	200	101.3	90	110	
9	Be	45	213.995	10790	2.72	200	107.0	90	110	
11	B	45	216.357	4940	1.40	200	108.2	90	110	
23	Na	45	5164.029	4568179	0.62	5000	103.3	90	110	
24	Mg	45	5053.650	2357361	0.39	5000	101.1	90	110	
27	Al	45	5423.484	1022809	0.55	5000	108.5	90	110	
39	K	45	5214.111	2467940	0.42	5000	104.3	90	110	
44	Ca	45	4839.251	131807	0.65	5000	96.8	90	110	
47	Ti	45	205.327	31555	0.39	200	102.7	90	110	
51	V	45	205.990	929455	0.77	200	103.0	90	110	
52	Cr	45	209.673	1093698	0.86	200	104.8	90	110	
55	Mn	45	205.575	688807	1.34	200	102.8	90	110	
56	Fe	45	5187.399	23491673	0.69	5000	103.7	90	110	
59	Co	72	212.189	1657814	0.91	200	106.1	90	110	
60	Ni	72	211.668	435512	0.71	200	105.8	90	110	
63	Cu	72	211.696	1190257	0.88	200	105.8	90	110	
66	Zn	72	216.500	218729	0.47	200	108.2	90	110	
75	As	72	218.261	169865	0.39	200	109.1	90	110	
78	Se	72	215.008	12036	2.59	200	107.5	90	110	
88	Sr	115	210.351	957096	0.19	200	105.2	90	110	
95	Mo	115	209.542	675924	0.33	200	104.8	90	110	
107	Ag	115	206.940	2016929	0.48	200	103.5	90	110	
111	Cd	115	214.013	321926	0.09	200	107.0	90	110	
118	Sn	115	207.925	717956	0.53	200	104.0	90	110	
121	Sb	115	211.120	1060650	0.80	200	105.6	90	110	
137	Ba	115	214.039	361181	0.68	200	107.0	90	110	
205	Tl	209	197.408	4611198	0.41	200	98.7	90	110	
208	Pb	209	202.260	3310876	0.72	200	101.1	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1102239	1.01	1262119	87.33	70	120	
72	Ge	702988	1.21	801025	87.76	70	120	
115	In	6725443	1.83	7659162	87.81	70	120	
209	Bi	14396674	0.87	15802225	91.11	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 16:30	Sample Name	LCVL6-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	155LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.807	418	2.28	1	980.7	70	130	Fail
9	Be	45	1.044	53	7.67	1	104.4	70	130	
11	B	45	27.900	724	5.83	20	139.5	70	130	Fail
23	Na	45	107.966	160565	1.02	100	108.0	70	130	
24	Mg	45	97.622	46265	1.10	100	97.6	70	130	
27	Al	45	154.215	30931	3.70	100	154.2	70	130	Fail
39	K	45	111.562	116507	0.56	100	111.6	70	130	
44	Ca	45	97.603	3195	3.94	100	97.6	70	130	
47	Ti	45	5.188	806	4.25	5	103.8	70	130	
51	V	45	0.701	7057	1.58	1	70.1	70	130	
52	Cr	45	5.103	28080	1.78	5	102.1	70	130	
55	Mn	45	5.385	18287	2.91	5	107.7	70	130	
56	Fe	45	102.796	474658	0.23	100	102.8	70	130	
59	Co	72	5.151	40927	0.87	5	103.0	70	130	
60	Ni	72	5.173	11117	0.70	5	103.5	70	130	
63	Cu	72	5.212	31515	1.43	5	104.2	70	130	
66	Zn	72	5.152	6106	1.11	5	103.0	70	130	
75	As	72	5.350	4474	3.50	5	107.0	70	130	
78	Se	72	5.701	424	4.78	5	114.0	70	130	
88	Sr	115	5.119	24261	2.17	5	102.4	70	130	
95	Mo	115	4.993	16502	0.80	5	99.9	70	130	
107	Ag	115	2.003	19971	0.74	2	100.1	70	130	
111	Cd	115	1.016	1567	4.06	1	101.6	70	130	
118	Sn	115	5.139	18856	1.63	5	102.8	70	130	
121	Sb	115	2.043	10876	2.69	2	102.2	70	130	
137	Ba	115	5.240	9064	3.46	5	104.8	70	130	
205	Tl	209	0.959	22993	1.19	1	95.9	70	130	
208	Pb	209	1.040	18385	1.79	1	104.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1103119	0.76	1262119	87.40	70	120	
72	Ge	713255	0.78	801025	89.04	70	120	
115	In	6866475	0.71	7659162	89.65	70	120	
209	Bi	14723291	0.57	15802225	93.17	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 16:32	Sample Name	CCB6-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	156_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.243	8	34.6	2	5	
9	Be	45	0.013	1	86.6	0.4	0.3	
11	B	45	8.171	280	9.5	10	10	
23	Na	45	6.491	71235	0.5	50	100	
24	Mg	45	-0.600	421	13.5	50	100	
27	Al	45	23.128	6172	1.1	50	10	FailAq
39	K	45	9.077	68481	0.6	50	100	
44	Ca	45	3.395	631	3.5	50	100	
47	Ti	45	-0.014	6	124.9	4	3	
51	V	45	-0.311	2479	2.9	4	3	
52	Cr	45	-0.098	950	7.4	2	2	
55	Mn	45	0.009	262	10.7	2	3	
56	Fe	45	0.416	10676	3.5	50	50	
59	Co	72	-0.001	88	5.8	2	3	
60	Ni	72	-0.071	174	4.4	2	3	
63	Cu	72	-0.078	1366	4.8	2	2	
66	Zn	72	-0.462	369	2.8	4	2	
75	As	72	-0.057	207	14.1	2	2	
78	Se	72	0.566	133	2.1	1	2	
88	Sr	115	0.012	580	9.0	4	3	
95	Mo	115	0.039	208	3.7	2	2	
107	Ag	115	0.011	179	2.8	0.4	1	
111	Cd	115	0.001	11	75.5	0.4	0.3	
118	Sn	115	-0.083	491	15.5	4	3	
121	Sb	115	-0.017	327	7.4	2	0.8	
137	Ba	115	0.013	71	15.1	2	3	
205	Tl	209	0.006	236	3.3	2	0.5	
208	Pb	209	0.063	1992	9.2	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1091025	1.17	1262119	86.44	70	120	
72	Ge	704722	0.30	801025	87.98	70	120	
115	In	6836042	0.90	7659162	89.25	70	120	
209	Bi	14434508	1.51	15802225	91.34	70	120	

Sample Report

Date Acquired	11/16/16 4:34 PM	Sample Name	1611044-03A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	157SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	88.872	3594	1.79	2000	>RL
9	Be	45	2.856	142	2.03	2000	>RL
11	B	45	141.235	3221	5.40	2000	>RL
23	Na	45	7536.952	6560064	1.44	25000	>RL
24	Mg	45	16047.548	7397722	2.43	25000	>RL
27	Al	45	69988.090	13024403	1.89	10000	OUTCAL
39	K	45	11521.434	5312229	2.11	25000	>RL
44	Ca	45	211044.518	5658589	1.40	25000	OUTCAL
47	Ti	45	238.354	36206	1.15	2000	>RL
51	V	45	129.390	578458	0.50	2000	>RL
52	Cr	45	63.315	327436	0.14	2000	>RL
55	Mn	45	634.272	2099794	0.54	2000	>RL
56	Fe	45	79696.050	356562821	1.37	10000	OUTCAL
59	Co	72	28.256	210848	0.59	2000	>RL
60	Ni	72	38.936	76742	0.58	2000	>RL
63	Cu	72	15.828	86554	0.54	2000	>RL
66	Zn	72	193.692	186922	0.54	2000	>RL
75	As	72	27.233	20447	0.58	2000	>RL
78	Se	72	5.051	364	4.52	2000	>RL
88	Sr	115	507.789	2230569	1.00	2000	>RL
95	Mo	115	2.693	8466	2.94	2000	>RL
107	Ag	115	0.037	417	9.09	500	
111	Cd	115	0.378	558	19.47	2000	
118	Sn	115	5.554	19242	0.57	2000	>RL
121	Sb	115	0.443	2541	3.28	500	
137	Ba	115	1176.679	1917407	0.19	2000	>RL
205	Tl	209	0.550	12224	0.94	2000	
208	Pb	209	37.649	582614	0.44	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1089421	1.11	1262119	86.32	70	120	
72	Ge	671166	0.70	801025	83.79	70	120	
115	In	6503658	0.58	7659162	84.91	70	120	
209	Bi	13594789	1.35	15802225	86.03	70	120	

Sample Report

Date Acquired	11/16/16 4:36 PM	Sample Name	1611044-04A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	158SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	75.393	2957	0.49	2000	>RL
9	Be	45	1.809	87	14.94	2000	>RL
11	B	45	139.468	3083	7.65	2000	>RL
23	Na	45	6426.927	5427888	1.70	25000	>RL
24	Mg	45	10443.378	4663594	0.12	25000	>RL
27	Al	45	50430.095	9090724	3.03	10000	OUTCAL
39	K	45	7300.173	3283426	0.29	25000	>RL
44	Ca	45	277918.387	7218239	0.38	25000	OUTCAL
47	Ti	45	175.139	25771	2.64	2000	>RL
51	V	45	84.685	368051	0.08	2000	>RL
52	Cr	45	57.524	288318	1.25	2000	>RL
55	Mn	45	228.464	732881	0.84	2000	>RL
56	Fe	45	53821.924	233306124	0.28	10000	OUTCAL
59	Co	72	17.738	130764	1.17	2000	>RL
60	Ni	72	25.482	49705	0.62	2000	>RL
63	Cu	72	8.981	49238	0.77	2000	>RL
66	Zn	72	130.405	124545	1.40	2000	>RL
75	As	72	17.926	13374	1.19	2000	>RL
78	Se	72	2.909	247	9.19	2000	>RL
88	Sr	115	907.944	3960098	0.85	2000	>RL
95	Mo	115	4.638	14420	2.26	2000	>RL
107	Ag	115	0.042	453	17.65	500	
111	Cd	115	0.134	201	16.69	2000	
118	Sn	115	5.354	18444	3.29	2000	>RL
121	Sb	115	0.330	1980	2.31	500	
137	Ba	115	575.489	931270	0.26	2000	>RL
205	Tl	209	0.362	7865	0.72	2000	
208	Pb	209	33.168	500757	1.45	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1055318	0.29	1262119	83.61	70	120	
72	Ge	662825	0.50	801025	82.75	70	120	
115	In	6458746	0.97	7659162	84.33	70	120	
209	Bi	13260264	1.04	15802225	83.91	70	120	

Sample Report

Date Acquired	11/16/16 4:38 PM	Sample Name	1611044-05A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	159SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	58.347	2326	2.73	2000	>RL
9	Be	45	2.571	126	7.14	2000	>RL
11	B	45	80.381	1845	3.90	2000	>RL
23	Na	45	1183.285	1066887	0.21	25000	>RL
24	Mg	45	12350.712	5598088	1.90	25000	>RL
27	Al	45	65655.697	12012429	0.93	10000	OUTCAL
39	K	45	15170.828	6857396	1.11	25000	>RL
44	Ca	45	56307.021	1484733	0.57	25000	OUTCAL
47	Ti	45	297.959	44499	1.42	2000	>RL
51	V	45	98.856	435451	0.95	2000	>RL
52	Cr	45	68.166	346526	1.27	2000	>RL
55	Mn	45	642.304	2090868	0.83	2000	>RL
56	Fe	45	67121.510	295317002	0.93	10000	OUTCAL
59	Co	72	24.687	184185	1.54	2000	>RL
60	Ni	72	44.707	88043	0.59	2000	>RL
63	Cu	72	68.789	370300	0.67	2000	>RL
66	Zn	72	275.484	265442	0.44	2000	>RL
75	As	72	25.304	19011	1.44	2000	>RL
78	Se	72	4.620	341	9.07	2000	>RL
88	Sr	115	321.650	1414715	1.40	2000	>RL
95	Mo	115	3.517	11042	1.65	2000	>RL
107	Ag	115	0.168	1647	7.15	500	
111	Cd	115	0.718	1053	6.85	2000	>RL
118	Sn	115	7.507	25784	3.81	2000	>RL
121	Sb	115	7.183	35271	0.84	500	>RL
137	Ba	115	403.647	658569	0.48	2000	>RL
205	Tl	209	0.553	12117	1.00	2000	
208	Pb	209	298.236	4548688	0.72	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1071125	0.67	1262119	84.87	70	120	
72	Ge	670980	0.99	801025	83.77	70	120	
115	In	6513876	2.64	7659162	85.05	70	120	
209	Bi	13415132	0.57	15802225	84.89	70	120	

Sample Report

Date Acquired	11/16/16 4:40 PM	Sample Name	1611044-06A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	160SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	79.678	3219	2.32	2000	>RL
9	Be	45	3.336	166	5.75	2000	>RL
11	B	45	105.100	2418	4.27	2000	>RL
23	Na	45	7167.273	6230633	1.83	25000	>RL
24	Mg	45	17521.837	8062791	0.44	25000	>RL
27	Al	45	89401.341	16606284	0.68	10000	OUTCAL
39	K	45	18369.788	8416982	1.86	25000	>RL
44	Ca	45	89696.370	2400955	0.89	25000	OUTCAL
47	Ti	45	303.743	46054	0.70	2000	>RL
51	V	45	131.632	587415	0.52	2000	>RL
52	Cr	45	76.493	394593	1.17	2000	>RL
55	Mn	45	694.617	2295777	0.63	2000	>RL
56	Fe	45	82099.539	366724910	0.72	10000	OUTCAL
59	Co	72	30.668	228860	0.46	2000	>RL
60	Ni	72	52.802	103968	1.08	2000	>RL
63	Cu	72	28.038	152010	0.38	2000	>RL
66	Zn	72	251.185	242182	0.15	2000	>RL
75	As	72	27.541	20678	2.15	2000	>RL
78	Se	72	5.186	371	3.13	2000	>RL
88	Sr	115	385.546	1712775	0.89	2000	>RL
95	Mo	115	1.959	6250	1.95	2000	
107	Ag	115	0.118	1186	3.73	500	
111	Cd	115	0.540	802	2.09	2000	>RL
118	Sn	115	5.968	20856	1.20	2000	>RL
121	Sb	115	7.518	37262	1.59	500	>RL
137	Ba	115	471.623	777087	1.04	2000	>RL
205	Tl	209	0.710	15608	0.69	2000	
208	Pb	209	277.060	4242641	1.16	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1087520	0.58	1262119	86.17	70	120	
72	Ge	671197	0.46	801025	83.79	70	120	
115	In	6577538	1.53	7659162	85.88	70	120	
209	Bi	13469373	1.75	15802225	85.24	70	120	

Sample Report

Date Acquired	11/16/16 4:42 PM	Sample Name	1611044-07A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	161SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	83.709	3366	3.04	2000	>RL
9	Be	45	2.832	140	10.31	2000	>RL
11	B	45	141.183	3201	5.68	2000	>RL
23	Na	45	6550.043	5674448	0.72	25000	>RL
24	Mg	45	14910.371	6831456	1.90	25000	>RL
27	Al	45	62097.390	11483253	1.38	10000	OUTCAL
39	K	45	10130.266	4649963	1.07	25000	>RL
44	Ca	45	214067.984	5704535	1.31	25000	OUTCAL
47	Ti	45	206.580	31190	2.84	2000	>RL
51	V	45	131.240	583050	1.00	2000	>RL
52	Cr	45	57.712	296742	1.17	2000	>RL
55	Mn	45	454.919	1496925	0.90	2000	>RL
56	Fe	45	72250.229	321297898	0.92	10000	OUTCAL
59	Co	72	25.069	187254	0.47	2000	>RL
60	Ni	72	36.474	71974	1.05	2000	>RL
63	Cu	72	17.967	98110	0.12	2000	>RL
66	Zn	72	181.542	175409	1.06	2000	>RL
75	As	72	24.529	18458	1.84	2000	>RL
78	Se	72	4.380	329	6.87	2000	>RL
88	Sr	115	522.618	2287450	0.84	2000	>RL
95	Mo	115	1.740	5479	1.25	2000	
107	Ag	115	0.041	453	12.76	500	
111	Cd	115	0.402	591	8.47	2000	>RL
118	Sn	115	5.256	18182	2.18	2000	>RL
121	Sb	115	0.385	2254	7.41	500	
137	Ba	115	1532.530	2488760	1.03	2000	>RL
205	Tl	209	0.492	10740	3.10	2000	
208	Pb	209	32.406	492976	0.18	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1082733	0.87	1262119	85.79	70	120	
72	Ge	671766	0.40	801025	83.86	70	120	
115	In	6482841	2.03	7659162	84.64	70	120	
209	Bi	13359358	0.96	15802225	84.54	70	120	

Sample Report

Date Acquired	11/16/16 4:44 PM	Sample Name	1611044-08A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	162SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	91.826	3670	2.64	2000	>RL
9	Be	45	2.247	111	4.98	2000	>RL
11	B	45	186.555	4174	3.40	2000	>RL
23	Na	45	7266.855	6252873	1.23	25000	>RL
24	Mg	45	11558.216	5265391	2.04	25000	>RL
27	Al	45	55725.758	10247959	0.82	10000	OUTCAL
39	K	45	9342.916	4269204	0.83	25000	>RL
44	Ca	45	239229.323	6338884	1.91	25000	OUTCAL
47	Ti	45	175.917	26412	5.37	2000	>RL
51	V	45	93.898	415925	1.83	2000	>RL
52	Cr	45	55.553	284112	0.35	2000	>RL
55	Mn	45	260.230	851604	0.63	2000	>RL
56	Fe	45	56927.044	251745137	0.27	10000	OUTCAL
59	Co	72	30.993	232150	1.07	2000	>RL
60	Ni	72	27.450	54397	0.97	2000	>RL
63	Cu	72	9.531	53005	0.28	2000	>RL
66	Zn	72	144.198	139883	1.07	2000	>RL
75	As	72	18.963	14365	1.81	2000	>RL
78	Se	72	3.810	299	5.52	2000	>RL
88	Sr	115	880.417	3936947	0.18	2000	>RL
95	Mo	115	2.068	6635	3.62	2000	>RL
107	Ag	115	0.037	418	8.75	500	
111	Cd	115	0.151	232	14.45	2000	
118	Sn	115	5.198	18384	1.51	2000	>RL
121	Sb	115	0.374	2248	3.94	500	
137	Ba	115	478.836	794411	0.48	2000	>RL
205	Tl	209	0.374	8221	1.31	2000	
208	Pb	209	38.246	584183	1.10	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1076611	0.31	1262119	85.30	70	120	
72	Ge	673686	0.51	801025	84.10	70	120	
115	In	6621573	0.71	7659162	86.45	70	120	
209	Bi	13417574	0.81	15802225	84.91	70	120	

Sample Report

Date Acquired	11/16/16 4:46 PM	Sample Name	1611044-09A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	163SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	63.354	2569	3.66	2000	>RL
9	Be	45	2.546	127	16.16	2000	>RL
11	B	45	113.175	2601	6.06	2000	>RL
23	Na	45	1393.227	1266514	0.81	25000	>RL
24	Mg	45	13129.136	6054377	0.70	25000	>RL
27	Al	45	69417.416	12923588	1.38	10000	OUTCAL
39	K	45	15626.816	7185280	0.44	25000	>RL
44	Ca	45	55952.963	1501232	0.49	25000	OUTCAL
47	Ti	45	287.052	43616	1.78	2000	>RL
51	V	45	104.274	467110	0.63	2000	>RL
52	Cr	45	61.986	320739	0.14	2000	>RL
55	Mn	45	648.940	2149460	0.43	2000	>RL
56	Fe	45	68157.725	305133890	1.10	10000	OUTCAL
59	Co	72	26.234	197963	0.65	2000	>RL
60	Ni	72	42.141	83963	0.53	2000	>RL
63	Cu	72	47.710	260328	0.82	2000	>RL
66	Zn	72	271.165	264298	0.20	2000	>RL
75	As	72	23.978	18234	1.28	2000	>RL
78	Se	72	4.864	358	6.68	2000	>RL
88	Sr	115	412.522	1851316	0.95	2000	>RL
95	Mo	115	2.358	7582	1.61	2000	>RL
107	Ag	115	0.158	1588	6.03	500	
111	Cd	115	0.785	1175	4.41	2000	>RL
118	Sn	115	5.859	20695	2.50	2000	>RL
121	Sb	115	5.507	27684	0.93	500	>RL
137	Ba	115	428.662	713685	0.20	2000	>RL
205	Tl	209	0.563	12604	2.68	2000	
208	Pb	209	204.692	3191102	0.55	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1089895	0.83	1262119	86.35	70	120	
72	Ge	678682	0.44	801025	84.73	70	120	
115	In	6645019	0.98	7659162	86.76	70	120	
209	Bi	13711854	1.44	15802225	86.77	70	120	

Sample Report

Date Acquired	11/16/16 4:48 PM	Sample Name	1611044-10A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	164SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	81.373	3236	1.18	2000	>RL
9	Be	45	3.652	179	7.92	2000	>RL
11	B	45	110.730	2504	3.28	2000	>RL
23	Na	45	5846.562	5015507	1.49	25000	>RL
24	Mg	45	16747.118	7586932	0.22	25000	>RL
27	Al	45	85324.430	15602446	1.74	10000	OUTCAL
39	K	45	17362.901	7836394	0.76	25000	>RL
44	Ca	45	93167.026	2455292	0.64	25000	OUTCAL
47	Ti	45	304.266	45422	1.19	2000	>RL
51	V	45	127.308	559454	0.33	2000	>RL
52	Cr	45	74.560	378741	1.06	2000	>RL
55	Mn	45	658.809	2143737	0.42	2000	>RL
56	Fe	45	79366.927	349034893	0.86	10000	OUTCAL
59	Co	72	28.907	217225	0.71	2000	>RL
60	Ni	72	51.346	101808	0.12	2000	>RL
63	Cu	72	27.932	152492	0.94	2000	>RL
66	Zn	72	243.305	236234	0.20	2000	>RL
75	As	72	23.856	18066	0.91	2000	>RL
78	Se	72	5.236	376	5.86	2000	>RL
88	Sr	115	418.236	1817920	0.50	2000	>RL
95	Mo	115	1.990	6209	1.17	2000	
107	Ag	115	0.109	1080	8.18	500	
111	Cd	115	0.509	740	2.95	2000	>RL
118	Sn	115	6.102	20847	2.07	2000	>RL
121	Sb	115	1.616	8144	1.44	500	
137	Ba	115	543.686	876660	0.70	2000	>RL
205	Tl	209	0.663	14540	1.26	2000	
208	Pb	209	61.474	939484	0.51	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1070730	0.88	1262119	84.84	70	120	
72	Ge	675857	0.60	801025	84.37	70	120	
115	In	6435332	0.59	7659162	84.02	70	120	
209	Bi	13432024	0.92	15802225	85.00	70	120	

Sample Report

Date Acquired	11/16/16 4:50 PM	Sample Name	1611044-11A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	165SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	89.491	3570	4.71	2000	>RL
9	Be	45	2.443	120	10.10	2000	>RL
11	B	45	137.441	3096	2.64	2000	>RL
23	Na	45	6335.468	5450951	1.55	25000	>RL
24	Mg	45	15464.704	7031750	1.24	25000	>RL
27	Al	45	63740.456	11701480	0.19	10000	OUTCAL
39	K	45	9693.702	4419629	0.60	25000	>RL
44	Ca	45	294342.662	7784980	0.70	25000	OUTCAL
47	Ti	45	234.508	35145	1.39	2000	>RL
51	V	45	129.355	570552	0.45	2000	>RL
52	Cr	45	59.337	302820	0.67	2000	>RL
55	Mn	45	444.837	1452961	0.39	2000	>RL
56	Fe	45	71858.579	317207232	0.75	10000	OUTCAL
59	Co	72	31.558	234375	0.80	2000	>RL
60	Ni	72	38.759	76034	0.92	2000	>RL
63	Cu	72	17.016	92487	1.15	2000	>RL
66	Zn	72	169.902	163284	0.23	2000	>RL
75	As	72	25.891	19360	0.62	2000	>RL
78	Se	72	4.518	334	5.00	2000	>RL
88	Sr	115	607.533	2659939	0.22	2000	>RL
95	Mo	115	2.222	6976	2.57	2000	>RL
107	Ag	115	0.045	488	9.10	500	
111	Cd	115	0.458	671	9.01	2000	>RL
118	Sn	115	5.233	18114	1.30	2000	>RL
121	Sb	115	0.460	2616	3.76	500	
137	Ba	115	2522.300	4096720	0.59	2000	OUTCAL
205	Tl	209	0.494	10897	0.87	2000	
208	Pb	209	36.133	555175	0.58	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1074879	1.46	1262119	85.16	70	120	
72	Ge	667999	0.80	801025	83.39	70	120	
115	In	6483326	1.35	7659162	84.65	70	120	
209	Bi	13496488	1.31	15802225	85.41	70	120	

Sample Report

Date Acquired	11/16/16 4:52 PM	Sample Name	1611044-12A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	166SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	77.164	2982	2.67	2000	>RL
9	Be	45	1.711	81	21.59	2000	>RL
11	B	45	151.805	3298	2.35	2000	>RL
23	Na	45	7124.204	5922170	1.01	25000	>RL
24	Mg	45	11192.556	4925197	1.28	25000	>RL
27	Al	45	55437.181	9847706	0.40	10000	OUTCAL
39	K	45	7695.759	3407588	0.46	25000	>RL
44	Ca	45	262956.168	6729762	1.07	25000	OUTCAL
47	Ti	45	183.092	26549	0.94	2000	>RL
51	V	45	91.636	392149	0.57	2000	>RL
52	Cr	45	52.912	261442	0.64	2000	>RL
55	Mn	45	181.758	574592	0.41	2000	>RL
56	Fe	45	51203.249	218727311	1.04	10000	OUTCAL
59	Co	72	15.445	111148	0.50	2000	>RL
60	Ni	72	22.162	42235	1.16	2000	>RL
63	Cu	72	9.341	49921	0.33	2000	>RL
66	Zn	72	114.710	107025	1.44	2000	>RL
75	As	72	16.324	11909	1.74	2000	>RL
78	Se	72	3.134	253	7.74	2000	>RL
88	Sr	115	735.889	3185675	0.30	2000	>RL
95	Mo	115	2.055	6386	2.37	2000	>RL
107	Ag	115	0.037	404	9.12	500	
111	Cd	115	0.142	212	16.35	2000	
118	Sn	115	5.119	17538	0.61	2000	>RL
121	Sb	115	0.241	1541	3.31	500	
137	Ba	115	385.877	619764	0.19	2000	>RL
205	Tl	209	0.357	7606	2.56	2000	
208	Pb	209	32.574	482366	0.73	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1039947	0.58	1262119	82.40	70	120	
72	Ge	647006	0.76	801025	80.77	70	120	
115	In	6410221	0.84	7659162	83.69	70	120	
209	Bi	13003819	0.85	15802225	82.29	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/16/2016 16:54	Sample Name	CCV7-161116
Data Batch	161116.b	Comment	CCV ICPMS_TW
Data File Name	167_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.198	7811	1.51	200	99.6	90	110	
9	Be	45	211.084	10228	1.15	200	105.5	90	110	
11	B	45	217.190	4765	3.45	200	108.6	90	110	
23	Na	45	5150.840	4378478	0.62	5000	103.0	90	110	
24	Mg	45	5103.620	2287414	0.67	5000	102.1	90	110	
27	Al	45	5426.708	983312	0.90	5000	108.5	90	110	
39	K	45	5214.328	2371486	0.69	5000	104.3	90	110	
44	Ca	45	4935.933	129168	0.80	5000	98.7	90	110	
47	Ti	45	208.434	30779	0.53	200	104.2	90	110	
51	V	45	207.153	898120	0.68	200	103.6	90	110	
52	Cr	45	210.254	1053851	0.86	200	105.1	90	110	
55	Mn	45	206.781	665712	0.39	200	103.4	90	110	
56	Fe	45	5269.544	22930057	0.72	5000	105.4	90	110	
59	Co	72	210.723	1588881	0.59	200	105.4	90	110	
60	Ni	72	210.902	418792	0.53	200	105.5	90	110	
63	Cu	72	211.887	1149705	1.20	200	105.9	90	110	
66	Zn	72	215.986	210600	1.00	200	108.0	90	110	
75	As	72	218.706	164284	1.04	200	109.4	90	110	
78	Se	72	211.872	11446	1.42	200	105.9	90	110	
88	Sr	115	205.335	916501	0.27	200	102.7	90	110	
95	Mo	115	206.137	652273	0.48	200	103.1	90	110	
107	Ag	115	202.156	1932775	0.29	200	101.1	90	110	
111	Cd	115	208.573	307806	2.02	200	104.3	90	110	
118	Sn	115	205.368	695595	0.53	200	102.7	90	110	
121	Sb	115	207.642	1023289	0.68	200	103.8	90	110	
137	Ba	115	209.441	346739	1.25	200	104.7	90	110	
205	Tl	209	199.205	4433743	0.80	200	99.6	90	110	
208	Pb	209	202.091	3151911	0.89	200	101.0	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1059112	0.92	1262119	83.92	70	120	
72	Ge	678410	0.69	801025	84.69	70	120	
115	In	6596470	0.69	7659162	86.13	70	120	
209	Bi	13718894	1.25	15802225	86.82	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/16/2016 16:59	Sample Name	LCVL7-161116
Data Batch	161116.b	Comment	LCVLICPMS_TW
Data File Name	169LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.528	436	7.11	1	1052.8	70	130	Fail
9	Be	45	1.117	55	6.56	1	111.7	70	130	
11	B	45	27.188	691	6.42	20	135.9	70	130	Fail
23	Na	45	108.446	157032	1.16	100	108.4	70	130	
24	Mg	45	97.119	44901	1.03	100	97.1	70	130	
27	Al	45	160.519	31335	1.07	100	160.5	70	130	Fail
39	K	45	113.496	114520	0.57	100	113.5	70	130	
44	Ca	45	123.127	3793	5.98	100	123.1	70	130	
47	Ti	45	4.918	746	9.84	5	98.4	70	130	
51	V	45	0.725	6986	1.55	1	72.5	70	130	
52	Cr	45	5.139	27572	2.15	5	102.8	70	130	
55	Mn	45	5.345	17707	0.53	5	106.9	70	130	
56	Fe	45	106.728	480385	0.89	100	106.7	70	130	
59	Co	72	5.142	40267	1.09	5	102.8	70	130	
60	Ni	72	5.001	10602	0.67	5	100.0	70	130	
63	Cu	72	5.114	30509	1.20	5	102.3	70	130	
66	Zn	72	5.012	5877	3.60	5	100.2	70	130	
75	As	72	5.175	4272	3.10	5	103.5	70	130	
78	Se	72	5.688	417	8.37	5	113.8	70	130	
88	Sr	115	4.991	23568	2.23	5	99.8	70	130	
95	Mo	115	4.910	16157	1.34	5	98.2	70	130	
107	Ag	115	1.963	19492	0.16	2	98.2	70	130	
111	Cd	115	1.003	1541	3.56	1	100.3	70	130	
118	Sn	115	5.086	18588	0.93	5	101.7	70	130	
121	Sb	115	1.979	10504	2.85	2	98.9	70	130	
137	Ba	115	5.159	8884	2.07	5	103.2	70	130	
205	Tl	209	0.971	22290	1.45	1	97.1	70	130	
208	Pb	209	1.057	17879	2.26	1	105.7	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1076056	0.64	1262119	85.26	70	120	
72	Ge	702955	0.38	801025	87.76	70	120	
115	In	6837394	1.63	7659162	89.27	70	120	
209	Bi	14103546	2.11	15802225	89.25	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/16/2016 17:08	Sample Name	CCB7-161116
Data Batch	161116.b	Comment	CCB ICPMS_TW
Data File Name	170_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.117	14	44.7	2	5	
9	Be	45	0.020	1	100.0	0.4	0.3	
11	B	45	6.197	240	16.4	10	10	
23	Na	45	4.842	70958	0.9	50	100	
24	Mg	45	-0.400	522	8.3	50	100	
27	Al	45	0.775	2040	1.4	50	10	
39	K	45	7.939	69073	0.9	50	100	
44	Ca	45	2.043	604	3.5	50	100	
47	Ti	45	-0.036	2	86.6	4	3	
51	V	45	-0.320	2476	2.3	4	3	
52	Cr	45	-0.058	1178	8.3	2	2	
55	Mn	45	0.029	332	9.5	2	3	
56	Fe	45	0.829	12733	2.5	50	50	
59	Co	72	-0.002	82	37.7	2	3	
60	Ni	72	0.105	554	8.3	2	3	
63	Cu	72	-0.030	1686	6.0	2	2	
66	Zn	72	-0.333	513	6.7	4	2	
75	As	72	-0.104	175	7.4	2	2	
78	Se	72	0.262	119	11.8	1	2	
88	Sr	115	0.029	684	10.8	4	3	
95	Mo	115	0.019	149	2.6	2	2	
107	Ag	115	0.008	154	10.6	0.4	1	
111	Cd	115	0.005	18	57.3	0.4	0.3	
118	Sn	115	-0.029	704	7.3	4	3	
121	Sb	115	-0.021	317	26.1	2	0.8	
137	Ba	115	0.037	117	9.9	2	3	
205	Tl	209	0.004	181	7.0	2	0.5	
208	Pb	209	0.006	1092	4.4	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1108810	0.99	1262119	87.85	70	120	
72	Ge	725586	0.90	801025	90.58	70	120	
115	In	7107928	1.20	7659162	92.80	70	120	
209	Bi	14945402	0.98	15802225	94.58	70	120	

Pmoist
For

DHL Work Order
1611044

PMOIST_161109A
For

DHL Work Order
1611044

DHL Analytical, Inc.

Run ID: **PMOIST_161109A** **Run No.:** 88920

Analytical Run Date: 11/9/2016 **InstrumentID:** Pmoist

Analyst: Sydney Powers

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
1611044-14A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-15A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-18A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-21A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-01A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-06A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-11A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-16A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-21A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-26A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-31A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-36A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-41A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-01A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-04A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-08A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-11A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-16A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-21A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-14A DUP	1	PMOIST	DUP	77841	11/10/2016 8:00:00 AM		

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 2:18:41 PM**
Digestion: **Start: 11/9/2016 4:00:00 PM / Stop: 11/10/2016 8:00:00 AM**
Prep End Date: **11/10/2016 10:25:43 AM**

Prep Batch **77841** Prep Code: **PMOIST_PREP** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10	10	1.000	1 of 1	
1611044-14A DUP	Soil		10	10	1.000	of	
1611044-15A	Soil		10	10	1.000	1 of 1	
1611044-18A	Soil		10	10	1.000	1 of 1	
1611044-21A	Soil		10	10	1.000	1 of 1	
1611053-01A	Soil		10	10	1.000	1 of 1	
1611053-06A	Soil		10	10	1.000	1 of 1	
1611053-11A	Soil		10	10	1.000	1 of 1	
1611053-16A	Soil		10	10	1.000	1 of 1	
1611053-21A	Soil		10	10	1.000	1 of 1	
1611053-26A	Soil		10	10	1.000	1 of 1	
1611053-31A	Soil		10	10	1.000	1 of 1	
1611053-36A	Soil		10	10	1.000	1 of 1	
1611053-41A	Soil		10	10	1.000	1 of 1	
1611071-01A	Soil		10	10	1.000	1 of 1	
1611071-04A	Soil		10	10	1.000	1 of 1	
1611071-08A	Soil		10	10	1.000	1 of 1	
1611071-11A	Soil		10	10	1.000	1 of 1	
1611071-16A	Soil		10	10	1.000	1 of 1	
1611071-21A	Soil		10	10	1.000	1 of 1	

REVIEWED BY
By Janice Whitt at 12:36:12 PM, 11/10/2016

Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

RUN ID:	161109 PMOIST A				
Date Started:	11/9/16	Date Ended:	11/10/16	Date Ended:	
Time Started:	16:00	Time Ended:	8:00	Time Ended:	
Analyst Start:	[illegible]	Analyst End:	[illegible]	Analyst End:	
Balance #	20	Balance #	20	Balance #	
Oven #	FISHER-2	Thermometer #	81 (10/05/16)	Dry Time >12hrs	
		Correction Factor	0.0	2nd Weighing - if 1st dry is <12 hrs	
Initial Temperature	108.0	Final Temperature	108.2		

Sample ID	Tare Wt (g)	Tare + Sample (g)	Final Wt (g)	2nd Weight	<0.1% (Y/N)
SampID					
1611044-14A	1.00	12.23	9.73		
1611044-15A	1.02	12.38	10.35		
1611044-18A	0.97	12.11	10.00		
1611044-21A	0.97	12.49	10.31		
1611053-01A	0.98	12.08	10.66		
1611053-06A	1.02	12.36	11.48		
1611053-11A	1.02	12.27	10.75		
1611053-16A	0.98	12.28	11.48		
1611053-21A	0.98	12.21	10.51		
1611053-26A	0.98	12.27	11.78		
1611053-31A	0.97	12.14	11.39		
1611053-36A	0.97	12.28	11.36		
1611053-41A	0.98	12.52	11.12		
1611071-01A	0.98	12.01	10.71		
1611071-04A	0.98	12.65	11.78		
1611071-08A	0.97	12.44	10.58		
1611071-11A	0.99	12.31	11.66		
1611071-16A	0.97	12.28	11.78		
1611071-21A	0.98	12.59	11.93		
044-14A DUP	0.97	12.14	9.68		

Data Folder Contents	Review Items	Check	2nd Level Review
Hard Copies MUST match LIMS data			
1. Is the Prep Batch Report included?	Prep Start/End Dates SampAmt=10, FinVol=10 20 field samples/batch, 1 DUP/batch	X	x
2. Is the Run Log included?	Test Code, Sample Type Batch ID, and Analysis Date/Time	X	
3. Is PMOIST bench sheet included?	Bench sheet vs. LIMS - Single Analyte Worksheet	X	
4. Is the RPD for the DUP ≤30%?	If RPD fails criteria, then state reason below:	X	

Comments:

Analyst: [illegible] Date: 11/10/16

Second-Level Review: Janice Whitt Date: 11/10/2016

REVIEWED BY
By Janice Whitt at 12:39:22 PM, 11/10/2016

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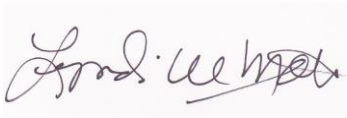

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70031 CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/4/2016 PAGE 1 OF 3
PO #: DHL WORK ORDER #: 1611053
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042850B1.0000 COLLECTOR: AC/DC 11/16 1650

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ (METHOD 8021)	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO (METHOD 8015) ❑ DRO (METHOD 8105) ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX11 ❑ Lead	PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑	CHLORIDE ❑ ANIONS ❑	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	Extract/Hold 11/22/16	Extract/Hold 11/22/16	Extract/Hold 11/22/16	FIELD NOTES
SGR-ROW13(0-0.5)	01	11/4/2016	0910	S	Jar	1				1		X							X											
SGR-ROW13(0.5-2)	02	11/4/2016	0911	S	Jar	1				1		X							X								✓			Hold
SGR-ROW13(2-4)	03	11/4/2016	0912	S	Jar	1				1		X							X						✓			✓		Hold
SGR-ROW13(4-6)	04	11/4/2016	0913	S	Jar	1				1		X							X						✓					Hold
SGR-ROW13(6-8)	05	11/4/2016	0914	S	Jar	1				1		X							X						✓					Hold
SGR-ROW14(0-0.5)	06	11/4/2016	0830	S	Jar	1				1		X							X											
SGR-ROW14(0.5-2)	07	11/4/2016	0831	S	Jar	1				1		X							X									✓			Hold
SGR-ROW14(2-4)	08	11/4/2016	0832	S	Jar	1				1		X							X						✓			✓		Hold
SGR-ROW14(4-6)	09	11/4/2016	0833	S	Jar	1				1		X							X						✓					Hold
SGR-ROW14(6-8)	10	11/4/2016	0834	S	Jar	1				1		X							X						✓					Hold
SGR-ROW15(0-0.5)	11	11/4/2016	1140	S	Jar	1				1		X							X											
SGR-ROW15(0.5-2)	12	11/4/2016	1141	S	Jar	1				1		X							X											Hold
SGR-ROW15(2-4)	13	11/4/2016	1142	S	Jar	1				1		X							X											Hold
SGR-ROW15(4-6)	14	11/4/2016	1143	S	Jar	1				1		X							X											Hold
SGR-ROW15(6-8)	15	11/4/2016	1144	S	Jar	1				1		X							X											Hold

Added per A Walter 11/14/16 -ERD

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	11/4/2016 1630	Picked up
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	11/5/16 730	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

~~LABORATORY USE ONLY~~ 11/22/16 1435
RECEIVING TEMP: 0.1, 1.4 THERM #: _____
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ❑ ~~FEDEX~~ ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

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№ 73139

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/4/2016 PAGE 2 OF 3
PO #: DHL WORK ORDER #: 1611053
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042B5081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC8270 ☐ PAH8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ Lead PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Extract / Hold 11/5/16 ☐
Extract / Hold plate 11/22/16 ☐
DATE 11/22/16

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
SGR-ROW16(0-0.5)	16	11/4/2016	1132	S	Jar	1				1		
SGR-ROW16(0.5-2)	17	11/4/2016	1133	S	Jar	1				1		Hold
SGR-ROW16(2-4)	18	11/4/2016	1134	S	Jar	1				1		Hold
SGR-ROW16(4-6)	19	11/4/2016	1135	S	Jar	1				1		Hold
SGR-ROW16(6-8)	20	11/4/2016	1136	S	Jar	1				1		Hold
SGR-ROW19(0-0.5)	21	11/4/2016	1015	S	Jar	1				1		
SGR-ROW19(0.5-2)	22	11/4/2016	1016	S	Jar	1				1		Hold
SGR-ROW19(2-4)	23	11/4/2016	1017	S	Jar	1				1		Hold
SGR-ROW19(4-6)	24	11/4/2016	1018	S	Jar	1				1		Hold
SGR-ROW19(6-8)	25	11/4/2016	1019	S	Jar	1				1		Hold
~~SGR-ROW19~~												AC 11/4/201
SGR-ROW20(0-0.5)	26	11/4/2016	1000	S	Jar	1				1		
SGR-ROW20(0.5-2)	27	11/4/2016	1001	S	Jar	1				1		Hold
SGR-ROW20(2-4)	28	11/4/2016	1002	S	Jar	1				1		Hold
SGR-ROW20(4-6)	29	11/4/2016	1003	S	Jar	1				1		Hold

RELINQUISHED BY: (Signature) DATE/TIME 11/4/2016 16:30 RECEIVED BY: (Signature) Added per Alex Walter, 11/14/16 - DKD
RELINQUISHED BY: (Signature) DATE/TIME 11/5/16 RECEIVED BY: (Signature) per Alex Walter 11/22/16 DKD
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY
RECEIVING TEMP: 2.1 1.4 THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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№ 70032

CHAIN-OF-CUSTODY

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PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/4/2016 PAGE 3 OF 3
PO #: DHL WORK ORDER #: 1611053
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ Lead PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Extract / Hold PAH 11/15/16 - afo
Extract / Hold PAH 11/22/16 - afo
PAH 11/22/16 - afo

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX	TPH 1005	GRO	VOC 8260	SVOC 8270	8270 PEST	8270 O-P PEST	8321 HERB	METALS 6020	RCRA	PH	CHLORIDE	TCLP-SVOC	TCLP-METALS	RCI	TDS	Extract / Hold PAH	Extract / Hold PAH	FIELD NOTES
SGR-ROW20(6-8)	30	11/4/2016	1004	S	Jar	1				1						X					X							✓			Hold
SGR-ROW21(0-0.5)	31	11/4/2016	1345	S	Jar	1				1						X					X										
SGR-ROW21(0.5-2)	32	11/4/2016	1346	S	Jar	1				1						X					X								✓		Hold
SGR-ROW21(2-4)	33	11/4/2016	1347	S	Jar	1				1						X					X							✓		✓	Hold
SGR-ROW21(4-6)	34	11/4/2016	1348	S	Jar	1				1						X					X							✓			Hold
SGR-ROW21(6-8)	35	11/4/2016	1349	S	Jar	1				1						X					X							✓			Hold
SGR-ROW22(0-0.5)	36	11/4/2016	1335	S	Jar	1				1						X					X										
SGR-ROW22(0.5-2)	37	11/4/2016	1336	S	Jar	1				1						X					X								✓		Hold
SGR-ROW22(2-4)	38	11/4/2016	1337	S	Jar	1				1						X					X							✓		✓	Hold
SGR-ROW22(4-6)	39	11/4/2016	1338	S	Jar	1				1						X					X							✓			Hold
SGR-ROW22(6-8)	40	11/4/2016	1339	S	Jar	1				1						X					X							✓			Hold
SGR-DUP02(20161104)	41	11/4/2016	—	S	Jar	1				1						X					X										
SGR-EBROW(20161104)	42	11/4/2016	1500	W	Bottles	2		1		1						X					X										

X added per A. Walter 11/14/16 - afo
X added outside HT per A Walter 11/22/16 - afo

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	11/4/16 16:30	[signature]
[signature]	11/5/16 930	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 0.1, 1.4 THERM #: 29
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/5/2016

Work Order Number 1611053 | Received by JB

Checklist completed by: _____ 11/7/2016 (Signature / Date) | Reviewed by _____ 11/7/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by JA
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-01
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:10 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	19.4	0.106	0.319	0.159		mg/Kg-dry	5	11/11/16 01:42 PM
IS: Bismuth	97.8	0	30-120	0		%REC	5	11/11/16 01:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.104	0.0568	0.114	0.0852	J	mg/Kg-dry	10	11/11/16 08:01 PM
Acenaphthylene	0.0852	0.0568	0.114	0.0852	U	mg/Kg-dry	10	11/11/16 08:01 PM
Anthracene	0.262	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[a]anthracene	2.52	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[a]pyrene	3.22	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[b]fluoranthene	2.99	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[e]pyrene	2.40	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[g,h,i]perylene	2.48	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[j]fluoranthene	1.40	0.0568	0.114	0.0852	N	mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[k]fluoranthene	1.49	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Chrysene	3.37	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Dibenz[a,h]anthracene	0.464	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Fluoranthene	4.33	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Fluorene	0.0852	0.0568	0.114	0.0852	U	mg/Kg-dry	10	11/11/16 08:01 PM
Indeno[1,2,3-cd]pyrene	2.48	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Phenanthrene	1.35	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Pyrene	3.84	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
IS: Acenaphthene-d10	82.5	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Chrysene-d12	89.5	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Naphthalene-d8	84.9	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Perylene-d12	98.6	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Phenanthrene-d10	83.3	0	50-200	0		%REC	10	11/11/16 08:01 PM
Surr: 2-Fluorobiphenyl	98.7	0	46-115	0		%REC	10	11/11/16 08:01 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-01
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:10 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	106	0	58-133	0		%REC	10	11/11/16 08:01 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	12.8	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-02
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:11 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	11.8		0.108	0.323	0.162		mg/Kg-dry	5	11/18/16 03:25 PM
IS: Bismuth	90.9		0	30-120	0		%REC	5	11/18/16 03:25 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0803	UJL	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Acenaphthylene	0.0803		0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Anthracene	0.0803		0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[a]anthracene	0.192	JL	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[a]pyrene	0.223		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[b]fluoranthene	0.210		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[e]pyrene	0.169		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[g,h,i]perylene	0.161		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[j]fluoranthene	0.105		0.0536	0.107	0.0803	JCN	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[k]fluoranthene	0.112		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Chrysene	0.210		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Dibenz[a,h]anthracene	0.0803	UJL	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Fluoranthene	0.336	JL	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Fluorene	0.0803	UJL	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Indeno[1,2,3-cd]pyrene	0.161	JL	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Phenanthrene	0.154		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Pyrene	0.288		0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
IS: Acenaphthene-d10	111		0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Chrysene-d12	101		0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Naphthalene-d8	117		0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Perylene-d12	98.3		0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Phenanthrene-d10	107		0	50-200	0		%REC	10	11/30/16 07:56 PM
Surr: 2-Fluorobiphenyl	82.8		0	46-115	0		%REC	10	11/30/16 07:56 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-02
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:11 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	77.5	0	58-133	0		%REC	10	11/30/16 07:56 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.89	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-03
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:12 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Acenaphthylene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Anthracene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[a]anthracene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[a]pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[b]fluoranthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[e]pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[g,h,i]perylene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[j]fluoranthene	0.0841	0.0561	0.112	0.0841	NU	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[k]fluoranthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Chrysene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Dibenz[a,h]anthracene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Fluoranthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Fluorene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Indeno[1,2,3-cd]pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Phenanthrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
IS: Acenaphthene-d10	87.2	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Chrysene-d12	78.9	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Naphthalene-d8	158	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Perylene-d12	74.5	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Phenanthrene-d10	83.8	0	50-200	0		%REC	10	11/23/16 02:22 PM
Surr: 2-Fluorobiphenyl	86.8	0	46-115	0		%REC	10	11/23/16 02:22 PM
Surr: 4-Terphenyl-d14	85.3	0	58-133	0		%REC	10	11/23/16 02:22 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	13.5	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-06
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:30 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	12.7	0.0995	0.298	0.149		mg/Kg-dry	5	11/11/16 01:44 PM
IS: Bismuth	97.5	0	30-120	0		%REC	5	11/11/16 01:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0789	0.0526	0.105	0.0789	U	mg/Kg-dry	10	11/11/16 08:29 PM
Acenaphthylene	0.0789	0.0526	0.105	0.0789	U	mg/Kg-dry	10	11/11/16 08:29 PM
Anthracene	0.113	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[a]anthracene	0.876	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[a]pyrene	1.06	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[b]fluoranthene	1.09	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[e]pyrene	0.813	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[g,h,i]perylene	0.830	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[j]fluoranthene	0.495	0.0526	0.105	0.0789	N	mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[k]fluoranthene	0.547	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Chrysene	1.24	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Dibenz[a,h]anthracene	0.166	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Fluoranthene	1.59	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Fluorene	0.0789	0.0526	0.105	0.0789	U	mg/Kg-dry	10	11/11/16 08:29 PM
Indeno[1,2,3-cd]pyrene	0.850	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Phenanthrene	0.601	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Pyrene	1.42	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
IS: Acenaphthene-d10	86.6	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Chrysene-d12	94.3	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Naphthalene-d8	90.4	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Phenanthrene-d10	86.7	0	50-200	0		%REC	10	11/11/16 08:29 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/11/16 08:29 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-06
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:30 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	109	0	58-133	0		%REC	10	11/11/16 08:29 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.76	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-07
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:31 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	8.58		0.0998	0.299	0.150		mg/Kg-dry	5	11/18/16 03:29 PM
IS: Bismuth	89.8		0	30-120	0		%REC	5	11/18/16 03:29 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0797	UJL	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Acenaphthylene	0.0797		0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Anthracene	0.0797		0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[a]anthracene	0.252	JL	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[a]pyrene	0.297		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[b]fluoranthene	0.281		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[e]pyrene	0.228		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[g,h,i]perylene	0.223		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[j]fluoranthene	0.146		0.0531	0.106	0.0797	CN	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[k]fluoranthene	0.154		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Chrysene	0.282		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Dibenz[a,h]anthracene	0.0797	UJL	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Fluoranthene	0.419	JL	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Fluorene	0.0797	UJL	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Indeno[1,2,3-cd]pyrene	0.219	JL	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Phenanthrene	0.181		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Pyrene	0.363		0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
IS: Acenaphthene-d10	112		0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Chrysene-d12	98.6		0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Naphthalene-d8	117		0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Perylene-d12	96.3		0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Phenanthrene-d10	108		0	50-200	0		%REC	10	11/30/16 06:04 PM
Surr: 2-Fluorobiphenyl	84.5		0	46-115	0		%REC	10	11/30/16 06:04 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-07
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:31 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	78.3	0	58-133	0		%REC	10	11/30/16 06:04 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	8.06	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-08
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:32 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Acenaphthylene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Anthracene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[a]anthracene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[a]pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[b]fluoranthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[e]pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[g,h,i]perylene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[j]fluoranthene	0.0823	0.0549	0.110	0.0823	NU	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[k]fluoranthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Chrysene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Dibenz[a,h]anthracene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Fluoranthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Fluorene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Indeno[1,2,3-cd]pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Phenanthrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
IS: Acenaphthene-d10	86.1	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Chrysene-d12	75.6	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Naphthalene-d8	155	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Perylene-d12	73.4	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Phenanthrene-d10	82.1	0	50-200	0		%REC	10	11/23/16 02:51 PM
Surr: 2-Fluorobiphenyl	85.8	0	46-115	0		%REC	10	11/23/16 02:51 PM
Surr: 4-Terphenyl-d14	83.1	0	58-133	0		%REC	10	11/23/16 02:51 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.93	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW15(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-11
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:40 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	14.1	0.112	0.337	0.168		mg/Kg-dry	5	11/11/16 01:46 PM
IS: Bismuth	96.0	0	30-120	0		%REC	5	11/11/16 01:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Acenaphthylene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[a]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[a]pyrene	0.0719	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[b]fluoranthene	0.0706	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[e]pyrene	0.0618	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[g,h,i]perylene	0.0634	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[j]fluoranthene	0.0850	0.0567	0.113	0.0850	NU	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[k]fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Chrysene	0.0571	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Dibenz[a,h]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Fluoranthene	0.0850	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Fluorene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Indeno[1,2,3-cd]pyrene	0.0605	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Phenanthrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Pyrene	0.0823	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
IS: Acenaphthene-d10	83.1	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Chrysene-d12	90.0	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Naphthalene-d8	85.3	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Phenanthrene-d10	83.6	0	50-200	0		%REC	10	11/11/16 08:57 PM
Surr: 2-Fluorobiphenyl	95.2	0	46-115	0		%REC	10	11/11/16 08:57 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW15(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-11
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:40 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	107	0	58-133	0		%REC	10	11/11/16 08:57 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	13.5	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW16(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-16
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:32 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.30	0.0978	0.294	0.147		mg/Kg-dry	5	11/11/16 01:30 PM
IS: Bismuth	95.4	0	30-120	0		%REC	5	11/11/16 01:30 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Acenaphthylene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Anthracene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[a]anthracene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[a]pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[b]fluoranthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[e]pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[g,h,i]perylene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[j]fluoranthene	0.0787	0.0525	0.105	0.0787	NU	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[k]fluoranthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Chrysene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Dibenz[a,h]anthracene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Fluoranthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Fluorene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Indeno[1,2,3-cd]pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Phenanthrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
IS: Acenaphthene-d10	81.1	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Chrysene-d12	86.9	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Naphthalene-d8	84.5	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Perylene-d12	96.8	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Phenanthrene-d10	81.5	0	50-200	0		%REC	10	11/11/16 09:25 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/11/16 09:25 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW16(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-16
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:32 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	111	0	58-133	0		%REC	10	11/11/16 09:25 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.08	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW19(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-21
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:15 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	19.2	0.114	0.343	0.172		mg/Kg-dry	5	11/11/16 01:48 PM
IS: Bismuth	97.2	0	30-120	0		%REC	5	11/11/16 01:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Acenaphthylene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Anthracene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[a]anthracene	0.232	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[a]pyrene	0.264	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[b]fluoranthene	0.270	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[e]pyrene	0.210	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[g,h,i]perylene	0.215	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[j]fluoranthene	0.121	0.0585	0.117	0.0878	N	mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[k]fluoranthene	0.122	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Chrysene	0.273	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Dibenz[a,h]anthracene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Fluoranthene	0.429	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Fluorene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Indeno[1,2,3-cd]pyrene	0.209	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Phenanthrene	0.179	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Pyrene	0.369	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
IS: Acenaphthene-d10	82.7	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Chrysene-d12	88.8	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Naphthalene-d8	87.1	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Perylene-d12	97.7	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Phenanthrene-d10	83.0	0	50-200	0		%REC	10	11/11/16 09:53 PM
Surr: 2-Fluorobiphenyl	98.6	0	46-115	0		%REC	10	11/11/16 09:53 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW19(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-21
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:15 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/11/16 09:53 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	15.1	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-26
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:00 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	18.5	0.0950	0.285	0.143		mg/Kg-dry	5	11/11/16 01:50 PM
IS: Bismuth	96.3	0	30-120	0		%REC	5	11/11/16 01:50 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0588	0.0505	0.101	0.0758	J	mg/Kg-dry	10	11/11/16 10:21 PM
Acenaphthylene	0.0758	0.0505	0.101	0.0758	U	mg/Kg-dry	10	11/11/16 10:21 PM
Anthracene	0.220	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[a]anthracene	2.04	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[a]pyrene	2.65	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[b]fluoranthene	2.51	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[e]pyrene	2.03	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[g,h,i]perylene	2.13	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[j]fluoranthene	1.20	0.0505	0.101	0.0758	N	mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[k]fluoranthene	1.25	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Chrysene	2.73	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Dibenz[a,h]anthracene	0.426	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Fluoranthene	3.37	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Fluorene	0.0758	0.0505	0.101	0.0758	U	mg/Kg-dry	10	11/11/16 10:21 PM
Indeno[1,2,3-cd]pyrene	2.15	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Phenanthrene	1.17	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Pyrene	2.96	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
IS: Acenaphthene-d10	85.4	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Chrysene-d12	92.8	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Naphthalene-d8	90.6	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Phenanthrene-d10	84.8	0	50-200	0		%REC	10	11/11/16 10:21 PM
Surr: 2-Fluorobiphenyl	99.6	0	46-115	0		%REC	10	11/11/16 10:21 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-26
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:00 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	111	0	58-133	0		%REC	10	11/11/16 10:21 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	4.34	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-27
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:01 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	10.5		0.103	0.310	0.155		mg/Kg-dry	5	11/18/16 03:31 PM
IS: Bismuth	88.5		0	30-120	0		%REC	5	11/18/16 03:31 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0762	UJL	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Acenaphthylene	0.0762		0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Anthracene	0.0762		0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[a]anthracene	0.329	JL	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[a]pyrene	0.411		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[b]fluoranthene	0.385		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[e]pyrene	0.313		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[g,h,i]perylene	0.293		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[j]fluoranthene	0.191		0.0508	0.102	0.0762	CN	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[k]fluoranthene	0.207		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Chrysene	0.386		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Dibenz[a,h]anthracene	0.0762	UJL	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Fluoranthene	0.516	JL	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Fluorene	0.0762	UJL	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Indeno[1,2,3-cd]pyrene	0.292	JL	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Phenanthrene	0.199		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Pyrene	0.448		0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
IS: Acenaphthene-d10	113		0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Chrysene-d12	101		0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Naphthalene-d8	118		0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Perylene-d12	97.8		0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Phenanthrene-d10	109		0	50-200	0		%REC	10	11/30/16 06:32 PM
Surr: 2-Fluorobiphenyl	79.4		0	46-115	0		%REC	10	11/30/16 06:32 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-27
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:01 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	73.5	0	58-133	0		%REC	10	11/30/16 06:32 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	6.95	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-28
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:02 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Acenaphthylene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Anthracene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[a]anthracene	0.108	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[a]pyrene	0.106	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[b]fluoranthene	0.107	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[e]pyrene	0.0850	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[g,h,i]perylene	0.0672	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[j]fluoranthene	0.0582	0.0546	0.109	0.0819	JN	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[k]fluoranthene	0.0575	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Chrysene	0.118	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
Dibenz[a,h]anthracene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Fluoranthene	0.201	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
Fluorene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Indeno[1,2,3-cd]pyrene	0.0701	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Phenanthrene	0.110	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
Pyrene	0.165	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
IS: Acenaphthene-d10	87.4	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Chrysene-d12	78.4	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Naphthalene-d8	157	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Perylene-d12	74.5	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Phenanthrene-d10	83.8	0	50-200	0		%REC	10	11/23/16 03:19 PM
Surr: 2-Fluorobiphenyl	83.9	0	46-115	0		%REC	10	11/23/16 03:19 PM
Surr: 4-Terphenyl-d14	83.1	0	58-133	0		%REC	10	11/23/16 03:19 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.30	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-31
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:45 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	35.4	0.0940	0.282	0.141		mg/Kg-dry	5	11/11/16 02:13 PM
IS: Bismuth	97.5	0	30-120	0		%REC	5	11/11/16 02:13 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0683	0.0501	0.100	0.0751	J	mg/Kg-dry	10	11/12/16 02:05 AM
Acenaphthylene	0.0649	0.0501	0.100	0.0751	J	mg/Kg-dry	10	11/12/16 02:05 AM
Anthracene	0.311	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[a]anthracene	7.16	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[a]pyrene	10.3	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[b]fluoranthene	11.3	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[e]pyrene	9.08	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[g,h,i]perylene	10.4	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[j]fluoranthene	5.20	0.0501	0.100	0.0751	N	mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[k]fluoranthene	5.58	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Chrysene	11.7	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Dibenz[a,h]anthracene	2.21	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Fluoranthene	15.2	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Fluorene	0.0627	0.0501	0.100	0.0751	J	mg/Kg-dry	10	11/12/16 02:05 AM
Indeno[1,2,3-cd]pyrene	11.1	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Phenanthrene	2.87	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Pyrene	13.1	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
IS: Acenaphthene-d10	83.6	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Chrysene-d12	90.6	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Naphthalene-d8	89.6	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Perylene-d12	99.2	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Phenanthrene-d10	82.9	0	50-200	0		%REC	10	11/12/16 02:05 AM
Surr: 2-Fluorobiphenyl	98.1	0	46-115	0		%REC	10	11/12/16 02:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-31
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:45 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/12/16 02:05 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	6.71	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-32
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:46 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	8.21	0.103	0.309	0.155		mg/Kg-dry	5	11/18/16 03:33 PM
IS: Bismuth	87.5	0	30-120	0		%REC	5	11/18/16 03:33 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0799 UJL	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Acenaphthylene	0.0799	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Anthracene	0.0799	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[a]anthracene	0.810 JL	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[a]pyrene	1.07	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[b]fluoranthene	1.13	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[e]pyrene	0.884	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[g,h,i]perylene	0.897	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[j]fluoranthene	0.527	0.0533	0.107	0.0799	CN	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[k]fluoranthene	0.554	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Chrysene	1.31	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Dibenz[a,h]anthracene	0.184	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Fluoranthene	1.50	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Fluorene	0.0799 UJL	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Indeno[1,2,3-cd]pyrene	0.947 JL	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Phenanthrene	0.385	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Pyrene	1.29	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
IS: Acenaphthene-d10	108	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Chrysene-d12	98.0	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Naphthalene-d8	114	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Perylene-d12	95.3	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Phenanthrene-d10	105	0	50-200	0		%REC	10	11/30/16 07:00 PM
Surr: 2-Fluorobiphenyl	80.4	0	46-115	0		%REC	10	11/30/16 07:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-32
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:46 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	74.9	0	58-133	0		%REC	10	11/30/16 07:00 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.36	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-33
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:47 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Acenaphthylene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Anthracene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[a]anthracene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[a]pyrene	0.0677	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[b]fluoranthene	0.0829	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[e]pyrene	0.0695	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[g,h,i]perylene	0.0749	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[j]fluoranthene	0.0856	0.0571	0.114	0.0856	NU	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[k]fluoranthene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Chrysene	0.0635	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Dibenz[a,h]anthracene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Fluoranthene	0.0772	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Fluorene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Indeno[1,2,3-cd]pyrene	0.0720	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Phenanthrene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Pyrene	0.0717	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
IS: Acenaphthene-d10	87.0	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Chrysene-d12	78.5	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Naphthalene-d8	156	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Perylene-d12	74.6	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Phenanthrene-d10	83.7	0	50-200	0		%REC	10	11/23/16 03:48 PM
Surr: 2-Fluorobiphenyl	84.9	0	46-115	0		%REC	10	11/23/16 03:48 PM
Surr: 4-Terphenyl-d14	81.2	0	58-133	0		%REC	10	11/23/16 03:48 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	14.8	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-36
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:35 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	28.1	0.102	0.305	0.153		mg/Kg-dry	5	11/11/16 02:15 PM
IS: Bismuth	98.4	0	30-120	0		%REC	5	11/11/16 02:15 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0828	0.0521	0.104	0.0781	J	mg/Kg-dry	10	11/12/16 02:33 AM
Acenaphthylene	0.0666	0.0521	0.104	0.0781	J	mg/Kg-dry	10	11/12/16 02:33 AM
Anthracene	0.312	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[a]anthracene	6.56	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[a]pyrene	8.59	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[b]fluoranthene	9.54	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[e]pyrene	7.50	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[g,h,i]perylene	8.41	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[j]fluoranthene	4.36	0.0521	0.104	0.0781	N	mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[k]fluoranthene	4.64	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Chrysene	10.3	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Dibenz[a,h]anthracene	1.84	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Fluoranthene	14.1	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Fluorene	0.0682	0.0521	0.104	0.0781	J	mg/Kg-dry	10	11/12/16 02:33 AM
Indeno[1,2,3-cd]pyrene	9.04	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Phenanthrene	2.74	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Pyrene	12.0	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
IS: Acenaphthene-d10	84.9	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Chrysene-d12	92.6	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Naphthalene-d8	91.2	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Phenanthrene-d10	84.2	0	50-200	0		%REC	10	11/12/16 02:33 AM
Surr: 2-Fluorobiphenyl	103	0	46-115	0		%REC	10	11/12/16 02:33 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-36
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:35 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	114	0	58-133	0		%REC	10	11/12/16 02:33 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	8.13	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-37
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:36 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	10.1		0.107	0.322	0.161		mg/Kg-dry	5	11/18/16 03:35 PM
IS: Bismuth	89.5		0	30-120	0		%REC	5	11/18/16 03:35 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0805	UJL	0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Acenaphthylene	0.0805		0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Anthracene	0.0805		0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[a]anthracene	0.740	JL	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[a]pyrene	1.05		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[b]fluoranthene	1.20		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[e]pyrene	0.919		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[g,h,i]perylene	0.974		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[j]fluoranthene	0.534		0.0536	0.107	0.0805	CN	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[k]fluoranthene	0.545		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Chrysene	1.29		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Dibenz[a,h]anthracene	0.200		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Fluoranthene	1.42		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Fluorene	0.0805	UJL	0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Indeno[1,2,3-cd]pyrene	1.02	JL	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Phenanthrene	0.278		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Pyrene	1.22		0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
IS: Acenaphthene-d10	112		0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Chrysene-d12	99.9		0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Naphthalene-d8	118		0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Perylene-d12	97.5		0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Phenanthrene-d10	108		0	50-200	0		%REC	10	11/30/16 08:52 PM
Surr: 2-Fluorobiphenyl	84.4		0	46-115	0		%REC	10	11/30/16 08:52 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-37
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:36 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	78.7	0	58-133	0		%REC	10	11/30/16 08:52 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.81	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-38
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:37 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Acenaphthylene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Anthracene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[a]anthracene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[a]pyrene	0.0597	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[b]fluoranthene	0.0716	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[e]pyrene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[g,h,i]perylene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[j]fluoranthene	0.0825	0.0550	0.110	0.0825	NU	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[k]fluoranthene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Chrysene	0.0630	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Dibenz[a,h]anthracene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Fluoranthene	0.0968	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Fluorene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Indeno[1,2,3-cd]pyrene	0.0552	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Phenanthrene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Pyrene	0.0842	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
IS: Acenaphthene-d10	84.5	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Chrysene-d12	75.5	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Naphthalene-d8	151	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Perylene-d12	71.9	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Phenanthrene-d10	80.9	0	50-200	0		%REC	10	11/23/16 04:17 PM
Surr: 2-Fluorobiphenyl	85.0	0	46-115	0		%REC	10	11/23/16 04:17 PM
Surr: 4-Terphenyl-d14	85.1	0	58-133	0		%REC	10	11/23/16 04:17 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	10.3	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP02(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-41
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	19.7	0.113	0.338	0.169		mg/Kg-dry	5	11/11/16 02:17 PM
IS: Bismuth	95.7	0	30-120	0		%REC	5	11/11/16 02:17 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0651	0.0540	0.108	0.0811	J	mg/Kg-dry	10	11/11/16 11:45 PM
Acenaphthylene	0.0811	0.0540	0.108	0.0811	U	mg/Kg-dry	10	11/11/16 11:45 PM
Anthracene	0.228	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[a]anthracene	1.89	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[a]pyrene	2.29	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[b]fluoranthene	2.13	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[e]pyrene	1.69	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[g,h,i]perylene	1.69	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[j]fluoranthene	1.03	0.0540	0.108	0.0811	N	mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[k]fluoranthene	1.04	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Chrysene	2.48	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Dibenz[a,h]anthracene	0.359	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Fluoranthene	3.18	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Fluorene	0.0811	0.0540	0.108	0.0811	U	mg/Kg-dry	10	11/11/16 11:45 PM
Indeno[1,2,3-cd]pyrene	1.73	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Phenanthrene	1.13	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Pyrene	2.78	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
IS: Acenaphthene-d10	83.6	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Chrysene-d12	91.5	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Naphthalene-d8	88.3	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Phenanthrene-d10	83.9	0	50-200	0		%REC	10	11/11/16 11:45 PM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/11/16 11:45 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP02(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-41
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	111	0	58-133	0		%REC	10	11/11/16 11:45 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	12.1	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBROW(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-42
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 03:00 PM
Lab Order:	1611053	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.000900	0.000300	0.00100	0.000900	U	mg/L	1	11/16/16 02:54 PM
IS: Bismuth	81.8	0	30-120	0		%REC	1	11/16/16 02:54 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Acenaphthylene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Anthracene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[a]anthracene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[a]pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[b]fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[e]pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[g,h,i]perylene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[j]fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	NU	mg/L	1	11/08/16 01:25 PM
Benzo[k]fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Chrysene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Dibenz[a,h]anthracene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Fluorene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Indeno[1,2,3-cd]pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Phenanthrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
IS: Acenaphthene-d10	102	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Chrysene-d12	103	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Naphthalene-d8	104	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Perylene-d12	107	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Phenanthrene-d10	101	0	50-200	0		%REC	1	11/08/16 01:25 PM
Surr: 2-Fluorobiphenyl	72.5	0	53-106	0		%REC	1	11/08/16 01:25 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBROW(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-42
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 03:00 PM
Lab Order:	1611053	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	83.8	0	58-132	0		%REC	1	11/08/16 01:25 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

December 02, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1611053

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 42 sample(s) on 11/5/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 5 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas & DoD Laboratory Certification Number: T104704211-16-17 & DoD-ELAP #L15-426

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Pmoist Raw Data 554

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№ 70031 CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/4/2016 PAGE 1 OF 3
PO #: DHL WORK ORDER #: 1611053
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042850B1.0000 COLLECTOR: AC/DC 11/16 1650

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ (METHOD 8021)	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO (METHOD 8015) ❑ DRO (METHOD 8105) ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX11 ❑ Lead	PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑	CHLORIDE ❑ ANIONS ❑	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	Extract/Hold 11/22/16	Extract/Hold 11/22/16	Extract/Hold 11/22/16	FIELD NOTES
SGR-ROW13(0-0.5)	01	11/4/2016	0910	S	Jar	1				1		X							X											
SGR-ROW13(0.5-2)	02	11/4/2016	0911	S	Jar	1				1		X							X								✓			Hold
SGR-ROW13(2-4)	03	11/4/2016	0912	S	Jar	1				1		X							X						✓			✓		Hold
SGR-ROW13(4-6)	04	11/4/2016	0913	S	Jar	1				1		X							X						✓					Hold
SGR-ROW13(6-8)	05	11/4/2016	0914	S	Jar	1				1		X							X						✓					Hold
SGR-ROW14(0-0.5)	06	11/4/2016	0830	S	Jar	1				1		X							X											
SGR-ROW14(0.5-2)	07	11/4/2016	0831	S	Jar	1				1		X							X									✓			Hold
SGR-ROW14(2-4)	08	11/4/2016	0832	S	Jar	1				1		X							X						✓			✓		Hold
SGR-ROW14(4-6)	09	11/4/2016	0833	S	Jar	1				1		X							X						✓					Hold
SGR-ROW14(6-8)	10	11/4/2016	0834	S	Jar	1				1		X							X						✓					Hold
SGR-ROW15(0-0.5)	11	11/4/2016	1140	S	Jar	1				1		X							X											
SGR-ROW15(0.5-2)	12	11/4/2016	1141	S	Jar	1				1		X							X											Hold
SGR-ROW15(2-4)	13	11/4/2016	1142	S	Jar	1				1		X							X											Hold
SGR-ROW15(4-6)	14	11/4/2016	1143	S	Jar	1				1		X							X											Hold
SGR-ROW15(6-8)	15	11/4/2016	1144	S	Jar	1				1		X							X											Hold

Added per A Walter 11/14/16 -ERD

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	11/4/2016 1630	Picked up
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	11/5/16 730	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

~~LABORATORY USE ONLY~~ 11/22/16 1435
RECEIVING TEMP: 0.1, 1.4 THERM #: _____
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ❑ ~~FEDEX~~ ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL ANALYTICAL
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№ 73139

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/4/2016 PAGE 2 OF 3
PO #: DHL WORK ORDER #: 1611053
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042B5081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC8270 ☐ PAH8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ Lead PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Extract / Hold 11/5/16 ☐
Extract / Hold plate 11/22/16 ☐
DATE 11/22/16

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
SGR-ROW16(0-0.5)	16	11/4/2016	1132	S	Jar	1				1		
SGR-ROW16(0.5-2)	17	11/4/2016	1133	S	Jar	1				1		Hold
SGR-ROW16(2-4)	18	11/4/2016	1134	S	Jar	1				1		Hold
SGR-ROW16(4-6)	19	11/4/2016	1135	S	Jar	1				1		Hold
SGR-ROW16(6-8)	20	11/4/2016	1136	S	Jar	1				1		Hold
SGR-ROW19(0-0.5)	21	11/4/2016	1015	S	Jar	1				1		
SGR-ROW19(0.5-2)	22	11/4/2016	1016	S	Jar	1				1		Hold
SGR-ROW19(2-4)	23	11/4/2016	1017	S	Jar	1				1		Hold
SGR-ROW19(4-6)	24	11/4/2016	1018	S	Jar	1				1		Hold
SGR-ROW19(6-8)	25	11/4/2016	1019	S	Jar	1				1		Hold
~~SGR-ROW19~~												AC 11/4/201
SGR-ROW20(0-0.5)	26	11/4/2016	1000	S	Jar	1				1		
SGR-ROW20(0.5-2)	27	11/4/2016	1001	S	Jar	1				1		Hold
SGR-ROW20(2-4)	28	11/4/2016	1002	S	Jar	1				1		Hold
SGR-ROW20(4-6)	29	11/4/2016	1003	S	Jar	1				1		Hold

RELINQUISHED BY: (Signature) DATE/TIME 11/4/2016 16:30 RECEIVED BY: (Signature) Added per Alex Walter, 11/14/16 - DKD
RELINQUISHED BY: (Signature) DATE/TIME 11/5/16 RECEIVED BY: (Signature) per Alex Walter 11/22/16 DKD
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY
RECEIVING TEMP: 2.1 1.4 THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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E-Mail: login@dhlanalytical.com

nelap

№ 70032

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/4/2016 PAGE 3 OF 3
PO #: DHL WORK ORDER #: 1611053
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT W=WATER SL=SLUDGE A=AIR O=OTHER L=LIQUID SO=SOLID SE=SEDIMENT

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ Lead PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ ☒ CHLORIDE ☐ ANIONS TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX	TPH 1005	GRO	VOC 8260	SVOC 8270	8270 PEST	8270 O-P PEST	8321 HERB	METALS 6020	RCRA	PH	CHLORIDE	TCLP-SVOC	TCLP-METALS	RCI	TDS	Extract / Hold PAH 11/15/16	Extract / Hold PAH 11/22/16 - afo	FIELD NOTES
SGR-ROW20(6-8)	30	11/4/2016	1004	S	Jar	1				1						X					X							✓			Hold
SGR-ROW21(0-0.5)	31	11/4/2016	1345	S	Jar	1				1						X					X										
SGR-ROW21(0.5-2)	32	11/4/2016	1346	S	Jar	1				1						X					X								✓		Hold
SGR-ROW21(2-4)	33	11/4/2016	1347	S	Jar	1				1						X					X							✓		✓	Hold
SGR-ROW21(4-6)	34	11/4/2016	1348	S	Jar	1				1						X					X							✓			Hold
SGR-ROW21(6-8)	35	11/4/2016	1349	S	Jar	1				1						X					X							✓			Hold
SGR-ROW22(0-0.5)	36	11/4/2016	1335	S	Jar	1				1						X					X										
SGR-ROW22(0.5-2)	37	11/4/2016	1336	S	Jar	1				1						X					X								✓		Hold
SGR-ROW22(2-4)	38	11/4/2016	1337	S	Jar	1				1						X					X							✓		✓	Hold
SGR-ROW22(4-6)	39	11/4/2016	1338	S	Jar	1				1						X					X							✓			Hold
SGR-ROW22(6-8)	40	11/4/2016	1339	S	Jar	1				1						X					X							✓			Hold
SGR-DUP02(20161104)	41	11/4/2016	—	S	Jar	1				1						X					X										
SGR-EBROW(20161104)	42	11/4/2016	1500	W	Bottles	2		1		1						X					X										

X added per A. Walter 11/14/16 - afo
X added outside HT per A Walter 11/22/16 - afo

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	11/4/16 16:30	[signature]
[signature]	11/5/16 930	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 0.1, 1.4 THERM #: 29
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER-ARCADIS

ROSEHILL OFFICE PARK I
8725 ROSEHILL RD STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 04NOV16
ACTWGT: 58.50 LB
CAD: 006994463/SSFE1.
DIMS: 24x13x13 IN

BILL THIRD PARTY

TO

DHL ANALYTIZAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 2

TRK# 0201 **7845 5728 7080**

MASTER

XO BSMA

SATURDAY 9:30A
FIRST OVERNIGHT

78664
TX-US **AUS**

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/4/2016
SIGNATURE

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER-ARCADIS

ROSEHILL OFFICE PARK I
8725 ROSEHILL RD STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 04NOV16
ACTWGT: 58.50 LB
CAD: 006994463/SSFE1722
DIMS: 24x13x13 IN

BILL THIRD PARTY

TO

DHL ANALYTIZAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 2

MPS# 0263 **7845 5728 7090**
Mstr# 7845 5728 7080 0201

XO BSMA

SATURDAY 9:30A
FIRST OVERNIGHT

78664
TX-US **AUS**

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/4/16
SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/5/2016

Work Order Number 1611053 | Received by JB

Checklist completed by: _____ 11/7/2016 (Signature / Date) | Reviewed by _____ 11/7/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by JA
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc.
Laboratory Review Checklist: Reportable Data

Project Name: Laredo SGR	**Date:** 12/02/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1611053
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?		X			**R3-01**
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?	X				
		7) Were % moisture (or solids) reported for all soil and sediment samples?	X				
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MQL?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		X			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: Laredo SGR | **Date:** 12/02/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1611053

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?		**X**			**S2-01**
		2) Were percent differences for each analyte within the method-required QC limits?	**X**				
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				**S5-02**
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on June 1-5, 2015. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director



Signature

12/02/16

Date

DHL Analytical, Inc. **Date:** *02-Dec-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611053

CASE NARRATIVE

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver. 5.0 and NELAC.

The "U" flag indicates the results for that sample are nondetect.

Samples were analyzed using the methods outlined in the following references:

Method SW8270D-LL - PAH Analysis (The compound Benzo[j]fluoranthene is not NELAC or DOD Certified)
Method SW6020A- Metals Analysis

Exception Report R1-01

Samples were received on and log-in performed on 11/5/2016. A total of 42 samples were received and 20 were analyzed. The samples arrived in good condition and were properly packaged. Analysis was added per the client's request on 11/14/2016 and 11/22/2016.

Exception Report R3-01

For PAH Analysis, five samples were extracted outside of the method specified holdtime, as per the client's request. These samples are "C" flagged in the Analytical Data Report. No further corrective action was taken.

Exception Report R7-03 and R7-04

For PAH Analysis, for soil batch 77875, the recoveries of up to six compounds for the Matrix Spike and Matrix Spike Duplicate (1611071-16 MS/MSD) were above of the method control limits. Additionally, the RPD of Fluoranthene for the Matrix Spike Duplicate (1611071-16 MSD) was above of the method control limit. These were flagged accordingly in the QC Summary Report. The recoveries of these compounds were within method control limits in the associated LCS. Client was informed and no further corrective action was taken.

Exception Report R10-01

For PAH Analysis, the samples were diluted due to observed color of extract; dilution meets project specifications.

The samples analyzed were discreet soil samples collected in 4 ounce soil containers and ISM process

not used, as per project specs.

Exception Report S2-01

For PAH Analysis, performed on 11/11/2016, the Matrix Spike Duplicate (1611071-16 MSD) and the ending Continuing Calibration Verification (CCV1-16111) were analyzed less than one hour outside of the method specified 12-hour window. All of the field sample were analyzed within the method specified 12-hour window. Client was informed and no further corrective action was taken.

Exception Report S5-02

For PAH Analysis, some samples and/or standards were manually integrated. Please refer to pages in each set of raw data for the full list of samples, standards, and the compounds that were manually integrated.

A summary of project communication follows:

The Subcontract Agreement No. D16-003 for Arcadis Project No. 04285081.0000.00043 was sent to DHL Analytical from client and signed on 1/6/2016, the contract for work signed and approved by both parties on 1/12/2016. A Modification No. 01-D16-003 was signed by both parties on 4/21/2016.

The bottlekit was requested from Alex Walters of Arcadis sent via email to John DuPont on 10/110/2016.
The following DHL Bottle Orders:
#7345 sent on 10/28/2016 via Lonestar Overnight Ground to arrive by 10/31/2016.
#7346 sent on 10/31/2016 via Lonestar Overnight Ground to arrive by 11/1/2016.
#7347 sent on 11/2/2016 via Lonestar Overnight Ground to arrive by 11/3/2016.

This sample delivery group arrives at DHL Analytical and Sample Summary was sent on 11/4/2016. Additional Sample Summary's sent on November 15 and 30, 2016. Associated shipping documents are kept in the project folder and/or client folder as part of the Administrative records filed in the QA office.

DHL project manager/qa staff discussed with client the following issues:
email communications 11/14/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding variance for tune frequency and some compounds for QC samples outside of the control limits. The client accepted the corrective action for the quality variances on 11/14/2016.
email communications 11/22/2016, 11/29-30/2016 - from A. O'Donnell to the Arcadis Kansas Laredo email group regarding extracting samples outside of the method specified holdtime. The client accepted the corrective action for the deviation from the method.

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611053

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1611053-01	SGR-ROW13(0-0.5)		11/04/16 09:10 AM	11/5/2016
1611053-02	SGR-ROW13(0.5-2)		11/04/16 09:11 AM	11/5/2016
1611053-03	SGR-ROW13(2-4)		11/04/16 09:12 AM	11/5/2016
1611053-04	SGR-ROW13(4-6)		11/04/16 09:13 AM	11/5/2016
1611053-05	SGR-ROW13(6-8)		11/04/16 09:14 AM	11/5/2016
1611053-06	SGR-ROW14(0-0.5)		11/04/16 08:30 AM	11/5/2016
1611053-07	SGR-ROW14(0.5-2)		11/04/16 08:31 AM	11/5/2016
1611053-08	SGR-ROW14(2-4)		11/04/16 08:32 AM	11/5/2016
1611053-09	SGR-ROW14(4-6)		11/04/16 08:33 AM	11/5/2016
1611053-10	SGR-ROW14(6-8)		11/04/16 08:34 AM	11/5/2016
1611053-11	SGR-ROW15(0-0.5)		11/04/16 11:40 AM	11/5/2016
1611053-12	SGR-ROW15(0.5-2)		11/04/16 11:41 AM	11/5/2016
1611053-13	SGR-ROW15(2-4)		11/04/16 11:42 AM	11/5/2016
1611053-14	SGR-ROW15(4-6)		11/04/16 11:43 AM	11/5/2016
1611053-15	SGR-ROW15(6-8)		11/04/16 11:44 AM	11/5/2016
1611053-16	SGR-ROW16(0-0.5)		11/04/16 11:32 AM	11/5/2016
1611053-17	SGR-ROW16(0.5-2)		11/04/16 11:33 AM	11/5/2016
1611053-18	SGR-ROW16(2-4)		11/04/16 11:34 AM	11/5/2016
1611053-19	SGR-ROW16(4-6)		11/04/16 11:35 AM	11/5/2016
1611053-20	SGR-ROW16(6-8)		11/04/16 11:36 AM	11/5/2016
1611053-21	SGR-ROW19(0-0.5)		11/04/16 10:15 AM	11/5/2016
1611053-22	SGR-ROW19(0.5-2)		11/04/16 10:16 AM	11/5/2016
1611053-23	SGR-ROW19(2-4)		11/04/16 10:17 AM	11/5/2016
1611053-24	SGR-ROW19(4-6)		11/04/16 10:18 AM	11/5/2016
1611053-25	SGR-ROW19(6-8)		11/04/16 10:19 AM	11/5/2016
1611053-26	SGR-ROW20(0-0.5)		11/04/16 10:00 AM	11/5/2016
1611053-27	SGR-ROW20(0.5-2)		11/04/16 10:01 AM	11/5/2016
1611053-28	SGR-ROW20(2-4)		11/04/16 10:02 AM	11/5/2016
1611053-29	SGR-ROW20(4-6)		11/04/16 10:03 AM	11/5/2016
1611053-30	SGR-ROW20(6-8)		11/04/16 10:04 AM	11/5/2016
1611053-31	SGR-ROW21(0-0.5)		11/04/16 01:45 PM	11/5/2016
1611053-32	SGR-ROW21(0.5-2)		11/04/16 01:46 PM	11/5/2016
1611053-33	SGR-ROW21(2-4)		11/04/16 01:47 PM	11/5/2016
1611053-34	SGR-ROW21(4-6)		11/04/16 01:48 PM	11/5/2016
1611053-35	SGR-ROW21(6-8)		11/04/16 01:49 PM	11/5/2016
1611053-36	SGR-ROW22(0-0.5)		11/04/16 01:35 PM	11/5/2016
1611053-37	SGR-ROW22(0.5-2)		11/04/16 01:36 PM	11/5/2016
1611053-38	SGR-ROW22(2-4)		11/04/16 01:37 PM	11/5/2016
1611053-39	SGR-ROW22(4-6)		11/04/16 01:38 PM	11/5/2016
1611053-40	SGR-ROW22(6-8)		11/04/16 01:39 PM	11/5/2016
1611053-41	SGR-DUP02(20161104)		11/04/16	11/5/2016
1611053-42	SGR-EBROW(20161104)		11/04/16 03:00 PM	11/5/2016

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611053-01A	SGR-ROW13(0-0.5)	11/04/16 09:10 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW13(0-0.5)	11/04/16 09:10 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW13(0-0.5)	11/04/16 09:10 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-02A	SGR-ROW13(0.5-2)	11/04/16 09:11 AM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW13(0.5-2)	11/04/16 09:11 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW13(0.5-2)	11/04/16 09:11 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611053-03A	SGR-ROW13(2-4)	11/04/16 09:12 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW13(2-4)	11/04/16 09:12 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611053-06A	SGR-ROW14(0-0.5)	11/04/16 08:30 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW14(0-0.5)	11/04/16 08:30 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW14(0-0.5)	11/04/16 08:30 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-07A	SGR-ROW14(0.5-2)	11/04/16 08:31 AM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW14(0.5-2)	11/04/16 08:31 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW14(0.5-2)	11/04/16 08:31 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611053-08A	SGR-ROW14(2-4)	11/04/16 08:32 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW14(2-4)	11/04/16 08:32 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611053-11A	SGR-ROW15(0-0.5)	11/04/16 11:40 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW15(0-0.5)	11/04/16 11:40 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW15(0-0.5)	11/04/16 11:40 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-16A	SGR-ROW16(0-0.5)	11/04/16 11:32 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW16(0-0.5)	11/04/16 11:32 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW16(0-0.5)	11/04/16 11:32 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-21A	SGR-ROW19(0-0.5)	11/04/16 10:15 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW19(0-0.5)	11/04/16 10:15 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW19(0-0.5)	11/04/16 10:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-26A	SGR-ROW20(0-0.5)	11/04/16 10:00 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW20(0-0.5)	11/04/16 10:00 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW20(0-0.5)	11/04/16 10:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611053-27A	SGR-ROW20(0.5-2)	11/04/16 10:01 AM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW20(0.5-2)	11/04/16 10:01 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW20(0.5-2)	11/04/16 10:01 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611053-28A	SGR-ROW20(2-4)	11/04/16 10:02 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW20(2-4)	11/04/16 10:02 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611053-31A	SGR-ROW21(0-0.5)	11/04/16 01:45 PM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW21(0-0.5)	11/04/16 01:45 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW21(0-0.5)	11/04/16 01:45 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-32A	SGR-ROW21(0.5-2)	11/04/16 01:46 PM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW21(0.5-2)	11/04/16 01:46 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW21(0.5-2)	11/04/16 01:46 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611053-33A	SGR-ROW21(2-4)	11/04/16 01:47 PM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW21(2-4)	11/04/16 01:47 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611053-36A	SGR-ROW22(0-0.5)	11/04/16 01:35 PM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW22(0-0.5)	11/04/16 01:35 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW22(0-0.5)	11/04/16 01:35 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-37A	SGR-ROW22(0.5-2)	11/04/16 01:36 PM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW22(0.5-2)	11/04/16 01:36 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW22(0.5-2)	11/04/16 01:36 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611053-38A	SGR-ROW22(2-4)	11/04/16 01:37 PM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW22(2-4)	11/04/16 01:37 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611053-41A	SGR-DUP02(20161104)	11/04/16	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-DUP02(20161104)	11/04/16	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-DUP02(20161104)	11/04/16	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611053-42A	SGR-EBROW(20161104)	11/04/16 03:00 PM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611053-42B	SGR-EBROW(20161104)	11/04/16 03:00 PM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/07/16 10:45 AM	77809

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611053-01A	SGR-ROW13(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 08:01 PM	GCMS6_161111C
	SGR-ROW13(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW13(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:42 PM	ICP-MS4_161111D
1611053-02A	SGR-ROW13(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 07:56 PM	GCMS6_161130A
	SGR-ROW13(0.5-2)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW13(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:25 PM	ICP-MS4_161118B
1611053-03A	SGR-ROW13(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 02:22 PM	GCMS8_161123A
	SGR-ROW13(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611053-06A	SGR-ROW14(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 08:29 PM	GCMS6_161111C
	SGR-ROW14(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW14(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:44 PM	ICP-MS4_161111D
1611053-07A	SGR-ROW14(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 06:04 PM	GCMS6_161130A
	SGR-ROW14(0.5-2)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW14(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:29 PM	ICP-MS4_161118B
1611053-08A	SGR-ROW14(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 02:51 PM	GCMS8_161123A
	SGR-ROW14(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611053-11A	SGR-ROW15(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 08:57 PM	GCMS6_161111C
	SGR-ROW15(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW15(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:46 PM	ICP-MS4_161111D
1611053-16A	SGR-ROW16(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 09:25 PM	GCMS6_161111C
	SGR-ROW16(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW16(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:30 PM	ICP-MS4_161111D
1611053-21A	SGR-ROW19(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 09:53 PM	GCMS6_161111C
	SGR-ROW19(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW19(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:48 PM	ICP-MS4_161111D
1611053-26A	SGR-ROW20(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 10:21 PM	GCMS6_161111C
	SGR-ROW20(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW20(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 01:50 PM	ICP-MS4_161111D

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611053-27A	SGR-ROW20(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 06:32 PM	GCMS6_161130A
	SGR-ROW20(0.5-2)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW20(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:31 PM	ICP-MS4_161118B
1611053-28A	SGR-ROW20(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 03:19 PM	GCMS8_161123A
	SGR-ROW20(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611053-31A	SGR-ROW21(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/12/16 02:05 AM	GCMS6_161111C
	SGR-ROW21(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW21(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:13 PM	ICP-MS4_161111D
1611053-32A	SGR-ROW21(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 07:00 PM	GCMS6_161130A
	SGR-ROW21(0.5-2)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW21(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:33 PM	ICP-MS4_161118B
1611053-33A	SGR-ROW21(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 03:48 PM	GCMS8_161123A
	SGR-ROW21(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611053-36A	SGR-ROW22(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/12/16 02:33 AM	GCMS6_161111C
	SGR-ROW22(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW22(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:15 PM	ICP-MS4_161111D
1611053-37A	SGR-ROW22(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 08:52 PM	GCMS6_161130A
	SGR-ROW22(0.5-2)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW22(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:35 PM	ICP-MS4_161118B
1611053-38A	SGR-ROW22(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 04:17 PM	GCMS8_161123A
	SGR-ROW22(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611053-41A	SGR-DUP02(20161104)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 11:45 PM	GCMS6_161111C
	SGR-DUP02(20161104)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-DUP02(20161104)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:17 PM	ICP-MS4_161111D
1611053-42A	SGR-EBROW(20161104)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 02:54 PM	ICP-MS3_161116A
1611053-42B	SGR-EBROW(20161104)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77809	1	11/08/16 01:25 PM	GCMS6_161108A

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-01
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:10 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	19.4	0.106	0.319	0.159		mg/Kg-dry	5	11/11/16 01:42 PM
IS: Bismuth	97.8	0	30-120	0		%REC	5	11/11/16 01:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.104	0.0568	0.114	0.0852	J	mg/Kg-dry	10	11/11/16 08:01 PM
Acenaphthylene	0.0852	0.0568	0.114	0.0852	U	mg/Kg-dry	10	11/11/16 08:01 PM
Anthracene	0.262	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[a]anthracene	2.52	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[a]pyrene	3.22	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[b]fluoranthene	2.99	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[e]pyrene	2.40	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[g,h,i]perylene	2.48	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[j]fluoranthene	1.40	0.0568	0.114	0.0852	N	mg/Kg-dry	10	11/11/16 08:01 PM
Benzo[k]fluoranthene	1.49	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Chrysene	3.37	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Dibenz[a,h]anthracene	0.464	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Fluoranthene	4.33	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Fluorene	0.0852	0.0568	0.114	0.0852	U	mg/Kg-dry	10	11/11/16 08:01 PM
Indeno[1,2,3-cd]pyrene	2.48	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Phenanthrene	1.35	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
Pyrene	3.84	0.0568	0.114	0.0852		mg/Kg-dry	10	11/11/16 08:01 PM
IS: Acenaphthene-d10	82.5	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Chrysene-d12	89.5	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Naphthalene-d8	84.9	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Perylene-d12	98.6	0	50-200	0		%REC	10	11/11/16 08:01 PM
IS: Phenanthrene-d10	83.3	0	50-200	0		%REC	10	11/11/16 08:01 PM
Surr: 2-Fluorobiphenyl	98.7	0	46-115	0		%REC	10	11/11/16 08:01 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-01
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:10 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	106	0	58-133	0		%REC	10	11/11/16 08:01 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	12.8	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-02
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:11 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.8	0.108	0.323	0.162		mg/Kg-dry	5	11/18/16 03:25 PM
IS: Bismuth	90.9	0	30-120	0		%REC	5	11/18/16 03:25 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0803	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Acenaphthylene	0.0803	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Anthracene	0.0803	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[a]anthracene	0.192	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[a]pyrene	0.223	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[b]fluoranthene	0.210	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[e]pyrene	0.169	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[g,h,i]perylene	0.161	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[j]fluoranthene	0.105	0.0536	0.107	0.0803	JCN	mg/Kg-dry	10	11/30/16 07:56 PM
Benzo[k]fluoranthene	0.112	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Chrysene	0.210	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Dibenz[a,h]anthracene	0.0803	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Fluoranthene	0.336	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Fluorene	0.0803	0.0536	0.107	0.0803	CU	mg/Kg-dry	10	11/30/16 07:56 PM
Indeno[1,2,3-cd]pyrene	0.161	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Phenanthrene	0.154	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
Pyrene	0.288	0.0536	0.107	0.0803	C	mg/Kg-dry	10	11/30/16 07:56 PM
IS: Acenaphthene-d10	111	0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Chrysene-d12	101	0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Naphthalene-d8	117	0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Perylene-d12	98.3	0	50-200	0		%REC	10	11/30/16 07:56 PM
IS: Phenanthrene-d10	107	0	50-200	0		%REC	10	11/30/16 07:56 PM
Surr: 2-Fluorobiphenyl	82.8	0	46-115	0		%REC	10	11/30/16 07:56 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-02
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:11 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	77.5	0	58-133	0		%REC	10	11/30/16 07:56 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.89	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW13(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-03
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 09:12 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Acenaphthylene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Anthracene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[a]anthracene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[a]pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[b]fluoranthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[e]pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[g,h,i]perylene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[j]fluoranthene	0.0841	0.0561	0.112	0.0841	NU	mg/Kg-dry	10	11/23/16 02:22 PM
Benzo[k]fluoranthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Chrysene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Dibenz[a,h]anthracene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Fluoranthene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Fluorene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Indeno[1,2,3-cd]pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Phenanthrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
Pyrene	0.0841	0.0561	0.112	0.0841	U	mg/Kg-dry	10	11/23/16 02:22 PM
IS: Acenaphthene-d10	87.2	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Chrysene-d12	78.9	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Naphthalene-d8	158	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Perylene-d12	74.5	0	50-200	0		%REC	10	11/23/16 02:22 PM
IS: Phenanthrene-d10	83.8	0	50-200	0		%REC	10	11/23/16 02:22 PM
Surr: 2-Fluorobiphenyl	86.8	0	46-115	0		%REC	10	11/23/16 02:22 PM
Surr: 4-Terphenyl-d14	85.3	0	58-133	0		%REC	10	11/23/16 02:22 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	13.5	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-06
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:30 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	12.7	0.0995	0.298	0.149		mg/Kg-dry	5	11/11/16 01:44 PM
IS: Bismuth	97.5	0	30-120	0		%REC	5	11/11/16 01:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0789	0.0526	0.105	0.0789	U	mg/Kg-dry	10	11/11/16 08:29 PM
Acenaphthylene	0.0789	0.0526	0.105	0.0789	U	mg/Kg-dry	10	11/11/16 08:29 PM
Anthracene	0.113	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[a]anthracene	0.876	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[a]pyrene	1.06	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[b]fluoranthene	1.09	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[e]pyrene	0.813	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[g,h,i]perylene	0.830	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[j]fluoranthene	0.495	0.0526	0.105	0.0789	N	mg/Kg-dry	10	11/11/16 08:29 PM
Benzo[k]fluoranthene	0.547	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Chrysene	1.24	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Dibenz[a,h]anthracene	0.166	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Fluoranthene	1.59	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Fluorene	0.0789	0.0526	0.105	0.0789	U	mg/Kg-dry	10	11/11/16 08:29 PM
Indeno[1,2,3-cd]pyrene	0.850	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Phenanthrene	0.601	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
Pyrene	1.42	0.0526	0.105	0.0789		mg/Kg-dry	10	11/11/16 08:29 PM
IS: Acenaphthene-d10	86.6	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Chrysene-d12	94.3	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Naphthalene-d8	90.4	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/11/16 08:29 PM
IS: Phenanthrene-d10	86.7	0	50-200	0		%REC	10	11/11/16 08:29 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/11/16 08:29 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-06
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:30 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	109	0	58-133	0		%REC	10	11/11/16 08:29 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.76	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-07
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:31 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	8.58	0.0998	0.299	0.150		mg/Kg-dry	5	11/18/16 03:29 PM
IS: Bismuth	89.8	0	30-120	0		%REC	5	11/18/16 03:29 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0797	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Acenaphthylene	0.0797	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Anthracene	0.0797	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[a]anthracene	0.252	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[a]pyrene	0.297	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[b]fluoranthene	0.281	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[e]pyrene	0.228	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[g,h,i]perylene	0.223	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[j]fluoranthene	0.146	0.0531	0.106	0.0797	CN	mg/Kg-dry	10	11/30/16 06:04 PM
Benzo[k]fluoranthene	0.154	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Chrysene	0.282	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Dibenz[a,h]anthracene	0.0797	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Fluoranthene	0.419	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Fluorene	0.0797	0.0531	0.106	0.0797	CU	mg/Kg-dry	10	11/30/16 06:04 PM
Indeno[1,2,3-cd]pyrene	0.219	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Phenanthrene	0.181	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
Pyrene	0.363	0.0531	0.106	0.0797	C	mg/Kg-dry	10	11/30/16 06:04 PM
IS: Acenaphthene-d10	112	0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Chrysene-d12	98.6	0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Naphthalene-d8	117	0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Perylene-d12	96.3	0	50-200	0		%REC	10	11/30/16 06:04 PM
IS: Phenanthrene-d10	108	0	50-200	0		%REC	10	11/30/16 06:04 PM
Surr: 2-Fluorobiphenyl	84.5	0	46-115	0		%REC	10	11/30/16 06:04 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-07
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:31 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	78.3	0	58-133	0		%REC	10	11/30/16 06:04 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	8.06	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW14(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-08
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 08:32 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Acenaphthylene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Anthracene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[a]anthracene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[a]pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[b]fluoranthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[e]pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[g,h,i]perylene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[j]fluoranthene	0.0823	0.0549	0.110	0.0823	NU	mg/Kg-dry	10	11/23/16 02:51 PM
Benzo[k]fluoranthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Chrysene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Dibenz[a,h]anthracene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Fluoranthene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Fluorene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Indeno[1,2,3-cd]pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Phenanthrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
Pyrene	0.0823	0.0549	0.110	0.0823	U	mg/Kg-dry	10	11/23/16 02:51 PM
IS: Acenaphthene-d10	86.1	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Chrysene-d12	75.6	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Naphthalene-d8	155	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Perylene-d12	73.4	0	50-200	0		%REC	10	11/23/16 02:51 PM
IS: Phenanthrene-d10	82.1	0	50-200	0		%REC	10	11/23/16 02:51 PM
Surr: 2-Fluorobiphenyl	85.8	0	46-115	0		%REC	10	11/23/16 02:51 PM
Surr: 4-Terphenyl-d14	83.1	0	58-133	0		%REC	10	11/23/16 02:51 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.93	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW15(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-11
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:40 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	14.1	0.112	0.337	0.168		mg/Kg-dry	5	11/11/16 01:46 PM
IS: Bismuth	96.0	0	30-120	0		%REC	5	11/11/16 01:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Acenaphthylene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[a]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[a]pyrene	0.0719	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[b]fluoranthene	0.0706	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[e]pyrene	0.0618	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[g,h,i]perylene	0.0634	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[j]fluoranthene	0.0850	0.0567	0.113	0.0850	NU	mg/Kg-dry	10	11/11/16 08:57 PM
Benzo[k]fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Chrysene	0.0571	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Dibenz[a,h]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Fluoranthene	0.0850	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Fluorene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Indeno[1,2,3-cd]pyrene	0.0605	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
Phenanthrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/11/16 08:57 PM
Pyrene	0.0823	0.0567	0.113	0.0850	J	mg/Kg-dry	10	11/11/16 08:57 PM
IS: Acenaphthene-d10	83.1	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Chrysene-d12	90.0	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Naphthalene-d8	85.3	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/11/16 08:57 PM
IS: Phenanthrene-d10	83.6	0	50-200	0		%REC	10	11/11/16 08:57 PM
Surr: 2-Fluorobiphenyl	95.2	0	46-115	0		%REC	10	11/11/16 08:57 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW15(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-11
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:40 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	107	0	58-133	0		%REC	10	11/11/16 08:57 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	13.5	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW16(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-16
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:32 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.30	0.0978	0.294	0.147		mg/Kg-dry	5	11/11/16 01:30 PM
IS: Bismuth	95.4	0	30-120	0		%REC	5	11/11/16 01:30 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Acenaphthylene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Anthracene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[a]anthracene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[a]pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[b]fluoranthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[e]pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[g,h,i]perylene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[j]fluoranthene	0.0787	0.0525	0.105	0.0787	NU	mg/Kg-dry	10	11/11/16 09:25 PM
Benzo[k]fluoranthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Chrysene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Dibenz[a,h]anthracene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Fluoranthene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Fluorene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Indeno[1,2,3-cd]pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Phenanthrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
Pyrene	0.0787	0.0525	0.105	0.0787	U	mg/Kg-dry	10	11/11/16 09:25 PM
IS: Acenaphthene-d10	81.1	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Chrysene-d12	86.9	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Naphthalene-d8	84.5	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Perylene-d12	96.8	0	50-200	0		%REC	10	11/11/16 09:25 PM
IS: Phenanthrene-d10	81.5	0	50-200	0		%REC	10	11/11/16 09:25 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/11/16 09:25 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW16(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-16
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 11:32 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	111	0	58-133	0		%REC	10	11/11/16 09:25 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.08	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW19(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-21
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:15 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	19.2	0.114	0.343	0.172		mg/Kg-dry	5	11/11/16 01:48 PM
IS: Bismuth	97.2	0	30-120	0		%REC	5	11/11/16 01:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Acenaphthylene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Anthracene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[a]anthracene	0.232	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[a]pyrene	0.264	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[b]fluoranthene	0.270	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[e]pyrene	0.210	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[g,h,i]perylene	0.215	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[j]fluoranthene	0.121	0.0585	0.117	0.0878	N	mg/Kg-dry	10	11/11/16 09:53 PM
Benzo[k]fluoranthene	0.122	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Chrysene	0.273	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Dibenz[a,h]anthracene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Fluoranthene	0.429	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Fluorene	0.0878	0.0585	0.117	0.0878	U	mg/Kg-dry	10	11/11/16 09:53 PM
Indeno[1,2,3-cd]pyrene	0.209	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Phenanthrene	0.179	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
Pyrene	0.369	0.0585	0.117	0.0878		mg/Kg-dry	10	11/11/16 09:53 PM
IS: Acenaphthene-d10	82.7	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Chrysene-d12	88.8	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Naphthalene-d8	87.1	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Perylene-d12	97.7	0	50-200	0		%REC	10	11/11/16 09:53 PM
IS: Phenanthrene-d10	83.0	0	50-200	0		%REC	10	11/11/16 09:53 PM
Surr: 2-Fluorobiphenyl	98.6	0	46-115	0		%REC	10	11/11/16 09:53 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW19(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-21
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:15 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/11/16 09:53 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	15.1	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-26
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:00 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	18.5	0.0950	0.285	0.143		mg/Kg-dry	5	11/11/16 01:50 PM
IS: Bismuth	96.3	0	30-120	0		%REC	5	11/11/16 01:50 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0588	0.0505	0.101	0.0758	J	mg/Kg-dry	10	11/11/16 10:21 PM
Acenaphthylene	0.0758	0.0505	0.101	0.0758	U	mg/Kg-dry	10	11/11/16 10:21 PM
Anthracene	0.220	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[a]anthracene	2.04	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[a]pyrene	2.65	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[b]fluoranthene	2.51	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[e]pyrene	2.03	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[g,h,i]perylene	2.13	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[j]fluoranthene	1.20	0.0505	0.101	0.0758	N	mg/Kg-dry	10	11/11/16 10:21 PM
Benzo[k]fluoranthene	1.25	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Chrysene	2.73	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Dibenz[a,h]anthracene	0.426	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Fluoranthene	3.37	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Fluorene	0.0758	0.0505	0.101	0.0758	U	mg/Kg-dry	10	11/11/16 10:21 PM
Indeno[1,2,3-cd]pyrene	2.15	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Phenanthrene	1.17	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
Pyrene	2.96	0.0505	0.101	0.0758		mg/Kg-dry	10	11/11/16 10:21 PM
IS: Acenaphthene-d10	85.4	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Chrysene-d12	92.8	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Naphthalene-d8	90.6	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/11/16 10:21 PM
IS: Phenanthrene-d10	84.8	0	50-200	0		%REC	10	11/11/16 10:21 PM
Surr: 2-Fluorobiphenyl	99.6	0	46-115	0		%REC	10	11/11/16 10:21 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-26
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:00 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	111	0	58-133	0		%REC	10	11/11/16 10:21 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	4.34	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-27
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:01 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	10.5	0.103	0.310	0.155		mg/Kg-dry	5	11/18/16 03:31 PM
IS: Bismuth	88.5	0	30-120	0		%REC	5	11/18/16 03:31 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0762	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Acenaphthylene	0.0762	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Anthracene	0.0762	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[a]anthracene	0.329	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[a]pyrene	0.411	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[b]fluoranthene	0.385	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[e]pyrene	0.313	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[g,h,i]perylene	0.293	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[j]fluoranthene	0.191	0.0508	0.102	0.0762	CN	mg/Kg-dry	10	11/30/16 06:32 PM
Benzo[k]fluoranthene	0.207	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Chrysene	0.386	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Dibenz[a,h]anthracene	0.0762	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Fluoranthene	0.516	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Fluorene	0.0762	0.0508	0.102	0.0762	CU	mg/Kg-dry	10	11/30/16 06:32 PM
Indeno[1,2,3-cd]pyrene	0.292	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Phenanthrene	0.199	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
Pyrene	0.448	0.0508	0.102	0.0762	C	mg/Kg-dry	10	11/30/16 06:32 PM
IS: Acenaphthene-d10	113	0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Chrysene-d12	101	0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Naphthalene-d8	118	0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Perylene-d12	97.8	0	50-200	0		%REC	10	11/30/16 06:32 PM
IS: Phenanthrene-d10	109	0	50-200	0		%REC	10	11/30/16 06:32 PM
Surr: 2-Fluorobiphenyl	79.4	0	46-115	0		%REC	10	11/30/16 06:32 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-27
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:01 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	73.5	0	58-133	0		%REC	10	11/30/16 06:32 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	6.95	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW20(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-28
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 10:02 AM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Acenaphthylene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Anthracene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[a]anthracene	0.108	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[a]pyrene	0.106	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[b]fluoranthene	0.107	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[e]pyrene	0.0850	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[g,h,i]perylene	0.0672	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[j]fluoranthene	0.0582	0.0546	0.109	0.0819	JN	mg/Kg-dry	10	11/23/16 03:19 PM
Benzo[k]fluoranthene	0.0575	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Chrysene	0.118	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
Dibenz[a,h]anthracene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Fluoranthene	0.201	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
Fluorene	0.0819	0.0546	0.109	0.0819	U	mg/Kg-dry	10	11/23/16 03:19 PM
Indeno[1,2,3-cd]pyrene	0.0701	0.0546	0.109	0.0819	J	mg/Kg-dry	10	11/23/16 03:19 PM
Phenanthrene	0.110	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
Pyrene	0.165	0.0546	0.109	0.0819		mg/Kg-dry	10	11/23/16 03:19 PM
IS: Acenaphthene-d10	87.4	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Chrysene-d12	78.4	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Naphthalene-d8	157	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Perylene-d12	74.5	0	50-200	0		%REC	10	11/23/16 03:19 PM
IS: Phenanthrene-d10	83.8	0	50-200	0		%REC	10	11/23/16 03:19 PM
Surr: 2-Fluorobiphenyl	83.9	0	46-115	0		%REC	10	11/23/16 03:19 PM
Surr: 4-Terphenyl-d14	83.1	0	58-133	0		%REC	10	11/23/16 03:19 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.30	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-31
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:45 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	35.4	0.0940	0.282	0.141		mg/Kg-dry	5	11/11/16 02:13 PM
IS: Bismuth	97.5	0	30-120	0		%REC	5	11/11/16 02:13 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0683	0.0501	0.100	0.0751	J	mg/Kg-dry	10	11/12/16 02:05 AM
Acenaphthylene	0.0649	0.0501	0.100	0.0751	J	mg/Kg-dry	10	11/12/16 02:05 AM
Anthracene	0.311	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[a]anthracene	7.16	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[a]pyrene	10.3	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[b]fluoranthene	11.3	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[e]pyrene	9.08	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[g,h,i]perylene	10.4	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[j]fluoranthene	5.20	0.0501	0.100	0.0751	N	mg/Kg-dry	10	11/12/16 02:05 AM
Benzo[k]fluoranthene	5.58	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Chrysene	11.7	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Dibenz[a,h]anthracene	2.21	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Fluoranthene	15.2	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Fluorene	0.0627	0.0501	0.100	0.0751	J	mg/Kg-dry	10	11/12/16 02:05 AM
Indeno[1,2,3-cd]pyrene	11.1	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Phenanthrene	2.87	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
Pyrene	13.1	0.0501	0.100	0.0751		mg/Kg-dry	10	11/12/16 02:05 AM
IS: Acenaphthene-d10	83.6	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Chrysene-d12	90.6	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Naphthalene-d8	89.6	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Perylene-d12	99.2	0	50-200	0		%REC	10	11/12/16 02:05 AM
IS: Phenanthrene-d10	82.9	0	50-200	0		%REC	10	11/12/16 02:05 AM
Surr: 2-Fluorobiphenyl	98.1	0	46-115	0		%REC	10	11/12/16 02:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-31
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:45 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/12/16 02:05 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	6.71	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-32
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:46 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	8.21	0.103	0.309	0.155		mg/Kg-dry	5	11/18/16 03:33 PM
IS: Bismuth	87.5	0	30-120	0		%REC	5	11/18/16 03:33 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0799	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Acenaphthylene	0.0799	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Anthracene	0.0799	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[a]anthracene	0.810	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[a]pyrene	1.07	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[b]fluoranthene	1.13	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[e]pyrene	0.884	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[g,h,i]perylene	0.897	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[j]fluoranthene	0.527	0.0533	0.107	0.0799	CN	mg/Kg-dry	10	11/30/16 07:00 PM
Benzo[k]fluoranthene	0.554	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Chrysene	1.31	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Dibenz[a,h]anthracene	0.184	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Fluoranthene	1.50	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Fluorene	0.0799	0.0533	0.107	0.0799	CU	mg/Kg-dry	10	11/30/16 07:00 PM
Indeno[1,2,3-cd]pyrene	0.947	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Phenanthrene	0.385	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
Pyrene	1.29	0.0533	0.107	0.0799	C	mg/Kg-dry	10	11/30/16 07:00 PM
IS: Acenaphthene-d10	108	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Chrysene-d12	98.0	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Naphthalene-d8	114	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Perylene-d12	95.3	0	50-200	0		%REC	10	11/30/16 07:00 PM
IS: Phenanthrene-d10	105	0	50-200	0		%REC	10	11/30/16 07:00 PM
Surr: 2-Fluorobiphenyl	80.4	0	46-115	0		%REC	10	11/30/16 07:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-32
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:46 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	74.9	0	58-133	0		%REC	10	11/30/16 07:00 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.36	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW21(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-33
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:47 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Acenaphthylene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Anthracene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[a]anthracene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[a]pyrene	0.0677	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[b]fluoranthene	0.0829	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[e]pyrene	0.0695	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[g,h,i]perylene	0.0749	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[j]fluoranthene	0.0856	0.0571	0.114	0.0856	NU	mg/Kg-dry	10	11/23/16 03:48 PM
Benzo[k]fluoranthene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Chrysene	0.0635	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Dibenz[a,h]anthracene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Fluoranthene	0.0772	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Fluorene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Indeno[1,2,3-cd]pyrene	0.0720	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
Phenanthrene	0.0856	0.0571	0.114	0.0856	U	mg/Kg-dry	10	11/23/16 03:48 PM
Pyrene	0.0717	0.0571	0.114	0.0856	J	mg/Kg-dry	10	11/23/16 03:48 PM
IS: Acenaphthene-d10	87.0	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Chrysene-d12	78.5	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Naphthalene-d8	156	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Perylene-d12	74.6	0	50-200	0		%REC	10	11/23/16 03:48 PM
IS: Phenanthrene-d10	83.7	0	50-200	0		%REC	10	11/23/16 03:48 PM
Surr: 2-Fluorobiphenyl	84.9	0	46-115	0		%REC	10	11/23/16 03:48 PM
Surr: 4-Terphenyl-d14	81.2	0	58-133	0		%REC	10	11/23/16 03:48 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	14.8	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-36
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:35 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	28.1	0.102	0.305	0.153		mg/Kg-dry	5	11/11/16 02:15 PM
IS: Bismuth	98.4	0	30-120	0		%REC	5	11/11/16 02:15 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0828	0.0521	0.104	0.0781	J	mg/Kg-dry	10	11/12/16 02:33 AM
Acenaphthylene	0.0666	0.0521	0.104	0.0781	J	mg/Kg-dry	10	11/12/16 02:33 AM
Anthracene	0.312	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[a]anthracene	6.56	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[a]pyrene	8.59	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[b]fluoranthene	9.54	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[e]pyrene	7.50	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[g,h,i]perylene	8.41	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[j]fluoranthene	4.36	0.0521	0.104	0.0781	N	mg/Kg-dry	10	11/12/16 02:33 AM
Benzo[k]fluoranthene	4.64	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Chrysene	10.3	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Dibenz[a,h]anthracene	1.84	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Fluoranthene	14.1	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Fluorene	0.0682	0.0521	0.104	0.0781	J	mg/Kg-dry	10	11/12/16 02:33 AM
Indeno[1,2,3-cd]pyrene	9.04	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Phenanthrene	2.74	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
Pyrene	12.0	0.0521	0.104	0.0781		mg/Kg-dry	10	11/12/16 02:33 AM
IS: Acenaphthene-d10	84.9	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Chrysene-d12	92.6	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Naphthalene-d8	91.2	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/12/16 02:33 AM
IS: Phenanthrene-d10	84.2	0	50-200	0		%REC	10	11/12/16 02:33 AM
Surr: 2-Fluorobiphenyl	103	0	46-115	0		%REC	10	11/12/16 02:33 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611053-36
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:35 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	114	0	58-133	0		%REC	10	11/12/16 02:33 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	8.13	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-37
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:36 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	10.1	0.107	0.322	0.161		mg/Kg-dry	5	11/18/16 03:35 PM
IS: Bismuth	89.5	0	30-120	0		%REC	5	11/18/16 03:35 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0805	0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Acenaphthylene	0.0805	0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Anthracene	0.0805	0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[a]anthracene	0.740	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[a]pyrene	1.05	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[b]fluoranthene	1.20	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[e]pyrene	0.919	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[g,h,i]perylene	0.974	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[j]fluoranthene	0.534	0.0536	0.107	0.0805	CN	mg/Kg-dry	10	11/30/16 08:52 PM
Benzo[k]fluoranthene	0.545	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Chrysene	1.29	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Dibenz[a,h]anthracene	0.200	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Fluoranthene	1.42	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Fluorene	0.0805	0.0536	0.107	0.0805	CU	mg/Kg-dry	10	11/30/16 08:52 PM
Indeno[1,2,3-cd]pyrene	1.02	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Phenanthrene	0.278	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
Pyrene	1.22	0.0536	0.107	0.0805	C	mg/Kg-dry	10	11/30/16 08:52 PM
IS: Acenaphthene-d10	112	0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Chrysene-d12	99.9	0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Naphthalene-d8	118	0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Perylene-d12	97.5	0	50-200	0		%REC	10	11/30/16 08:52 PM
IS: Phenanthrene-d10	108	0	50-200	0		%REC	10	11/30/16 08:52 PM
Surr: 2-Fluorobiphenyl	84.4	0	46-115	0		%REC	10	11/30/16 08:52 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611053-37
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:36 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	78.7	0	58-133	0		%REC	10	11/30/16 08:52 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.81	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW22(2-4)
Project:	Laredo SGR	**Lab ID:**	1611053-38
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 01:37 PM
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Acenaphthylene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Anthracene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[a]anthracene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[a]pyrene	0.0597	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[b]fluoranthene	0.0716	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[e]pyrene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[g,h,i]perylene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[j]fluoranthene	0.0825	0.0550	0.110	0.0825	NU	mg/Kg-dry	10	11/23/16 04:17 PM
Benzo[k]fluoranthene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Chrysene	0.0630	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Dibenz[a,h]anthracene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Fluoranthene	0.0968	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Fluorene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Indeno[1,2,3-cd]pyrene	0.0552	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
Phenanthrene	0.0825	0.0550	0.110	0.0825	U	mg/Kg-dry	10	11/23/16 04:17 PM
Pyrene	0.0842	0.0550	0.110	0.0825	J	mg/Kg-dry	10	11/23/16 04:17 PM
IS: Acenaphthene-d10	84.5	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Chrysene-d12	75.5	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Naphthalene-d8	151	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Perylene-d12	71.9	0	50-200	0		%REC	10	11/23/16 04:17 PM
IS: Phenanthrene-d10	80.9	0	50-200	0		%REC	10	11/23/16 04:17 PM
Surr: 2-Fluorobiphenyl	85.0	0	46-115	0		%REC	10	11/23/16 04:17 PM
Surr: 4-Terphenyl-d14	85.1	0	58-133	0		%REC	10	11/23/16 04:17 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	10.3	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP02(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-41
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	19.7	0.113	0.338	0.169		mg/Kg-dry	5	11/11/16 02:17 PM
IS: Bismuth	95.7	0	30-120	0		%REC	5	11/11/16 02:17 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0651	0.0540	0.108	0.0811	J	mg/Kg-dry	10	11/11/16 11:45 PM
Acenaphthylene	0.0811	0.0540	0.108	0.0811	U	mg/Kg-dry	10	11/11/16 11:45 PM
Anthracene	0.228	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[a]anthracene	1.89	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[a]pyrene	2.29	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[b]fluoranthene	2.13	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[e]pyrene	1.69	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[g,h,i]perylene	1.69	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[j]fluoranthene	1.03	0.0540	0.108	0.0811	N	mg/Kg-dry	10	11/11/16 11:45 PM
Benzo[k]fluoranthene	1.04	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Chrysene	2.48	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Dibenz[a,h]anthracene	0.359	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Fluoranthene	3.18	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Fluorene	0.0811	0.0540	0.108	0.0811	U	mg/Kg-dry	10	11/11/16 11:45 PM
Indeno[1,2,3-cd]pyrene	1.73	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Phenanthrene	1.13	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
Pyrene	2.78	0.0540	0.108	0.0811		mg/Kg-dry	10	11/11/16 11:45 PM
IS: Acenaphthene-d10	83.6	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Chrysene-d12	91.5	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Naphthalene-d8	88.3	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/11/16 11:45 PM
IS: Phenanthrene-d10	83.9	0	50-200	0		%REC	10	11/11/16 11:45 PM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/11/16 11:45 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DUP02(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-41
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16
Lab Order:	1611053	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	111	0	58-133	0		%REC	10	11/11/16 11:45 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	12.1	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *02-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBROW(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-42
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 03:00 PM
Lab Order:	1611053	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.000900	0.000300	0.00100	0.000900	U	mg/L	1	11/16/16 02:54 PM
IS: Bismuth	81.8	0	30-120	0		%REC	1	11/16/16 02:54 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Acenaphthylene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Anthracene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[a]anthracene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[a]pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[b]fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[e]pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[g,h,i]perylene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Benzo[j]fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	NU	mg/L	1	11/08/16 01:25 PM
Benzo[k]fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Chrysene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Dibenz[a,h]anthracene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Fluoranthene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Fluorene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Indeno[1,2,3-cd]pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Phenanthrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
Pyrene	0.0000629	0.0000393	0.0000786	0.0000629	U	mg/L	1	11/08/16 01:25 PM
IS: Acenaphthene-d10	102	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Chrysene-d12	103	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Naphthalene-d8	104	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Perylene-d12	107	0	50-200	0		%REC	1	11/08/16 01:25 PM
IS: Phenanthrene-d10	101	0	50-200	0		%REC	1	11/08/16 01:25 PM
Surr: 2-Fluorobiphenyl	72.5	0	53-106	0		%REC	1	11/08/16 01:25 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBROW(20161104)
Project:	Laredo SGR	**Lab ID:**	1611053-42
Project No:	04285081.0000.00043	**Collection Date:**	11/04/16 03:00 PM
Lab Order:	1611053	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	83.8	0	58-132	0		%REC	1	11/08/16 01:25 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161114B

Sample ID **DCS1-77661**	Batch ID: **77661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS3_161114B**	Analysis Date: **11/14/2016 3:31:00 PM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000473	0.00100	0.000500	0	94.6	80	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

The QC data in batch 77913 applies to the following samples: 1611053-42A

Sample ID	MB-77913	Batch ID:	77913	TestNo:	SW6020A	Units:	mg/L
SampType:	MBLK	Run ID:	ICP-MS3_161116A	Analysis Date:	11/16/2016 1:53:00 PM	Prep Date:	11/15/2016

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000900	0.00100								U
IS: Bismuth	0.200		0.200		79.8	30	120			

Sample ID	LCS-77913	Batch ID:	77913	TestNo:	SW6020A	Units:	mg/L
SampType:	LCS	Run ID:	ICP-MS3_161116A	Analysis Date:	11/16/2016 1:59:00 PM	Prep Date:	11/15/2016

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.193	0.00100	0.200	0	96.3	88	115			
IS: Bismuth	0.200		0.200		78.2	30	120			

Sample ID	LCSD-77913	Batch ID:	77913	TestNo:	SW6020A	Units:	mg/L
SampType:	LCSD	Run ID:	ICP-MS3_161116A	Analysis Date:	11/16/2016 2:05:00 PM	Prep Date:	11/15/2016

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	95.8	88	115	0.468	20	
IS: Bismuth	0.200		0.200		78.6	30	120	0	0	

Sample ID	1611028-26A SD	Batch ID:	77913	TestNo:	SW6020A	Units:	mg/L
SampType:	SD	Run ID:	ICP-MS3_161116A	Analysis Date:	11/16/2016 2:24:00 PM	Prep Date:	11/15/2016

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00450	0.00500	0	0				0	10	U
IS: Bismuth	1.00		0.200		82.0	30	120	0	0	

Sample ID	1611028-26A PDS	Batch ID:	77913	TestNo:	SW6020A	Units:	mg/L
SampType:	PDS	Run ID:	ICP-MS3_161116A	Analysis Date:	11/16/2016 3:06:00 PM	Prep Date:	11/15/2016

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.3	80	120			
IS: Bismuth	0.200		0.200		79.3	30	120			

Sample ID	1611028-26A MS	Batch ID:	77913	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS3_161116A	Analysis Date:	11/16/2016 3:12:00 PM	Prep Date:	11/15/2016

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.193	0.00100	0.200	0	96.6	88	115			
IS: Bismuth	0.200		0.200		79.2	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

Sample ID **1611028-26A MSD**	Batch ID: **77913**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:18:00 PM**	Prep Date: **11/15/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	95.8	88	115	0.728	20	
IS: Bismuth	0.200		0.200		78.0	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

Sample ID **ICV1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 12:10:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0979	0.00100	0.100	0	97.9	90	110			
IS: Bismuth	0.200		0.200		98.4	30	120			

Sample ID **ILCVL-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 12:22:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	106	90	110			
IS: Bismuth	0.200		0.200		77.7	30	120			

Sample ID **LCVL1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 1:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00107	0.00100	0.00100	0	107	80	120			
IS: Bismuth	0.200		0.200		79.3	30	120			

Sample ID **CCV2-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	106	90	110			
IS: Bismuth	0.200		0.200		78.2	30	120			

Sample ID **LCVL2-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		80.5	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160916A

Sample ID **DCS1-77170**	Batch ID: **77170**	TestNo: **SW6020A**	Units: **mg/Kg**		
SampType: **DCS**	Run ID: **ICP-MS4_160916A**	Analysis Date: **9/16/2016 12:15:00 PM**	Prep Date: **9/12/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.261	0.300	0.2500	0	104	80	120	0	0	
IS: Bismuth	50.0		200.0		104	70	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

The QC data in batch 77842 applies to the following samples: 1611053-01A, 1611053-06A, 1611053-11A, 1611053-16A, 1611053-21A, 1611053-26A, 1611053-31A, 1611053-36A, 1611053-41A

Sample ID **MB-77842** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:22:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		102	30	120			

Sample ID **LCS-77842** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:24:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.1	0.300	50.00	0	98.2	84	118			
IS: Bismuth	50.0		200.0		99.4	30	120			

Sample ID **LCSD-77842** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:26:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.7	0.300	50.00	0	99.3	84	118	1.08	20	
IS: Bismuth	50.0		200.0		98.4	30	120	0	0	

Sample ID **1611053-16A SD** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:32:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	8.36	1.47	0	8.297				0.693	10	
IS: Bismuth	245		195.7		98.7	30	120	0	0	

Sample ID **1611053-16A PDS** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:52:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	55.7	0.294	48.92	8.297	96.9	80	120			
IS: Bismuth	48.9		978.4		95.2	30	120			

Sample ID **1611053-16A MS** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:54:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	56.1	0.299	49.82	8.297	95.9	84	118			
IS: Bismuth	49.8		199.3		94.6	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **1611053-16A MSD** Batch ID: **77842** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **ICP-MS4_161111D** Analysis Date: **11/11/2016 1:56:00 PM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	56.5	0.296	49.37	8.297	97.7	84	118	0.776	20	
IS: Bismuth	49.4		197.5		91.5	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **ICV-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 10:18:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.101	0.00100	0.100	0	101	90	110			
IS: Bismuth	0.200		0.200		102	30	120			

Sample ID **LCVL-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 10:24:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00111	0.00100	0.00100	0	111	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV4-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.7	90	110			
IS: Bismuth	0.200		0.200		96.9	30	120			

Sample ID **LCVL4-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000981	0.00100	0.00100	0	98.1	80	120			
IS: Bismuth	0.200		0.200		98.5	30	120			

Sample ID **CCV5-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.3	90	110			
IS: Bismuth	0.200		0.200		97.5	30	120			

Sample ID **LCVL5-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00103	0.00100	0.00100	0	103	80	120			
IS: Bismuth	0.200		0.200		97.0	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **CCV6-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.7	90	110			
IS: Bismuth	0.200		0.200		99.0	30	120			

Sample ID **LCVL6-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00103	0.00100	0.00100	0	103	80	120			
IS: Bismuth	0.200		0.200		99.5	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

The QC data in batch 77967 applies to the following samples: 1611053-02A, 1611053-07A, 1611053-27A, 1611053-32A, 1611053-37A

Sample ID	**MB-77967**	Batch ID:	**77967**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**MBLK**	Run ID:	**ICP-MS4_161118B**	Analysis Date:	**11/18/2016 3:17:00 PM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		95.7	30	120			

Sample ID	**LCS-77967**	Batch ID:	**77967**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**LCS**	Run ID:	**ICP-MS4_161118B**	Analysis Date:	**11/18/2016 3:19:00 PM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	50.7	0.300	50.00	0	101	84	118			
IS: Bismuth	50.0		200.0		92.4	30	120			

Sample ID	**LCSD-77967**	Batch ID:	**77967**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**LCSD**	Run ID:	**ICP-MS4_161118B**	Analysis Date:	**11/18/2016 3:21:00 PM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	50.9	0.300	50.00	0	102	84	118	0.514	20	
IS: Bismuth	50.0		200.0		93.4	30	120	0	0	

Sample ID	**1611053-02A SD**	Batch ID:	**77967**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**SD**	Run ID:	**ICP-MS4_161118B**	Analysis Date:	**11/18/2016 3:27:00 PM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	11.7	1.62	0	11.78				0.720	10	
IS: Bismuth	269		215.5		95.5	30	120	0	0	

Sample ID	**1611053-02A PDS**	Batch ID:	**77967**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**PDS**	Run ID:	**ICP-MS4_161118B**	Analysis Date:	**11/18/2016 3:45:00 PM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	63.5	0.323	53.87	11.78	96.1	80	120			
IS: Bismuth	53.9		1077		92.0	30	120			

Sample ID	**1611053-02A MS**	Batch ID:	**77967**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**MS**	Run ID:	**ICP-MS4_161118B**	Analysis Date:	**11/18/2016 3:47:00 PM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	66.1	0.326	54.40	11.78	99.8	84	118			
IS: Bismuth	54.4		217.6		91.7	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

Sample ID **1611053-02A MSD**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:49:00 PM**	Prep Date: **11/17/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	66.5	0.323	53.87	11.78	102	84	118	0.623	20	
IS: Bismuth	53.9		215.5		89.8	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

Sample ID **ICV-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 11:57:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0987	0.00100	0.100	0	98.7	90	110			
IS: Bismuth	0.200		0.200		93.5	30	120			

Sample ID **LCVL-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 12:06:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000980	0.00100	0.00100	0	98.0	80	120			
IS: Bismuth	0.200		0.200		98.9	30	120			

Sample ID **CCV5-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.198	0.00100	0.200	0	99.2	90	110			
IS: Bismuth	0.200		0.200		89.8	30	120			

Sample ID **LCVL5-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000886	0.00100	0.00100	0	88.6	80	120			
IS: Bismuth	0.200		0.200		92.7	30	120			

Sample ID **CCV6-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.6	90	110			
IS: Bismuth	0.200		0.200		93.3	30	120			

Sample ID **LCVL6-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000936	0.00100	0.00100	0	93.6	80	120			
IS: Bismuth	0.200		0.200		92.0	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160830A

Sample ID **DCS-76975**	Batch ID: **76975**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **DCS**	Run ID: **GCMS6_160830A**	Analysis Date: **8/30/2016 11:07:00 AM**	Prep Date: **8/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.0000272	0.0000500	0.0000400	0	68.0	20	200	0	0	
Acenaphthylene	0.0000275	0.0000500	0.0000400	0	68.8	20	200	0	0	
Anthracene	0.0000302	0.0000500	0.0000400	0	75.6	20	200	0	0	
Benzo[a]anthracene	0.0000348	0.0000500	0.0000400	0	87.1	20	200	0	0	
Benzo[a]pyrene	0.0000353	0.0000500	0.0000400	0	88.2	20	200	0	0	
Benzo[b]fluoranthene	0.0000391	0.0000500	0.0000400	0	97.8	20	200	0	0	
Benzo[e]pyrene	0.0000366	0.0000500	0.0000400	0	91.4	20	200	0	0	
Benzo[g,h,i]perylene	0.0000294	0.0000500	0.0000400	0	73.4	20	200	0	0	
Benzo[j]fluoranthene	0.0000371	0.0000500	0.0000400	0	92.8	20	200	0	0	N
Benzo[k]fluoranthene	0.0000364	0.0000500	0.0000400	0	90.9	20	200	0	0	
Chrysene	0.0000339	0.0000500	0.0000400	0	84.8	20	200	0	0	
Dibenz[a,h]anthracene	0.0000297	0.0000500	0.0000400	0	74.3	20	200	0	0	
Fluoranthene	0.0000331	0.0000500	0.0000400	0	82.7	20	200	0	0	
Fluorene	0.0000281	0.0000500	0.0000400	0	70.3	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0000295	0.0000500	0.0000400	0	73.9	20	200	0	0	
Phenanthrene	0.0000334	0.0000500	0.0000400	0	83.5	20	200	0	0	
Pyrene	0.0000301	0.0000500	0.0000400	0	75.2	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161021A

Sample ID **DCS-77602**	Batch ID: **77602**	TestNo: **SW8270D-LL**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **GCMS6_161021A**	Analysis Date: **10/21/2016 5:02:00 PM**	Prep Date: **10/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00962	0.0100	0.01000	0	96.2	20	200	0	0	
Acenaphthylene	0.00967	0.0100	0.01000	0	96.7	20	200	0	0	
Anthracene	0.00913	0.0100	0.01000	0	91.3	20	200	0	0	
Benzo[a]anthracene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Benzo[a]pyrene	0.00921	0.0100	0.01000	0	92.1	20	200	0	0	
Benzo[b]fluoranthene	0.0100	0.0100	0.01000	0	100	20	200	0	0	
Benzo[e]pyrene	0.0105	0.0100	0.01000	0	105	20	200	0	0	
Benzo[g,h,i]perylene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Benzo[j]fluoranthene	0.0102	0.0100	0.01000	0	102	20	200	0	0	N
Benzo[k]fluoranthene	0.0100	0.0100	0.01000	0	100	20	200	0	0	
Chrysene	0.0103	0.0100	0.01000	0	103	20	200	0	0	
Dibenz[a,h]anthracene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Fluoranthene	0.0105	0.0100	0.01000	0	104	20	200	0	0	
Fluorene	0.0102	0.0100	0.01000	0	102	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0103	0.0100	0.01000	0	103	20	200	0	0	
Phenanthrene	0.0110	0.0100	0.01000	0	110	20	200	0	0	
Pyrene	0.0106	0.0100	0.01000	0	106	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

The QC data in batch 77809 applies to the following samples: 1611053-42B

Sample ID **LCS-77809** Batch ID: **77809** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS6_161108A** Analysis Date: **11/8/2016 10:05:00 AM** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00280	0.0000500	0.00400	0	70.1	48	114			
Acenaphthylene	0.00293	0.0000500	0.00400	0	73.4	35	121			
Anthracene	0.00322	0.0000500	0.00400	0	80.4	53	119			
Benzo[a]anthracene	0.00382	0.0000500	0.00400	0	95.5	59	120			
Benzo[a]pyrene	0.00369	0.0000500	0.00400	0	92.3	53	120			
Benzo[b]fluoranthene	0.00353	0.0000500	0.00400	0	88.3	53	126			
Benzo[e]pyrene	0.00374	0.0000500	0.00400	0	93.5	40	140			
Benzo[g,h,i]perylene	0.00361	0.0000500	0.00400	0	90.4	44	128			
Benzo[j]fluoranthene	0.00341	0.0000500	0.00400	0	85.3	45	124			N
Benzo[k]fluoranthene	0.00387	0.0000500	0.00400	0	96.8	54	125			
Chrysene	0.00386	0.0000500	0.00400	0	96.4	57	120			
Dibenz[a,h]anthracene	0.00367	0.0000500	0.00400	0	91.8	44	131			
Fluoranthene	0.00365	0.0000500	0.00400	0	91.2	58	120			
Fluorene	0.00304	0.0000500	0.00400	0	76.1	50	118			
Indeno[1,2,3-cd]pyrene	0.00372	0.0000500	0.00400	0	92.9	48	130			
Phenanthrene	0.00332	0.0000500	0.00400	0	82.9	53	115			
Pyrene	0.00355	0.0000500	0.00400	0	88.9	53	121			
IS: Acenaphthene-d10	0.00800		0.00800		103	50	200			
IS: Chrysene-d12	0.00800		0.00800		104	50	200			
IS: Naphthalene-d8	0.00800		0.00800		106	50	200			
IS: Perylene-d12	0.00800		0.00800		112	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		103	50	200			
Surr: 2-Fluorobiphenyl	5.47		8.000		68.4	53	106			
Surr: 4-Terphenyl-d14	6.56		8.000		82.0	58	132			

Sample ID **MB-77809** Batch ID: **77809** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS6_161108A** Analysis Date: **11/8/2016 10:37:00 AM** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.0000400	0.0000500								U
Acenaphthylene	0.0000400	0.0000500								U
Anthracene	0.0000400	0.0000500								U
Benzo[a]anthracene	0.0000400	0.0000500								U
Benzo[a]pyrene	0.0000400	0.0000500								U
Benzo[b]fluoranthene	0.0000400	0.0000500								U
Benzo[e]pyrene	0.0000400	0.0000500								U
Benzo[g,h,i]perylene	0.0000400	0.0000500								U
Benzo[j]fluoranthene	0.0000400	0.0000500								NU
Benzo[k]fluoranthene	0.0000400	0.0000500								U
Chrysene	0.0000400	0.0000500								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

Sample ID **MB-77809**	Batch ID: **77809**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 10:37:00 AM**	Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.0000400	0.0000500								U
Fluoranthene	0.0000400	0.0000500								U
Fluorene	0.0000400	0.0000500								U
Indeno[1,2,3-cd]pyrene	0.0000400	0.0000500								U
Phenanthrene	0.0000400	0.0000500								U
Pyrene	0.0000400	0.0000500								U
IS: Acenaphthene-d10	0.00800		0.00800		113	50	200			
IS: Chrysene-d12	0.00800		0.00800		118	50	200			
IS: Naphthalene-d8	0.00800		0.00800		115	50	200			
IS: Perylene-d12	0.00800		0.00800		125	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		110	50	200			
Surr: 2-Fluorobiphenyl	5.57		8.000		69.6	53	106			
Surr: 4-Terphenyl-d14	6.71		8.000		83.9	58	132			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

Sample ID **ICV-161108**	Batch ID: **R88889**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **ICV**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 9:37:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.27	0.0000500	2.00	0	113	80	120			
Acenaphthylene	2.34	0.0000500	2.00	0	117	80	120			
Anthracene	2.10	0.0000500	2.00	0	105	80	120			
Benzo[a]anthracene	2.29	0.0000500	2.00	0	115	80	120			
Benzo[a]pyrene	2.21	0.0000500	2.00	0	110	80	120			
Benzo[b]fluoranthene	2.30	0.0000500	2.00	0	115	80	120			
Benzo[e]pyrene	2.20	0.0000500	2.00	0	110	80	120			
Benzo[g,h,i]perylene	2.13	0.0000500	2.00	0	107	80	120			
Benzo[j]fluoranthene	2.18	0.0000500	2.00	0	109	80	120			N
Benzo[k]fluoranthene	2.04	0.0000500	2.00	0	102	80	120			
Chrysene	2.27	0.0000500	2.00	0	113	80	120			
Dibenz[a,h]anthracene	2.16	0.0000500	2.00	0	108	80	120			
Fluoranthene	2.23	0.0000500	2.00	0	112	80	120			
Fluorene	2.32	0.0000500	2.00	0	116	80	120			
Indeno[1,2,3-cd]pyrene	2.19	0.0000500	2.00	0	109	80	120			
Phenanthrene	2.10	0.0000500	2.00	0	105	80	120			
Pyrene	2.18	0.0000500	2.00	0	109	80	120			
IS: Acenaphthene-d10	4.00		4.00		95.7	50	200			
IS: Chrysene-d12	4.00		4.00		102	50	200			
IS: Naphthalene-d8	4.00		4.00		103	50	200			
IS: Perylene-d12	4.00		4.00		108	50	200			
IS: Phenanthrene-d10	4.00		4.00		98.6	50	200			
Surr: 2-Fluorobiphenyl	2380		2000		119	65	120			
Surr: 4-Terphenyl-d14	2340		2000		117	65	120			

Sample ID **CCV1-161108**	Batch ID: **R88889**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **CCV**	Run ID: **GCMS6_161108A**	Analysis Date: **11/8/2016 1:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.03	0.0000500	1.00	0	103	50	150			
Acenaphthylene	1.07	0.0000500	1.00	0	107	50	150			
Anthracene	1.01	0.0000500	1.00	0	101	50	150			
Benzo[a]anthracene	1.06	0.0000500	1.00	0	106	50	150			
Benzo[a]pyrene	1.02	0.0000500	1.00	0	102	50	150			
Benzo[b]fluoranthene	1.07	0.0000500	1.00	0	107	50	150			
Benzo[e]pyrene	1.02	0.0000500	1.00	0	102	50	150			
Benzo[g,h,i]perylene	0.995	0.0000500	1.00	0	99.5	50	150			
Benzo[j]fluoranthene	1.02	0.0000500	1.00	0	102	50	150			N
Benzo[k]fluoranthene	0.957	0.0000500	1.00	0	95.7	50	150			
Chrysene	1.06	0.0000500	1.00	0	106	50	150			
Dibenz[a,h]anthracene	0.999	0.0000500	1.00	0	99.9	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

Sample ID **CCV1-161108** Batch ID: **R88889** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **CCV** Run ID: **GCMS6_161108A** Analysis Date: **11/8/2016 1:53:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.06	0.0000500	1.00	0	106	50	150			
Fluorene	1.04	0.0000500	1.00	0	104	50	150			
Indeno[1,2,3-cd]pyrene	1.02	0.0000500	1.00	0	102	50	150			
Phenanthrene	1.02	0.0000500	1.00	0	102	50	150			
Pyrene	1.03	0.0000500	1.00	0	103	50	150			
IS: Acenaphthene-d10	4.00		4.00		105	50	200			
IS: Chrysene-d12	4.00		4.00		108	50	200			
IS: Naphthalene-d8	4.00		4.00		109	50	200			
IS: Perylene-d12	4.00		4.00		117	50	200			
IS: Phenanthrene-d10	4.00		4.00		105	50	200			
Surr: 2-Fluorobiphenyl	1080		1000		108	50	150			
Surr: 4-Terphenyl-d14	1100		1000		110	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

The QC data in batch 77875 applies to the following samples: 1611053-01A, 1611053-06A, 1611053-11A, 1611053-16A, 1611053-21A, 1611053-26A, 1611053-31A, 1611053-36A, 1611053-41A

Sample ID **LCS-77875** Batch ID: **77875** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161111C** Analysis Date: **11/11/2016 5:13:00 PM** Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.953	0.0100	1.000	0	95.3	44	111			
Acenaphthylene	0.976	0.0100	1.000	0	97.6	39	116			
Anthracene	0.916	0.0100	1.000	0	91.6	50	114			
Benzo[a]anthracene	0.980	0.0100	1.000	0	98.0	54	122			
Benzo[a]pyrene	0.891	0.0100	1.000	0	89.1	50	125			
Benzo[b]fluoranthene	0.935	0.0100	1.000	0	93.5	53	128			
Benzo[e]pyrene	0.951	0.0100	1.000	0	95.1	43	140			
Benzo[g,h,i]perylene	0.981	0.0100	1.000	0	98.1	49	127			
Benzo[j]fluoranthene	0.892	0.0100	1.000	0	89.2	45	125			N
Benzo[k]fluoranthene	0.922	0.0100	1.000	0	92.2	56	123			
Chrysene	1.01	0.0100	1.000	0	101	57	118			
Dibenz[a,h]anthracene	0.970	0.0100	1.000	0	97.0	50	129			
Fluoranthene	1.04	0.0100	1.000	0	104	55	119			
Fluorene	1.01	0.0100	1.000	0	101	47	114			
Indeno[1,2,3-cd]pyrene	0.987	0.0100	1.000	0	98.7	49	130			
Phenanthrene	0.991	0.0100	1.000	0	99.1	49	113			
Pyrene	1.02	0.0100	1.000	0	102	55	117			
IS: Acenaphthene-d10	4.00		4.000		91.4	50	200			
IS: Chrysene-d12	4.00		4.000		98.7	50	200			
IS: Naphthalene-d8	4.00		4.000		98.2	50	200			
IS: Perylene-d12	4.00		4.000		110	50	200			
IS: Phenanthrene-d10	4.00		4.000		92.3	50	200			
Surr: 2-Fluorobiphenyl	0.902		1.000		90.2	46	115			
Surr: 4-Terphenyl-d14	0.981		1.000		98.1	58	133			

Sample ID **MB-77875** Batch ID: **77875** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161111C** Analysis Date: **11/11/2016 5:41:00 PM** Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **MB-77875**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_161111C**	Analysis Date: **11/11/2016 5:41:00 PM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	0.00750	0.0100								U
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		85.8	50	200			
IS: Chrysene-d12	4.00		4.000		93.1	50	200			
IS: Naphthalene-d8	4.00		4.000		92.1	50	200			
IS: Perylene-d12	4.00		4.000		103	50	200			
IS: Phenanthrene-d10	4.00		4.000		86.6	50	200			
Surr: 2-Fluorobiphenyl	0.934		1.000		93.4	46	115			
Surr: 4-Terphenyl-d14	1.05		1.000		105	58	133			

Sample ID **1611071-16AMS**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:01:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.15	0.104	1.039	0	110	44	111			
Acenaphthylene	1.16	0.104	1.039	0	112	39	116			
Anthracene	1.16	0.104	1.039	0	112	50	114			
Benzo[a]anthracene	1.33	0.104	1.039	0.08309	120	54	122			
Benzo[a]pyrene	1.28	0.104	1.039	0.1136	112	50	125			
Benzo[b]fluoranthene	1.33	0.104	1.039	0.1160	117	53	128			
Benzo[e]pyrene	1.26	0.104	1.039	0.09519	112	43	140			
Benzo[g,h,i]perylene	1.27	0.104	1.039	0.09686	113	49	127			
Benzo[j]fluoranthene	1.12	0.104	1.039	0.05339	103	45	125			N
Benzo[k]fluoranthene	1.13	0.104	1.039	0.06146	103	56	123			
Chrysene	1.35	0.104	1.039	0.1026	120	57	118			S
Dibenz[a,h]anthracene	1.18	0.104	1.039	0	113	50	129			
Fluoranthene	1.64	0.104	1.039	0.1461	143	55	119			S
Fluorene	1.19	0.104	1.039	0	115	47	114			S
Indeno[1,2,3-cd]pyrene	1.29	0.104	1.039	0.09420	115	49	130			
Phenanthrene	1.35	0.104	1.039	0	130	49	113			S
Pyrene	1.56	0.104	1.039	0.1359	137	55	117			S
IS: Acenaphthene-d10	41.6		4.156		81.2	50	200			
IS: Chrysene-d12	41.6		4.156		88.1	50	200			
IS: Naphthalene-d8	41.6		4.156		88.2	50	200			
IS: Perylene-d12	41.6		4.156		97.5	50	200			
IS: Phenanthrene-d10	41.6		4.156		80.9	50	200			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **1611071-16AMS**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:01:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	1.05		1.039		101	46	115			
Surr: 4-Terphenyl-d14	1.16		1.039		111	58	133			

Sample ID **1611071-16AMSD**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:29:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.09	0.0995	0.9945	0	109	44	111	5.35	20	
Acenaphthylene	1.10	0.0995	0.9945	0	111	39	116	5.54	20	
Anthracene	1.07	0.0995	0.9945	0	107	50	114	8.24	20	
Benzo[a]anthracene	1.17	0.0995	0.9945	0.08309	110	54	122	12.5	20	
Benzo[a]pyrene	1.16	0.0995	0.9945	0.1136	105	50	125	9.97	20	
Benzo[b]fluoranthene	1.25	0.0995	0.9945	0.1160	114	53	128	6.13	20	
Benzo[e]pyrene	1.16	0.0995	0.9945	0.09519	107	43	140	8.28	20	
Benzo[g,h,i]perylene	1.18	0.0995	0.9945	0.09686	109	49	127	7.55	20	
Benzo[j]fluoranthene	1.04	0.0995	0.9945	0.05339	98.9	45	125	7.75	20	N
Benzo[k]fluoranthene	1.03	0.0995	0.9945	0.06146	97.2	56	123	9.67	20	
Chrysene	1.19	0.0995	0.9945	0.1026	110	57	118	12.2	20	
Dibenz[a,h]anthracene	1.12	0.0995	0.9945	0	112	50	129	5.41	20	
Fluoranthene	1.33	0.0995	0.9945	0.1461	119	55	119	20.6	20	R
Fluorene	1.13	0.0995	0.9945	0	114	47	114	5.07	20	
Indeno[1,2,3-cd]pyrene	1.20	0.0995	0.9945	0.09420	112	49	130	7.12	20	
Phenanthrene	1.16	0.0995	0.9945	0	116	49	113	15.1	20	S
Pyrene	1.31	0.0995	0.9945	0.1359	118	55	117	17.4	20	S
IS: Acenaphthene-d10	39.8		3.978		82.3	50	200	0	0	
IS: Chrysene-d12	39.8		3.978		88.6	50	200	0	0	
IS: Naphthalene-d8	39.8		3.978		88.0	50	200	0	0	
IS: Perylene-d12	39.8		3.978		97.7	50	200	0	0	
IS: Phenanthrene-d10	39.8		3.978		81.3	50	200	0	0	
Surr: 2-Fluorobiphenyl	1.00		0.9945		101	46	115	0	0	
Surr: 4-Terphenyl-d14	1.11		0.9945		112	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **ICV-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/11/2016 3:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.17	0.0100	2.000	0	108	80	120			
Acenaphthylene	2.22	0.0100	2.000	0	111	80	120			
Anthracene	2.10	0.0100	2.000	0	105	80	120			
Benzo[a]anthracene	2.13	0.0100	2.000	0	106	80	120			
Benzo[a]pyrene	2.00	0.0100	2.000	0	100	80	120			
Benzo[b]fluoranthene	2.14	0.0100	2.000	0	107	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	101	80	120			
Benzo[g,h,i]perylene	2.08	0.0100	2.000	0	104	80	120			
Benzo[j]fluoranthene	1.97	0.0100	2.000	0	98.4	80	120			N
Benzo[k]fluoranthene	1.83	0.0100	2.000	0	91.7	80	120			
Chrysene	2.11	0.0100	2.000	0	106	80	120			
Dibenz[a,h]anthracene	2.09	0.0100	2.000	0	104	80	120			
Fluoranthene	2.19	0.0100	2.000	0	109	80	120			
Fluorene	2.22	0.0100	2.000	0	111	80	120			
Indeno[1,2,3-cd]pyrene	2.10	0.0100	2.000	0	105	80	120			
Phenanthrene	2.13	0.0100	2.000	0	107	80	120			
Pyrene	2.14	0.0100	2.000	0	107	80	120			
IS: Acenaphthene-d10	4.00		4.000		92.1	50	200			
IS: Chrysene-d12	4.00		4.000		100	50	200			
IS: Naphthalene-d8	4.00		4.000		94.6	50	200			
IS: Perylene-d12	4.00		4.000		111	50	200			
IS: Phenanthrene-d10	4.00		4.000		93.7	50	200			
Surr: 2-Fluorobiphenyl	2.30		2.000		115	65	120			
Surr: 4-Terphenyl-d14	2.33		2.000		117	65	120			

Sample ID **CCV1-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.05	0.0100	1.000	0	105	50	150			
Acenaphthylene	1.08	0.0100	1.000	0	108	50	150			
Anthracene	1.04	0.0100	1.000	0	104	50	150			
Benzo[a]anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]pyrene	0.979	0.0100	1.000	0	97.9	50	150			
Benzo[b]fluoranthene	1.04	0.0100	1.000	0	104	50	150			
Benzo[e]pyrene	0.991	0.0100	1.000	0	99.1	50	150			
Benzo[g,h,i]perylene	1.01	0.0100	1.000	0	101	50	150			
Benzo[j]fluoranthene	0.964	0.0100	1.000	0	96.4	50	150			N
Benzo[k]fluoranthene	0.915	0.0100	1.000	0	91.5	50	150			
Chrysene	1.04	0.0100	1.000	0	104	50	150			
Dibenz[a,h]anthracene	1.01	0.0100	1.000	0	101	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **CCV1-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.08	0.0100	1.000	0	108	50	150			
Fluorene	1.08	0.0100	1.000	0	108	50	150			
Indeno[1,2,3-cd]pyrene	1.02	0.0100	1.000	0	102	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.06	0.0100	1.000	0	106	50	150			
IS: Acenaphthene-d10	4.00		4.000		92.0	50	200			
IS: Chrysene-d12	4.00		4.000		98.4	50	200			
IS: Naphthalene-d8	4.00		4.000		98.2	50	200			
IS: Perylene-d12	4.00		4.000		109	50	200			
IS: Phenanthrene-d10	4.00		4.000		91.5	50	200			
Surr: 2-Fluorobiphenyl	1.13		1.000		113	50	150			
Surr: 4-Terphenyl-d14	1.17		1.000		117	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

The QC data in batch 78027 applies to the following samples: 1611053-02A, 1611053-07A, 1611053-27A, 1611053-32A, 1611053-37A

Sample ID **LCS-78027** Batch ID: **78027** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161130A** Analysis Date: **11/30/2016 4:12:00 PM** Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.860	0.0100	1.000	0	86.0	44	111			
Acenaphthylene	0.877	0.0100	1.000	0	87.7	39	116			
Anthracene	0.905	0.0100	1.000	0	90.5	50	114			
Benzo[a]anthracene	1.01	0.0100	1.000	0	101	54	122			
Benzo[a]pyrene	0.964	0.0100	1.000	0	96.4	50	125			
Benzo[b]fluoranthene	1.05	0.0100	1.000	0	105	53	128			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	43	140			
Benzo[g,h,i]perylene	0.960	0.0100	1.000	0	96.0	49	127			
Benzo[j]fluoranthene	1.01	0.0100	1.000	0	101	45	125			N
Benzo[k]fluoranthene	0.969	0.0100	1.000	0	96.9	56	123			
Chrysene	1.02	0.0100	1.000	0	102	57	118			
Dibenz[a,h]anthracene	0.958	0.0100	1.000	0	95.8	50	129			
Fluoranthene	0.964	0.0100	1.000	0	96.4	55	119			
Fluorene	0.912	0.0100	1.000	0	91.2	47	114			
Indeno[1,2,3-cd]pyrene	0.968	0.0100	1.000	0	96.8	49	130			
Phenanthrene	0.932	0.0100	1.000	0	93.2	49	113			
Pyrene	0.937	0.0100	1.000	0	93.7	55	117			
IS: Acenaphthene-d10	4.00		4.000		112	50	200			
IS: Chrysene-d12	4.00		4.000		98.4	50	200			
IS: Naphthalene-d8	4.00		4.000		118	50	200			
IS: Perylene-d12	4.00		4.000		94.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		107	50	200			
Surr: 2-Fluorobiphenyl	0.813		1.000		81.3	46	115			
Surr: 4-Terphenyl-d14	0.761		1.000		76.1	58	133			

Sample ID **MB-78027** Batch ID: **78027** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161130A** Analysis Date: **11/30/2016 4:40:00 PM** Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **MB-78027** Batch ID: **78027** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161130A** Analysis Date: **11/30/2016 4:40:00 PM** Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		113	50	200			
IS: Chrysene-d12	4.00		4.000		99.9	50	200			
IS: Naphthalene-d8	4.00		4.000		119	50	200			
IS: Perylene-d12	4.00		4.000		96.2	50	200			
IS: Phenanthrene-d10	4.00		4.000		109	50	200			
Surr: 2-Fluorobiphenyl	0.796		1.000		79.6	46	115			
Surr: 4-Terphenyl-d14	0.727		1.000		72.7	58	133			

Sample ID **1611053-02AMS** Batch ID: **78027** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **GCMS6_161130A** Analysis Date: **11/30/2016 9:21:00 PM** Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.929	0.108	1.075	0	86.4	44	111			
Acenaphthylene	0.907	0.108	1.075	0	84.3	39	116			
Anthracene	0.965	0.108	1.075	0	89.7	50	114			
Benzo[a]anthracene	1.22	0.108	1.075	0.1918	95.5	54	122			
Benzo[a]pyrene	1.24	0.108	1.075	0.2230	95.0	50	125			
Benzo[b]fluoranthene	1.22	0.108	1.075	0.2103	93.9	53	128			
Benzo[e]pyrene	1.27	0.108	1.075	0.1690	102	43	140			
Benzo[g,h,i]perylene	1.14	0.108	1.075	0.1608	91.5	49	127			
Benzo[j]fluoranthene	1.16	0.108	1.075	0.1054	97.6	45	125			N
Benzo[k]fluoranthene	1.15	0.108	1.075	0.1122	96.9	56	123			
Chrysene	1.28	0.108	1.075	0.2095	99.5	57	118			
Dibenz[a,h]anthracene	0.986	0.108	1.075	0	91.7	50	129			
Fluoranthene	1.30	0.108	1.075	0.3362	89.6	55	119			
Fluorene	0.939	0.108	1.075	0	87.3	47	114			
Indeno[1,2,3-cd]pyrene	1.16	0.108	1.075	0.1606	93.3	49	130			
Phenanthrene	1.07	0.108	1.075	0.1538	84.9	49	113			
Pyrene	1.25	0.108	1.075	0.2882	89.5	55	117			
IS: Acenaphthene-d10	43.0		4.302		116	50	200			
IS: Chrysene-d12	43.0		4.302		104	50	200			
IS: Naphthalene-d8	43.0		4.302		122	50	200			
IS: Perylene-d12	43.0		4.302		103	50	200			
IS: Phenanthrene-d10	43.0		4.302		112	50	200			
Surr: 2-Fluorobiphenyl	0.862		1.075		80.2	46	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **1611053-02AMS**	Batch ID: **78027**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 9:21:00 PM**	Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.791		1.075		73.6	58	133			

Sample ID **1611053-02AMSD**	Batch ID: **78027**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 9:48:00 PM**	Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.891	0.105	1.046	0	85.2	44	111	4.13	20	
Acenaphthylene	0.887	0.105	1.046	0	84.8	39	116	2.24	20	
Anthracene	0.917	0.105	1.046	0	87.7	50	114	5.08	20	
Benzo[a]anthracene	1.08	0.105	1.046	0.1918	84.9	54	122	12.1	20	
Benzo[a]pyrene	1.12	0.105	1.046	0.2230	86.0	50	125	10.3	20	
Benzo[b]fluoranthene	1.11	0.105	1.046	0.2103	86.5	53	128	9.00	20	
Benzo[e]pyrene	1.18	0.105	1.046	0.1690	96.4	43	140	7.44	20	
Benzo[g,h,i]perylene	1.06	0.105	1.046	0.1608	86.0	49	127	7.63	20	
Benzo[j]fluoranthene	1.09	0.105	1.046	0.1054	94.2	45	125	5.75	20	N
Benzo[k]fluoranthene	1.07	0.105	1.046	0.1122	91.9	56	123	7.22	20	
Chrysene	1.11	0.105	1.046	0.2095	86.0	57	118	14.3	20	
Dibenz[a,h]anthracene	0.947	0.105	1.046	0	90.5	50	129	4.08	20	
Fluoranthene	1.14	0.105	1.046	0.3362	76.6	55	119	13.3	20	
Fluorene	0.924	0.105	1.046	0	88.3	47	114	1.63	20	
Indeno[1,2,3-cd]pyrene	1.07	0.105	1.046	0.1606	86.6	49	130	8.75	20	
Phenanthrene	0.986	0.105	1.046	0.1538	79.5	49	113	7.87	20	
Pyrene	1.12	0.105	1.046	0.2882	79.1	55	117	11.4	20	
IS: Acenaphthene-d10	41.8		4.184		113	50	200	0	0	
IS: Chrysene-d12	41.8		4.184		102	50	200	0	0	
IS: Naphthalene-d8	41.8		4.184		120	50	200	0	0	
IS: Perylene-d12	41.8		4.184		100	50	200	0	0	
IS: Phenanthrene-d10	41.8		4.184		110	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.875		1.046		83.6	46	115	0	0	
Surr: 4-Terphenyl-d14	0.797		1.046		76.2	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **ICV-161130**	Batch ID: **R89215**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 3:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.12	0.0100	2.000	0	106	80	120			
Acenaphthylene	2.15	0.0100	2.000	0	107	80	120			
Anthracene	2.11	0.0100	2.000	0	105	80	120			
Benzo[a]anthracene	2.36	0.0100	2.000	0	118	80	120			
Benzo[a]pyrene	2.33	0.0100	2.000	0	116	80	120			
Benzo[b]fluoranthene	2.29	0.0100	2.000	0	115	80	120			
Benzo[e]pyrene	2.36	0.0100	2.000	0	118	80	120			
Benzo[g,h,i]perylene	2.23	0.0100	2.000	0	112	80	120			
Benzo[j]fluoranthene	2.38	0.0100	2.000	0	119	80	120			N
Benzo[k]fluoranthene	2.38	0.0100	2.000	0	119	80	120			
Chrysene	2.34	0.0100	2.000	0	117	80	120			
Dibenz[a,h]anthracene	2.16	0.0100	2.000	0	108	80	120			
Fluoranthene	2.15	0.0100	2.000	0	108	80	120			
Fluorene	2.15	0.0100	2.000	0	107	80	120			
Indeno[1,2,3-cd]pyrene	2.22	0.0100	2.000	0	111	80	120			
Phenanthrene	2.12	0.0100	2.000	0	106	80	120			
Pyrene	2.09	0.0100	2.000	0	105	80	120			
IS: Acenaphthene-d10	4.00		4.000		110	50	200			
IS: Chrysene-d12	4.00		4.000		94.3	50	200			
IS: Naphthalene-d8	4.00		4.000		118	50	200			
IS: Perylene-d12	4.00		4.000		89.8	50	200			
IS: Phenanthrene-d10	4.00		4.000		106	50	200			
Surr: 2-Fluorobiphenyl	2.18		2.000		109	65	120			
Surr: 4-Terphenyl-d14	1.90		2.000		94.9	65	120			

Sample ID **CCV1-161130**	Batch ID: **R89215**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 10:17:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.03	0.0100	1.000	0	103	50	150			
Acenaphthylene	1.04	0.0100	1.000	0	104	50	150			
Anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]anthracene	1.15	0.0100	1.000	0	115	50	150			
Benzo[a]pyrene	1.12	0.0100	1.000	0	112	50	150			
Benzo[b]fluoranthene	1.16	0.0100	1.000	0	116	50	150			
Benzo[e]pyrene	1.15	0.0100	1.000	0	115	50	150			
Benzo[g,h,i]perylene	1.07	0.0100	1.000	0	107	50	150			
Benzo[j]fluoranthene	1.14	0.0100	1.000	0	114	50	150			N
Benzo[k]fluoranthene	1.09	0.0100	1.000	0	109	50	150			
Chrysene	1.16	0.0100	1.000	0	116	50	150			
Dibenz[a,h]anthracene	1.05	0.0100	1.000	0	105	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **CCV1-161130**	Batch ID: **R89215**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 10:17:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.06	0.0100	1.000	0	106	50	150			
Fluorene	1.05	0.0100	1.000	0	105	50	150			
Indeno[1,2,3-cd]pyrene	1.09	0.0100	1.000	0	109	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.04	0.0100	1.000	0	104	50	150			
IS: Acenaphthene-d10	4.00		4.000		113	50	200			
IS: Chrysene-d12	4.00		4.000		98.2	50	200			
IS: Naphthalene-d8	4.00		4.000		122	50	200			
IS: Perylene-d12	4.00		4.000		98.1	50	200			
IS: Phenanthrene-d10	4.00		4.000		109	50	200			
Surr: 2-Fluorobiphenyl	1.07		1.000		107	50	150			
Surr: 4-Terphenyl-d14	0.956		1.000		95.6	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_160913A

Sample ID **DCS-77144** Batch ID: **77144** TestNo: **SW8270D-LL** Units: **mg/Kg**
SampType: **DCS** Run ID: **GCMS8_160913A** Analysis Date: **9/13/2016 1:33:00 PM** Prep Date: **9/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00812	0.0500	0.01000	0	81.2	20	200	0	0	
Acenaphthylene	0.00849	0.0500	0.01000	0	84.9	20	200	0	0	
Anthracene	0.00762	0.0500	0.01000	0	76.2	20	200	0	0	
Benzo[a]anthracene	0.00870	0.0500	0.01000	0	87.0	20	200	0	0	
Benzo[a]pyrene	0.00842	0.0500	0.01000	0	84.2	20	200	0	0	
Benzo[b]fluoranthene	0.00905	0.0500	0.01000	0	90.5	20	200	0	0	
Benzo[e]pyrene	0.00928	0.0500	0.01000	0	92.8	20	200	0	0	
Benzo[g,h,i]perylene	0.00968	0.0500	0.01000	0	96.8	20	200	0	0	
Benzo[j]fluoranthene	0.00875	0.0500	0.01000	0	87.5	20	200	0	0	N
Benzo[k]fluoranthene	0.00934	0.0500	0.01000	0	93.4	20	200	0	0	
Chrysene	0.00889	0.0500	0.01000	0	88.9	20	200	0	0	
Dibenz[a,h]anthracene	0.0101	0.0500	0.01000	0	101	20	200	0	0	
Fluoranthene	0.00778	0.0500	0.01000	0	77.8	20	200	0	0	
Fluorene	0.00824	0.0500	0.01000	0	82.4	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0101	0.0500	0.01000	0	101	20	200	0	0	
Phenanthrene	0.00995	0.0500	0.01000	0	99.5	20	200	0	0	
Pyrene	0.00780	0.0500	0.01000	0	78.0	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

The QC data in batch 77972 applies to the following samples: 1611053-03A, 1611053-08A, 1611053-28A, 1611053-33A, 1611053-38A

Sample ID **LCS-77972** Batch ID: **77972** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 12:27:00 P** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.01	0.0100	1.000	0	101	44	111			
Acenaphthylene	1.03	0.0100	1.000	0	103	39	116			
Anthracene	0.948	0.0100	1.000	0	94.8	50	114			
Benzo[a]anthracene	1.08	0.0100	1.000	0	108	54	122			
Benzo[a]pyrene	1.02	0.0100	1.000	0	102	50	125			
Benzo[b]fluoranthene	1.10	0.0100	1.000	0	110	53	128			
Benzo[e]pyrene	1.11	0.0100	1.000	0	111	43	140			
Benzo[g,h,i]perylene	1.02	0.0100	1.000	0	102	49	127			
Benzo[j]fluoranthene	1.06	0.0100	1.000	0	106	45	125			N
Benzo[k]fluoranthene	1.10	0.0100	1.000	0	110	56	123			
Chrysene	1.12	0.0100	1.000	0	112	57	118			
Dibenz[a,h]anthracene	1.03	0.0100	1.000	0	103	50	129			
Fluoranthene	0.994	0.0100	1.000	0	99.4	55	119			
Fluorene	1.01	0.0100	1.000	0	101	47	114			
Indeno[1,2,3-cd]pyrene	1.04	0.0100	1.000	0	104	49	130			
Phenanthrene	1.03	0.0100	1.000	0	103	49	113			
Pyrene	0.963	0.0100	1.000	0	96.3	55	117			
IS: Acenaphthene-d10	4.00		4.000		86.2	50	200			
IS: Chrysene-d12	4.00		4.000		76.0	50	200			
IS: Naphthalene-d8	4.00		4.000		156	50	200			
IS: Perylene-d12	4.00		4.000		72.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		82.9	50	200			
Surr: 2-Fluorobiphenyl	0.811		1.000		81.1	46	115			
Surr: 4-Terphenyl-d14	0.795		1.000		79.5	58	133			

Sample ID **MB-77972** Batch ID: **77972** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 1:24:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **MB-77972**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 1:24:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		89.2	50	200			
IS: Chrysene-d12	4.00		4.000		78.3	50	200			
IS: Naphthalene-d8	4.00		4.000		158	50	200			
IS: Perylene-d12	4.00		4.000		75.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		84.4	50	200			
Surr: 2-Fluorobiphenyl	0.813		1.000		81.3	46	115			
Surr: 4-Terphenyl-d14	0.793		1.000		79.3	58	133			

Sample ID **1611053-03AMS**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 6:40:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.22	0.113	1.133	0	108	44	111			
Acenaphthylene	1.25	0.113	1.133	0	111	39	116			
Anthracene	1.13	0.113	1.133	0	99.5	50	114			
Benzo[a]anthracene	1.22	0.113	1.133	0	108	54	122			
Benzo[a]pyrene	1.18	0.113	1.133	0	104	50	125			
Benzo[b]fluoranthene	1.25	0.113	1.133	0	110	53	128			
Benzo[e]pyrene	1.27	0.113	1.133	0	113	43	140			
Benzo[g,h,i]perylene	1.15	0.113	1.133	0	102	49	127			
Benzo[j]fluoranthene	1.25	0.113	1.133	0	110	45	125			N
Benzo[k]fluoranthene	1.25	0.113	1.133	0	111	56	123			
Chrysene	1.25	0.113	1.133	0	110	57	118			
Dibenz[a,h]anthracene	1.12	0.113	1.133	0	98.6	50	129			
Fluoranthene	1.21	0.113	1.133	0	106	55	119			
Fluorene	1.20	0.113	1.133	0	106	47	114			
Indeno[1,2,3-cd]pyrene	1.16	0.113	1.133	0	102	49	130			
Phenanthrene	1.23	0.113	1.133	0	108	49	113			
Pyrene	1.19	0.113	1.133	0	105	55	117			
IS: Acenaphthene-d10	45.3		4.532		84.6	50	200			
IS: Chrysene-d12	45.3		4.532		76.1	50	200			
IS: Naphthalene-d8	45.3		4.532		152	50	200			
IS: Perylene-d12	45.3		4.532		71.8	50	200			
IS: Phenanthrene-d10	45.3		4.532		81.1	50	200			
Surr: 2-Fluorobiphenyl	0.956		1.133		84.4	46	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **1611053-03AMS**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 6:40:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.920		1.133		81.2	58	133			

Sample ID **1611053-03AMSD**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 7:09:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.09	0.112	1.122	0	97.2	44	111	11.1	20	
Acenaphthylene	1.13	0.112	1.122	0	101	39	116	10.5	20	
Anthracene	1.08	0.112	1.122	0	96.2	50	114	4.40	20	
Benzo[a]anthracene	1.23	0.112	1.122	0	110	54	122	0.596	20	
Benzo[a]pyrene	1.17	0.112	1.122	0	104	50	125	0.640	20	
Benzo[b]fluoranthene	1.26	0.112	1.122	0	112	53	128	0.721	20	
Benzo[e]pyrene	1.28	0.112	1.122	0	114	43	140	0.751	20	
Benzo[g,h,i]perylene	1.16	0.112	1.122	0	103	49	127	0.868	20	
Benzo[j]fluoranthene	1.26	0.112	1.122	0	112	45	125	0.537	20	N
Benzo[k]fluoranthene	1.26	0.112	1.122	0	112	56	123	0.308	20	
Chrysene	1.27	0.112	1.122	0	114	57	118	1.79	20	
Dibenz[a,h]anthracene	1.12	0.112	1.122	0	99.5	50	129	0.118	20	
Fluoranthene	1.19	0.112	1.122	0	106	55	119	1.47	20	
Fluorene	1.12	0.112	1.122	0	100	47	114	6.89	20	
Indeno[1,2,3-cd]pyrene	1.16	0.112	1.122	0	104	49	130	0.599	20	
Phenanthrene	1.18	0.112	1.122	0	105	49	113	3.67	20	
Pyrene	1.16	0.112	1.122	0	104	55	117	2.30	20	
IS: Acenaphthene-d10	44.9		4.488		84.4	50	200	0	0	
IS: Chrysene-d12	44.9		4.488		75.5	50	200	0	0	
IS: Naphthalene-d8	44.9		4.488		153	50	200	0	0	
IS: Perylene-d12	44.9		4.488		72.5	50	200	0	0	
IS: Phenanthrene-d10	44.9		4.488		82.1	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.850		1.122		75.7	46	115	0	0	
Surr: 4-Terphenyl-d14	0.903		1.122		80.5	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **ICV-161123**	Batch ID: **R89136**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 11:58:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.12	0.0100	2.000	0	106	80	120			
Acenaphthylene	2.14	0.0100	2.000	0	107	80	120			
Anthracene	1.97	0.0100	2.000	0	98.6	80	120			
Benzo[a]anthracene	2.11	0.0100	2.000	0	105	80	120			
Benzo[a]pyrene	2.03	0.0100	2.000	0	102	80	120			
Benzo[b]fluoranthene	1.97	0.0100	2.000	0	98.3	80	120			
Benzo[e]pyrene	2.08	0.0100	2.000	0	104	80	120			
Benzo[g,h,i]perylene	1.91	0.0100	2.000	0	95.7	80	120			
Benzo[j]fluoranthene	2.13	0.0100	2.000	0	106	80	120			N
Benzo[k]fluoranthene	2.14	0.0100	2.000	0	107	80	120			
Chrysene	2.13	0.0100	2.000	0	107	80	120			
Dibenz[a,h]anthracene	1.94	0.0100	2.000	0	97.2	80	120			
Fluoranthene	1.88	0.0100	2.000	0	93.8	80	120			
Fluorene	2.04	0.0100	2.000	0	102	80	120			
Indeno[1,2,3-cd]pyrene	1.94	0.0100	2.000	0	97.0	80	120			
Phenanthrene	1.99	0.0100	2.000	0	99.3	80	120			
Pyrene	1.80	0.0100	2.000	0	90.2	80	120			
IS: Acenaphthene-d10	4.00		4.000		81.3	50	200			
IS: Chrysene-d12	4.00		4.000		72.0	50	200			
IS: Naphthalene-d8	4.00		4.000		150	50	200			
IS: Perylene-d12	4.00		4.000		70.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		79.6	50	200			
Surr: 2-Fluorobiphenyl	2.14		2.000		107	65	120			
Surr: 4-Terphenyl-d14	1.92		2.000		95.9	65	120			

Sample ID **CCV1-161123**	Batch ID: **R89136**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 7:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.04	0.0100	1.000	0	104	50	150			
Acenaphthylene	1.07	0.0100	1.000	0	107	50	150			
Anthracene	0.973	0.0100	1.000	0	97.3	50	150			
Benzo[a]anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]pyrene	1.00	0.0100	1.000	0	100	50	150			
Benzo[b]fluoranthene	1.02	0.0100	1.000	0	102	50	150			
Benzo[e]pyrene	1.03	0.0100	1.000	0	103	50	150			
Benzo[g,h,i]perylene	0.950	0.0100	1.000	0	95.0	50	150			
Benzo[j]fluoranthene	1.05	0.0100	1.000	0	105	50	150			N
Benzo[k]fluoranthene	1.01	0.0100	1.000	0	101	50	150			
Chrysene	1.05	0.0100	1.000	0	105	50	150			
Dibenz[a,h]anthracene	0.946	0.0100	1.000	0	94.6	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **CCV1-161123** Batch ID: **R89136** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **CCV** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 7:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	0.943	0.0100	1.000	0	94.3	50	150			
Fluorene	1.01	0.0100	1.000	0	101	50	150			
Indeno[1,2,3-cd]pyrene	0.964	0.0100	1.000	0	96.4	50	150			
Phenanthrene	0.991	0.0100	1.000	0	99.1	50	150			
Pyrene	0.912	0.0100	1.000	0	91.2	50	150			
IS: Acenaphthene-d10	4.00		4.000		81.9	50	200			
IS: Chrysene-d12	4.00		4.000		72.6	50	200			
IS: Naphthalene-d8	4.00		4.000		149	50	200			
IS: Perylene-d12	4.00		4.000		69.9	50	200			
IS: Phenanthrene-d10	4.00		4.000		79.9	50	200			
Surr: 2-Fluorobiphenyl	1.06		1.000		106	50	150			
Surr: 4-Terphenyl-d14	0.945		1.000		94.5	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161109A

The QC data in batch 77841 applies to the following samples: 1611053-01A, 1611053-06A, 1611053-11A, 1611053-16A, 1611053-21A, 1611053-26A, 1611053-31A, 1611053-36A, 1611053-41A

Sample ID **1611044-14A DUP** Batch ID: **77841** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_161109A** Analysis Date: **11/10/2016 8:00:00 AM** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	22.0	0	0	22.26				1.08	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161116A

The QC data in batch 77953 applies to the following samples: 1611053-02A, 1611053-07A, 1611053-27A, 1611053-32A, 1611053-37A

Sample ID **1611144-04A DUP** Batch ID: **77953** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_161116A** Analysis Date: **11/17/2016 8:00:00 AM** Prep Date: **11/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	16.3	0	0	16.18				0.835	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161128A

The QC data in batch 78054 applies to the following samples: 1611053-03A, 1611053-08A, 1611053-28A, 1611053-33A, 1611053-38A

Sample ID **1611053-33A DUP** Batch ID: **78054** TestNo: **D2216** Units: **WT%**
SampType: **DUP** Run ID: **PMOIST_161128A** Analysis Date: **11/29/2016 8:10:00 AM** Prep Date: **11/28/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	15.0	0	0	14.78				1.49	30	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_160830A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-76975	-----	SW8270D-LL	76975	1	8/30/2016 11:07:00 AM	8/25/2016 3:00:24 PM	A

Run ID: GCMS6_161021A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77602	-----	SW8270D-LL	77602	1	10/21/2016 5:02:00 PM	10/19/2016 8:45:21 AM	S

Run ID: GCMS6_161108A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161108	-----	SW8270D-LL	R88889	1	11/8/2016 9:09:00 AM		A
ICV-161108	-----	SW8270D-LL	R88889	1	11/8/2016 9:37:00 AM		A
LCS-77809	-----	SW8270D-LL	77809	1	11/8/2016 10:05:00 AM	11/7/2016 10:45:00 AM	A
MB-77809	-----	SW8270D-LL	77809	1	11/8/2016 10:37:00 AM	11/7/2016 10:45:00 AM	A
1611053-42B	SGR-EBROW(20161104)	SW8270D-LL	77809	1	11/8/2016 1:25:00 PM	11/7/2016 10:45:00 AM	E
CCV1-161108	-----	SW8270D-LL	R88889	1	11/8/2016 1:53:00 PM		A

Run ID: GCMS6_161111C

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161111	-----	SW8270D-LL	R88956	1	11/11/2016 3:22:00 PM		S
ICV-161111	-----	SW8270D-LL	R88956	1	11/11/2016 3:50:00 PM		S
LCS-77875	-----	SW8270D-LL	77875	1	11/11/2016 5:13:00 PM	11/11/2016 12:55:01 PM	S
MB-77875	-----	SW8270D-LL	77875	1	11/11/2016 5:41:00 PM	11/11/2016 12:55:01 PM	S
1611053-01A	SGR-ROW13(0-0.5)	SW8270D-LL	77875	10	11/11/2016 8:01:00 PM	11/11/2016 12:55:01 PM	S
1611053-06A	SGR-ROW14(0-0.5)	SW8270D-LL	77875	10	11/11/2016 8:29:00 PM	11/11/2016 12:55:01 PM	S
1611053-11A	SGR-ROW15(0-0.5)	SW8270D-LL	77875	10	11/11/2016 8:57:00 PM	11/11/2016 12:55:01 PM	S
1611053-16A	SGR-ROW16(0-0.5)	SW8270D-LL	77875	10	11/11/2016 9:25:00 PM	11/11/2016 12:55:01 PM	S
1611053-21A	SGR-ROW19(0-0.5)	SW8270D-LL	77875	10	11/11/2016 9:53:00 PM	11/11/2016 12:55:01 PM	S
1611053-26A	SGR-ROW20(0-0.5)	SW8270D-LL	77875	10	11/11/2016 10:21:00 PM	11/11/2016 12:55:01 PM	S
1611053-41A	SGR-DUP02(20161104)	SW8270D-LL	77875	10	11/11/2016 11:45:00 PM	11/11/2016 12:55:01 PM	S
1611053-31A	SGR-ROW21(0-0.5)	SW8270D-LL	77875	10	11/12/2016 2:05:00 AM	11/11/2016 12:55:01 PM	S
1611053-36A	SGR-ROW22(0-0.5)	SW8270D-LL	77875	10	11/12/2016 2:33:00 AM	11/11/2016 12:55:01 PM	S
1611071-16AMS	-----	SW8270D-LL	77875	10	11/12/2016 3:01:00 AM	11/11/2016 12:55:01 PM	S
1611071-16AMSD	-----	SW8270D-LL	77875	10	11/12/2016 3:29:00 AM	11/11/2016 12:55:01 PM	S
CCV1-161111	-----	SW8270D-LL	R88956	1	11/12/2016 3:57:00 AM		S

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_161130A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161130	-----	SW8270D-LL	R89215	1	11/30/2016 3:16:00 PM		S
ICV-161130	-----	SW8270D-LL	R89215	1	11/30/2016 3:44:00 PM		S
LCS-78027	-----	SW8270D-LL	78027	1	11/30/2016 4:12:00 PM	11/23/2016 9:23:08 AM	S
MB-78027	-----	SW8270D-LL	78027	1	11/30/2016 4:40:00 PM	11/23/2016 9:23:08 AM	S
1611053-07A	SGR-ROW14(0.5-2)	SW8270D-LL	78027	10	11/30/2016 6:04:00 PM	11/23/2016 9:23:08 AM	S
1611053-27A	SGR-ROW20(0.5-2)	SW8270D-LL	78027	10	11/30/2016 6:32:00 PM	11/23/2016 9:23:08 AM	S
1611053-32A	SGR-ROW21(0.5-2)	SW8270D-LL	78027	10	11/30/2016 7:00:00 PM	11/23/2016 9:23:08 AM	S
1611053-02A	SGR-ROW13(0.5-2)	SW8270D-LL	78027	10	11/30/2016 7:56:00 PM	11/23/2016 9:23:08 AM	S
1611053-37A	SGR-ROW22(0.5-2)	SW8270D-LL	78027	10	11/30/2016 8:52:00 PM	11/23/2016 9:23:08 AM	S
1611053-02AMS	SGR-ROW13(0.5-2)MS	SW8270D-LL	78027	10	11/30/2016 9:21:00 PM	11/23/2016 9:23:08 AM	S
1611053-02AMSD	SGR-ROW13(0.5-2)MSD	SW8270D-LL	78027	10	11/30/2016 9:48:00 PM	11/23/2016 9:23:08 AM	S
CCV1-161130	-----	SW8270D-LL	R89215	1	11/30/2016 10:17:00 PM		S

Run ID: GCMS8_160913A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77144	-----	SW8270D-LL	77144	1	9/13/2016 1:33:00 PM	9/9/2016 8:42:54 AM	S

Run ID: GCMS8_161123A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161123	-----	SW8270D-LL	R89136	1	11/23/2016 11:30:00 AM		S
ICV-161123	-----	SW8270D-LL	R89136	1	11/23/2016 11:58:00 AM		S
LCS-77972	-----	SW8270D-LL	77972	1	11/23/2016 12:27:00 PM	11/17/2016 1:19:38 PM	S
MB-77972	-----	SW8270D-LL	77972	1	11/23/2016 1:24:00 PM	11/17/2016 1:19:38 PM	S
1611053-03A	SGR-ROW13(2-4)	SW8270D-LL	77972	10	11/23/2016 2:22:00 PM	11/17/2016 1:19:38 PM	S
1611053-08A	SGR-ROW14(2-4)	SW8270D-LL	77972	10	11/23/2016 2:51:00 PM	11/17/2016 1:19:38 PM	S
1611053-28A	SGR-ROW20(2-4)	SW8270D-LL	77972	10	11/23/2016 3:19:00 PM	11/17/2016 1:19:38 PM	S
1611053-33A	SGR-ROW21(2-4)	SW8270D-LL	77972	10	11/23/2016 3:48:00 PM	11/17/2016 1:19:38 PM	S
1611053-38A	SGR-ROW22(2-4)	SW8270D-LL	77972	10	11/23/2016 4:17:00 PM	11/17/2016 1:19:38 PM	S
1611053-03AMS	SGR-ROW13(2-4)MS	SW8270D-LL	77972	10	11/23/2016 6:40:00 PM	11/17/2016 1:19:38 PM	S
1611053-03AMSD	SGR-ROW13(2-4)MSD	SW8270D-LL	77972	10	11/23/2016 7:09:00 PM	11/17/2016 1:19:38 PM	S
CCV1-161123	-----	SW8270D-LL	R89136	1	11/23/2016 7:38:00 PM		S

Run ID: ICP-MS3_161114B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS1-77661	-----	SW6020A	77661	1	11/14/2016 3:31:00 PM	10/25/2016 8:22:11 AM	A

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS3_161116A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R89004	1	11/16/2016 10:40:00 AM		A
L2-161116	-----	SW6020A	R89004	1	11/16/2016 10:46:00 AM		A
L-161116	-----	SW6020A	R89004	1	11/16/2016 10:52:00 AM		A
10X-161116	-----	SW6020A	R89004	1	11/16/2016 10:58:00 AM		A
5X-161116	-----	SW6020A	R89004	1	11/16/2016 11:04:00 AM		A
2X-161116	-----	SW6020A	R89004	1	11/16/2016 11:10:00 AM		A
H-161116	-----	SW6020A	R89004	1	11/16/2016 11:16:00 AM		A
H2-161116	-----	SW6020A	R89004	1	11/16/2016 11:22:00 AM		A
ICSA-161116	-----	SW6020A	R89004	1	11/16/2016 11:46:00 AM		A
ICSAB-161116	-----	SW6020A	R89004	1	11/16/2016 11:52:00 AM		A
ICV1-161116	-----	SW6020A	R89004	1	11/16/2016 12:10:00 PM		A
ILCVL-161116	-----	SW6020A	R89004	1	11/16/2016 12:22:00 PM		A
ICB1-161116	-----	SW6020A	R89004	1	11/16/2016 12:28:00 PM		A
CCV1-161116	-----	SW6020A	R89004	1	11/16/2016 1:35:00 PM		A
CCB1-161116	-----	SW6020A	R89004	1	11/16/2016 1:41:00 PM		A
LCVL1-161116	-----	SW6020A	R89004	1	11/16/2016 1:47:00 PM		A
MB-77913	-----	SW6020A	77913	1	11/16/2016 1:53:00 PM	11/15/2016 9:08:38 AM	A
LCS-77913	-----	SW6020A	77913	1	11/16/2016 1:59:00 PM	11/15/2016 9:08:38 AM	A
LCSD-77913	-----	SW6020A	77913	1	11/16/2016 2:05:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A SD	-----	SW6020A	77913	5	11/16/2016 2:24:00 PM	11/15/2016 9:08:38 AM	A
1611053-42A	SGR-EBROW(20161104)	SW6020A	77913	1	11/16/2016 2:54:00 PM	11/15/2016 9:08:38 AM	E
1611028-26A PDS	-----	SW6020A	77913	1	11/16/2016 3:06:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MS	-----	SW6020A	77913	1	11/16/2016 3:12:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MSD	-----	SW6020A	77913	1	11/16/2016 3:18:00 PM	11/15/2016 9:08:38 AM	A
CCV2-161116	-----	SW6020A	R89004	1	11/16/2016 3:24:00 PM		A
CCB2-161116	-----	SW6020A	R89004	1	11/16/2016 3:36:00 PM		A
LCVL2-161116	-----	SW6020A	R89004	1	11/16/2016 3:43:00 PM		A

Run ID: ICP-MS4_160916A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS1-77170	-----	SW6020A	77170	5	9/16/2016 12:15:00 PM	9/12/2016 10:01:07 AM	S

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161111D

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R88958	1	11/11/2016 9:49:00 AM		A
L2-161111	-----	SW6020A	R88958	1	11/11/2016 9:51:00 AM		A
L-161111	-----	SW6020A	R88958	1	11/11/2016 9:53:00 AM		A
10X-161111	-----	SW6020A	R88958	1	11/11/2016 9:55:00 AM		A
5X-161111	-----	SW6020A	R88958	1	11/11/2016 9:57:00 AM		A
2X-161111	-----	SW6020A	R88958	1	11/11/2016 9:59:00 AM		A
H-161111	-----	SW6020A	R88958	1	11/11/2016 10:01:00 AM		A
H2-161111	-----	SW6020A	R88958	1	11/11/2016 10:03:00 AM		A
ICSA-161111	-----	SW6020A	R88958	1	11/11/2016 10:09:00 AM		A
ICSAB-161111	-----	SW6020A	R88958	1	11/11/2016 10:11:00 AM		A
ICV-161111	-----	SW6020A	R88958	1	11/11/2016 10:18:00 AM		A
LCVL-161111	-----	SW6020A	R88958	1	11/11/2016 10:24:00 AM		A
ICB-161111	-----	SW6020A	R88958	1	11/11/2016 10:29:00 AM		A
CCV4-161111	-----	SW6020A	R88958	1	11/11/2016 1:11:00 PM		A
LCVL4-161111	-----	SW6020A	R88958	1	11/11/2016 1:15:00 PM		A
CCB4-161111	-----	SW6020A	R88958	1	11/11/2016 1:20:00 PM		A
MB-77842	-----	SW6020A	77842	5	11/11/2016 1:22:00 PM	11/9/2016 2:30:25 PM	S
LCS-77842	-----	SW6020A	77842	5	11/11/2016 1:24:00 PM	11/9/2016 2:30:25 PM	S
LCSD-77842	-----	SW6020A	77842	5	11/11/2016 1:26:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A	SGR-ROW16(0-0.5)	SW6020A	77842	5	11/11/2016 1:30:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A SD	SGR-ROW16(0-0.5)	SW6020A	77842	25	11/11/2016 1:32:00 PM	11/9/2016 2:30:25 PM	S
1611053-01A	SGR-ROW13(0-0.5)	SW6020A	77842	5	11/11/2016 1:42:00 PM	11/9/2016 2:30:25 PM	S
1611053-06A	SGR-ROW14(0-0.5)	SW6020A	77842	5	11/11/2016 1:44:00 PM	11/9/2016 2:30:25 PM	S
1611053-11A	SGR-ROW15(0-0.5)	SW6020A	77842	5	11/11/2016 1:46:00 PM	11/9/2016 2:30:25 PM	S
1611053-21A	SGR-ROW19(0-0.5)	SW6020A	77842	5	11/11/2016 1:48:00 PM	11/9/2016 2:30:25 PM	S
1611053-26A	SGR-ROW20(0-0.5)	SW6020A	77842	5	11/11/2016 1:50:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A PDS	SGR-ROW16(0-0.5)	SW6020A	77842	5	11/11/2016 1:52:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A MS	SGR-ROW16(0-0.5)MS	SW6020A	77842	5	11/11/2016 1:54:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A MSD	SGR-ROW16(0-0.5)MSD	SW6020A	77842	5	11/11/2016 1:56:00 PM	11/9/2016 2:30:25 PM	S
CCV5-161111	-----	SW6020A	R88958	1	11/11/2016 1:58:00 PM		A
LCVL5-161111	-----	SW6020A	R88958	1	11/11/2016 2:02:00 PM		A
CCB5-161111	-----	SW6020A	R88958	1	11/11/2016 2:11:00 PM		A
1611053-31A	SGR-ROW21(0-0.5)	SW6020A	77842	5	11/11/2016 2:13:00 PM	11/9/2016 2:30:25 PM	S
1611053-36A	SGR-ROW22(0-0.5)	SW6020A	77842	5	11/11/2016 2:15:00 PM	11/9/2016 2:30:25 PM	S
1611053-41A	SGR-DUP02(20161104)	SW6020A	77842	5	11/11/2016 2:17:00 PM	11/9/2016 2:30:25 PM	S
CCV6-161111	-----	SW6020A	R88958	1	11/11/2016 2:31:00 PM		A
LCVL6-161111	-----	SW6020A	R88958	1	11/11/2016 2:35:00 PM		A
CCB6-161111	-----	SW6020A	R88958	1	11/11/2016 2:55:00 PM		A

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161118B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R89084	1	11/18/2016 10:49:00 AM		A
L2-161118	-----	SW6020A	R89084	1	11/18/2016 10:52:00 AM		A
L-161118	-----	SW6020A	R89084	1	11/18/2016 10:55:00 AM		A
10X-161118	-----	SW6020A	R89084	1	11/18/2016 10:58:00 AM		A
5X-161118	-----	SW6020A	R89084	1	11/18/2016 11:01:00 AM		A
2X-161118	-----	SW6020A	R89084	1	11/18/2016 11:04:00 AM		A
H-161118	-----	SW6020A	R89084	1	11/18/2016 11:07:00 AM		A
H2-161118	-----	SW6020A	R89084	1	11/18/2016 11:10:00 AM		A
ICSAB-161118	-----	SW6020A	R89084	1	11/18/2016 11:21:00 AM		A
ICSA-161118	-----	SW6020A	R89084	1	11/18/2016 11:36:00 AM		A
ICV-161118	-----	SW6020A	R89084	1	11/18/2016 11:57:00 AM		A
LCVL-161118	-----	SW6020A	R89084	1	11/18/2016 12:06:00 PM		A
ICB-161118	-----	SW6020A	R89084	1	11/18/2016 12:08:00 PM		A
CCV5-161118	-----	SW6020A	R89084	1	11/18/2016 3:09:00 PM		A
LCVL5-161118	-----	SW6020A	R89084	1	11/18/2016 3:13:00 PM		A
CCB5-161118	-----	SW6020A	R89084	1	11/18/2016 3:15:00 PM		A
MB-77967	-----	SW6020A	77967	5	11/18/2016 3:17:00 PM	11/17/2016 11:01:42 AM	S
LCS-77967	-----	SW6020A	77967	5	11/18/2016 3:19:00 PM	11/17/2016 11:01:42 AM	S
LCSD-77967	-----	SW6020A	77967	5	11/18/2016 3:21:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A	SGR-ROW13(0.5-2)	SW6020A	77967	5	11/18/2016 3:25:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A SD	SGR-ROW13(0.5-2)	SW6020A	77967	25	11/18/2016 3:27:00 PM	11/17/2016 11:01:42 AM	S
1611053-07A	SGR-ROW14(0.5-2)	SW6020A	77967	5	11/18/2016 3:29:00 PM	11/17/2016 11:01:42 AM	S
1611053-27A	SGR-ROW20(0.5-2)	SW6020A	77967	5	11/18/2016 3:31:00 PM	11/17/2016 11:01:42 AM	S
1611053-32A	SGR-ROW21(0.5-2)	SW6020A	77967	5	11/18/2016 3:33:00 PM	11/17/2016 11:01:42 AM	S
1611053-37A	SGR-ROW22(0.5-2)	SW6020A	77967	5	11/18/2016 3:35:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A PDS	SGR-ROW13(0.5-2)	SW6020A	77967	5	11/18/2016 3:45:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A MS	SGR-ROW13(0.5-2)MS	SW6020A	77967	5	11/18/2016 3:47:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A MSD	SGR-ROW13(0.5-2)MSD	SW6020A	77967	5	11/18/2016 3:49:00 PM	11/17/2016 11:01:42 AM	S
CCV6-161118	-----	SW6020A	R89084	1	11/18/2016 3:51:00 PM		A
LCVL6-161118	-----	SW6020A	R89084	1	11/18/2016 3:56:00 PM		A
CCB6-161118	-----	SW6020A	R89084	1	11/18/2016 4:00:00 PM		A

Lab Order: 1611053
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: PMOIST_161109A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611053-01A	SGR-ROW13(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-06A	SGR-ROW14(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-11A	SGR-ROW15(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-16A	SGR-ROW16(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-21A	SGR-ROW19(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-26A	SGR-ROW20(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-31A	SGR-ROW21(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-36A	SGR-ROW22(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611053-41A	SGR-DUP02(20161104)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611044-14A DUP	-----	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S

Run ID: PMOIST_161116A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611053-02A	SGR-ROW13(0.5-2)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611053-07A	SGR-ROW14(0.5-2)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611053-27A	SGR-ROW20(0.5-2)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611053-32A	SGR-ROW21(0.5-2)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611053-37A	SGR-ROW22(0.5-2)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611144-04A DUP	-----	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S

Run ID: PMOIST_161128A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611053-03A	SGR-ROW13(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611053-08A	SGR-ROW14(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611053-28A	SGR-ROW20(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611053-33A	SGR-ROW21(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611053-38A	SGR-ROW22(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611053-33A DUP	SGR-ROW21(2-4)PD9	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S

CLIENT: Arcadis
Work Order: 1611053
Project: Laredo SGR

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Lead	0.100	0.300

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Lead	0.000300	0.00100

TestNo: SW8270D-LL	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Acenaphthene	0.00500	0.0100
Acenaphthylene	0.00500	0.0100
Anthracene	0.00500	0.0100
Benzo[a]anthracene	0.00500	0.0100
Benzo[a]pyrene	0.00500	0.0100
Benzo[b]fluoranthene	0.00500	0.0100
Benzo[e]pyrene	0.00500	0.0100
Benzo[g,h,i]perylene	0.00500	0.0100
Benzo[j]fluoranthene	0.00500	0.0100
Benzo[k]fluoranthene	0.00500	0.0100
Chrysene	0.00500	0.0100
Dibenz[a,h]anthracene	0.00500	0.0100
Fluoranthene	0.00500	0.0100
Fluorene	0.00500	0.0100
Indeno[1,2,3-cd]pyrene	0.00500	0.0100
Phenanthrene	0.00500	0.0100
Pyrene	0.00500	0.0100

TestNo: SW8270D-LL	MDL	MQL
Analyte	**mg/L**	**mg/L**
Acenaphthene	0.0000250	0.0000500
Acenaphthylene	0.0000250	0.0000500
Anthracene	0.0000250	0.0000500
Benzo[a]anthracene	0.0000250	0.0000500
Benzo[a]pyrene	0.0000250	0.0000500
Benzo[b]fluoranthene	0.0000250	0.0000500
Benzo[e]pyrene	0.0000250	0.0000500
Benzo[g,h,i]perylene	0.0000250	0.0000500
Benzo[j]fluoranthene	0.0000250	0.0000500
Benzo[k]fluoranthene	0.0000250	0.0000500
Chrysene	0.0000250	0.0000500
Dibenz[a,h]anthracene	0.0000250	0.0000500
Fluoranthene	0.0000250	0.0000500
Fluorene	0.0000250	0.0000500
Indeno[1,2,3-cd]pyrene	0.0000250	0.0000500
Phenanthrene	0.0000250	0.0000500
Pyrene	0.0000250	0.0000500

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

GCMS6
For

DHL Work Order
1611053

GCMS6_161108A
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161108A
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			X
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report	X		X
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS			X	
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS			X	
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)			X	

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	7 days (Aq) - extraction	X			X
	14 days (Soil) - extraction			X	
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only			X	
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			X
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE 1. Are all non-conformances included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Are all corrective actions included?				X	
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS __LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	X Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	X Other (describe below)	___ Accept data
X Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

No LCSD/MS/MSD required - Equipment Blanks only in Batch

Analyst: Don Winston Date: 11/8/2016

Second-Level Review: Date: ***REVIEWED/APPROVED*** 11/11/2016

By Sherri Herschmann at 11:22:18 AM, 11/11/2016

DHL Analytical, Inc.

Run ID: GCMS6_161108A **Run No.:** 88889

Analytical Run Date: 11/8/2016 **InstrumentID:** GCMS6

Analyst: Duston Bezner **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161108	1	PAH_LL_WDOD1	TUNE	R88889	11/8/2016 9:09:00 AM		
ICV-161108	1	PAH_LL_WDOD1	ICV	R88889	11/8/2016 9:37:00 AM		
LCS-77809	1	PAH_LL_WDOD1	LCS	77809	11/8/2016 10:05:00 AM		
MB-77809	1	PAH_LL_WDOD1	MBLK	77809	11/8/2016 10:37:00 AM		
1611022-13B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 11:04:00 AM		
1611022-26B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 11:33:00 AM		
1611028-13B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 12:01:00 PM		
1611028-26B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 12:29:00 PM		
1611044-13B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 12:57:00 PM		
1611053-42B	1	PAH_LL_WDOD1	SAMP	77809	11/8/2016 1:25:00 PM		
CCV1-161108	1	PAH_LL_WDOD1	CCV	R88889	11/8/2016 1:53:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHICV161020	2 PPM PAH ICV	ICV	01/18/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	01/11/2026

REVIEWED/APPROVED

By Sherri Herschmann at 11:24:23 AM, 11/11/2016

Sequence Name: C:\HPCHEM\1\SEQUENCE\161108.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161108\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16110801	PP161020	SBLK
2	Sample	2	16110802	DFTPPPAH	DFTPP-161108
3	Sample	3	16110803	PP161020	ICV-161108
4	Sample	4	16110804	PP161020	LCS-77809
5	Sample	5	16110805	PP161020	MB-77809
6	Sample	6	16110806	PP161020	1611022-13B
7	Sample	7	16110807	PP161020	1611022-26B
8	Sample	8	16110808	PP161020	1611028-13B
9	Sample	9	16110809	PP161020	1611028-26B
10	Sample	10	16110810	PP161020	1611044-13B
11	Sample	11	16110811	PP161020	1611053-42B
12	Sample	12	16110812	PP161020	CCV1-161108
13	Sample	1	16110813	DFTPPPAH	DFTPP-161108
14	Sample	2	16110814	PP161020	ICV-161108
15	Sample	3	16110815	PP161020	LCS-77815
16	Sample	4	16110816	PP161020	MB-77815
17	Sample	5	16110817	PP161020	1611022-01A
18	Sample	6	16110818	PP161020	1611022-02A
19	Sample	7	16110819	PP161020	1611022-03A
20	Sample	8	16110820	PP161020	1611022-04A
21	Sample	9	16110821	PP161020	1611022-05A
22	Sample	10	16110822	PP161020	1611022-06A
23	Sample	11	16110823	PP161020	1611022-07A
24	Sample	12	16110824	PP161020	1611022-08A
25	Sample	13	16110825	PP161020	1611022-09A
26	Sample	14	16110826	PP161020	1611022-10A
27	Sample	15	16110827	PP161020	1611022-11A
28	Sample	16	16110828	PP161020	1611022-12A
29	Sample	17	16110829	PP161020	1611022-14A
30	Sample	18	16110830	PP161020	1611022-15A
31	Sample	19	16110831	PP161020	1611022-16A
32	Sample	20	16110832	PP161020	1611022-17A
33	Sample	21	16110833	PP161020	1611022-18A
34	Sample	22	16110834	PP161020	1611022-19A
35	Sample	23	16110835	PP161020	1611022-20A
36	Sample	24	16110836	PP161020	1611022-21A
37	Sample	25	16110837	PP161020	1611022-09AMS
38	Sample	26	16110838	PP161020	1611022-09AMSD
39	Sample	27	16110839	PP161020	CCV1-161108

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/7/2016 10:45:00 AM**
Digestion:
Prep End Date: **11/17/2016 12:00:00 PM**

Prep Batch **77809** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List

Turbo-Vap #1,2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13B	Equip Blank	6	313	1	0.003	1 of 1	
1611022-26B	Equip Blank	6	309.1	1	0.003	1 of 1	
	More samples coming in tomorrow!!!						
1611028-13B	Equip Blank	6	310.8	1	0.003	1 of 1	
1611028-26B	Equip Blank	6	323	1	0.003	1 of 1	
1611044-13B	Equip Blank	6	303.9	1	0.003	1 of 1	
1611053-42B	Equip Blank	6	318	1	0.003	1 of 1	
LCS-77809	Aqueous	6	500	1	0.002	of	
	No LCSD/MS/MSD required as per JD.						
MB-77809	Aqueous	6	500	1	0.002	of	

Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	120	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS	0.01	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.1	01/29/2017

REVIEWED/APPROVED
By Sherri Herschmann at 11:31:35 AM, 11/11/2016

DHL Analytical, Inc. PREP BATCH REPORT

~~10:45AM~~ JG 11/7/16 10:45AM

Prep Start Date: **11/7/2016** ~~**10:04:03**~~ **AM**

Digestion:

Prep End Date: 11/7/16 12:00PM

Equipment List
Turbo-Vap #1,2
Balance # 25, 29

Prep Batch **77809** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13B	Equip Blank	6	500	1	0.002	1 of 1	525.6 - 212.6 = 313.0
1611022-26B	Equip Blank	6	500	1	0.002	1 of 1	522.2 - 213.1 = 309.1
More samples coming in tomorrow!!!							
1611028-13B	Equip Blank	6	500	1	0.002	1 of 1	524.6 - 213.8 = 310.8
1611028-26B	Equip Blank	6	500	1	0.002	1 of 1	536.7 - 213.7 = 323.0
1611044-13B	Equip Blank	6	500	1	0.002	1 of 1	517.4 - 213.5 = 303.9
1611053-42B	Equip Blank	6	500	1	0.002	1 of 1	531.6 - 213.6 = 318.0
LCS-77809	Aqueous	6	500	1	0.002	of	
No LCSD/MS/MSD required as per JD.							
MB-77809	Aqueous	6	500	1	0.002	of	

REVIEWED/APPROVED

By Sherri Herschmann at 11:40:46 AM, 11/11/2016

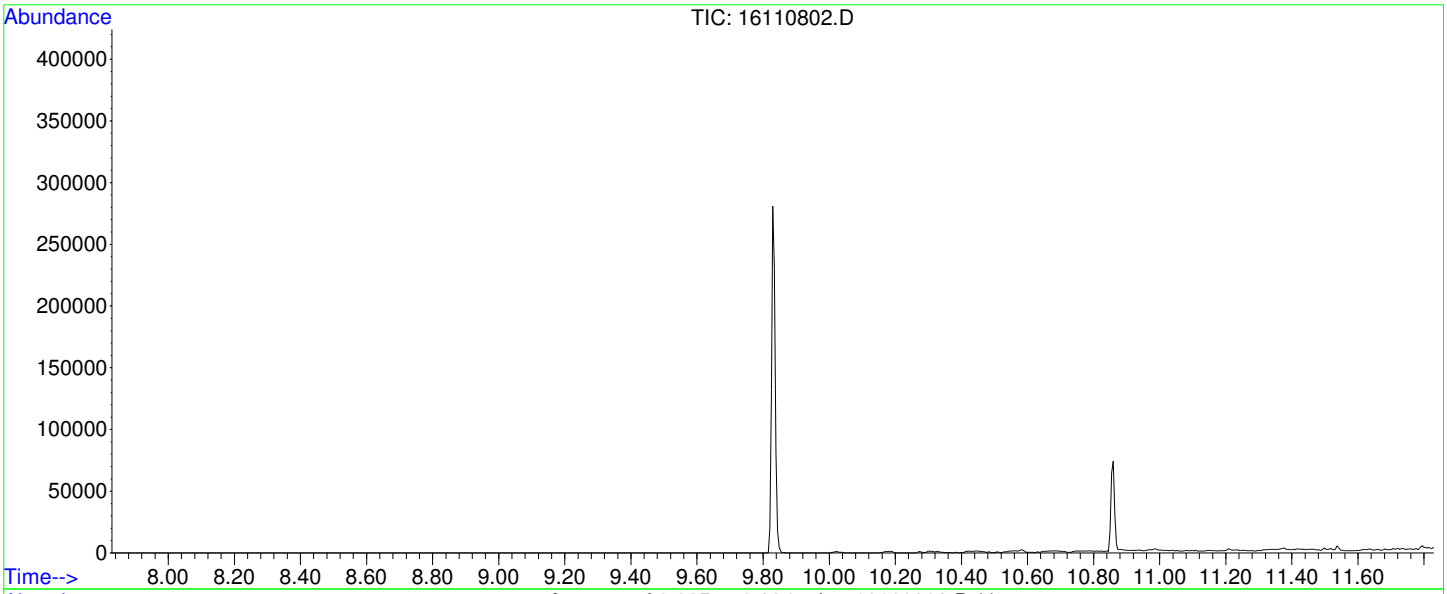
Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	120	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS	0.01	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.1	01/29/2017

JG 11/7/16

11/7/16

Data File : C:\HPCHEM\1\DATA\161108\16110802.D Vial: 2
Acq On : 8 Nov 2016 9:09 am Operator:
Sample : DFTPP-161108 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 794, 795, 796; Background Corrected with Scan 790

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	21.1	5780	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	27.6	7552	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.5	11340	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	27336	PASS
199	198	5	9	6.9	1893	PASS
275	198	10	60	28.1	7682	PASS
365	198	1	200	3.2	873	PASS
441	442	0.01	24	14.9	6168	PASS
442	198	50	400	151.4	41379	PASS
443	442	15	24	19.3	7990	PASS

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110803.D Vial: 3
Acq On : 8 Nov 2016 9:37 am Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

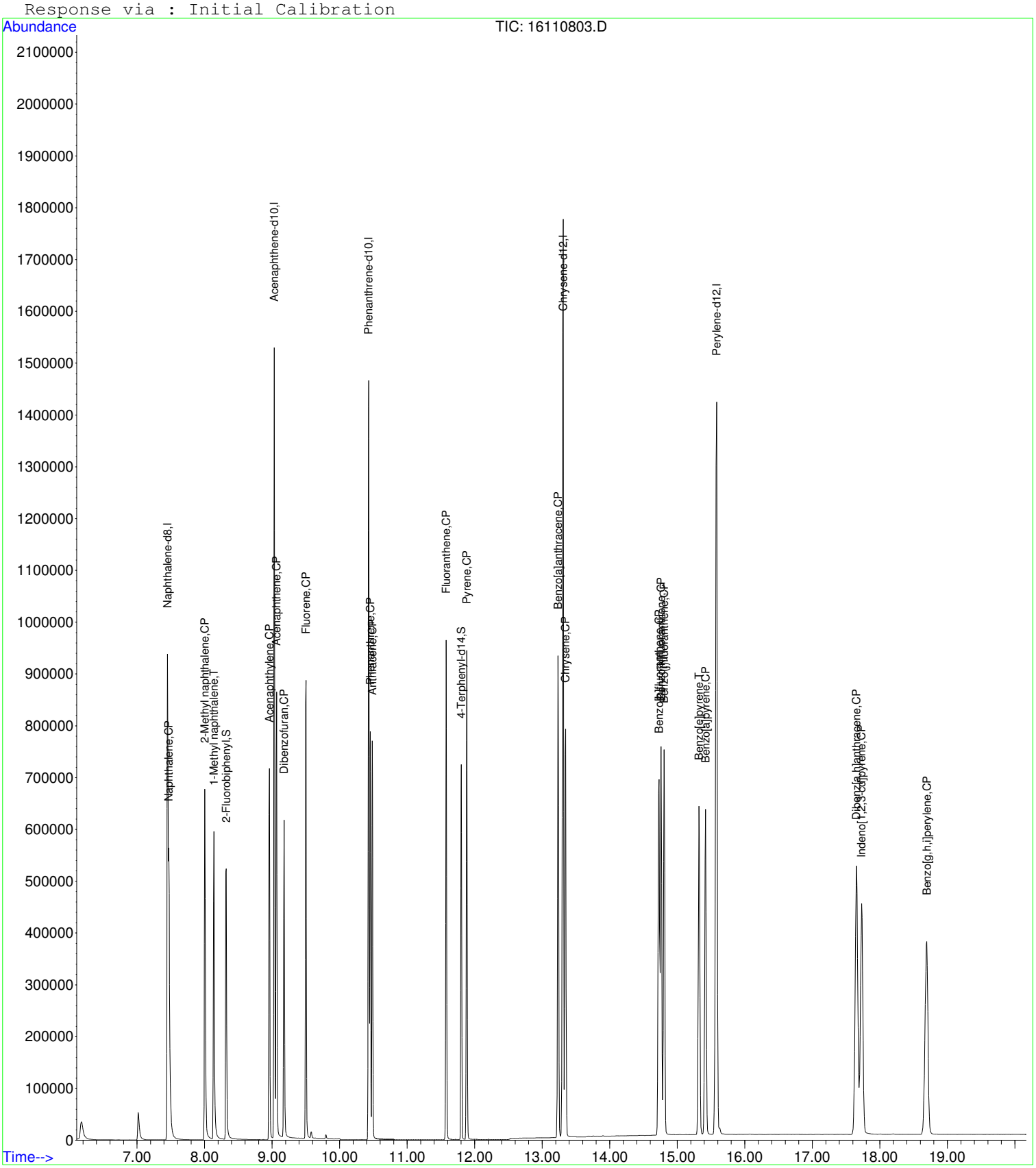
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1127580	4000.00	ug/kg	103
5) Acenaphthene-d10	9.03	164	606384	4000.00	ug/kg	96
11) Phenanthrene-d10	10.43	188	1183171	4000.00	ug/kg	99
17) Chrysene-d12	13.31	240	1572300	4000.00	ug/kg	102
20) Perylene-d12	15.58	264	1645898	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	422364	2384.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	59.62%		
16) 4-Terphenyl-d14	11.80	244	555282	2336.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.42%		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	447296	2203.45	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	332962	2204.05	ug/kg	94
4) 1-Methyl naphthalene	8.14	142	300306	2127.85	ug/kg	92
6) Dibenzofuran	9.18	168	448729	2325.88	ug/kg	99
8) Acenaphthylene	8.96	152	501464	2340.85	ug/kg	99
9) Acenaphthene	9.07	154	291000	2269.82	ug/kg	96
10) Fluorene	9.50	166	363382	2315.85	ug/kg	98
12) Phenanthrene	10.45	178	484887	2104.73	ug/kg	100
13) Anthracene	10.48	178	497052	2096.15	ug/kg	99
14) Fluoranthene	11.58	202	607651	2233.13	ug/kg	100
15) Pyrene	11.88	202	616128	2180.33	ug/kg	100
18) Benzo[a]anthracene	13.23	228	704353	2291.42	ug/kg	100
19) Chrysene	13.35	228	646153	2268.99	ug/kg	98
21) Benzo[b]fluoranthene	14.73	252	841444	2302.11	ug/kg	97
22) Benzo[k]fluoranthene	14.76	252	687267	2039.98	ug/kg	100
23) Benzo(j)fluoranthene	14.81	252	709734	2178.23	ug/kg	100
24) Benzo[e]pyrene	15.32	252	717273	2197.26	ug/kg	98
25) Benzo[a]pyrene	15.42	252	735166	2205.94	ug/kg	99
26) Dibenz[a,h]anthracene	17.66	278	756015	2159.59	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.73	276	740134	2188.49	ug/kg	99
28) Benzo[g,h,i]perylene	18.70	276	761476	2130.86	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110803.D Vial: 3
Acq On : 8 Nov 2016 9:37 am Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

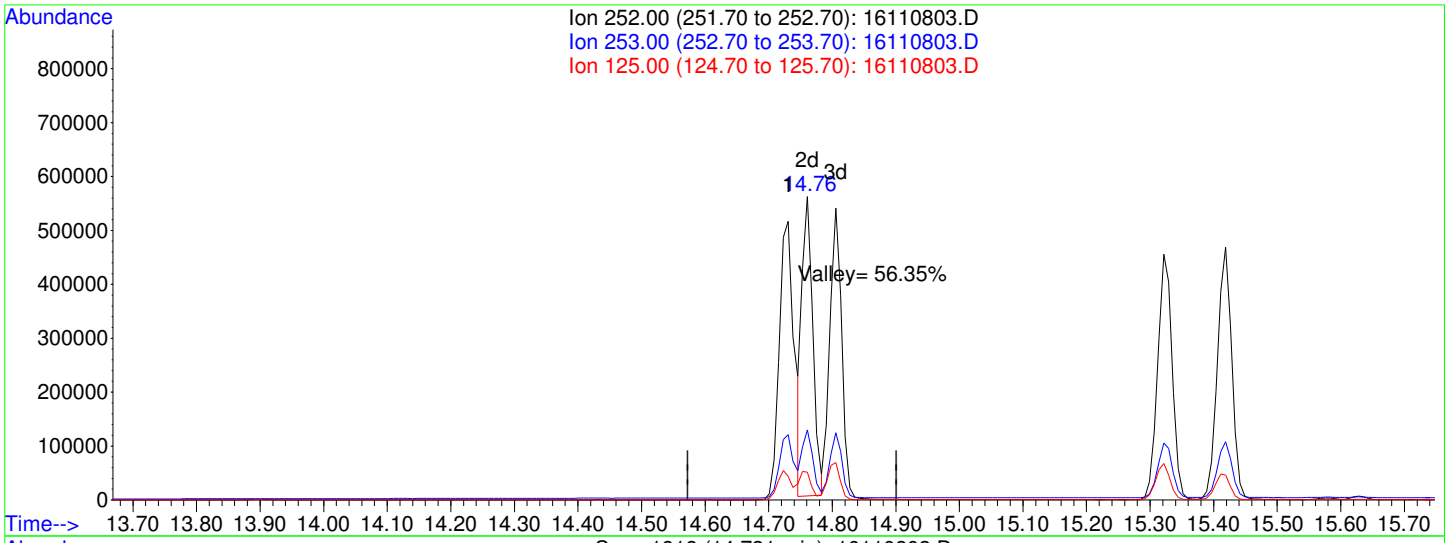
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration

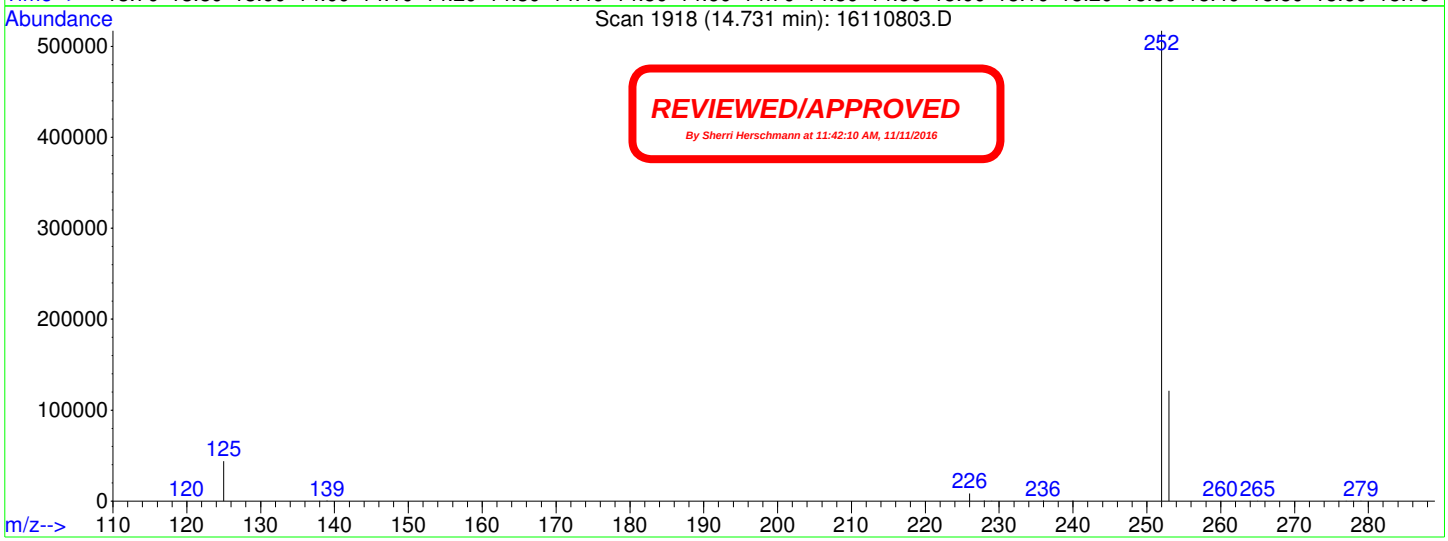


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161108\16110803.D Vial: 3
Acq On : 8 Nov 2016 9:37 am Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 9:57 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Multiple Level Calibration





TIC: 16110803.D

(21) Benzo[b]fluoranthene (CP)

14.73min 2302.11ug/kg

response 841444

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.75
125.00	10.50	8.43
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110804.D Vial: 4
Acq On : 8 Nov 2016 10:05 am Operator:
Sample : LCS-77809 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

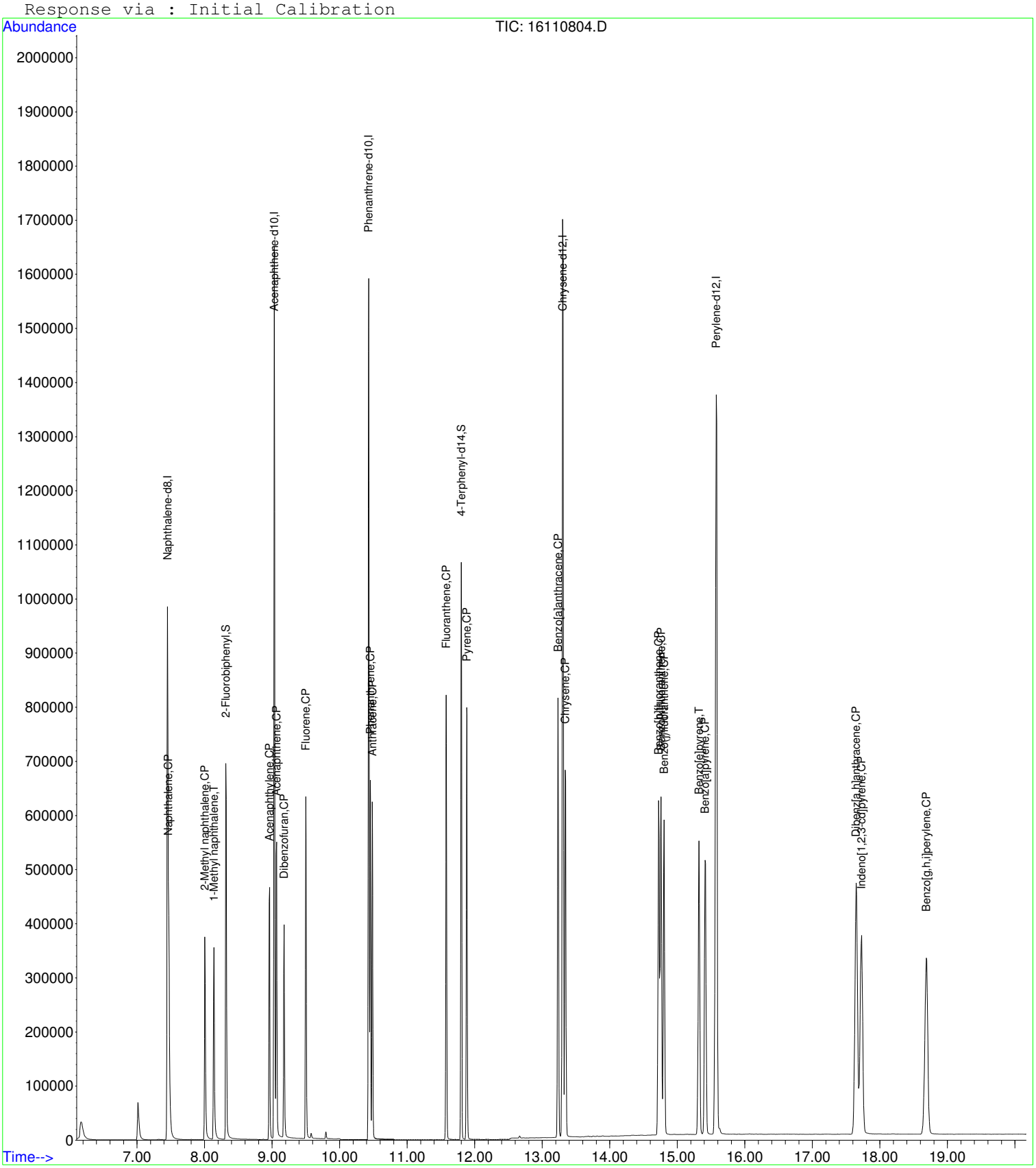
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1160264	4000.00	ug/kg	106
5) Acenaphthene-d10	9.03	164	652744	4000.00	ug/kg	103
11) Phenanthrene-d10	10.43	188	1237377	4000.00	ug/kg	103
17) Chrysene-d12	13.31	240	1603568	4000.00	ug/kg	104
20) Perylene-d12	15.58	264	1696513	4000.00	ug/kg	112
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	521238	2734.20	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	68.36%		
16) 4-Terphenyl-d14	11.80	244	815551	3281.62	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	82.04%		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	258098	1235.62	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	189078	1216.35	ug/kg	92
4) 1-Methyl naphthalene	8.14	142	176442	1214.98	ug/kg	93
6) Dibenzofuran	9.18	168	297086	1430.51	ug/kg	100
8) Acenaphthylene	8.96	152	338353	1467.27	ug/kg	99
9) Acenaphthene	9.07	154	193534	1402.36	ug/kg	96
10) Fluorene	9.50	166	256949	1521.24	ug/kg	98
12) Phenanthrene	10.45	178	399546	1658.32	ug/kg	100
13) Anthracene	10.48	178	398842	1608.30	ug/kg	99
14) Fluoranthene	11.58	202	518916	1823.48	ug/kg	100
15) Pyrene	11.88	202	525224	1777.22	ug/kg	100
18) Benzo[a]anthracene	13.23	228	598952	1910.54	ug/kg	100
19) Chrysene	13.34	228	559934	1927.89	ug/kg	100
21) Benzo[b]fluoranthene	14.72	252	665679	1766.89	ug/kg	100
22) Benzo[k]fluoranthene	14.76	252	672060	1935.33	ug/kg	99
23) Benzo(j)fluoranthene	14.81	252	572790	1705.49	ug/kg	99
24) Benzo[e]pyrene	15.32	252	629325	1870.33	ug/kg	98
25) Benzo[a]pyrene	15.42	252	633795	1845.03	ug/kg	98
26) Dibenz[a,h]anthracene	17.65	278	662147	1835.02	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.73	276	647929	1858.69	ug/kg	98
28) Benzo[g,h,i]perylene	18.69	276	665771	1807.46	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110804.D Vial: 4
Acq On : 8 Nov 2016 10:05 am Operator:
Sample : LCS-77809 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110805.D Vial: 5
Acq On : 8 Nov 2016 10:37 am Operator:
Sample : MB-77809 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

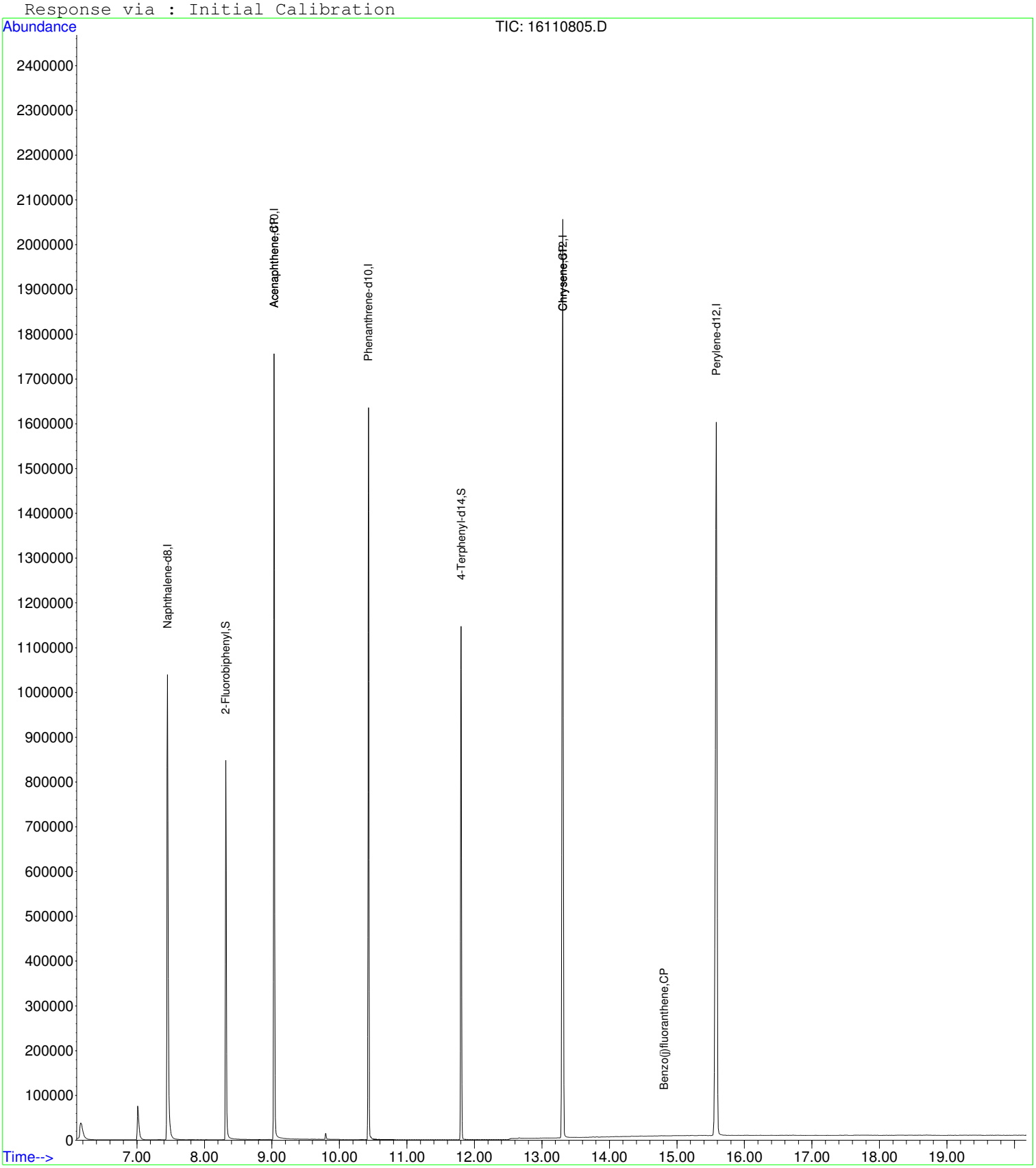
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1259697	4000.00	ug/kg	115
5) Acenaphthene-d10	9.03	164	718062	4000.00	ug/kg	113
11) Phenanthrene-d10	10.43	188	1317969	4000.00	ug/kg	110
17) Chrysene-d12	13.31	240	1816723	4000.00	ug/kg	118
20) Perylene-d12	15.58	264	1889726	4000.00	ug/kg	125
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	584182	2785.63	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	69.64%		
16) 4-Terphenyl-d14	11.80	244	888592	3356.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	83.92%		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	2438	~~16.06 ug/kg#~~		10
19) Chrysene	13.31	228	4210	~~12.79 ug/kg~~		67
23) Benzo(j)fluoranthene	14.81	252	232	0.62 ug/kg#		55

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110805.D Vial: 5
Acq On : 8 Nov 2016 10:37 am Operator:
Sample : MB-77809 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:39 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110811.D Vial: 11
Acq On : 8 Nov 2016 1:25 pm Operator:
Sample : 1611053-42B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:42 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

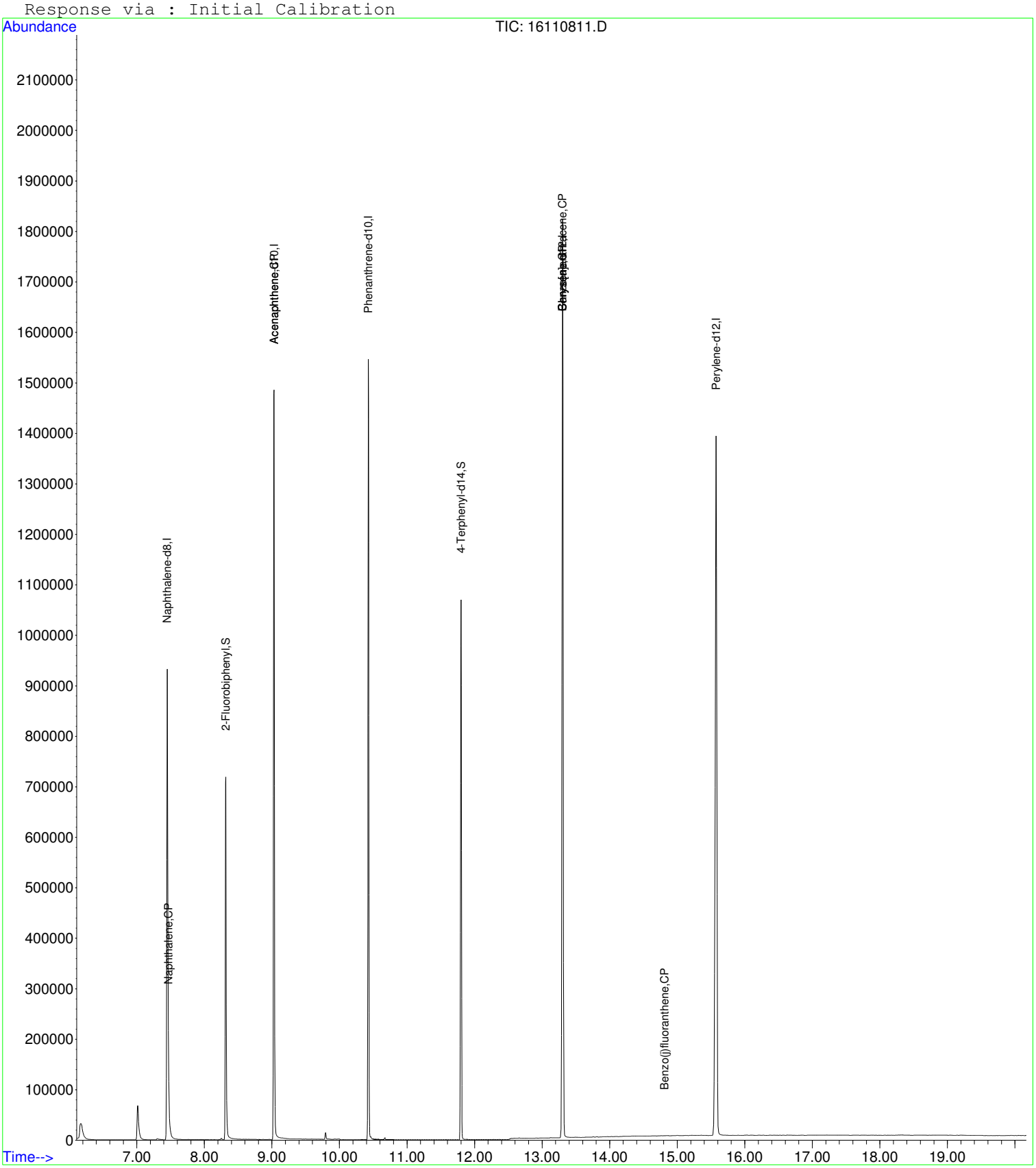
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1140223	4000.00	ug/kg	104
5) Acenaphthene-d10	9.03	164	648512	4000.00	ug/kg	102
11) Phenanthrene-d10	10.43	188	1218010	4000.00	ug/kg	101
17) Chrysene-d12	13.30	240	1592126	4000.00	ug/kg	103
20) Perylene-d12	15.58	264	1627095	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	549047	2898.87	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 72.47%			
16) 4-Terphenyl-d14	11.80	244	820041	3352.15	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 83.80%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	1035	5.04	ug/kg#	1
9) Acenaphthene	9.03	154	2210	16.12	ug/kg#	10
18) Benzo[a]anthracene	13.30	228	3659	11.76	ug/kg	75
19) Chrysene	13.30	228	3659	12.69	ug/kg	71
23) Benzo(j)fluoranthene	14.81	252	30	0.09	ug/kg#	66

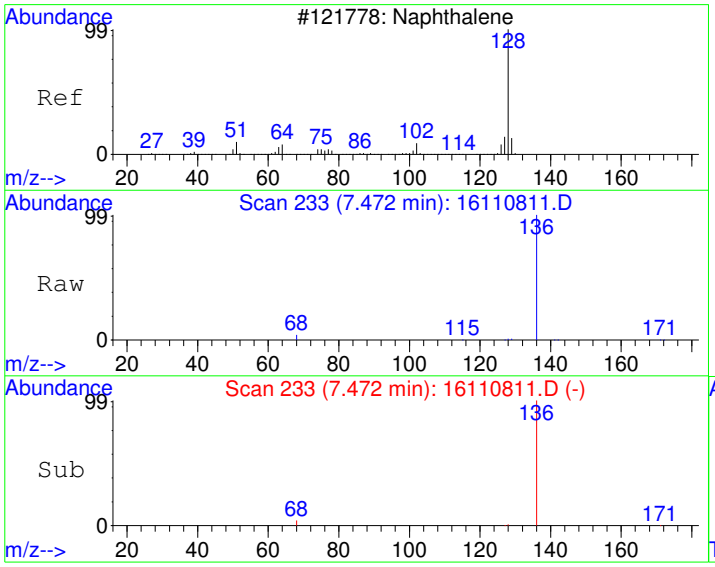
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110811.D Vial: 11
Acq On : 8 Nov 2016 1:25 pm Operator:
Sample : 1611053-42B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:42 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration

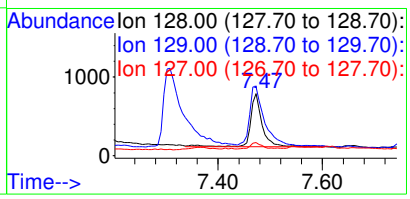


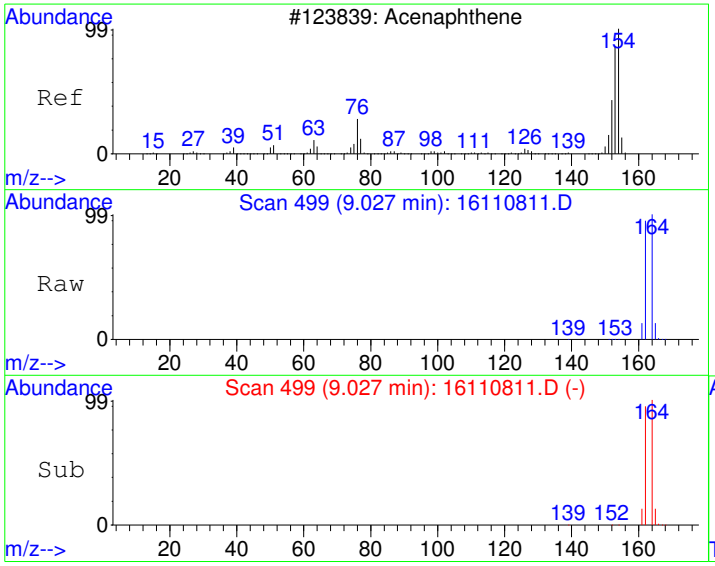


#2
Naphthalene
Concen: 5.04 ug/kg
RT: 7.47 min Scan# 233
Delta R.T. 0.00 min
Lab File: 16110811.D
Acq: 8 Nov 2016 1:25 pm

Tgt Ion:128 Resp: 1035

Ion	Ratio	Lower	Upper
128	100		
129	112.1	0.0	41.1#
127	11.8	0.0	42.7

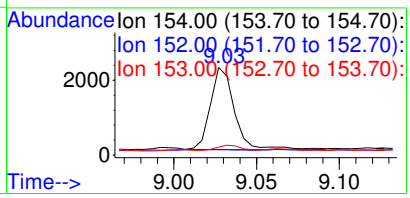


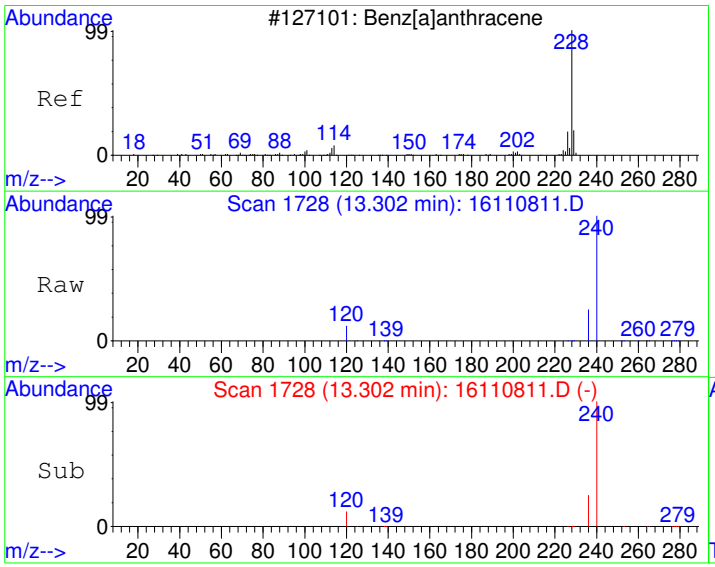


#9
Acenaphthene
Concen: 16.12 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110811.D
Acq: 8 Nov 2016 1:25 pm

Tgt Ion:154 Resp: 2210

Ion	Ratio	Lower	Upper
154	100		
152	0.8	19.8	79.8#
153	4.1	77.1	137.1#

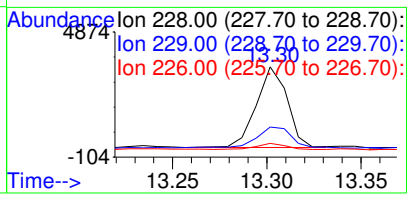


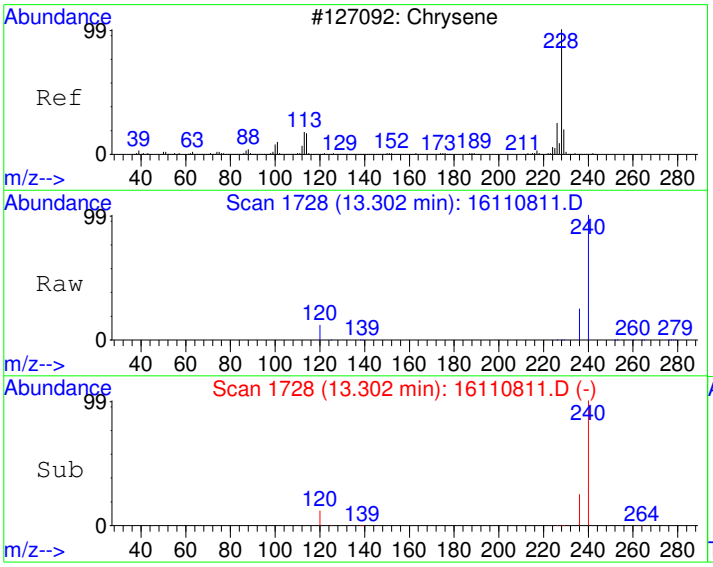


#18
Benzo[a]anthracene
Concen: 11.76 ug/kg
RT: 13.30 min Scan# 1728
Delta R.T. 0.05 min
Lab File: 16110811.D
Acq: 8 Nov 2016 1:25 pm

Tgt Ion:228 Resp: 3659

Ion	Ratio	Lower	Upper
228	100		
229	25.6	0.0	50.4
226	7.2	0.0	55.6

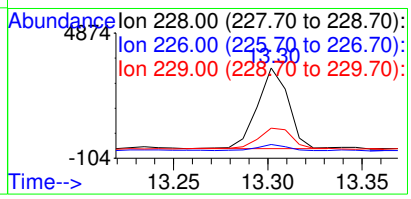


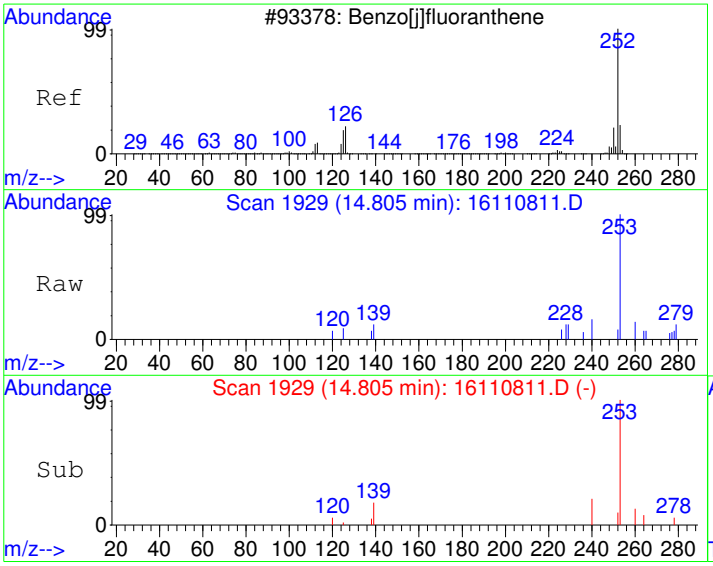


#19
Chrysene
Concen: 12.69 ug/kg
RT: 13.30 min Scan# 1728
Delta R.T. -0.05 min
Lab File: 16110811.D
Acq: 8 Nov 2016 1:25 pm

Tgt Ion:228 Resp: 3659

Ion	Ratio	Lower	Upper
228	100		
226	7.2	0.0	58.8
229	25.6	0.0	50.2

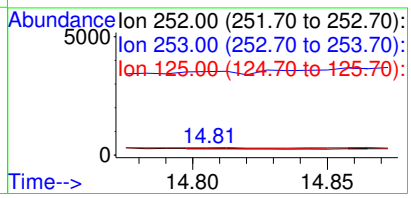




#23
Benzo(j)fluoranthene
Concen: 0.09 ug/kg
RT: 14.81 min Scan# 1929
Delta R.T. -0.01 min
Lab File: 16110811.D
Acq: 8 Nov 2016 1:25 pm

Tgt Ion:252 Resp: 30

Ion	Ratio	Lower	Upper
252	100		
253	45.5	2.3	42.3#
125	9.1	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110812.D Vial: 12
Acq On : 8 Nov 2016 1:53 pm Operator:
Sample : CCV1-161108 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

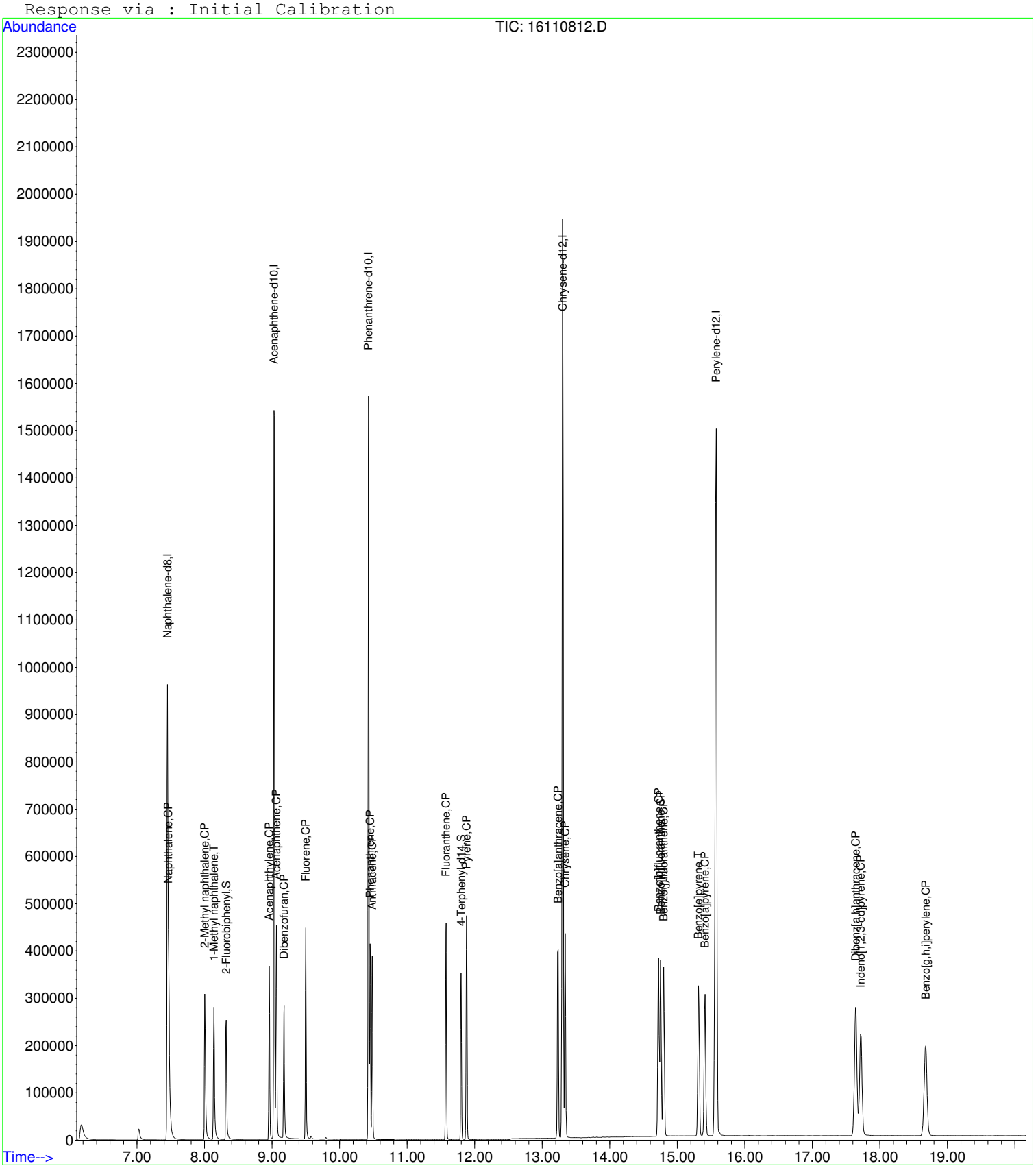
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1190454	4000.00	ug/kg	109
5) Acenaphthene-d10	9.03	164	666968	4000.00	ug/kg	105
11) Phenanthrene-d10	10.43	188	1263874	4000.00	ug/kg	105
17) Chrysene-d12	13.30	240	1659912	4000.00	ug/kg	108
20) Perylene-d12	15.58	264	1780897	4000.00	ug/kg	117
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	210918	1082.79	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.07%#			
16) 4-Terphenyl-d14	11.80	244	278801	1098.32	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.46%#			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	219624	1024.76	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	164000	1028.26	ug/kg	91
4) 1-Methyl naphthalene	8.14	142	149176	1001.18	ug/kg	94
6) Dibenzofuran	9.18	168	224344	1057.21	ug/kg	100
8) Acenaphthylene	8.96	152	251020	1065.33	ug/kg	99
9) Acenaphthene	9.06	154	145891	1034.59	ug/kg	99
10) Fluorene	9.50	166	179611	1040.69	ug/kg	100
12) Phenanthrene	10.45	178	251708	1022.81	ug/kg	99
13) Anthracene	10.48	178	256293	1011.81	ug/kg	99
14) Fluoranthene	11.58	202	307222	1056.95	ug/kg	100
15) Pyrene	11.88	202	309801	1026.31	ug/kg	99
18) Benzo[a]anthracene	13.23	228	343891	1059.71	ug/kg	99
19) Chrysene	13.34	228	319450	1062.55	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	421695	1066.26	ug/kg	98
22) Benzo[k]fluoranthene	14.75	252	348833	956.93	ug/kg	100
23) Benzo(j)fluoranthene	14.80	252	359077	1018.50	ug/kg	99
24) Benzo[e]pyrene	15.31	252	360317	1020.11	ug/kg	98
25) Benzo[a]pyrene	15.41	252	366132	1015.34	ug/kg	99
26) Dibenz[a,h]anthracene	17.64	278	378569	999.42	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.72	276	373996	1022.03	ug/kg	100
28) Benzo[g,h,i]perylene	18.68	276	384622	994.71	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110812.D Vial: 12
Acq On : 8 Nov 2016 1:53 pm Operator:
Sample : CCV1-161108 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 8 14:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



GCMS6_161111C
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161111C
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report		X	x
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			x
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS		X		
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS		X		
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)		X		

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis	7 days (Aq) - extraction			X	
1. Are all sample hold times met?	14 days (Soil) - extraction	X			
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only	X			x
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			x
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE 1. Are all non-conformances included and noted?	All deviations from the method and SOP that affect data quality	X			x
2. Are all corrective actions included?		X			
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?		X			

QA APPROVED
By John DuPont at 12:00:41 PM, 11/14/2016

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS ___LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
X Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

MSD and ending CCV ran outside the 12 hour tune.

Analyst: Don Winston Date: 11/14/2016

Second-Level Review: Janice Whitt Date: 11/14/2016

REVIEWED BY
By Janice Whitt at 11:38:09 AM, 11/14/2016

DHL Analytical, Inc.

Run ID: GCMS6_161111C **Run No.:** 88956

Analytical Run Date: 11/11/2016 **InstrumentID:** GCMS6

Analyst: Don Winston **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161111	1	PAH_LL_SDOD1	TUNE	R88956	11/11/2016 3:22:00 PM		All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers.
ICV-161111	1	PAH_LL_SDOD1	ICV	R88956	11/11/2016 3:50:00 PM		
LCS-77875	1	PAH_LL_SDOD1	LCS	77875	11/11/2016 4:18:00 PM		DNR-Internal standards not spiked. See rerun.
MB-77875	1	PAH_LL_SDOD1	MBLK	77875	11/11/2016 4:46:00 PM		DNR-Internal standards not spiked. See rerun.
LCS-77875	1	PAH_LL_SDOD1	LCS	77875	11/11/2016 5:13:00 PM		
MB-77875	1	PAH_LL_SDOD1	MBLK	77875	11/11/2016 5:41:00 PM		
1611044-14A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 6:09:00 PM		
1611044-15A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 6:37:00 PM		
1611044-18A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 7:05:00 PM		
1611044-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 7:33:00 PM		
1611053-01A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:01:00 PM		
1611053-06A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:29:00 PM		
1611053-11A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:57:00 PM		
1611053-16A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 9:25:00 PM		
1611053-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 9:53:00 PM		
1611053-26A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 10:21:00 PM		
1611071-16A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 10:49:00 PM		
1611071-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 11:17:00 PM		
1611053-41A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 11:45:00 PM		
1611071-01A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 12:13:00 AM		
1611071-04A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 12:41:00 AM		
1611071-08A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 1:09:00 AM		
1611071-11A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 1:37:00 AM		
1611053-31A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 2:05:00 AM		
1611053-36A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 2:33:00 AM		
1611071-16AMS	10	PAH_LL_SDOD1	MS	77875	11/12/2016 3:01:00 AM		High recovery for Chrysene, Fluoranthene, Fluorene, Phenanthrene and Pyrene .

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

DHL Analytical, Inc.

Run ID: GCMS6_161111C **Run No.:** 88956

1611071-16AMSD	10	PAH_LL_SDOD1	MSD	77875	11/12/2016 3:29:00 AM		High recovery for Phenanthrene and Pyrene. %RPD outside limits for Fluoranthene. MSD ran 7 minutes outside 12 hour tune.
CCV1-161111	1	PAH_LL_SDOD1	CCV	R88956	11/12/2016 3:57:00 AM		CCV ran 35 minutes outside 12 hour tune.

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C
11	Sample	1	16111111	DFTPPPAH	DFTPP-161111
12	Sample	2	16111112	PP161020	ICV-161111
13	Sample	3	16111113	PP161020	LCS-77875
14	Sample	4	16111114	PP161020	MB-77875
15	Sample	3	16111115	PP161020	LCS-77875
16	Sample	4	16111116	PP161020	MB-77875
17	Sample	5	16111117	PP161020	1611044-14A
18	Sample	6	16111118	PP161020	1611044-15A
19	Sample	7	16111119	PP161020	1611044-18A
20	Sample	8	16111120	PP161020	1611044-21A
21	Sample	9	16111121	PP161020	1611053-01A
22	Sample	10	16111122	PP161020	1611053-06A
23	Sample	11	16111123	PP161020	1611053-11A
24	Sample	12	16111124	PP161020	1611053-16A
25	Sample	13	16111125	PP161020	1611053-21A
26	Sample	14	16111126	PP161020	1611053-26A
27	Sample	15	16111127	PP161020	1611071-16A
28	Sample	16	16111128	PP161020	1611071-21A
29	Sample	17	16111129	PP161020	1611053-41A
30	Sample	18	16111130	PP161020	1611071-01A
31	Sample	19	16111131	PP161020	1611071-04A
32	Sample	20	16111132	PP161020	1611071-08A
33	Sample	21	16111133	PP161020	1611071-11A
34	Sample	22	16111134	PP161020	1611053-31A
35	Sample	23	16111135	PP161020	1611053-36A
36	Sample	24	16111136	PP161020	1611071-16AMS
37	Sample	25	16111137	PP161020	1611071-16AMSD
38	Sample	26	16111138	PP161020	CCV1-161111

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: **11/11/2016 2:59:00 PM**

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10.64	10	0.940	1 of 1	
	Clay-like. This is a reprep of 77829.						
1611044-15A	Soil		10.12	10	0.988	1 of 1	
	Clay-like.						
1611044-18A	Soil		10.4	10	0.962	1 of 1	
	Clay-like.						
1611044-21A	Soil		10	10	1.000	1 of 1	
	Clay-like.						
1611053-01A	Soil		10.1	10	0.990	1 of 1	
1611053-06A	Soil		10.3	10	0.971	1 of 1	
	Contains grass, pebbles, shells						
1611053-11A	Soil		10.2	10	0.980	1 of 1	
1611053-16A	Soil		10.25	10	0.976	1 of 1	
1611053-21A	Soil		10.07	10	0.993	1 of 1	
1611053-26A	Soil		10.35	10	0.966	1 of 1	
	Contains grass, leaves						
1611053-31A	Soil		10.7	10	0.935	1 of 1	
	Contains grass, leaves						
1611053-36A	Soil		10.45	10	0.957	1 of 1	
	Contains grass, leaves						
1611053-41A	Soil		10.53	10	0.950	1 of 1	
	Contains grass, leaves, roots						
1611071-01A	Soil		10.48	10	0.954	1 of 1	
1611071-04A	Soil		10.95	10	0.913	1 of 1	
1611071-08A	Soil		10.53	10	0.950	1 of 1	
	Clay.						
1611071-11A	Soil		10.61	10	0.943	1 of 1	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:05 AM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: **11/11/2016 2:59:00 PM**

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-16A	Soil		10.64	10	0.940	1 of 1	
1611071-16AMS	Soil		10.07	10	0.993	of	
1611071-16AMSD	Soil		10.52	10	0.951	of	
1611071-21A	Soil		10.33	10	0.968	1 of 1	
LCS-77875	Soil		10	10	1.000	of	
MB-77875	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:07 AM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: 11/11/2016 2:59 PM

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia** Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10.64	10	1.000	1 of 1	clay-like This is a reprep of 77829
1611044-15A	Soil		10.12	10	1.000	1 of 1	
1611044-18A	Soil		10.40	10	1.000	1 of 1	
1611044-21A	Soil		10.00	10	1.000	1 of 1	
1611053-01A	Soil		10.10	10	1.000	1 of 1	
1611053-06A	Soil		10.30	10	1.000	1 of 1	contains grass, pebbles, shells
1611053-11A	Soil		10.20	10	1.000	1 of 1	
1611053-16A	Soil		10.25	10	1.000	1 of 1	
1611053-21A	Soil		10.07	10	1.000	1 of 1	
1611053-26A	Soil		10.35	10	1.000	1 of 1	Contains grass, leaves
1611053-31A	Soil		10.70	10	1.000	1 of 1	" " "
1611053-36A	Soil		10.45	10	1.000	1 of 1	" "
1611053-41A	Soil		10.53	10	1.000	1 of 1	" " " , roots
1611071-01A	Soil		10.48	10	1.000	1 of 1	
1611071-04A	Soil		10.95	10	1.000	1 of 1	
1611071-08A	Soil		10.53	10	1.000	1 of 1	clay
1611071-11A	Soil		10.61	10	1.000	1 of 1	
1611071-16A	Soil		10.64	10	1.000	1 of 1	
1611071-16AMS	Soil		10.07	10	1.000	of	
1611071-16AMSD	Soil		10.52	10	1.000	of	
1611071-21A	Soil		10.33	10	1.000	1 of 1	
LCS-77875	Soil		10	10	1.000	of	
MB-77875	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

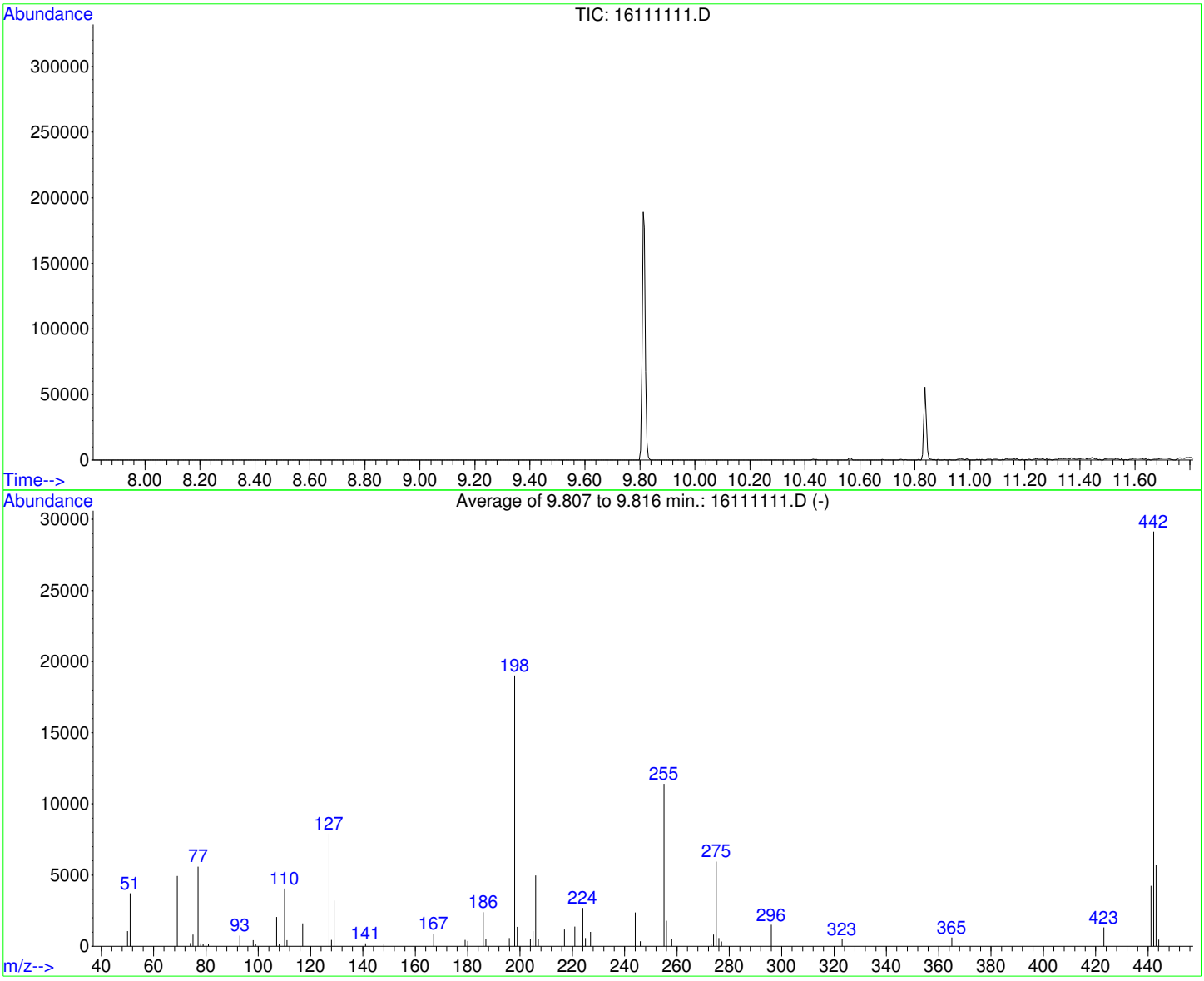
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:00 AM, 11/14/2016

11/11/16

11/11/16

Data File : C:\HPCHEM\1\DATA\161111\16111111.D Vial: 1
Acq On : 11 Nov 2016 3:22 pm Operator:
Sample : DFTPP-161111 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 791, 792, 793; Background Corrected with Scan 787

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	19.6	3721	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	26.0	4943	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.7	7923	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	19016	PASS
199	198	5	9	7.2	1362	PASS
275	198	10	60	31.3	5956	PASS
365	198	1	200	3.3	620	PASS
441	442	0.01	24	14.6	4248	PASS
442	198	50	400	153.3	29146	PASS
443	442	15	24	19.7	5743	PASS

REVIEWED BY
By Janice Whitt at 10:54:02 AM, 11/14/2016

Manual Integrations Tracking Form - DoD QSM 5.0 Requirement

Instrument ID: GCMS #6 **Data Folder: GCMS6_161111C**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611044-18A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-01A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-06A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-11A	Benzo[k]fluoranthene– Integrated wrong peak			
1611053-26A	Benzo[k]fluoranthene– Integrated wrong peak			
1611053-31A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-01A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-04A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-16A	Benzo[k]fluoranthene– Integrated wrong peak			

***Manually Integrated = MI**

Don Winston 11-11-2016

Analyst **Date**

Angie O'Donnell 12/2/2016

2nd Level Review **Date**

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

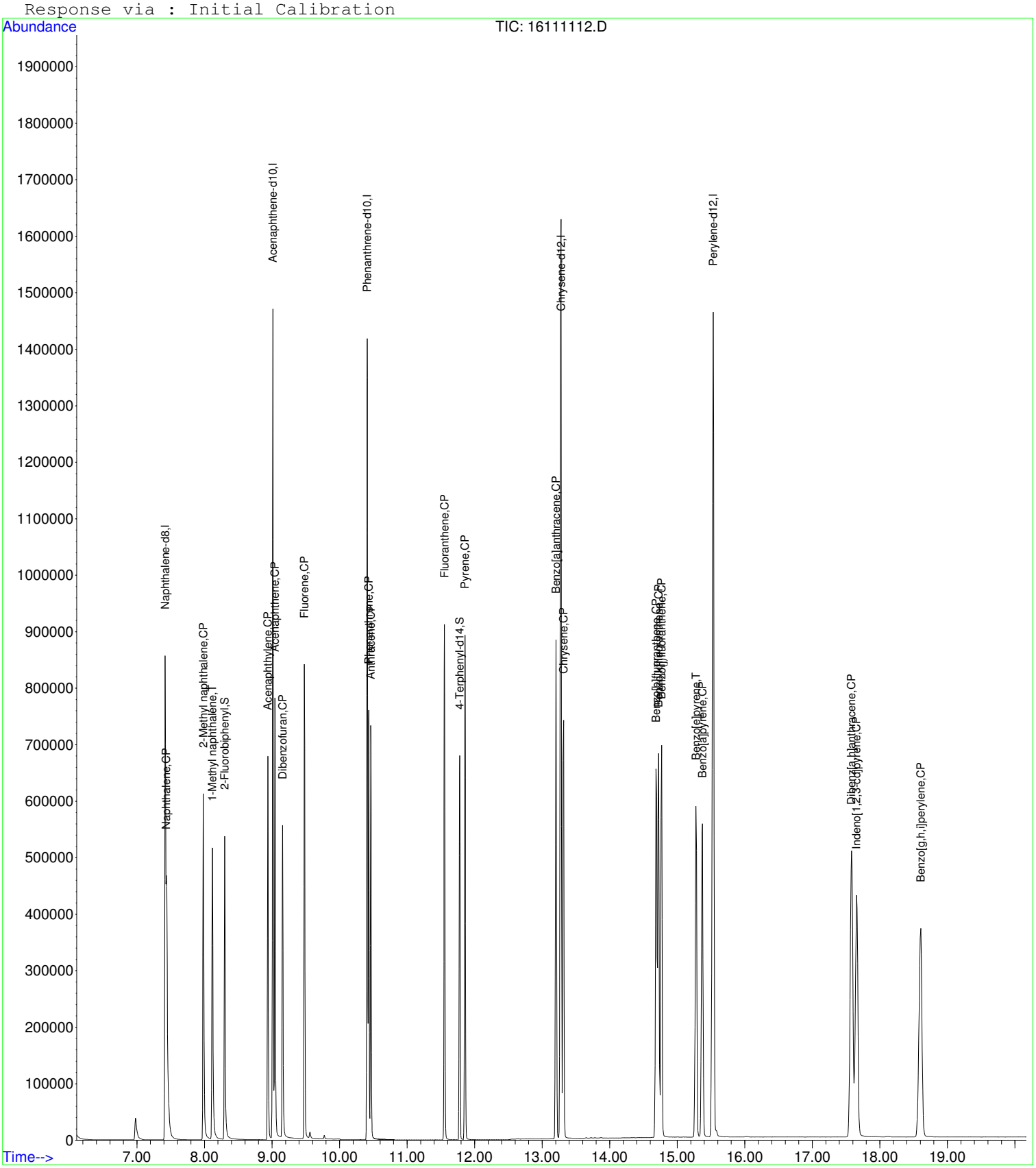
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1032489	4000.00	ug/kg	95
5) Acenaphthene-d10	9.01	164	583652	4000.00	ug/kg	92
11) Phenanthrene-d10	10.41	188	1124326	4000.00	ug/kg	94
17) Chrysene-d12	13.28	240	1548523	4000.00	ug/kg	100
20) Perylene-d12	15.53	264	1687021	4000.00	ug/kg	111
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	392693	2303.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	57.59%		
16) 4-Terphenyl-d14	11.78	244	526763	2332.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.32%		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	395881	2129.78	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	301328	2178.35	ug/kg	92
4) 1-Methyl naphthalene	8.12	142	271193	2098.54	ug/kg	95
6) Dibenzofuran	9.16	168	418688	2254.69	ug/kg	98
8) Acenaphthylene	8.94	152	456810	2215.46	ug/kg	100
9) Acenaphthene	9.04	154	267447	2167.35	ug/kg	99
10) Fluorene	9.48	166	335369	2220.56	ug/kg	98
12) Phenanthrene	10.43	178	466758	2132.07	ug/kg	100
13) Anthracene	10.46	178	473783	2102.59	ug/kg	100
14) Fluoranthene	11.55	202	565079	2185.36	ug/kg	99
15) Pyrene	11.86	202	574300	2138.67	ug/kg	100
18) Benzo[a]anthracene	13.20	228	643750	2126.42	ug/kg	100
19) Chrysene	13.32	228	593119	2114.74	ug/kg	98
21) Benzo[b]fluoranthene	14.69	252	803287	2144.14	ug/kg	99
22) Benzo[k]fluoranthene	14.72	252	632979	1833.04	ug/kg	99
23) Benzo(j)fluoranthene	14.77	252	656983	1967.19	ug/kg	98
24) Benzo[e]pyrene	15.28	252	679007	2029.34	ug/kg	97
25) Benzo[a]pyrene	15.37	252	684518	2003.90	ug/kg	98
26) Dibenz[a,h]anthracene	17.58	278	749501	2088.79	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.66	276	726395	2095.51	ug/kg	98
28) Benzo[g,h,i]perylene	18.61	276	761602	2079.26	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

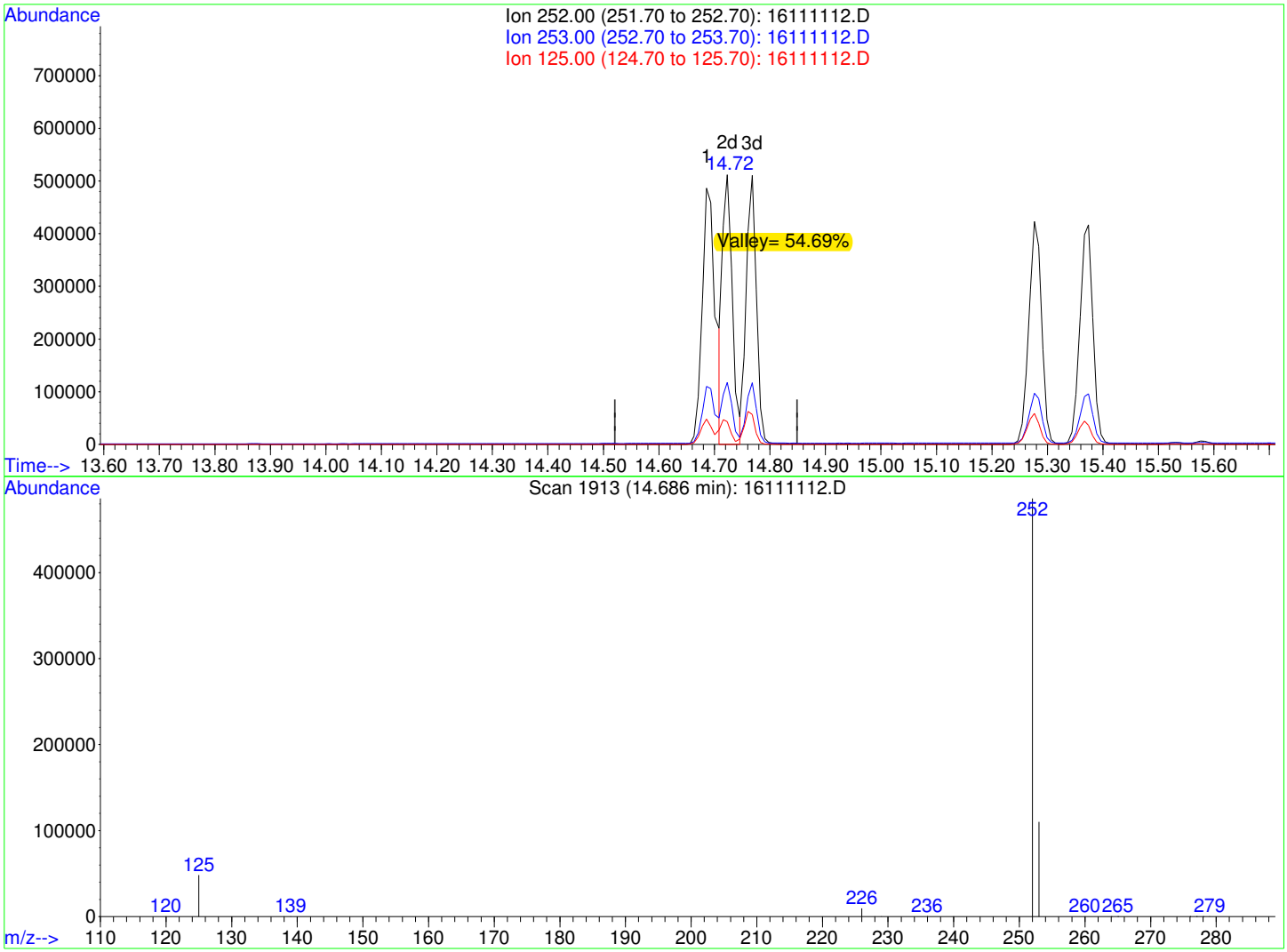
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration



TIC: 16111112.D

(21) Benzo[b]fluoranthene (CP)

14.69min 2144.14ug/kg

response 803287

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.22
125.00	10.50	9.91
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111113.D Vial: 3
Acq On : 11 Nov 2016 4:18 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

DNR-Internal standards not spiked.

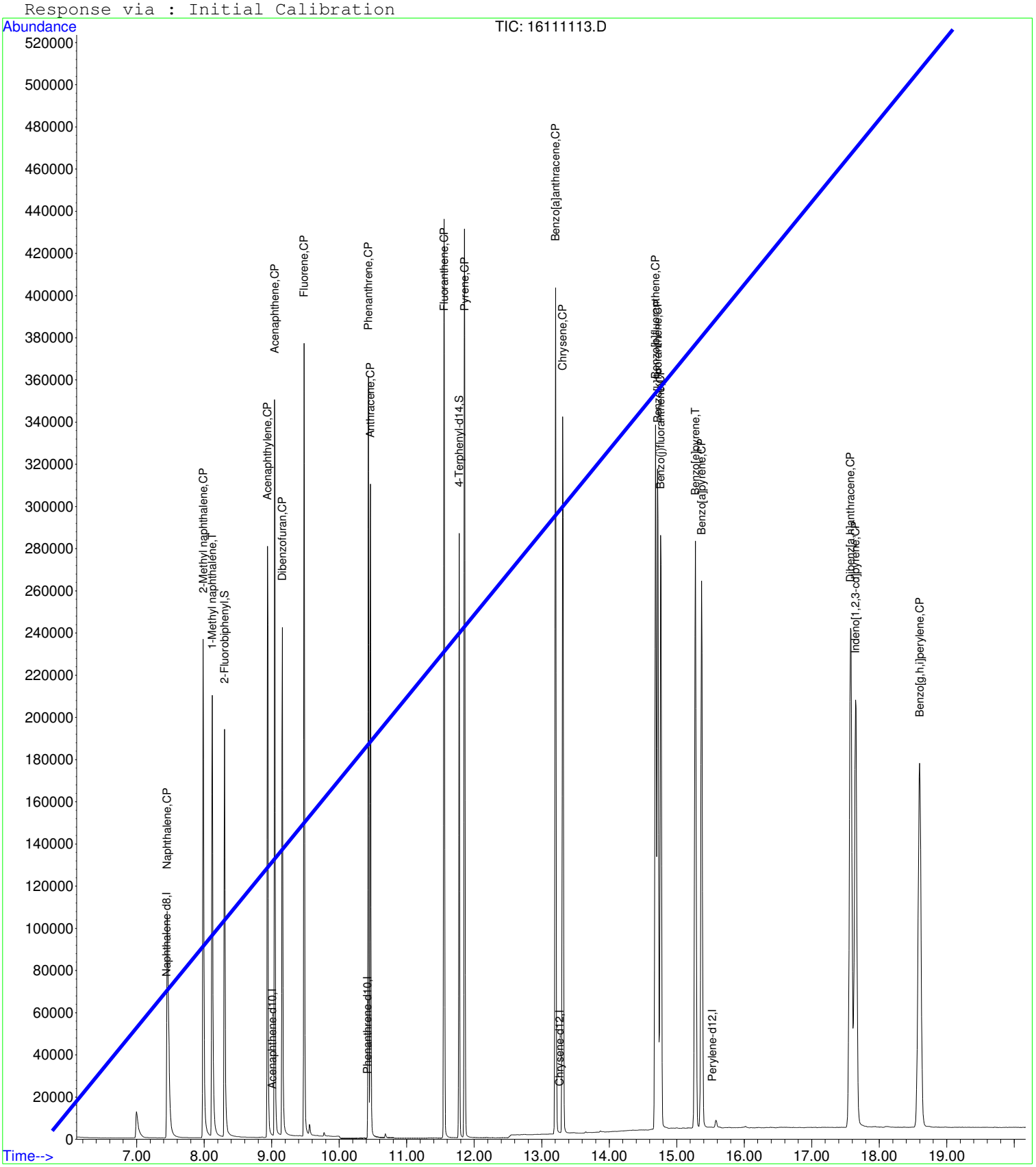
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.44	136	126	4000.00	ug/kg	0
5) Acenaphthene-d10	9.01	164	33	4000.00	ug/kg	0
11) Phenanthrene-d10	10.41	188	99	4000.00	ug/kg	0
17) Chrysene-d12	13.27	240	179	4000.00	ug/kg	0
20) Perylene-d12	15.53	264	135	4000.00	ug/kg	0
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	156280	16215363.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 405384.10%#		
16) 4-Terphenyl-d14	11.78	244	222852	11207803.16	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 280195.08%#		
Target Compounds						Qvalue
2) Naphthalene	7.46	128	183761	8101006.95	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	129393	7665025.21	ug/kg	91
4) 1-Methyl naphthalene	8.12	142	117416	7445294.43	ug/kg	94
6) Dibenzofuran	9.16	168	186594	17771944.61	ug/kg	99
8) Acenaphthylene	8.94	152	202584	17376912.86	ug/kg	100
9) Acenaphthene	9.04	154	123712	17731412.16	ug/kg	99
10) Fluorene	9.48	166	154772	18124782.92	ug/kg	98
12) Phenanthrene	10.43	178	221291	11479720.66	ug/kg	99
13) Anthracene	10.46	178	203883	10527755.98	ug/kg	99
14) Fluoranthene	11.55	202	268357	11786481.96	ug/kg	99
15) Pyrene	11.86	202	273146	11552015.66	ug/kg	99
18) Benzo[a]anthracene	13.20	228	298299	8524112.13	ug/kg	99
19) Chrysene	13.31	228	282667	8718762.14	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	343939	11472300.09	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	339683	12292590.88	ug/kg	100
23) Benzo(j)fluoranthene	14.76	252	285828	10695048.84	ug/kg	98
24) Benzo[e]pyrene	15.28	252	321395	12003432.31	ug/kg	96
25) Benzo[a]pyrene	15.37	252	304803	11150546.78	ug/kg	99
26) Dibenz[a,h]anthracene	17.58	278	349419	12169044.78	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.66	276	344457	12417614.79	ug/kg	95
28) Benzo[g,h,i]perylene	18.60	276	359536	12266179.54	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111113.D Vial: 3
Acq On : 11 Nov 2016 4:18 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111114.D Vial: 4
Acq On : 11 Nov 2016 4:46 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

DNR-Internal standards not spiked.

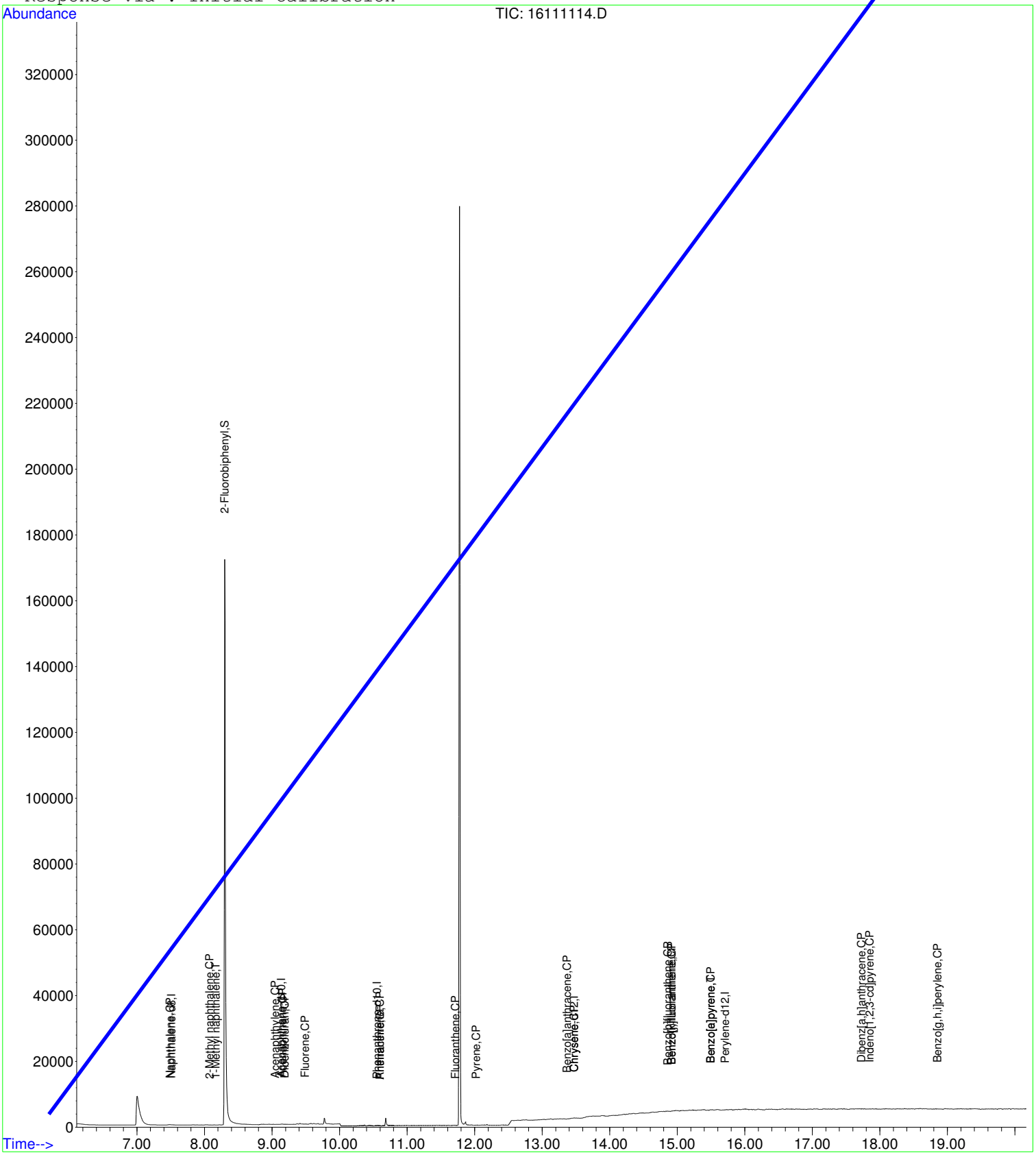
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.52	136	92	4000.00	ug/kg	0
5) Acenaphthene-d10	9.14	164	14	4000.00	ug/kg	0
11) Phenanthrene-d10	10.55	188	31	4000.00	ug/kg	0
17) Chrysene-d12	13.47	240	162	4000.00	ug/kg	0
20) Perylene-d12	15.71	264	18	4000.00	ug/kg	0
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	153433	37525628.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 938140.72%#		
16) 4-Terphenyl-d14	0.00	244	0	0.00	ug/kg	
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 0.00%#		
Target Compounds						Qvalue
2) Naphthalene	7.49	128	181	10928.10	ug/kg#	1
3) 2-Methyl naphthalene	8.07	142	7	567.92	ug/kg#	25
4) 1-Methyl naphthalene	8.17	142	9	781.59	ug/kg	82
6) Dibenzofuran	9.19	168	54	12123.19	ug/kg#	44
8) Acenaphthylene	9.05	152	16	3234.99	ug/kg	62
9) Acenaphthene	9.16	154	87	29392.51	ug/kg#	11
10) Fluorene	9.49	166	31	8557.13	ug/kg	96
12) Phenanthrene	10.60	178	8	1325.35	ug/kg	73
13) Anthracene	10.60	178	8	1287.65	ug/kg	74
14) Fluoranthene	11.71	202	19	2665.01	ug/kg	64
15) Pyrene	12.02	202	11	1485.69	ug/kg	66
18) Benzo[a]anthracene	13.36	228	11	347.32	ug/kg	52
19) Chrysene	13.47	228	34	1158.77	ug/kg	80
21) Benzo[b]fluoranthene	14.86	252	35	8755.85	ug/kg#	1
22) Benzo[k]fluoranthene	14.91	252	52	14113.48	ug/kg#	1
23) Benzo(j)fluoranthene	14.91	252	52	14592.93	ug/kg#	1
24) Benzo[e]pyrene	15.49	252	51	14285.58	ug/kg	80
25) Benzo[a]pyrene	15.49	252	51	13992.92	ug/kg	80
26) Dibenz[a,h]anthracene	17.73	278	31	8097.16	ug/kg	62
27) Indeno[1,2,3-cd]pyrene	17.85	276	8	2162.99	ug/kg	68
28) Benzo[g,h,i]perylene	18.86	276	13	3326.38	ug/kg	77

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111114.D Vial: 4
Acq On : 11 Nov 2016 4:46 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111115.D Vial: 3
Acq On : 11 Nov 2016 5:13 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

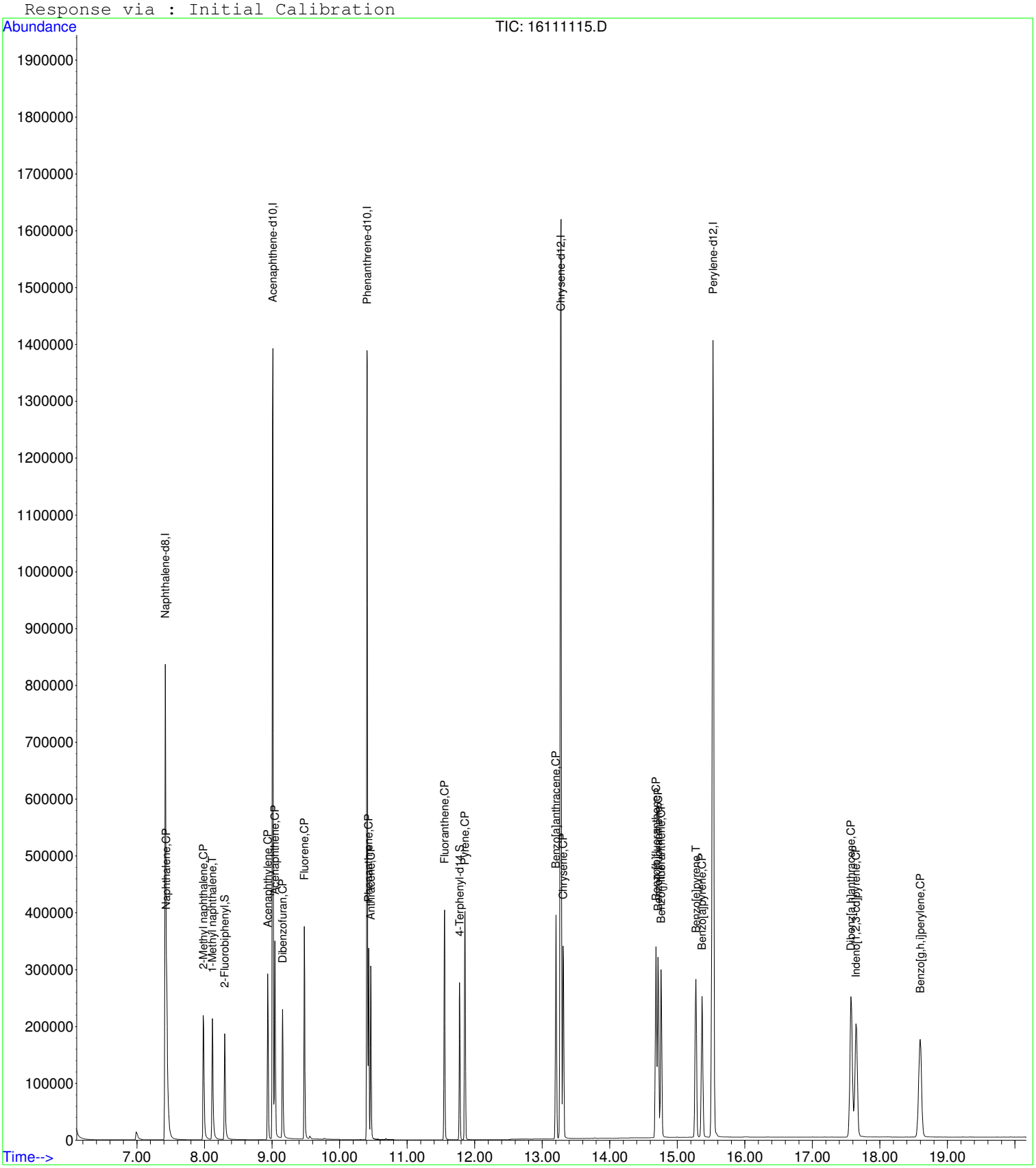
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1072292	4000.00	ug/kg	98
5) Acenaphthene-d10	9.01	164	579546	4000.00	ug/kg	91
11) Phenanthrene-d10	10.41	188	1108329	4000.00	ug/kg	92
17) Chrysene-d12	13.28	240	1521870	4000.00	ug/kg	99
20) Perylene-d12	15.53	264	1666829	4000.00	ug/kg	110
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	152691	902.12	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.55%#			
16) 4-Terphenyl-d14	11.78	244	218369	980.98	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 24.52%#			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	174376	903.30	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	128247	892.70	ug/kg	89
4) 1-Methyl naphthalene	8.12	142	117084	872.39	ug/kg	97
6) Dibenzofuran	9.16	168	182543	989.98	ug/kg	99
8) Acenaphthylene	8.94	152	199814	975.93	ug/kg	99
9) Acenaphthene	9.04	154	116807	953.29	ug/kg	100
10) Fluorene	9.48	166	150940	1006.49	ug/kg	100
12) Phenanthrene	10.43	178	213890	991.12	ug/kg	99
13) Anthracene	10.46	178	203443	915.89	ug/kg	99
14) Fluoranthene	11.55	202	264742	1038.63	ug/kg	98
15) Pyrene	11.86	202	268835	1015.58	ug/kg	99
18) Benzo[a]anthracene	13.20	228	291608	980.10	ug/kg	99
19) Chrysene	13.31	228	277931	1008.31	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	345936	934.56	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	314560	921.97	ug/kg	98
23) Benzo(j)fluoranthene	14.76	252	294480	892.43	ug/kg	99
24) Benzo[e]pyrene	15.28	252	314323	950.79	ug/kg	96
25) Benzo[a]pyrene	15.37	252	300755	891.11	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	343914	970.07	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.65	276	338128	987.25	ug/kg	98
28) Benzo[g,h,i]perylene	18.60	276	354925	980.72	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111115.D Vial: 3
Acq On : 11 Nov 2016 5:13 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111116.D Vial: 4
Acq On : 11 Nov 2016 5:41 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

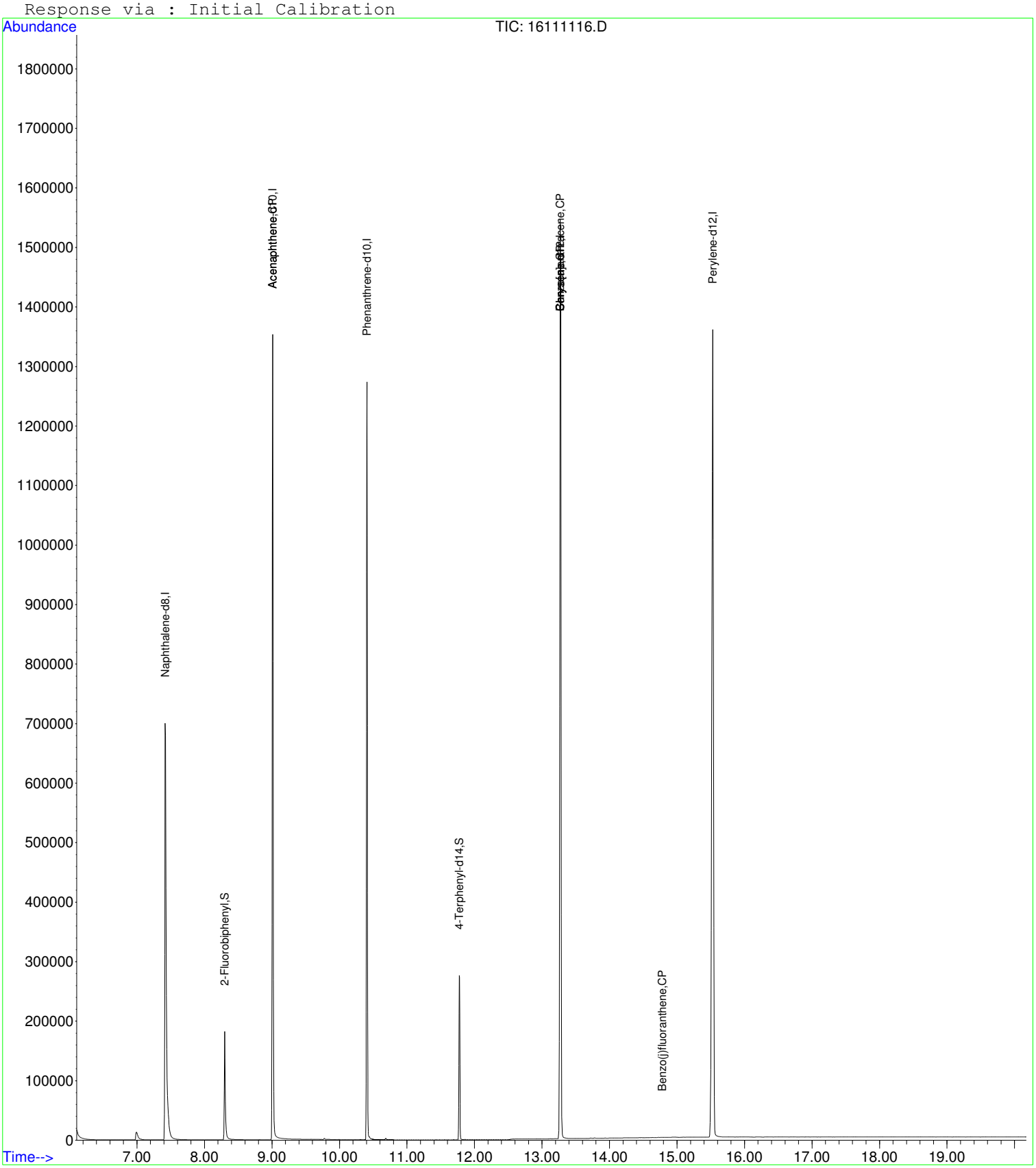
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1005466	4000.00	ug/kg	92
5) Acenaphthene-d10	9.01	164	544025	4000.00	ug/kg	86
11) Phenanthrene-d10	10.41	188	1039292	4000.00	ug/kg	87
17) Chrysene-d12	13.27	240	1435158	4000.00	ug/kg	93
20) Perylene-d12	15.53	264	1562116	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	148387	933.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.35%#		
16) 4-Terphenyl-d14	11.78	244	219034	1049.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	26.23%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	2001	~~17.40 ug/kg#~~		~~11~~
18) Benzo[a]anthracene	13.27	228	3372	~~12.02 ug/kg~~		~~73~~
19) Chrysene	13.27	228	3372	~~12.97 ug/kg~~		~~69~~
23) Benzo(j)fluoranthene	14.77	252	58	0.19 ug/kg#		47

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111116.D Vial: 4
Acq On : 11 Nov 2016 5:41 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111121.D Vial: 9
Acq On : 11 Nov 2016 8:01 pm Operator:
Sample : 1611053-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	926657	4000.00	ug/kg	85
5) Acenaphthene-d10	9.01	164	523004	4000.00	ug/kg	83
11) Phenanthrene-d10	10.41	188	1000323	4000.00	ug/kg	83
17) Chrysene-d12	13.27	240	1380528	4000.00	ug/kg	90
20) Perylene-d12	15.52	264	1495637	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	15077	98.71	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.47%#		
16) 4-Terphenyl-d14	11.78	244	21383	106.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.66%#		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	1012	6.07	ug/kg	95
9) Acenaphthene	9.05	154	1010	9.13	ug/kg	96
12) Phenanthrene	10.43	178	23211	119.17	ug/kg	100
13) Anthracene	10.47	178	4627	23.08	ug/kg	99
14) Fluoranthene	11.55	202	87747	381.42	ug/kg	99
15) Pyrene	11.85	202	80866	338.47	ug/kg	99
18) Benzo[a]anthracene	13.20	228	59952	222.13	ug/kg	98
19) Chrysene	13.31	228	74123	296.44	ug/kg	98
21) Benzo[b]fluoranthene	14.69	252	87427	263.22	ug/kg	97
22) Benzo[k]fluoranthene	14.69	252	87427	~~285.58 ug/kg~~		~~99~~
23) Benzo(j)fluoranthene	14.76	252	36405	122.96	ug/kg	93
24) Benzo[e]pyrene	15.27	252	62649	211.20	ug/kg	97
25) Benzo[a]pyrene	15.37	252	86007	284.00	ug/kg	98
26) Dibenz[a,h]anthracene	17.57	278	13000	40.87	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.65	276	67259	218.86	ug/kg	97
28) Benzo[g,h,i]perylene	18.59	276	71036	218.75	ug/kg	97

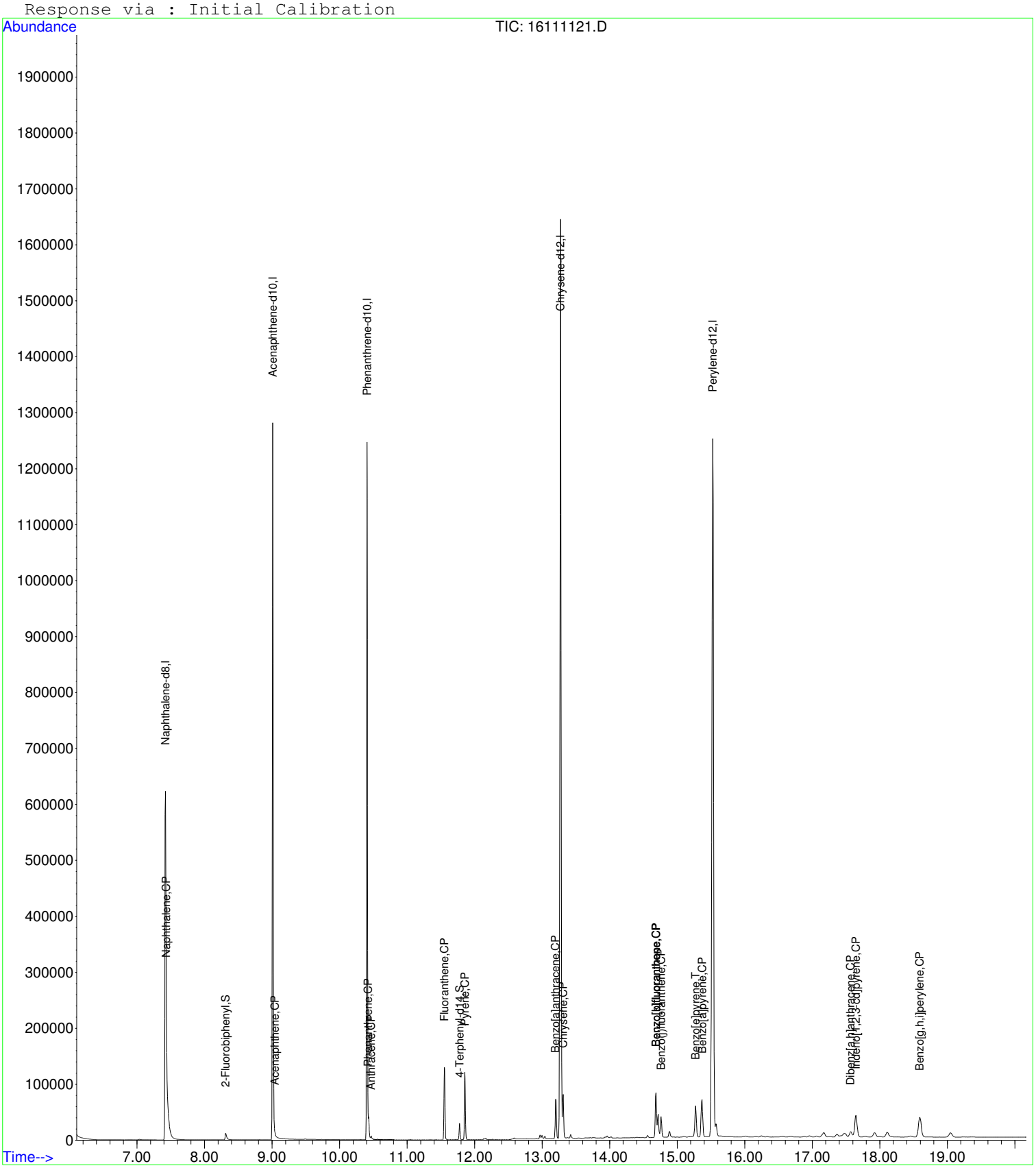
Wrong RT See MI

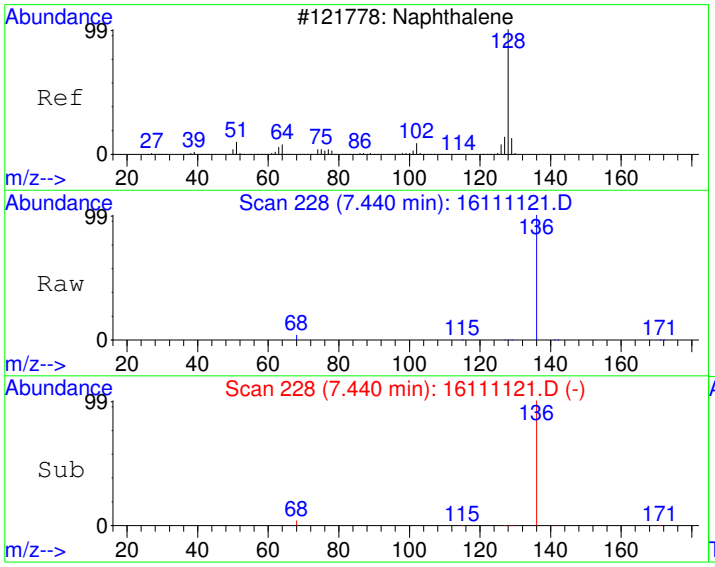
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111121.D Vial: 9
Acq On : 11 Nov 2016 8:01 pm Operator:
Sample : 1611053-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

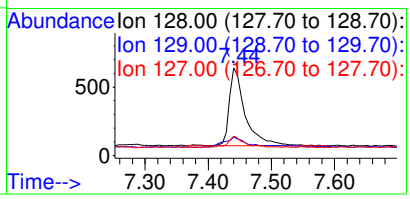


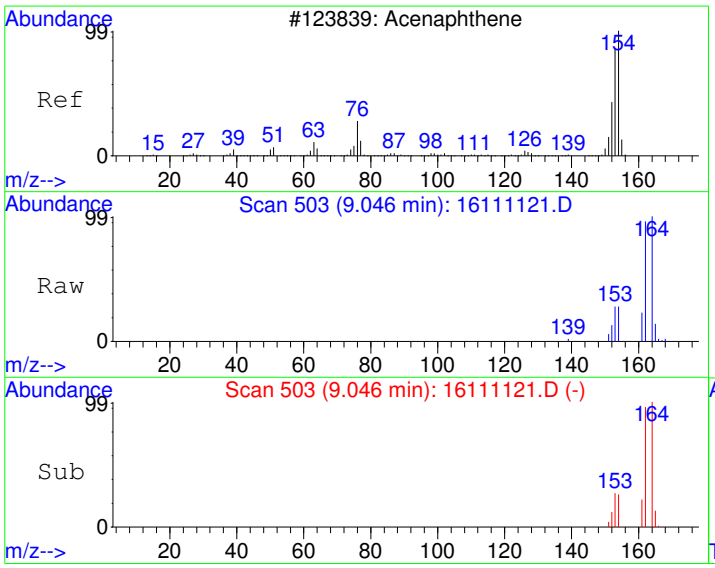


#2
Naphthalene
Concen: 6.07 ug/kg
RT: 7.44 min Scan# 228
Delta R.T. -0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:128 Resp: 1012

Ion	Ratio	Lower	Upper
128	100		
129	12.9	0.0	41.1
127	14.8	0.0	42.7

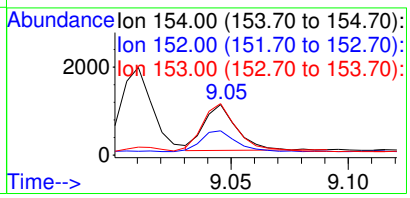


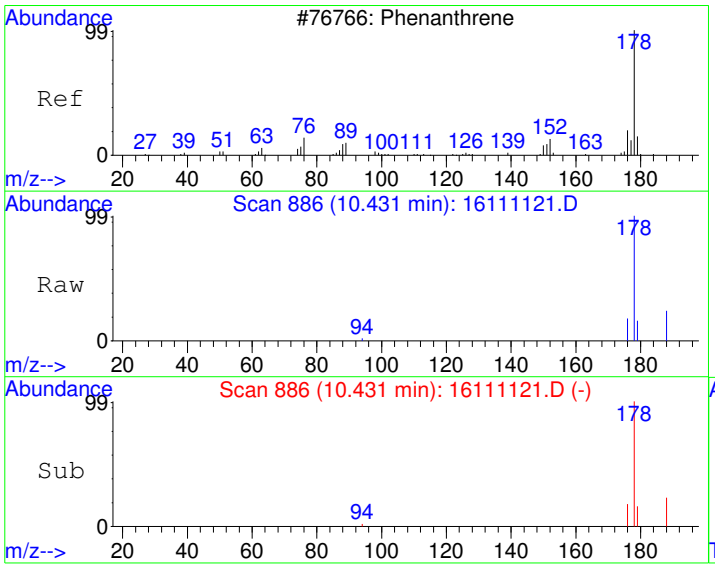


#9
Acenaphthene
Concen: 9.13 ug/kg
RT: 9.05 min Scan# 503
Delta R.T. 0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:154 Resp: 1010

Ion	Ratio	Lower	Upper
154	100		
152	45.4	19.8	79.8
153	104.9	77.1	137.1

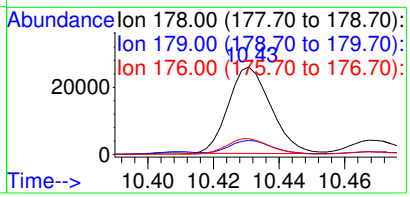


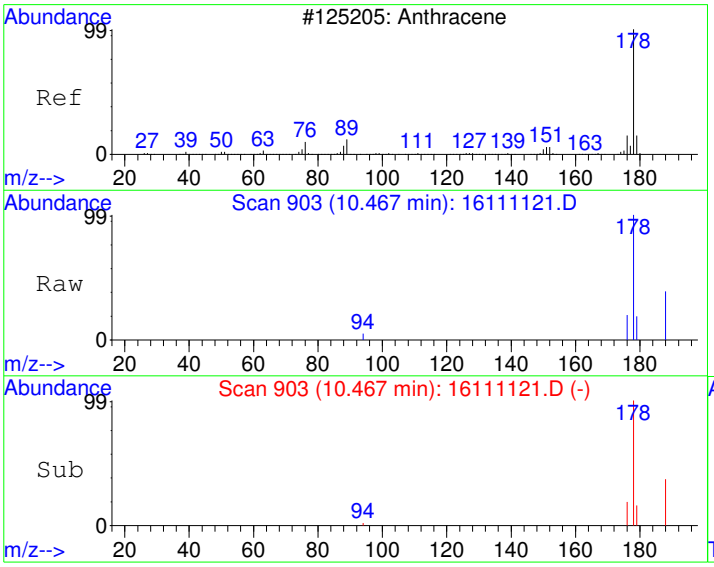


#12
Phenanthrene
Concen: 119.17 ug/kg
RT: 10.43 min Scan# 886
Delta R.T. -0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:178 Resp: 23211

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	45.8
176	18.3	0.0	48.3

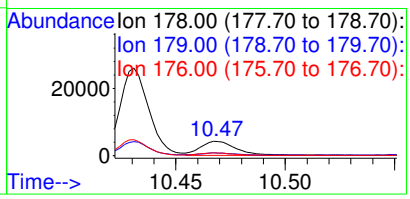


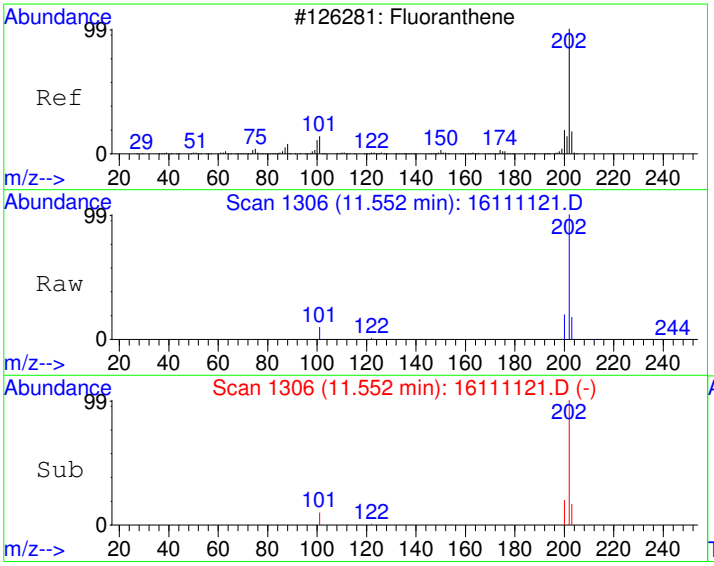


#13
Anthracene
Concen: 23.08 ug/kg
RT: 10.47 min Scan# 903
Delta R.T. 0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:178 Resp: 4627

Ion	Ratio	Lower	Upper
178	100		
179	16.4	0.0	45.7
176	18.6	0.0	48.1

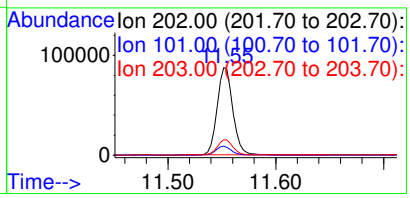


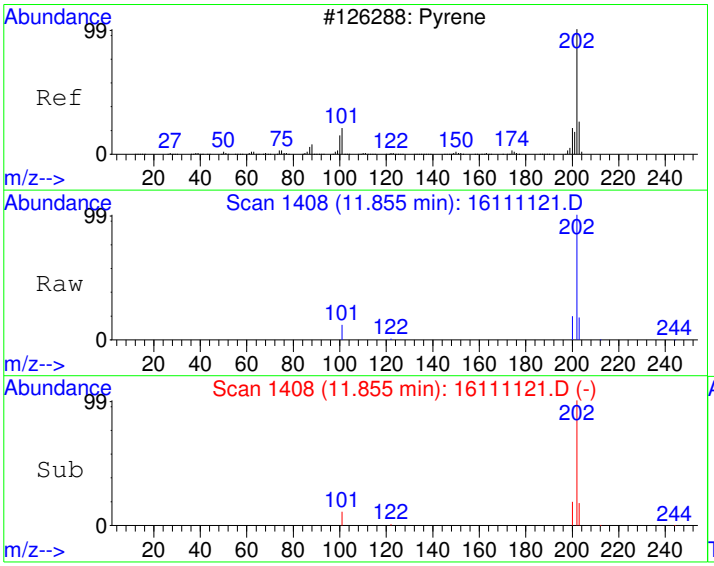


#14
Fluoranthene
Concen: 381.42 ug/kg
RT: 11.55 min Scan# 1306
Delta R.T. 0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:202 Resp: 87747

Ion	Ratio	Lower	Upper
202	100		
101	10.1	0.0	40.6
203	17.4	0.0	48.0

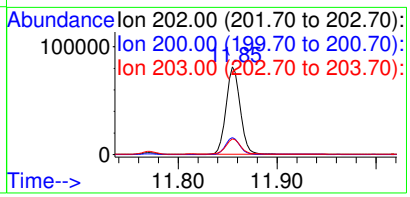


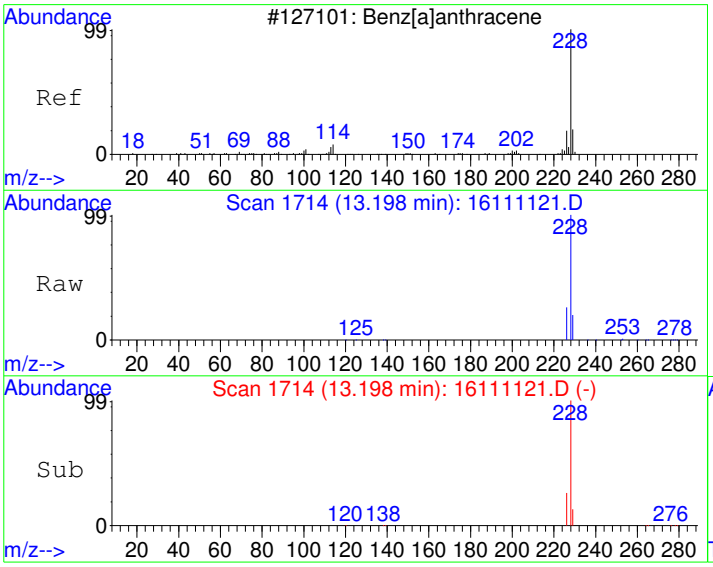


#15
Pyrene
Concen: 338.47 ug/kg
RT: 11.85 min Scan# 1408
Delta R.T. 0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:202 Resp: 80866

Ion	Ratio	Lower	Upper
202	100		
200	19.3	0.0	50.1
203	17.6	0.0	47.8

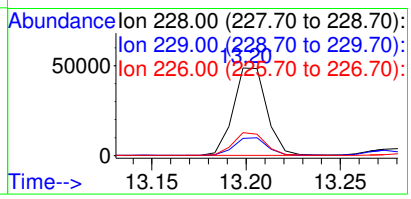


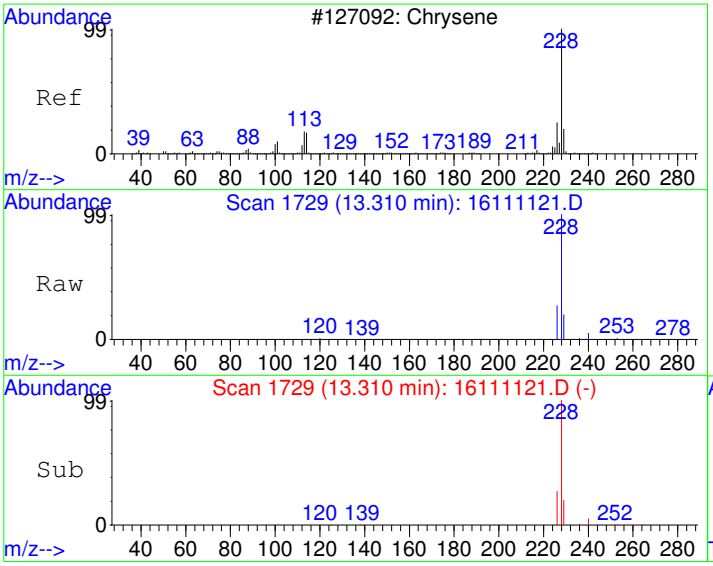


#18
Benzo[a]anthracene
Concen: 222.13 ug/kg
RT: 13.20 min Scan# 1714
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:228 Resp: 59952

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	50.4
226	26.1	0.0	55.6

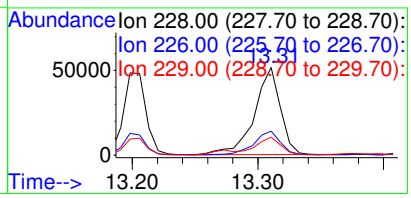


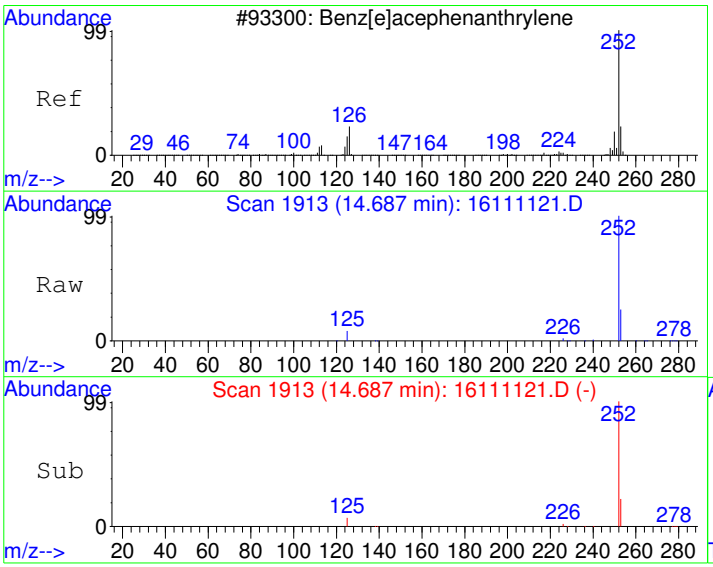


#19
Chrysene
Concen: 296.44 ug/kg
RT: 13.31 min Scan# 1729
Delta R.T. 0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:228 Resp: 74123

Ion	Ratio	Lower	Upper
228	100		
226	27.3	0.0	58.8
229	20.1	0.0	50.2

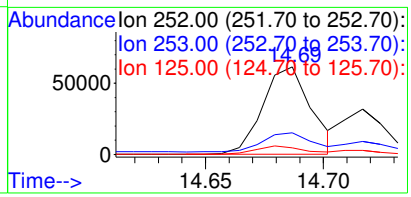


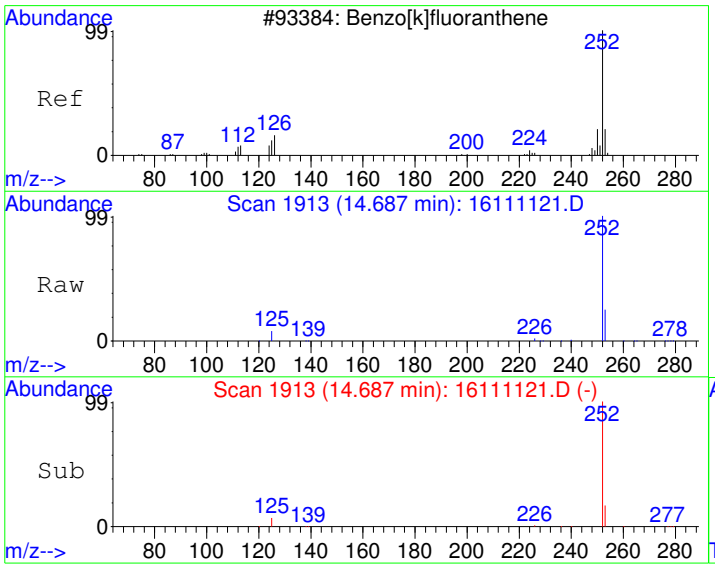


#21
Benzo[b]fluoranthene
Concen: 263.22 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. 0.00 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:252 Resp: 87427

Ion	Ratio	Lower	Upper
252	100		
253	21.9	0.0	52.1
125	7.4	0.0	40.5

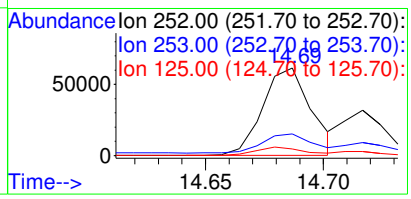




#22
Benzo[k]fluoranthene
Concen: 285.58 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. -0.04 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

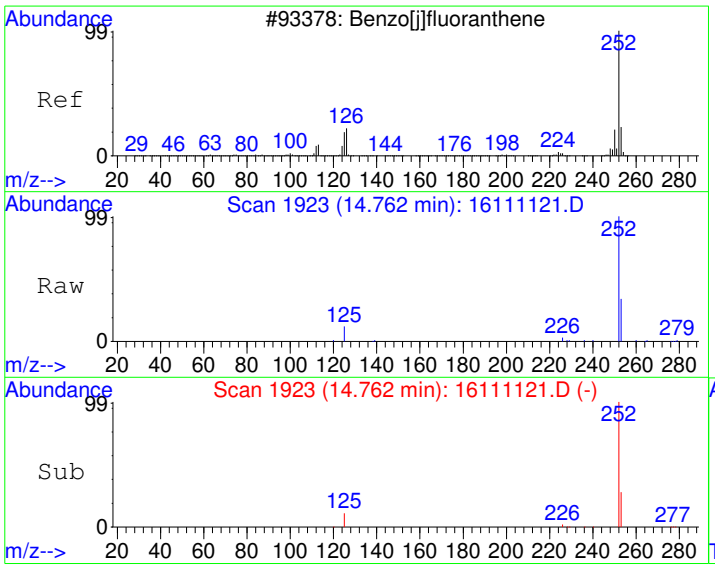
Tgt Ion:252 Resp: 87427

Ion	Ratio	Lower	Upper
252	100		
253	21.9	2.4	42.4
125	7.4	0.0	28.2



BEFORE MANUAL INTEGRATION

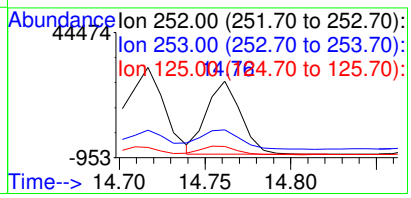
By Don Winston at 9:36:22 AM, 11/14/2016



#23
Benzo(j)fluoranthene
Concen: 122.96 ug/kg
RT: 14.76 min Scan# 1923
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

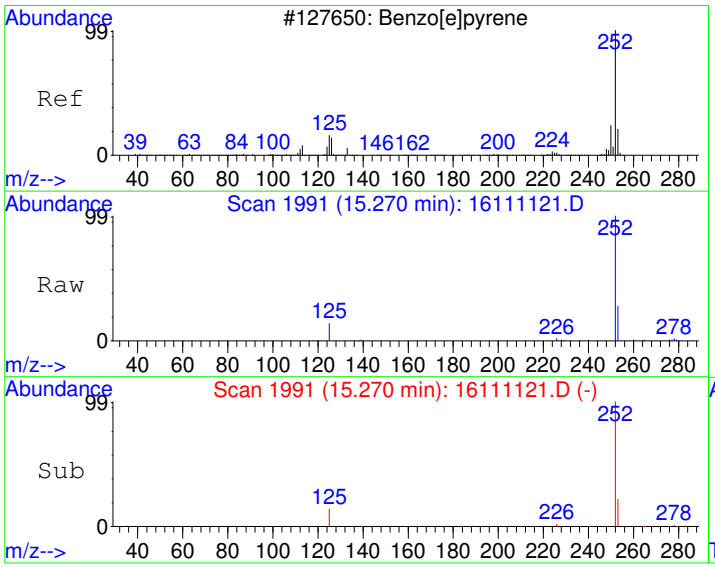
Tgt Ion:252 Resp: 36405

Ion	Ratio	Lower	Upper
252	100		
253	26.7	2.3	42.3
125	11.2	0.0	32.6



BEFORE MANUAL INTEGRATION

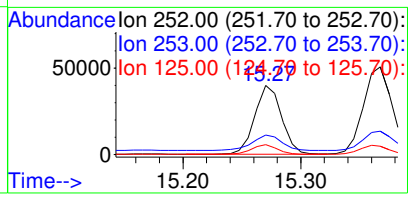
By Janice Whitt at 11:03:25 AM, 11/14/2016

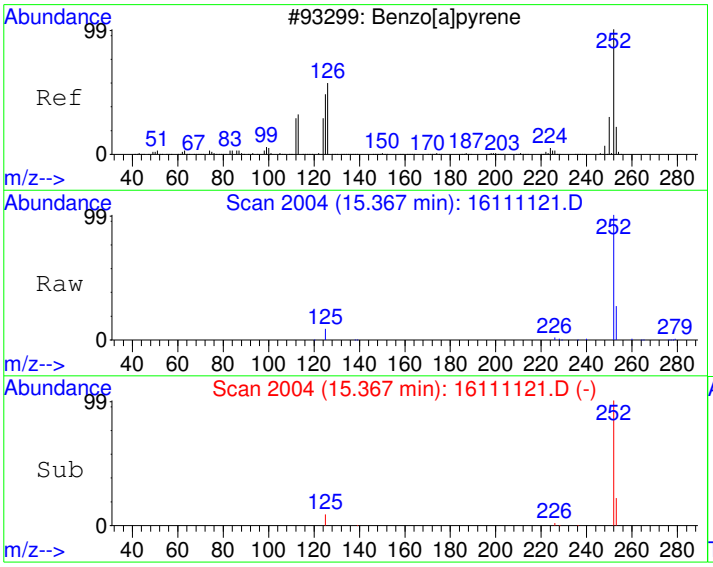


#24
Benzo[e]pyrene
Concen: 211.20 ug/kg
RT: 15.27 min Scan# 1991
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:252 Resp: 62649

Ion	Ratio	Lower	Upper
252	100		
253	22.6	1.8	41.8
125	13.8	0.0	35.7

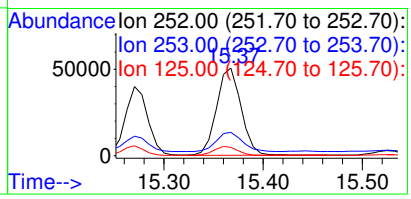


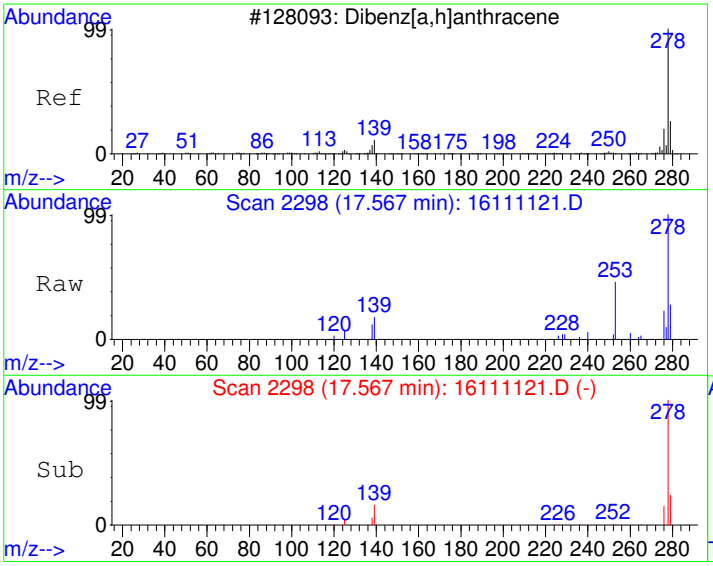


#25
Benzo[a]pyrene
Concen: 284.00 ug/kg
RT: 15.37 min Scan# 2004
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:252 Resp: 86007

Ion	Ratio	Lower	Upper
252	100		
253	22.1	2.2	42.2
125	9.0	0.0	30.8

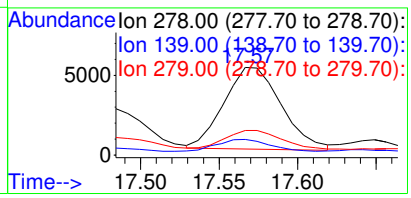


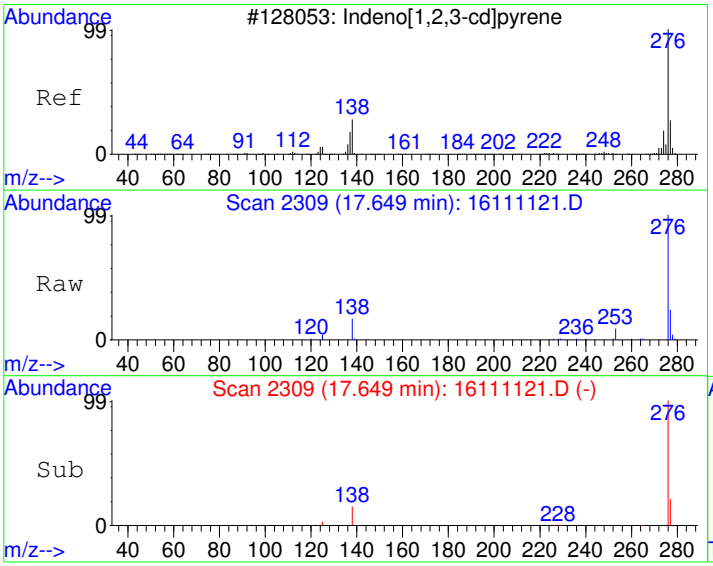


#26
Dibenz[a,h]anthracene
Concen: 40.87 ug/kg
RT: 17.57 min Scan# 2298
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:278 Resp: 13000

Ion	Ratio	Lower	Upper
278	100		
139	14.7	0.0	35.8
279	23.5	4.2	44.2

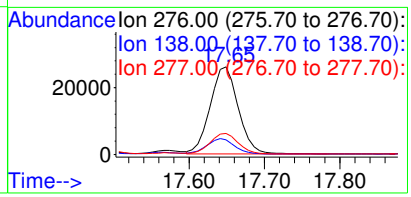


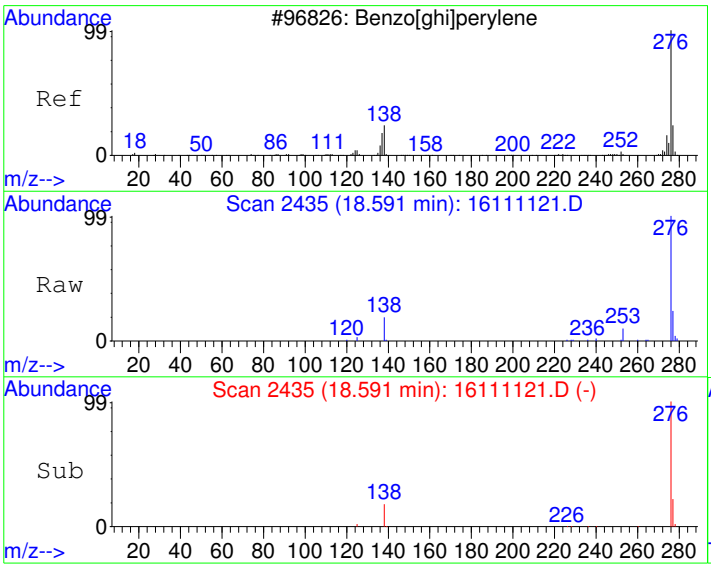


#27
Indeno[1,2,3-cd]pyrene
Concen: 218.86 ug/kg
RT: 17.65 min Scan# 2309
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:276 Resp: 67259

Ion	Ratio	Lower	Upper
276	100		
138	16.1	0.0	39.3
277	23.7	4.0	44.0

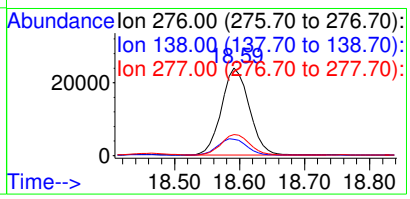




#28
Benzo[g,h,i]perylene
Concen: 218.75 ug/kg
RT: 18.59 min Scan# 2435
Delta R.T. -0.01 min
Lab File: 16111121.D
Acq: 11 Nov 2016 8:01 pm

Tgt Ion:276 Resp: 71036

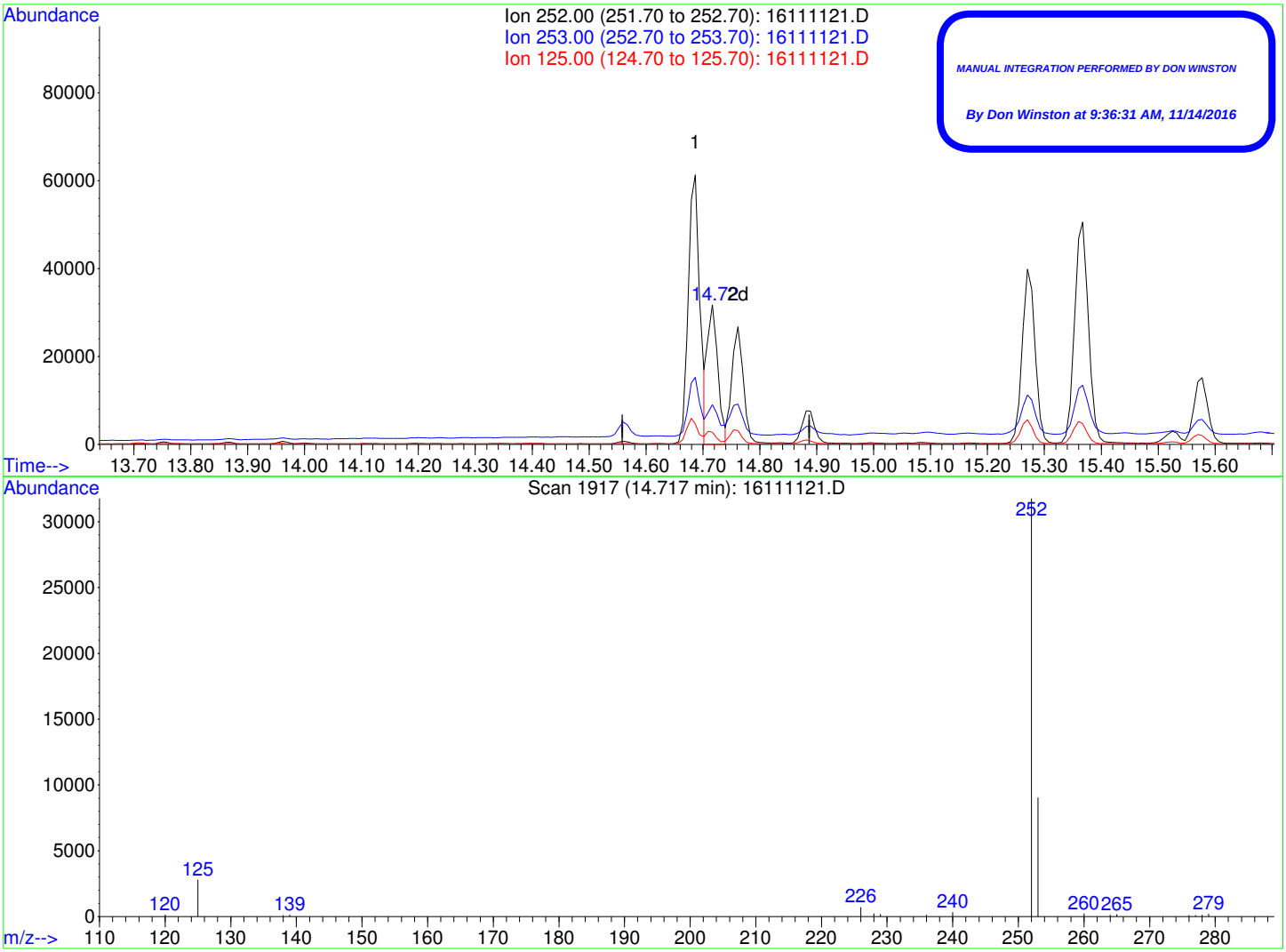
Ion	Ratio	Lower	Upper
276	100		
138	18.2	0.8	40.8
277	23.5	4.0	44.0



Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111121.D Vial: 9
Acq On : 11 Nov 2016 8:01 pm Operator:
Sample : 1611053-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:27 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration



TIC: 16111121.D

(22) Benzo[k]fluoranthene (CP)

14.72min 131.62ug/kg m

response 40295

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	28.52
125.00	8.20	8.81
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:03:31 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111122.D Vial: 10
Acq On : 11 Nov 2016 8:29 pm Operator:
Sample : 1611053-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

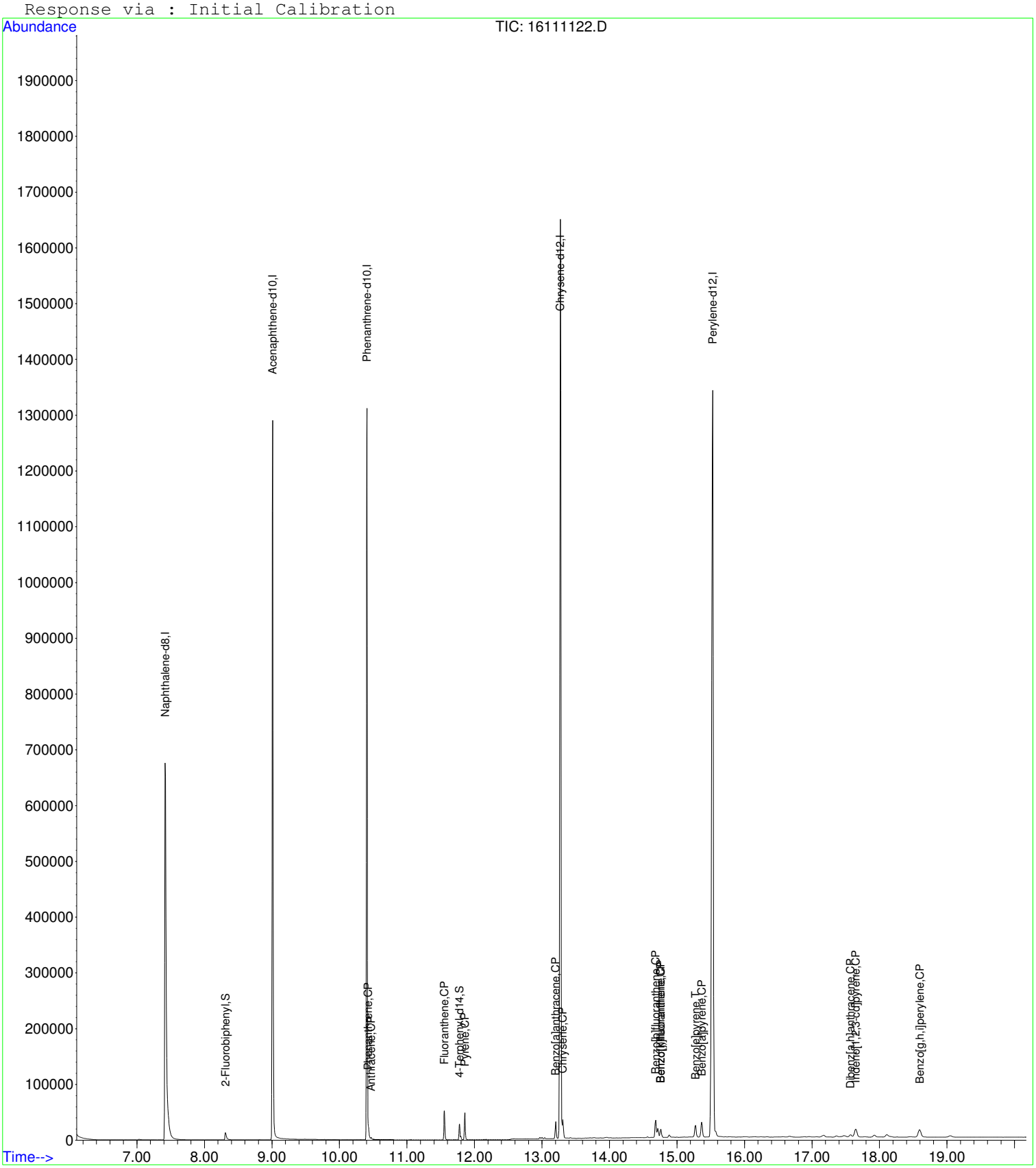
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	986530	4000.00	ug/kg	90
5) Acenaphthene-d10	9.01	164	548890	4000.00	ug/kg	87
11) Phenanthrene-d10	10.41	188	1041045	4000.00	ug/kg	87
17) Chrysene-d12	13.27	240	1453864	4000.00	ug/kg	94
20) Perylene-d12	15.53	264	1580157	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	16050	100.12	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.50%#		
16) 4-Terphenyl-d14	11.78	244	22762	108.86	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.72%#		
Target Compounds						Qvalue
12) Phenanthrene	10.43	178	11571	57.08	ug/kg	100
13) Anthracene	10.47	178	2247	10.77	ug/kg	96
14) Fluoranthene	11.56	202	36160	151.03	ug/kg	98
15) Pyrene	11.86	202	33529	134.85	ug/kg	99
18) Benzo[a]anthracene	13.20	228	23669	83.27	ug/kg	98
19) Chrysene	13.31	228	31142	118.26	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	36269	103.36	ug/kg	97
22) Benzo[k]fluoranthene	14.76	252	14818	45.81	ug/kg	91
23) Benzo(j)fluoranthene	14.76	252	14700	46.99	ug/kg	95
24) Benzo[e]pyrene	15.28	252	24202	77.22	ug/kg	94
25) Benzo[a]pyrene	15.37	252	32355	101.12	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	5301	15.77	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.65	276	26235	80.80	ug/kg	96
28) Benzo[g,h,i]perylene	18.60	276	27037	78.81	ug/kg	97

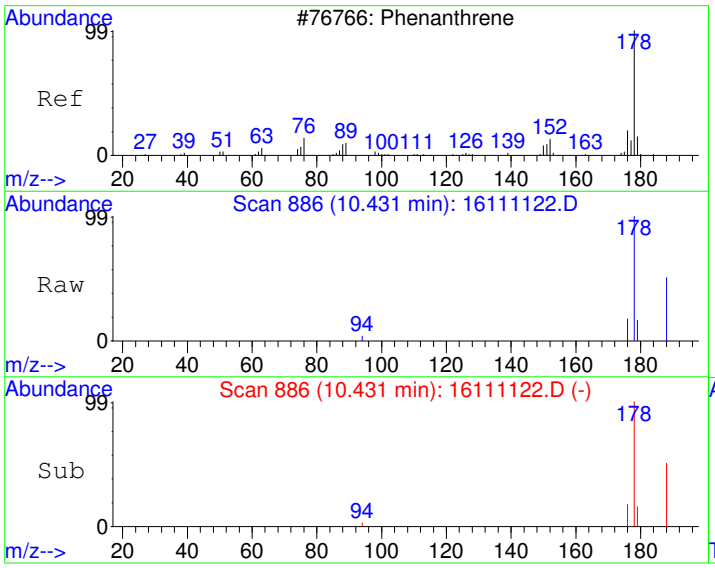
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111122.D Vial: 10
Acq On : 11 Nov 2016 8:29 pm Operator:
Sample : 1611053-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:44 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

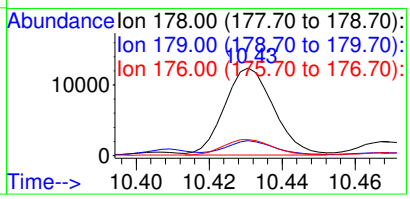


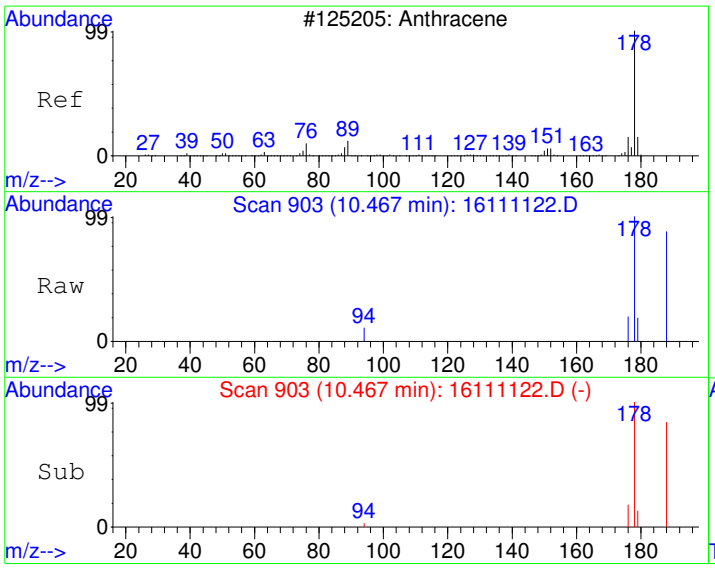


#12
Phenanthrene
Concen: 57.08 ug/kg
RT: 10.43 min Scan# 886
Delta R.T. -0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:178 Resp: 11571

Ion	Ratio	Lower	Upper
178	100		
179	16.0	0.0	45.8
176	18.2	0.0	48.3

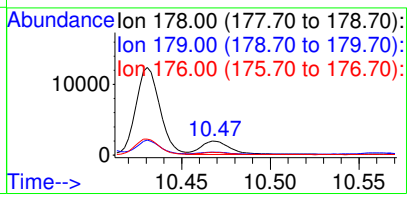


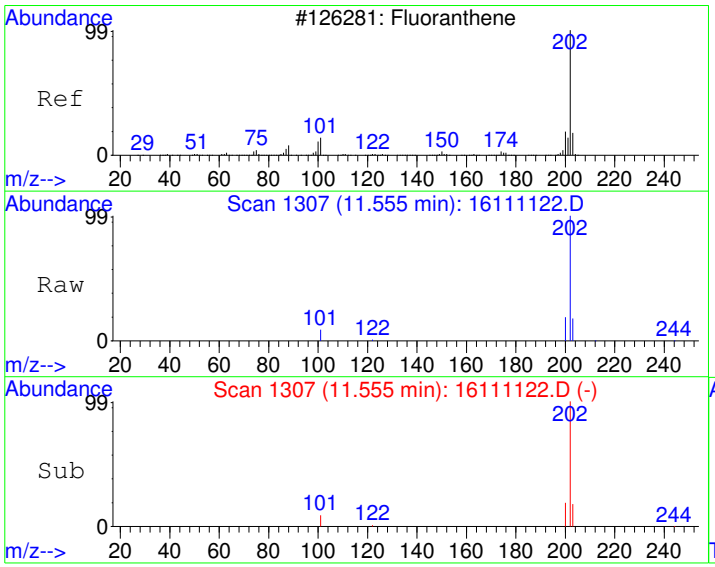


#13
Anthracene
Concen: 10.77 ug/kg
RT: 10.47 min Scan# 903
Delta R.T. 0.01 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:178 Resp: 2247

Ion	Ratio	Lower	Upper
178	100		
179	12.2	0.0	45.7
176	17.6	0.0	48.1

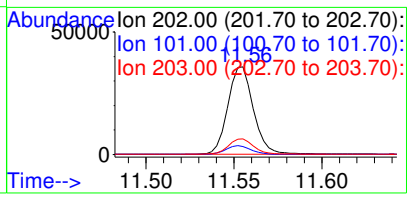


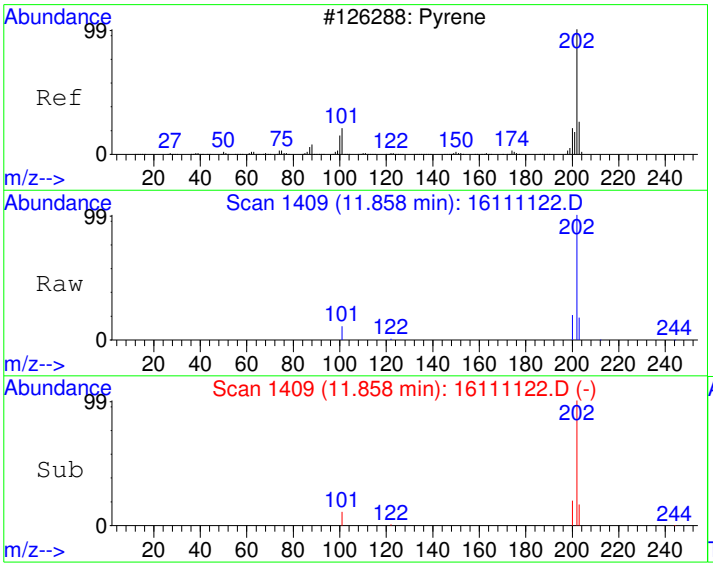


#14
Fluoranthene
Concen: 151.03 ug/kg
RT: 11.56 min Scan# 1307
Delta R.T. 0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:202 Resp: 36160

Ion	Ratio	Lower	Upper
202	100		
101	9.0	0.0	40.6
203	17.7	0.0	48.0

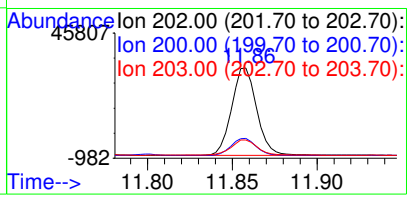


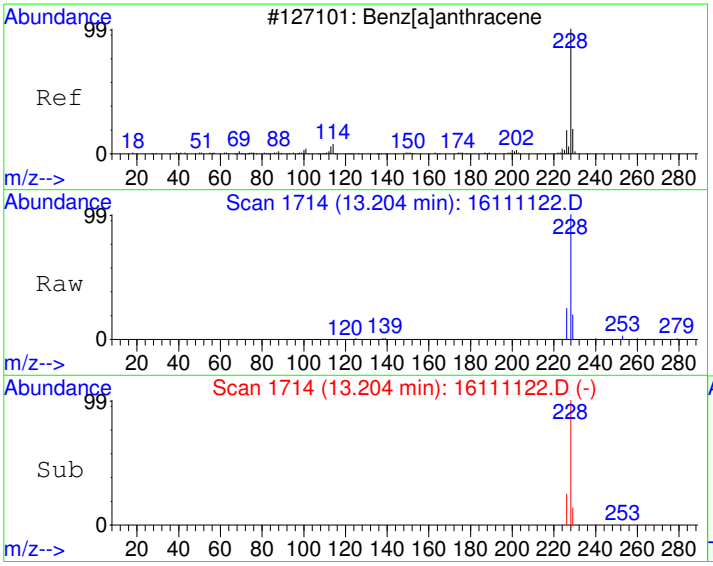


#15
Pyrene
Concen: 134.85 ug/kg
RT: 11.86 min Scan# 1409
Delta R.T. 0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:202 Resp: 33529

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	50.1
203	17.3	0.0	47.8

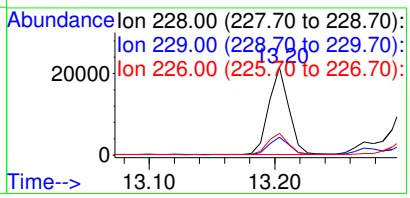


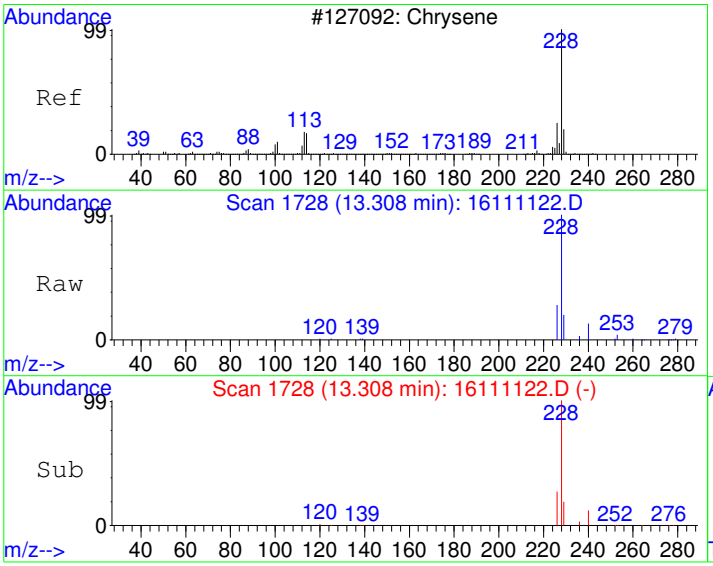


#18
Benzo[a]anthracene
Concen: 83.27 ug/kg
RT: 13.20 min Scan# 1714
Delta R.T. -0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:228 Resp: 23669

Ion	Ratio	Lower	Upper
228	100		
229	19.8	0.0	50.4
226	24.6	0.0	55.6

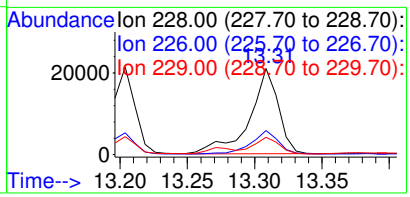


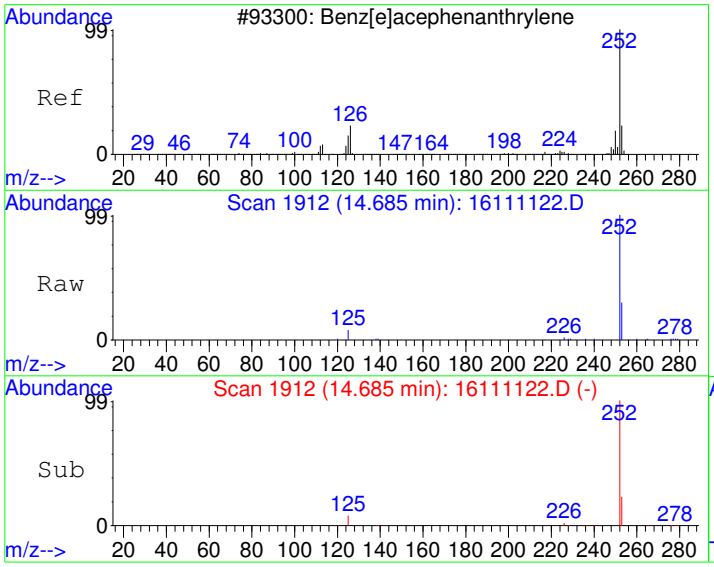


#19
Chrysene
Concen: 118.26 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. -0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:228 Resp: 31142

Ion	Ratio	Lower	Upper
228	100		
226	27.4	0.0	58.8
229	19.4	0.0	50.2

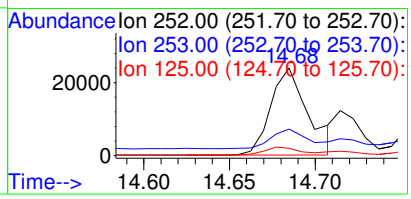


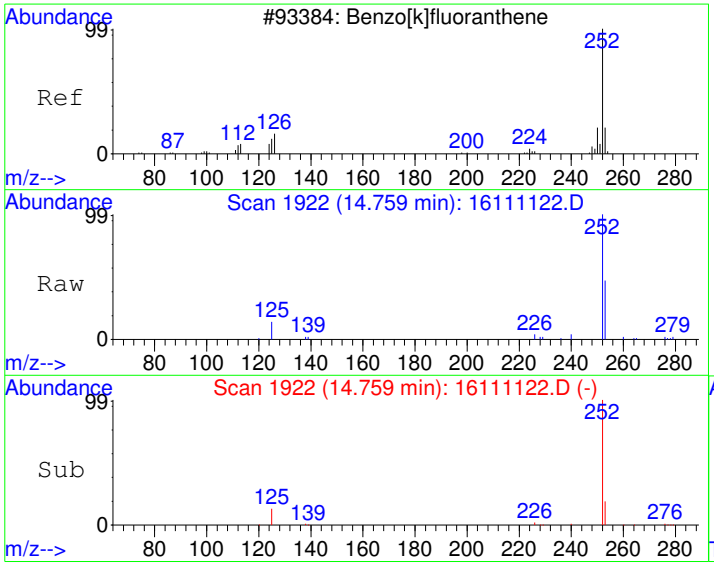


#21
Benzo[b]fluoranthene
Concen: 103.36 ug/kg
RT: 14.68 min Scan# 1912
Delta R.T. -0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:252 Resp: 36269

Ion	Ratio	Lower	Upper
252	100		
253	22.2	0.0	52.1
125	7.7	0.0	40.5

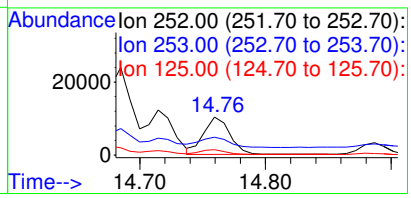




#22
Benzo[k]fluoranthene
Concen: 45.81 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. 0.04 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

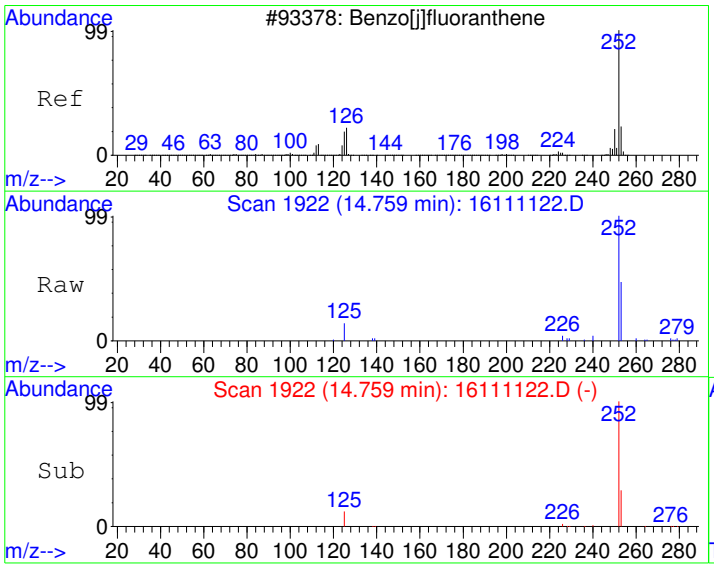
Tgt Ion:252 Resp: 14818

Ion	Ratio	Lower	Upper
252	100		
253	26.3	2.4	42.4
125	12.5	0.0	28.2



BEFORE MANUAL INTEGRATION
By Don Winston at 9:41:22 AM, 11/14/2016

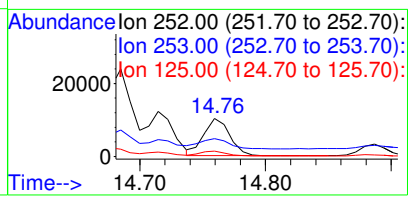
BEFORE MANUAL INTEGRATION
By Janice Whitt at 11:12:03 AM, 11/14/2016

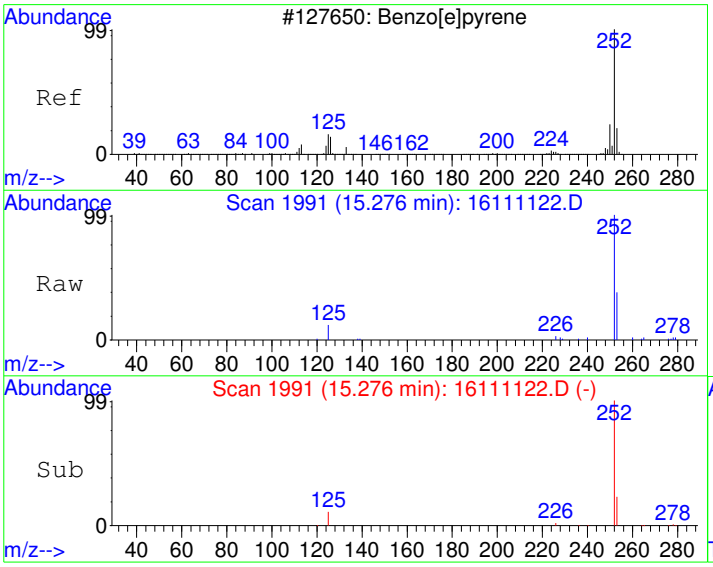


#23
Benzo(j)fluoranthene
Concen: 46.99 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:252 Resp: 14700

Ion	Ratio	Lower	Upper
252	100		
253	26.3	2.3	42.3
125	12.5	0.0	32.6

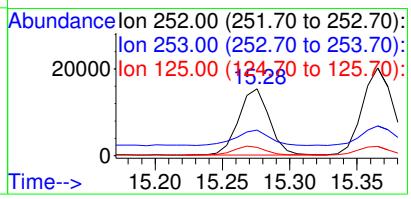


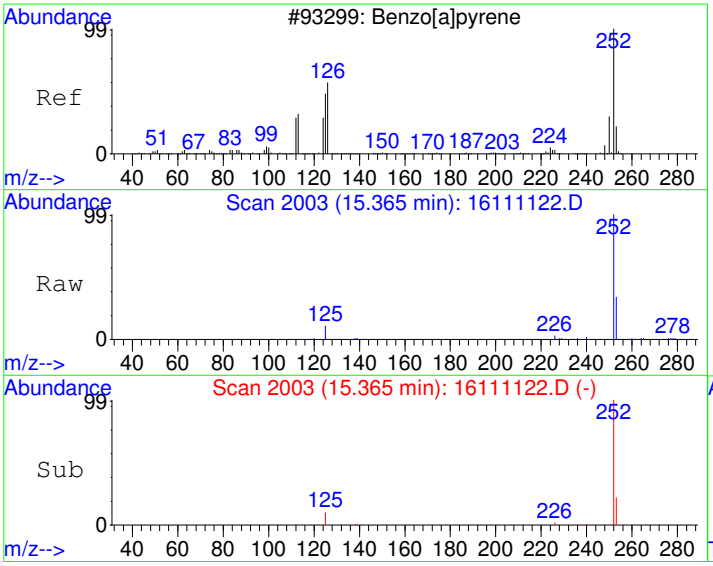


#24
Benzo[e]pyrene
Concen: 77.22 ug/kg
RT: 15.28 min Scan# 1991
Delta R.T. -0.00 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:252 Resp: 24202

Ion	Ratio	Lower	Upper
252	100		
253	23.2	1.8	41.8
125	11.4	0.0	35.7

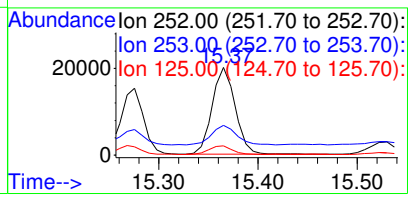


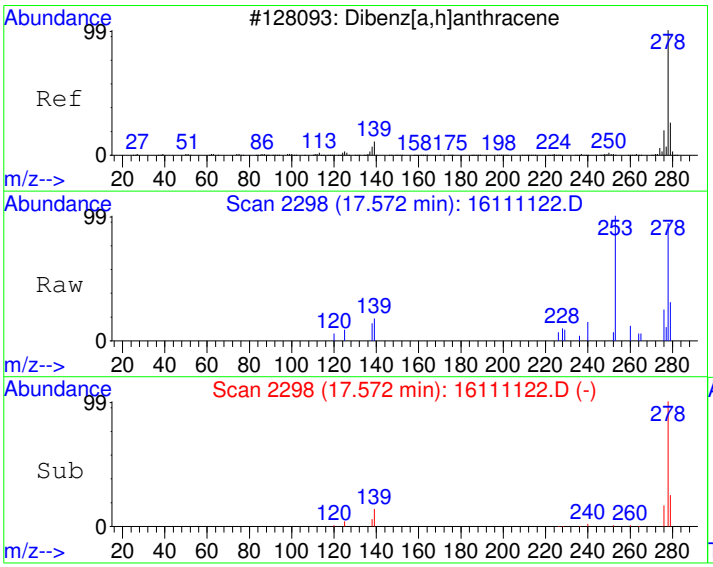


#25
Benzo[a]pyrene
Concen: 101.12 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:252 Resp: 32355

Ion	Ratio	Lower	Upper
252	100		
253	22.6	2.2	42.2
125	9.9	0.0	30.8

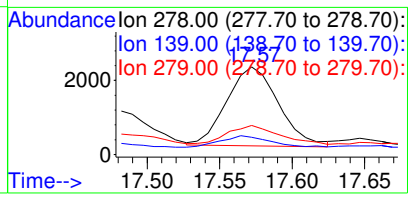


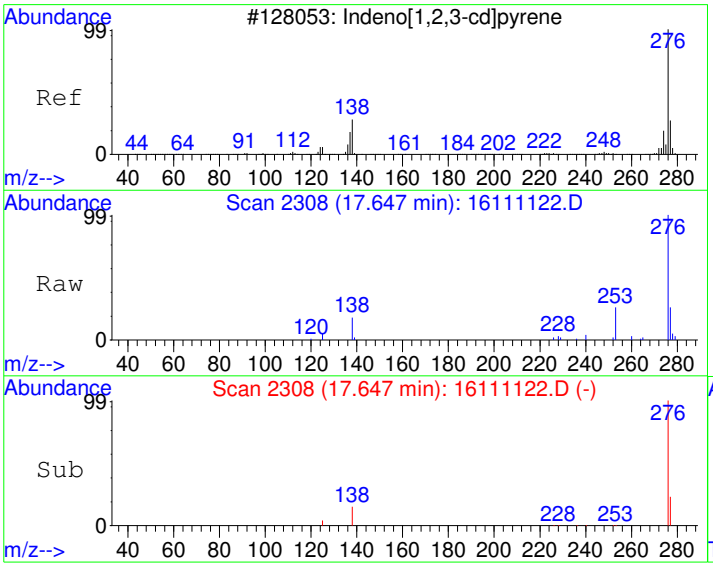


#26
Dibenz[a,h]anthracene
Concen: 15.77 ug/kg
RT: 17.57 min Scan# 2298
Delta R.T. -0.01 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:278 Resp: 5301

Ion	Ratio	Lower	Upper
278	100		
139	13.0	0.0	35.8
279	24.7	4.2	44.2

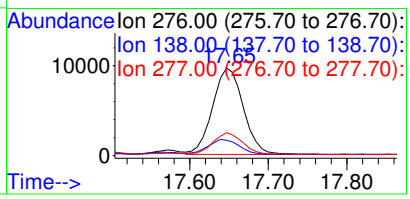


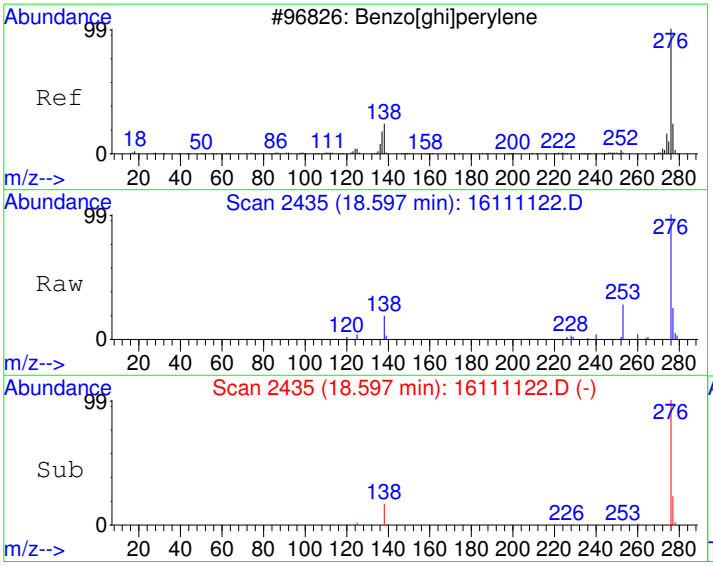


#27
Indeno[1,2,3-cd]pyrene
Concen: 80.80 ug/kg
RT: 17.65 min Scan# 2308
Delta R.T. -0.01 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:276 Resp: 26235

Ion	Ratio	Lower	Upper
276	100		
138	16.3	0.0	39.3
277	25.2	4.0	44.0

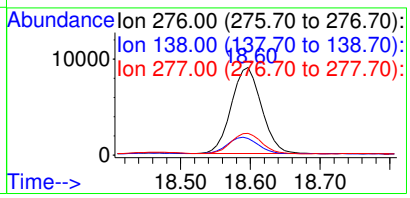




#28
Benzo[g,h,i]perylene
Concen: 78.81 ug/kg
RT: 18.60 min Scan# 2435
Delta R.T. -0.01 min
Lab File: 16111122.D
Acq: 11 Nov 2016 8:29 pm

Tgt Ion:276 Resp: 27037

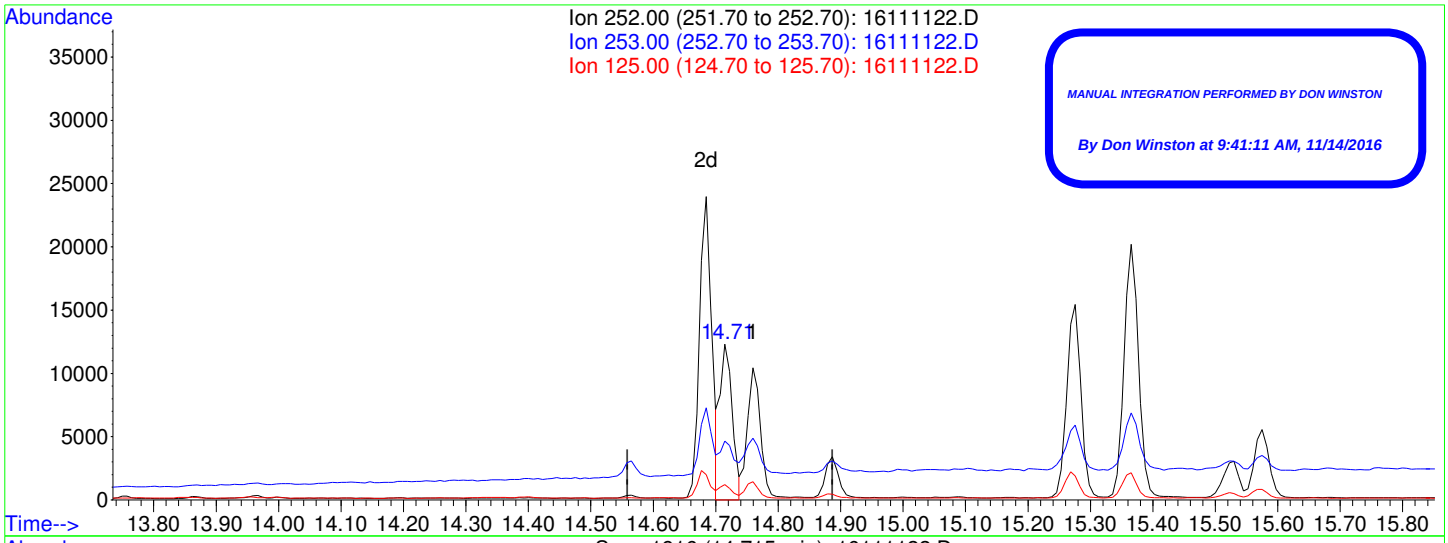
Ion	Ratio	Lower	Upper
276	100		
138	17.7	0.8	40.8
277	23.9	4.0	44.0

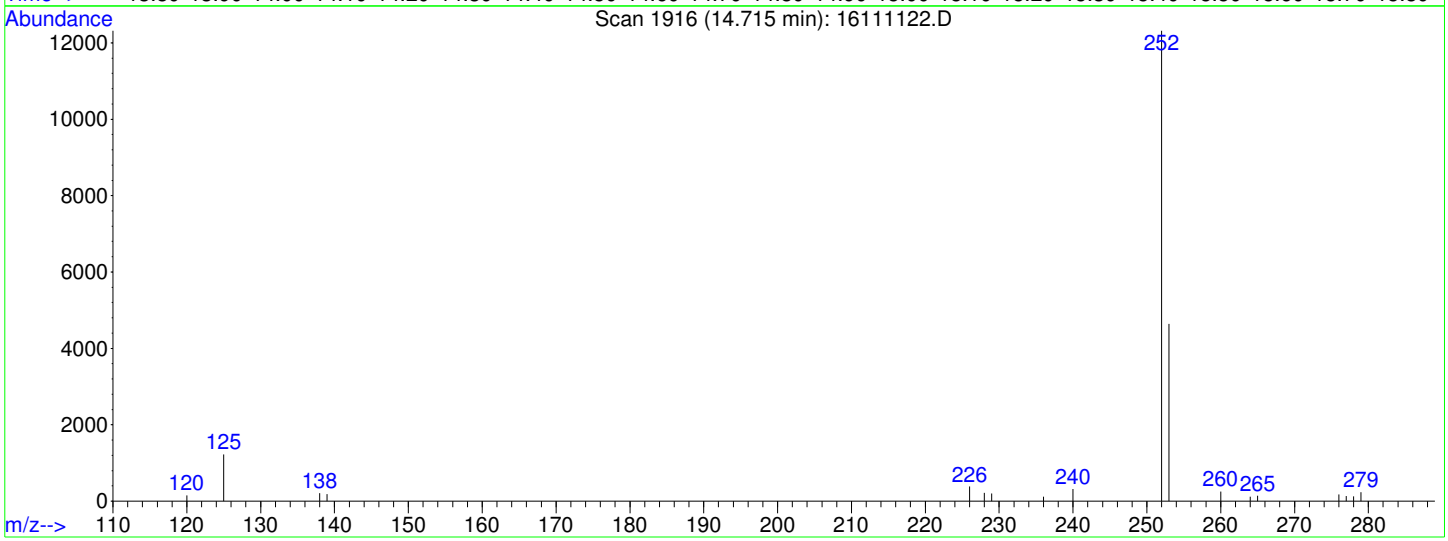


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111122.D Vial: 10
Acq On : 11 Nov 2016 8:29 pm Operator:
Sample : 1611053-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:28 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration





TIC: 16111122.D

(22) Benzo[k]fluoranthene (CP)

14.71min 51.97ug/kg m

response 16810

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	37.69
125.00	8.20	9.95
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:12:08 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111123.D Vial: 11
Acq On : 11 Nov 2016 8:57 pm Operator:
Sample : 1611053-11A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	931183	4000.00	ug/kg	85
5) Acenaphthene-d10	9.01	164	526996	4000.00	ug/kg	83
11) Phenanthrene-d10	10.41	188	1003118	4000.00	ug/kg	84
17) Chrysene-d12	13.27	240	1387803	4000.00	ug/kg	90
20) Perylene-d12	15.52	264	1518853	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	14657	95.23	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.38%#		
16) 4-Terphenyl-d14	11.78	244	21562	107.02	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.68%#		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1851	~~16.61 ug/kg#~~		~~10~~
14) Fluoranthene	11.56	202	1730	7.50 ug/kg		95
15) Pyrene	11.86	202	1740	7.26 ug/kg		98
19) Chrysene	13.31	228	1267	5.04 ug/kg		100
21) Benzo[b]fluoranthene	14.69	252	2103	6.23 ug/kg		94
22) Benzo[k]fluoranthene	14.69	252	2103	~~6.76 ug/kg~~		~~94~~
23) Benzo(j)fluoranthene	14.77	252	875	2.91 ug/kg		94
24) Benzo[e]pyrene	15.28	252	1642	5.45 ug/kg		95
25) Benzo[a]pyrene	15.37	252	1950	6.34 ug/kg		94
27) Indeno[1,2,3-cd]pyrene	17.66	276	1667	5.34 ug/kg		98
28) Benzo[g,h,i]perylene	18.60	276	1845	5.59 ug/kg		96

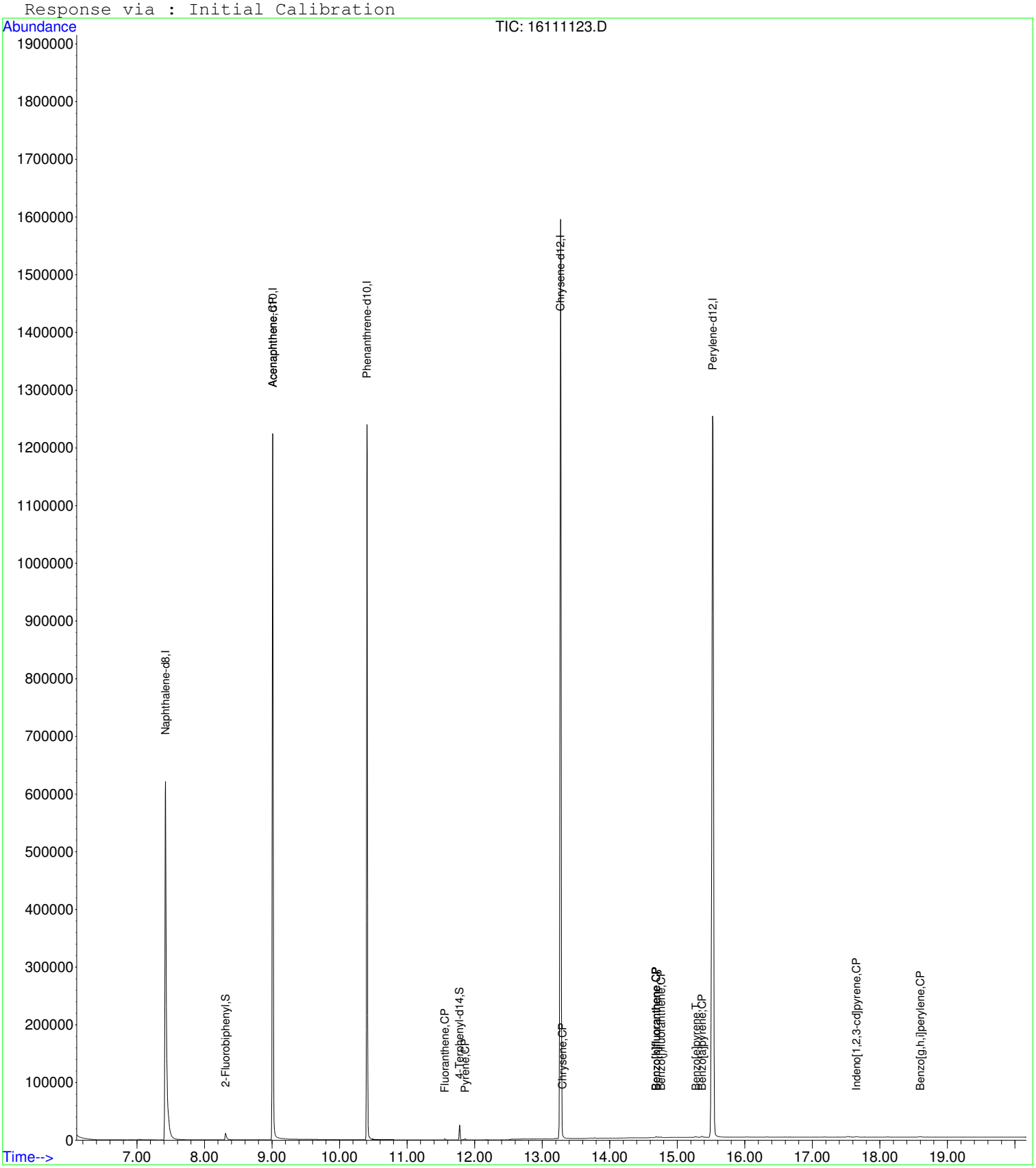
Wrong RT See MI

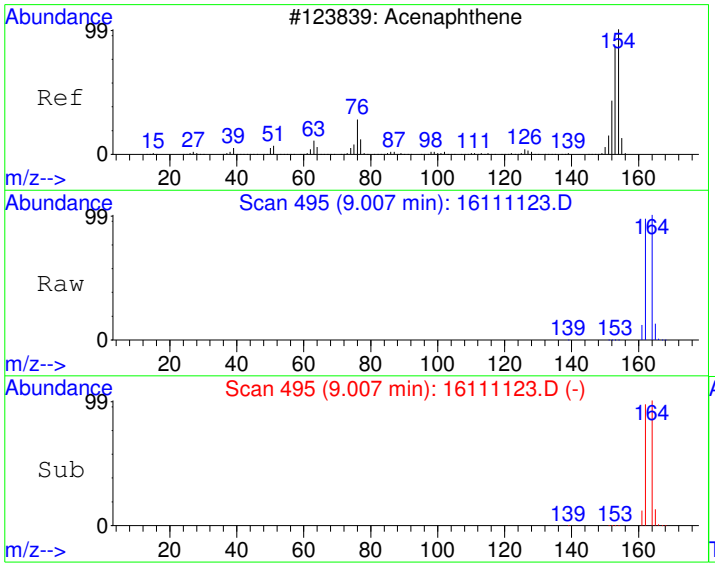
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111123.D Vial: 11
Acq On : 11 Nov 2016 8:57 pm Operator:
Sample : 1611053-11A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

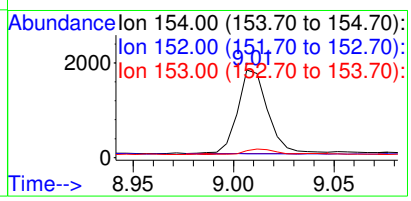


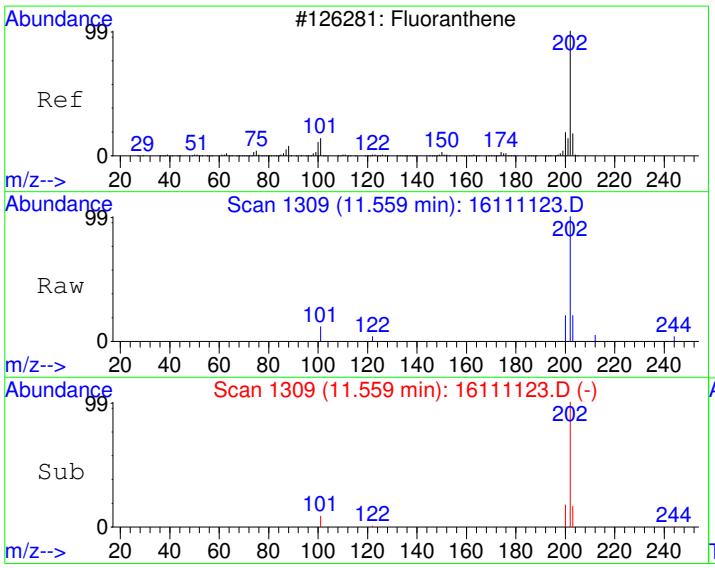


#9
Acenaphthene
Concen: 16.61 ug/kg
RT: 9.01 min Scan# 495
Delta R.T. -0.04 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:154 Resp: 1851

Ion	Ratio	Lower	Upper
154	100		
152	0.6	19.8	79.8#
153	4.3	77.1	137.1#

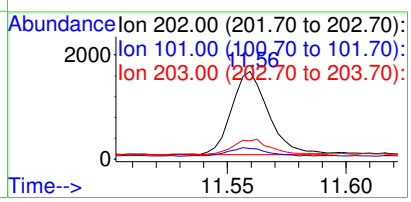


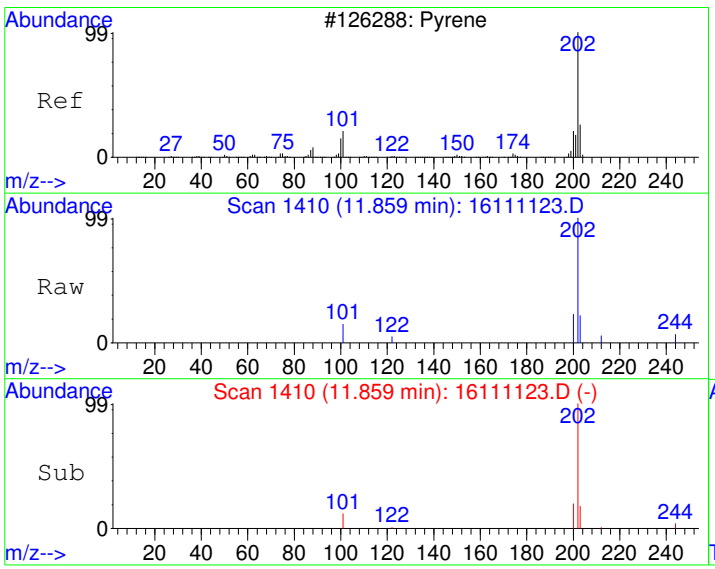


#14
Fluoranthene
Concen: 7.50 ug/kg
RT: 11.56 min Scan# 1309
Delta R.T. 0.01 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:202 Resp: 1730

Ion	Ratio	Lower	Upper
202	100		
101	9.1	0.0	40.6
203	15.7	0.0	48.0

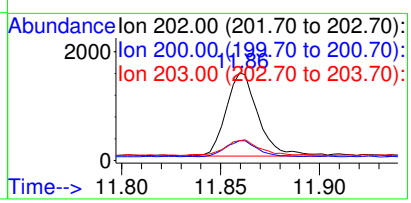


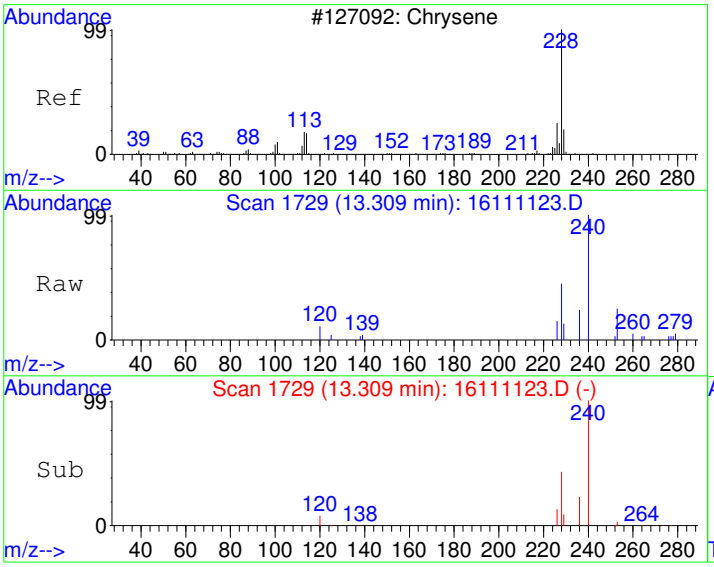


#15
Pyrene
Concen: 7.26 ug/kg
RT: 11.86 min Scan# 1410
Delta R.T. 0.00 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:202 Resp: 1740

Ion	Ratio	Lower	Upper
202	100		
200	19.0	0.0	50.1
203	17.5	0.0	47.8

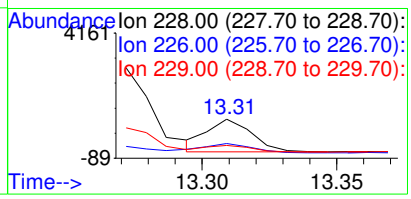


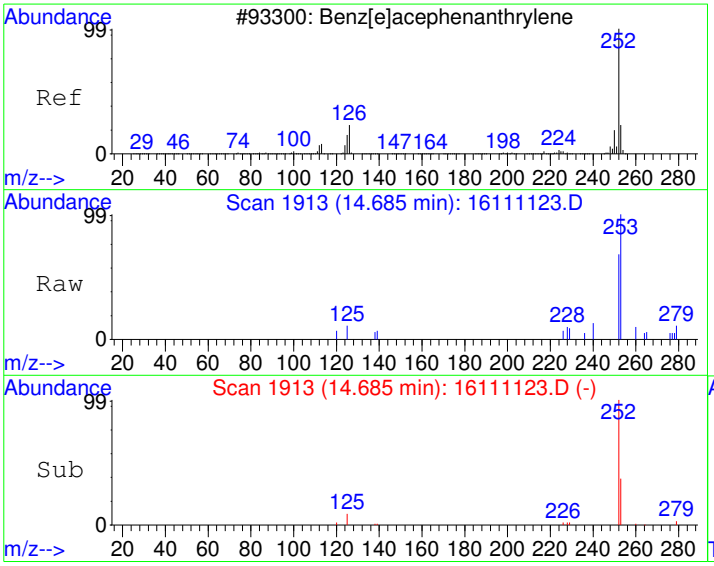


#19
Chrysene
Concen: 5.04 ug/kg
RT: 13.31 min Scan# 1729
Delta R.T. -0.00 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:228 Resp: 1267

Ion	Ratio	Lower	Upper
228	100		
226	28.9	0.0	58.8
229	20.4	0.0	50.2

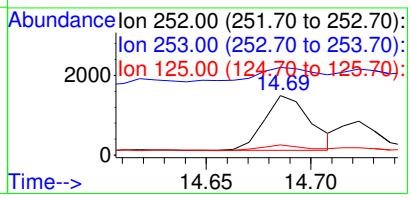


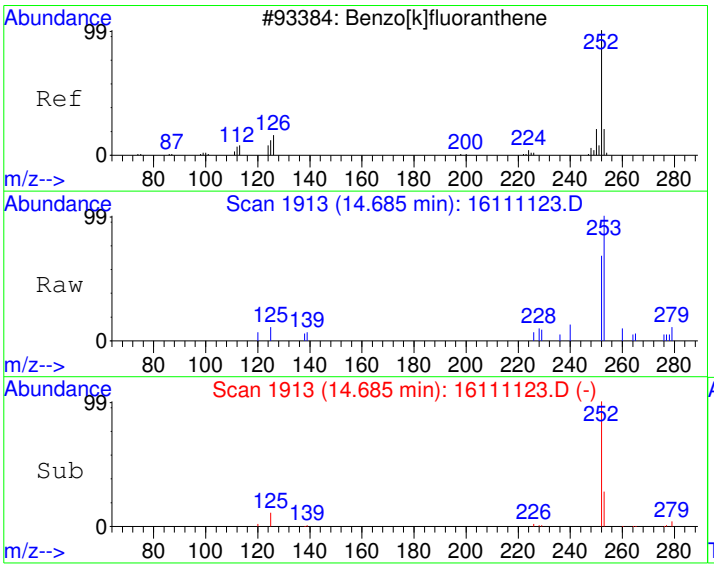


#21
Benzo[b]fluoranthene
Concen: 6.23 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. -0.00 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:252 Resp: 2103

Ion	Ratio	Lower	Upper
252	100		
253	25.8	0.0	52.1
125	9.6	0.0	40.5



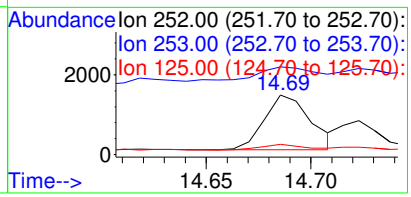


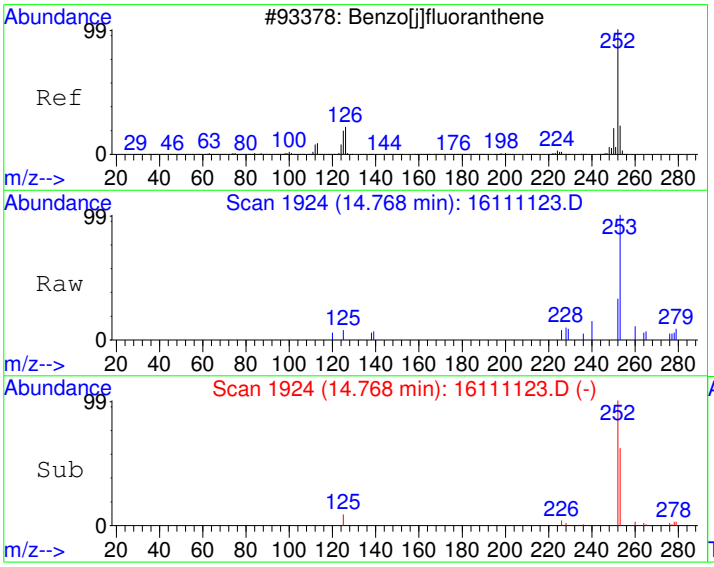
#22
Benzo[k]fluoranthene
Concen: 6.76 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. -0.04 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:252 Resp: 2103

Ion	Ratio	Lower	Upper
252	100		
253	25.8	2.4	42.4
125	9.6	0.0	28.2

BEFORE MANUAL INTEGRATION
By Janice Whitt at 11:14:23 AM, 11/14/2016

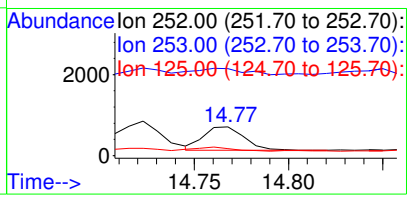


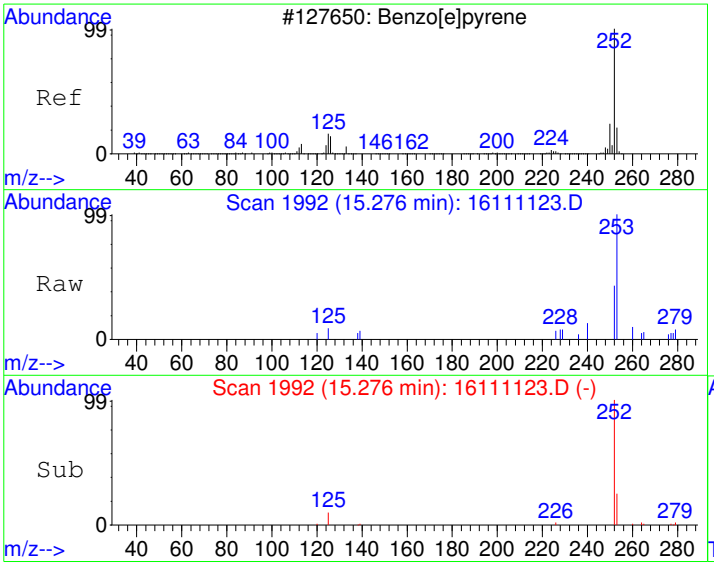


#23
Benzo(j)fluoranthene
Concen: 2.91 ug/kg
RT: 14.77 min Scan# 1924
Delta R.T. -0.00 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:252 Resp: 875

Ion	Ratio	Lower	Upper
252	100		
253	20.4	2.3	42.3
125	8.9	0.0	32.6

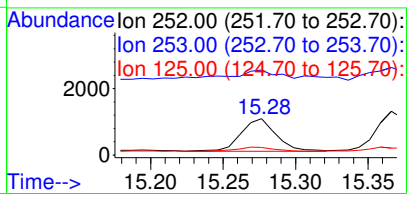


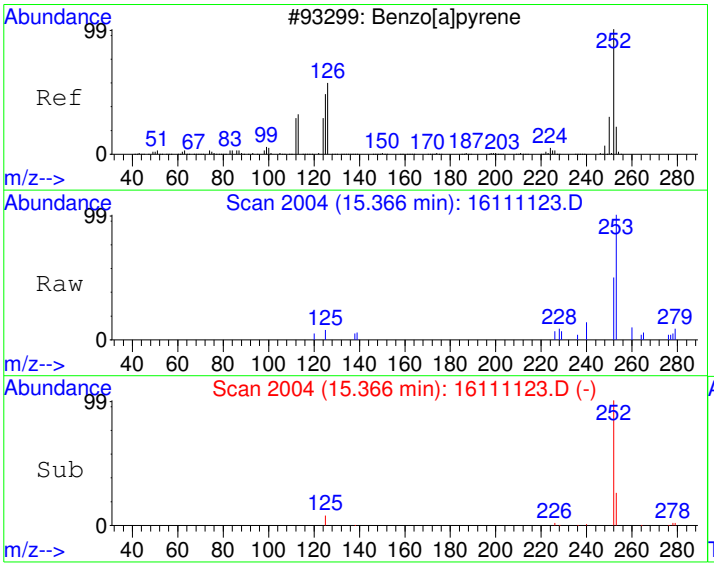


#24
Benzo[e]pyrene
Concen: 5.45 ug/kg
RT: 15.28 min Scan# 1992
Delta R.T. -0.00 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:252 Resp: 1642

Ion	Ratio	Lower	Upper
252	100		
253	22.2	1.8	41.8
125	11.4	0.0	35.7

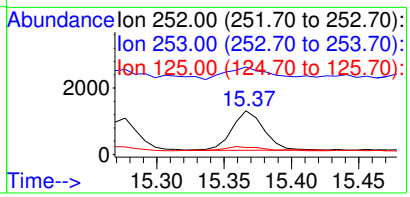


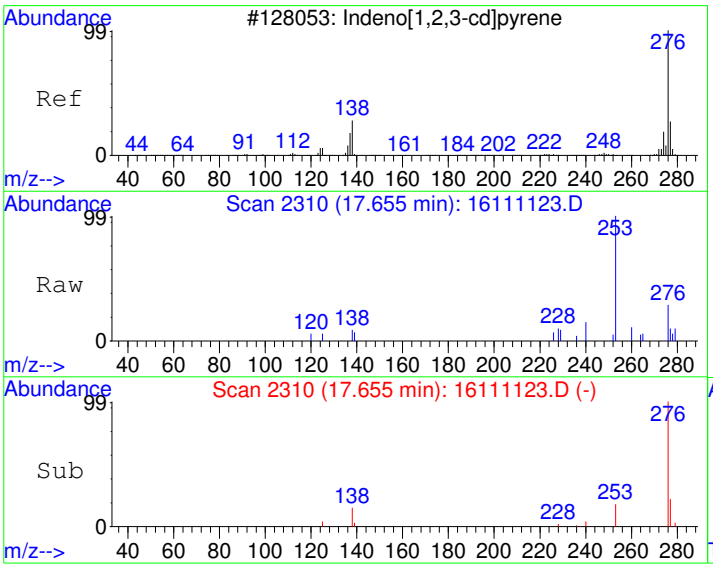


#25
Benzo[a]pyrene
Concen: 6.34 ug/kg
RT: 15.37 min Scan# 2004
Delta R.T. -0.01 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:252 Resp: 1950

Ion	Ratio	Lower	Upper
252	100		
253	24.9	2.2	42.2
125	8.3	0.0	30.8

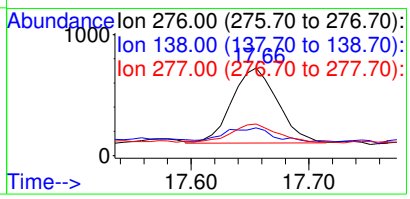


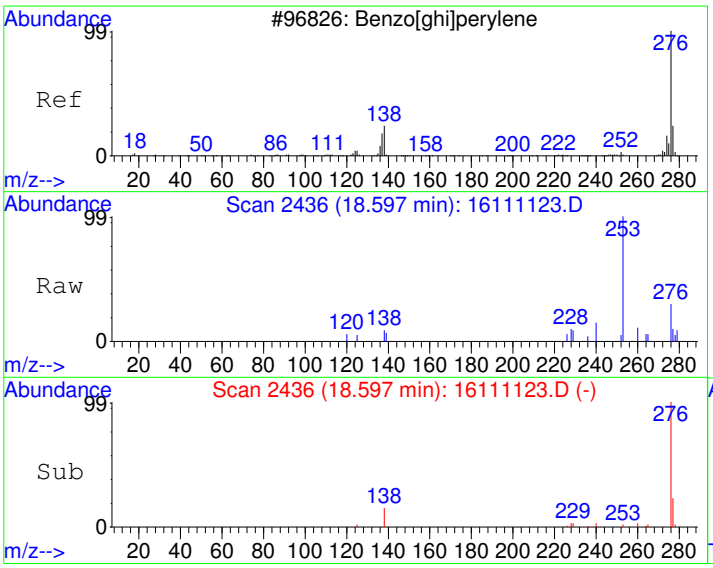


#27
Indeno[1,2,3-cd]pyrene
Concen: 5.34 ug/kg
RT: 17.66 min Scan# 2310
Delta R.T. -0.00 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:276 Resp: 1667

Ion	Ratio	Lower	Upper
276	100		
138	17.8	0.0	39.3
277	23.8	4.0	44.0

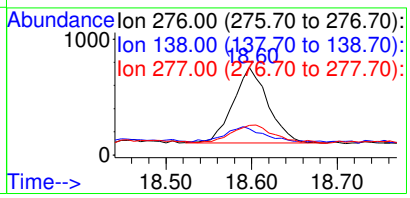




#28
Benzo[g,h,i]perylene
Concen: 5.59 ug/kg
RT: 18.60 min Scan# 2436
Delta R.T. -0.01 min
Lab File: 16111123.D
Acq: 11 Nov 2016 8:57 pm

Tgt Ion:276 Resp: 1845

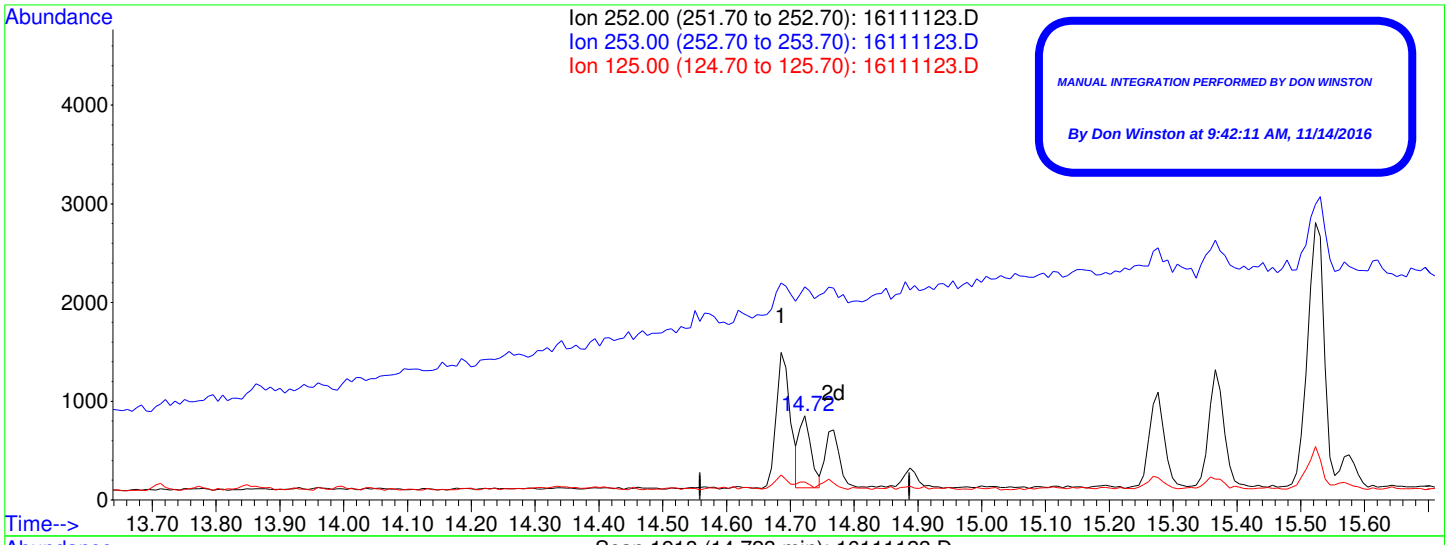
Ion	Ratio	Lower	Upper
276	100		
138	17.5	0.8	40.8
277	23.8	4.0	44.0

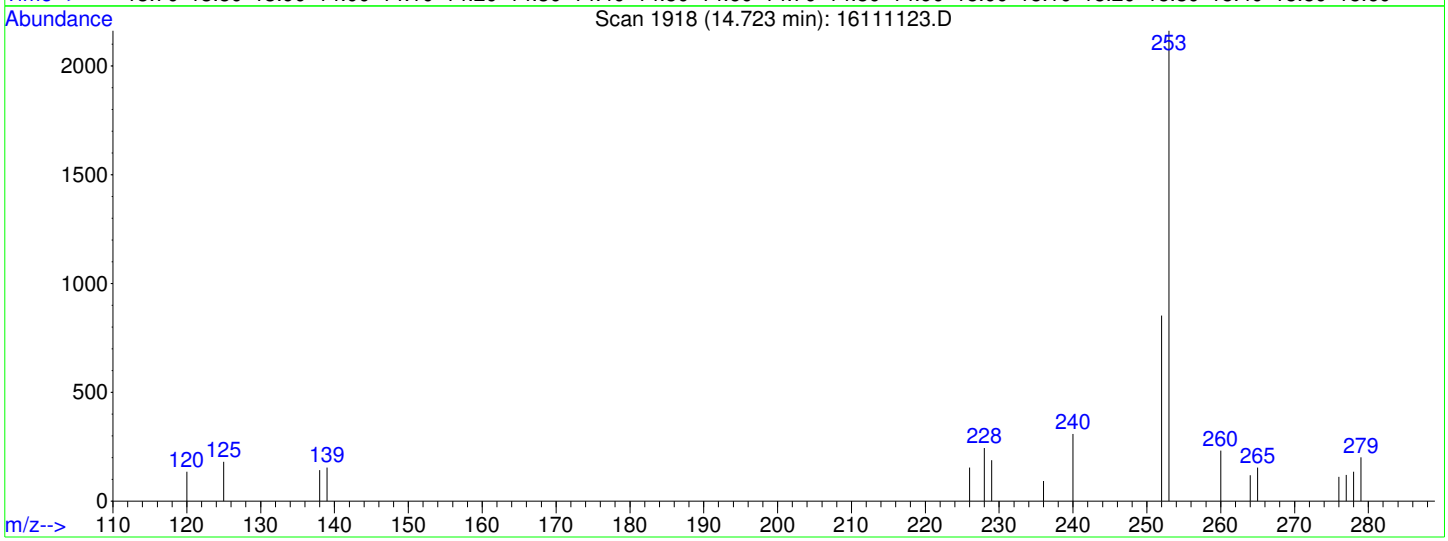


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111123.D Vial: 11
Acq On : 11 Nov 2016 8:57 pm Operator:
Sample : 1611053-11A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:29 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration





TIC: 16111123.D

(22) Benzo[k]fluoranthene (CP)

14.72min ~~3.05ug/kg m~~ Below MDL

response 949

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	253.34#
125.00	8.20	21.22
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:14:33 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111124.D Vial: 12
Acq On : 11 Nov 2016 9:25 pm Operator:
Sample : 1611053-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

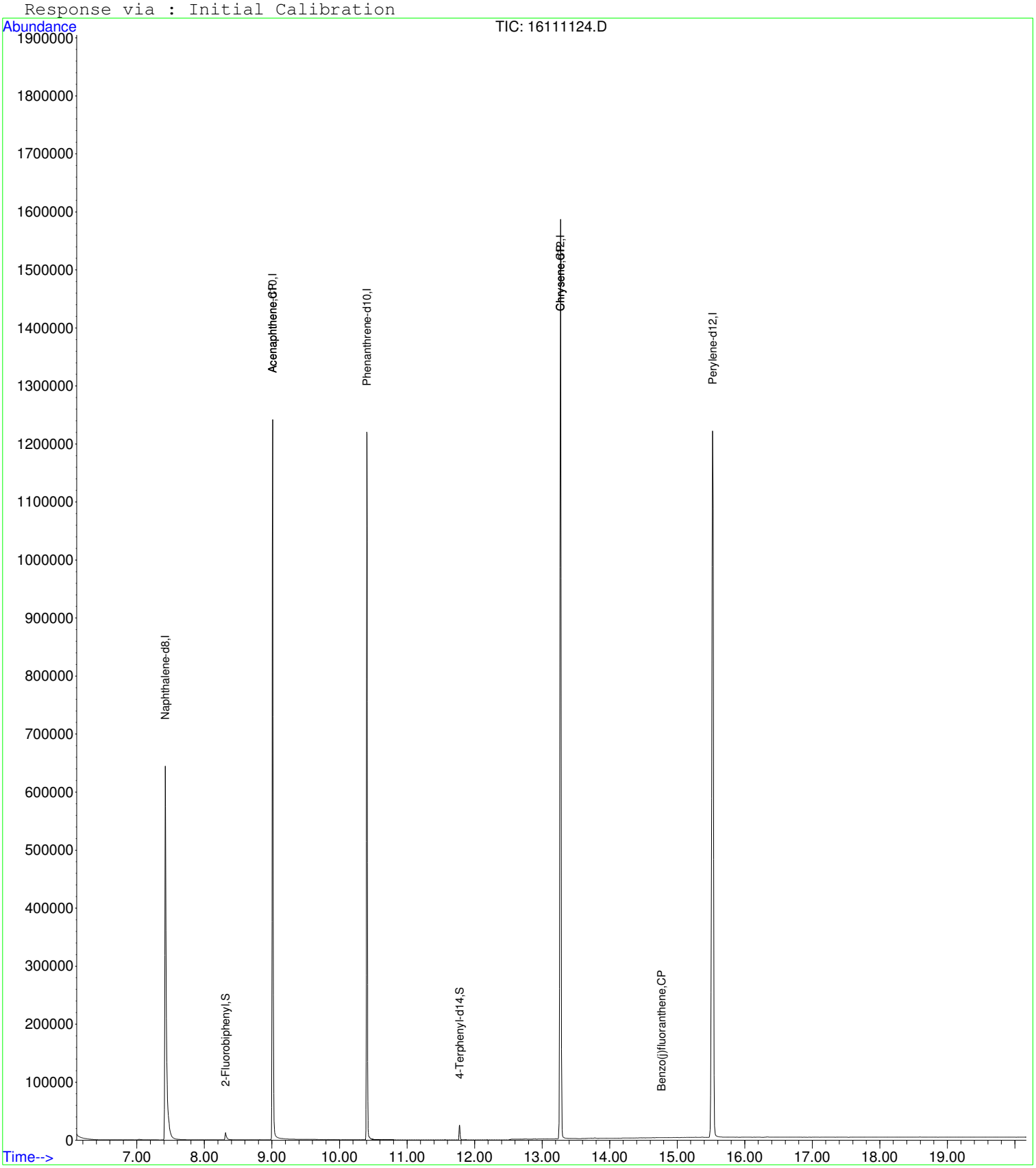
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	922644	4000.00	ug/kg	85
5) Acenaphthene-d10	9.01	164	514297	4000.00	ug/kg	81
11) Phenanthrene-d10	10.41	188	977696	4000.00	ug/kg	81
17) Chrysene-d12	13.27	240	1339514	4000.00	ug/kg	87
20) Perylene-d12	15.52	264	1469082	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15162	100.94	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.52%#			
16) 4-Terphenyl-d14	11.78	244	21880	111.42	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.79%#			
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1791	~~16.47~~	~~ug/kg#~~	~~11~~
19) Chrysene	13.27	228	3075	~~12.67~~	~~ug/kg~~	~~67~~
23) Benzo(j)fluoranthene	14.77	252	195	0.67	ug/kg	83

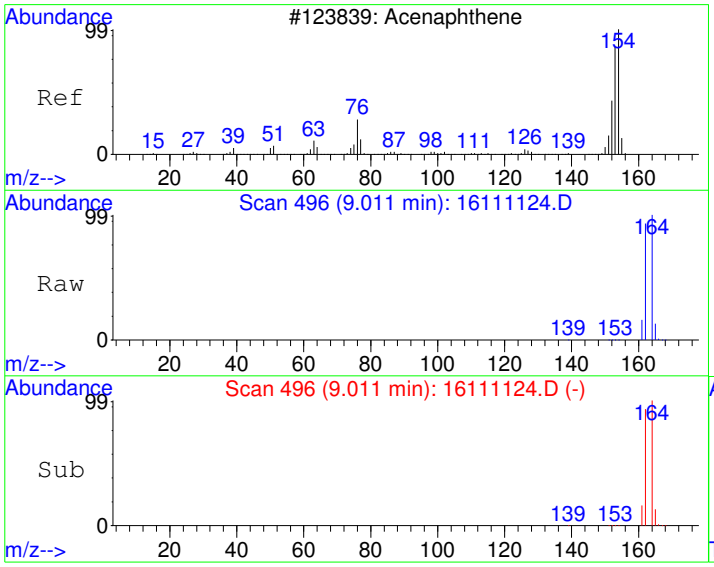
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111124.D Vial: 12
Acq On : 11 Nov 2016 9:25 pm Operator:
Sample : 1611053-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

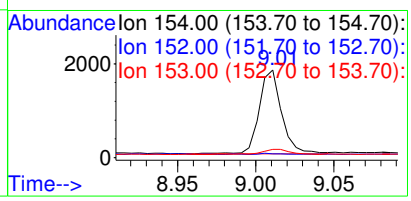


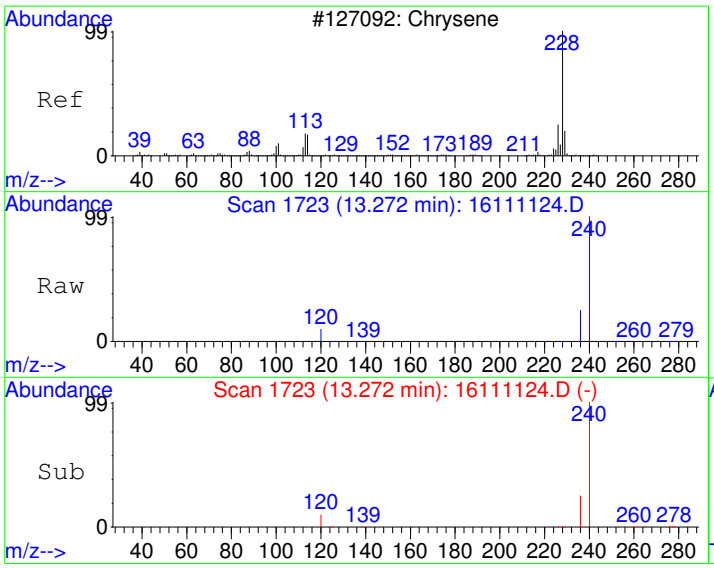


#9
Acenaphthene
Concen: 16.47 ug/kg
RT: 9.01 min Scan# 496
Delta R.T. -0.03 min
Lab File: 16111124.D
Acq: 11 Nov 2016 9:25 pm

Tgt Ion:154 Resp: 1791

Ion	Ratio	Lower	Upper
154	100		
152	0.7	19.8	79.8#
153	5.7	77.1	137.1#

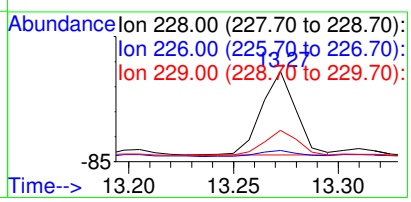


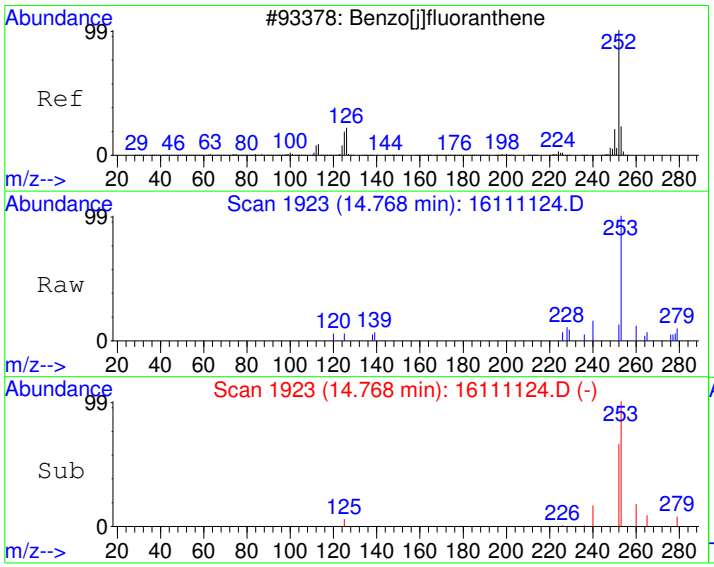


#19
Chrysene
Concen: 12.67 ug/kg
RT: 13.27 min Scan# 1723
Delta R.T. -0.04 min
Lab File: 16111124.D
Acq: 11 Nov 2016 9:25 pm

Tgt Ion:228 Resp: 3075

Ion	Ratio	Lower	Upper
228	100		
226	6.6	0.0	58.8
229	29.5	0.0	50.2

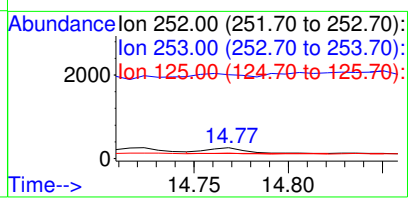




#23
Benzo(j)fluoranthene
Concen: 0.67 ug/kg
RT: 14.77 min Scan# 1923
Delta R.T. 0.00 min
Lab File: 16111124.D
Acq: 11 Nov 2016 9:25 pm

Tgt Ion:252 Resp: 195

Ion	Ratio	Lower	Upper
252	100		
253	32.8	2.3	42.3
125	16.1	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111125.D Vial: 13
Acq On : 11 Nov 2016 9:53 pm Operator:
Sample : 1611053-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

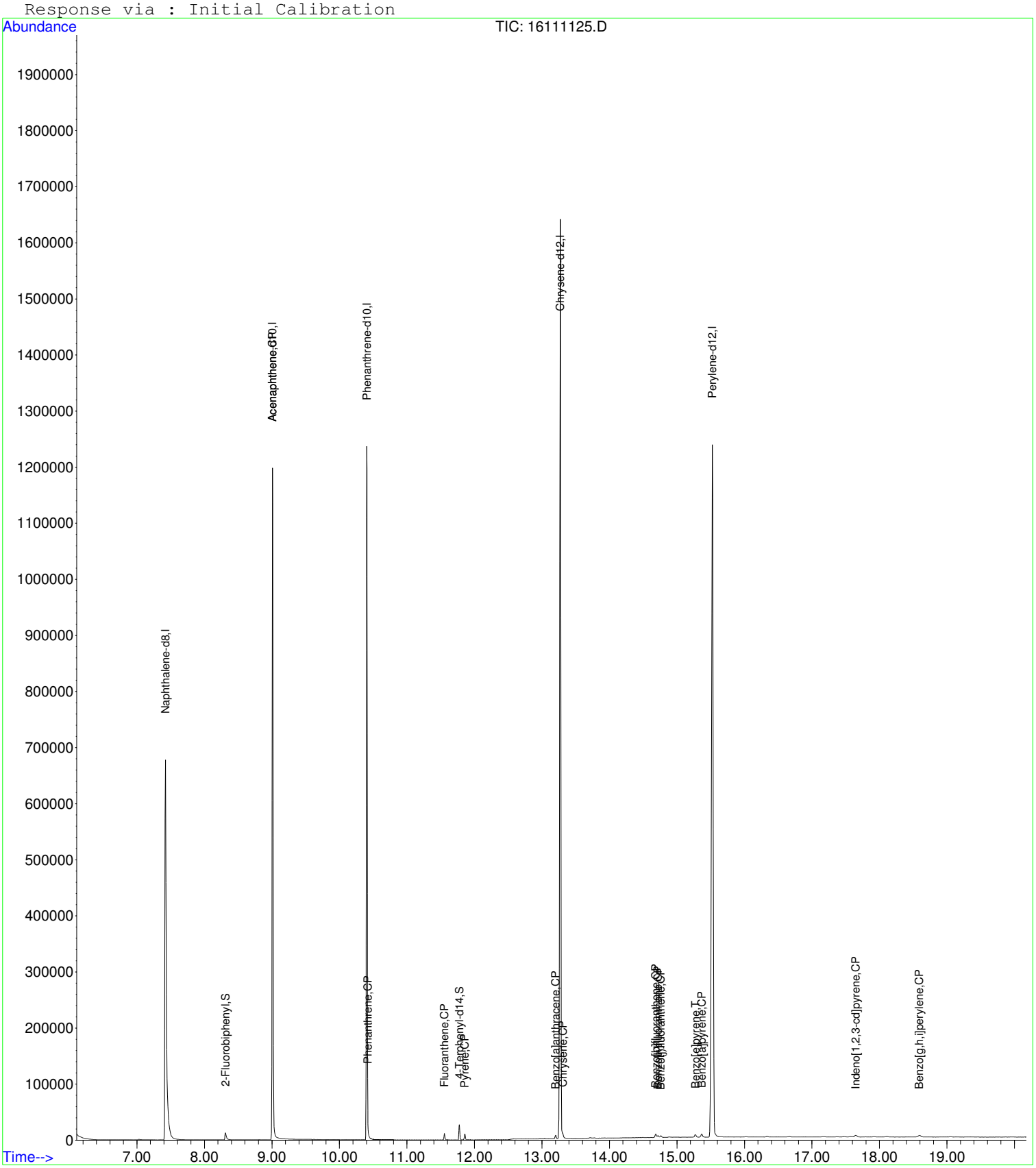
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	951285	4000.00	ug/kg	87
5) Acenaphthene-d10	9.01	164	524426	4000.00	ug/kg	83
11) Phenanthrene-d10	10.40	188	995649	4000.00	ug/kg	83
17) Chrysene-d12	13.27	240	1368849	4000.00	ug/kg	89
20) Perylene-d12	15.52	264	1482727	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15108	98.64	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.47%#			
16) 4-Terphenyl-d14	11.78	244	21632	108.18	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.70%#			
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	1803	16.26	ug/kg#	10
12) Phenanthrene	10.43	178	2960	15.27	ug/kg	100
14) Fluoranthene	11.55	202	8385	36.62	ug/kg	97
15) Pyrene	11.86	202	7491	31.50	ug/kg	99
18) Benzo[a]anthracene	13.20	228	5299	19.80	ug/kg	99
19) Chrysene	13.31	228	5773	23.29	ug/kg	97
21) Benzo[b]fluoranthene	14.69	252	7610	23.11	ug/kg	96
22) Benzo[k]fluoranthene	14.72	252	3160	10.41	ug/kg	80
23) Benzo(j)fluoranthene	14.76	252	3043	10.37	ug/kg	93
24) Benzo[e]pyrene	15.28	252	5276	17.94	ug/kg	90
25) Benzo[a]pyrene	15.37	252	6764	22.53	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.65	276	5445	17.87	ug/kg	98
28) Benzo[g,h,i]perylene	18.60	276	5908	18.35	ug/kg	97

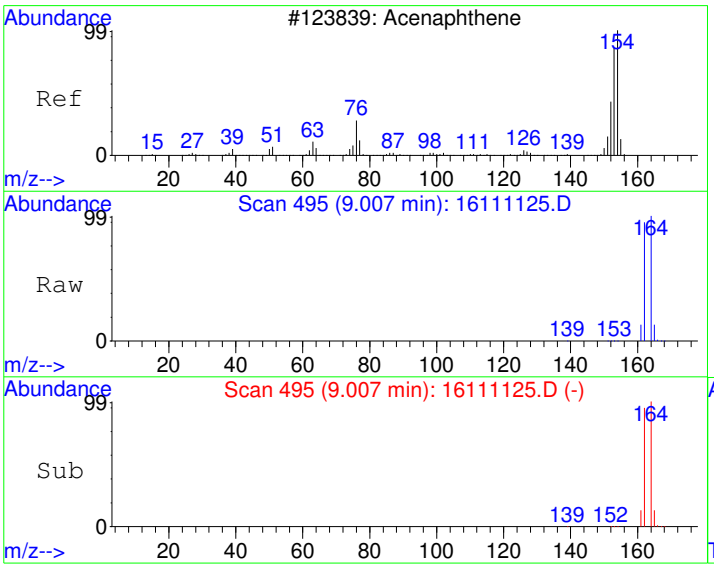
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111125.D Vial: 13
Acq On : 11 Nov 2016 9:53 pm Operator:
Sample : 1611053-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

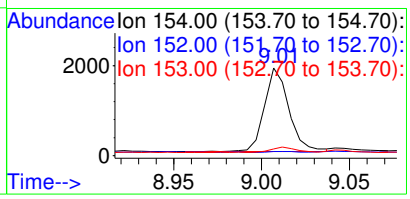


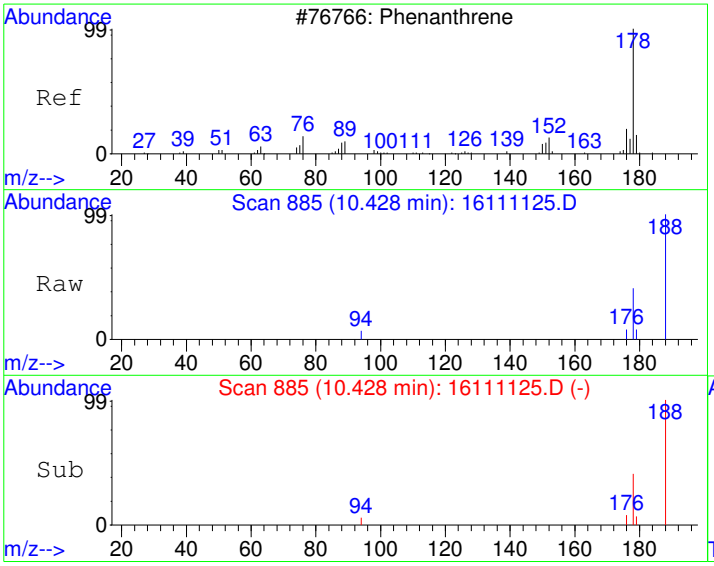


#9
Acenaphthene
Concen: 16.26 ug/kg
RT: 9.01 min Scan# 495
Delta R.T. -0.04 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:154 Resp: 1803

Ion	Ratio	Lower	Upper
154	100		
152	0.8	19.8	79.8#
153	4.2	77.1	137.1#

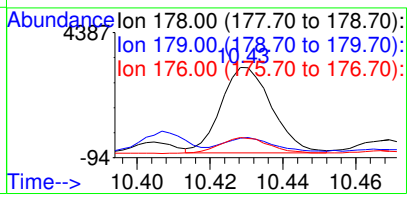


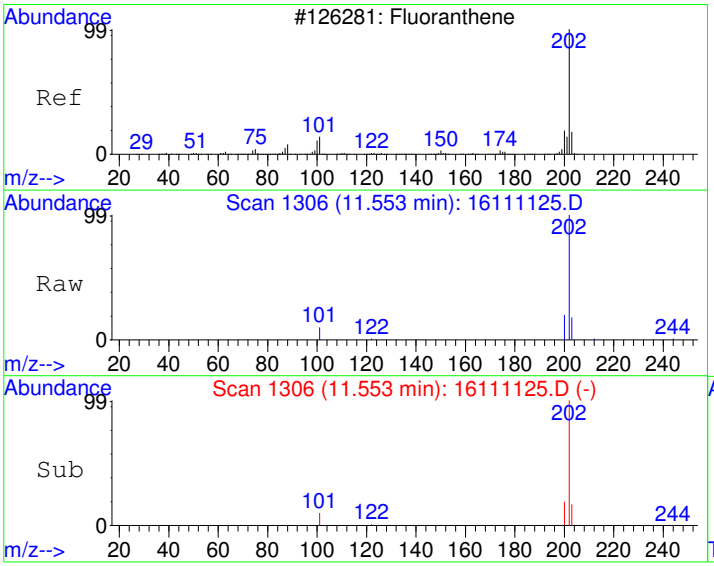


#12
Phenanthrene
Concen: 15.27 ug/kg
RT: 10.43 min Scan# 885
Delta R.T. -0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:178 Resp: 2960

Ion	Ratio	Lower	Upper
178	100		
179	15.8	0.0	45.8
176	18.6	0.0	48.3

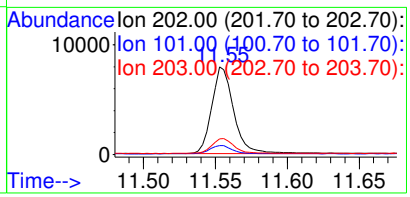


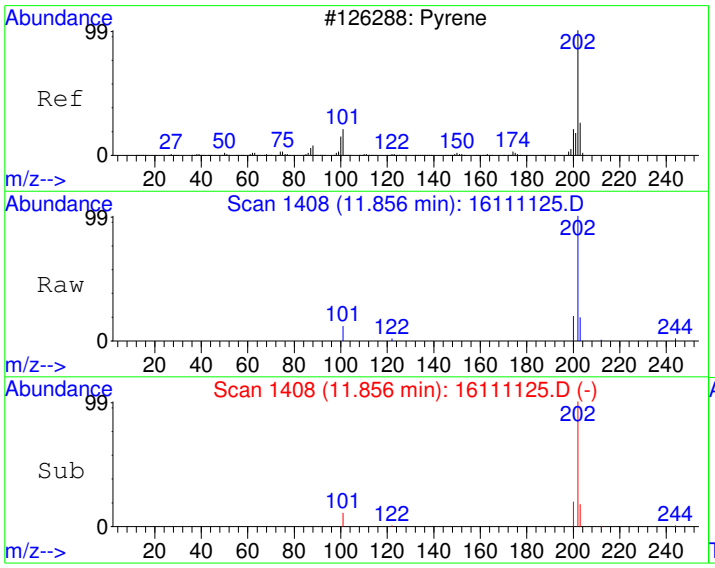


#14
Fluoranthene
Concen: 36.62 ug/kg
RT: 11.55 min Scan# 1306
Delta R.T. 0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:202 Resp: 8385

Ion	Ratio	Lower	Upper
202	100		
101	9.5	0.0	40.6
203	16.6	0.0	48.0

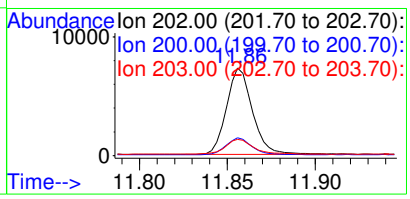


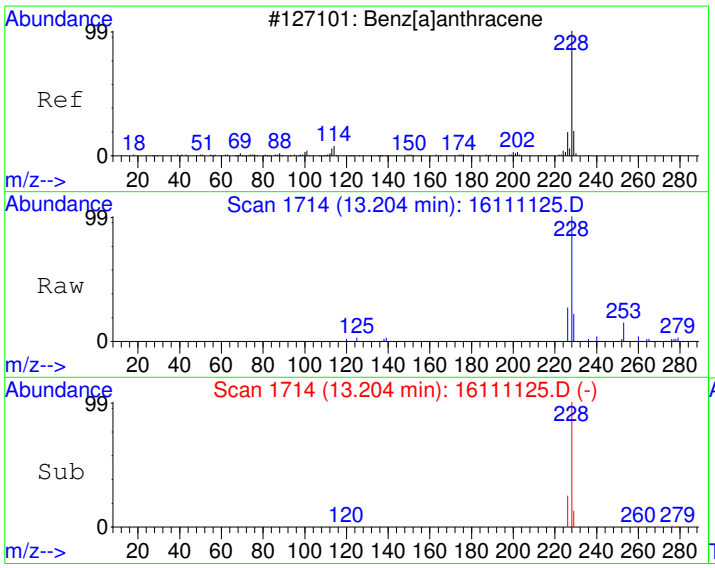


#15
Pyrene
Concen: 31.50 ug/kg
RT: 11.86 min Scan# 1408
Delta R.T. 0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:202 Resp: 7491

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	50.1
203	17.3	0.0	47.8

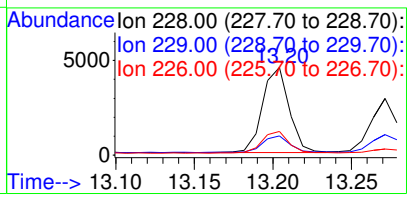


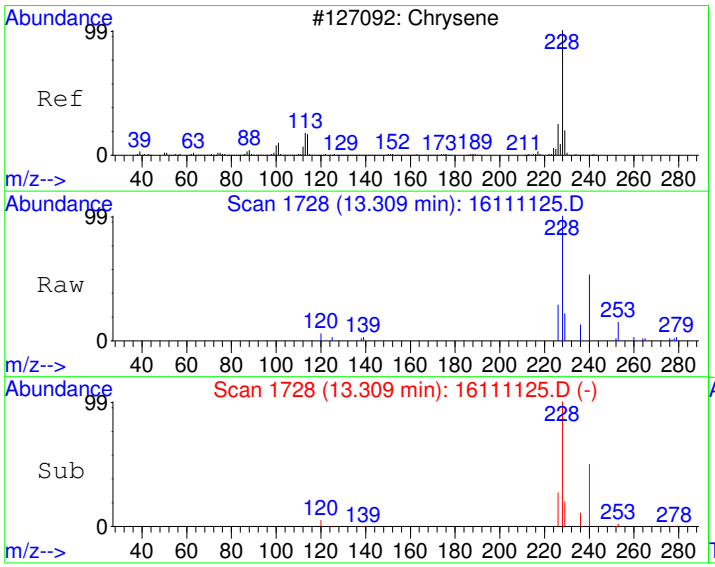


#18
Benzo[a]anthracene
Concen: 19.80 ug/kg
RT: 13.20 min Scan# 1714
Delta R.T. -0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:228 Resp: 5299

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	50.4
226	25.4	0.0	55.6

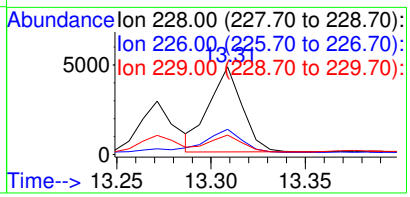


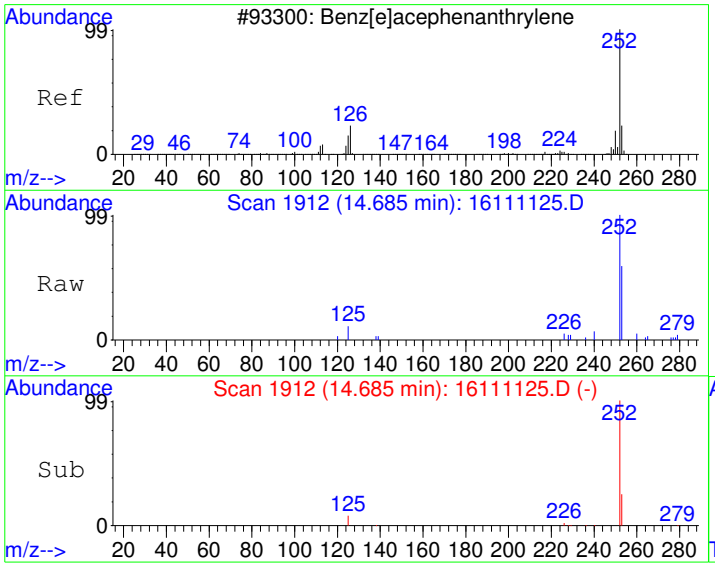


#19
Chrysene
Concen: 23.29 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. -0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:228 Resp: 5773

Ion	Ratio	Lower	Upper
228	100		
226	27.2	0.0	58.8
229	19.2	0.0	50.2

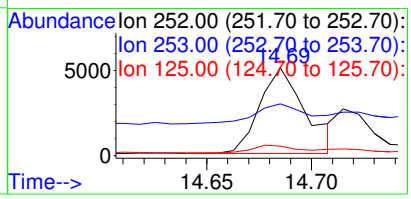


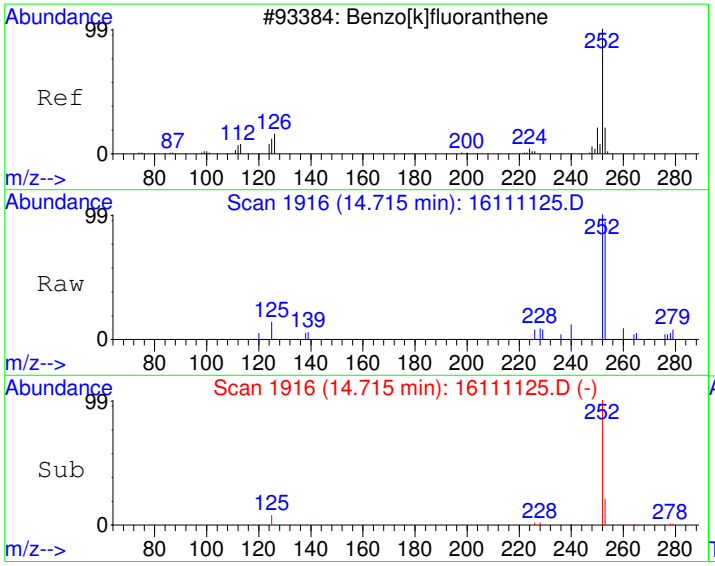


#21
Benzo[b]fluoranthene
Concen: 23.11 ug/kg
RT: 14.69 min Scan# 1912
Delta R.T. -0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:252 Resp: 7610

Ion	Ratio	Lower	Upper
252	100		
253	23.3	0.0	52.1
125	8.1	0.0	40.5

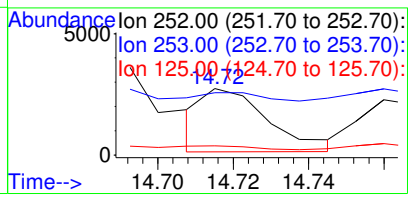


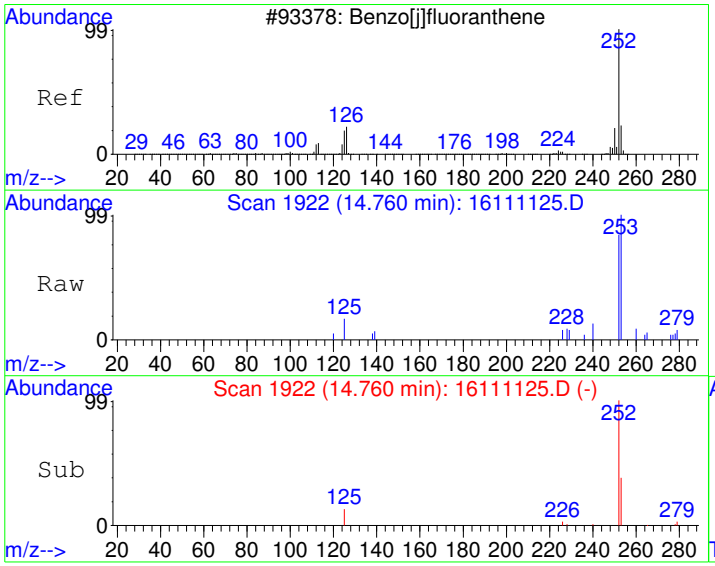


#22
Benzo[k]fluoranthene
Concen: 10.41 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.01 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:252 Resp: 3160

Ion	Ratio	Lower	Upper
252	100		
253	10.3	2.4	42.4
125	6.2	0.0	28.2

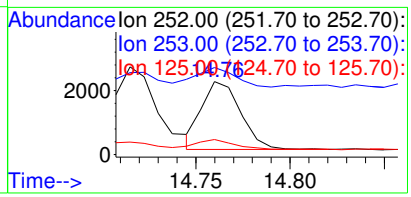


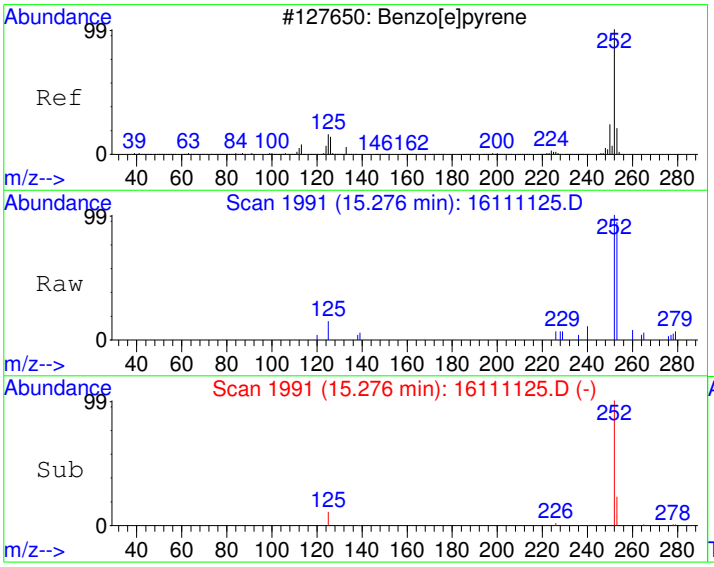


#23
Benzo(j)fluoranthene
Concen: 10.37 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:252 Resp: 3043

Ion	Ratio	Lower	Upper
252	100		
253	26.4	2.3	42.3
125	14.4	0.0	32.6

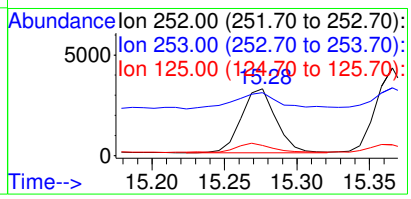


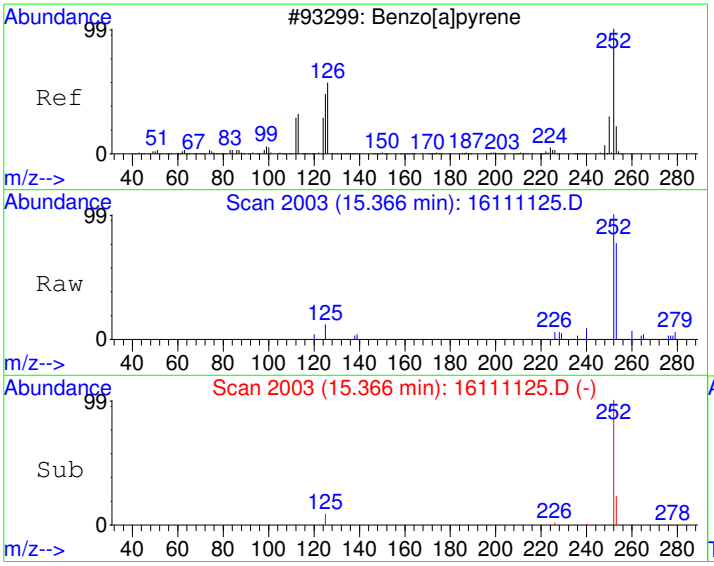


#24
Benzo[e]pyrene
Concen: 17.94 ug/kg
RT: 15.28 min Scan# 1991
Delta R.T. -0.00 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:252 Resp: 5276

Ion	Ratio	Lower	Upper
252	100		
253	25.7	1.8	41.8
125	10.6	0.0	35.7

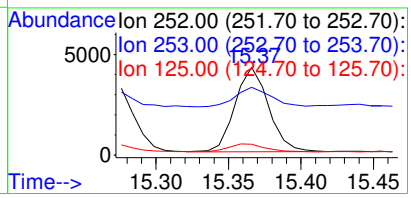


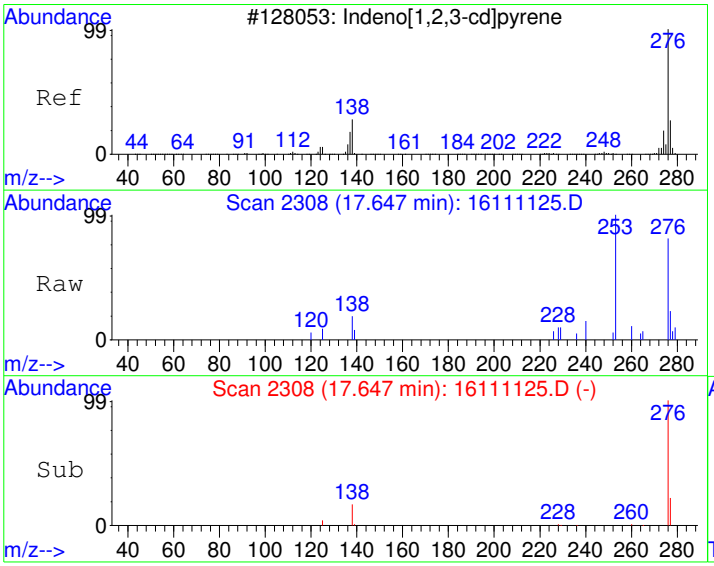


#25
Benzo[a]pyrene
Concen: 22.53 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:252 Resp: 6764

Ion	Ratio	Lower	Upper
252	100		
253	22.8	2.2	42.2
125	8.9	0.0	30.8

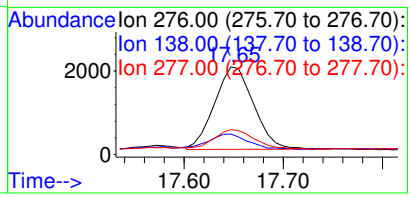


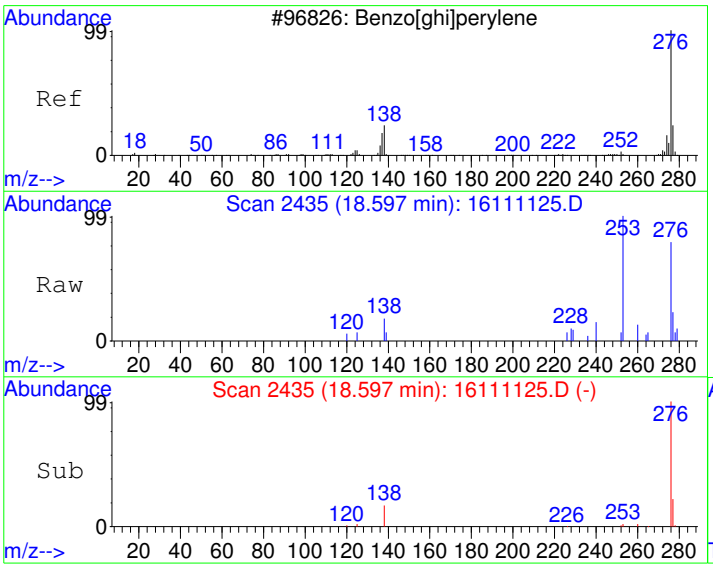


#27
Indeno[1,2,3-cd]pyrene
Concen: 17.87 ug/kg
RT: 17.65 min Scan# 2308
Delta R.T. -0.01 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:276 Resp: 5445

Ion	Ratio	Lower	Upper
276	100		
138	17.6	0.0	39.3
277	23.5	4.0	44.0

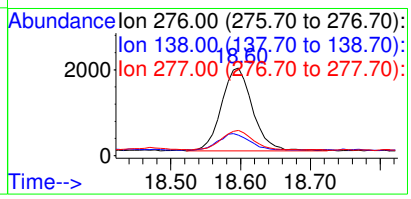




#28
Benzo[g,h,i]perylene
Concen: 18.35 ug/kg
RT: 18.60 min Scan# 2435
Delta R.T. -0.01 min
Lab File: 16111125.D
Acq: 11 Nov 2016 9:53 pm

Tgt Ion:276 Resp: 5908

Ion	Ratio	Lower	Upper
276	100		
138	17.5	0.8	40.8
277	23.9	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111126.D Vial: 14
Acq On : 11 Nov 2016 10:21 pm Operator:
Sample : 1611053-26A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	989099	4000.00	ug/kg	91
5) Acenaphthene-d10	9.01	164	541196	4000.00	ug/kg	85
11) Phenanthrene-d10	10.41	188	1017879	4000.00	ug/kg	85
17) Chrysene-d12	13.27	240	1430295	4000.00	ug/kg	93
20) Perylene-d12	15.52	264	1538003	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15736	99.56	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.49%#		
16) 4-Terphenyl-d14	11.78	244	22687	110.97	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.77%#		
Target Compounds						Qvalue
9) Acenaphthene	9.04	154	666	5.82	ug/kg	96
12) Phenanthrene	10.43	178	22947	115.78	ug/kg	99
13) Anthracene	10.47	178	4440	21.76	ug/kg	98
14) Fluoranthene	11.55	202	78008	333.23	ug/kg	98
15) Pyrene	11.85	202	71152	292.68	ug/kg	99
18) Benzo[a]anthracene	13.20	228	56602	202.42	ug/kg	98
19) Chrysene	13.31	228	70136	270.74	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	84842	248.40	ug/kg	97
22) Benzo[k]fluoranthene	14.69	252	84842	~~269.50~~	~~ug/kg~~	~~99~~
23) Benzo(j)fluoranthene	14.76	252	36052	118.41	ug/kg	94
24) Benzo[e]pyrene	15.27	252	61182	200.57	ug/kg	97
25) Benzo[a]pyrene	15.37	252	81613	262.07	ug/kg	98
26) Dibenz[a,h]anthracene	17.57	278	13796	42.17	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.64	276	67388	213.24	ug/kg	98
28) Benzo[g,h,i]perylene	18.59	276	70389	210.79	ug/kg	96

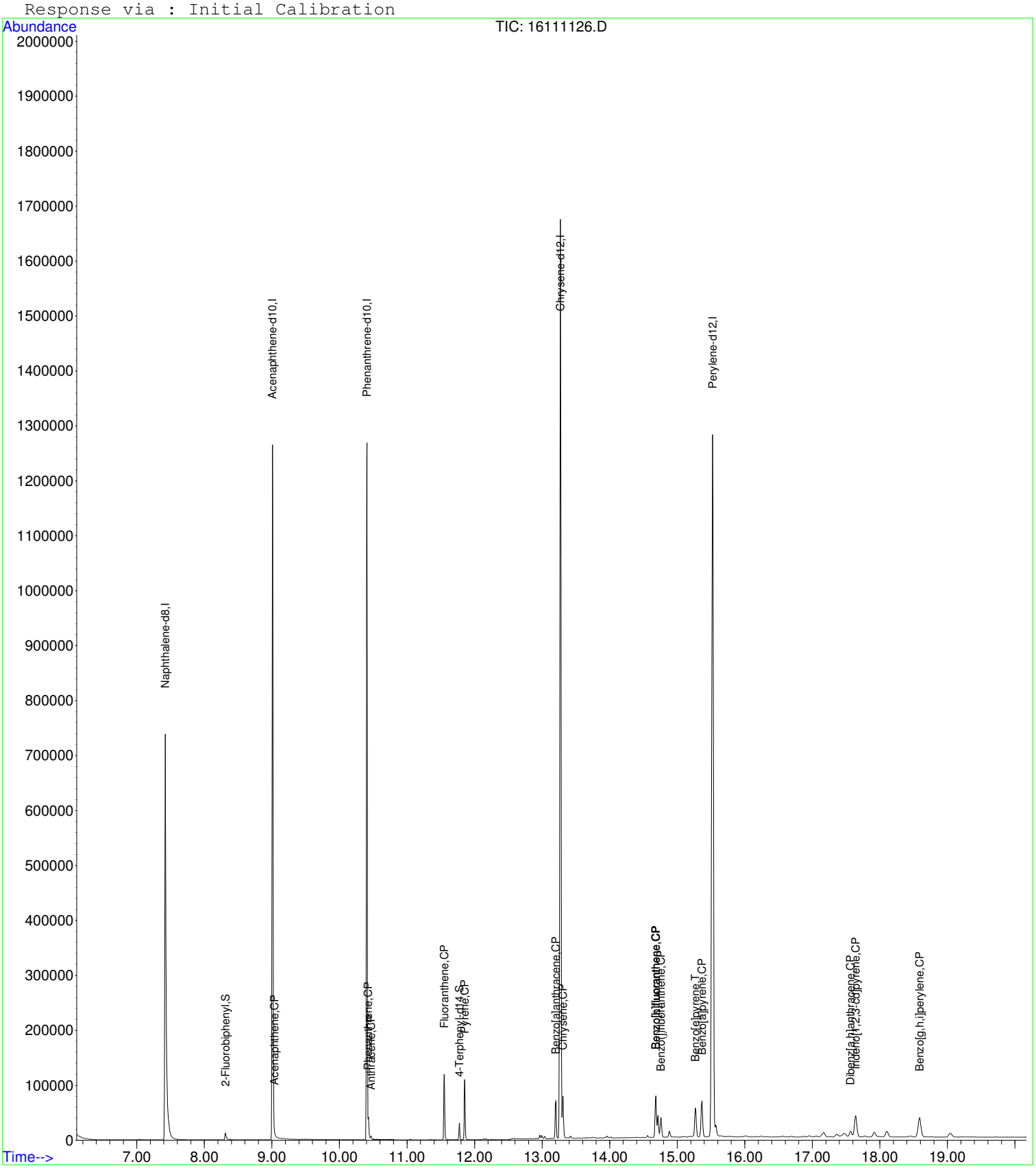
Wrong RT See MI

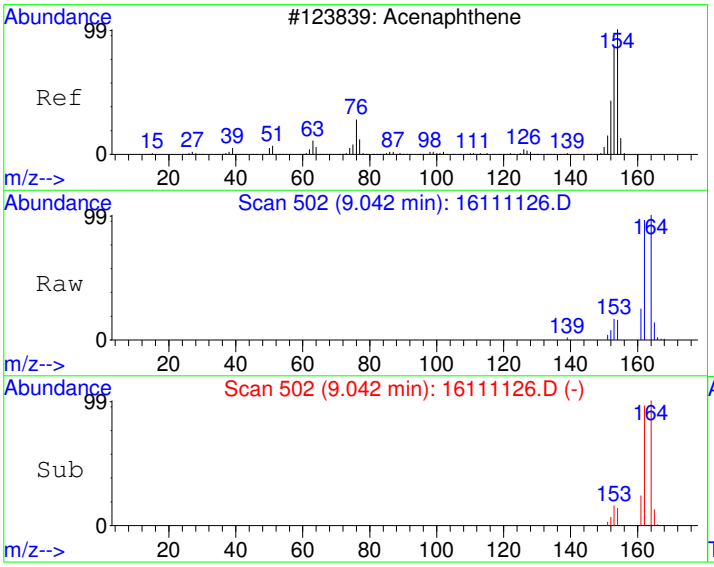
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111126.D Vial: 14
Acq On : 11 Nov 2016 10:21 pm Operator:
Sample : 1611053-26A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

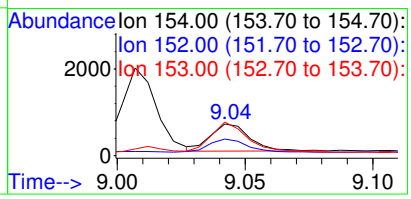


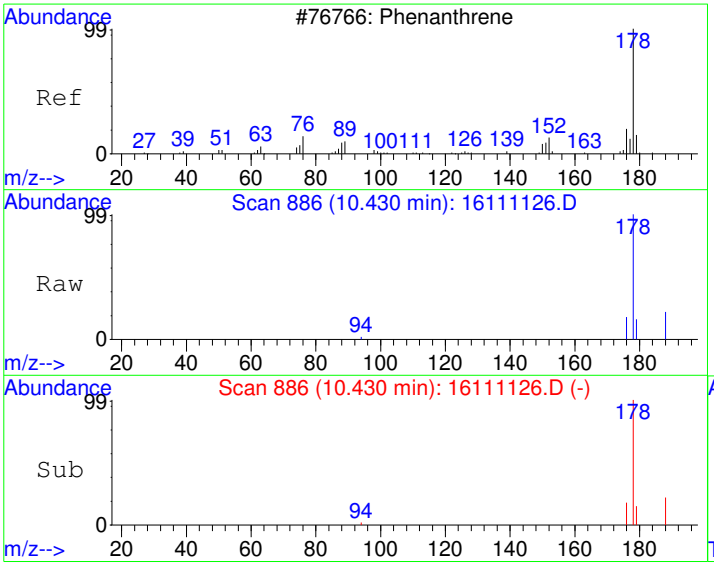


#9
Acenaphthene
Concen: 5.82 ug/kg
RT: 9.04 min Scan# 502
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:154 Resp: 666

Ion	Ratio	Lower	Upper
154	100		
152	48.6	19.8	79.8
153	111.8	77.1	137.1

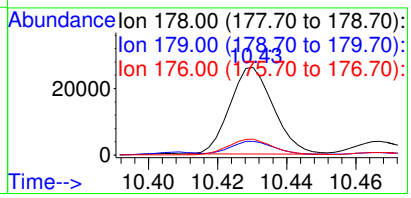


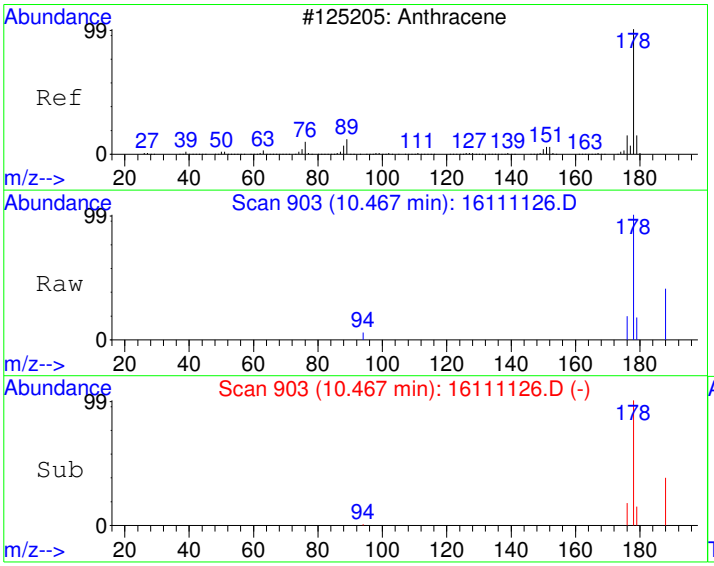


#12
Phenanthrene
Concen: 115.78 ug/kg
RT: 10.43 min Scan# 886
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:178 Resp: 22947

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	45.8
176	18.1	0.0	48.3

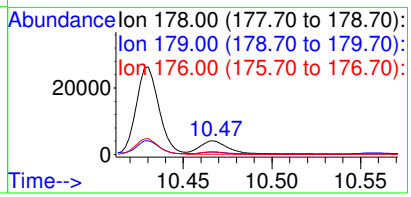


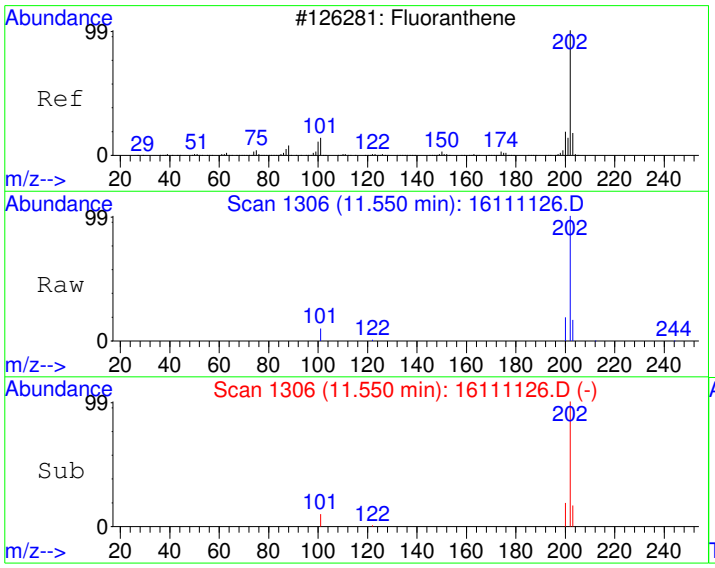


#13
Anthracene
Concen: 21.76 ug/kg
RT: 10.47 min Scan# 903
Delta R.T. 0.01 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:178 Resp: 4440

Ion	Ratio	Lower	Upper
178	100		
179	14.5	0.0	45.7
176	17.7	0.0	48.1

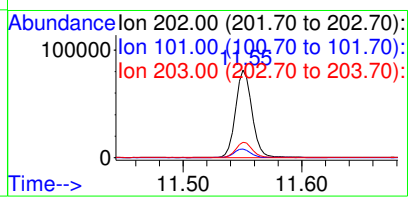


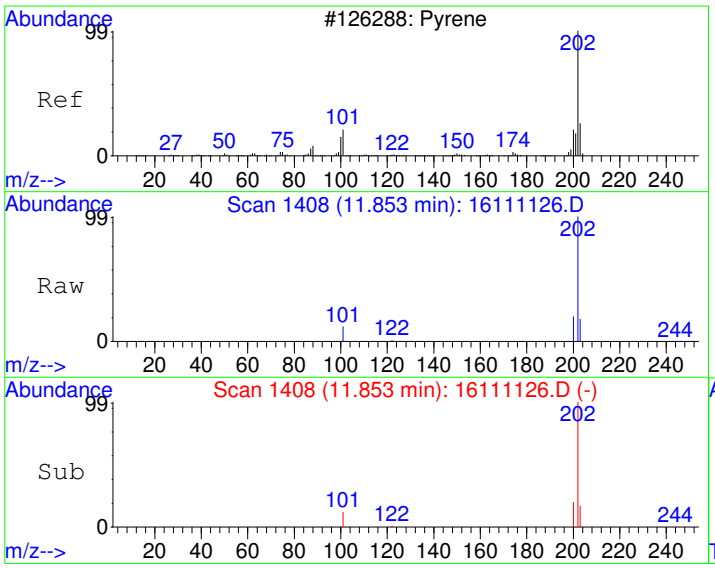


#14
Fluoranthene
Concen: 333.23 ug/kg
RT: 11.55 min Scan# 1306
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:202 Resp: 78008

Ion	Ratio	Lower	Upper
202	100		
101	9.8	0.0	40.6
203	17.3	0.0	48.0

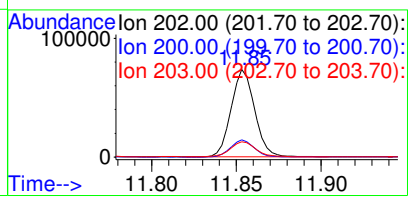


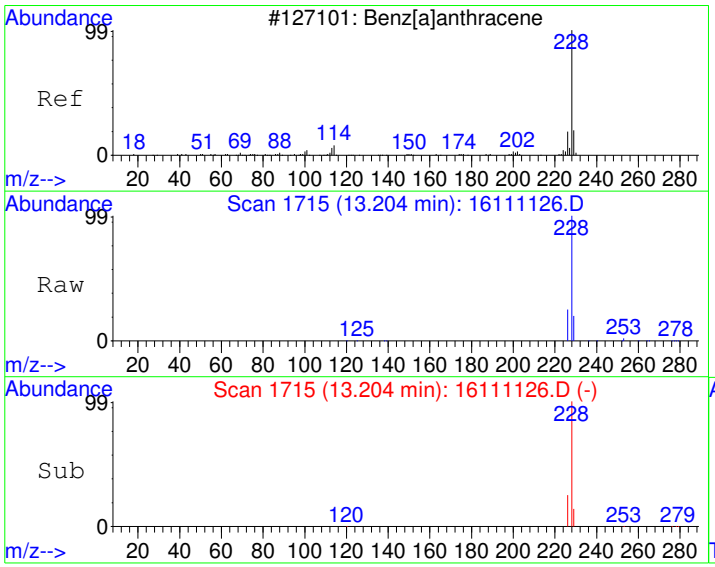


#15
Pyrene
Concen: 292.68 ug/kg
RT: 11.85 min Scan# 1408
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:202 Resp: 71152

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	17.4	0.0	47.8

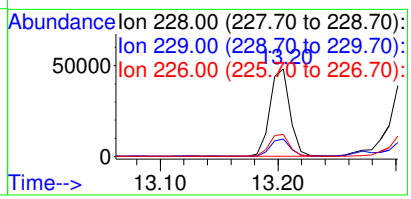


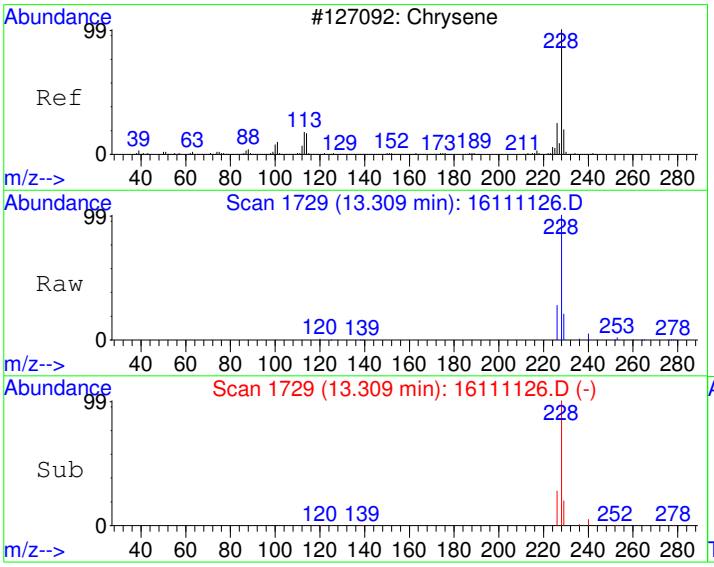


#18
Benzo[a]anthracene
Concen: 202.42 ug/kg
RT: 13.20 min Scan# 1715
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:228 Resp: 56602

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.4
226	24.9	0.0	55.6

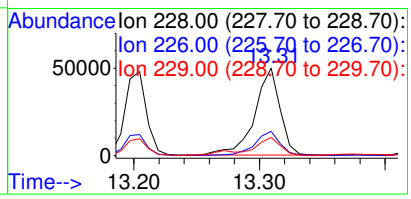


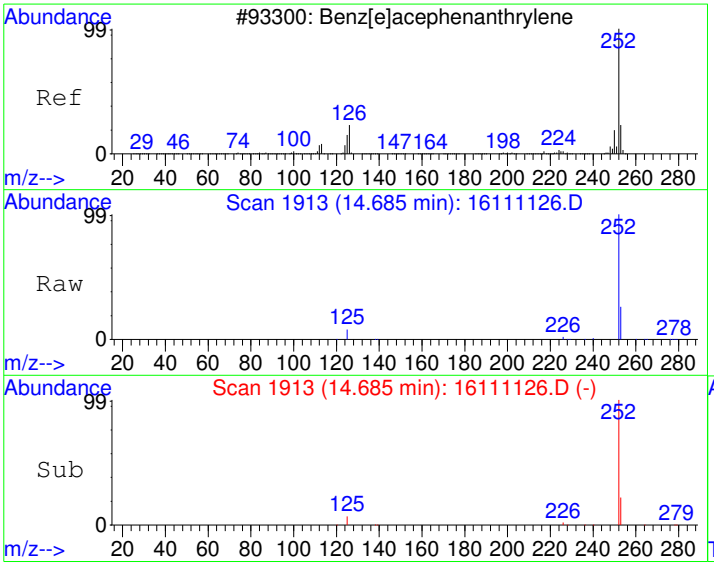


#19
Chrysene
Concen: 270.74 ug/kg
RT: 13.31 min Scan# 1729
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:228 Resp: 70136

Ion	Ratio	Lower	Upper
228	100		
226	27.7	0.0	58.8
229	20.4	0.0	50.2

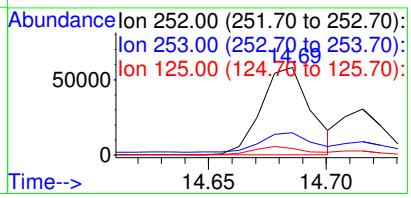


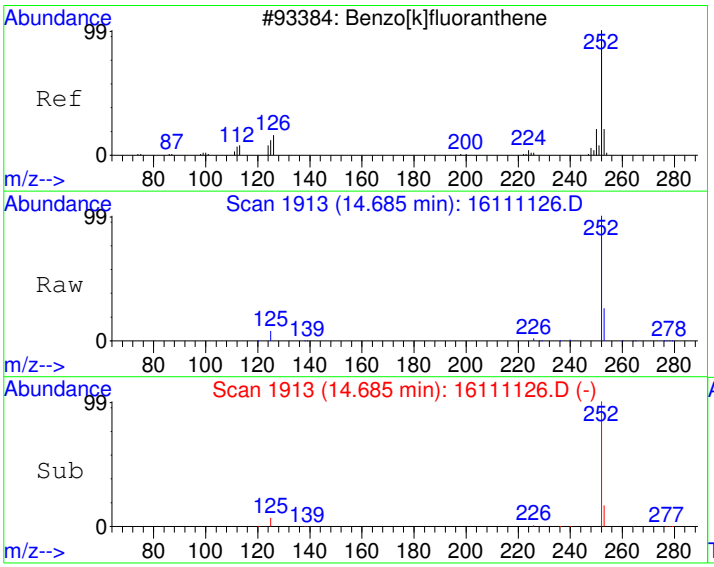


#21
Benzo[b]fluoranthene
Concen: 248.40 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. -0.00 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:252 Resp: 84842

Ion	Ratio	Lower	Upper
252	100		
253	22.2	0.0	52.1
125	7.4	0.0	40.5

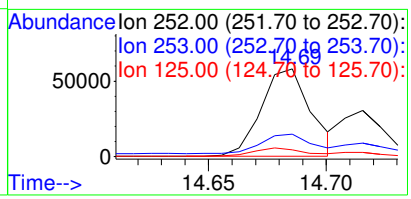




#22
Benzo[k]fluoranthene
Concen: 269.50 ug/kg
RT: 14.69 min Scan# 1913
Delta R.T. -0.04 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

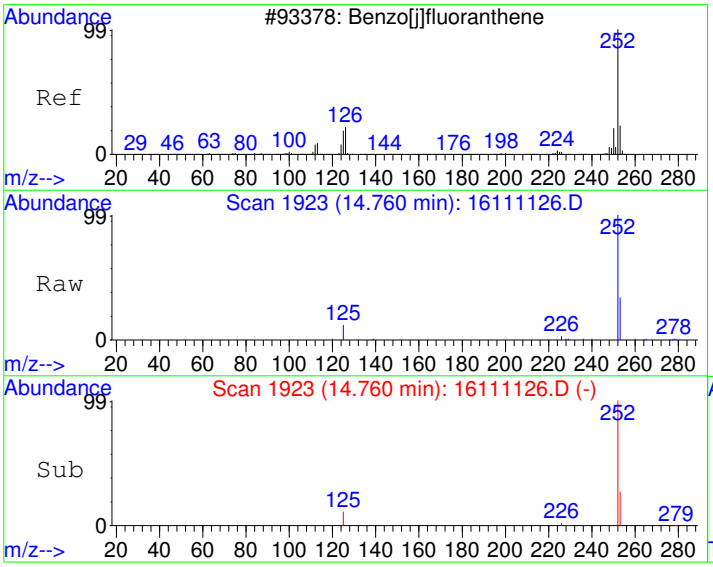
Tgt Ion:252 Resp: 84842

Ion	Ratio	Lower	Upper
252	100		
253	22.2	2.4	42.4
125	7.4	0.0	28.2



BEFORE MANUAL INTEGRATION
By Don Winston at 9:24:19 AM, 11/14/2016

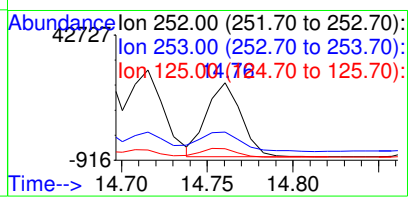
BEFORE MANUAL INTEGRATION
By Janice Whitt at 11:17:46 AM, 11/14/2016

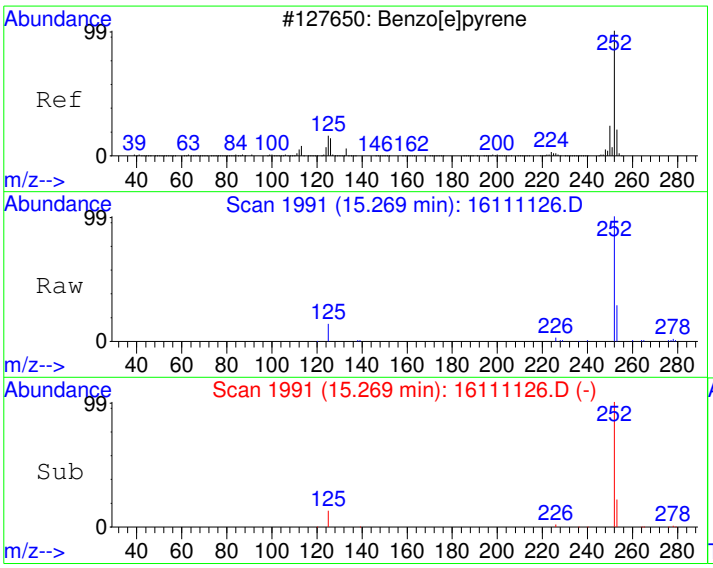


#23
Benzo(j)fluoranthene
Concen: 118.41 ug/kg
RT: 14.76 min Scan# 1923
Delta R.T. -0.01 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:252 Resp: 36052

Ion	Ratio	Lower	Upper
252	100		
253	25.8	2.3	42.3
125	11.3	0.0	32.6

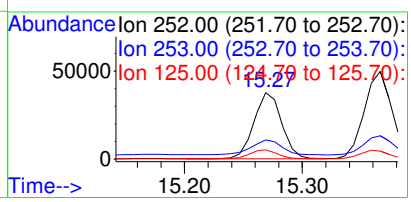


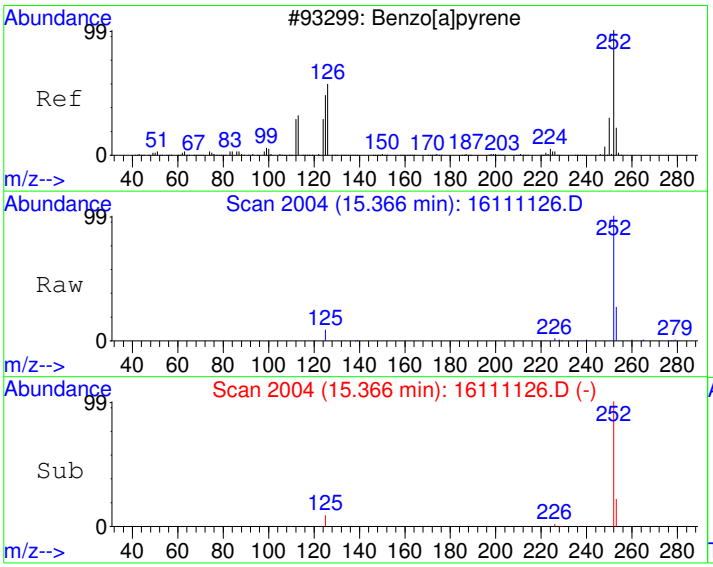


#24
Benzo[e]pyrene
Concen: 200.57 ug/kg
RT: 15.27 min Scan# 1991
Delta R.T. -0.01 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:252 Resp: 61182

Ion	Ratio	Lower	Upper
252	100		
253	22.4	1.8	41.8
125	13.3	0.0	35.7

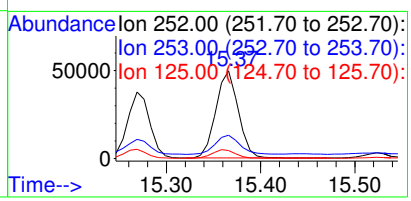


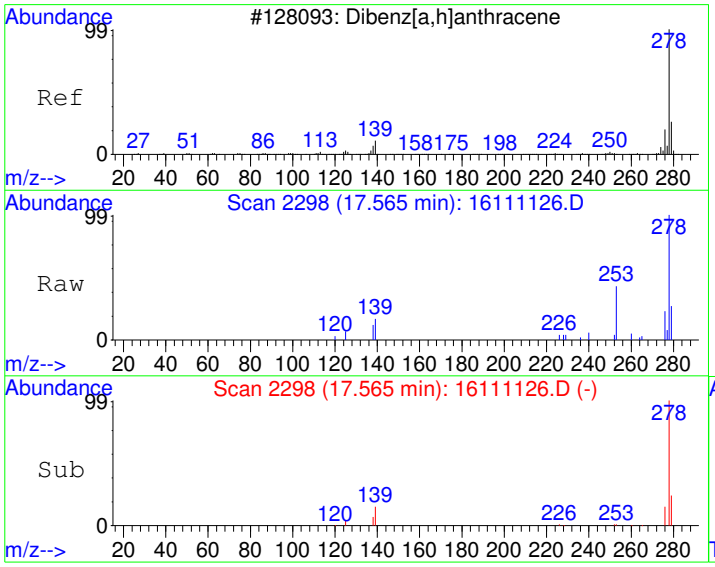


#25
Benzo[a]pyrene
Concen: 262.07 ug/kg
RT: 15.37 min Scan# 2004
Delta R.T. -0.01 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:252 Resp: 81613

Ion	Ratio	Lower	Upper
252	100		
253	22.1	2.2	42.2
125	8.9	0.0	30.8

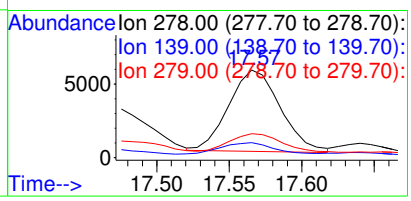


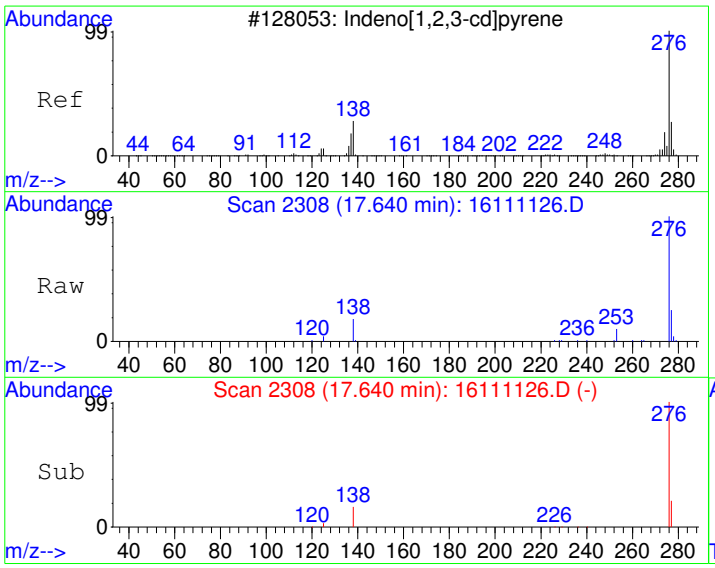


#26
Dibenz[a,h]anthracene
Concen: 42.17 ug/kg
RT: 17.57 min Scan# 2298
Delta R.T. -0.02 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:278 Resp: 13796

Ion	Ratio	Lower	Upper
278	100		
139	14.5	0.0	35.8
279	23.0	4.2	44.2

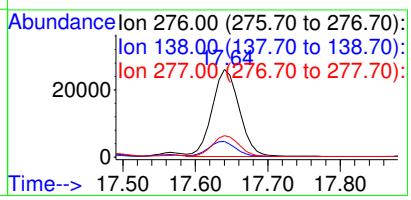


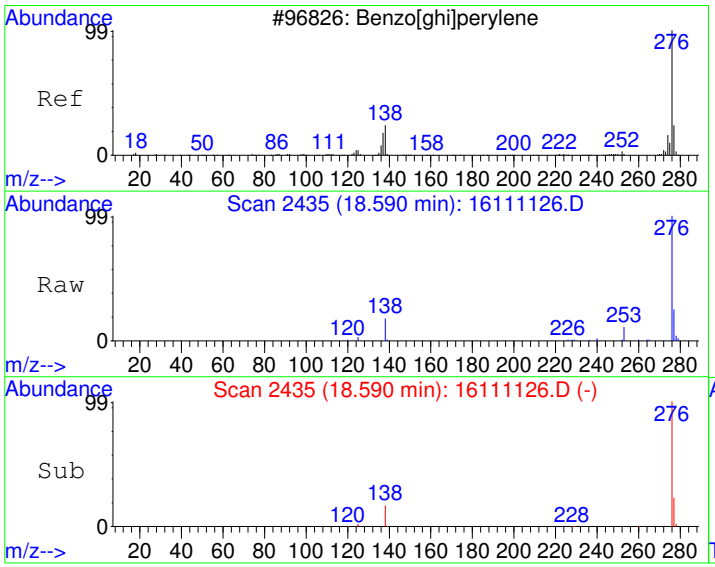


#27
Indeno[1,2,3-cd]pyrene
Concen: 213.24 ug/kg
RT: 17.64 min Scan# 2308
Delta R.T. -0.02 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:276 Resp: 67388

Ion	Ratio	Lower	Upper
276	100		
138	17.3	0.0	39.3
277	24.1	4.0	44.0

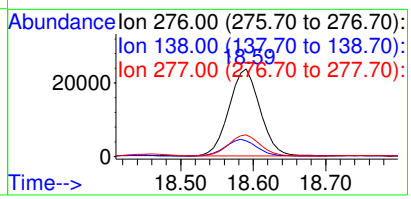




#28
Benzo[g,h,i]perylene
Concen: 210.79 ug/kg
RT: 18.59 min Scan# 2435
Delta R.T. -0.02 min
Lab File: 16111126.D
Acq: 11 Nov 2016 10:21 pm

Tgt Ion:276 Resp: 70389

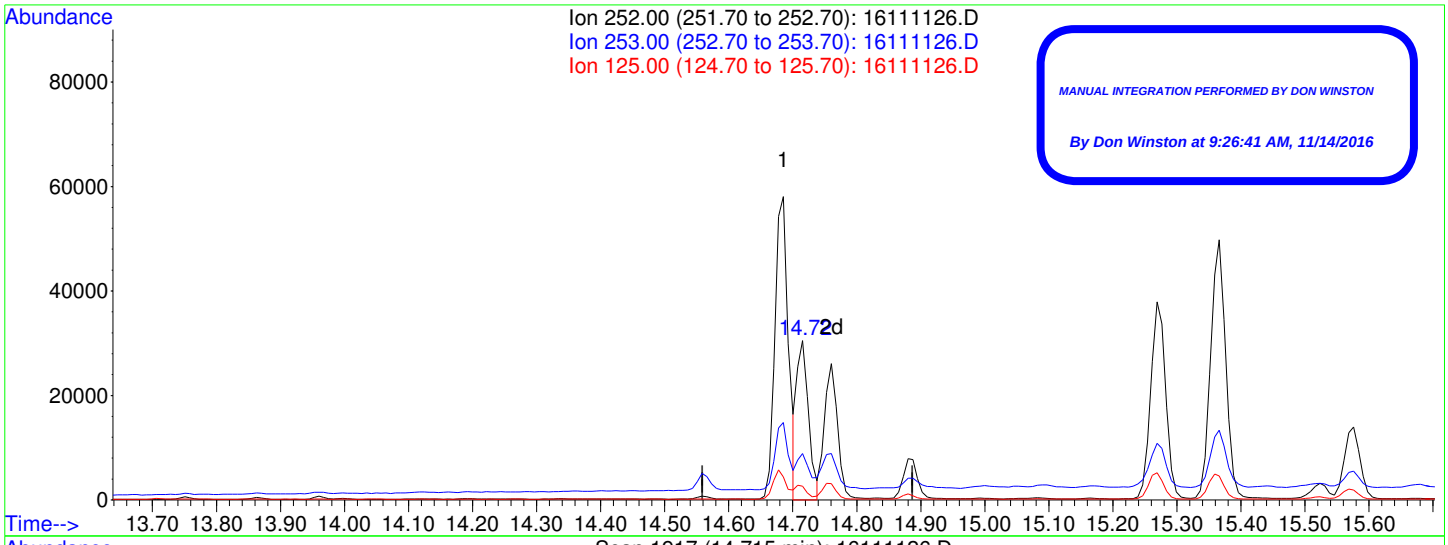
Ion	Ratio	Lower	Upper
276	100		
138	17.2	0.8	40.8
277	24.2	4.0	44.0

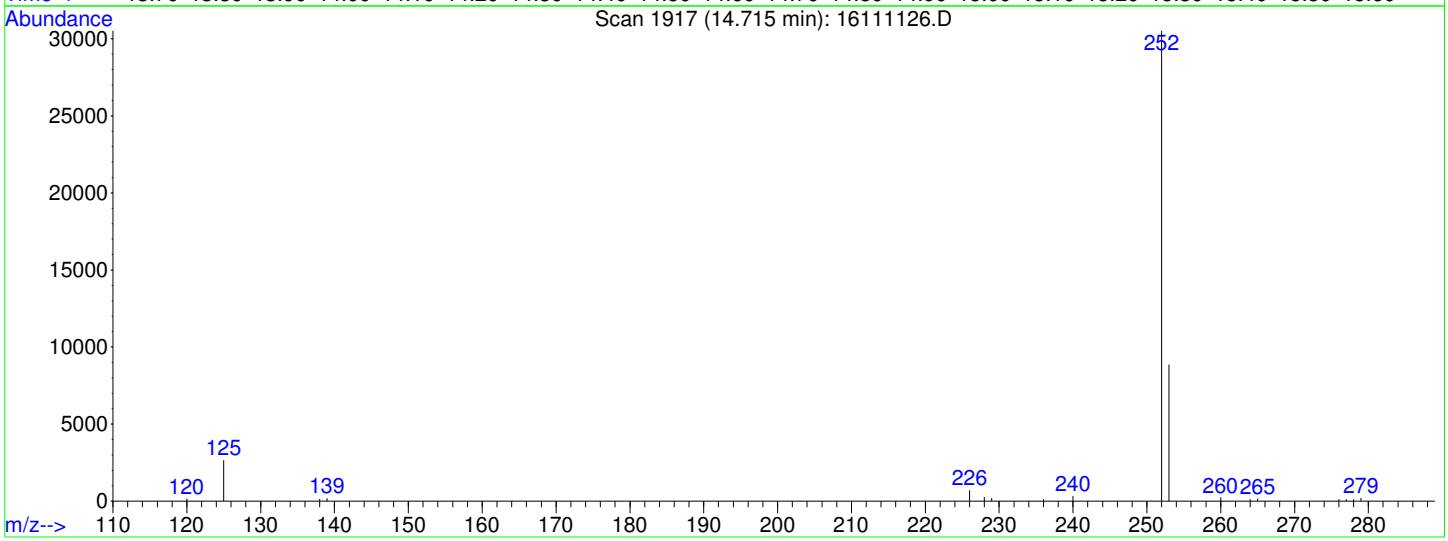


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111126.D Vial: 14
Acq On : 11 Nov 2016 10:21 pm Operator:
Sample : 1611053-26A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:24 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration





TIC: 16111126.D

(22) Benzo[k]fluoranthene (CP)

14.72min 123.58ug/kg m

response 38905

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	29.02
125.00	8.20	8.68
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:17:52 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111129.D Vial: 17
Acq On : 11 Nov 2016 11:45 pm Operator:
Sample : 1611053-41A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

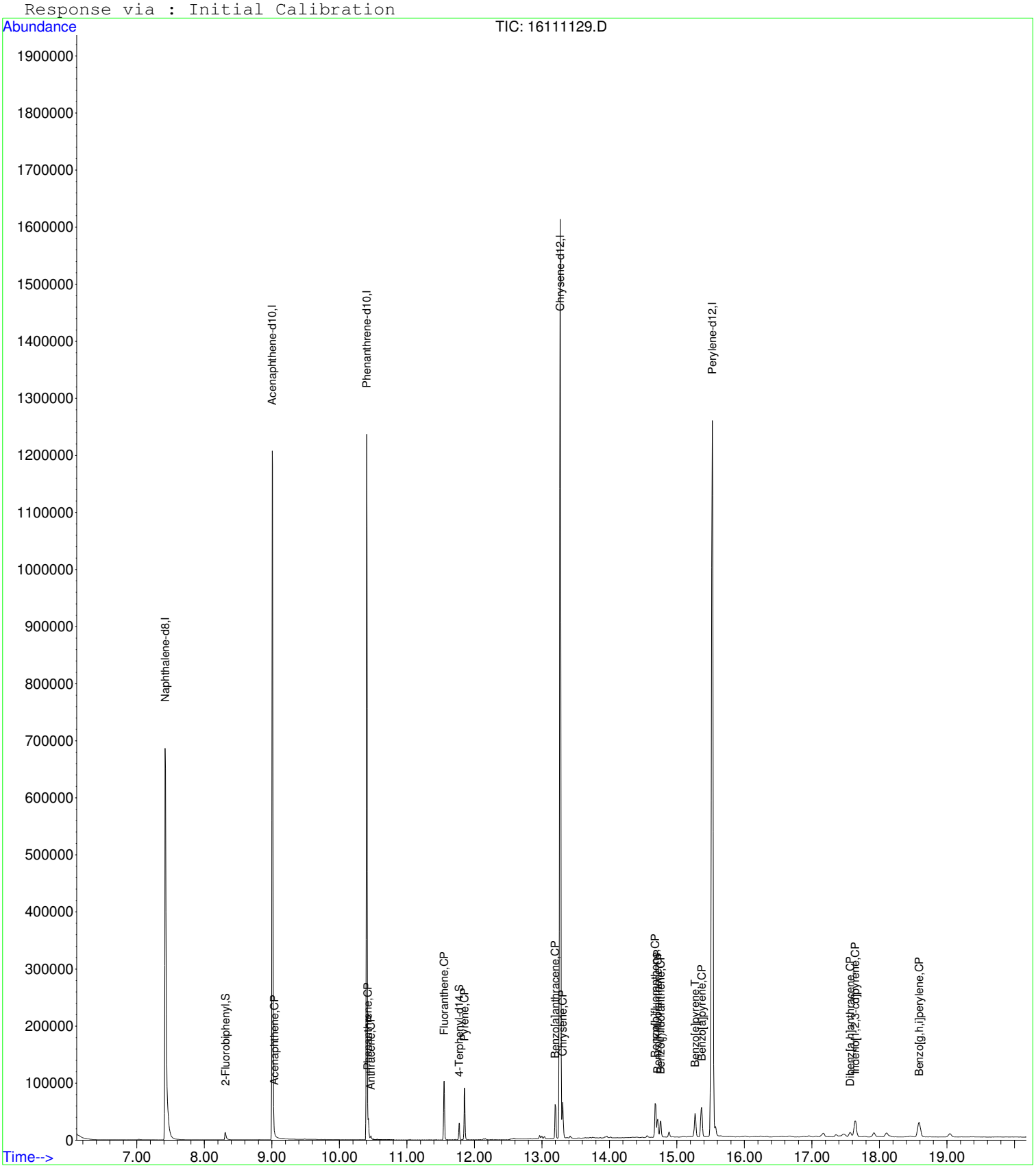
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	964482	4000.00	ug/kg	88
5) Acenaphthene-d10	9.01	164	530086	4000.00	ug/kg	84
11) Phenanthrene-d10	10.40	188	1007026	4000.00	ug/kg	84
17) Chrysene-d12	13.27	240	1411340	4000.00	ug/kg	92
20) Perylene-d12	15.52	264	1522647	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15776	101.90	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.55%#			
16) 4-Terphenyl-d14	11.77	244	22418	110.84	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.77%#			
Target Compounds						Qvalue
9) Acenaphthene	9.04	154	675	6.02	ug/kg	96
12) Phenanthrene	10.43	178	20560	104.85	ug/kg	99
13) Anthracene	10.46	178	4249	21.05	ug/kg	98
14) Fluoranthene	11.55	202	68114	294.10	ug/kg	98
15) Pyrene	11.85	202	61850	257.16	ug/kg	99
18) Benzo[a]anthracene	13.20	228	48366	175.29	ug/kg	99
19) Chrysene	13.31	228	58612	229.29	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	66533	196.76	ug/kg	99
22) Benzo[k]fluoranthene	14.72	252	30023	96.33	ug/kg	89
23) Benzo(j)fluoranthene	14.76	252	28618	94.94	ug/kg	94
24) Benzo[e]pyrene	15.27	252	47306	156.65	ug/kg	97
25) Benzo[a]pyrene	15.37	252	65310	211.83	ug/kg	98
26) Dibenz[a,h]anthracene	17.57	278	10750	33.19	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.64	276	50090	160.10	ug/kg	98
28) Benzo[g,h,i]perylene	18.59	276	51617	156.13	ug/kg	97

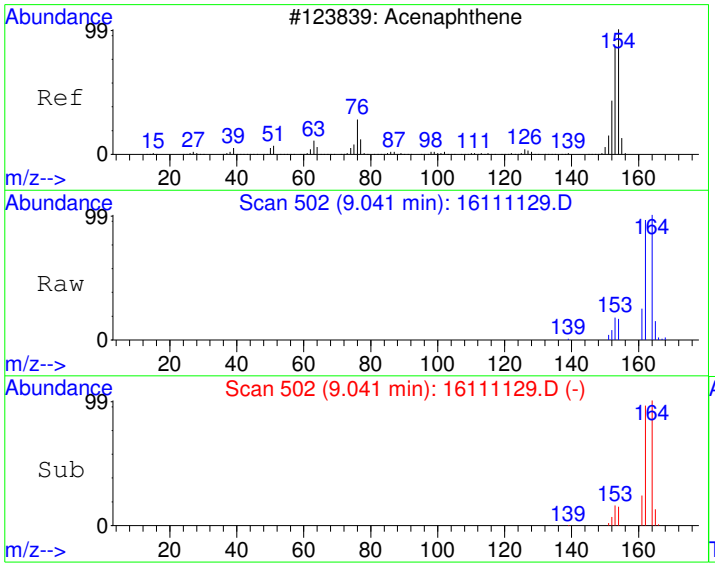
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111129.D Vial: 17
Acq On : 11 Nov 2016 11:45 pm Operator:
Sample : 1611053-41A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

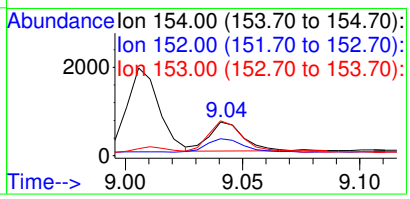


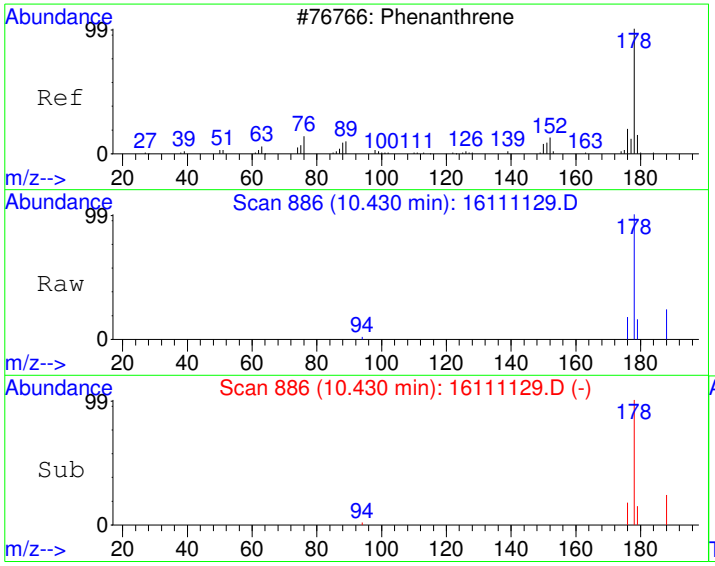


#9
Acenaphthene
Concen: 6.02 ug/kg
RT: 9.04 min Scan# 502
Delta R.T. -0.00 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:154 Resp: 675

Ion	Ratio	Lower	Upper
154	100		
152	46.1	19.8	79.8
153	110.2	77.1	137.1

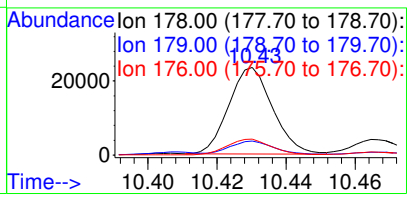


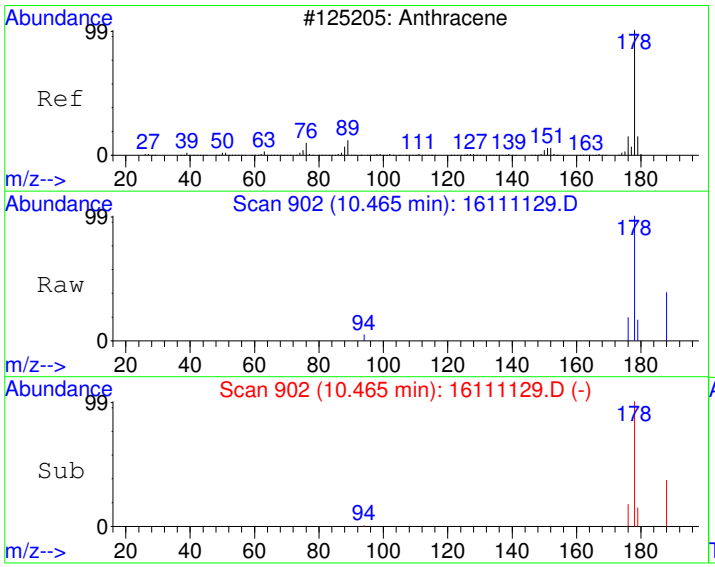


#12
Phenanthrene
Concen: 104.85 ug/kg
RT: 10.43 min Scan# 886
Delta R.T. -0.00 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:178 Resp: 20560

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	45.8
176	18.1	0.0	48.3

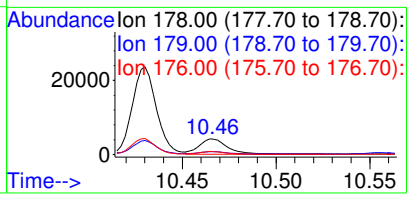


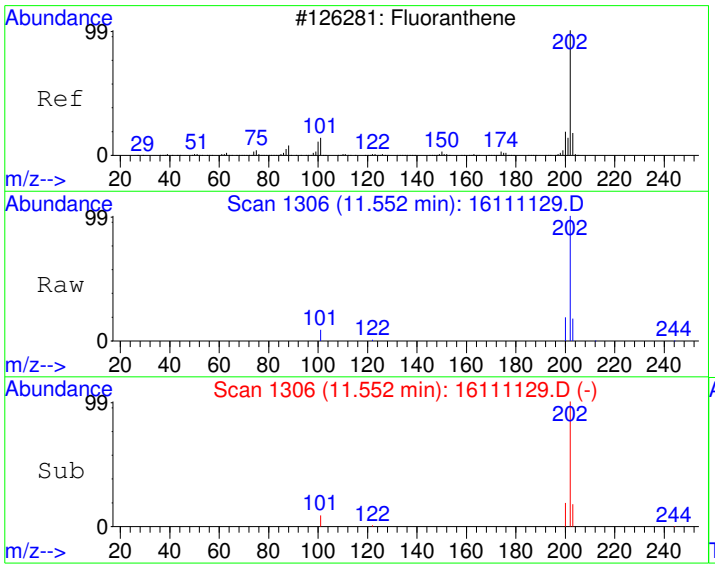


#13
Anthracene
Concen: 21.05 ug/kg
RT: 10.46 min Scan# 902
Delta R.T. 0.00 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:178 Resp: 4249

Ion	Ratio	Lower	Upper
178	100		
179	14.3	0.0	45.7
176	18.1	0.0	48.1

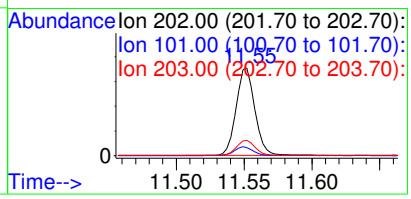


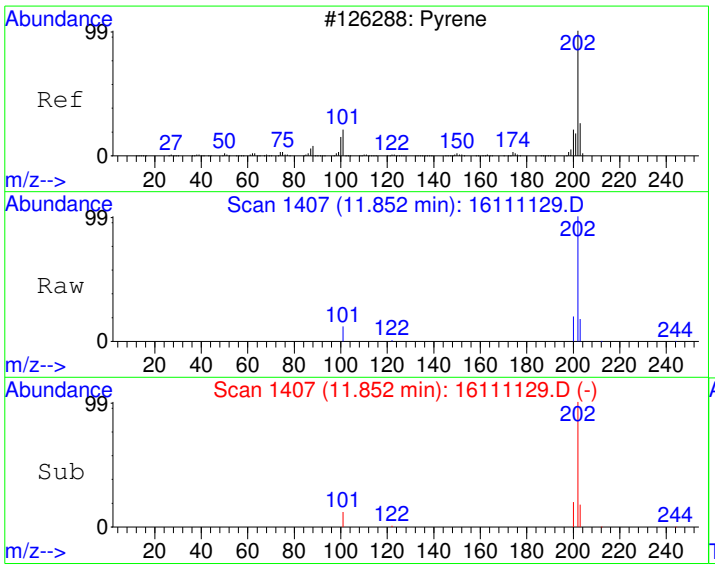


#14
Fluoranthene
Concen: 294.10 ug/kg
RT: 11.55 min Scan# 1306
Delta R.T. 0.00 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:202 Resp: 68114

Ion	Ratio	Lower	Upper
202	100		
101	9.1	0.0	40.6
203	17.5	0.0	48.0

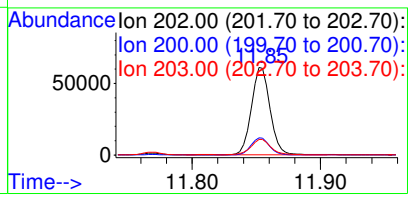


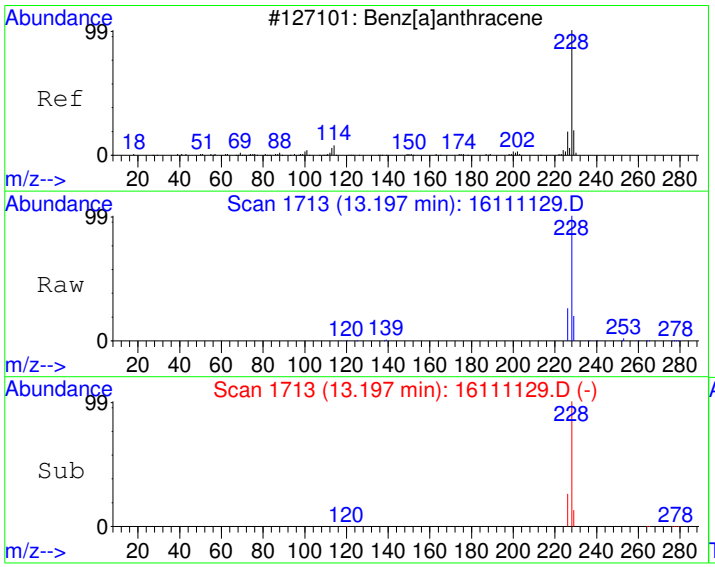


#15
Pyrene
Concen: 257.16 ug/kg
RT: 11.85 min Scan# 1407
Delta R.T. -0.00 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:202 Resp: 61850

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	17.7	0.0	47.8

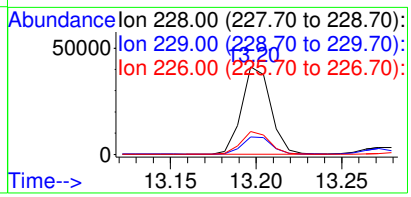


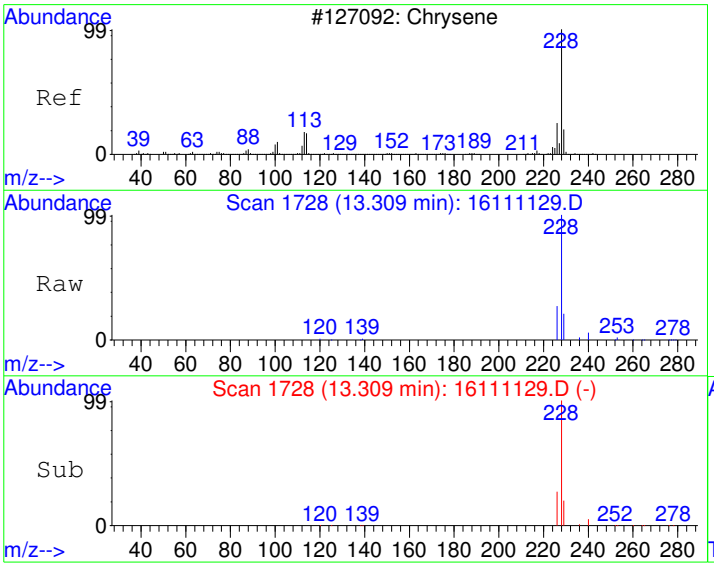


#18
Benzo[a]anthracene
Concen: 175.29 ug/kg
RT: 13.20 min Scan# 1713
Delta R.T. -0.01 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:228 Resp: 48366

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.4
226	26.0	0.0	55.6

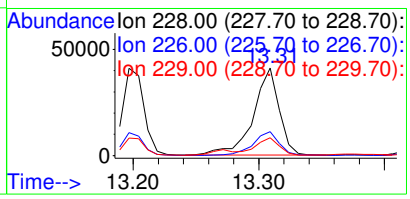


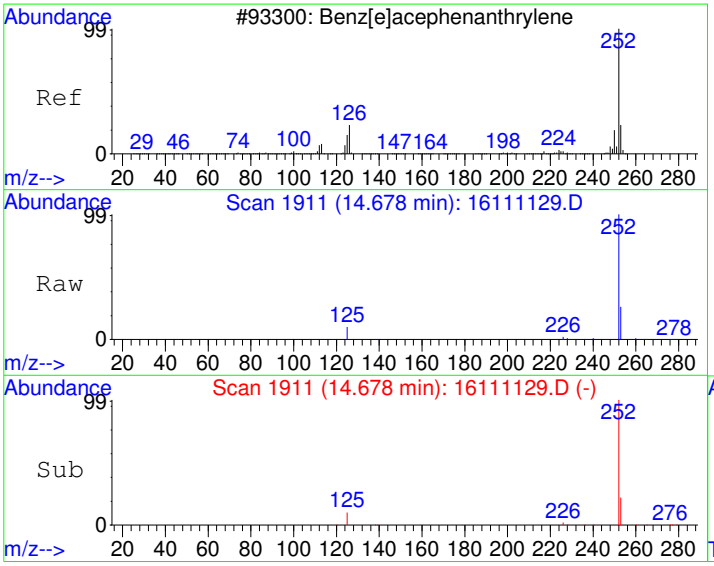


#19
Chrysene
Concen: 229.29 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. -0.00 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:228 Resp: 58612

Ion	Ratio	Lower	Upper
228	100		
226	27.1	0.0	58.8
229	20.2	0.0	50.2

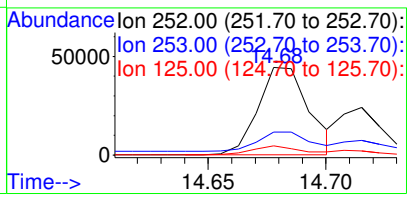


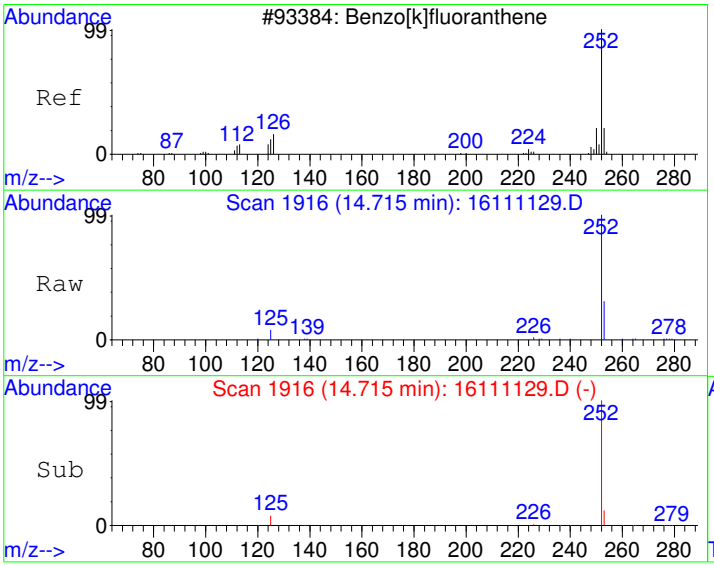


#21
Benzo[b]fluoranthene
Concen: 196.76 ug/kg
RT: 14.68 min Scan# 1911
Delta R.T. -0.01 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:252 Resp: 66533

Ion	Ratio	Lower	Upper
252	100		
253	21.9	0.0	52.1
125	10.1	0.0	40.5

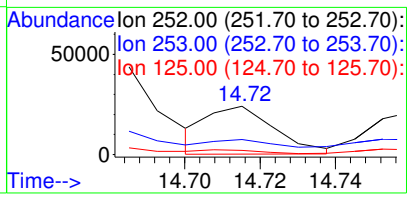


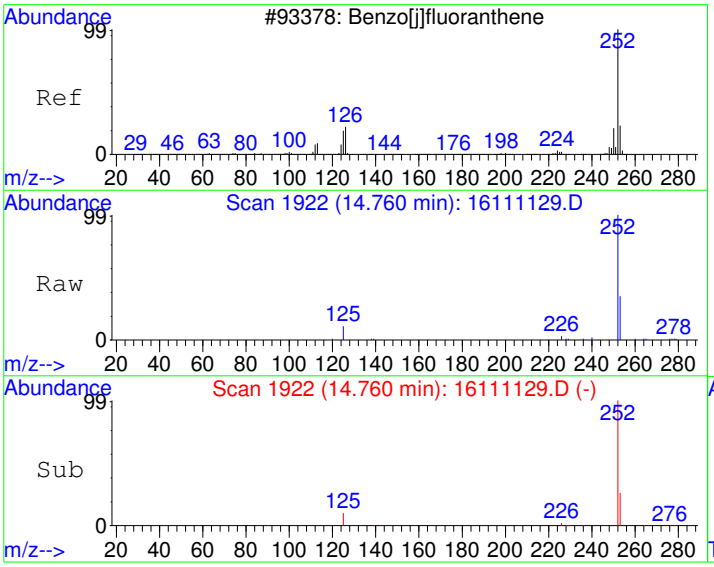


#22
Benzo[k]fluoranthene
Concen: 96.33 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.01 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:252 Resp: 30023

Ion	Ratio	Lower	Upper
252	100		
253	16.2	2.4	42.4
125	6.5	0.0	28.2

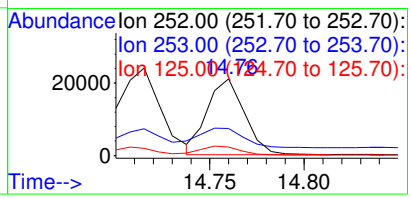


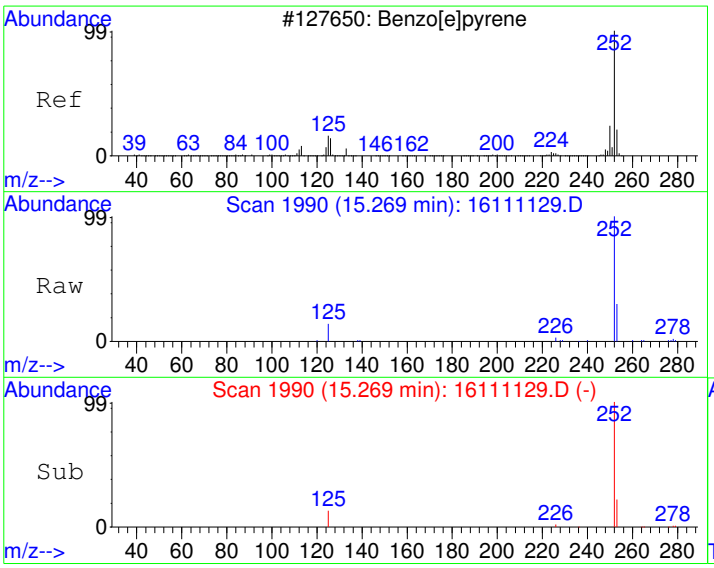


#23
Benzo(j)fluoranthene
Concen: 94.94 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:252 Resp: 28618

Ion	Ratio	Lower	Upper
252	100		
253	25.6	2.3	42.3
125	10.5	0.0	32.6

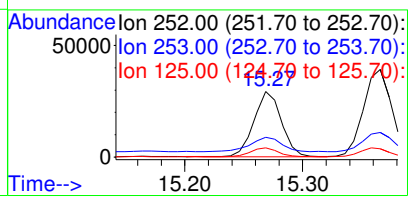


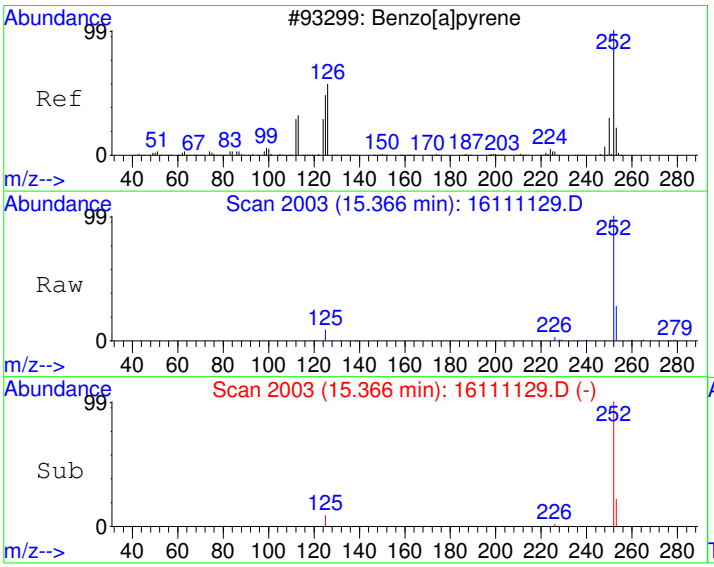


#24
Benzo[e]pyrene
Concen: 156.65 ug/kg
RT: 15.27 min Scan# 1990
Delta R.T. -0.01 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:252 Resp: 47306

Ion	Ratio	Lower	Upper
252	100		
253	22.2	1.8	41.8
125	13.3	0.0	35.7

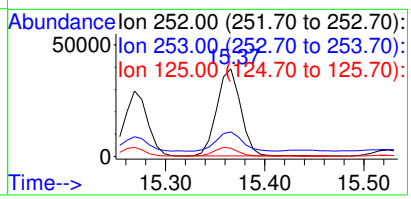


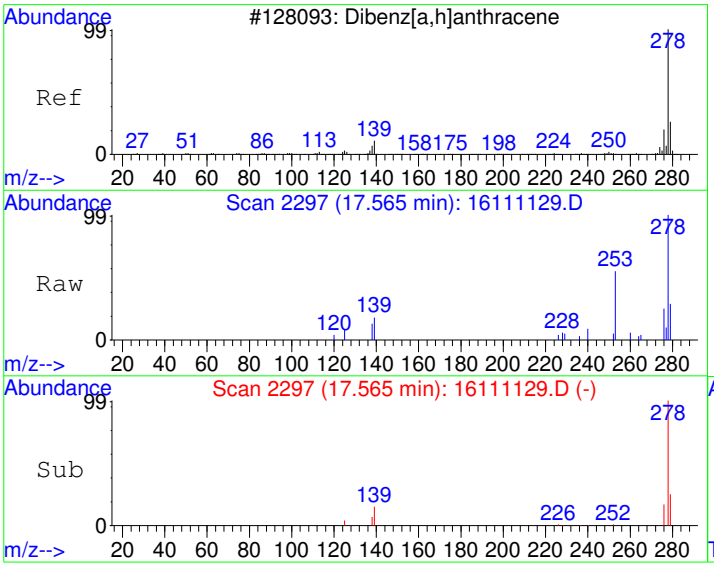


#25
Benzo[a]pyrene
Concen: 211.83 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:252 Resp: 65310

Ion	Ratio	Lower	Upper
252	100		
253	22.1	2.2	42.2
125	9.0	0.0	30.8

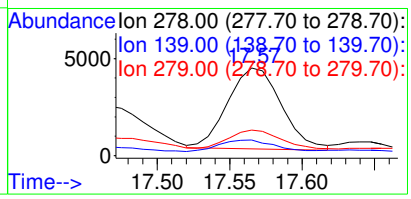


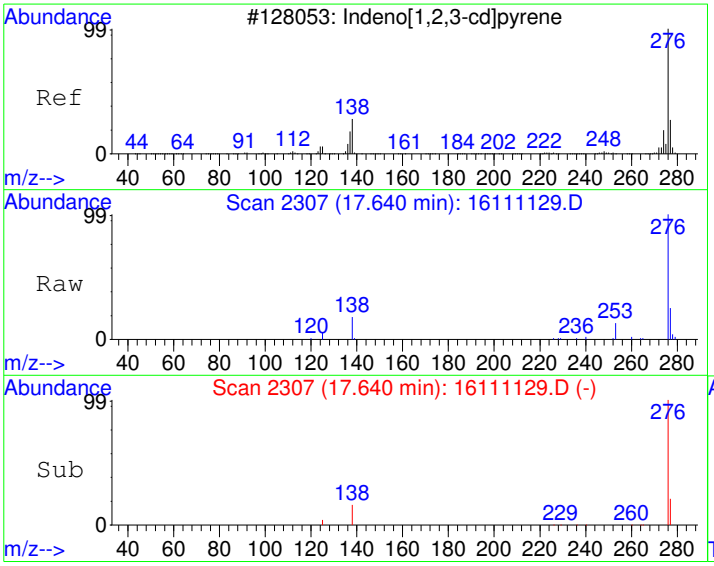


#26
Dibenz[a,h]anthracene
Concen: 33.19 ug/kg
RT: 17.57 min Scan# 2297
Delta R.T. -0.02 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:278 Resp: 10750

Ion	Ratio	Lower	Upper
278	100		
139	14.8	0.0	35.8
279	23.9	4.2	44.2

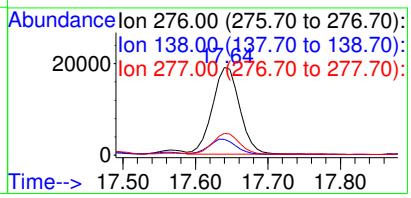


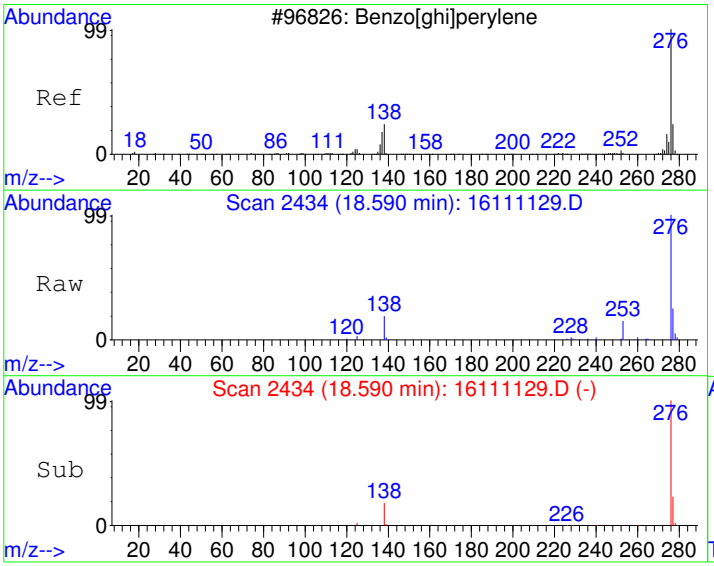


#27
Indeno[1,2,3-cd]pyrene
Concen: 160.10 ug/kg
RT: 17.64 min Scan# 2307
Delta R.T. -0.02 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:276 Resp: 50090

Ion	Ratio	Lower	Upper
276	100		
138	17.2	0.0	39.3
277	24.4	4.0	44.0

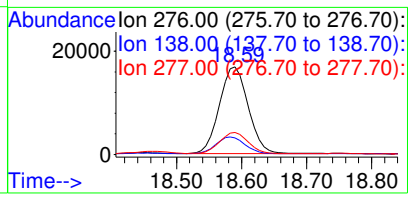




#28
Benzo[g,h,i]perylene
Concen: 156.13 ug/kg
RT: 18.59 min Scan# 2434
Delta R.T. -0.02 min
Lab File: 16111129.D
Acq: 11 Nov 2016 11:45 pm

Tgt Ion:276 Resp: 51617

Ion	Ratio	Lower	Upper
276	100		
138	18.0	0.8	40.8
277	24.3	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111134.D Vial: 22
Acq On : 12 Nov 2016 2:05 am Operator:
Sample : 1611053-31A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:48 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	977797	4000.00	ug/kg	90
5) Acenaphthene-d10	9.01	164	530043	4000.00	ug/kg	84
11) Phenanthrene-d10	10.41	188	994616	4000.00	ug/kg	83
17) Chrysene-d12	13.27	240	1396446	4000.00	ug/kg	91
20) Perylene-d12	15.53	264	1504310	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15192	98.14	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.45%#		
16) 4-Terphenyl-d14	11.77	244	21604	108.15	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.70%#		
Target Compounds						Qvalue
8) Acenaphthylene	8.95	152	1213	6.48	ug/kg	99
9) Acenaphthene	9.05	154	764	6.82	ug/kg	96
10) Fluorene	9.49	166	859	6.26	ug/kg	97
12) Phenanthrene	10.43	178	55410	286.11	ug/kg	99
13) Anthracene	10.47	178	6186	31.03	ug/kg	98
14) Fluoranthene	11.55	202	345936	1512.33	ug/kg	99
15) Pyrene	11.85	202	310514	1307.15	ug/kg	99
18) Benzo[a]anthracene	13.20	228	195200	715.00	ug/kg	99
19) Chrysene	13.31	228	295822	1169.60	ug/kg	99
21) Benzo[b]fluoranthene	14.68	252	376319	1126.48	ug/kg	97
22) Benzo[k]fluoranthene	14.76	252	154468	~~501.65 ug/kg~~		~~93~~
23) Benzo(j)fluoranthene	14.76	252	154468	518.70	ug/kg	95
24) Benzo[e]pyrene	15.27	252	270333	906.07	ug/kg	97
25) Benzo[a]pyrene	15.37	252	313518	1029.29	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	70526	220.42	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.64	276	342277	1107.33	ug/kg	98
28) Benzo[g,h,i]perylene	18.59	276	340029	1041.07	ug/kg	98

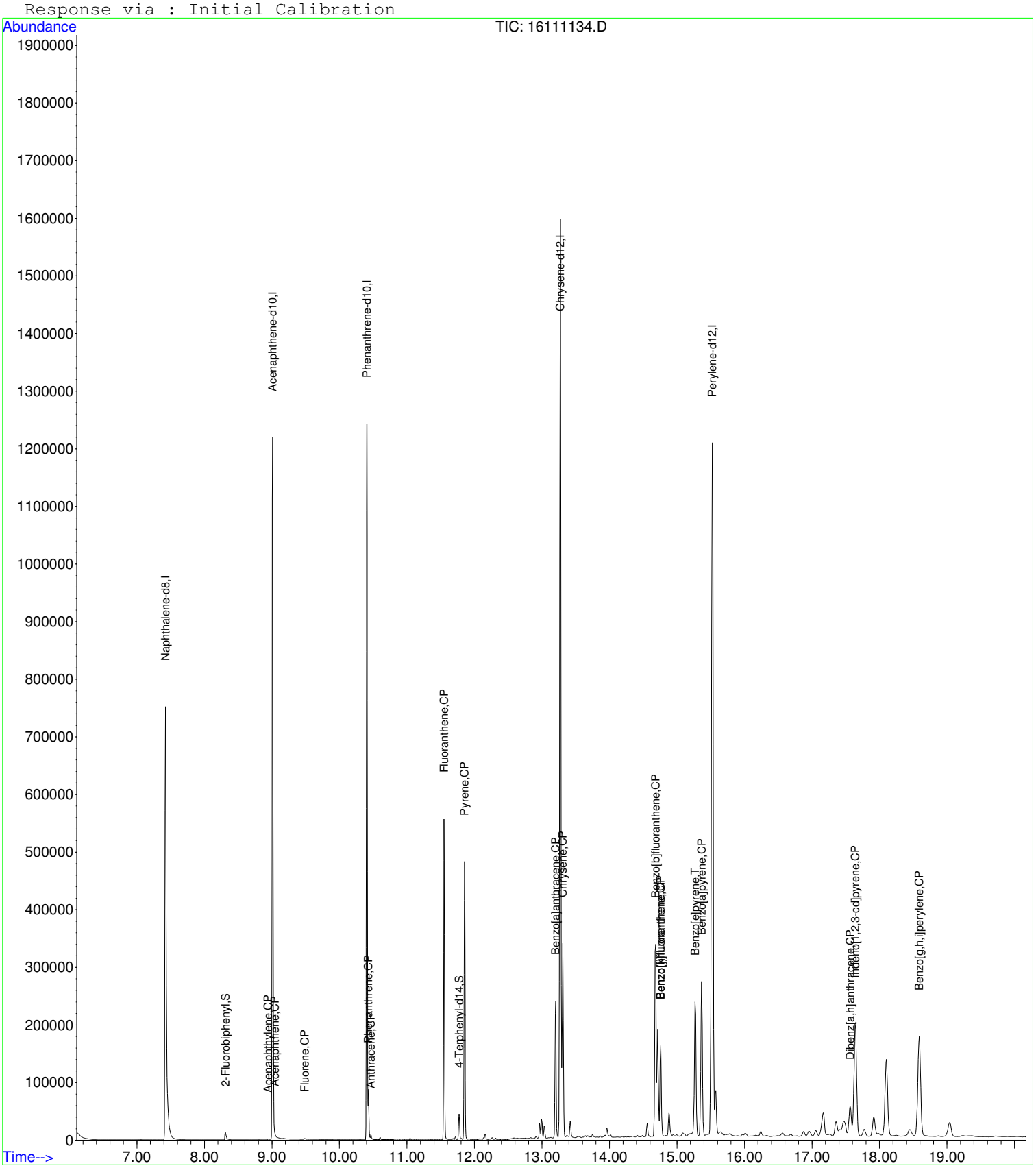
Wrong RT See MI

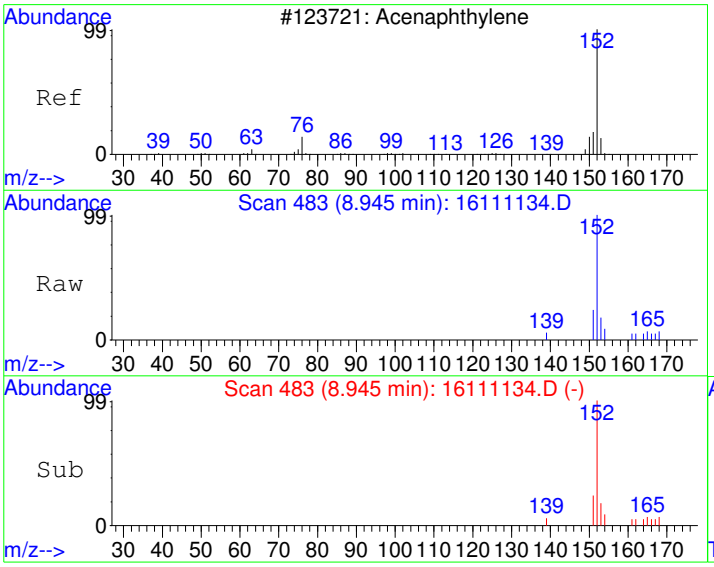
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111134.D Vial: 22
Acq On : 12 Nov 2016 2:05 am Operator:
Sample : 1611053-31A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:48 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

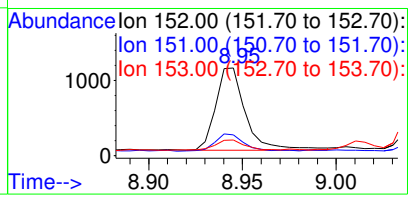


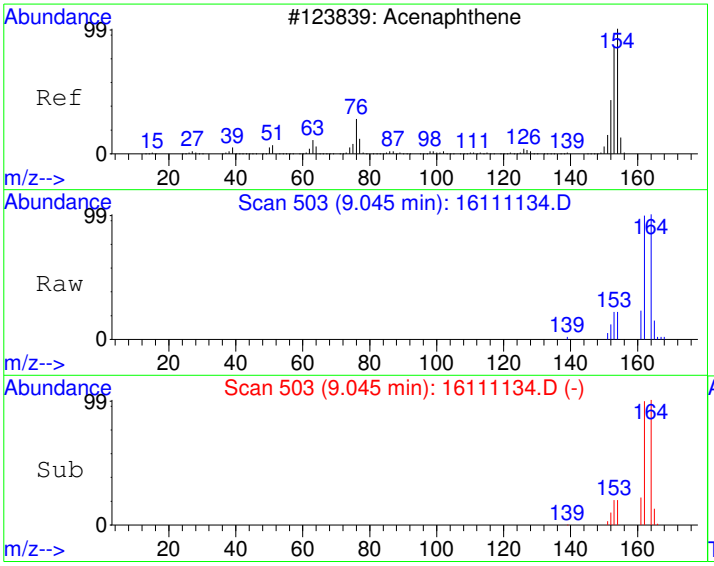


#8
Acenaphthylene
Concen: 6.48 ug/kg
RT: 8.95 min Scan# 483
Delta R.T. 0.01 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:152 Resp: 1213

Ion	Ratio	Lower	Upper
152	100		
151	19.6	0.0	49.8
153	12.1	0.0	43.3

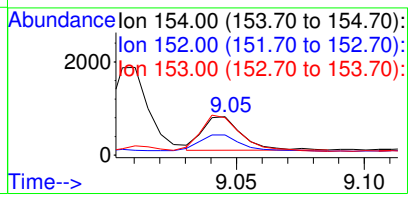


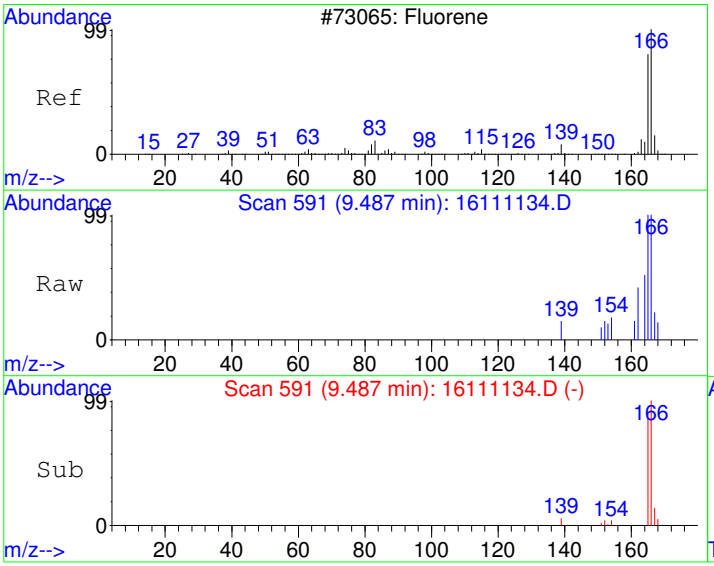


#9
Acenaphthene
Concen: 6.82 ug/kg
RT: 9.05 min Scan# 503
Delta R.T. 0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:154 Resp: 764

Ion	Ratio	Lower	Upper
154	100		
152	49.4	19.8	79.8
153	101.8	77.1	137.1

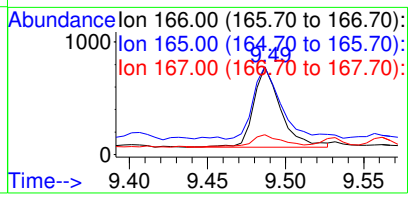


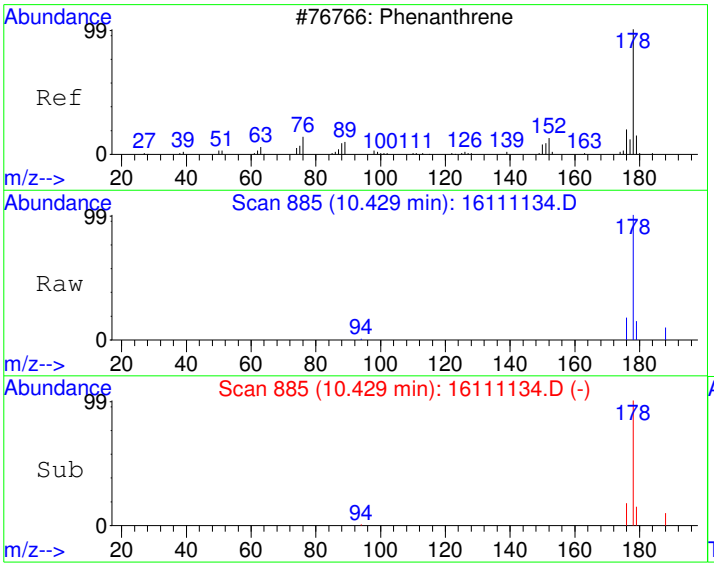


#10
Fluorene
Concen: 6.26 ug/kg
RT: 9.49 min Scan# 591
Delta R.T. 0.01 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:166 Resp: 859

Ion	Ratio	Lower	Upper
166	100		
165	88.6	61.1	121.1
167	14.7	0.0	43.7

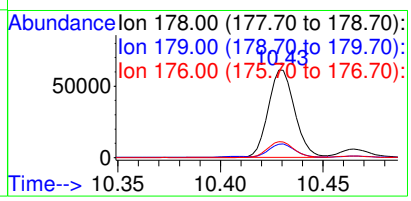


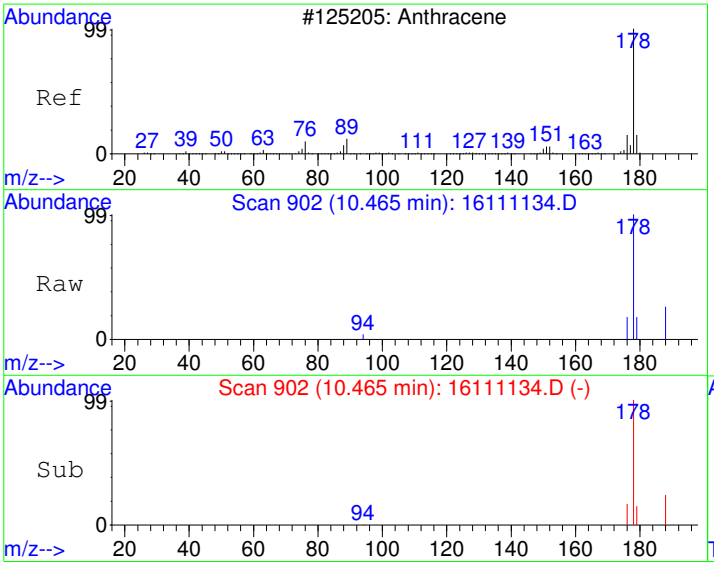


#12
Phenanthrene
Concen: 286.11 ug/kg
RT: 10.43 min Scan# 885
Delta R.T. -0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:178 Resp: 55410

Ion	Ratio	Lower	Upper
178	100		
179	15.3	0.0	45.8
176	18.1	0.0	48.3

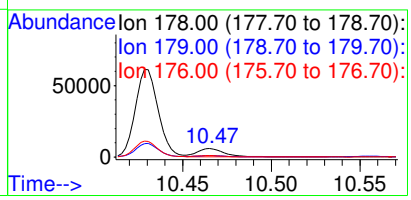


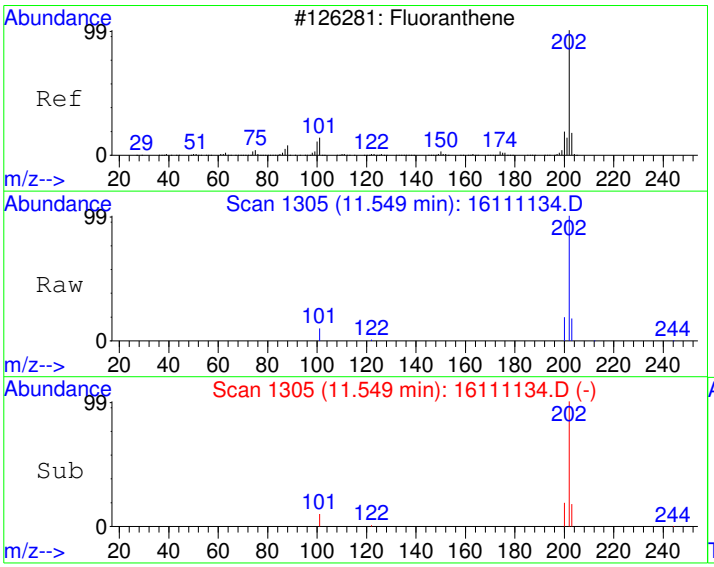


#13
Anthracene
Concen: 31.03 ug/kg
RT: 10.47 min Scan# 902
Delta R.T. 0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:178 Resp: 6186

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	45.7
176	17.0	0.0	48.1

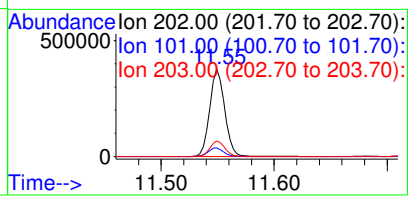


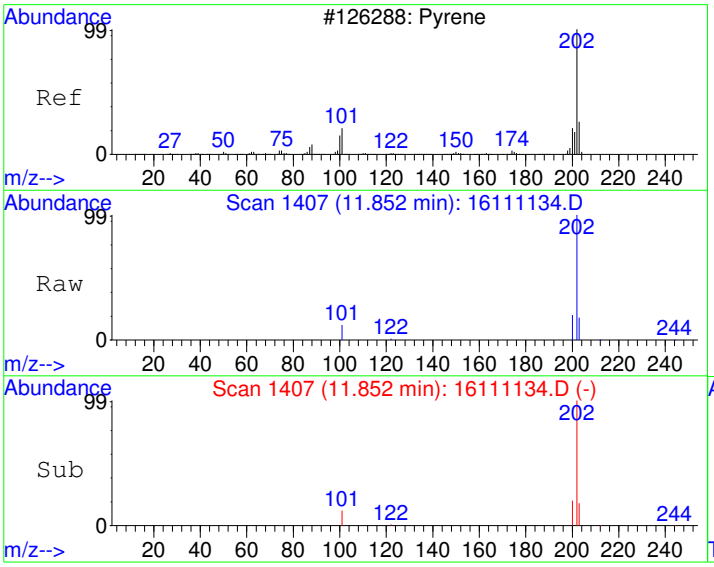


#14
Fluoranthene
Concen: 1512.33 ug/kg
RT: 11.55 min Scan# 1305
Delta R.T. -0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:202 Resp: 345936

Ion	Ratio	Lower	Upper
202	100		
101	9.7	0.0	40.6
203	17.9	0.0	48.0

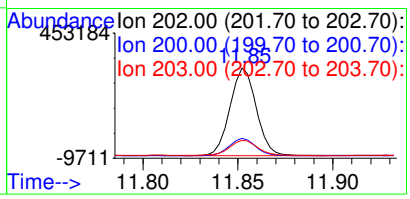


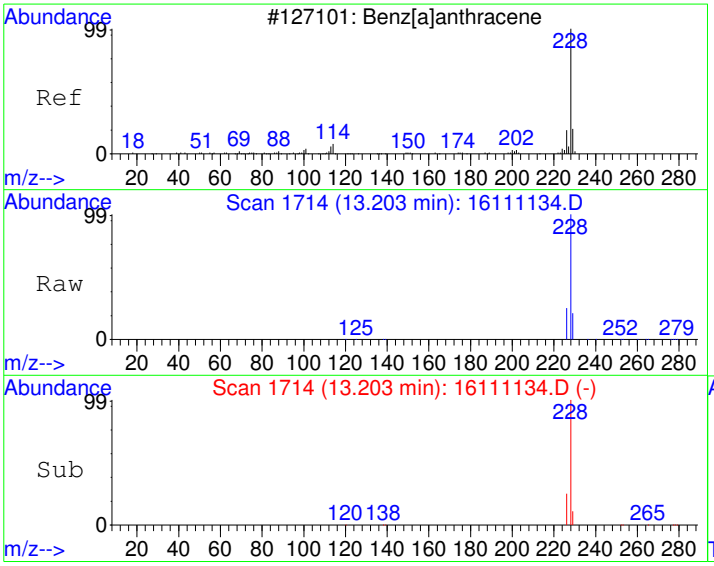


#15
Pyrene
Concen: 1307.15 ug/kg
RT: 11.85 min Scan# 1407
Delta R.T. -0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:202 Resp: 310514

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	50.1
203	17.5	0.0	47.8

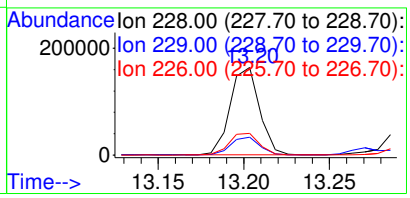


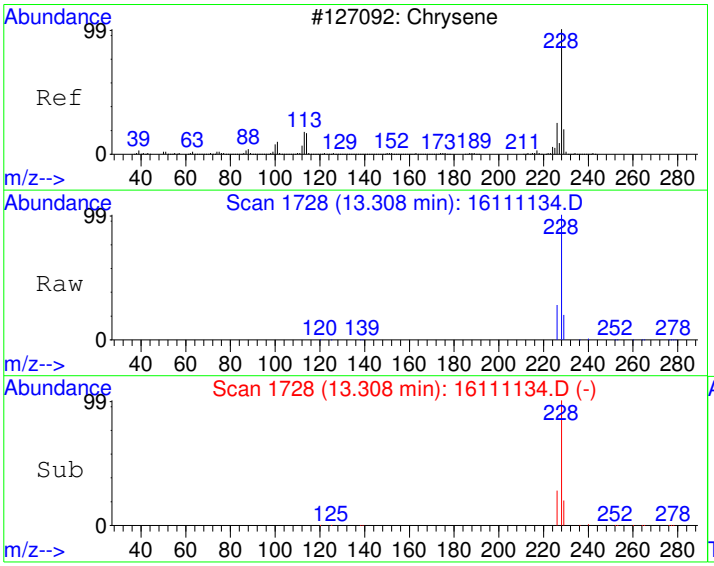


#18
Benzo[a]anthracene
Concen: 715.00 ug/kg
RT: 13.20 min Scan# 1714
Delta R.T. -0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:228 Resp: 195200

Ion	Ratio	Lower	Upper
228	100		
229	20.4	0.0	50.4
226	24.6	0.0	55.6

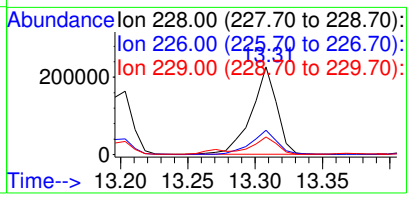


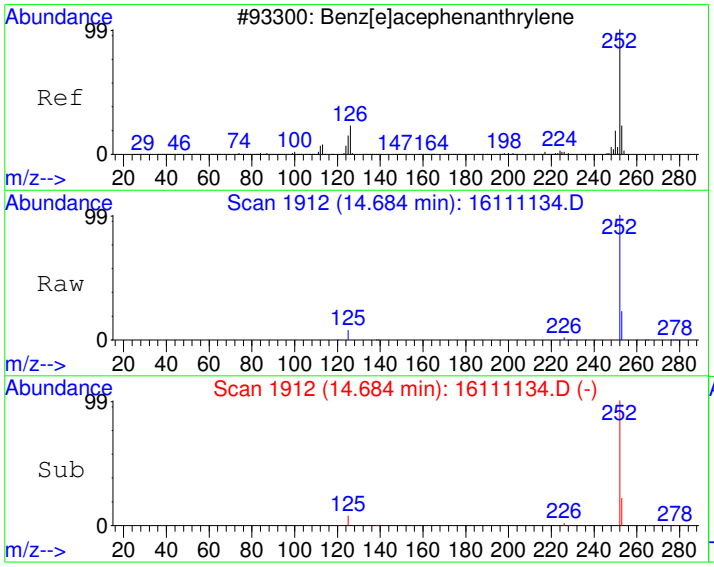


#19
Chrysene
Concen: 1169.60 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. -0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:228 Resp: 295822

Ion	Ratio	Lower	Upper
228	100		
226	27.8	0.0	58.8
229	19.9	0.0	50.2

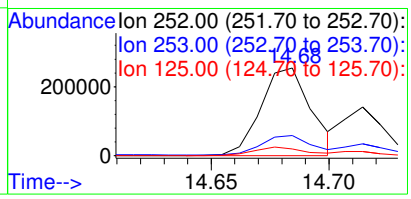


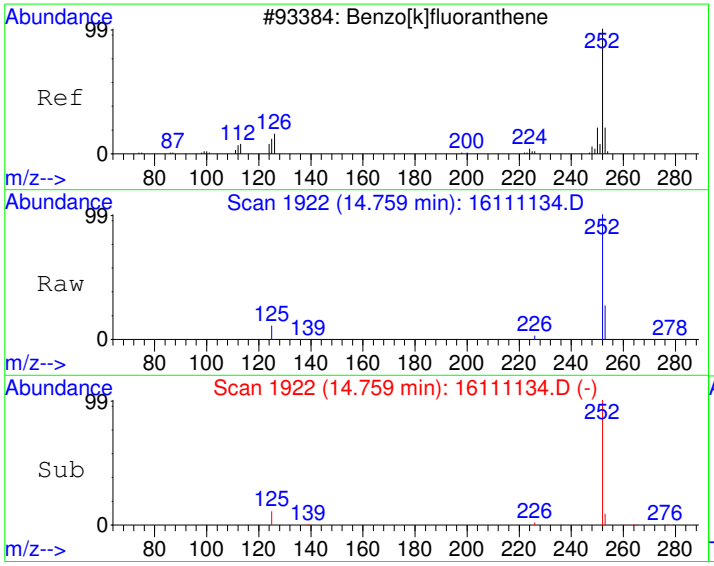


#21
Benzo[b]fluoranthene
Concen: 1126.48 ug/kg
RT: 14.68 min Scan# 1912
Delta R.T. -0.00 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:252 Resp: 376319

Ion	Ratio	Lower	Upper
252	100		
253	22.3	0.0	52.1
125	7.7	0.0	40.5

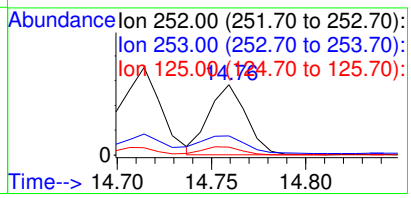




#22
Benzo[k]fluoranthene
Concen: 501.65 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. 0.04 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

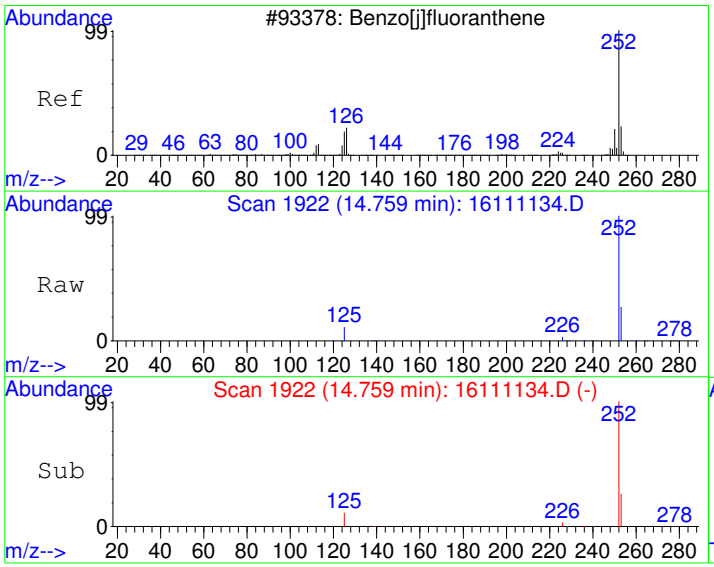
Tgt Ion:252 Resp: 154468

Ion	Ratio	Lower	Upper
252	100		
253	25.5	2.4	42.4
125	11.3	0.0	28.2



BEFORE MANUAL INTEGRATION
By Don Winston at 9:07:56 AM, 11/14/2016

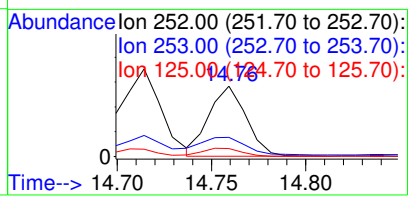
BEFORE MANUAL INTEGRATION
By Janice Whitt at 11:30:08 AM, 11/14/2016

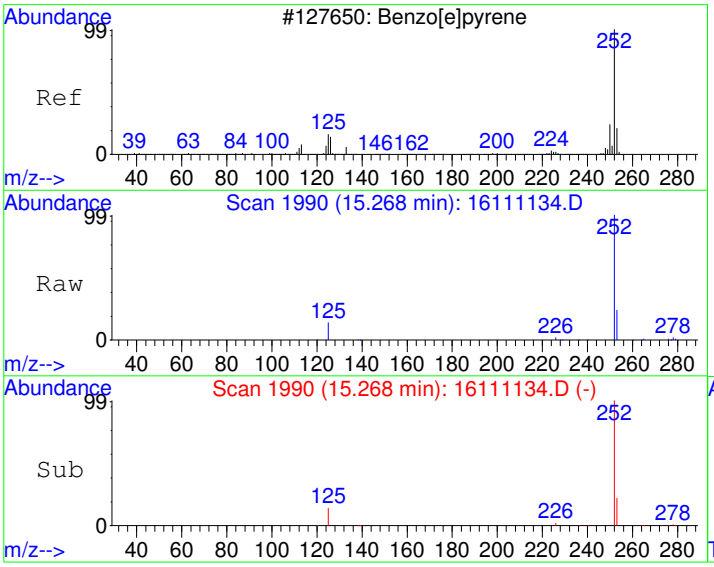


#23
Benzo(j)fluoranthene
Concen: 518.70 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:252 Resp: 154468

Ion	Ratio	Lower	Upper
252	100		
253	25.5	2.3	42.3
125	11.3	0.0	32.6

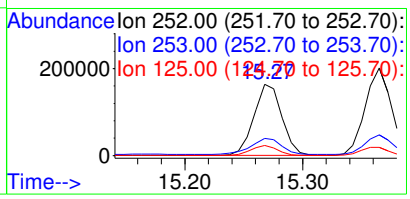


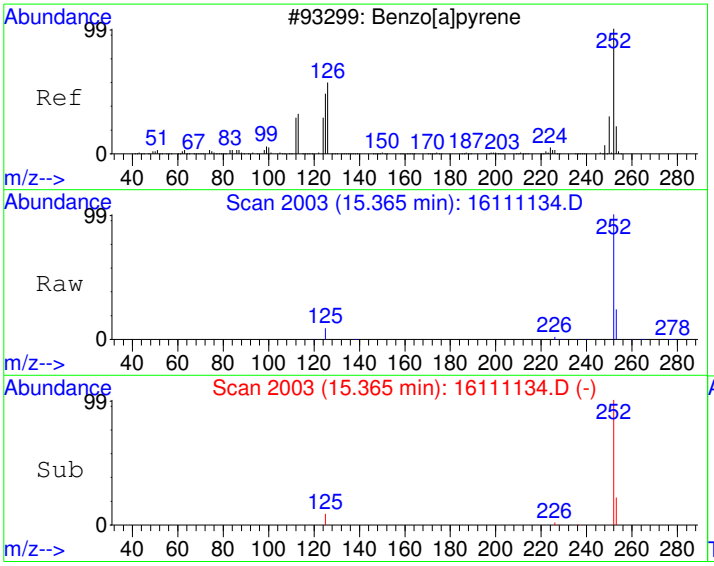


#24
Benzo[e]pyrene
Concen: 906.07 ug/kg
RT: 15.27 min Scan# 1990
Delta R.T. -0.01 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:252 Resp: 270333

Ion	Ratio	Lower	Upper
252	100		
253	22.9	1.8	41.8
125	14.0	0.0	35.7

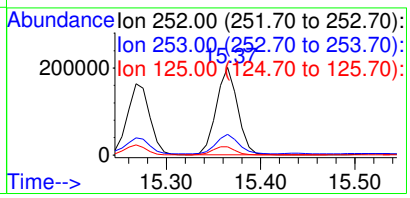


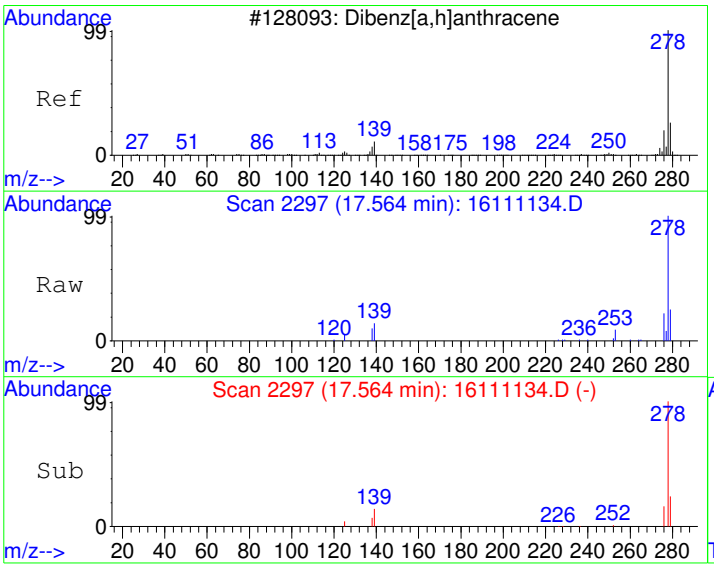


#25
Benzo[a]pyrene
Concen: 1029.29 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:252 Resp: 313518

Ion	Ratio	Lower	Upper
252	100		
253	22.4	2.2	42.2
125	9.2	0.0	30.8

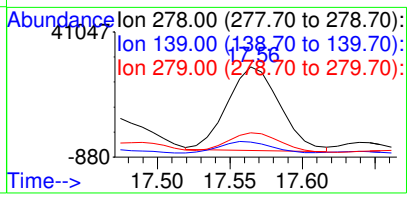


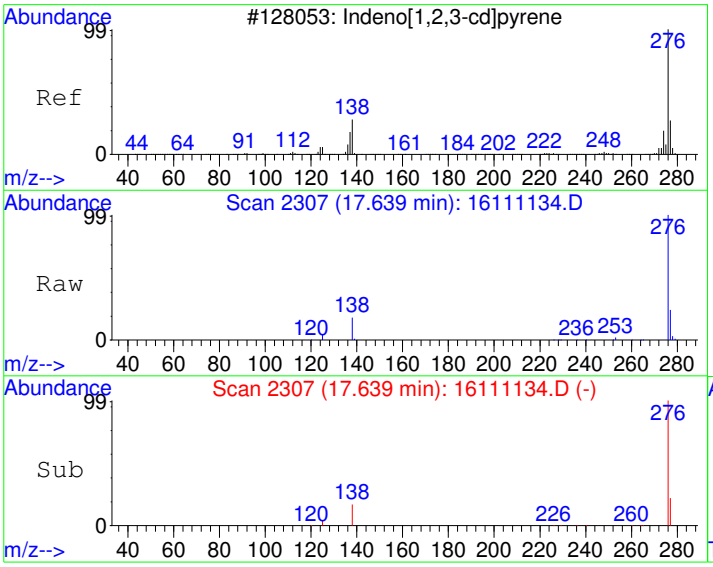


#26
Dibenz[a,h]anthracene
Concen: 220.42 ug/kg
RT: 17.56 min Scan# 2297
Delta R.T. -0.02 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:278 Resp: 70526

Ion	Ratio	Lower	Upper
278	100		
139	13.6	0.0	35.8
279	24.2	4.2	44.2

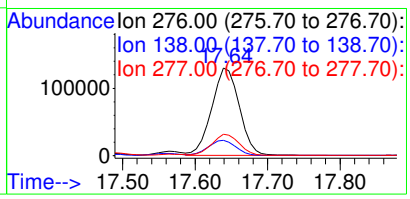


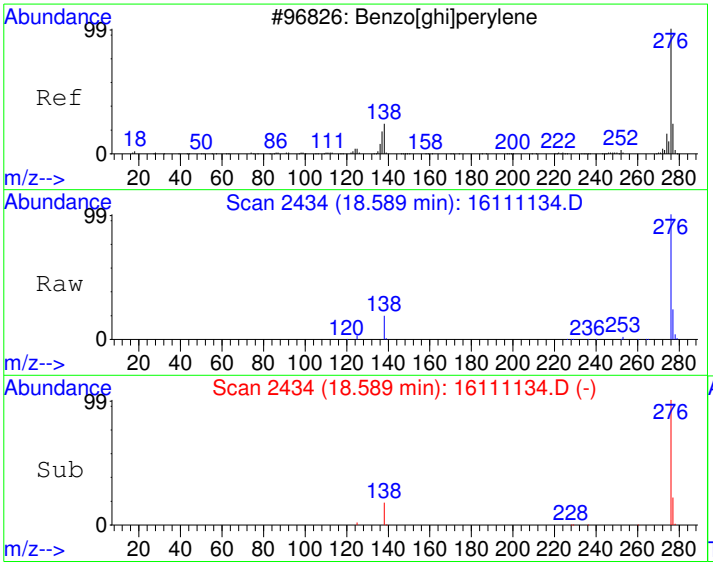


#27
Indeno[1,2,3-cd]pyrene
Concen: 1107.33 ug/kg
RT: 17.64 min Scan# 2307
Delta R.T. -0.02 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:276 Resp: 342277

Ion	Ratio	Lower	Upper
276	100		
138	17.5	0.0	39.3
277	24.1	4.0	44.0

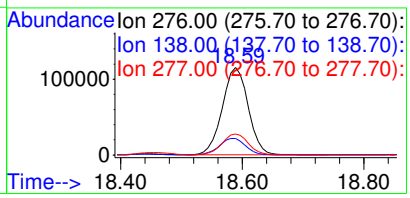




#28
Benzo[g,h,i]perylene
Concen: 1041.07 ug/kg
RT: 18.59 min Scan# 2434
Delta R.T. -0.02 min
Lab File: 16111134.D
Acq: 12 Nov 2016 2:05 am

Tgt Ion:276 Resp: 340029

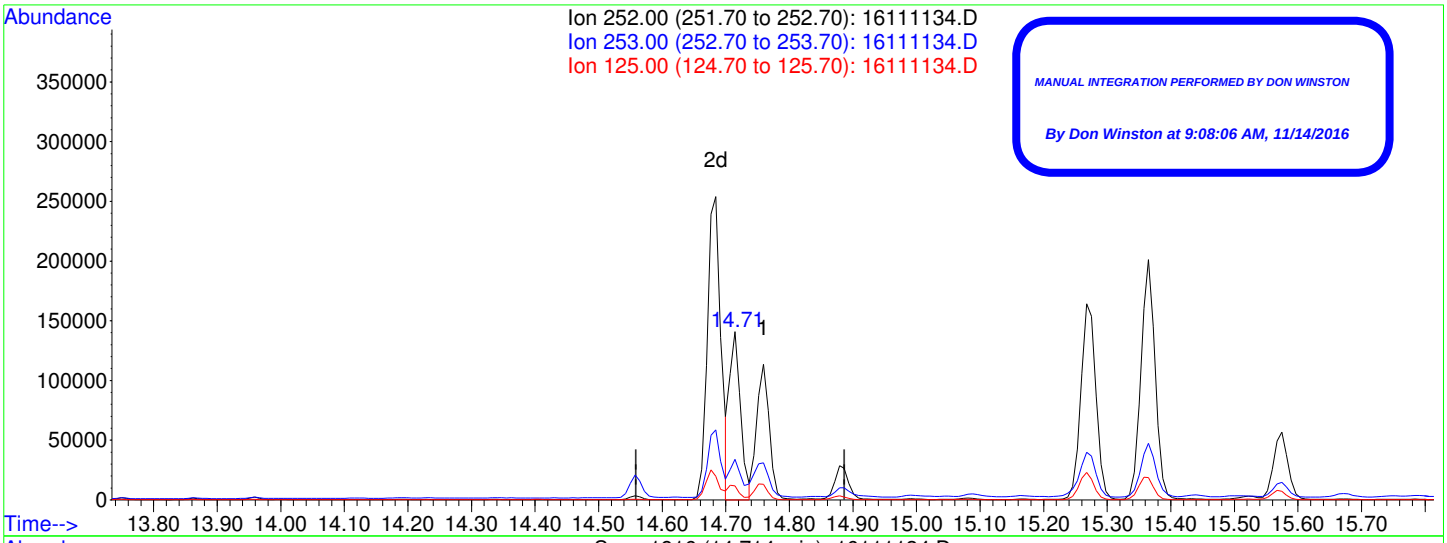
Ion	Ratio	Lower	Upper
276	100		
138	18.9	0.8	40.8
277	24.0	4.0	44.0

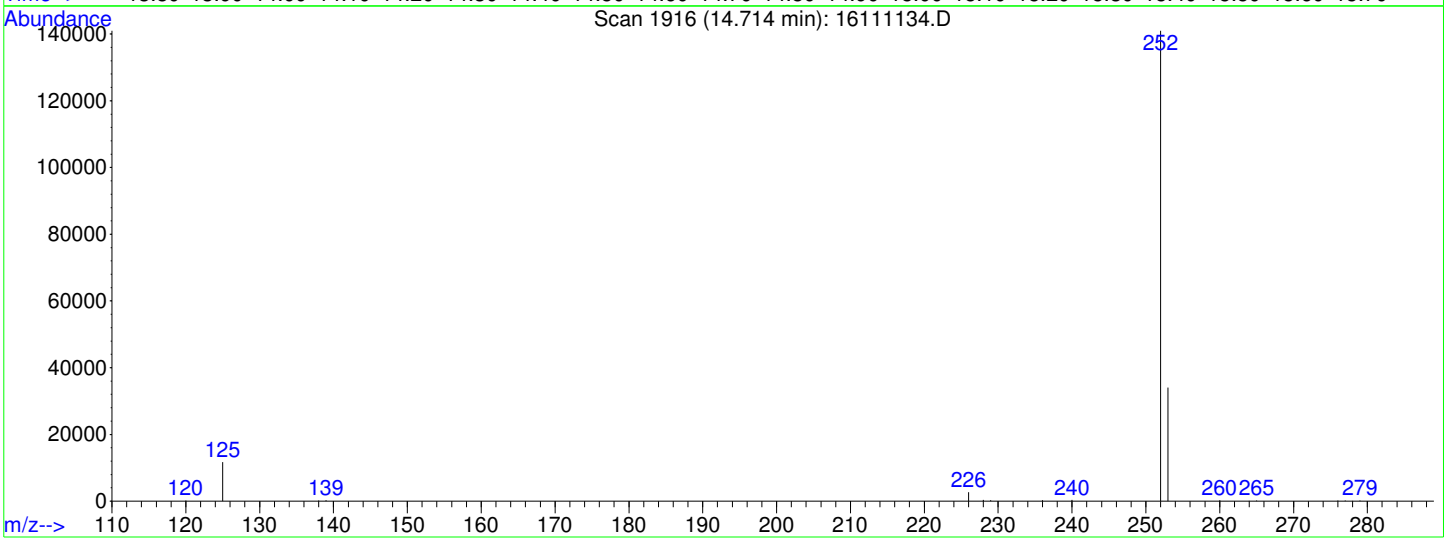


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111134.D Vial: 22
Acq On : 12 Nov 2016 2:05 am Operator:
Sample : 1611053-31A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:04 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration





TIC: 16111134.D

(22) Benzo[k]fluoranthene (CP)

14.71min 556.54ug/kg m

response 171368

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:30:14 AM, 11/14/2016

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	24.18
125.00	8.20	8.30
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111135.D Vial: 23
Acq On : 12 Nov 2016 2:33 am Operator:
Sample : 1611053-36A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:48 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

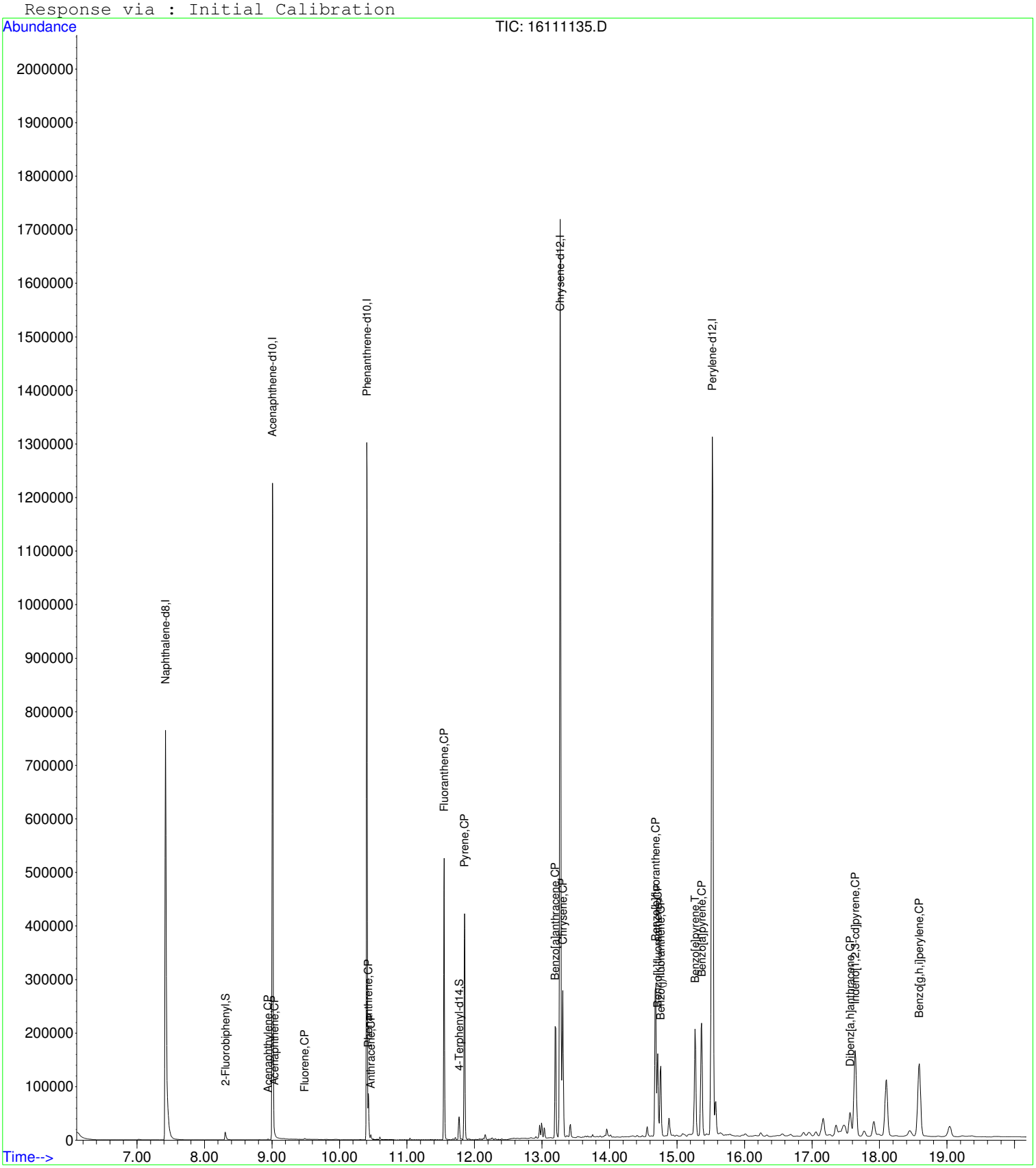
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	995423	4000.00	ug/kg	91
5) Acenaphthene-d10	9.01	164	537901	4000.00	ug/kg	85
11) Phenanthrene-d10	10.40	188	1010773	4000.00	ug/kg	84
17) Chrysene-d12	13.27	240	1427669	4000.00	ug/kg	93
20) Perylene-d12	15.52	264	1549196	4000.00	ug/kg	102
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	16186	103.03	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.58%#			
16) 4-Terphenyl-d14	11.77	244	23100	113.79	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.84%#			
Target Compounds						Qvalue
8) Acenaphthylene	8.94	152	1215	6.39	ug/kg	99
9) Acenaphthene	9.04	154	904	7.95	ug/kg	96
10) Fluorene	9.48	166	911	6.55	ug/kg	99
12) Phenanthrene	10.43	178	51747	262.93	ug/kg	99
13) Anthracene	10.47	178	6068	29.95	ug/kg	99
14) Fluoranthene	11.55	202	314829	1354.34	ug/kg	99
15) Pyrene	11.85	202	278979	1155.62	ug/kg	99
18) Benzo[a]anthracene	13.20	228	175841	630.00	ug/kg	99
19) Chrysene	13.31	228	255869	989.52	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	315154	916.05	ug/kg	97
22) Benzo[k]fluoranthene	14.71	252	141325	445.67	ug/kg	89
23) Benzo(j)fluoranthene	14.76	252	128508	419.02	ug/kg	95
24) Benzo[e]pyrene	15.27	252	221307	720.26	ug/kg	96
25) Benzo[a]pyrene	15.37	252	258586	824.35	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	58143	176.46	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.64	276	276238	867.79	ug/kg	98
28) Benzo[g,h,i]perylene	18.59	276	271512	807.20	ug/kg	97

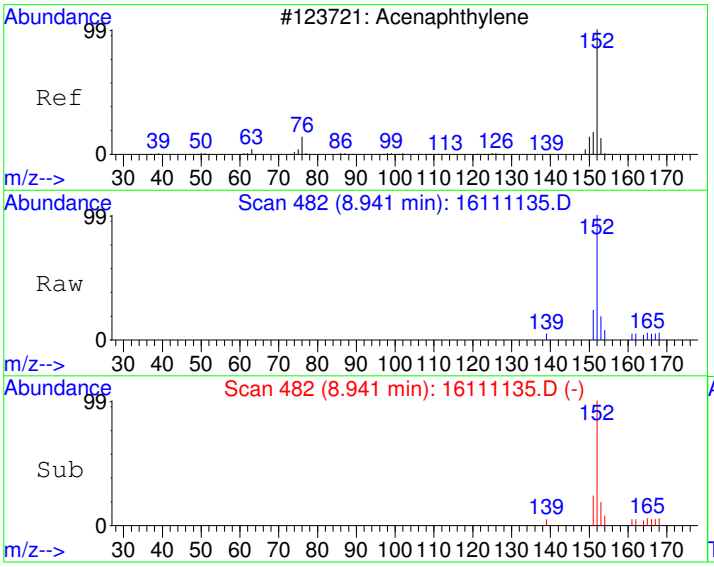
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111135.D Vial: 23
Acq On : 12 Nov 2016 2:33 am Operator:
Sample : 1611053-36A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:48 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

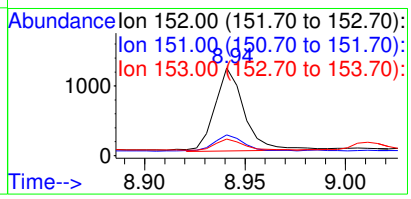


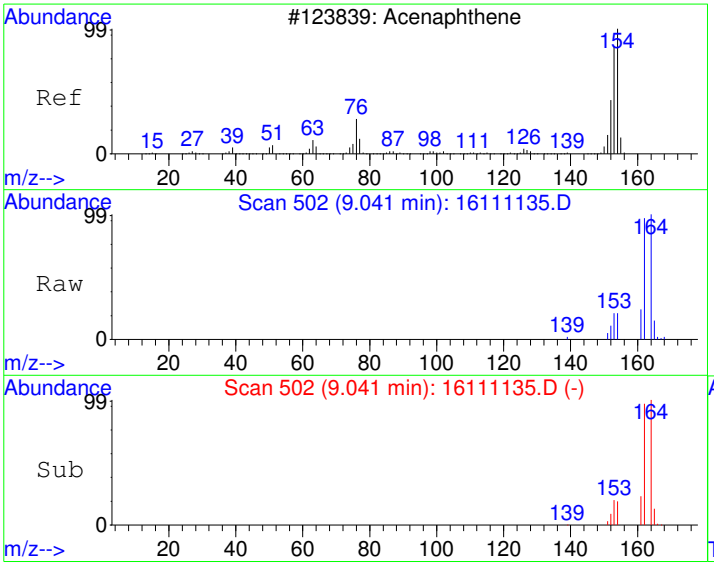


#8
Acenaphthylene
Concen: 6.39 ug/kg
RT: 8.94 min Scan# 482
Delta R.T. 0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:152 Resp: 1215

Ion	Ratio	Lower	Upper
152	100		
151	19.1	0.0	49.8
153	13.7	0.0	43.3

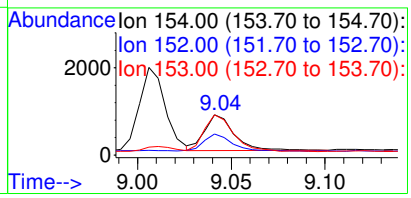


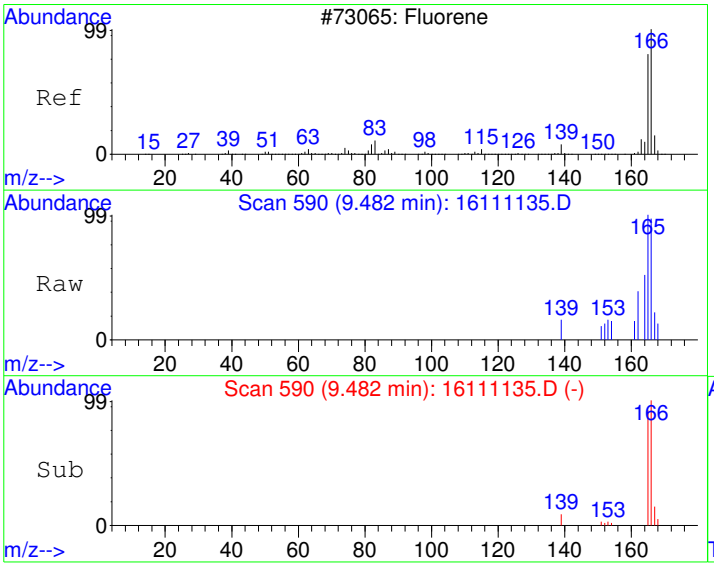


#9
Acenaphthene
Concen: 7.95 ug/kg
RT: 9.04 min Scan# 502
Delta R.T. -0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:154 Resp: 904

Ion	Ratio	Lower	Upper
154	100		
152	47.7	19.8	79.8
153	103.2	77.1	137.1

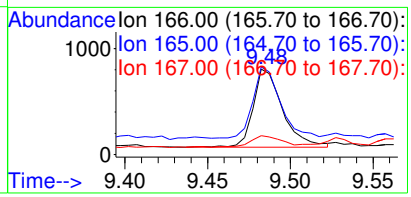


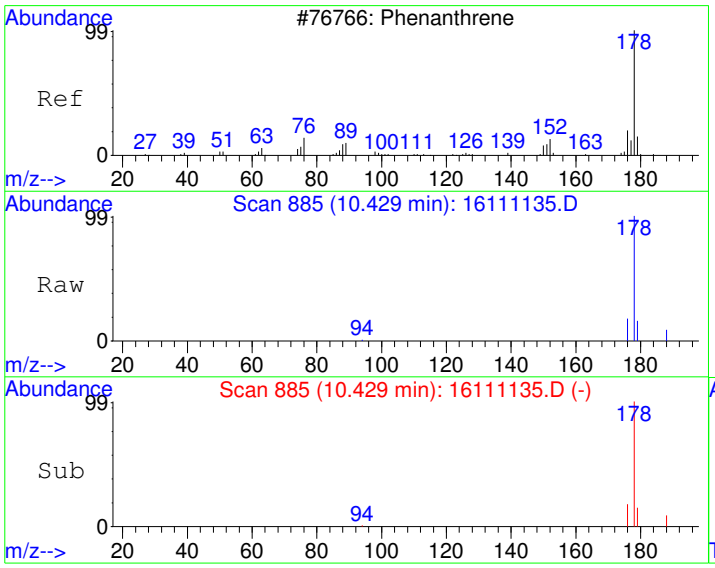


#10
Fluorene
Concen: 6.55 ug/kg
RT: 9.48 min Scan# 590
Delta R.T. 0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:166 Resp: 911

Ion	Ratio	Lower	Upper
166	100		
165	91.3	61.1	121.1
167	15.0	0.0	43.7

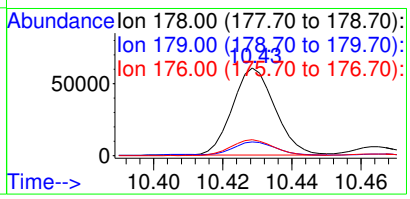


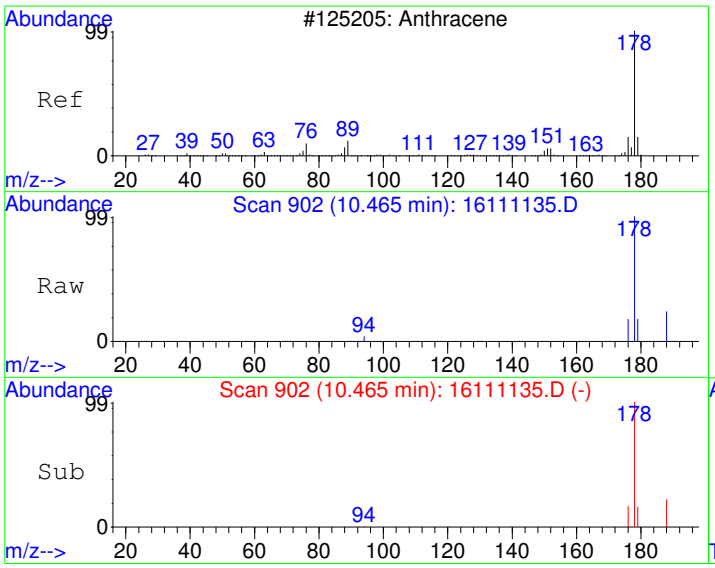


#12
Phenanthrene
Concen: 262.93 ug/kg
RT: 10.43 min Scan# 885
Delta R.T. -0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:178 Resp: 51747

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	45.8
176	18.1	0.0	48.3

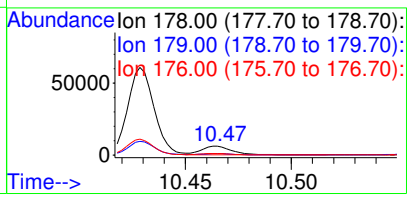


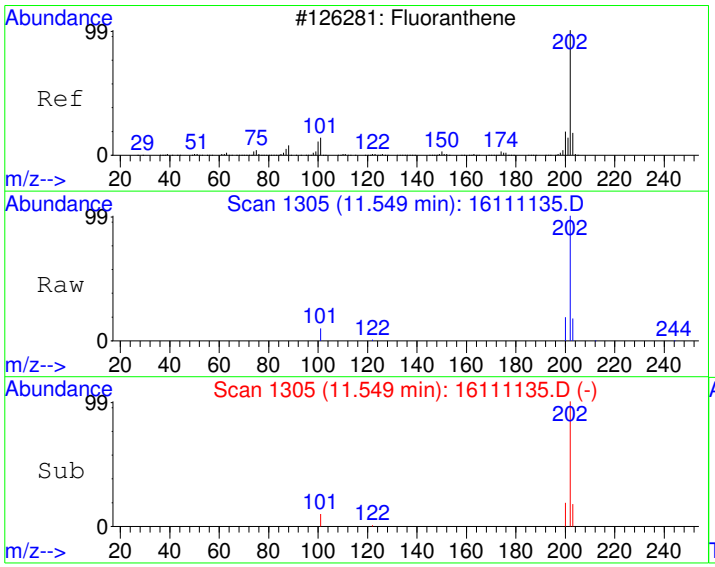


#13
Anthracene
Concen: 29.95 ug/kg
RT: 10.47 min Scan# 902
Delta R.T. 0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:178 Resp: 6068

Ion	Ratio	Lower	Upper
178	100		
179	15.8	0.0	45.7
176	17.6	0.0	48.1

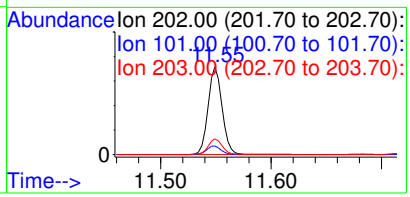


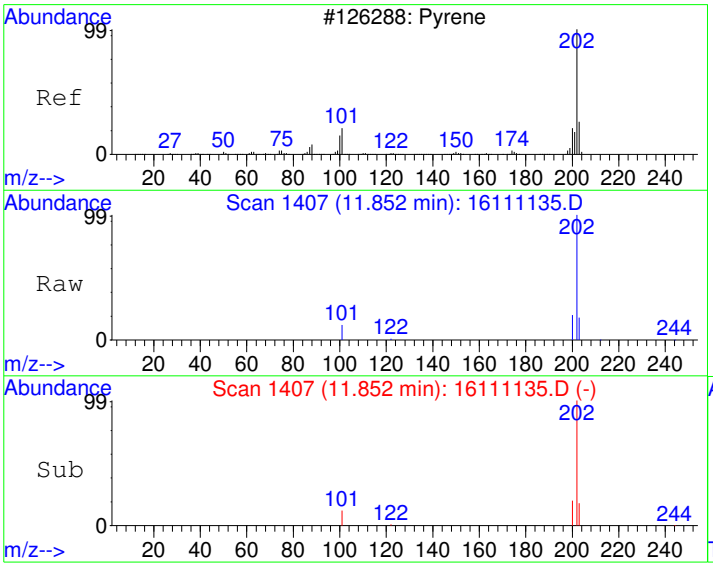


#14
Fluoranthene
Concen: 1354.34 ug/kg
RT: 11.55 min Scan# 1305
Delta R.T. -0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:202 Resp: 314829

Ion	Ratio	Lower	Upper
202	100		
101	9.7	0.0	40.6
203	17.7	0.0	48.0

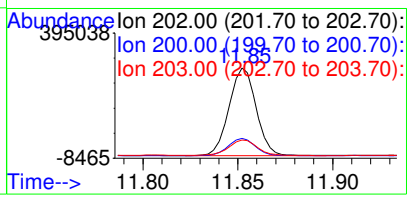


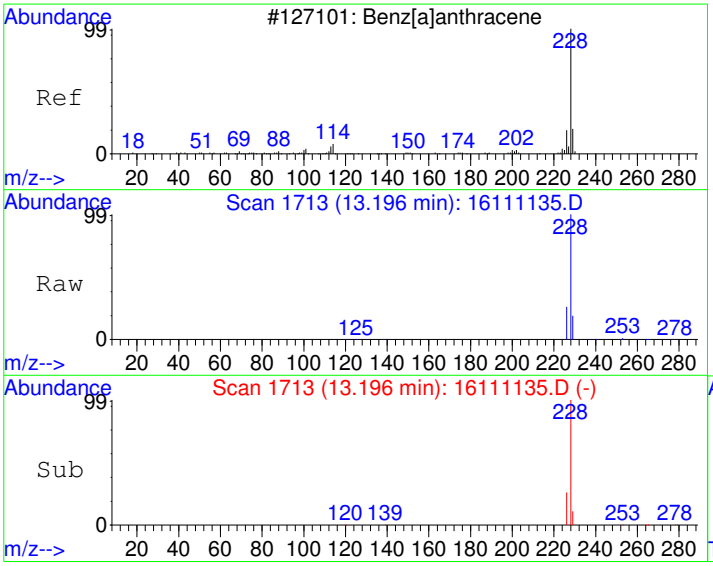


#15
Pyrene
Concen: 1155.62 ug/kg
RT: 11.85 min Scan# 1407
Delta R.T. -0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:202 Resp: 278979

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	50.1
203	17.9	0.0	47.8

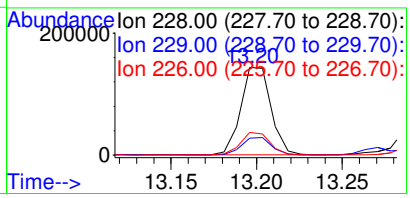


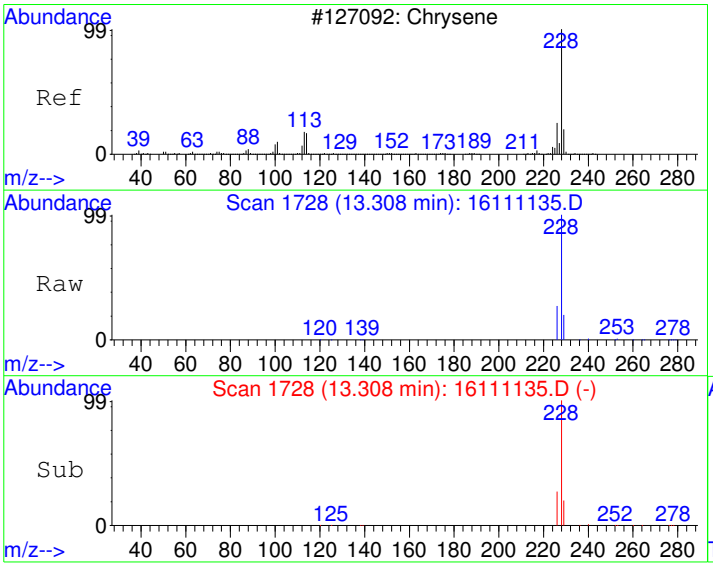


#18
Benzo[a]anthracene
Concen: 630.00 ug/kg
RT: 13.20 min Scan# 1713
Delta R.T. -0.01 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:228 Resp: 175841

Ion	Ratio	Lower	Upper
228	100		
229	19.3	0.0	50.4
226	26.0	0.0	55.6

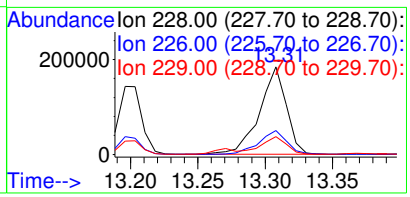


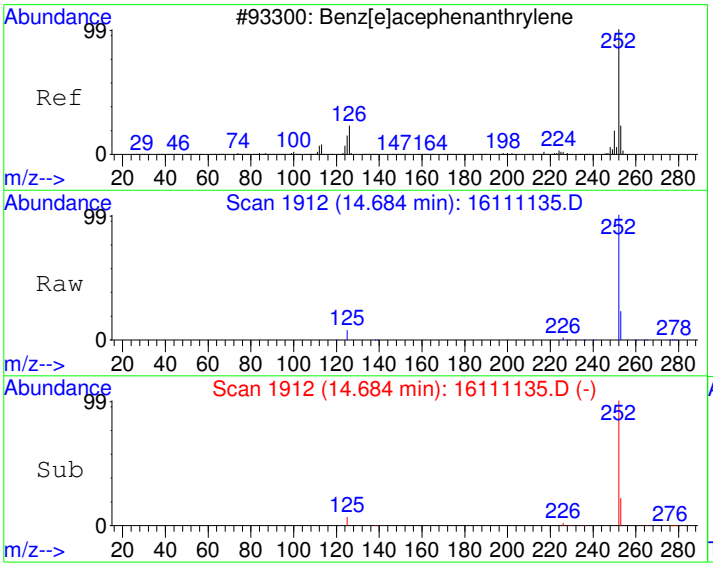


#19
Chrysene
Concen: 989.52 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. -0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:228 Resp: 255869

Ion	Ratio	Lower	Upper
228	100		
226	27.4	0.0	58.8
229	20.2	0.0	50.2

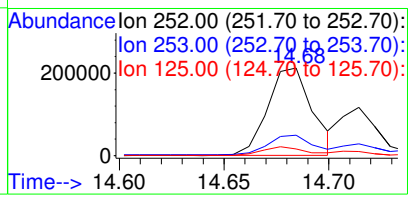


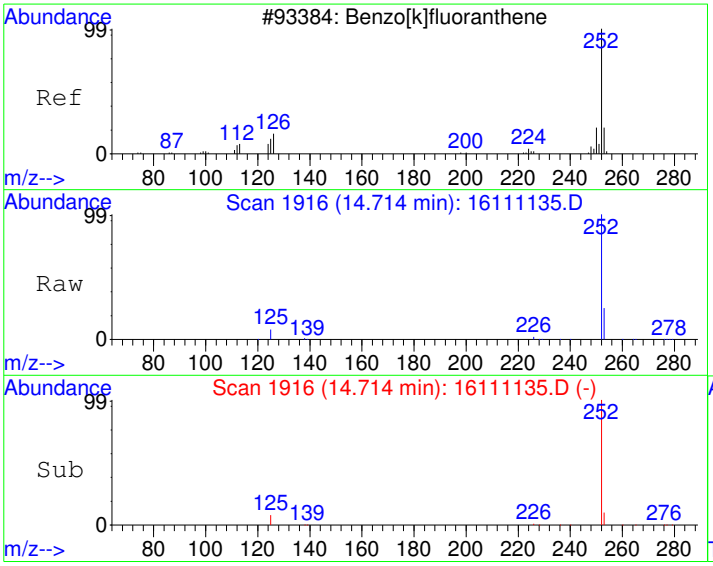


#21
Benzo[b]fluoranthene
Concen: 916.05 ug/kg
RT: 14.68 min Scan# 1912
Delta R.T. -0.00 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:252 Resp: 315154

Ion	Ratio	Lower	Upper
252	100		
253	22.2	0.0	52.1
125	7.4	0.0	40.5

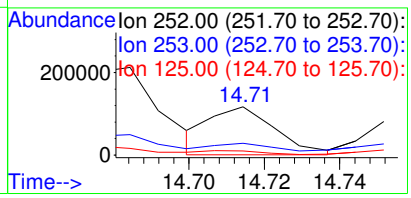


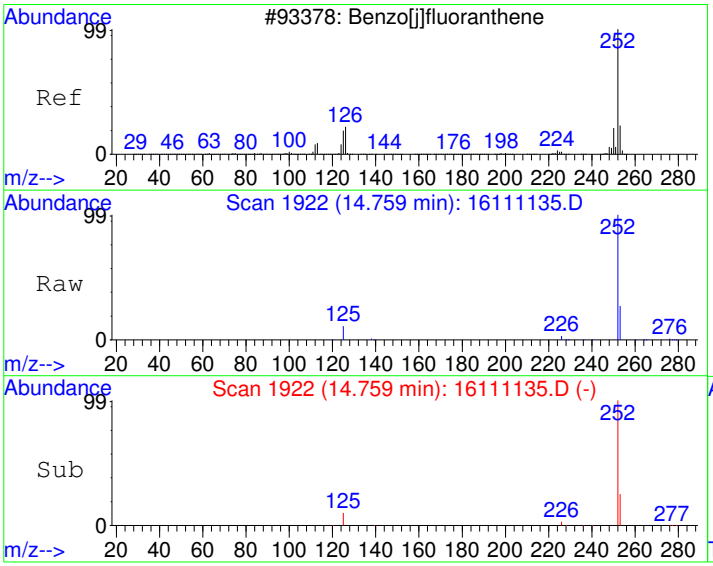


#22
Benzo[k]fluoranthene
Concen: 445.67 ug/kg
RT: 14.71 min Scan# 1916
Delta R.T. -0.01 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:252 Resp: 141325

Ion	Ratio	Lower	Upper
252	100		
253	15.8	2.4	42.4
125	7.1	0.0	28.2

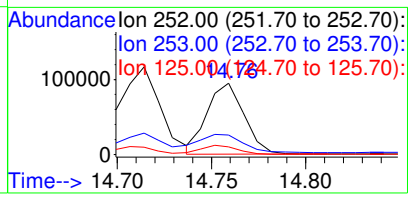


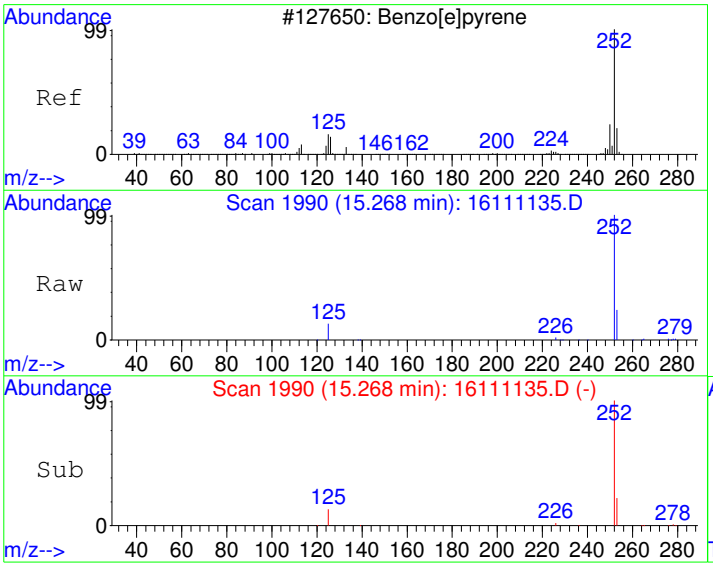


#23
Benzo(j)fluoranthene
Concen: 419.02 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:252 Resp: 128508

Ion	Ratio	Lower	Upper
252	100		
253	25.0	2.3	42.3
125	10.6	0.0	32.6

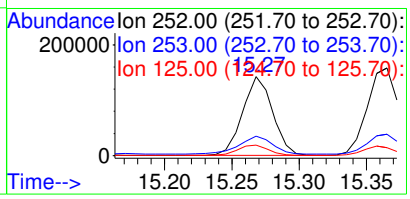


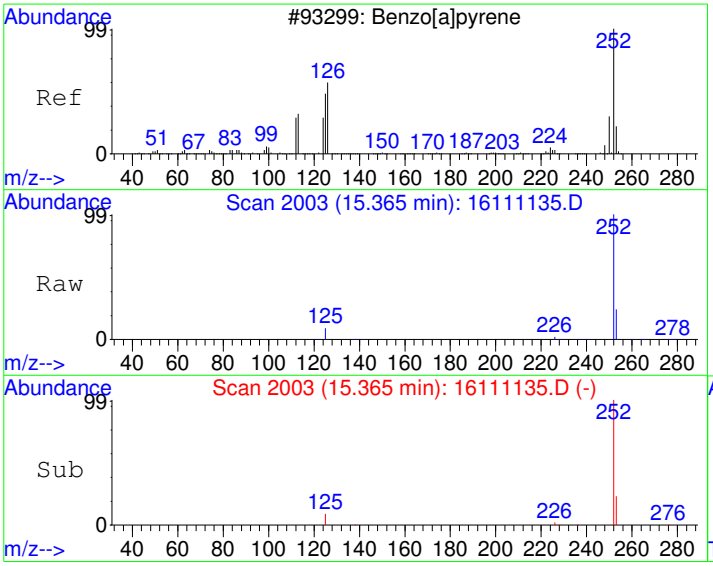


#24
Benzo[e]pyrene
Concen: 720.26 ug/kg
RT: 15.27 min Scan# 1990
Delta R.T. -0.01 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:252 Resp: 221307

Ion	Ratio	Lower	Upper
252	100		
253	22.7	1.8	41.8
125	13.2	0.0	35.7

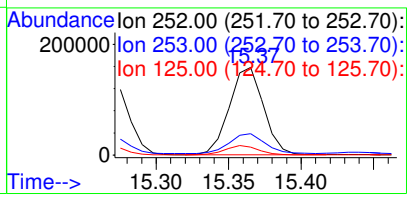


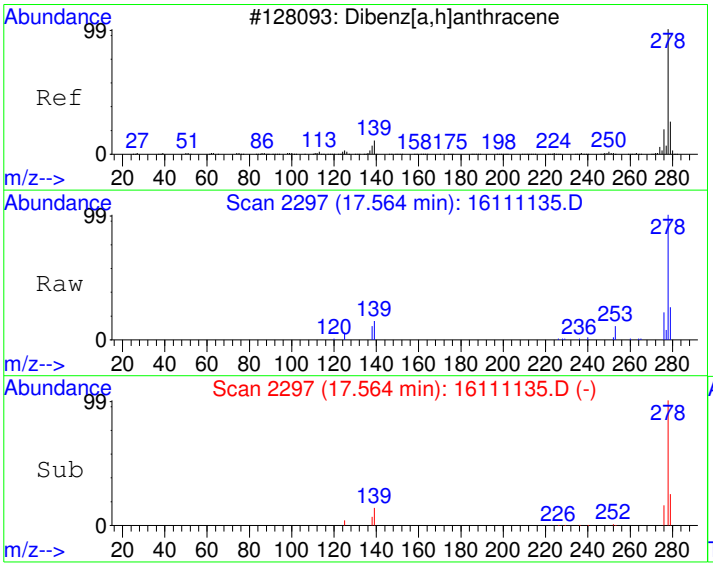


#25
Benzo[a]pyrene
Concen: 824.35 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:252 Resp: 258586

Ion	Ratio	Lower	Upper
252	100		
253	22.7	2.2	42.2
125	8.9	0.0	30.8

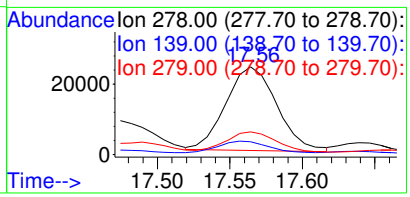


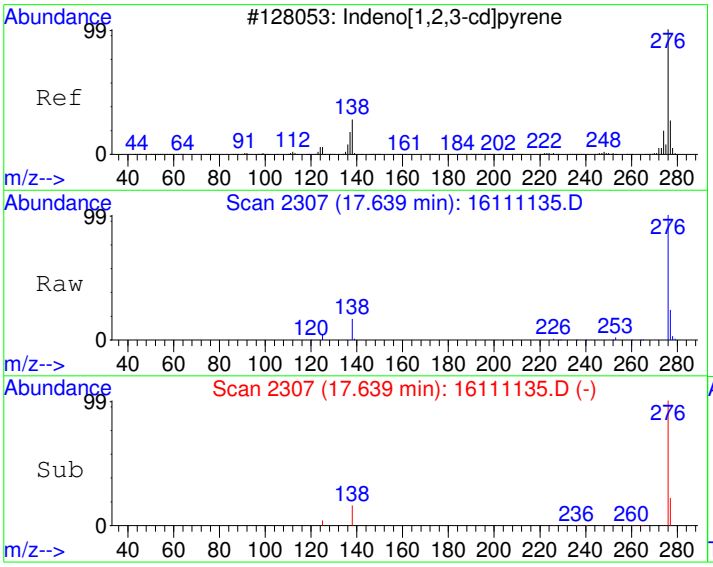


#26
Dibenz[a,h]anthracene
Concen: 176.46 ug/kg
RT: 17.56 min Scan# 2297
Delta R.T. -0.02 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:278 Resp: 58143

Ion	Ratio	Lower	Upper
278	100		
139	13.4	0.0	35.8
279	25.1	4.2	44.2

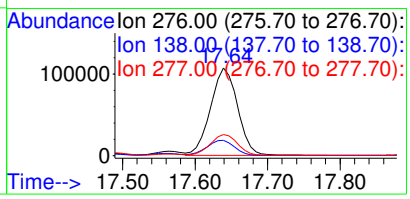


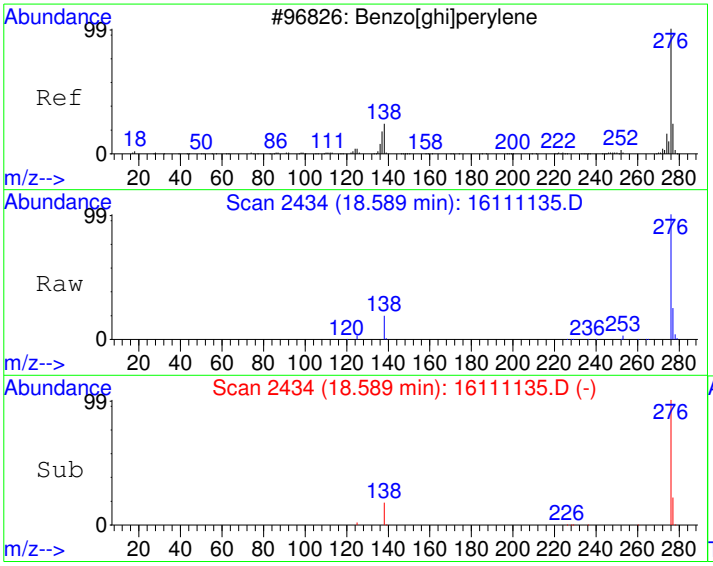


#27
Indeno[1,2,3-cd]pyrene
Concen: 867.79 ug/kg
RT: 17.64 min Scan# 2307
Delta R.T. -0.02 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:276 Resp: 276238

Ion	Ratio	Lower	Upper
276	100		
138	17.3	0.0	39.3
277	24.0	4.0	44.0

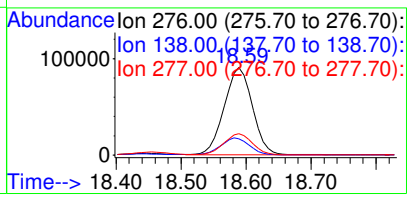




#28
Benzo[g,h,i]perylene
Concen: 807.20 ug/kg
RT: 18.59 min Scan# 2434
Delta R.T. -0.02 min
Lab File: 16111135.D
Acq: 12 Nov 2016 2:33 am

Tgt Ion:276 Resp: 271512

Ion	Ratio	Lower	Upper
276	100		
138	18.4	0.8	40.8
277	24.4	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111136.D Vial: 24
Acq On : 12 Nov 2016 3:01 am Operator:
Sample : 1611071-16AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

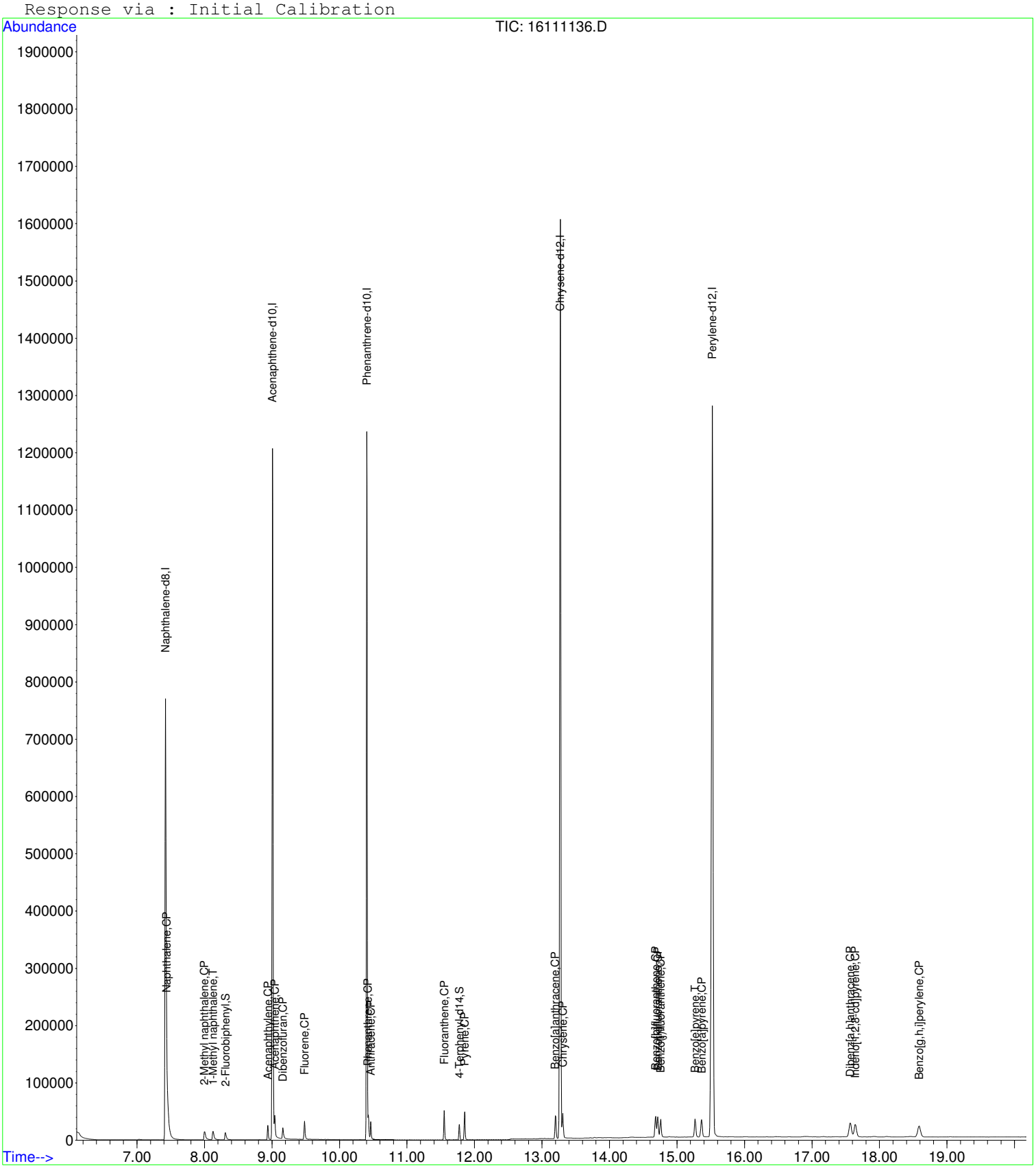
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	962442	4000.00	ug/kg	88
5) Acenaphthene-d10	9.01	164	514445	4000.00	ug/kg	81
11) Phenanthrene-d10	10.40	188	971340	4000.00	ug/kg	81
17) Chrysene-d12	13.27	240	1358962	4000.00	ug/kg	88
20) Perylene-d12	15.52	264	1479258	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15195	101.13	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.53%#		
16) 4-Terphenyl-d14	11.77	244	21705	111.26	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.78%#		
Target Compounds						Qvalue
2) Naphthalene	7.45	128	17627	101.73	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	12835	99.54	ug/kg	94
4) 1-Methyl naphthalene	8.13	142	12042	99.97	ug/kg	94
6) Dibenzofuran	9.16	168	18541	113.28	ug/kg	99
8) Acenaphthylene	8.94	152	20372	112.09	ug/kg	98
9) Acenaphthene	9.04	154	11994	110.27	ug/kg	99
10) Fluorene	9.48	166	15271	114.72	ug/kg	100
12) Phenanthrene	10.43	178	24522	129.65	ug/kg	98
13) Anthracene	10.46	178	21740	111.68	ug/kg	98
14) Fluoranthene	11.55	202	35166	157.42	ug/kg	98
15) Pyrene	11.85	202	34798	150.00	ug/kg	99
18) Benzo[a]anthracene	13.20	228	34045	128.14	ug/kg	99
19) Chrysene	13.31	228	31939	129.76	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	41946	127.69	ug/kg	97
22) Benzo[k]fluoranthene	14.71	252	32999	108.98	ug/kg	98
23) Benzo(j)fluoranthene	14.76	252	31597	107.90	ug/kg	98
24) Benzo[e]pyrene	15.27	252	35550	121.17	ug/kg	97
25) Benzo[a]pyrene	15.37	252	36888	123.15	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	35651	113.31	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.64	276	37821	124.43	ug/kg	99
28) Benzo[g,h,i]perylene	18.59	276	39328	122.45	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111136.D Vial: 24
Acq On : 12 Nov 2016 3:01 am Operator:
Sample : 1611071-16AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111137.D Vial: 25
Acq On : 12 Nov 2016 3:29 am Operator:
Sample : 1611071-16AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

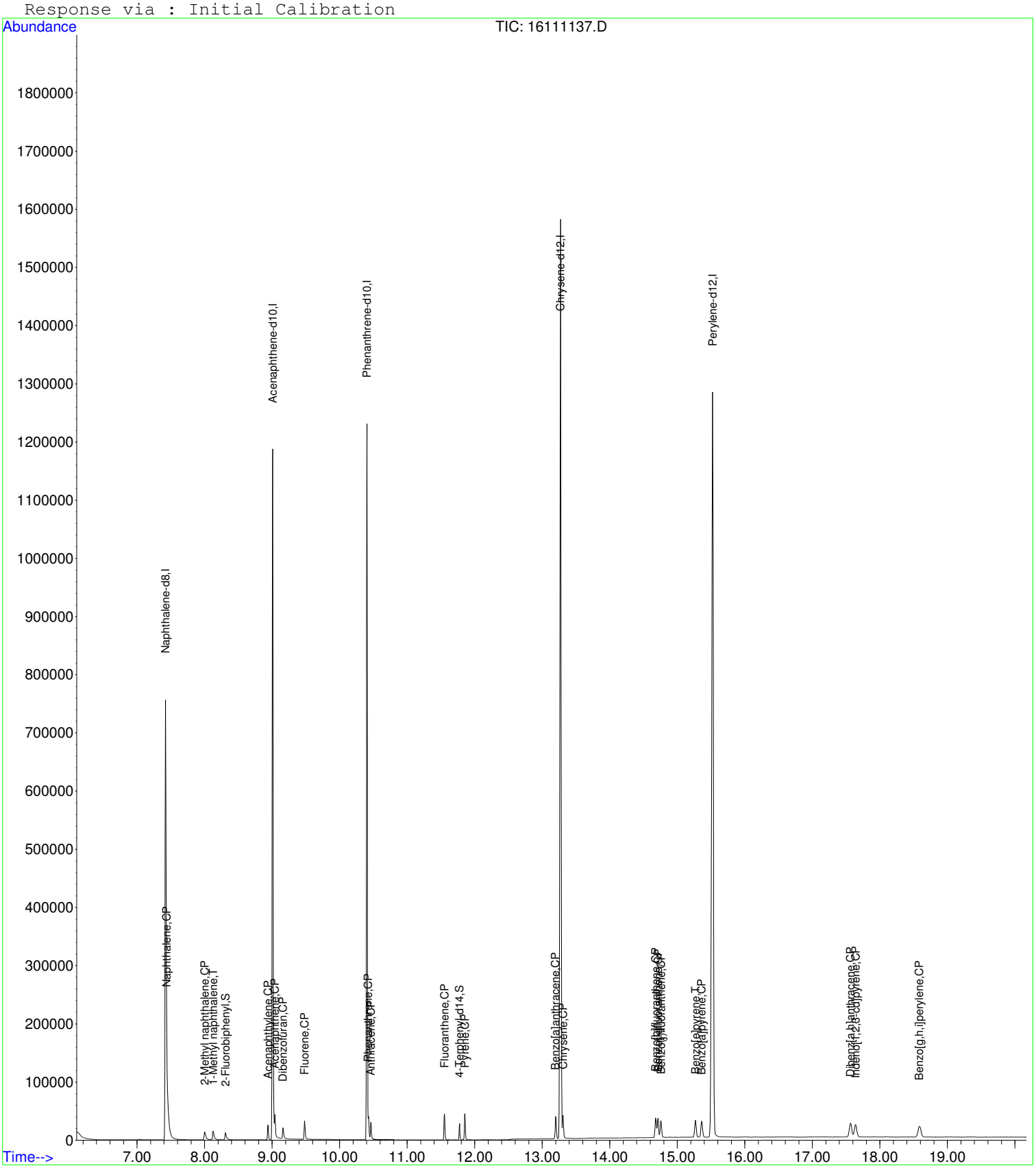
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	961258	4000.00	ug/kg	88
5) Acenaphthene-d10	9.01	164	521751	4000.00	ug/kg	82
11) Phenanthrene-d10	10.40	188	975385	4000.00	ug/kg	81
17) Chrysene-d12	13.27	240	1366453	4000.00	ug/kg	89
20) Perylene-d12	15.52	264	1482692	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15327	100.58	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.51%#		
16) 4-Terphenyl-d14	11.77	244	21920	111.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.80%#		
Target Compounds						Qvalue
2) Naphthalene	7.45	128	17409	100.60	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	12660	98.30	ug/kg	95
4) 1-Methyl naphthalene	8.13	142	11970	99.49	ug/kg	96
6) Dibenzofuran	9.16	168	18693	112.61	ug/kg	99
8) Acenaphthylene	8.94	152	20422	110.79	ug/kg	99
9) Acenaphthene	9.04	154	12046	109.20	ug/kg	99
10) Fluorene	9.48	166	15381	113.92	ug/kg	99
12) Phenanthrene	10.43	178	22121	116.47	ug/kg	98
13) Anthracene	10.46	178	21002	107.44	ug/kg	99
14) Fluoranthene	11.55	202	30003	133.75	ug/kg	98
15) Pyrene	11.85	202	30676	131.68	ug/kg	98
18) Benzo[a]anthracene	13.20	228	31546	118.09	ug/kg	99
19) Chrysene	13.31	228	29707	120.03	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	41310	125.46	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	31367	103.35	ug/kg	97
23) Benzo(j)fluoranthene	14.76	252	30618	104.31	ug/kg	96
24) Benzo[e]pyrene	15.27	252	34265	116.52	ug/kg	97
25) Benzo[a]pyrene	15.36	252	34957	116.44	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	35365	112.14	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.64	276	36878	121.05	ug/kg	97
28) Benzo[g,h,i]perylene	18.58	276	38183	118.61	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111137.D Vial: 25
Acq On : 12 Nov 2016 3:29 am Operator:
Sample : 1611071-16AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111138.D Vial: 26
Acq On : 12 Nov 2016 3:57 am Operator:
Sample : CCV1-161111 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

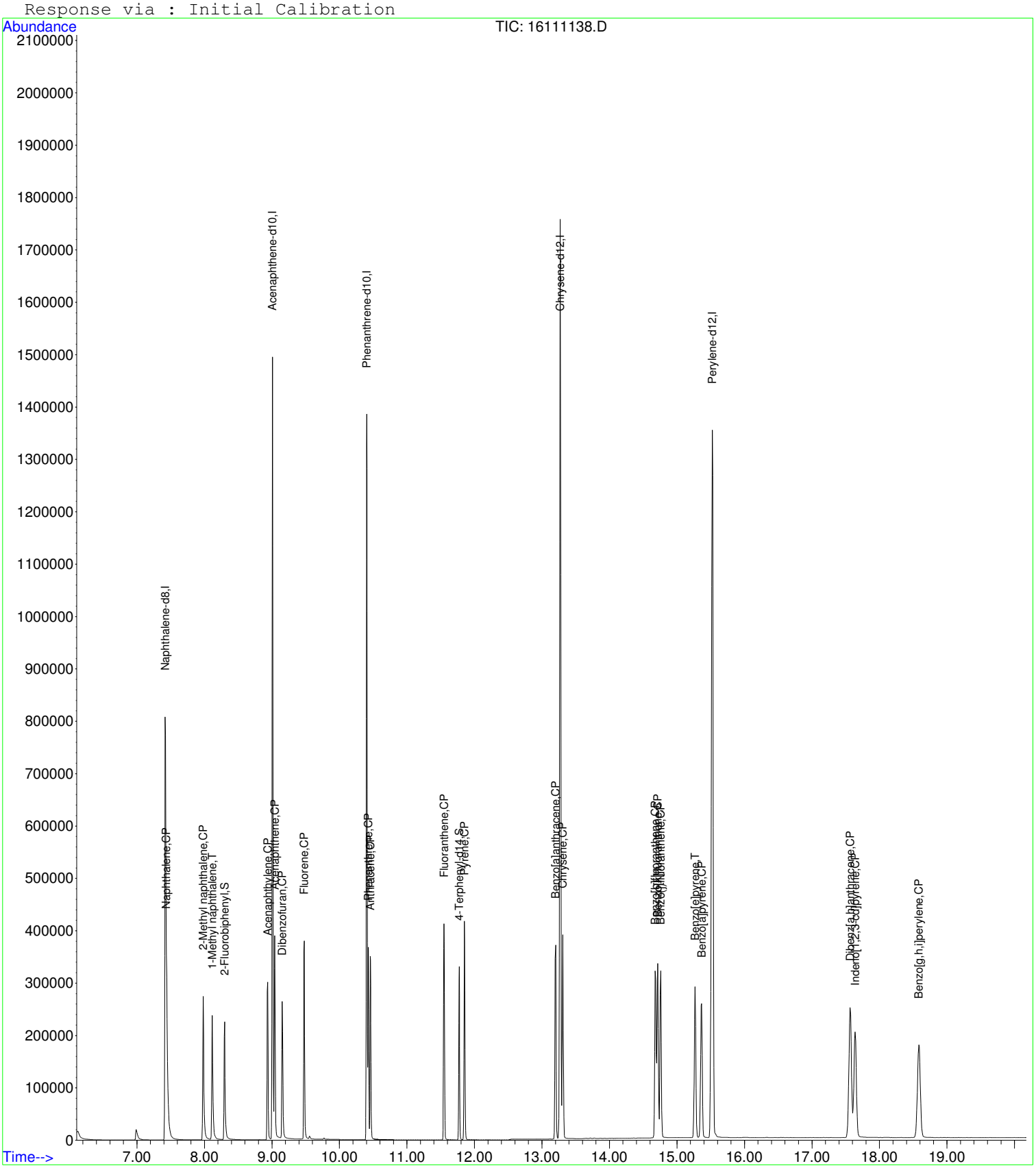
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1071899	4000.00	ug/kg	98
5) Acenaphthene-d10	9.01	164	583181	4000.00	ug/kg	92
11) Phenanthrene-d10	10.40	188	1098717	4000.00	ug/kg	92
17) Chrysene-d12	13.27	240	1517162	4000.00	ug/kg	98
20) Perylene-d12	15.52	264	1655703	4000.00	ug/kg	109
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	192577	1130.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	28.27%#		
16) 4-Terphenyl-d14	11.77	244	257287	1165.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	29.15%#		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	201942	1046.48	ug/kg	100
3) 2-Methyl naphthalene	7.98	142	147853	1029.56	ug/kg	92
4) 1-Methyl naphthalene	8.12	142	133493	995.02	ug/kg	93
6) Dibenzofuran	9.15	168	203633	1097.48	ug/kg	99
8) Acenaphthylene	8.94	152	222966	1082.22	ug/kg	99
9) Acenaphthene	9.04	154	129679	1051.75	ug/kg	98
10) Fluorene	9.48	166	163013	1080.22	ug/kg	98
12) Phenanthrene	10.43	178	224414	1048.98	ug/kg	99
13) Anthracene	10.46	178	229126	1040.53	ug/kg	99
14) Fluoranthene	11.55	202	274125	1084.85	ug/kg	98
15) Pyrene	11.85	202	277777	1058.54	ug/kg	99
18) Benzo[a]anthracene	13.20	228	306358	1032.87	ug/kg	99
19) Chrysene	13.31	228	286499	1042.61	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	381262	1036.92	ug/kg	99
22) Benzo[k]fluoranthene	14.71	252	310098	915.00	ug/kg	99
23) Benzo(j)fluoranthene	14.76	252	315923	963.85	ug/kg	98
24) Benzo[e]pyrene	15.27	252	325406	990.93	ug/kg	97
25) Benzo[a]pyrene	15.37	252	328277	979.19	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	356867	1013.37	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.64	276	347526	1021.51	ug/kg	98
28) Benzo[g,h,i]perylene	18.58	276	363341	1010.72	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111138.D Vial: 26
Acq On : 12 Nov 2016 3:57 am Operator:
Sample : CCV1-161111 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



GCMS6_161130A
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161130A
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			X
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report	X		X
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS	X			
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS	X			
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)	X			

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis	7 days (Aq) - extraction			X	
1. Are all sample hold times met?	14 days (Soil) - extraction		X		
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only	X			X
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			X
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE	All deviations from the method and SOP that affect data quality				
1. Are all non-conformances included and noted?		X			X
2. Are all corrective actions included?		X			
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?		X			

Approved by: **QA APPROVED** By John DuPont at 3:13:22 PM, 12/1/2016 Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
X Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS ___LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	X Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	X Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
___ Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

Analyst: Lauren Garcia Don Winston Date: 12/1/2016

Second-Level Review: Janice Whitt Date: **REVIEWED BY** By Janice Whitt at 2:03:54 PM, 12/1/2016 12/1/2016

DHL Analytical, Inc.

Run ID: GCMS6_161130A **Run No.:** 89215

Analytical Run Date: 11/30/2016 **InstrumentID:** GCMS6

Analyst: Lauren Garcia **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161130	1	PAH_LL_SDOD1	TUNE	R89215	11/30/2016 3:16:00 PM		
ICV-161130	1	PAH_LL_SDOD1	ICV	R89215	11/30/2016 3:44:00 PM		
LCS-78027	1	PAH_LL_SDOD1	LCS	78027	11/30/2016 4:12:00 PM		
MB-78027	1	PAH_LL_SDOD1	MBLK	78027	11/30/2016 4:40:00 PM		
1611071-02A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 5:08:00 PM	H	
1611071-05A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 5:36:00 PM	H	
1611053-07A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 6:04:00 PM	H	
1611053-27A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 6:32:00 PM	H	
1611053-32A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 7:00:00 PM	H	
1611071-22A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 7:28:00 PM	H	
1611053-02A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 7:56:00 PM	H	
1611071-12A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 8:25:00 PM	H	
1611053-37A	10	PAH_LL_SDOD1	SAMP	78027	11/30/2016 8:52:00 PM	H	
1611053-02AMS	10	PAH_LL_SDOD1	MS	78027	11/30/2016 9:21:00 PM	H	
1611053-02AMSD	10	PAH_LL_SDOD1	MSD	78027	11/30/2016 9:48:00 PM	H	
CCV1-161130	1	PAH_LL_SDOD1	CCV	R89215	11/30/2016 10:17:00 PM		

Samples prepared out of hold time at clients request. jw 12/1/2016

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/21/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161130.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161130\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16113001	DFTPPPAH	DFTPP-161130
2	Sample	2	16113002	PP161020	ICV-161130
3	Sample	3	16113003	PP161020	LCS-78027
4	Sample	4	16113004	PP161020	MB-78027
5	Sample	5	16113005	PP161020	1611071-02A
6	Sample	6	16113006	PP161020	1611071-05A
7	Sample	7	16113007	PP161020	1611053-07A
8	Sample	8	16113008	PP161020	1611053-27A
9	Sample	9	16113009	PP161020	1611053-32A
10	Sample	10	16113010	PP161020	1611071-22A
11	Sample	11	16113011	PP161020	1611053-02A
12	Sample	12	16113012	PP161020	1611071-12A
13	Sample	13	16113013	PP161020	1611053-37A
14	Sample	14	16113014	PP161020	1611053-02AMS
15	Sample	15	16113015	PP161020	1611053-02AMSD
16	Sample	16	16113016	PP161020	CCV1-161130
17	Sample	17	16113017	PP161020	SBLK

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/23/2016 9:23:08 AM**
Digestion:
Prep End Date: 11/23/2016 11:10 AM

Prep Batch **78027** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-02A	Soil	5.01	10.36	10	1.000	1 of 1	Extract and Hold
1611053-02AMS	Soil	5.01	10.32	10	1.000	of	
1611053-02AMSD	Soil	5.01	10.61	10	1.000	of	
1611053-07A	Soil	5.04	10.24	10	1.000	1 of 1	Extract and Hold
1611053-27A	Soil	4.97	10.58	10	1.000	1 of 1	Extract and Hold
1611053-32A	Soil	4.82	10.35	10	1.000	1 of 1	Extract and Hold
1611053-37A	Soil	4.82	10.11	10	1.000	1 of 1	Extract and Hold
1611071-02A	Soil	3.96	10.57	10	1.000	1 of 1	Extract and Hold
1611071-05A	Soil	3.97	10.55	10	1.000	1 of 1	Extract and Hold
1611071-12A	Soil	3.92	10.84	10	1.000	1 of 1	Extract and Hold

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161118	200 PPM PAH SPIKE	LCS/MS/MSD	0.05	05/18/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 1:19:03 PM, 12/1/2016

11/23/16

11/23/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/23/2016 9:23:08 AM**
Digestion:
Prep End Date: 11/23/2016 11:10 AM

Prep Batch **78027** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-22A	Soil		10.60	10	1.000	1 of 1	
	3.89						
	Extract and Hold						
LCS-78027	Soil		10	10	1.000	of	
MB-78027	Soil		10	10	1.000	of	

Prepared out of hold time ~~out of~~ 11/23/16
as per client request

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161118	200 PPM PAH SPIKE	LCS/MS/MSD	0.05	05/18/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 1:19:04 PM, 12/1/2016

11/23/16

11/23/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/23/2016 9:23:08 AM**
Digestion:
Prep End Date: **11/23/2016 11:10:00 AM**

Prep Batch **78027** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-02A	Soil		10.36	10	0.965	1 of 1	
5.01							
Extract and Hold							
1611053-02AMS	Soil		10.32	10	0.969	of	
5.01							
1611053-02AMSD	Soil		10.61	10	0.943	of	
5.01							
1611053-07A	Soil		10.24	10	0.977	1 of 1	
5.04							
Extract and Hold							
1611053-27A	Soil		10.58	10	0.945	1 of 1	
4.97							
Extract and Hold							
1611053-32A	Soil		10.35	10	0.966	1 of 1	
4.82							
Extract and Hold							
1611053-37A	Soil		10.11	10	0.989	1 of 1	
4.82							
Extract and Hold							
1611071-02A	Soil		10.57	10	0.946	1 of 1	
3.96							
Extract and Hold							
1611071-05A	Soil		10.55	10	0.948	1 of 1	
3.97							
Extract and Hold							
1611071-12A	Soil		10.84	10	0.923	1 of 1	
3.92							
Extract and Hold							

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161118	200 PPM PAH SPIKE	LCS/MS/MSD	0.05	05/18/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 1:19:09 PM, 12/1/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/23/2016 9:23:08 AM**
Digestion:
Prep End Date: **11/23/2016 11:10:00 AM**

Prep Batch **78027** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,4

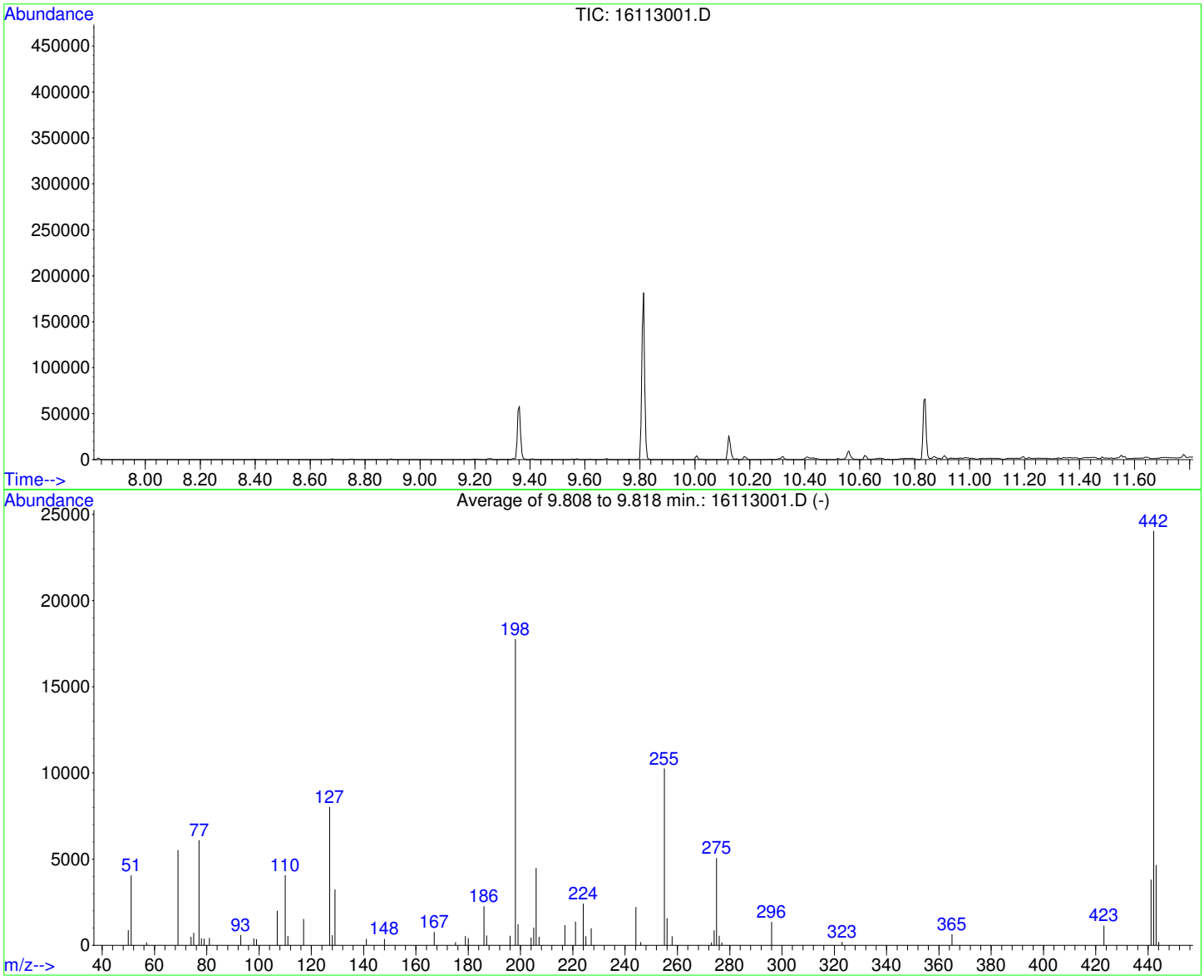
Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-22A	Soil		10.6	10	0.943	1 of 1	
	3.89						
	Extract and Hold						
LCS-78027	Soil		10	10	1.000	of	
MB-78027	Soil		10	10	1.000	of	
	Prepared out of hold time as per client request.						

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161118	200 PPM PAH SPIKE	LCS/MS/MSD	0.05	05/18/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 1:19:11 PM, 12/1/2016

Data File : C:\HPCHEM\1\DATA\161130\16113001.D Vial: 1
Acq On : 30 Nov 2016 3:16 pm Operator:
Sample : DFTPP-161130 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 791, 792, 793; Background Corrected with Scan 786

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	22.8	4057	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	45.2	8028	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	17779	PASS
199	198	5	9	6.9	1226	PASS
275	198	10	60	28.5	5063	PASS
365	198	1	200	3.7	655	PASS
441	442	0.01	24	15.9	3816	PASS
442	198	50	400	135.3	24048	PASS
443	442	15	24	19.4	4656	PASS

REVIEWED BY
By Janice Whitt at 1:19:13 PM, 12/1/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113002.D Vial: 2
Acq On : 30 Nov 2016 3:44 pm Operator:
Sample : ICV-161130 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

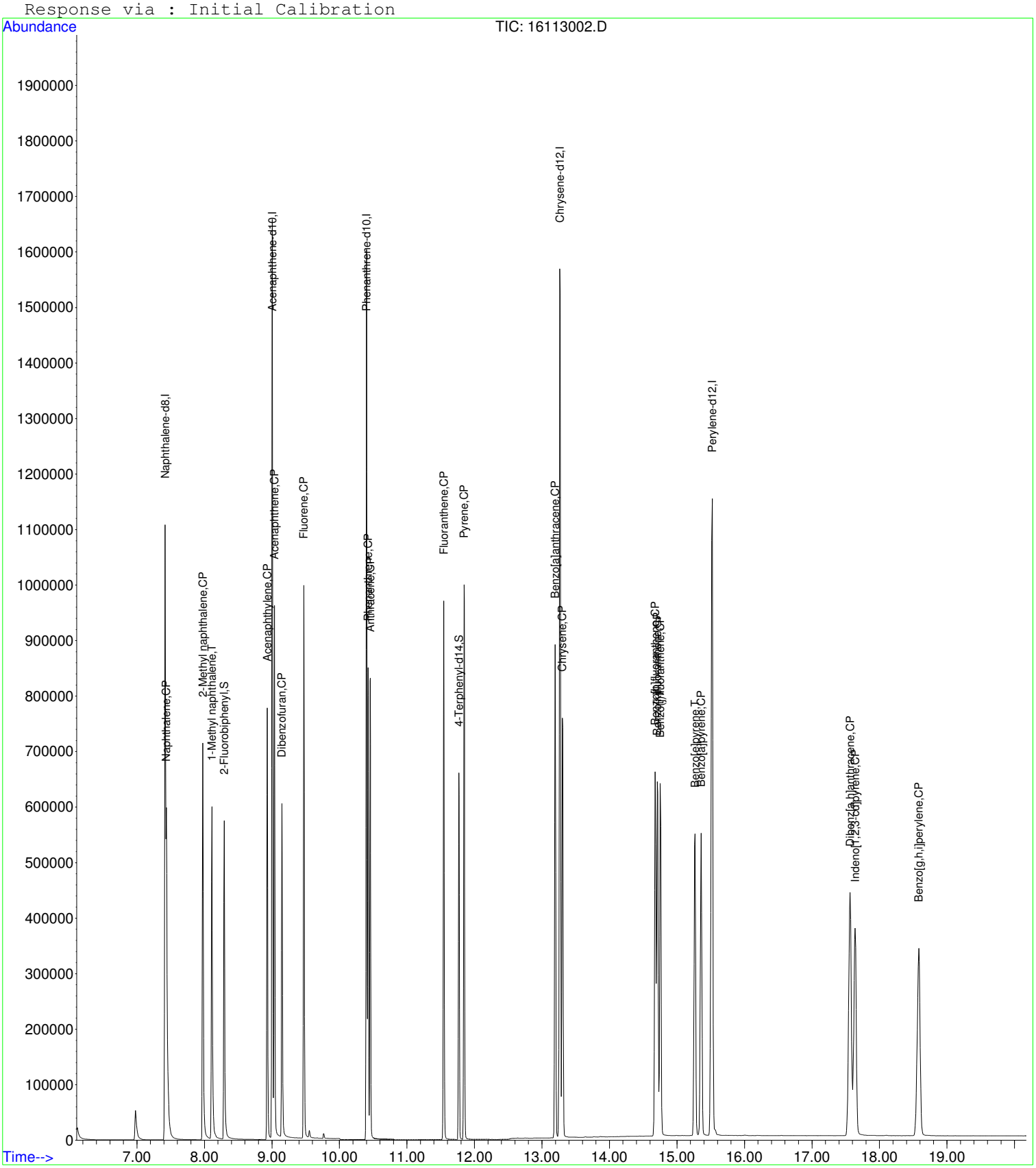
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1293241	4000.00	ug/kg	118
5) Acenaphthene-d10	9.01	164	694238	4000.00	ug/kg	110
11) Phenanthrene-d10	10.40	188	1272385	4000.00	ug/kg	106
17) Chrysene-d12	13.27	240	1453753	4000.00	ug/kg	94
20) Perylene-d12	15.52	264	1361742	4000.00	ug/kg	90
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.29	172	442034	2180.14	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 54.50%			
16) 4-Terphenyl-d14	11.77	244	484971	1897.74	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 47.44%			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	476582	2046.98	ug/kg	100
3) 2-Methyl naphthalene	7.98	142	352473	2034.32	ug/kg	95
4) 1-Methyl naphthalene	8.11	142	319924	1976.48	ug/kg	92
6) Dibenzofuran	9.15	168	462461	2093.72	ug/kg	100
8) Acenaphthylene	8.93	152	527270	2149.84	ug/kg	99
9) Acenaphthene	9.04	154	310783	2117.36	ug/kg	97
10) Fluorene	9.47	166	385715	2147.10	ug/kg	99
12) Phenanthrene	10.42	178	525902	2122.70	ug/kg	100
13) Anthracene	10.46	178	537355	2107.22	ug/kg	99
14) Fluoranthene	11.55	202	629806	2152.26	ug/kg	99
15) Pyrene	11.85	202	635503	2091.21	ug/kg	99
18) Benzo[a]anthracene	13.20	228	670224	2358.20	ug/kg	100
19) Chrysene	13.30	228	616816	2342.60	ug/kg	100
21) Benzo[b]fluoranthene	14.68	252	692967	2291.50	ug/kg	99
22) Benzo[k]fluoranthene	14.71	252	663394	2380.02	ug/kg	98
23) Benzo(j)fluoranthene	14.75	252	642824	2384.56	ug/kg	98
24) Benzo[e]pyrene	15.27	252	638471	2363.99	ug/kg	97
25) Benzo[a]pyrene	15.36	252	641994	2328.34	ug/kg	99
26) Dibenz[a,h]anthracene	17.56	278	625722	2160.38	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.64	276	619823	2215.18	ug/kg	99
28) Benzo[g,h,i]perylene	18.58	276	660189	2232.93	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113002.D Vial: 2
Acq On : 30 Nov 2016 3:44 pm Operator:
Sample : ICV-161130 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

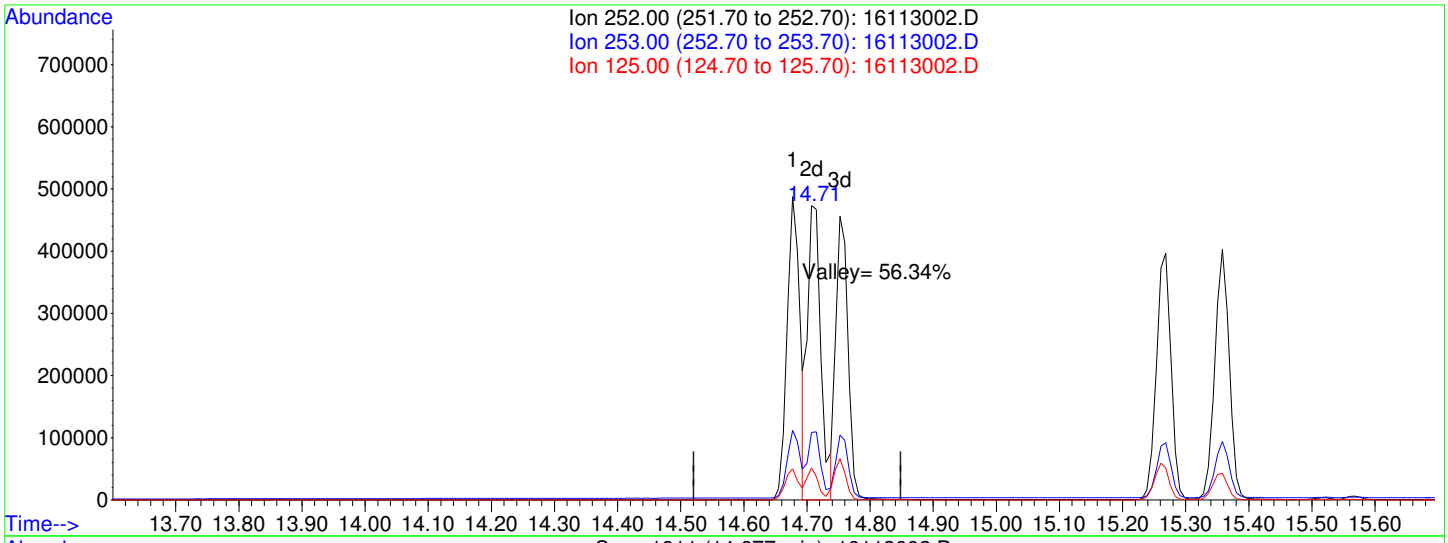
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration

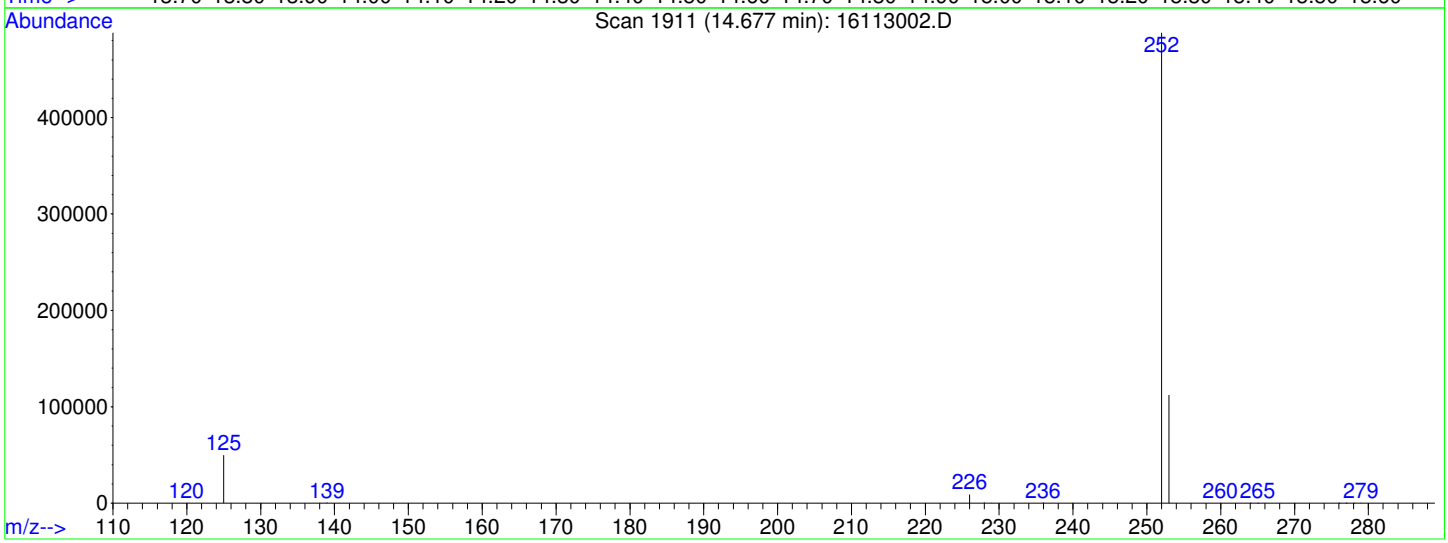


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161130\16113002.D Vial: 2
Acq On : 30 Nov 2016 3:44 pm Operator:
Sample : ICV-161130 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:46 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Multiple Level Calibration





TIC: 16113002.D

(21) Benzo[b]fluoranthene (CP)

14.68min 2291.50ug/kg

response 692967

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.40
125.00	10.50	10.14
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113003.D Vial: 3
Acq On : 30 Nov 2016 4:12 pm Operator:
Sample : LCS-78027 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

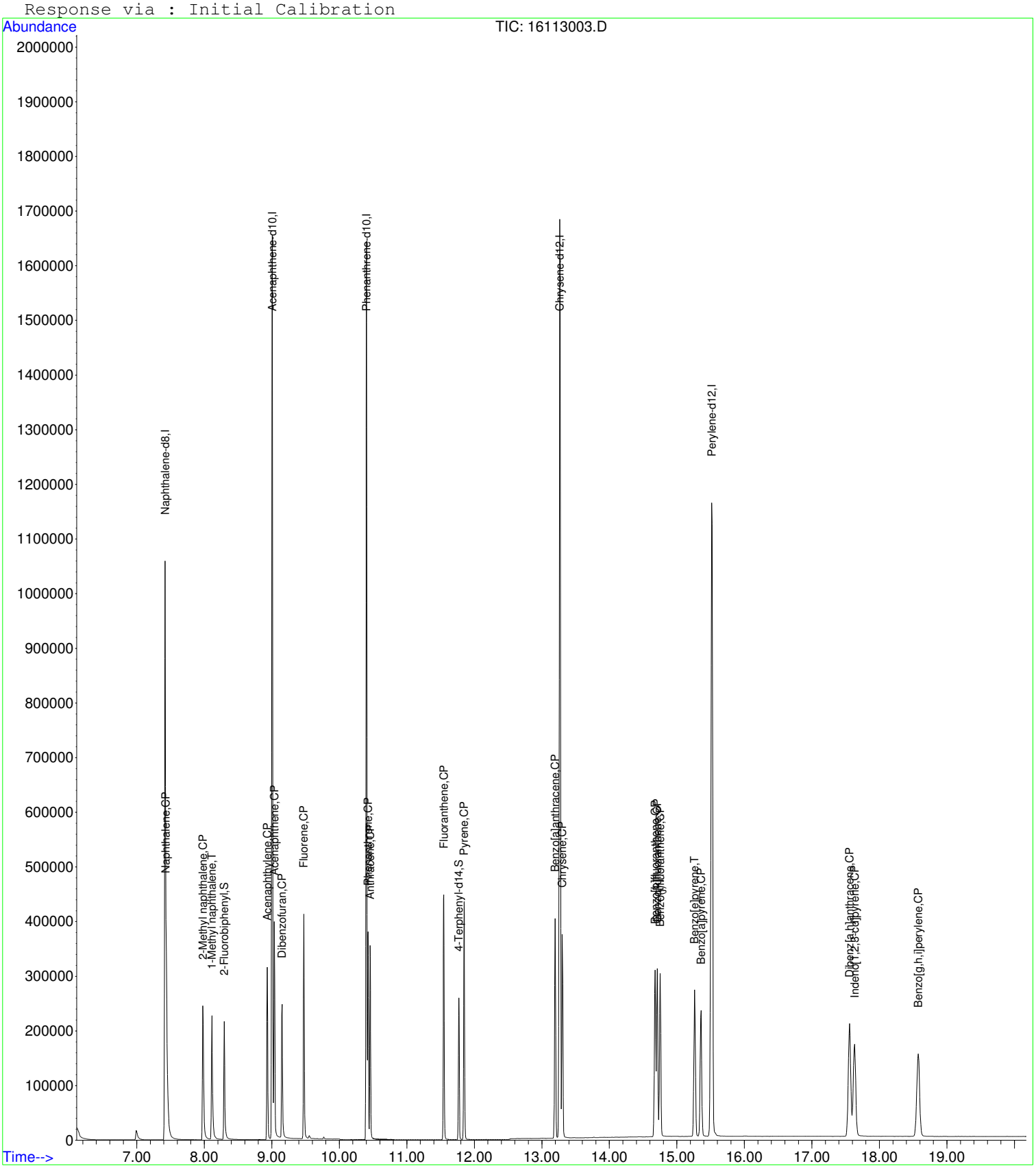
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1285739	4000.00	ug/kg	118
5) Acenaphthene-d10	9.01	164	707259	4000.00	ug/kg	112
11) Phenanthrene-d10	10.40	188	1286872	4000.00	ug/kg	107
17) Chrysene-d12	13.26	240	1517653	4000.00	ug/kg	98
20) Perylene-d12	15.52	264	1433193	4000.00	ug/kg	94
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.29	172	167862	812.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.32%#			
16) 4-Terphenyl-d14	11.77	244	196688	760.99	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.02%#			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	187906	811.79	ug/kg	100
3) 2-Methyl naphthalene	7.98	142	142597	827.81	ug/kg	91
4) 1-Methyl naphthalene	8.11	142	129206	802.89	ug/kg	93
6) Dibenzofuran	9.15	168	201980	897.60	ug/kg	100
8) Acenaphthylene	8.93	152	219112	876.94	ug/kg	99
9) Acenaphthene	9.04	154	128564	859.78	ug/kg	99
10) Fluorene	9.47	166	166856	911.71	ug/kg	100
12) Phenanthrene	10.43	178	233415	931.53	ug/kg	99
13) Anthracene	10.46	178	233340	904.74	ug/kg	99
14) Fluoranthene	11.55	202	285271	963.89	ug/kg	99
15) Pyrene	11.85	202	288054	937.21	ug/kg	99
18) Benzo[a]anthracene	13.20	228	300977	1014.40	ug/kg	99
19) Chrysene	13.30	228	280508	1020.48	ug/kg	99
21) Benzo[b]fluoranthene	14.68	252	334812	1051.96	ug/kg	98
22) Benzo[k]fluoranthene	14.71	252	284152	968.61	ug/kg	99
23) Benzo(j)fluoranthene	14.75	252	286274	1008.99	ug/kg	99
24) Benzo[e]pyrene	15.26	252	303479	1067.64	ug/kg	99
25) Benzo[a]pyrene	15.36	252	279761	964.04	ug/kg	98
26) Dibenz[a,h]anthracene	17.56	278	292022	957.98	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.63	276	284924	967.52	ug/kg	98
28) Benzo[g,h,i]perylene	18.58	276	298819	960.29	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113003.D Vial: 3
Acq On : 30 Nov 2016 4:12 pm Operator:
Sample : LCS-78027 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113004.D Vial: 4
Acq On : 30 Nov 2016 4:40 pm Operator:
Sample : MB-78027 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

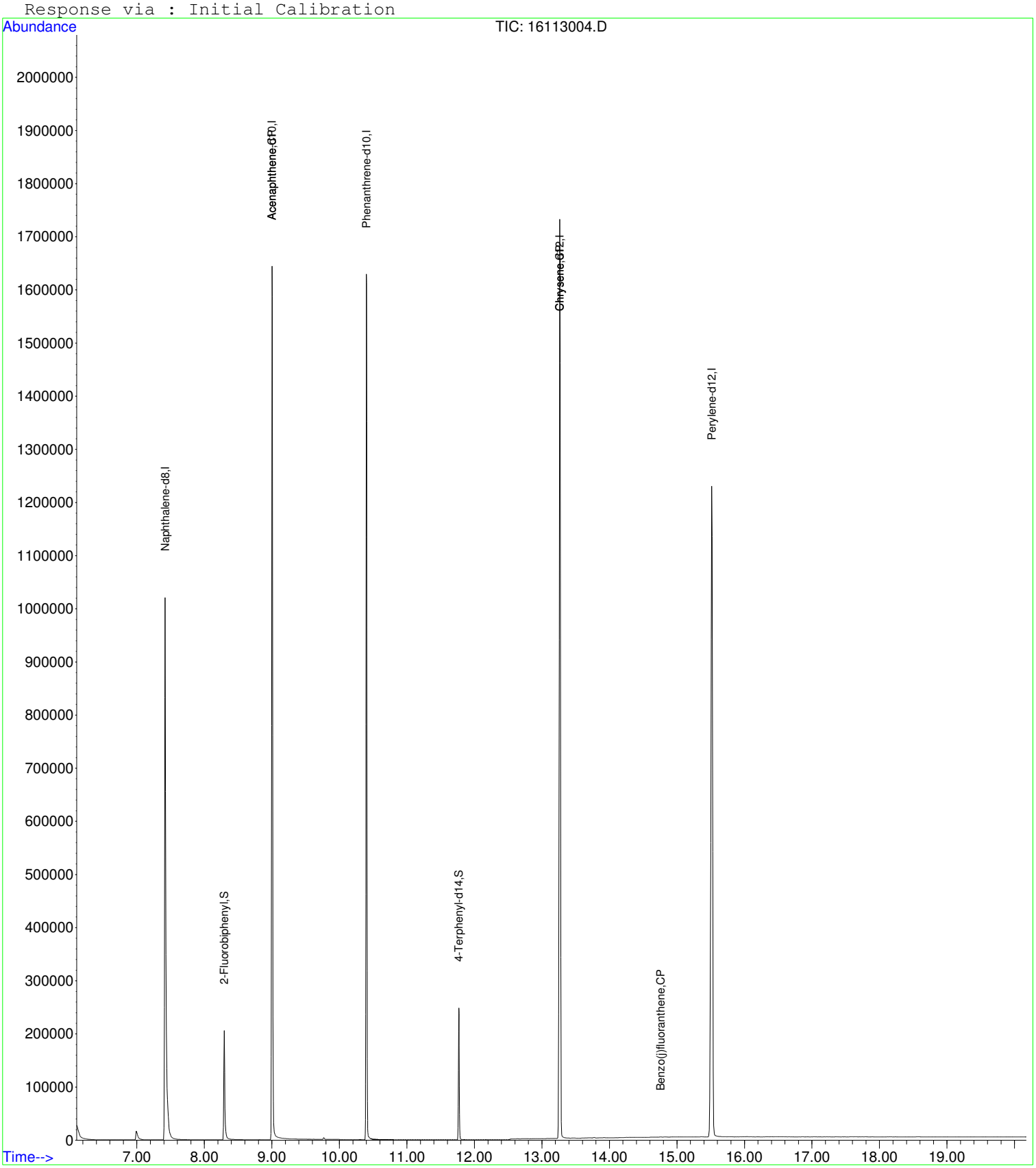
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1303295	4000.00	ug/kg	119
5) Acenaphthene-d10	9.00	164	717392	4000.00	ug/kg	113
11) Phenanthrene-d10	10.40	188	1311258	4000.00	ug/kg	109
17) Chrysene-d12	13.26	240	1541152	4000.00	ug/kg	100
20) Perylene-d12	15.51	264	1458749	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.29	172	166794	796.09	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.90%#			
16) 4-Terphenyl-d14	11.77	244	191429	726.87	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 18.17%#			
Target Compounds						Qvalue
9) Acenaphthene	9.00	154	2373	15.65	ug/kg#	10
19) Chrysene	13.26	228	4177	14.96	ug/kg	71
23) Benzo(j)fluoranthene	14.76	252	221	0.77	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113004.D Vial: 4
Acq On : 30 Nov 2016 4:40 pm Operator:
Sample : MB-78027 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113007.D Vial: 7
Acq On : 30 Nov 2016 6:04 pm Operator:
Sample : 1611053-07A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:50 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

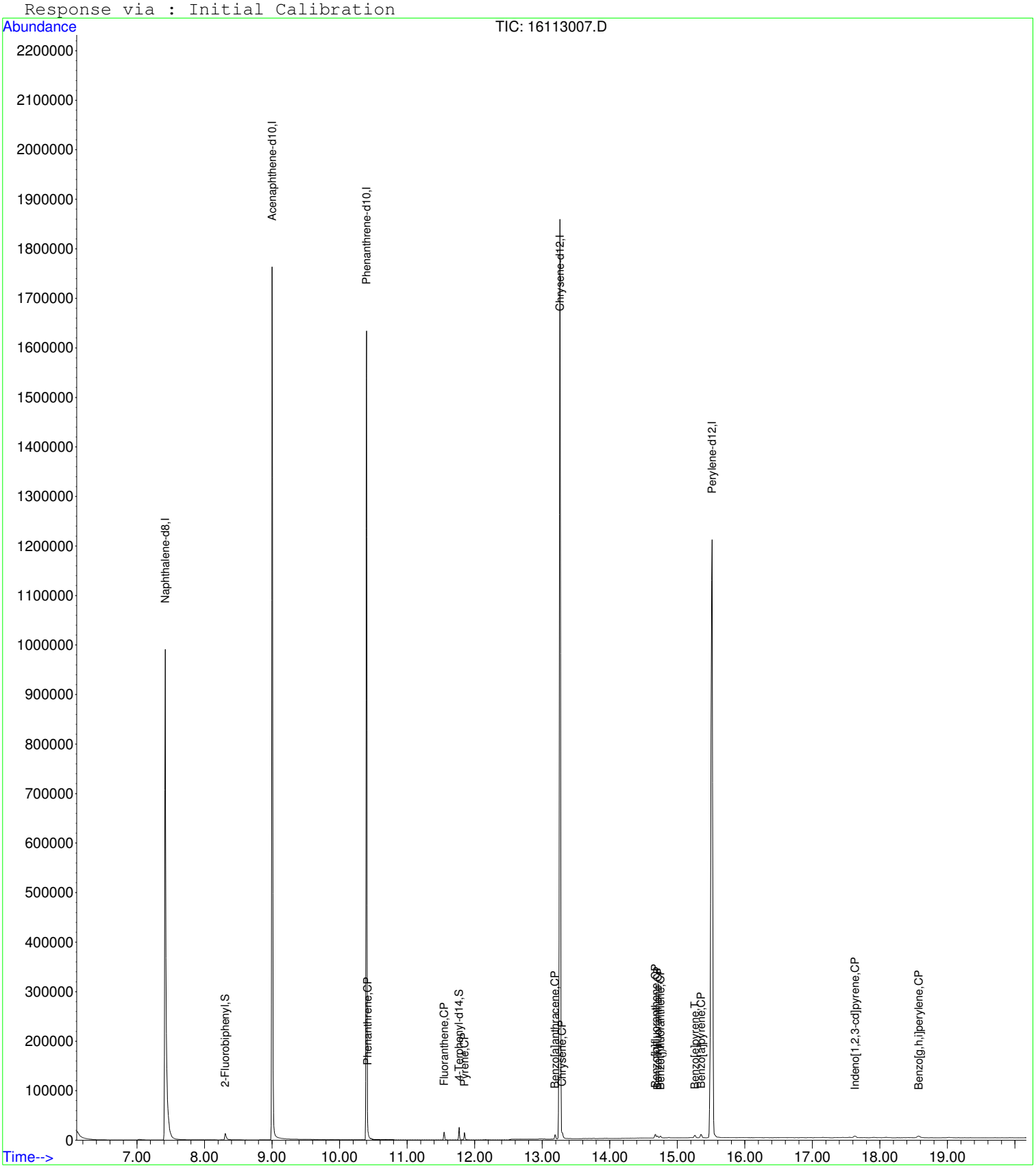
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1276421	4000.00	ug/kg	117
5) Acenaphthene-d10	9.00	164	710209	4000.00	ug/kg	112
11) Phenanthrene-d10	10.40	188	1295970	4000.00	ug/kg	108
17) Chrysene-d12	13.26	240	1520650	4000.00	ug/kg	99
20) Perylene-d12	15.52	264	1461082	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	17518	84.46	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.11%#		
16) 4-Terphenyl-d14	11.77	244	20378	78.29	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.96%#		
Target Compounds						Qvalue
12) Phenanthrene	10.42	178	4299	17.04	ug/kg	98
14) Fluoranthene	11.55	202	11756	39.44	ug/kg	98
15) Pyrene	11.85	202	10576	34.17	ug/kg	99
18) Benzo[a]anthracene	13.19	228	7047	23.70	ug/kg	98
19) Chrysene	13.30	228	7321	26.58	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	8593	26.48	ug/kg	98
22) Benzo[k]fluoranthene	14.71	252	4330	14.48	ug/kg	90
23) Benzo(j)fluoranthene	14.75	252	3963	13.70	ug/kg	96
24) Benzo[e]pyrene	15.26	252	6206	21.42	ug/kg	96
25) Benzo[a]pyrene	15.35	252	8279	27.98	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.63	276	6188	20.61	ug/kg	98
28) Benzo[g,h,i]perylene	18.58	276	6654	20.98	ug/kg	98

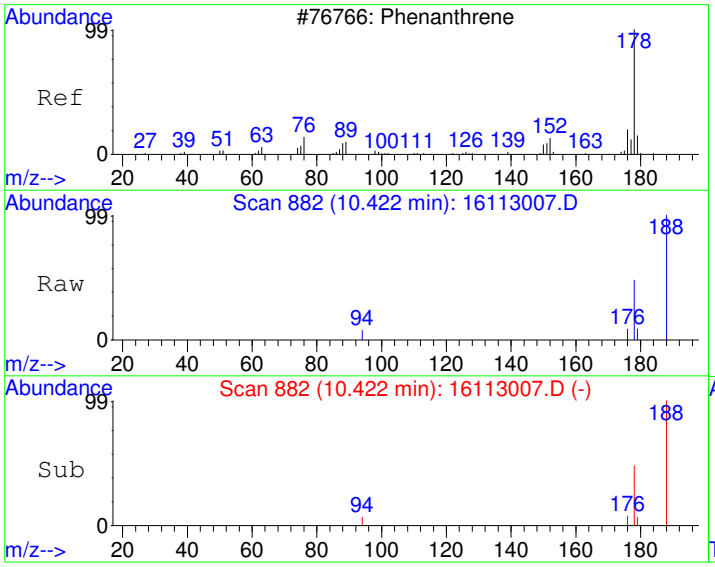
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113007.D Vial: 7
Acq On : 30 Nov 2016 6:04 pm Operator:
Sample : 1611053-07A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:50 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration

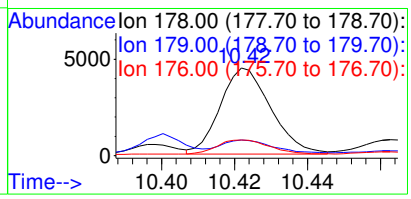


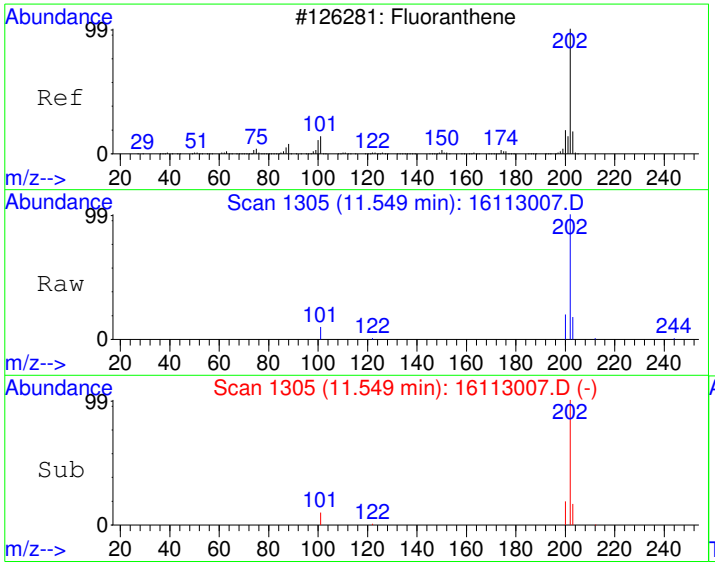


#12
Phenanthrene
Concen: 17.04 ug/kg
RT: 10.42 min Scan# 882
Delta R.T. -0.01 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:178 Resp: 4299

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	45.8
176	16.7	0.0	48.3

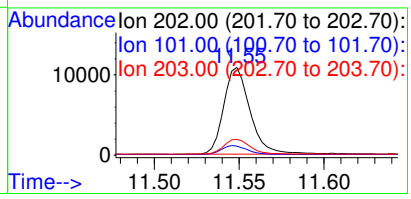


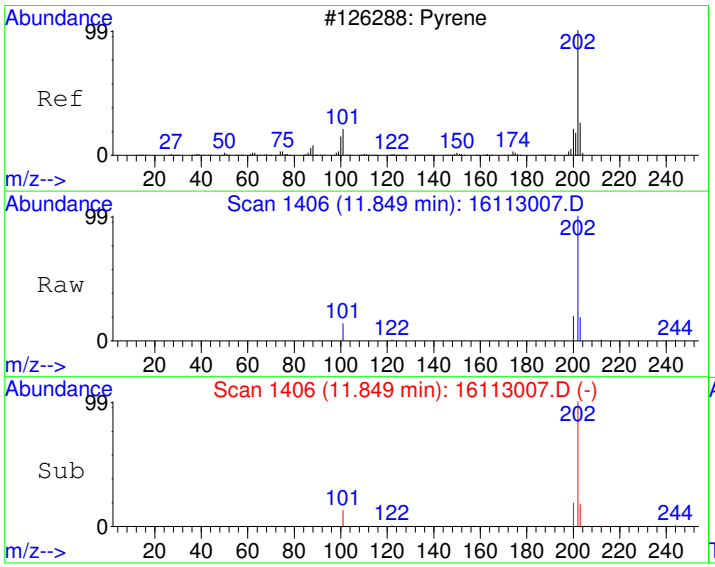


#14
Fluoranthene
Concen: 39.44 ug/kg
RT: 11.55 min Scan# 1305
Delta R.T. -0.00 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:202 Resp: 11756

Ion	Ratio	Lower	Upper
202	100		
101	9.9	0.0	40.6
203	17.0	0.0	48.0

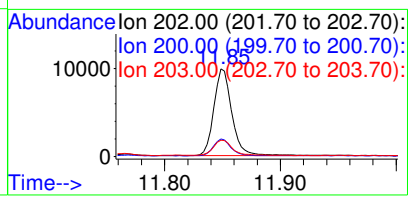


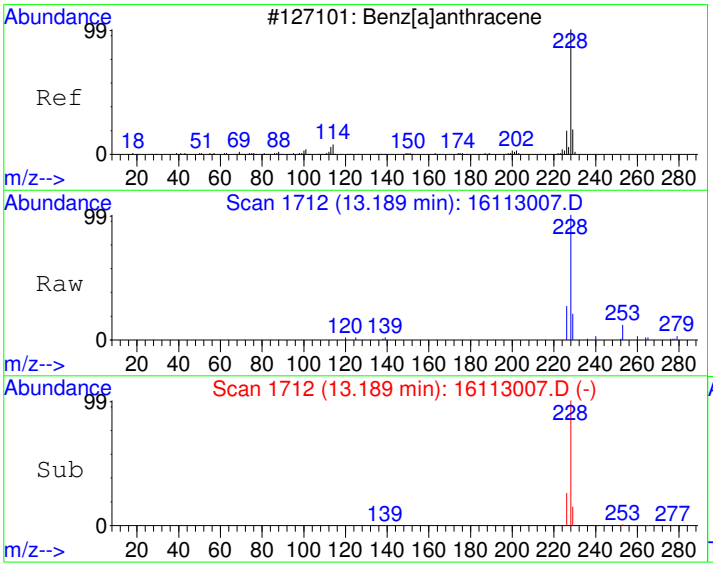


#15
Pyrene
Concen: 34.17 ug/kg
RT: 11.85 min Scan# 1406
Delta R.T. -0.01 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:202 Resp: 10576

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	17.6	0.0	47.8

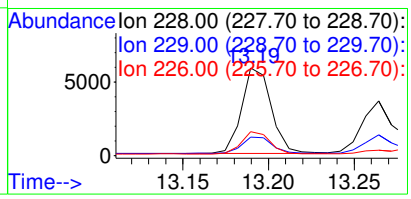


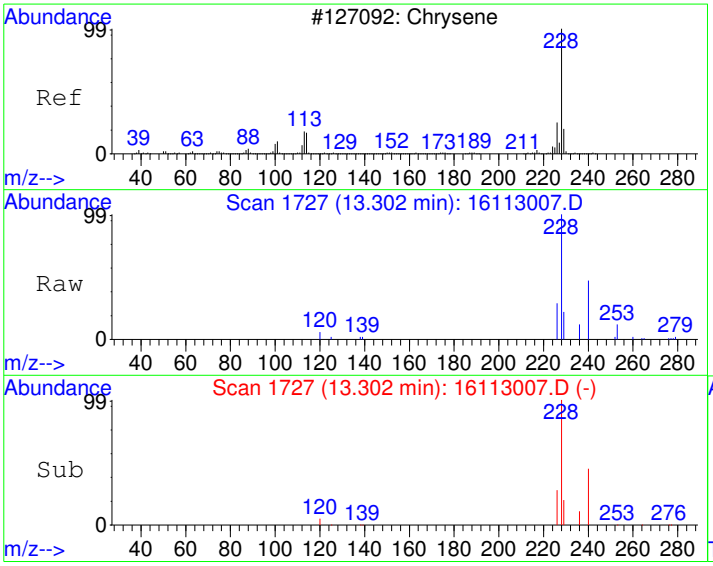


#18
Benzo[a]anthracene
Concen: 23.70 ug/kg
RT: 13.19 min Scan# 1712
Delta R.T. -0.02 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:228 Resp: 7047

Ion	Ratio	Lower	Upper
228	100		
229	19.1	0.0	50.4
226	26.5	0.0	55.6

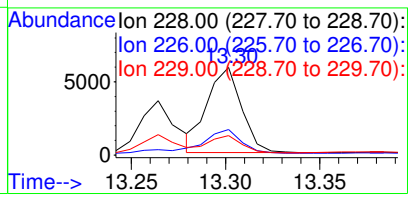


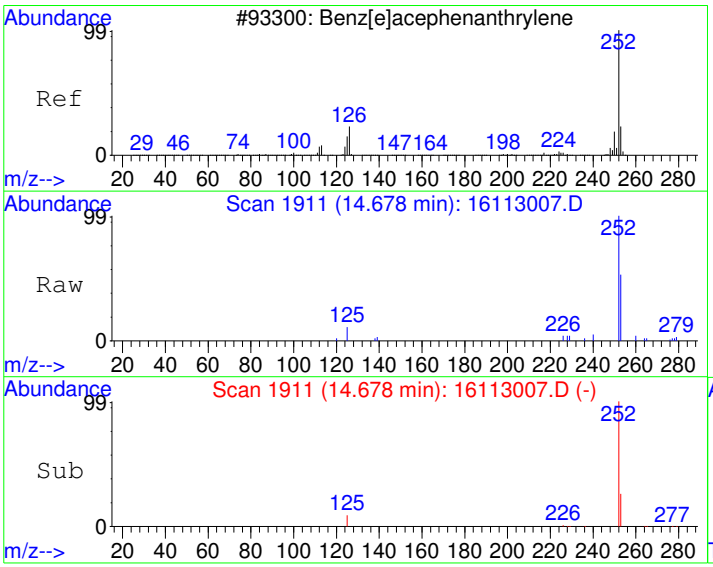


#19
Chrysene
Concen: 26.58 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.01 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:228 Resp: 7321

Ion	Ratio	Lower	Upper
228	100		
226	28.0	0.0	58.8
229	19.4	0.0	50.2

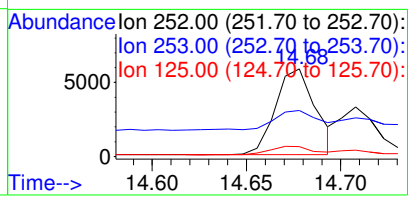


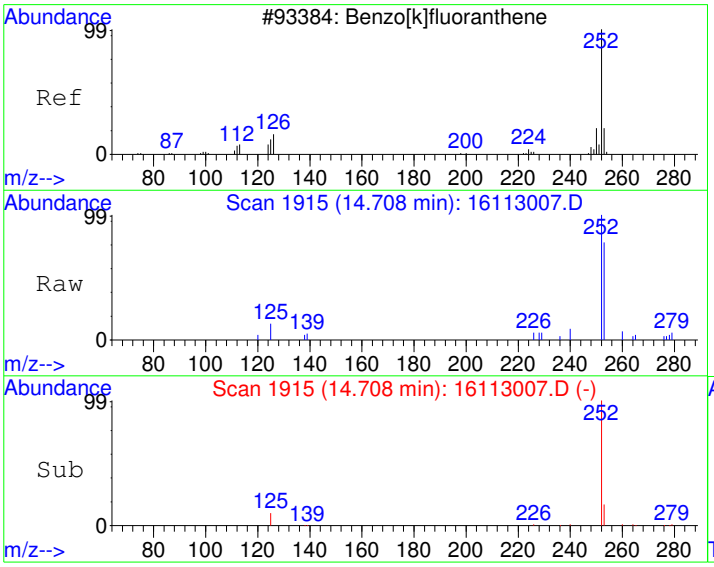


#21
Benzo[b]fluoranthene
Concen: 26.48 ug/kg
RT: 14.68 min Scan# 1911
Delta R.T. -0.01 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:252 Resp: 8593

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	52.1
125	9.3	0.0	40.5

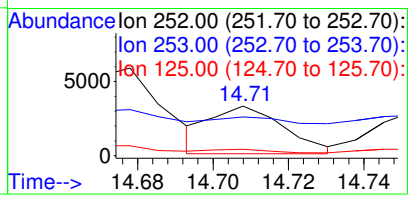


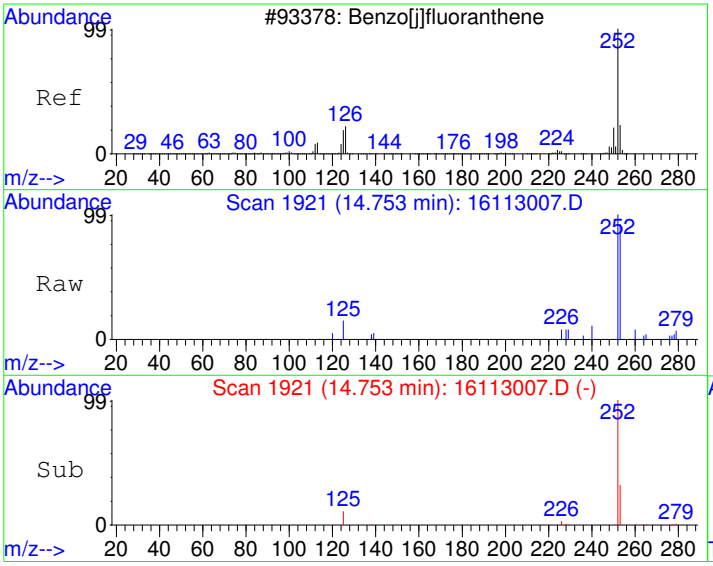


#22
Benzo[k]fluoranthene
Concen: 14.48 ug/kg
RT: 14.71 min Scan# 1915
Delta R.T. -0.02 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:252 Resp: 4330

Ion	Ratio	Lower	Upper
252	100		
253	16.3	2.4	42.4
125	8.5	0.0	28.2

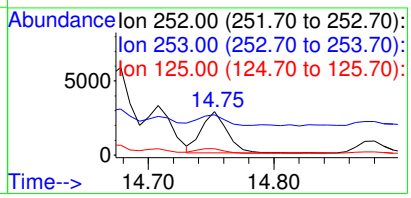


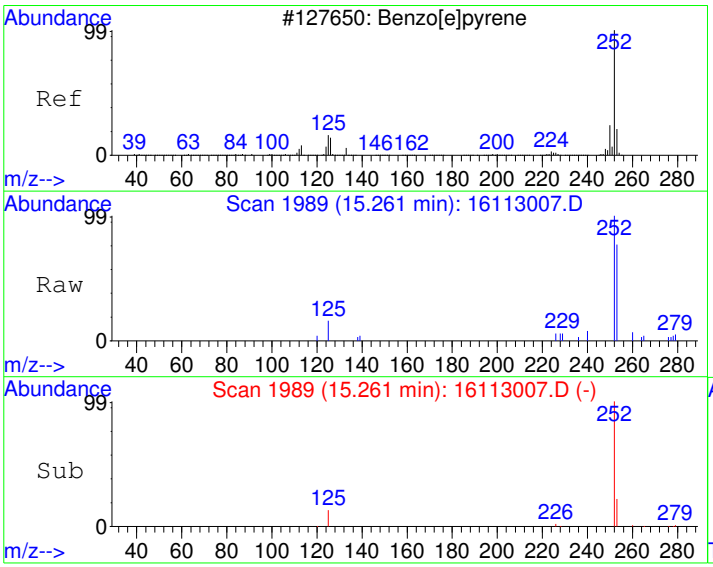


#23
Benzo(j)fluoranthene
Concen: 13.70 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.02 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:252 Resp: 3963

Ion	Ratio	Lower	Upper
252	100		
253	24.7	2.3	42.3
125	11.3	0.0	32.6

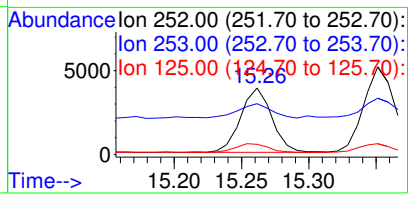


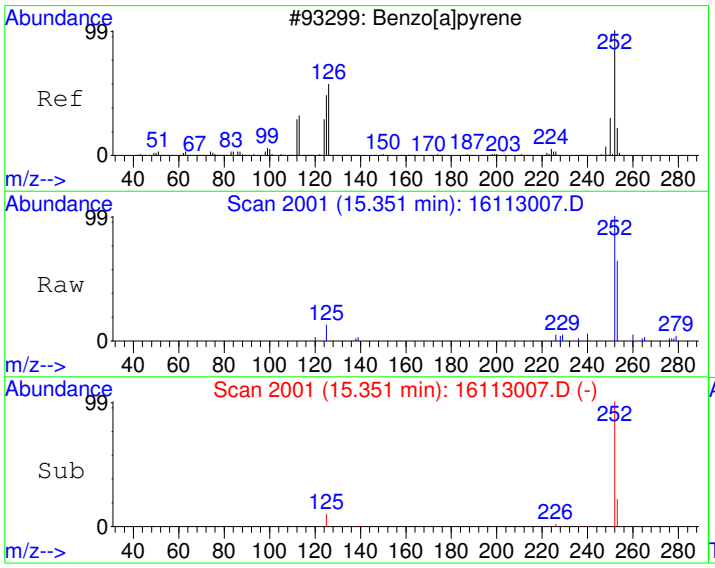


#24
Benzo[e]pyrene
Concen: 21.42 ug/kg
RT: 15.26 min Scan# 1989
Delta R.T. -0.02 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:252 Resp: 6206

Ion	Ratio	Lower	Upper
252	100		
253	21.3	1.8	41.8
125	12.6	0.0	35.7

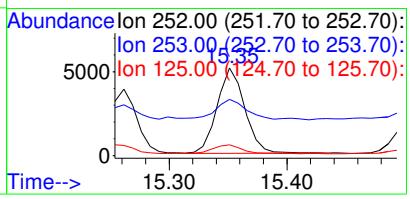


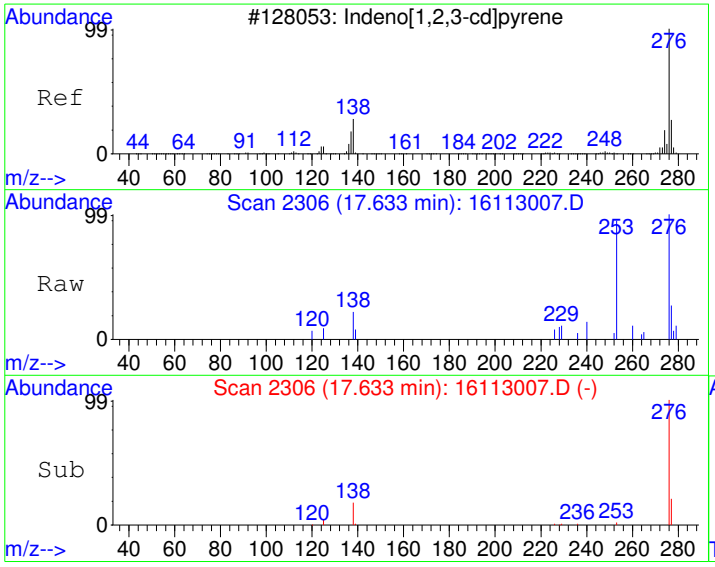


#25
Benzo[a]pyrene
Concen: 27.98 ug/kg
RT: 15.35 min Scan# 2001
Delta R.T. -0.02 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:252 Resp: 8279

Ion	Ratio	Lower	Upper
252	100		
253	22.6	2.2	42.2
125	10.5	0.0	30.8

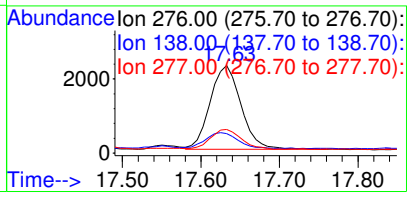


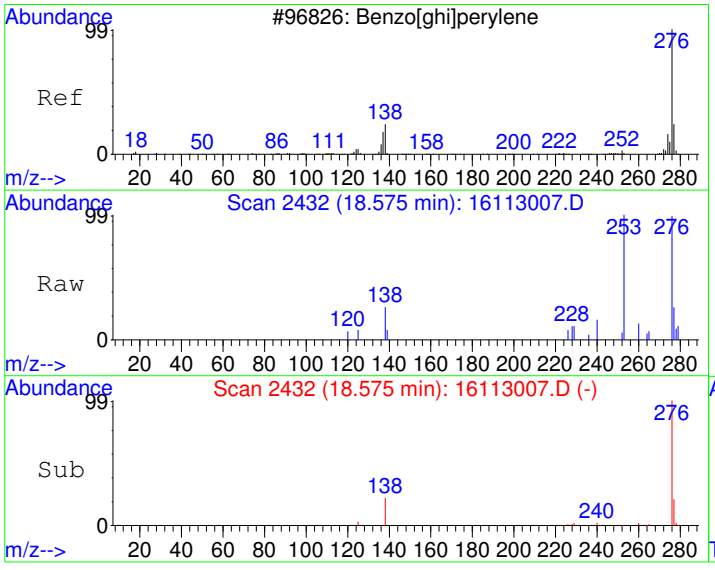


#27
Indeno[1,2,3-cd]pyrene
Concen: 20.61 ug/kg
RT: 17.63 min Scan# 2306
Delta R.T. -0.02 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:276 Resp: 6188

Ion	Ratio	Lower	Upper
276	100		
138	17.8	0.0	39.3
277	23.3	4.0	44.0

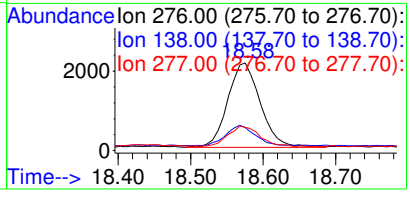




#28
Benzo[g,h,i]perylene
Concen: 20.98 ug/kg
RT: 18.58 min Scan# 2432
Delta R.T. -0.03 min
Lab File: 16113007.D
Acq: 30 Nov 2016 6:04 pm

Tgt Ion:276 Resp: 6654

Ion	Ratio	Lower	Upper
276	100		
138	21.3	0.8	40.8
277	22.8	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113008.D Vial: 8
Acq On : 30 Nov 2016 6:32 pm Operator:
Sample : 1611053-27A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:50 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

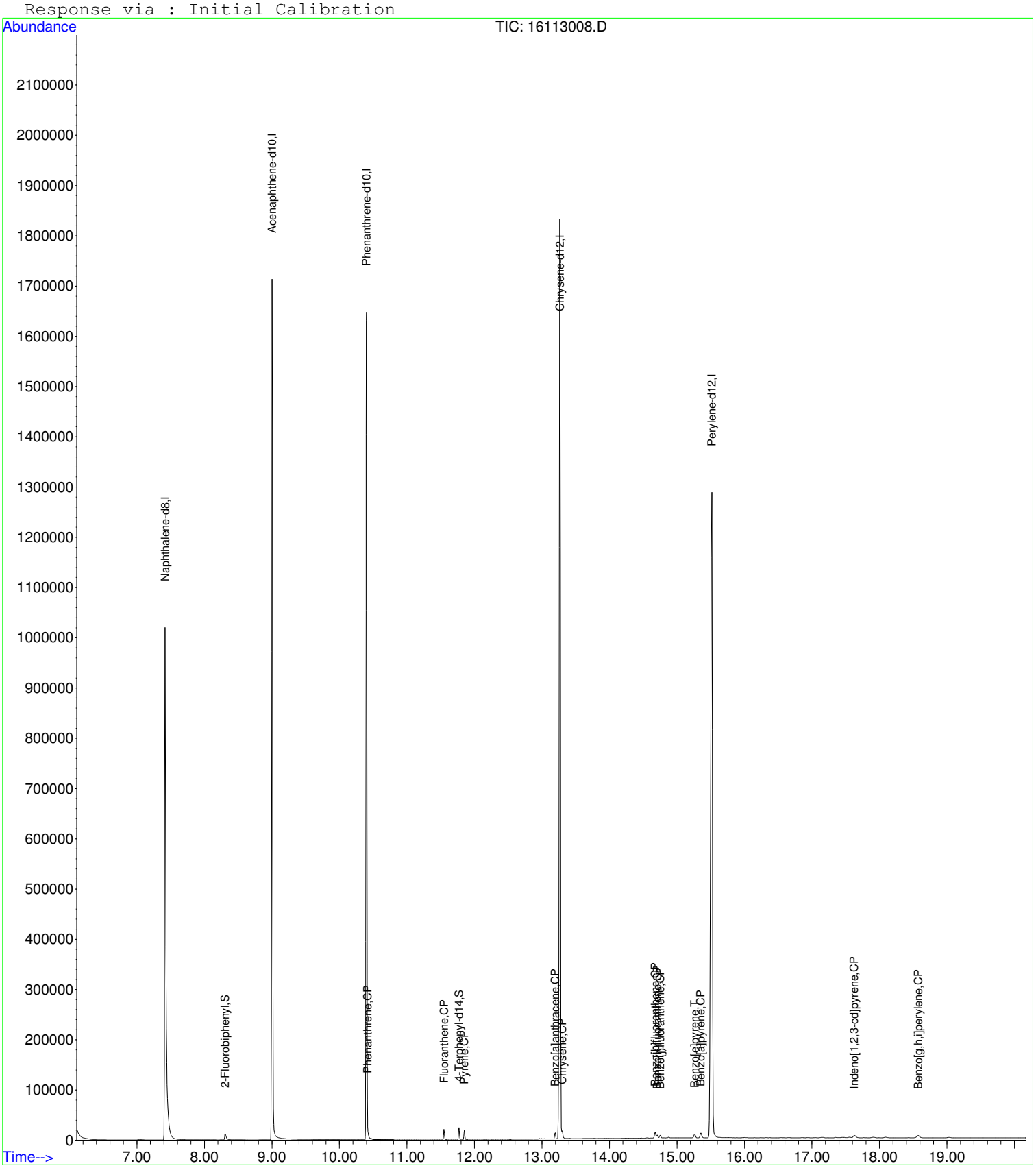
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1293010	4000.00	ug/kg	118
5) Acenaphthene-d10	9.00	164	715571	4000.00	ug/kg	113
11) Phenanthrene-d10	10.40	188	1306163	4000.00	ug/kg	109
17) Chrysene-d12	13.26	240	1557709	4000.00	ug/kg	101
20) Perylene-d12	15.52	264	1483062	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	16600	79.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.99%#		
16) 4-Terphenyl-d14	11.77	244	19278	73.49	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.84%#		
Target Compounds						Qvalue
12) Phenanthrene	10.42	178	4984	19.60	ug/kg	99
14) Fluoranthene	11.55	202	15259	50.80	ug/kg	99
15) Pyrene	11.85	202	13753	44.09	ug/kg	99
18) Benzo[a]anthracene	13.20	228	9863	32.39	ug/kg	98
19) Chrysene	13.30	228	10725	38.01	ug/kg	97
21) Benzo[b]fluoranthene	14.68	252	12486	37.91	ug/kg	96
22) Benzo[k]fluoranthene	14.71	252	6181	20.36	ug/kg	91
23) Benzo(j)fluoranthene	14.75	252	5507	18.76	ug/kg	97
24) Benzo[e]pyrene	15.26	252	9066	30.82	ug/kg	97
25) Benzo[a]pyrene	15.35	252	12164	40.51	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.63	276	8751	28.72	ug/kg	99
28) Benzo[g,h,i]perylene	18.57	276	9299	28.88	ug/kg	98

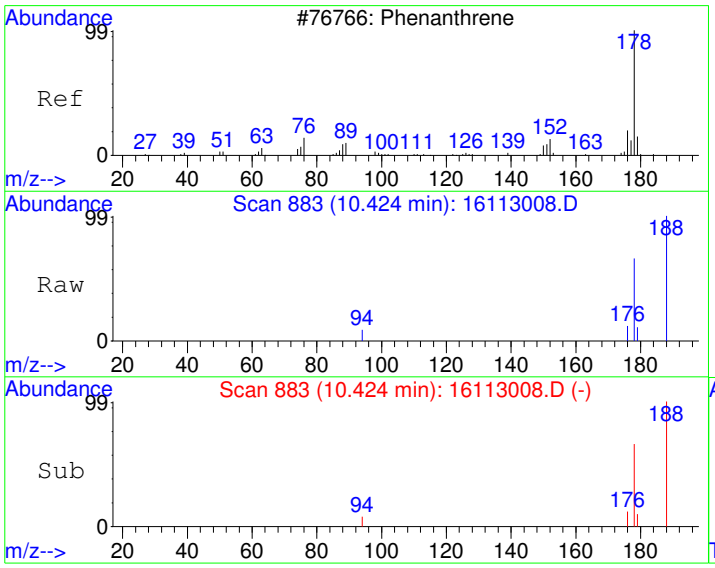
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113008.D Vial: 8
Acq On : 30 Nov 2016 6:32 pm Operator:
Sample : 1611053-27A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:50 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration

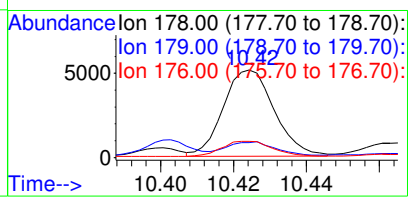


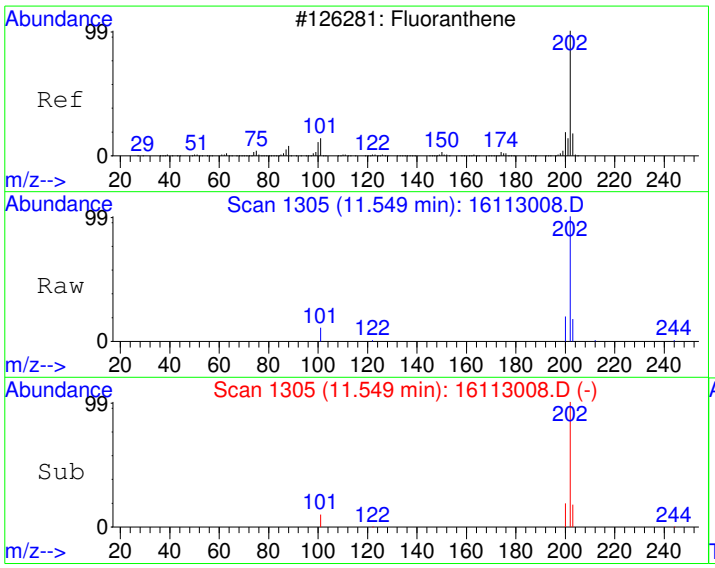


#12
Phenanthrene
Concen: 19.60 ug/kg
RT: 10.42 min Scan# 883
Delta R.T. -0.01 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:178 Resp: 4984

Ion	Ratio	Lower	Upper
178	100		
179	14.8	0.0	45.8
176	18.0	0.0	48.3

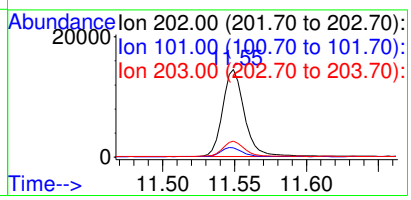


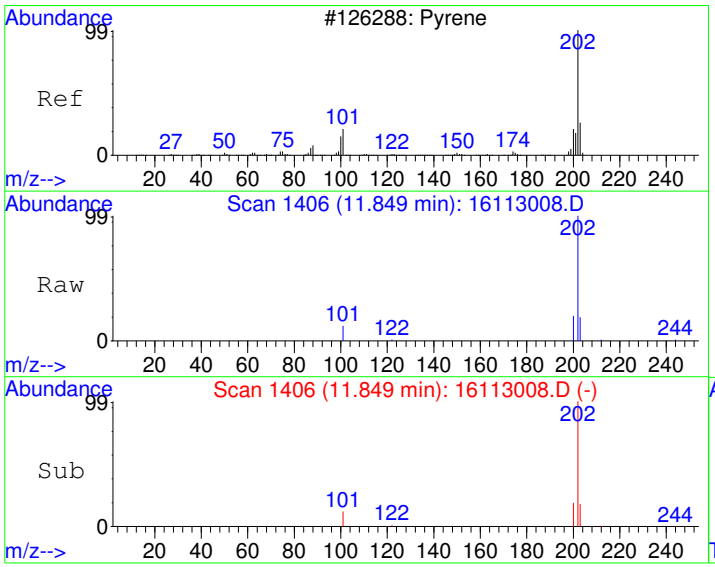


#14
Fluoranthene
Concen: 50.80 ug/kg
RT: 11.55 min Scan# 1305
Delta R.T. -0.00 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:202 Resp: 15259

Ion	Ratio	Lower	Upper
202	100		
101	10.1	0.0	40.6
203	17.4	0.0	48.0

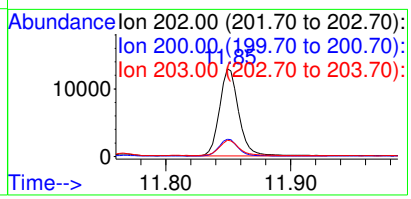


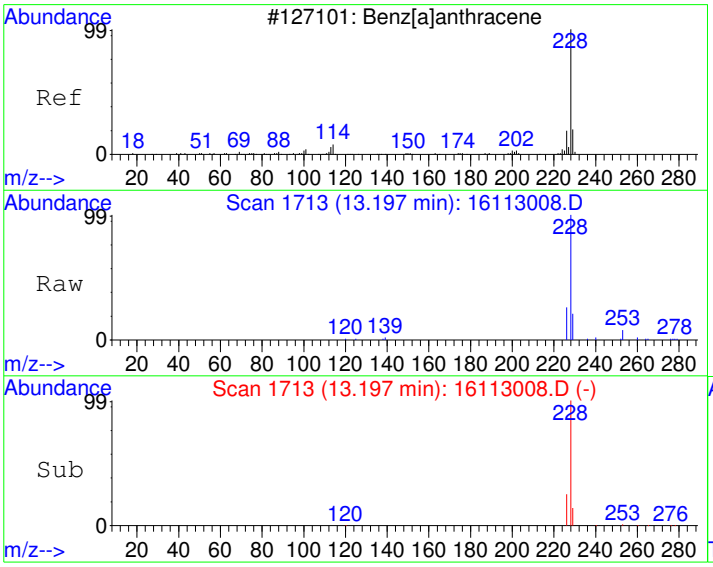


#15
Pyrene
Concen: 44.09 ug/kg
RT: 11.85 min Scan# 1406
Delta R.T. -0.01 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:202 Resp: 13753

Ion	Ratio	Lower	Upper
202	100		
200	19.3	0.0	50.1
203	17.6	0.0	47.8

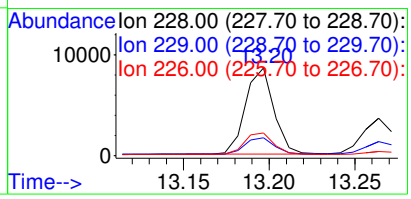


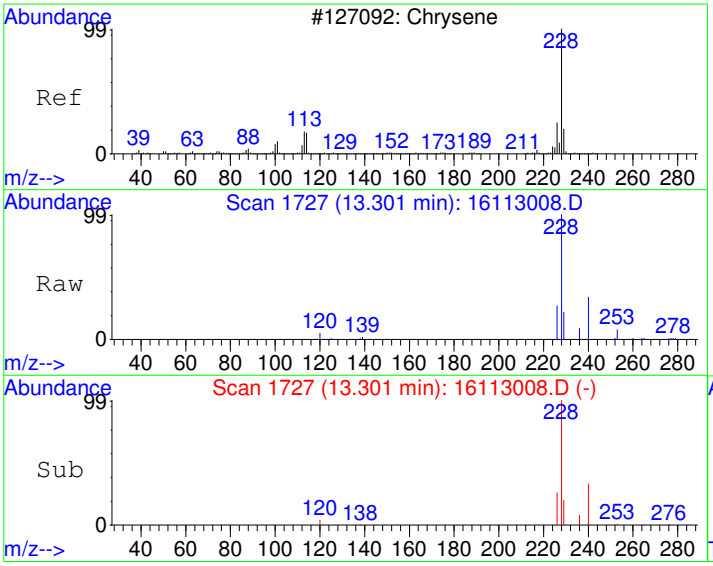


#18
Benzo[a]anthracene
Concen: 32.39 ug/kg
RT: 13.20 min Scan# 1713
Delta R.T. -0.01 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:228 Resp: 9863

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	50.4
226	25.2	0.0	55.6

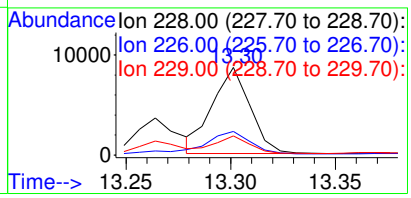


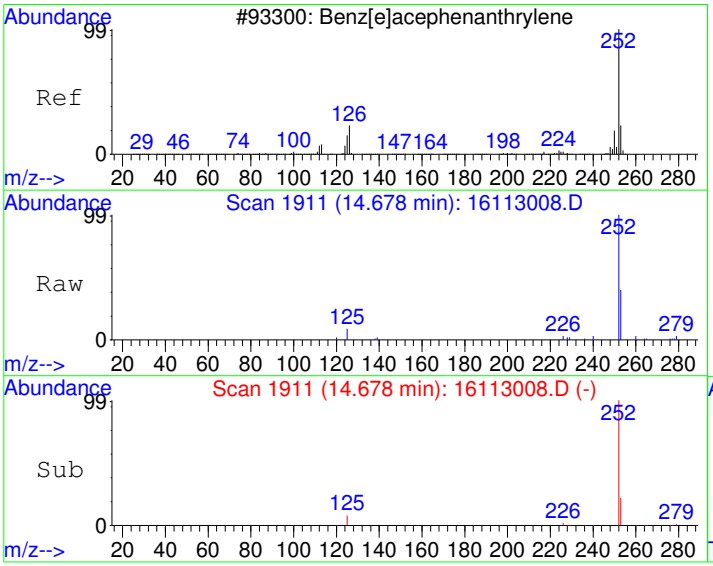


#19
Chrysene
Concen: 38.01 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.01 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:228 Resp: 10725

Ion	Ratio	Lower	Upper
228	100		
226	26.3	0.0	58.8
229	20.2	0.0	50.2

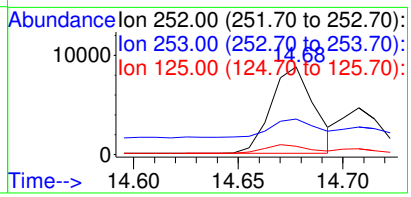


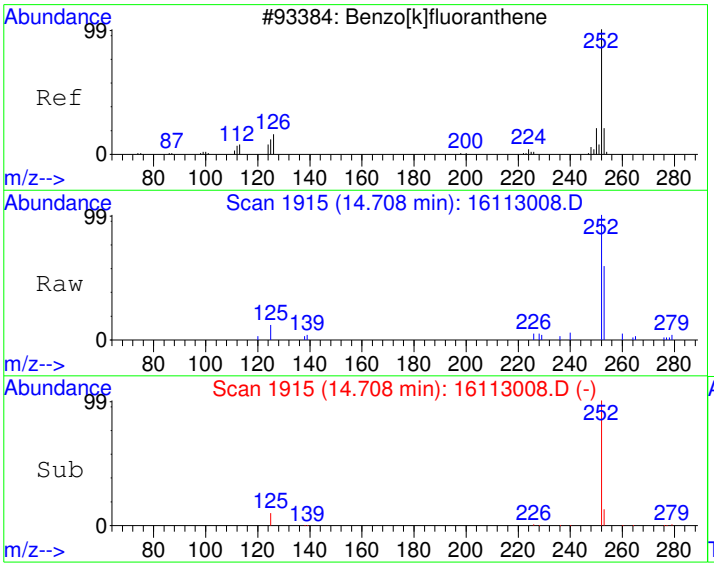


#21
Benzo[b]fluoranthene
Concen: 37.91 ug/kg
RT: 14.68 min Scan# 1911
Delta R.T. -0.01 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:252 Resp: 12486

Ion	Ratio	Lower	Upper
252	100		
253	20.7	0.0	52.1
125	8.2	0.0	40.5

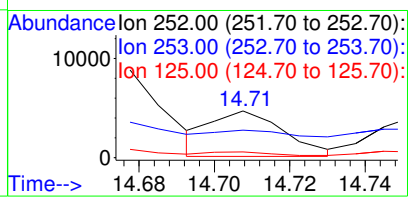


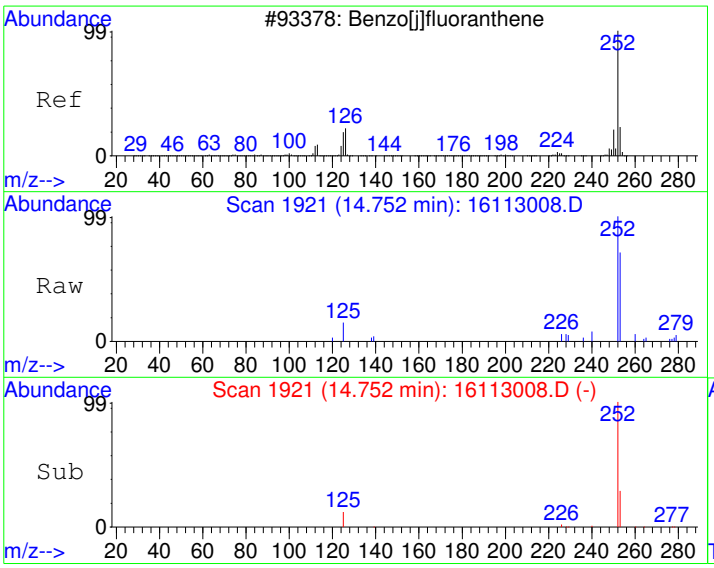


#22
Benzo[k]fluoranthene
Concen: 20.36 ug/kg
RT: 14.71 min Scan# 1915
Delta R.T. -0.02 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:252 Resp: 6181

Ion	Ratio	Lower	Upper
252	100		
253	17.2	2.4	42.4
125	9.4	0.0	28.2

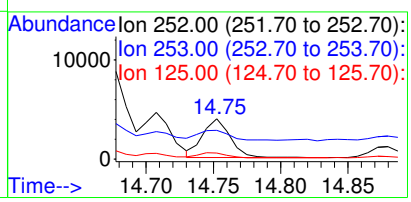


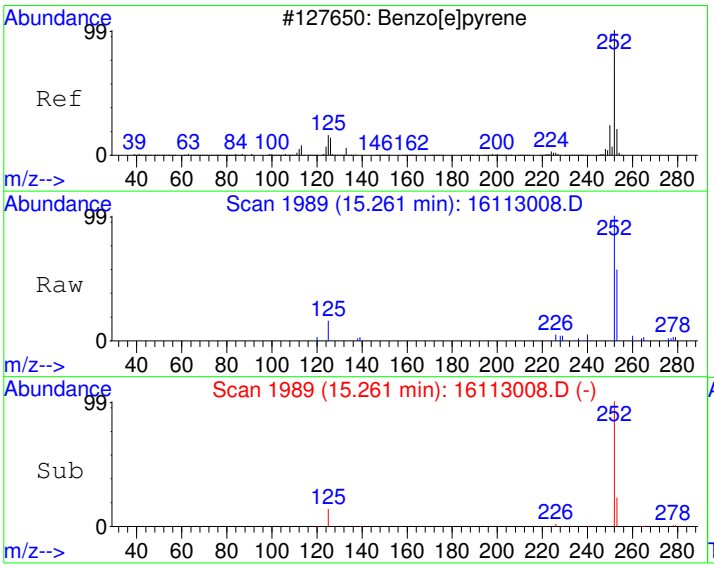


#23
Benzo(j)fluoranthene
Concen: 18.76 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.02 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:252 Resp: 5507

Ion	Ratio	Lower	Upper
252	100		
253	24.2	2.3	42.3
125	12.1	0.0	32.6

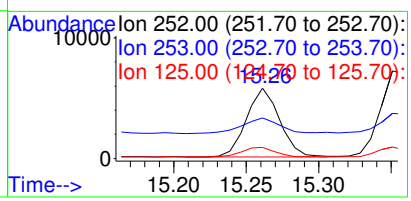


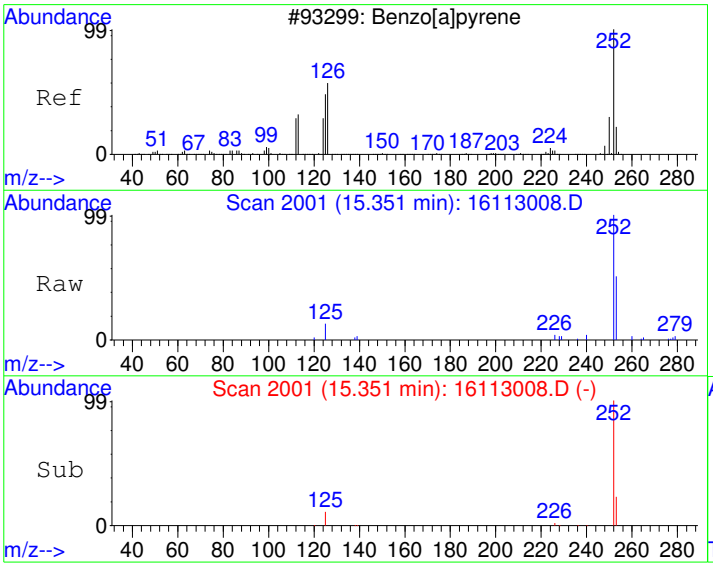


#24
Benzo[e]pyrene
Concen: 30.82 ug/kg
RT: 15.26 min Scan# 1989
Delta R.T. -0.02 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:252 Resp: 9066

Ion	Ratio	Lower	Upper
252	100		
253	22.6	1.8	41.8
125	13.6	0.0	35.7

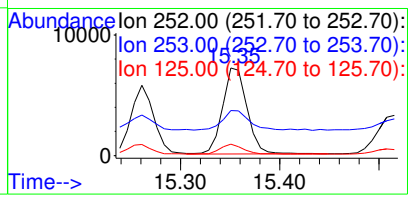


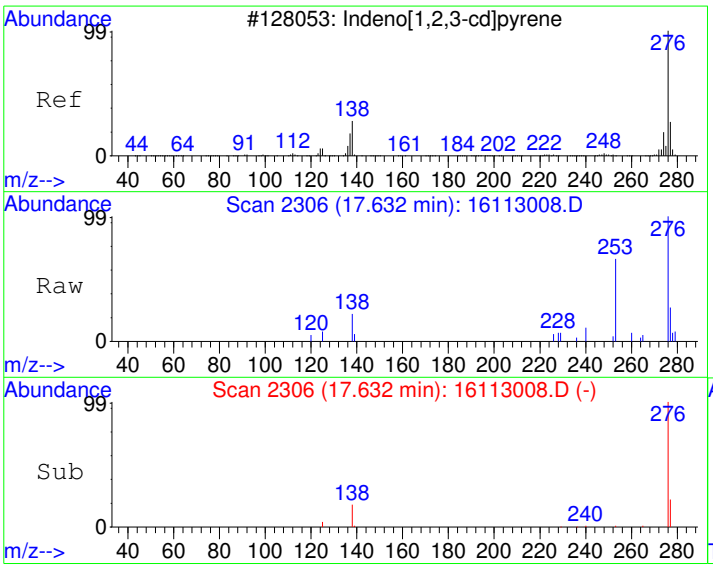


#25
Benzo[a]pyrene
Concen: 40.51 ug/kg
RT: 15.35 min Scan# 2001
Delta R.T. -0.02 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:252 Resp: 12164

Ion	Ratio	Lower	Upper
252	100		
253	22.4	2.2	42.2
125	11.4	0.0	30.8

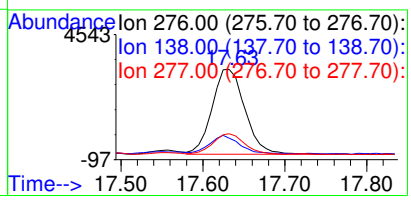


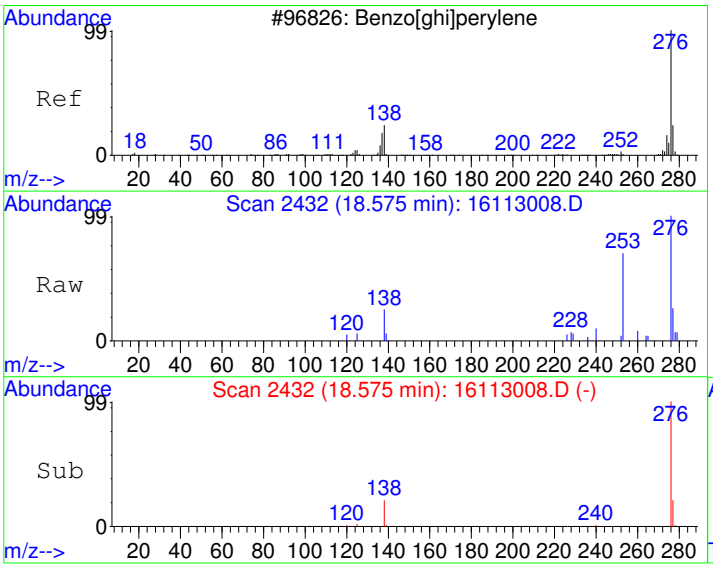


#27
Indeno[1,2,3-cd]pyrene
Concen: 28.72 ug/kg
RT: 17.63 min Scan# 2306
Delta R.T. -0.02 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:276 Resp: 8751

Ion	Ratio	Lower	Upper
276	100		
138	18.4	0.0	39.3
277	24.4	4.0	44.0

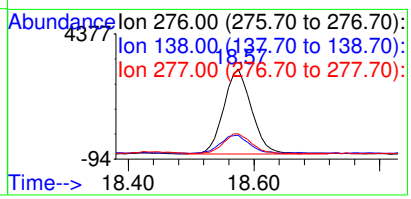




#28
Benzo[g,h,i]perylene
Concen: 28.88 ug/kg
RT: 18.57 min Scan# 2432
Delta R.T. -0.03 min
Lab File: 16113008.D
Acq: 30 Nov 2016 6:32 pm

Tgt Ion:276 Resp: 9299

Ion	Ratio	Lower	Upper
276	100		
138	21.5	0.8	40.8
277	22.9	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113009.D Vial: 9
Acq On : 30 Nov 2016 7:00 pm Operator:
Sample : 1611053-32A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:50 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

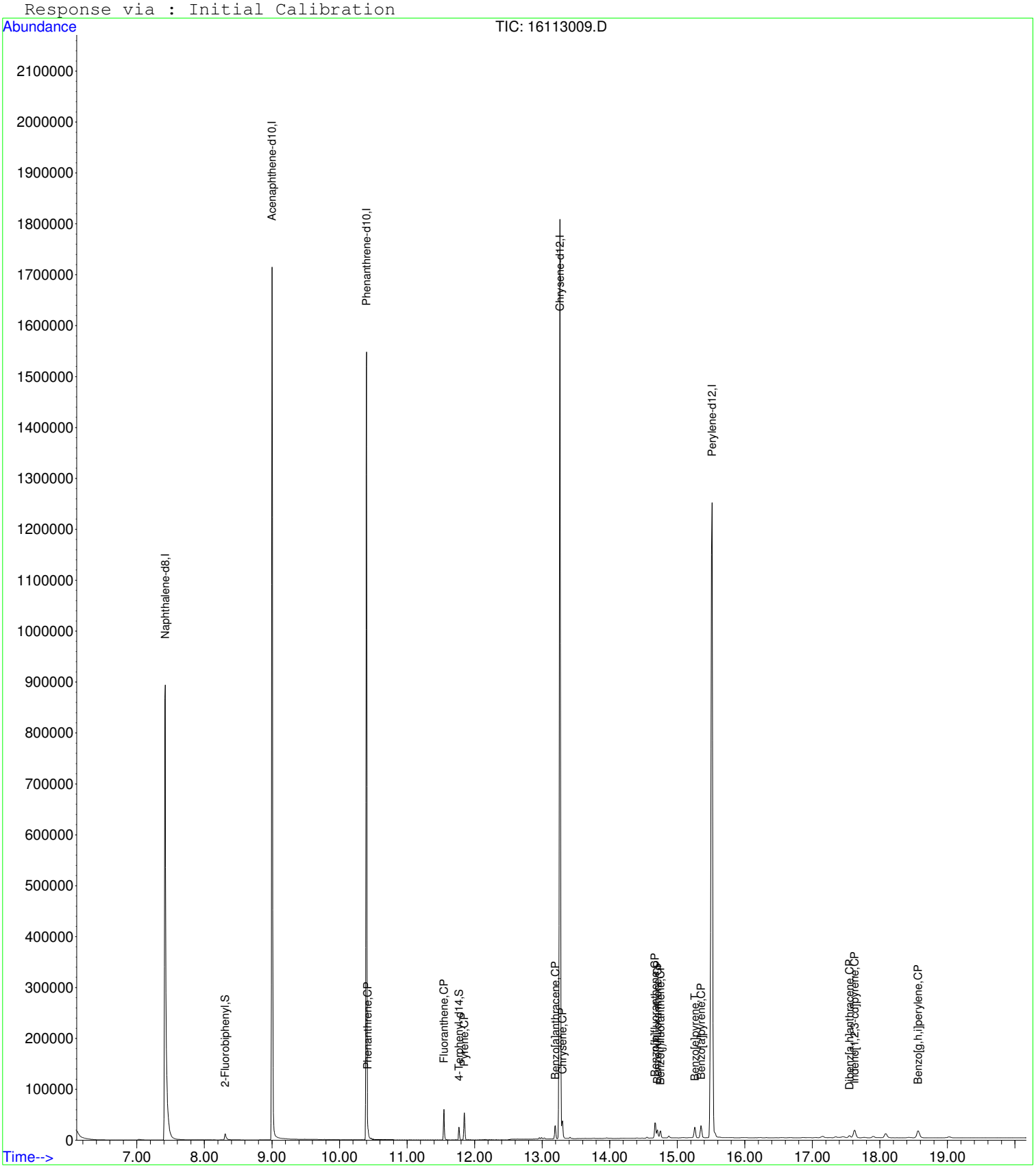
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1249334	4000.00	ug/kg	114
5) Acenaphthene-d10	9.00	164	685482	4000.00	ug/kg	108
11) Phenanthrene-d10	10.40	188	1263388	4000.00	ug/kg	105
17) Chrysene-d12	13.26	240	1511453	4000.00	ug/kg	98
20) Perylene-d12	15.52	264	1446171	4000.00	ug/kg	95
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	16087	80.36	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.01%#		
16) 4-Terphenyl-d14	11.77	244	18996	74.86	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.87%#		
Target Compounds						Qvalue
12) Phenanthrene	10.42	178	8881	36.10	ug/kg	99
14) Fluoranthene	11.55	202	40854	140.61	ug/kg	99
15) Pyrene	11.85	202	36607	121.32	ug/kg	98
18) Benzo[a]anthracene	13.20	228	22449	75.97	ug/kg	98
19) Chrysene	13.30	228	33568	122.62	ug/kg	98
21) Benzo[b]fluoranthene	14.67	252	33999	105.86	ug/kg	99
22) Benzo[k]fluoranthene	14.71	252	15371	51.93	ug/kg	89
23) Benzo(j)fluoranthene	14.75	252	14158	49.45	ug/kg	96
24) Benzo[e]pyrene	15.26	252	23792	82.95	ug/kg	96
25) Benzo[a]pyrene	15.35	252	29255	99.91	ug/kg	100
26) Dibenz[a,h]anthracene	17.55	278	5313	17.27	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.62	276	26399	88.84	ug/kg	99
28) Benzo[g,h,i]perylene	18.57	276	26432	84.18	ug/kg	100

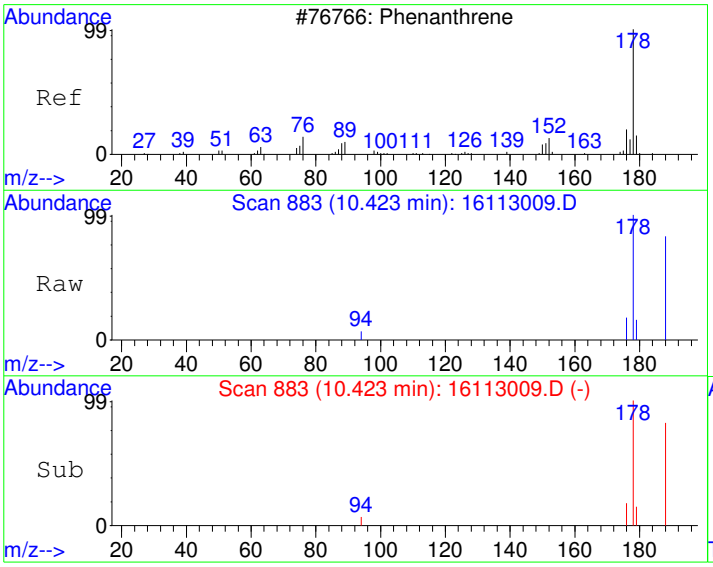
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113009.D Vial: 9
Acq On : 30 Nov 2016 7:00 pm Operator:
Sample : 1611053-32A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:50 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration

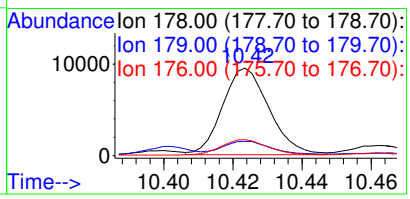


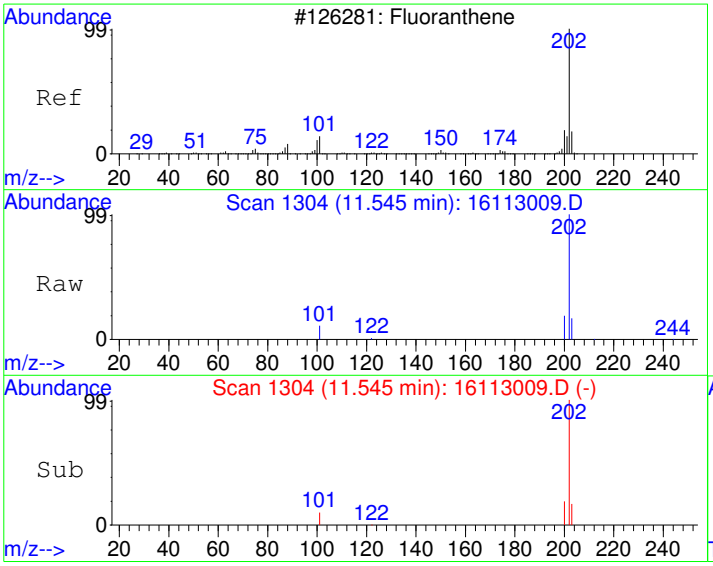


#12
Phenanthrene
Concen: 36.10 ug/kg
RT: 10.42 min Scan# 883
Delta R.T. -0.01 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:178 Resp: 8881

Ion	Ratio	Lower	Upper
178	100		
179	15.3	0.0	45.8
176	17.9	0.0	48.3

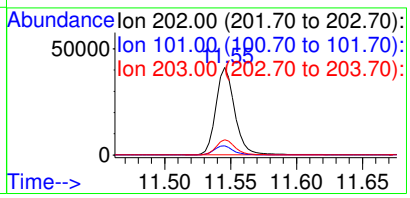


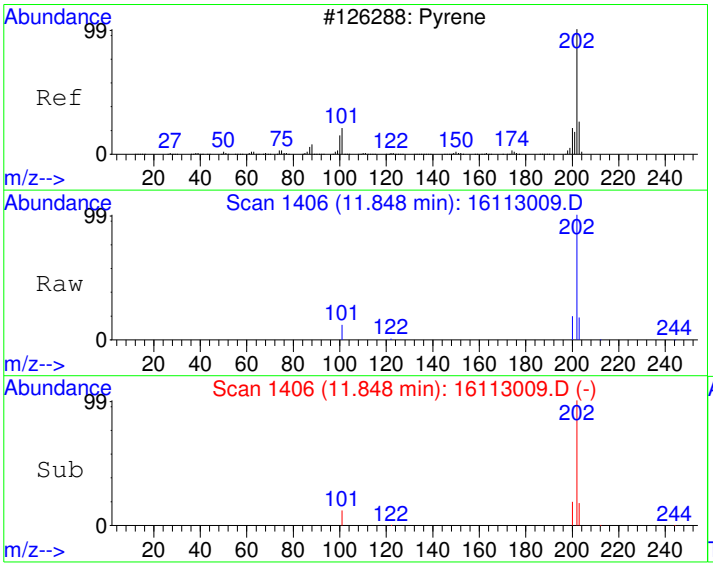


#14
Fluoranthene
Concen: 140.61 ug/kg
RT: 11.55 min Scan# 1304
Delta R.T. -0.01 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:202 Resp: 40854

Ion	Ratio	Lower	Upper
202	100		
101	10.4	0.0	40.6
203	17.2	0.0	48.0

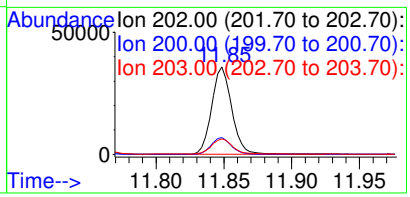


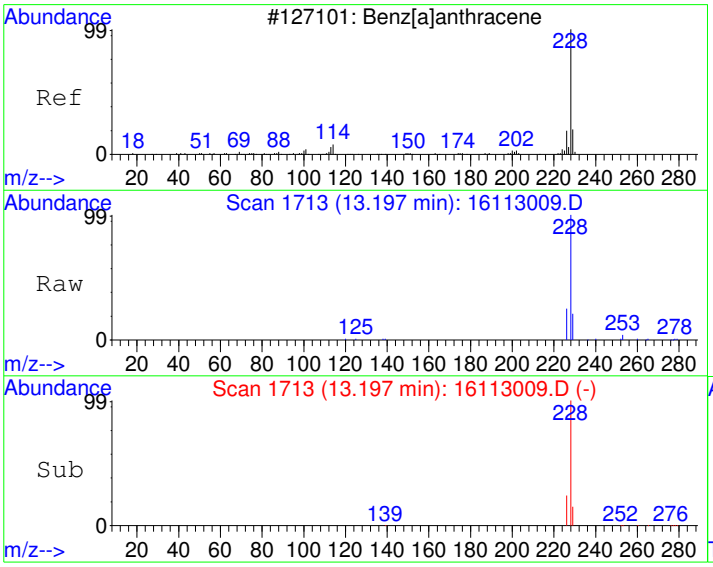


#15
Pyrene
Concen: 121.32 ug/kg
RT: 11.85 min Scan# 1406
Delta R.T. -0.01 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:202 Resp: 36607

Ion	Ratio	Lower	Upper
202	100		
200	19.1	0.0	50.1
203	17.4	0.0	47.8

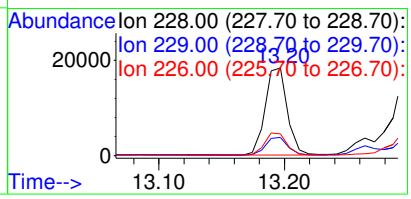


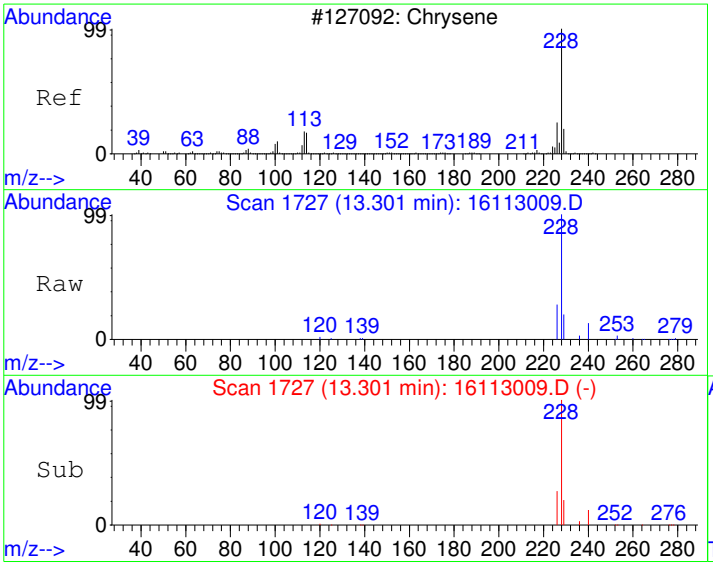


#18
Benzo[a]anthracene
Concen: 75.97 ug/kg
RT: 13.20 min Scan# 1713
Delta R.T. -0.01 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:228 Resp: 22449

Ion	Ratio	Lower	Upper
228	100		
229	19.8	0.0	50.4
226	24.3	0.0	55.6

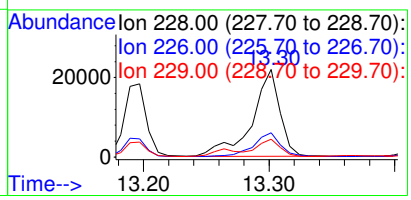


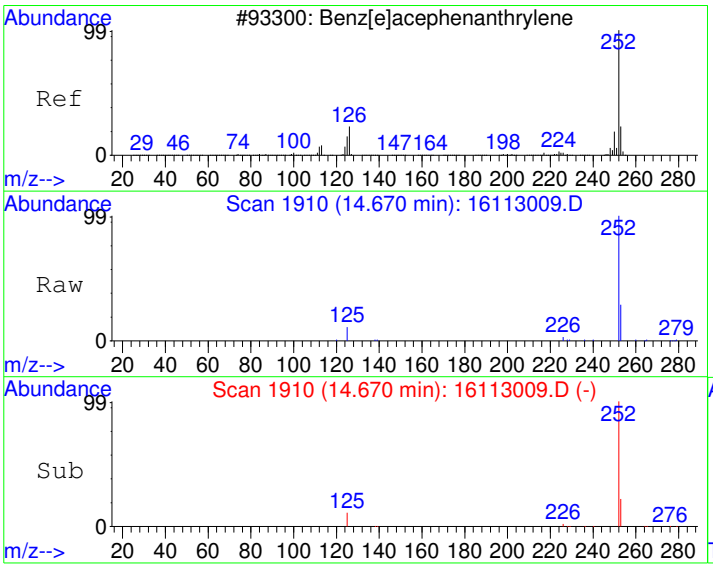


#19
Chrysene
Concen: 122.62 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.01 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:228 Resp: 33568

Ion	Ratio	Lower	Upper
228	100		
226	27.5	0.0	58.8
229	19.9	0.0	50.2

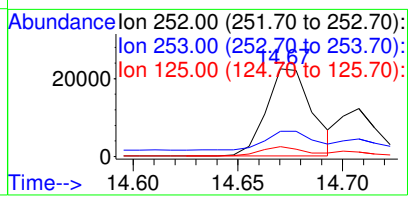


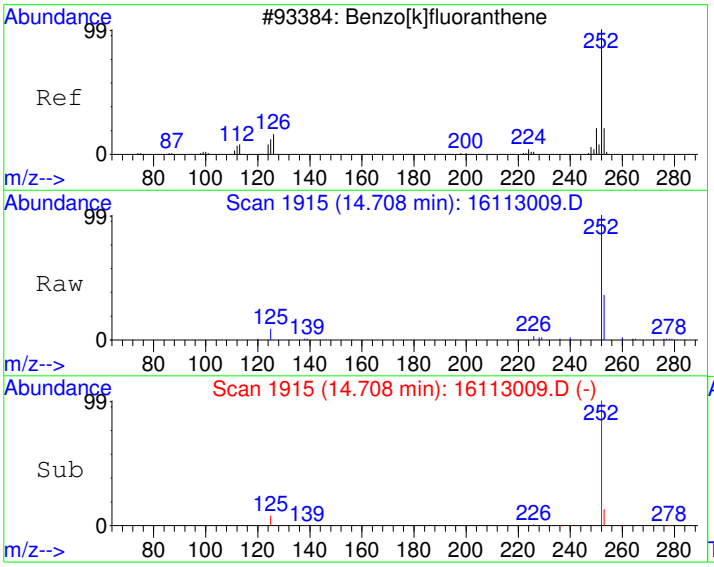


#21
Benzo[b]fluoranthene
Concen: 105.86 ug/kg
RT: 14.67 min Scan# 1910
Delta R.T. -0.01 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:252 Resp: 33999

Ion	Ratio	Lower	Upper
252	100		
253	21.4	0.0	52.1
125	10.8	0.0	40.5

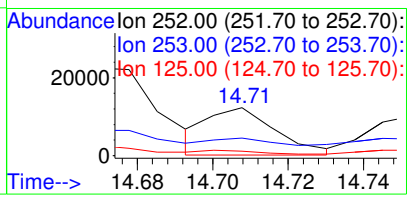


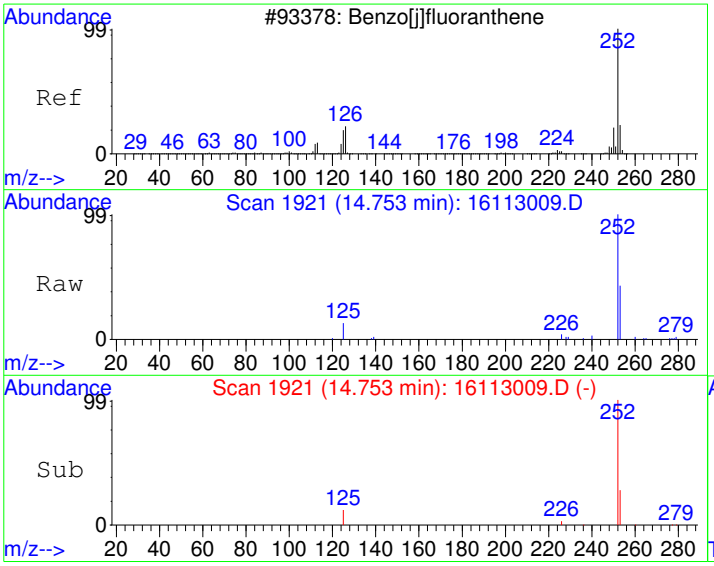


#22
Benzo[k]fluoranthene
Concen: 51.93 ug/kg
RT: 14.71 min Scan# 1915
Delta R.T. -0.02 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:252 Resp: 15371

Ion	Ratio	Lower	Upper
252	100		
253	15.8	2.4	42.4
125	6.7	0.0	28.2

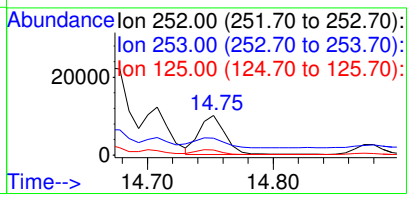


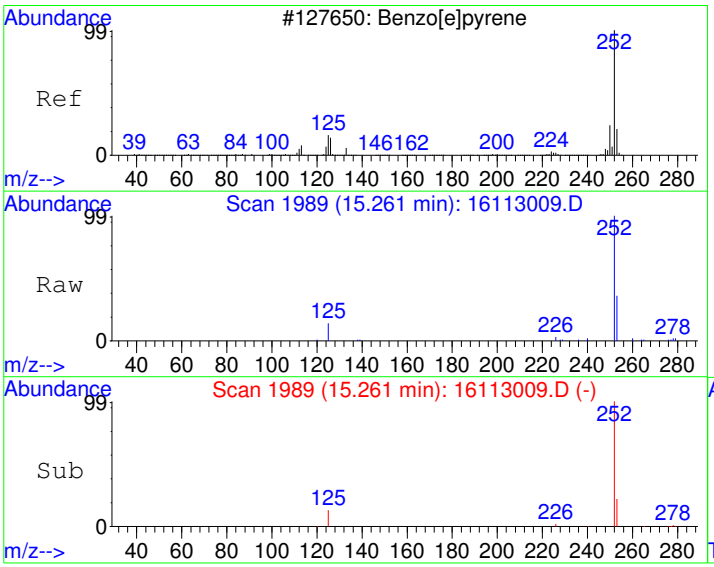


#23
Benzo(j)fluoranthene
Concen: 49.45 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.02 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:252 Resp: 14158

Ion	Ratio	Lower	Upper
252	100		
253	24.7	2.3	42.3
125	11.8	0.0	32.6

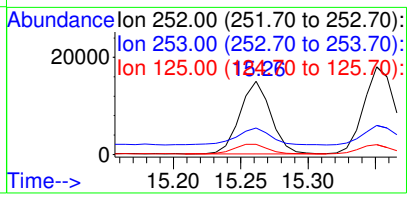


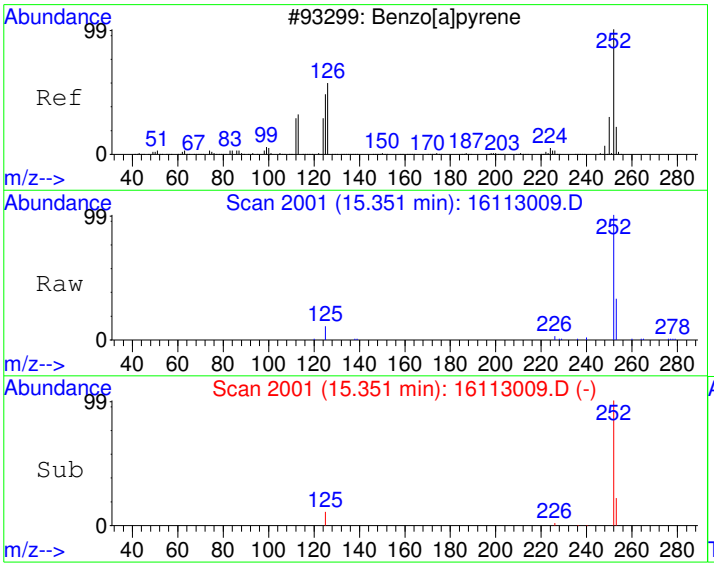


#24
Benzo[e]pyrene
Concen: 82.95 ug/kg
RT: 15.26 min Scan# 1989
Delta R.T. -0.02 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:252 Resp: 23792

Ion	Ratio	Lower	Upper
252	100		
253	23.1	1.8	41.8
125	13.3	0.0	35.7

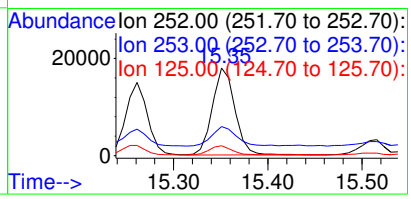


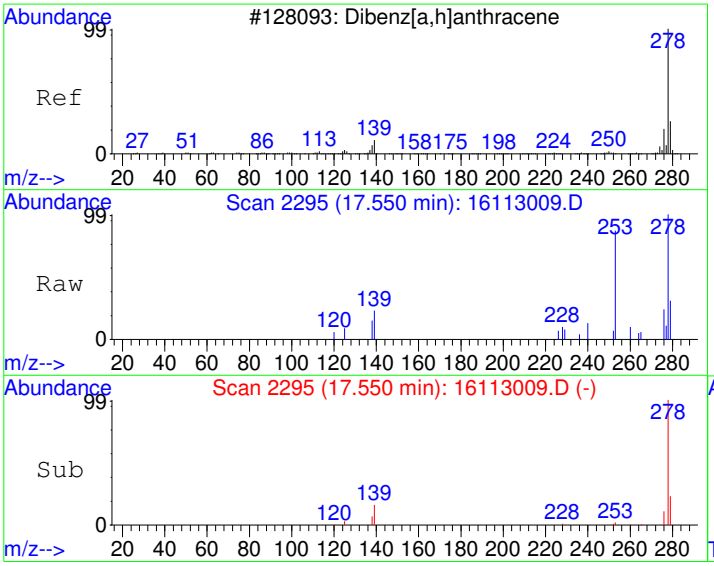


#25
Benzo[a]pyrene
Concen: 99.91 ug/kg
RT: 15.35 min Scan# 2001
Delta R.T. -0.02 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:252 Resp: 29255

Ion	Ratio	Lower	Upper
252	100		
253	22.4	2.2	42.2
125	10.7	0.0	30.8

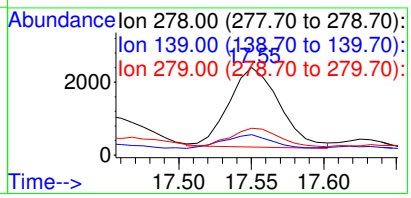


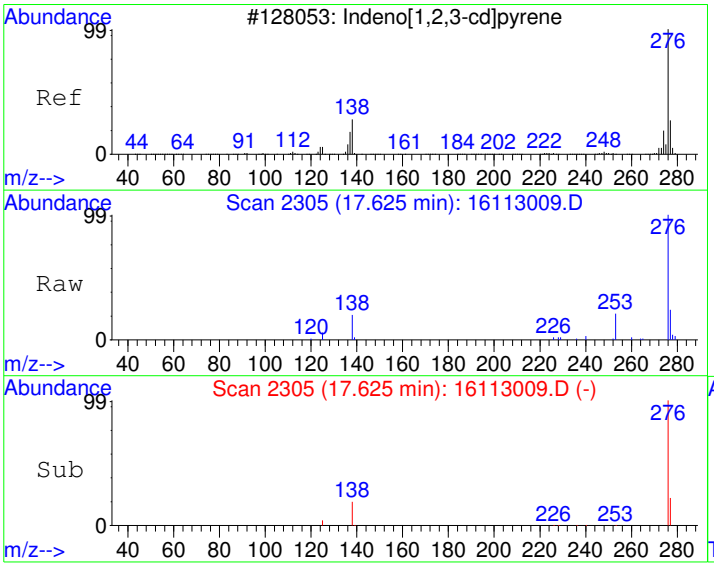


#26
Dibenz[a,h]anthracene
Concen: 17.27 ug/kg
RT: 17.55 min Scan# 2295
Delta R.T. -0.03 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:278 Resp: 5313

Ion	Ratio	Lower	Upper
278	100		
139	17.9	0.0	35.8
279	24.2	4.2	44.2

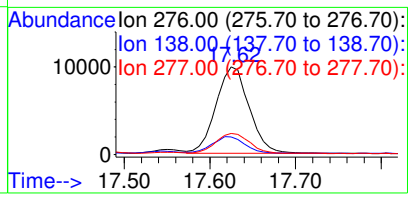


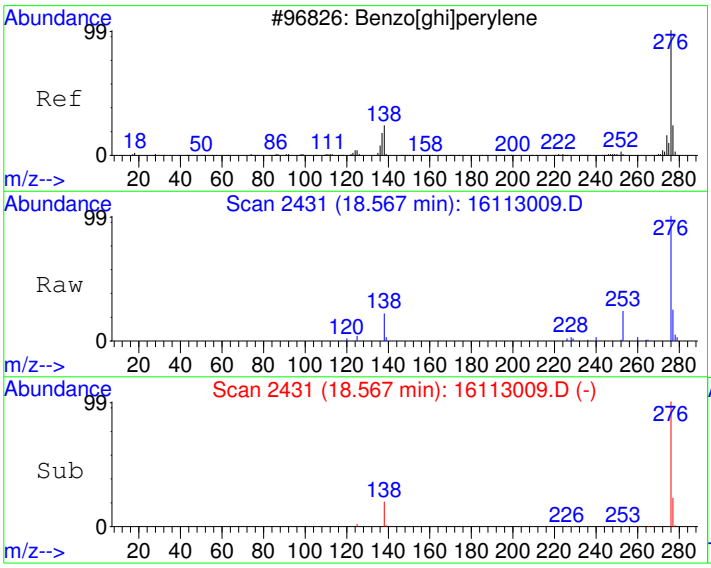


#27
Indeno[1,2,3-cd]pyrene
Concen: 88.84 ug/kg
RT: 17.62 min Scan# 2305
Delta R.T. -0.03 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:276 Resp: 26399

Ion	Ratio	Lower	Upper
276	100		
138	18.8	0.0	39.3
277	23.3	4.0	44.0

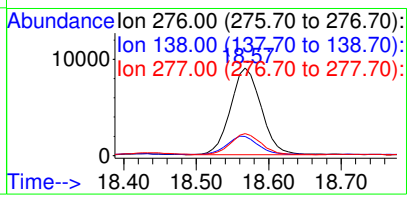




#28
Benzo[g,h,i]perylene
Concen: 84.18 ug/kg
RT: 18.57 min Scan# 2431
Delta R.T. -0.04 min
Lab File: 16113009.D
Acq: 30 Nov 2016 7:00 pm

Tgt Ion:276 Resp: 26432

Ion	Ratio	Lower	Upper
276	100		
138	20.9	0.8	40.8
277	24.1	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113011.D Vial: 11
Acq On : 30 Nov 2016 7:56 pm Operator:
Sample : 1611053-02A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:51 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

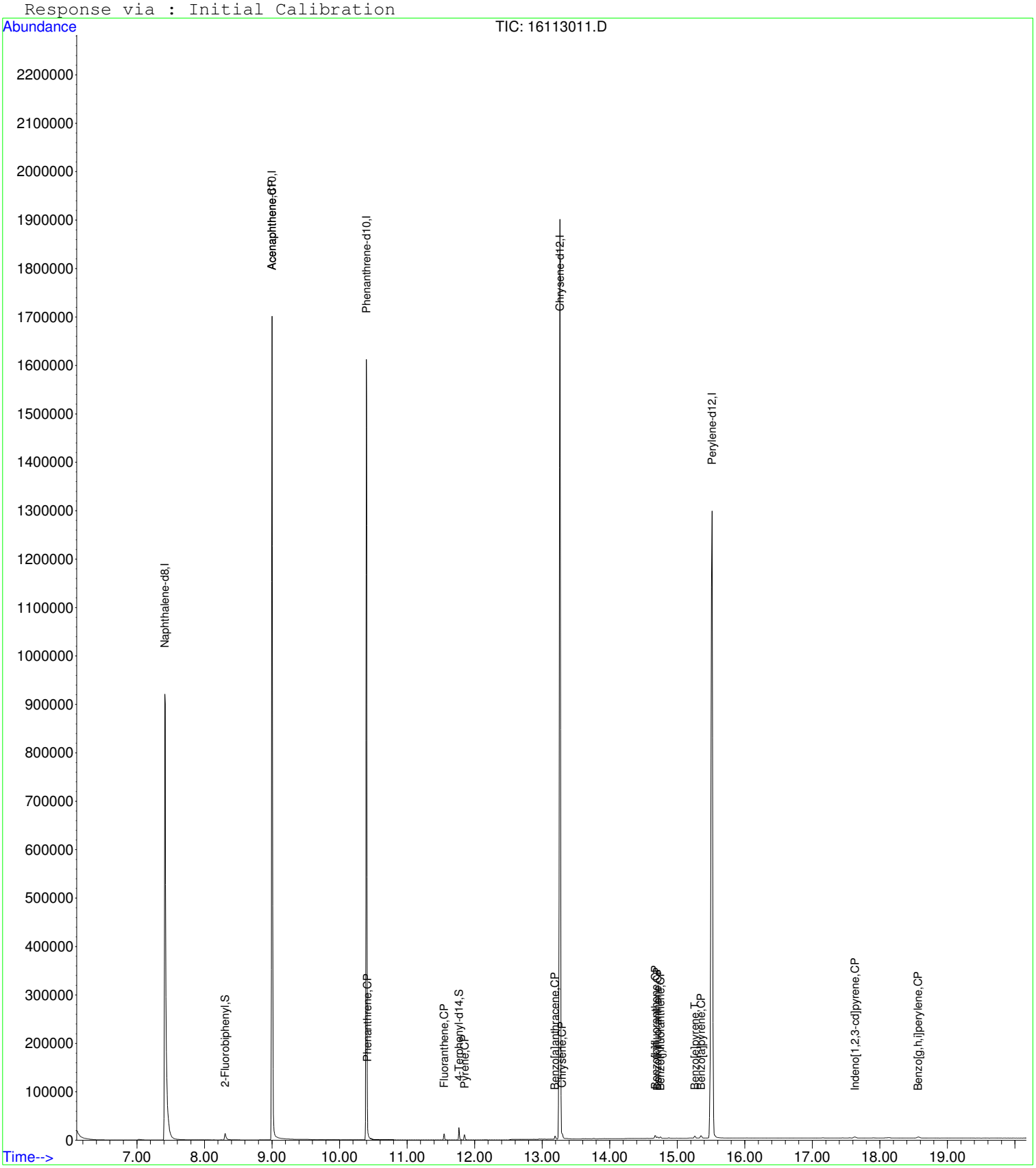
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.41	136	1280984	4000.00	ug/kg	117
5) Acenaphthene-d10	9.00	164	705726	4000.00	ug/kg	111
11) Phenanthrene-d10	10.40	188	1288629	4000.00	ug/kg	107
17) Chrysene-d12	13.26	240	1558798	4000.00	ug/kg	101
20) Perylene-d12	15.52	264	1490998	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	17060	82.77	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.07%#		
16) 4-Terphenyl-d14	11.77	244	20053	77.48	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.94%#		
Target Compounds						Qvalue
9) Acenaphthene	9.00	154	2269	15.21	ug/kg#	10
12) Phenanthrene	10.42	178	3603	14.36	ug/kg	98
14) Fluoranthene	11.55	202	9300	31.38	ug/kg	99
15) Pyrene	11.85	202	8278	26.90	ug/kg	98
18) Benzo[a]anthracene	13.19	228	5454	17.90	ug/kg	98
19) Chrysene	13.30	228	5522	19.56	ug/kg	97
21) Benzo[b]fluoranthene	14.68	252	6501	19.63	ug/kg	96
22) Benzo[k]fluoranthene	14.71	252	3195	10.47	ug/kg	84
23) Benzo(j)fluoranthene	14.75	252	2905	9.84	ug/kg	93
24) Benzo[e]pyrene	15.26	252	4667	15.78	ug/kg	97
25) Benzo[a]pyrene	15.35	252	6287	20.82	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.63	276	4592	14.99	ug/kg	97
28) Benzo[g,h,i]perylene	18.57	276	4858	15.01	ug/kg	98

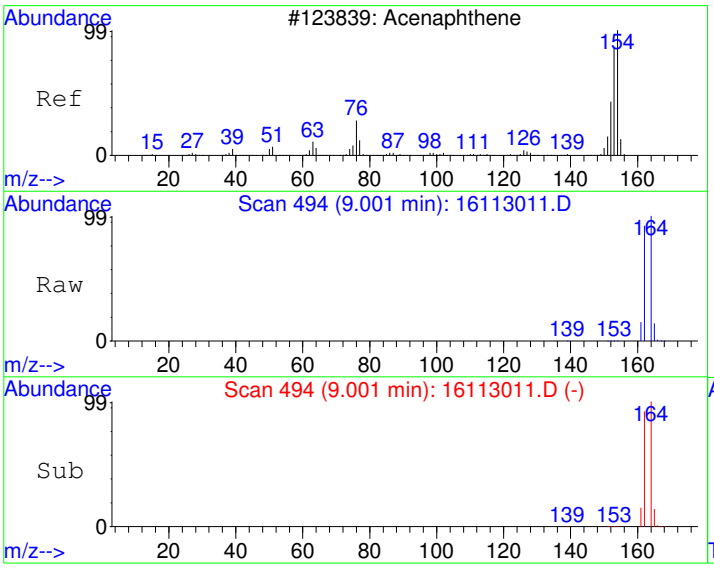
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113011.D Vial: 11
Acq On : 30 Nov 2016 7:56 pm Operator:
Sample : 1611053-02A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:51 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration

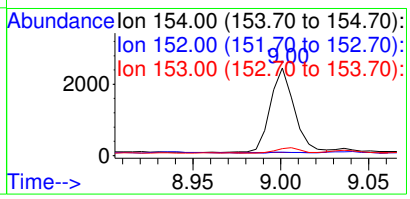


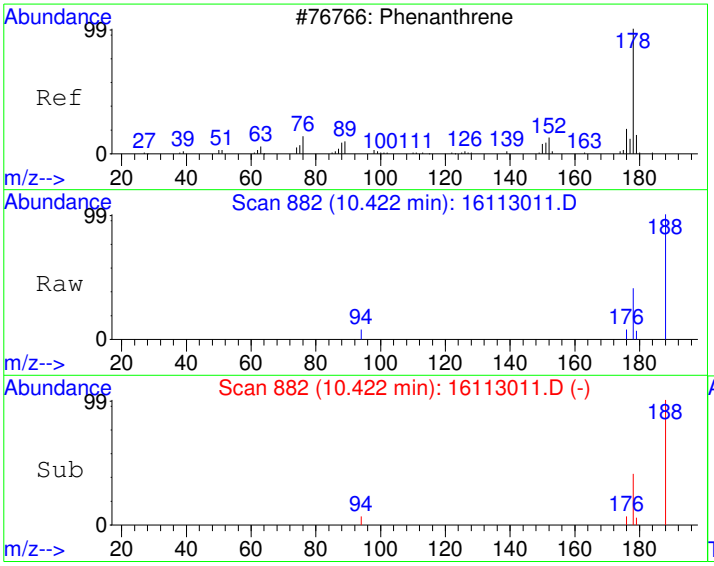


#9
Acenaphthene
Concen: 15.21 ug/kg
RT: 9.00 min Scan# 494
Delta R.T. -0.04 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:154 Resp: 2269

Ion	Ratio	Lower	Upper
154	100		
152	0.2	19.8	79.8#
153	5.1	77.1	137.1#

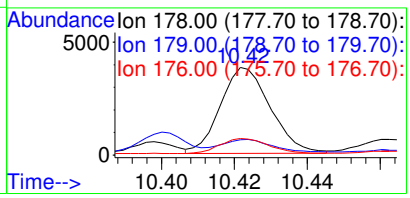


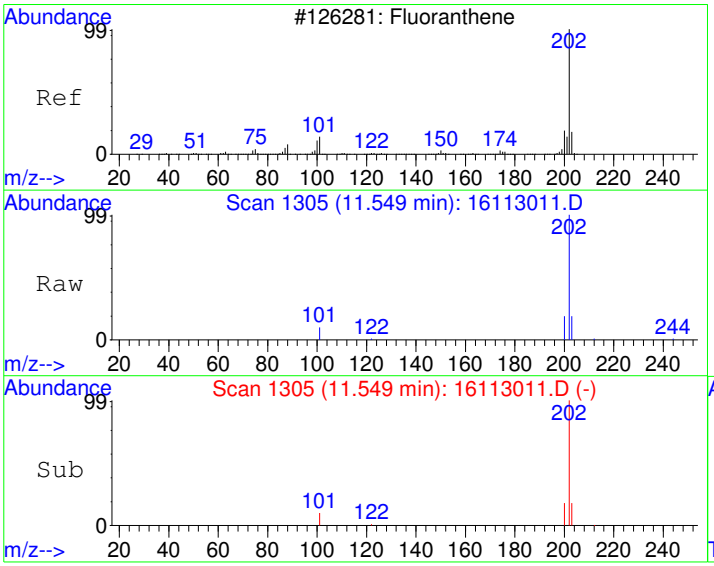


#12
Phenanthrene
Concen: 14.36 ug/kg
RT: 10.42 min Scan# 882
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:178 Resp: 3603

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	45.8
176	18.1	0.0	48.3

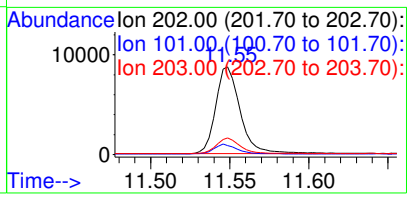


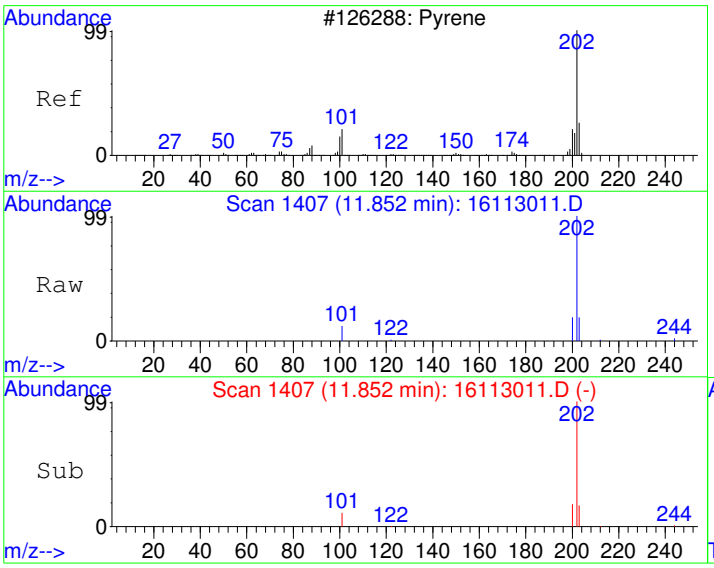


#14
Fluoranthene
Concen: 31.38 ug/kg
RT: 11.55 min Scan# 1305
Delta R.T. -0.00 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:202 Resp: 9300

Ion	Ratio	Lower	Upper
202	100		
101	9.7	0.0	40.6
203	18.0	0.0	48.0

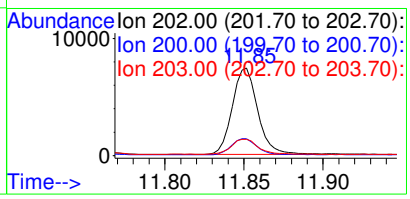


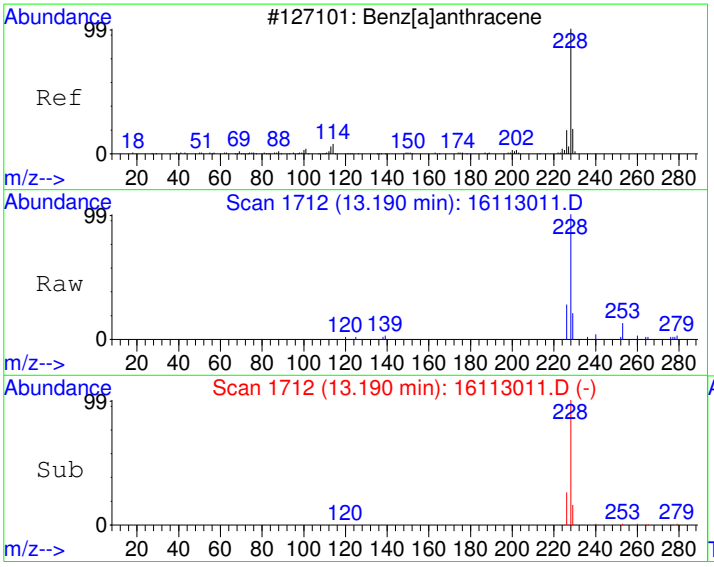


#15
Pyrene
Concen: 26.90 ug/kg
RT: 11.85 min Scan# 1407
Delta R.T. -0.00 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:202 Resp: 8278

Ion	Ratio	Lower	Upper
202	100		
200	18.4	0.0	50.1
203	17.4	0.0	47.8

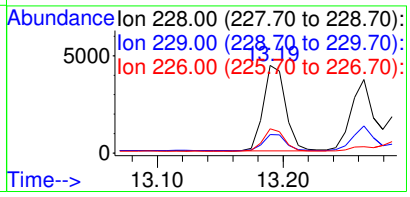


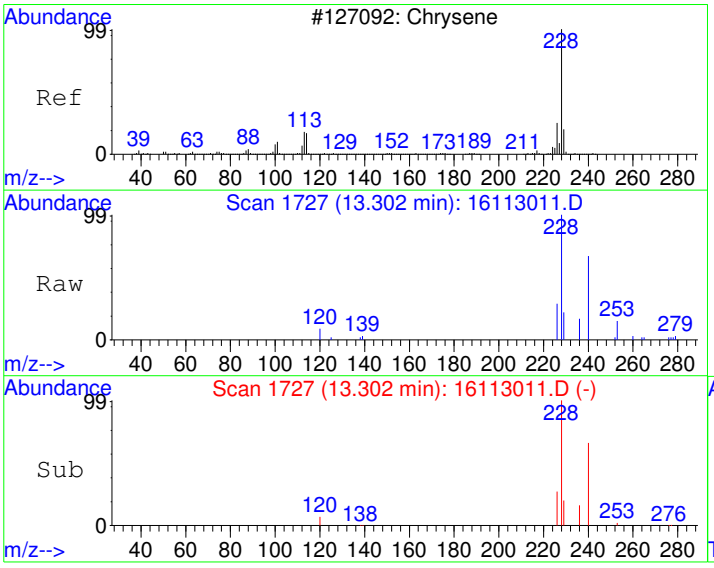


#18
Benzo[a]anthracene
Concen: 17.90 ug/kg
RT: 13.19 min Scan# 1712
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:228 Resp: 5454

Ion	Ratio	Lower	Upper
228	100		
229	18.9	0.0	50.4
226	26.2	0.0	55.6

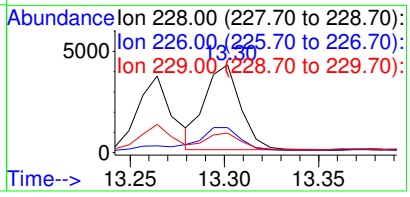


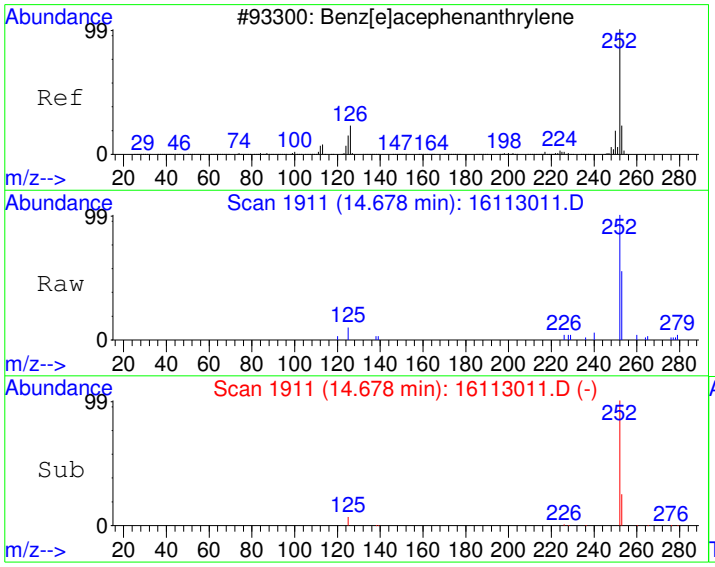


#19
Chrysene
Concen: 19.56 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:228 Resp: 5522

Ion	Ratio	Lower	Upper
228	100		
226	26.9	0.0	58.8
229	19.7	0.0	50.2

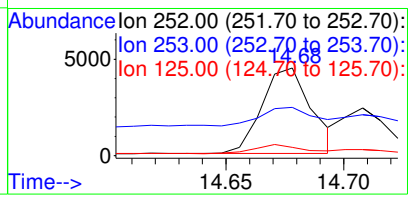


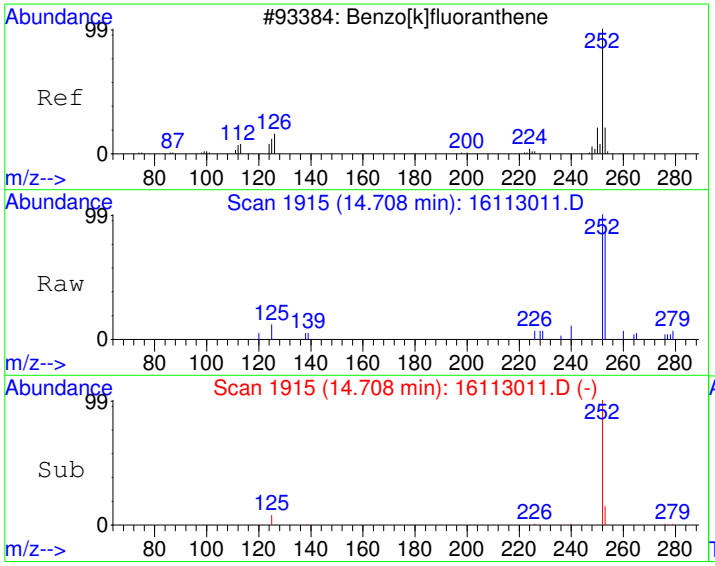


#21
Benzo[b]fluoranthene
Concen: 19.63 ug/kg
RT: 14.68 min Scan# 1911
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:252 Resp: 6501

Ion	Ratio	Lower	Upper
252	100		
253	20.9	0.0	52.1
125	7.4	0.0	40.5

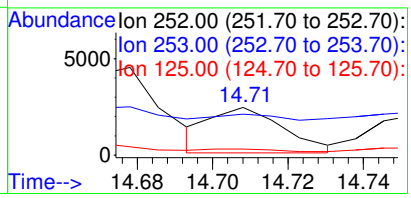


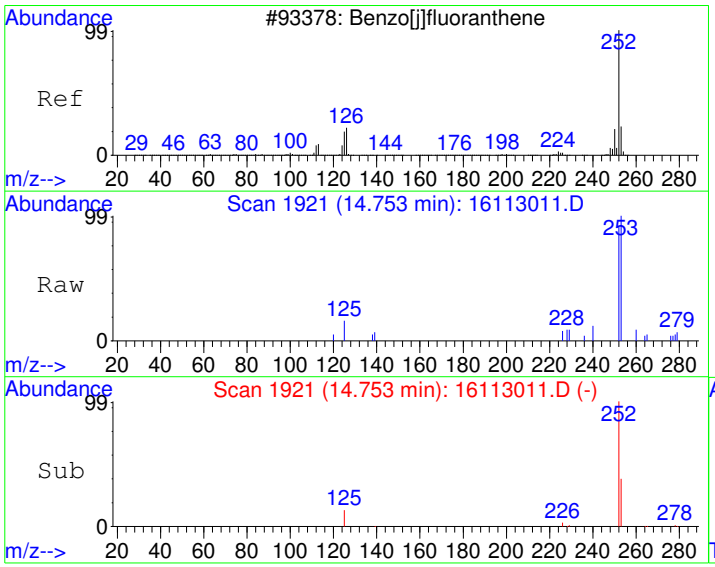


#22
Benzo[k]fluoranthene
Concen: 10.47 ug/kg
RT: 14.71 min Scan# 1915
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:252 Resp: 3195

Ion	Ratio	Lower	Upper
252	100		
253	12.5	2.4	42.4
125	6.9	0.0	28.2

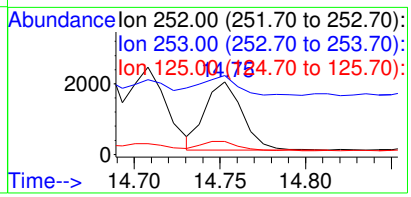


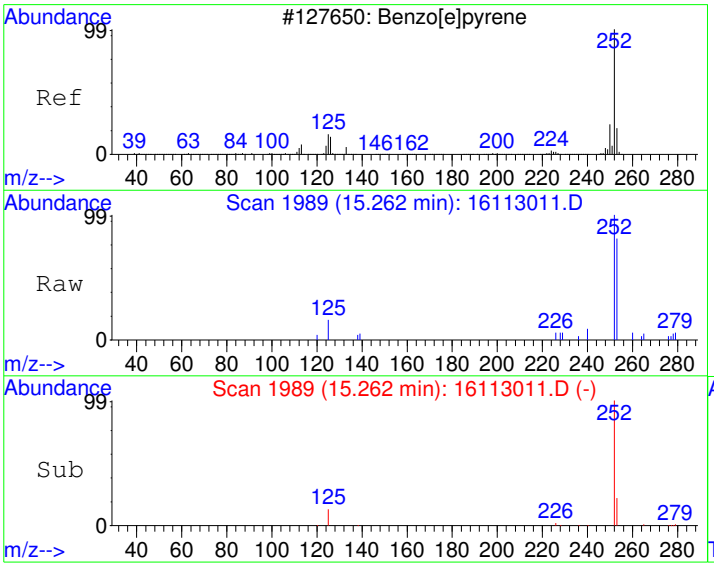


#23
Benzo(j)fluoranthene
Concen: 9.84 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:252 Resp: 2905

Ion	Ratio	Lower	Upper
252	100		
253	27.0	2.3	42.3
125	13.2	0.0	32.6

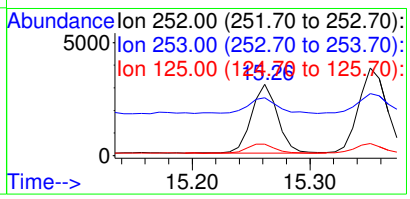


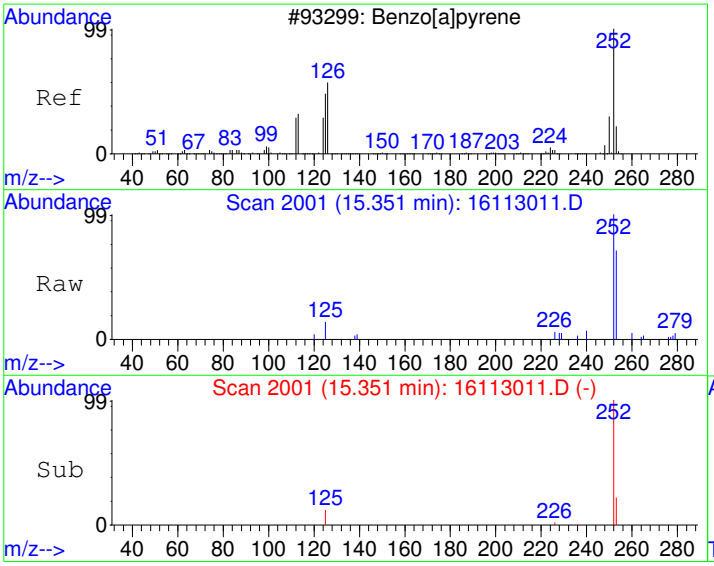


#24
Benzo[e]pyrene
Concen: 15.78 ug/kg
RT: 15.26 min Scan# 1989
Delta R.T. -0.01 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:252 Resp: 4667

Ion	Ratio	Lower	Upper
252	100		
253	21.9	1.8	41.8
125	13.1	0.0	35.7

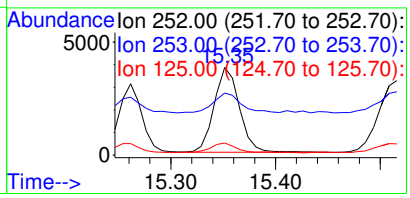


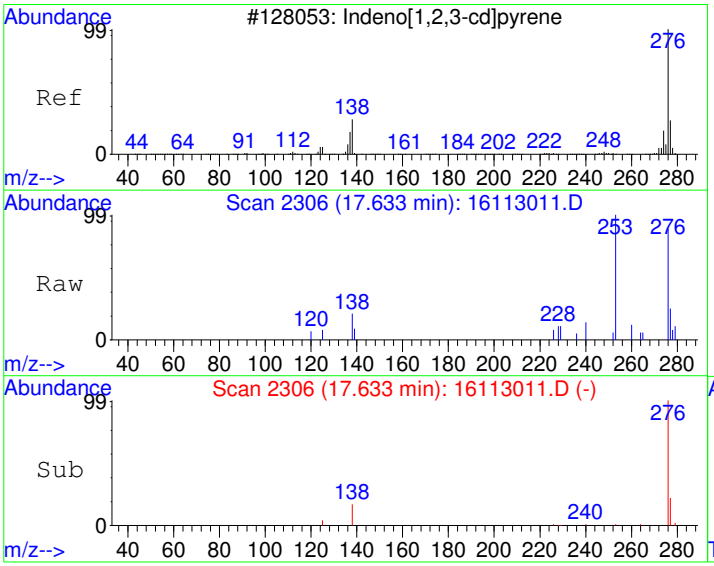


#25
Benzo[a]pyrene
Concen: 20.82 ug/kg
RT: 15.35 min Scan# 2001
Delta R.T. -0.02 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:252 Resp: 6287

Ion	Ratio	Lower	Upper
252	100		
253	22.6	2.2	42.2
125	11.1	0.0	30.8

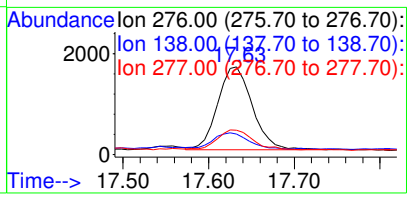


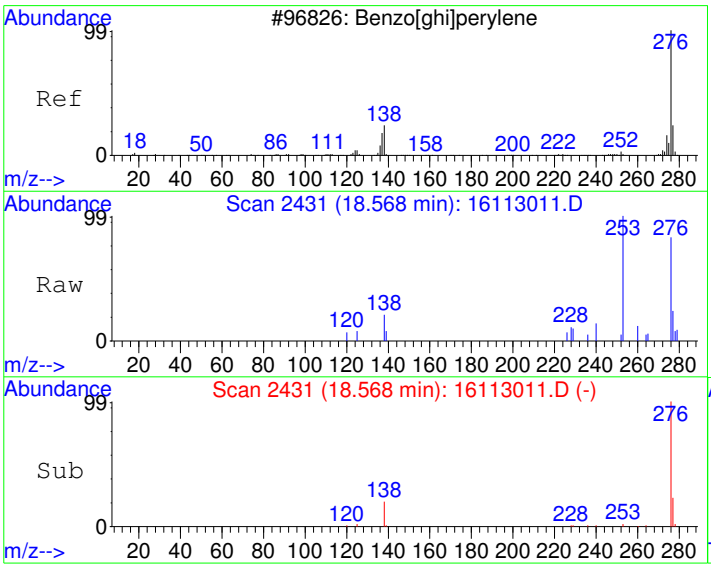


#27
Indeno[1,2,3-cd]pyrene
Concen: 14.99 ug/kg
RT: 17.63 min Scan# 2306
Delta R.T. -0.02 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:276 Resp: 4592

Ion	Ratio	Lower	Upper
276	100		
138	17.6	0.0	39.3
277	23.2	4.0	44.0

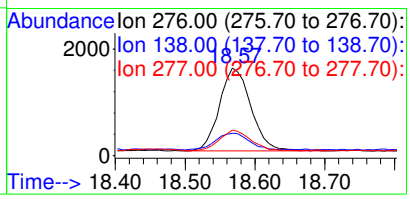




#28
Benzo[g,h,i]perylene
Concen: 15.01 ug/kg
RT: 18.57 min Scan# 2431
Delta R.T. -0.04 min
Lab File: 16113011.D
Acq: 30 Nov 2016 7:56 pm

Tgt Ion:276 Resp: 4858

Ion	Ratio	Lower	Upper
276	100		
138	20.2	0.8	40.8
277	25.1	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113013.D Vial: 13
Acq On : 30 Nov 2016 8:52 pm Operator:
Sample : 1611053-37A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:52 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

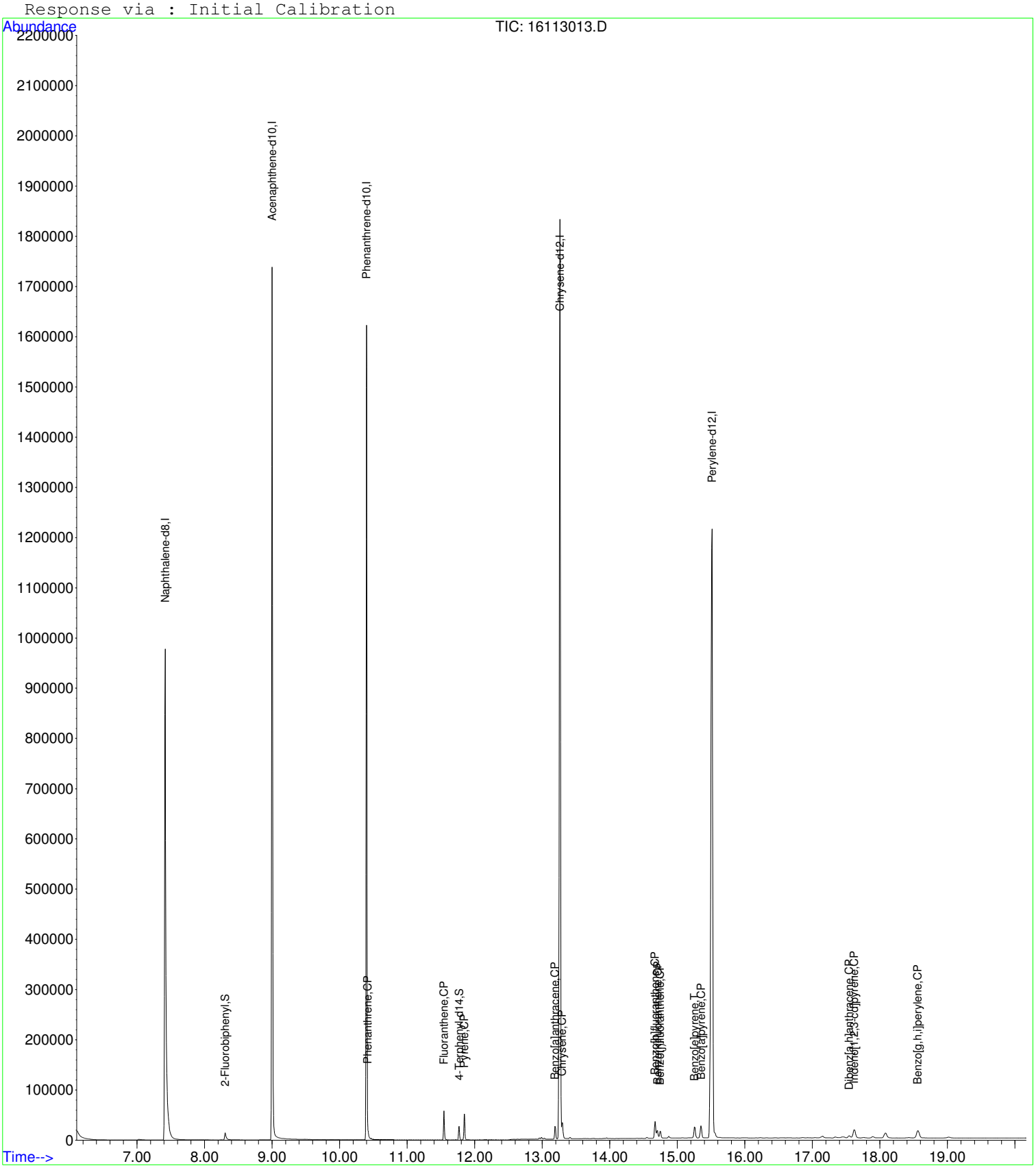
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1293305	4000.00	ug/kg	118
5) Acenaphthene-d10	9.00	164	709277	4000.00	ug/kg	112
11) Phenanthrene-d10	10.40	188	1292866	4000.00	ug/kg	108
17) Chrysene-d12	13.26	240	1541173	4000.00	ug/kg	100
20) Perylene-d12	15.52	264	1478938	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	17484	84.40	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.11%#		
16) 4-Terphenyl-d14	11.77	244	20424	78.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.97%#		
Target Compounds						Qvalue
12) Phenanthrene	10.42	178	6512	25.87	ug/kg	98
14) Fluoranthene	11.54	202	39411	132.55	ug/kg	99
15) Pyrene	11.85	202	35154	113.85	ug/kg	99
18) Benzo[a]anthracene	13.19	228	20780	68.97	ug/kg	99
19) Chrysene	13.30	228	33674	120.64	ug/kg	99
21) Benzo[b]fluoranthene	14.67	252	36776	111.97	ug/kg	99
22) Benzo[k]fluoranthene	14.71	252	15368	50.77	ug/kg	89
23) Benzo(j)fluoranthene	14.74	252	14577	49.79	ug/kg	91
24) Benzo[e]pyrene	15.25	252	25134	85.69	ug/kg	99
25) Benzo[a]pyrene	15.35	252	29294	97.82	ug/kg	99
26) Dibenz[a,h]anthracene	17.55	278	5860	18.63	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.62	276	28843	94.91	ug/kg	100
28) Benzo[g,h,i]perylene	18.56	276	29143	90.76	ug/kg	99

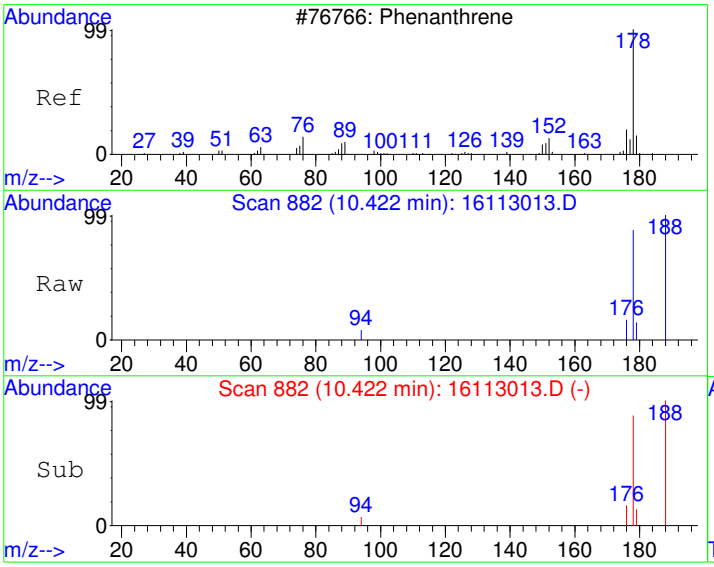
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113013.D Vial: 13
Acq On : 30 Nov 2016 8:52 pm Operator:
Sample : 1611053-37A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:52 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration

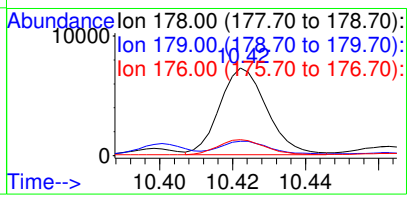


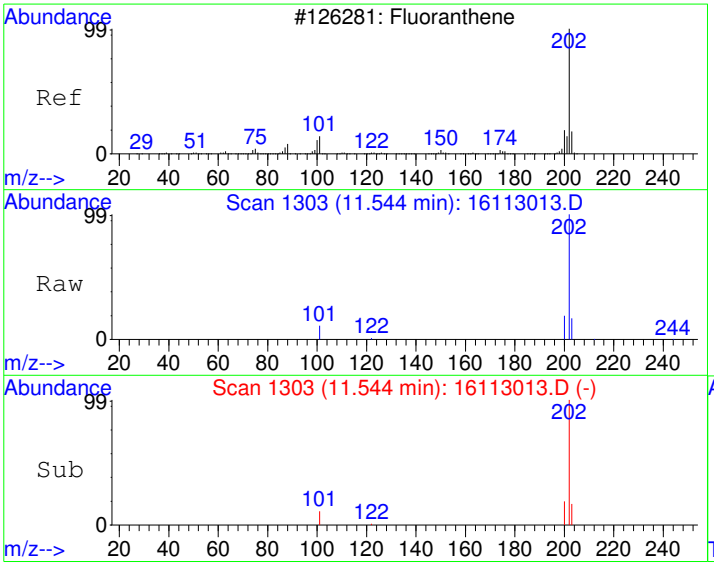


#12
Phenanthrene
Concen: 25.87 ug/kg
RT: 10.42 min Scan# 882
Delta R.T. -0.01 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:178 Resp: 6512

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	45.8
176	17.7	0.0	48.3

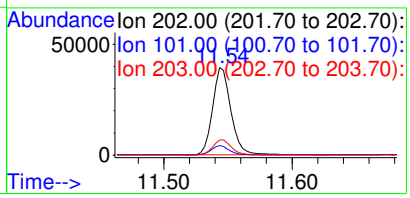


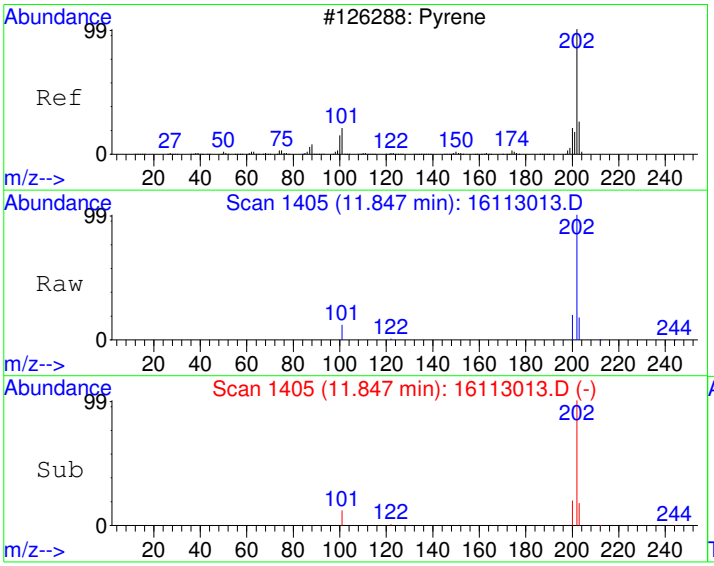


#14
Fluoranthene
Concen: 132.55 ug/kg
RT: 11.54 min Scan# 1303
Delta R.T. -0.01 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:202 Resp: 39411

Ion	Ratio	Lower	Upper
202	100		
101	10.7	0.0	40.6
203	17.1	0.0	48.0

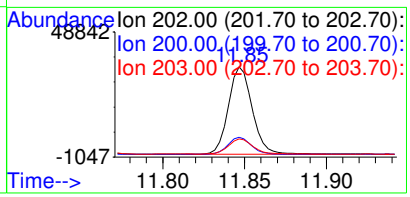


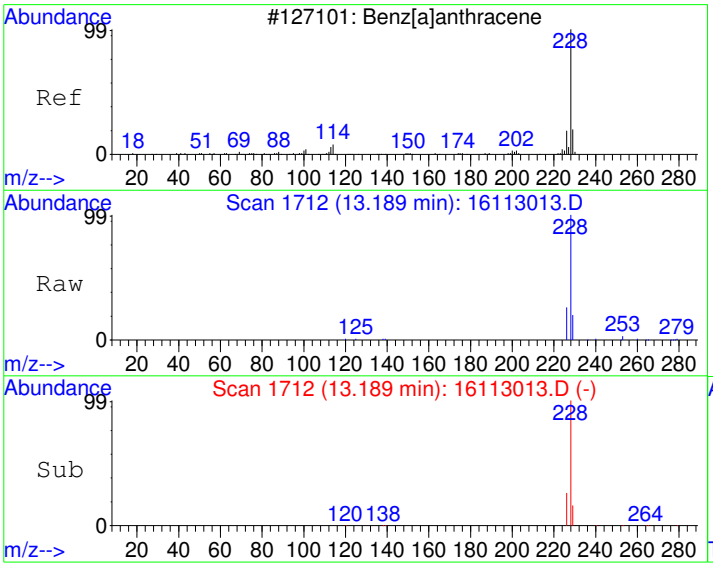


#15
Pyrene
Concen: 113.85 ug/kg
RT: 11.85 min Scan# 1405
Delta R.T. -0.01 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:202 Resp: 35154

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	17.4	0.0	47.8

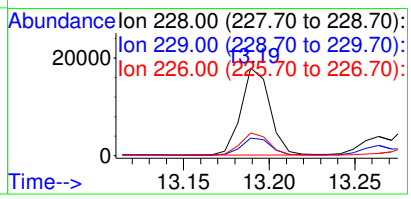


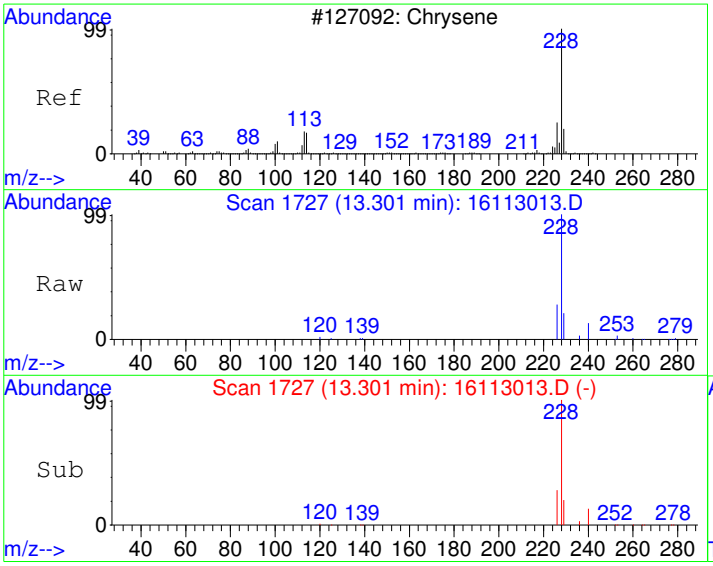


#18
Benzo[a]anthracene
Concen: 68.97 ug/kg
RT: 13.19 min Scan# 1712
Delta R.T. -0.02 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:228 Resp: 20780

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.4
226	25.6	0.0	55.6

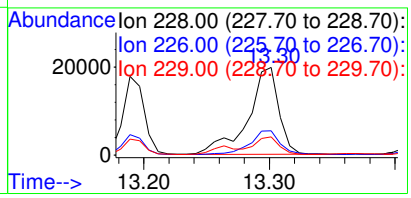


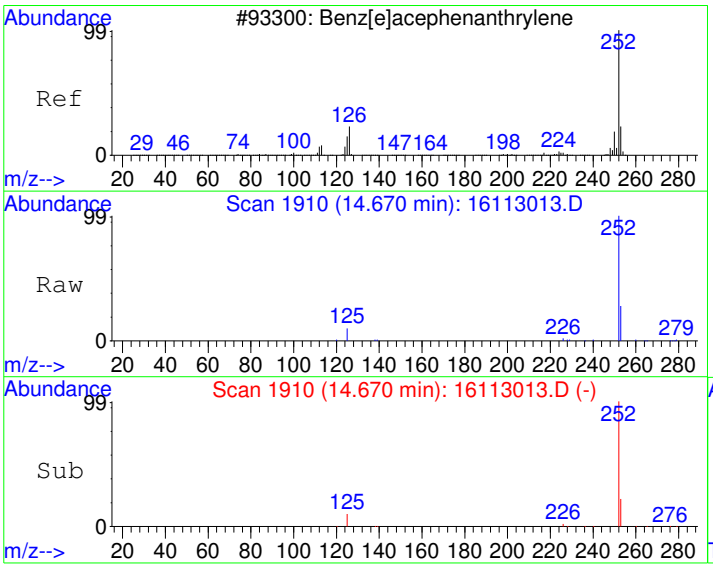


#19
Chrysene
Concen: 120.64 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.01 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:228 Resp: 33674

Ion	Ratio	Lower	Upper
228	100		
226	27.6	0.0	58.8
229	20.2	0.0	50.2

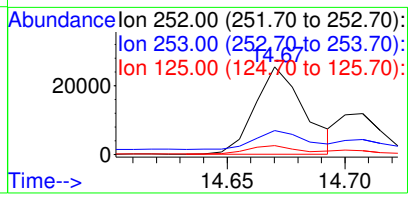


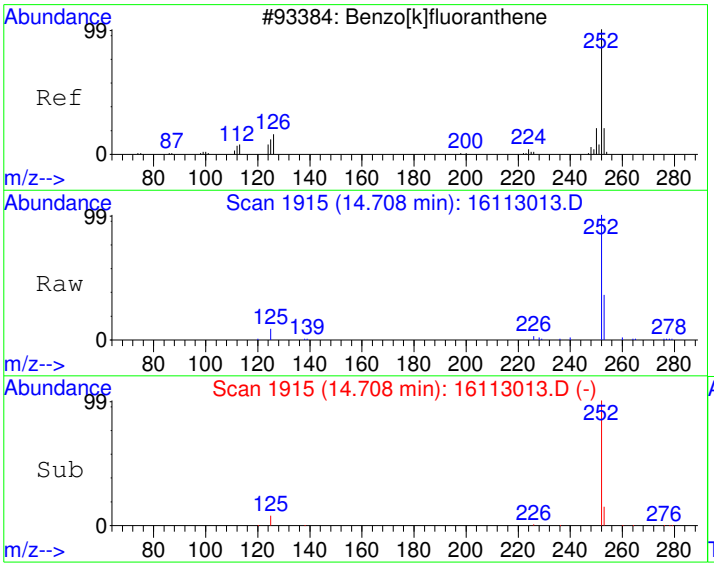


#21
Benzo[b]fluoranthene
Concen: 111.97 ug/kg
RT: 14.67 min Scan# 1910
Delta R.T. -0.01 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 36776

Ion	Ratio	Lower	Upper
252	100		
253	21.7	0.0	52.1
125	9.7	0.0	40.5

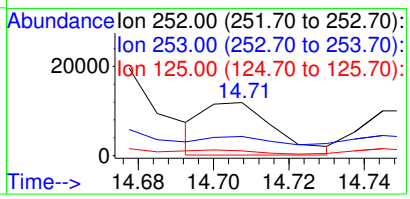


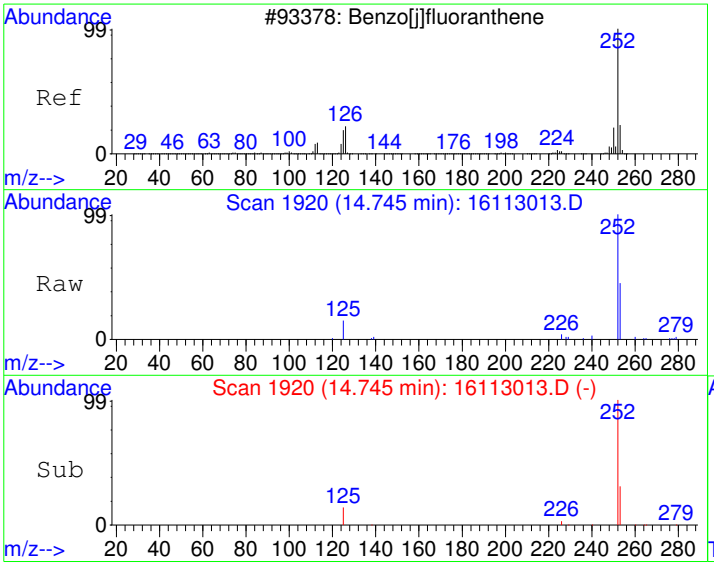


#22
Benzo[k]fluoranthene
Concen: 50.77 ug/kg
RT: 14.71 min Scan# 1915
Delta R.T. -0.02 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 15368

Ion	Ratio	Lower	Upper
252	100		
253	16.5	2.4	42.4
125	5.8	0.0	28.2

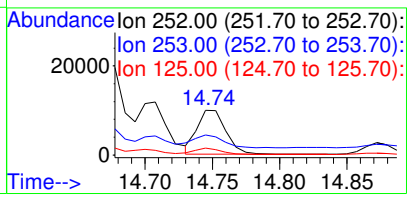


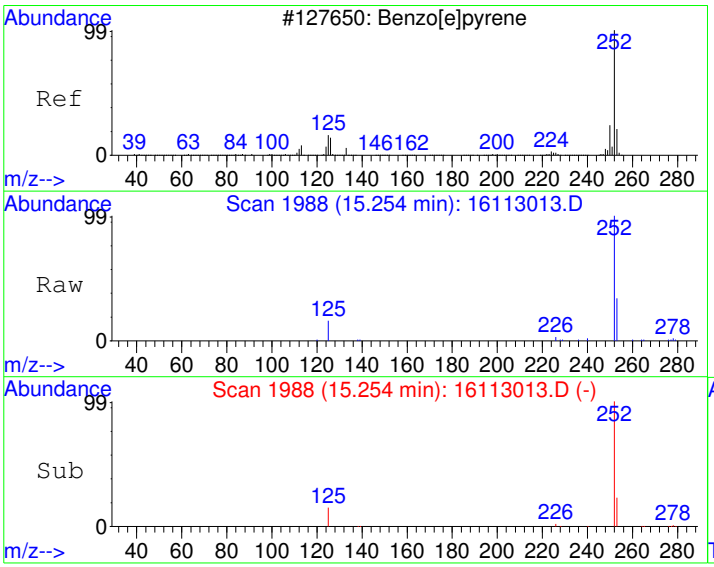


#23
Benzo(j)fluoranthene
Concen: 49.79 ug/kg
RT: 14.74 min Scan# 1920
Delta R.T. -0.02 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 14577

Ion	Ratio	Lower	Upper
252	100		
253	28.0	2.3	42.3
125	14.1	0.0	32.6

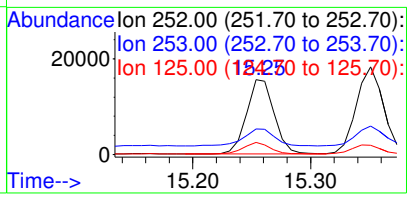


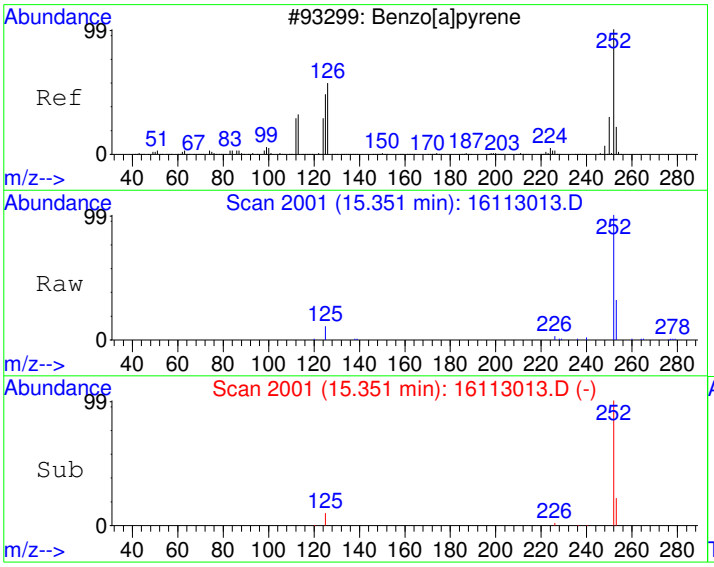


#24
Benzo[e]pyrene
Concen: 85.69 ug/kg
RT: 15.25 min Scan# 1988
Delta R.T. -0.02 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 25134

Ion	Ratio	Lower	Upper
252	100		
253	22.7	1.8	41.8
125	15.3	0.0	35.7

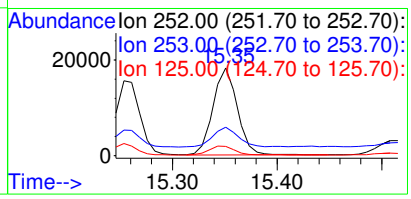


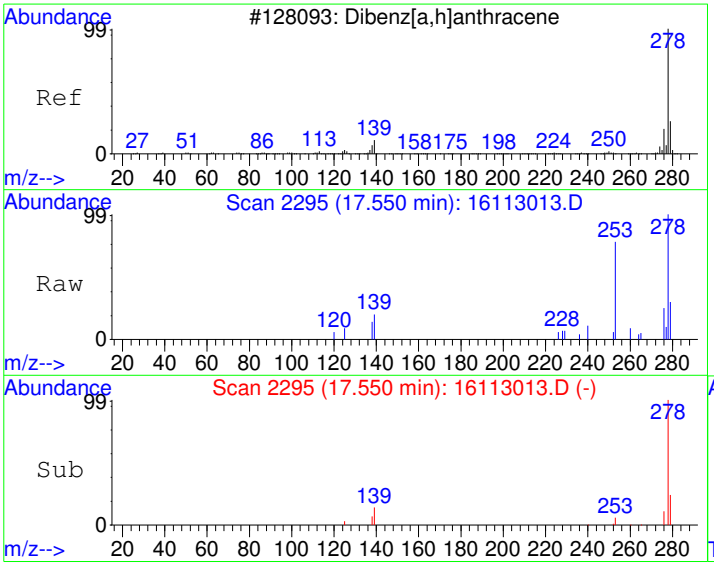


#25
Benzo[a]pyrene
Concen: 97.82 ug/kg
RT: 15.35 min Scan# 2001
Delta R.T. -0.02 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 29294

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.2	42.2
125	10.0	0.0	30.8

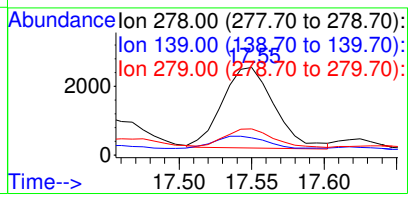


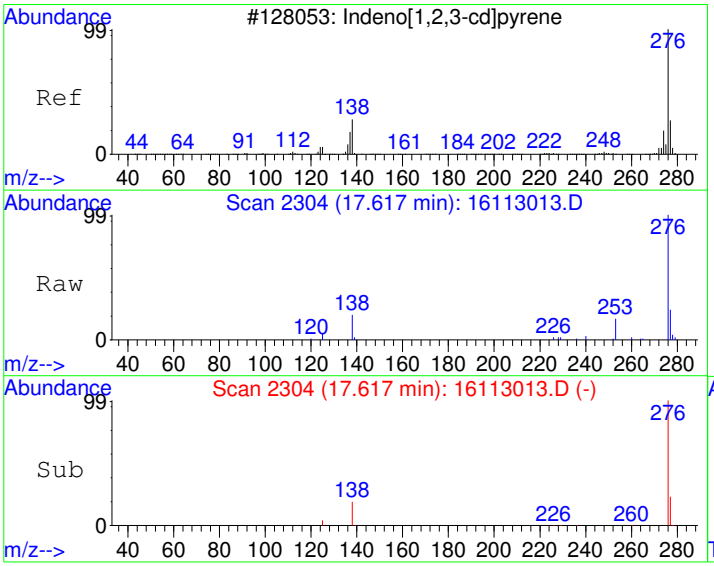


#26
Dibenz[a,h]anthracene
Concen: 18.63 ug/kg
RT: 17.55 min Scan# 2295
Delta R.T. -0.03 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:278 Resp: 5860

Ion	Ratio	Lower	Upper
278	100		
139	13.4	0.0	35.8
279	23.8	4.2	44.2

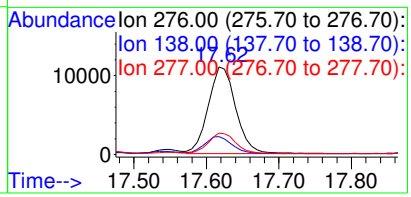


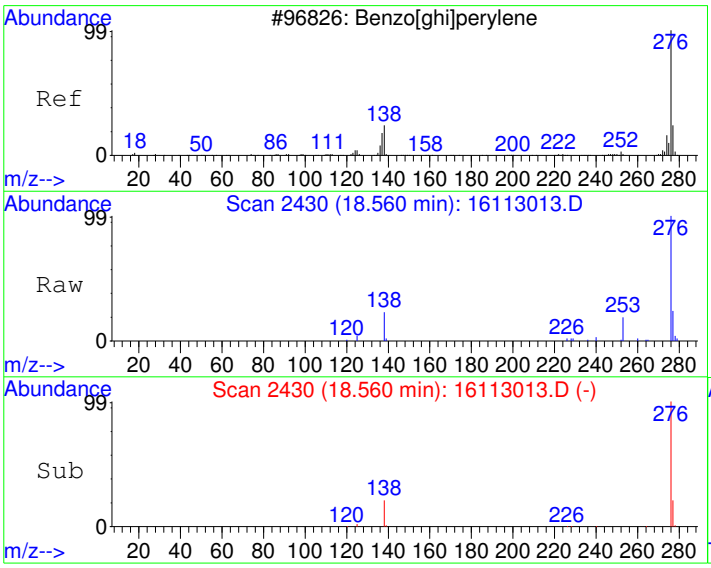


#27
Indeno[1,2,3-cd]pyrene
Concen: 94.91 ug/kg
RT: 17.62 min Scan# 2304
Delta R.T. -0.04 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:276 Resp: 28843

Ion	Ratio	Lower	Upper
276	100		
138	19.6	0.0	39.3
277	23.9	4.0	44.0

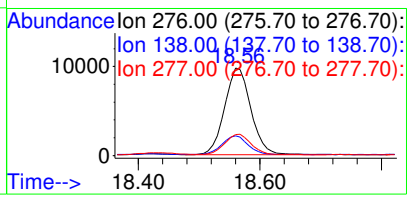




#28
Benzo[g,h,i]perylene
Concen: 90.76 ug/kg
RT: 18.56 min Scan# 2430
Delta R.T. -0.05 min
Lab File: 16113013.D
Acq: 30 Nov 2016 8:52 pm

Tgt Ion:276 Resp: 29143

Ion	Ratio	Lower	Upper
276	100		
138	21.5	0.8	40.8
277	23.4	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113014.D Vial: 14
Acq On : 30 Nov 2016 9:21 pm Operator:
Sample : 1611053-02AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

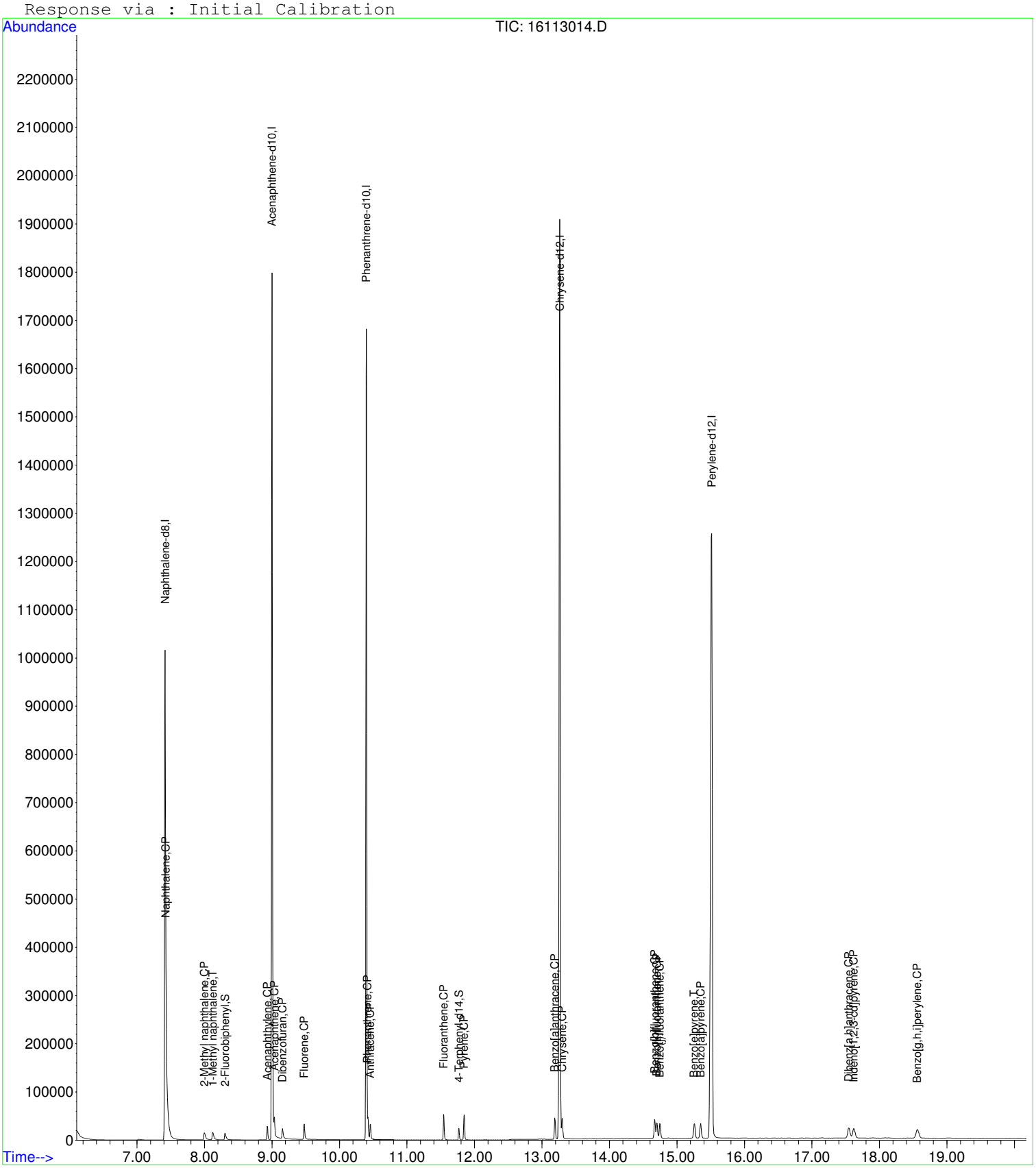
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1334991	4000.00	ug/kg	122
5) Acenaphthene-d10	9.00	164	735576	4000.00	ug/kg	116
11) Phenanthrene-d10	10.40	188	1343717	4000.00	ug/kg	112
17) Chrysene-d12	13.26	240	1601318	4000.00	ug/kg	104
20) Perylene-d12	15.52	264	1563656	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	17228	80.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.00%#		
16) 4-Terphenyl-d14	11.77	244	19857	73.58	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.84%#		
Target Compounds						Qvalue
2) Naphthalene	7.43	128	19623	81.65	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	14241	79.62	ug/kg	94
4) 1-Methyl naphthalene	8.12	142	13420	80.32	ug/kg	96
6) Dibenzofuran	9.16	168	20700	88.45	ug/kg	99
8) Acenaphthylene	8.93	152	21908	84.31	ug/kg	100
9) Acenaphthene	9.04	154	13435	86.39	ug/kg	97
10) Fluorene	9.48	166	16625	87.34	ug/kg	99
12) Phenanthrene	10.42	178	25944	99.16	ug/kg	98
13) Anthracene	10.46	178	24160	89.71	ug/kg	99
14) Fluoranthene	11.54	202	37352	120.87	ug/kg	99
15) Pyrene	11.85	202	37313	116.27	ug/kg	98
18) Benzo[a]anthracene	13.19	228	35484	113.35	ug/kg	99
19) Chrysene	13.30	228	34513	119.00	ug/kg	98
21) Benzo[b]fluoranthene	14.67	252	39388	113.43	ug/kg	98
22) Benzo[k]fluoranthene	14.70	252	34339	107.29	ug/kg	97
23) Benzo(j)fluoranthene	14.75	252	33251	107.42	ug/kg	99
24) Benzo[e]pyrene	15.26	252	36563	117.90	ug/kg	96
25) Benzo[a]pyrene	15.35	252	36653	115.77	ug/kg	98
26) Dibenz[a,h]anthracene	17.55	278	30493	91.69	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.62	276	34771	108.22	ug/kg	99
28) Benzo[g,h,i]perylene	18.56	276	36129	106.42	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113014.D Vial: 14
Acq On : 30 Nov 2016 9:21 pm Operator:
Sample : 1611053-02AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:48 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113015.D Vial: 15
Acq On : 30 Nov 2016 9:48 pm Operator:
Sample : 1611053-02AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:49 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

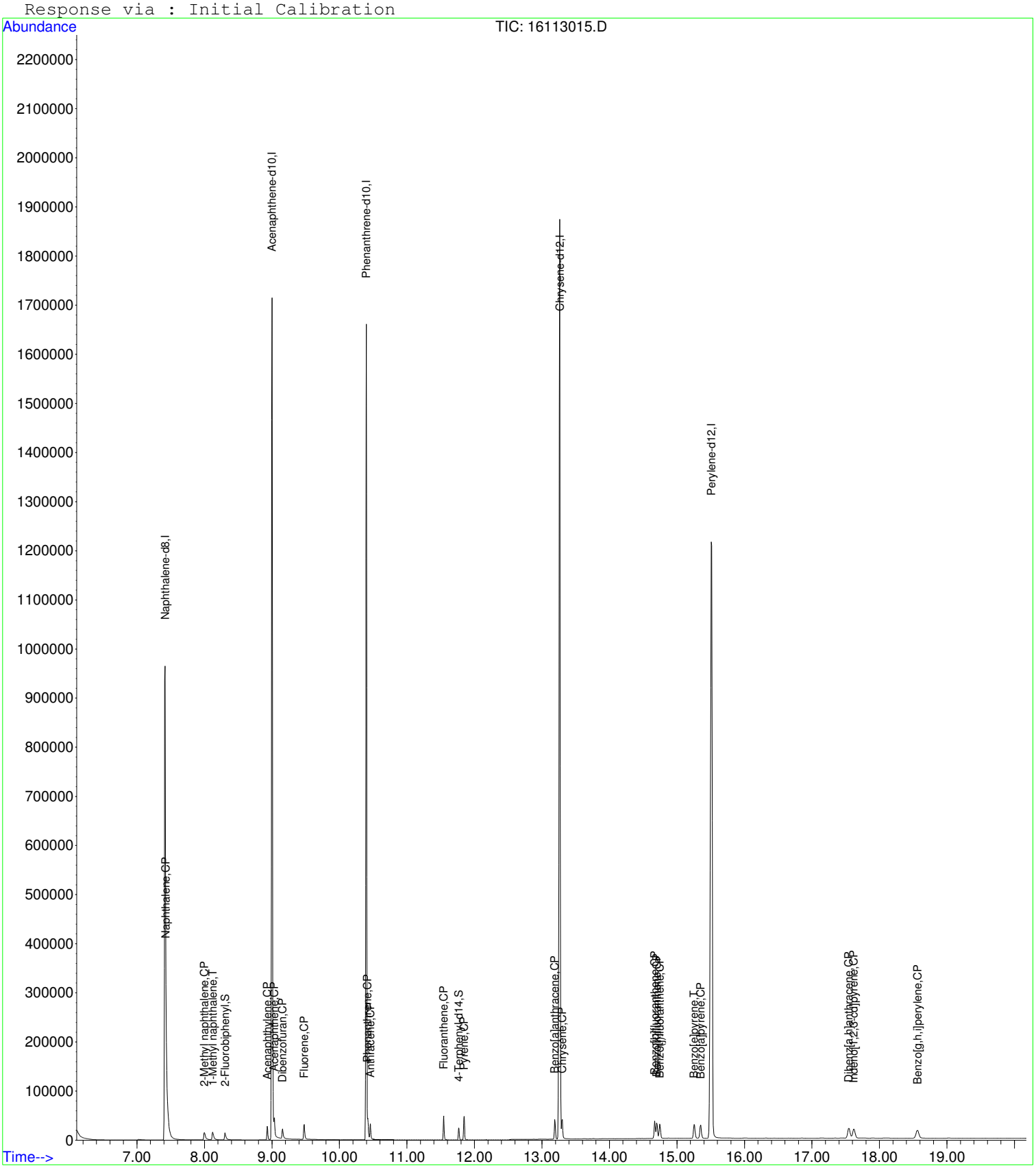
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1315384	4000.00	ug/kg	120
5) Acenaphthene-d10	9.00	164	714125	4000.00	ug/kg	113
11) Phenanthrene-d10	10.40	188	1315537	4000.00	ug/kg	110
17) Chrysene-d12	13.26	240	1577466	4000.00	ug/kg	102
20) Perylene-d12	15.51	264	1517356	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	17442	83.63	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.09%#		
16) 4-Terphenyl-d14	11.77	244	20142	76.23	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.91%#		
Target Compounds						Qvalue
2) Naphthalene	7.43	128	19087	80.60	ug/kg	99
3) 2-Methyl naphthalene	8.00	142	13817	78.40	ug/kg	94
4) 1-Methyl naphthalene	8.12	142	13114	79.65	ug/kg	96
6) Dibenzofuran	9.16	168	20081	88.38	ug/kg	99
8) Acenaphthylene	8.93	152	21384	84.76	ug/kg	99
9) Acenaphthene	9.04	154	12867	85.22	ug/kg	96
10) Fluorene	9.48	166	16325	88.34	ug/kg	98
12) Phenanthrene	10.42	178	24137	94.23	ug/kg	99
13) Anthracene	10.46	178	23112	87.66	ug/kg	98
14) Fluoranthene	11.54	202	32897	108.73	ug/kg	99
15) Pyrene	11.85	202	33494	106.60	ug/kg	99
18) Benzo[a]anthracene	13.19	228	31844	103.26	ug/kg	98
19) Chrysene	13.30	228	30290	106.02	ug/kg	97
21) Benzo[b]fluoranthene	14.67	252	35910	106.57	ug/kg	98
22) Benzo[k]fluoranthene	14.70	252	31872	102.62	ug/kg	97
23) Benzo(j)fluoranthene	14.74	252	31321	104.27	ug/kg	99
24) Benzo[e]pyrene	15.25	252	33863	112.52	ug/kg	99
25) Benzo[a]pyrene	15.35	252	32988	107.37	ug/kg	99
26) Dibenz[a,h]anthracene	17.55	278	29206	90.50	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.62	276	31780	101.93	ug/kg	98
28) Benzo[g,h,i]perylene	18.57	276	33396	101.37	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113015.D Vial: 15
Acq On : 30 Nov 2016 9:48 pm Operator:
Sample : 1611053-02AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:49 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161130\16113016.D Vial: 16
Acq On : 30 Nov 2016 10:17 pm Operator:
Sample : CCV1-161130 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:49 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

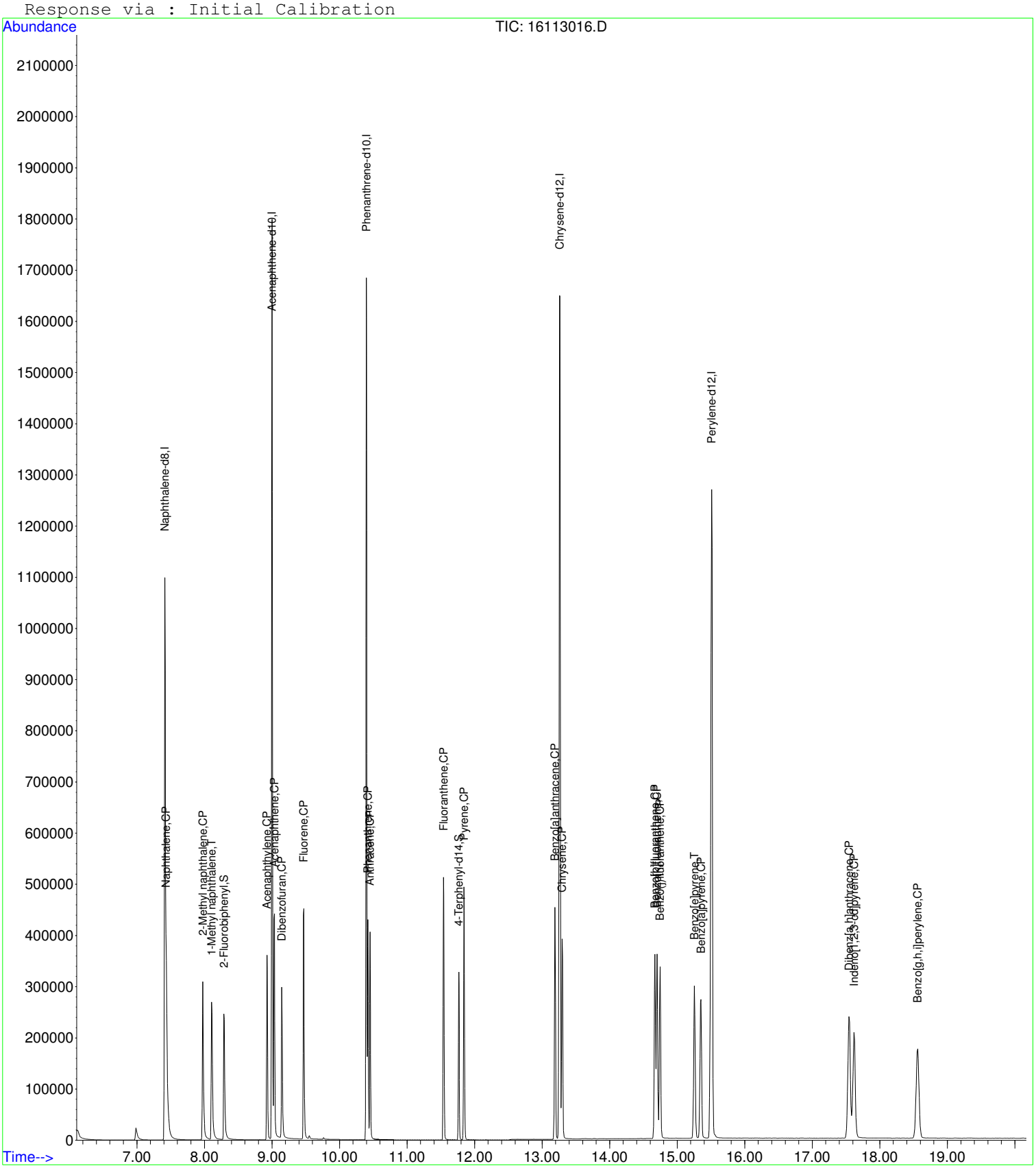
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.41	136	1328547	4000.00	ug/kg	122
5) Acenaphthene-d10	9.00	164	716762	4000.00	ug/kg	113
11) Phenanthrene-d10	10.40	188	1305250	4000.00	ug/kg	109
17) Chrysene-d12	13.26	240	1513713	4000.00	ug/kg	98
20) Perylene-d12	15.51	264	1488713	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.29	172	223928	1069.72	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 26.74%#			
16) 4-Terphenyl-d14	11.77	244	250552	955.75	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 23.89%#			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	240133	1003.99	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	177900	999.48	ug/kg	97
4) 1-Methyl naphthalene	8.11	142	160763	966.79	ug/kg	90
6) Dibenzofuran	9.15	168	234695	1029.15	ug/kg	100
8) Acenaphthylene	8.93	152	264066	1042.84	ug/kg	100
9) Acenaphthene	9.04	154	156320	1031.54	ug/kg	94
10) Fluorene	9.47	166	193972	1045.82	ug/kg	97
12) Phenanthrene	10.42	178	266159	1047.25	ug/kg	100
13) Anthracene	10.45	178	270345	1033.46	ug/kg	99
14) Fluoranthene	11.54	202	318671	1061.59	ug/kg	99
15) Pyrene	11.84	202	323009	1036.14	ug/kg	99
18) Benzo[a]anthracene	13.19	228	340004	1148.92	ug/kg	99
19) Chrysene	13.29	228	317187	1156.92	ug/kg	99
21) Benzo[b]fluoranthene	14.67	252	383617	1160.35	ug/kg	98
22) Benzo[k]fluoranthene	14.70	252	332595	1091.46	ug/kg	99
23) Benzo(j)fluoranthene	14.75	252	335985	1140.04	ug/kg	99
24) Benzo[e]pyrene	15.25	252	338121	1145.15	ug/kg	98
25) Benzo[a]pyrene	15.35	252	338691	1123.58	ug/kg	99
26) Dibenz[a,h]anthracene	17.54	278	332518	1050.14	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.62	276	332353	1086.49	ug/kg	100
28) Benzo[g,h,i]perylene	18.56	276	346789	1072.89	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161130\16113016.D Vial: 16
Acq On : 30 Nov 2016 10:17 pm Operator:
Sample : CCV1-161130 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Dec 1 8:49 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Nov 30 15:46:52 2016
Response via : Initial Calibration



GCMS6
Calibration Curve
For

DHL Work Order
1611053

CAL ID: 704

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #6 **Calibration File Name:** PAH161020.CAL

Target Concentration	Solvent Amount mL	Standard Preparation Stocks and Surrogate (µL/mL)	Final Volume mL
5 ppb	0.999	0.001 mL of 5000 ppb	1
10 ppb	0.998	0.002 mL of 5000 ppb	1
50 ppb	0.990	0.01 mL of 5000 ppb	1
100 ppb	0.980	0.02 mL of 5000 ppb	1
500 ppb	0.900	0.10 mL of 5000 ppb	1
1000 ppb	0.800	0.20 mL of 5000 ppb	1
2000 ppb	0.600	0.40 mL of 5000 ppb	1
5000 ppb	----	PAHCAL161020	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV161005-1	1
SSCV 2500 ppb	----	PAHSSCV161020-2	1

Standards Used for the Calibration Curve

1 uL Internal Standard SV160510-5 spiked in all.

Primary Stock STDs	DHL Standard ID	Second Source (SS) Stock STDs	DHL Standard ID
5 PPM (5000 PPB) PAH CAL STD	**PAHCAL161020**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV161005-1**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV161020-2**

Review Item	Acceptance Criteria	Yes	No	N/A	2nd Level Review
1. Are all standards within expiration dates?	Primary Stocks = 1 year Intermediate Standards = 6 months	X			X
2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)**	Manual Integration Tracking Form			X	
3. Does the tune and resolution check meet criteria?	Benzo(b) / Benzo(k)phenanthrene Valley > 50% See Tune Eval Report	X			
4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15%	%RSD < 15% COD ≥ 0.990	X			
5. Has the low point been reprocessed under the new ICAL curve and meets criteria?	70-130% recovery	X			
6. Has the SSCV been analyzed and meets criteria?	80-120% recovery	X			

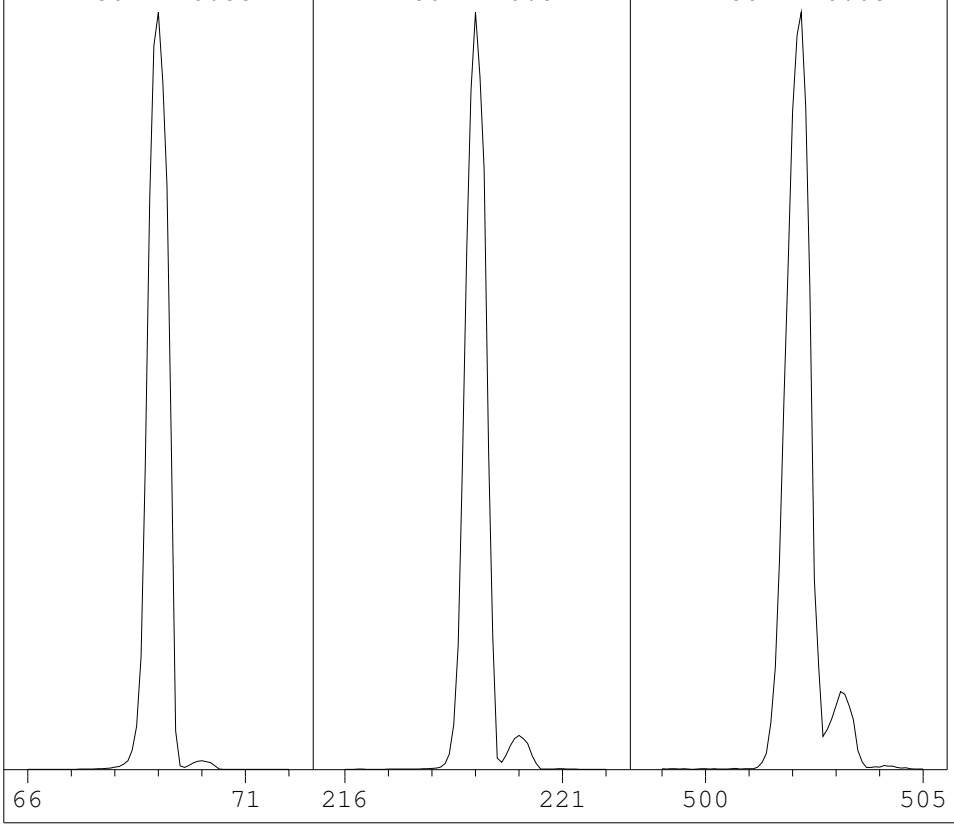
Analyst: Don Winston Date: 10/21/2016

Second-Level Review: Date: 10/31/2016

HP5973

Instrument: GC/MS #6

Thu Oct 20 15:57:14 2016 C:\HPCHEM\1\5973\ATUNE.U



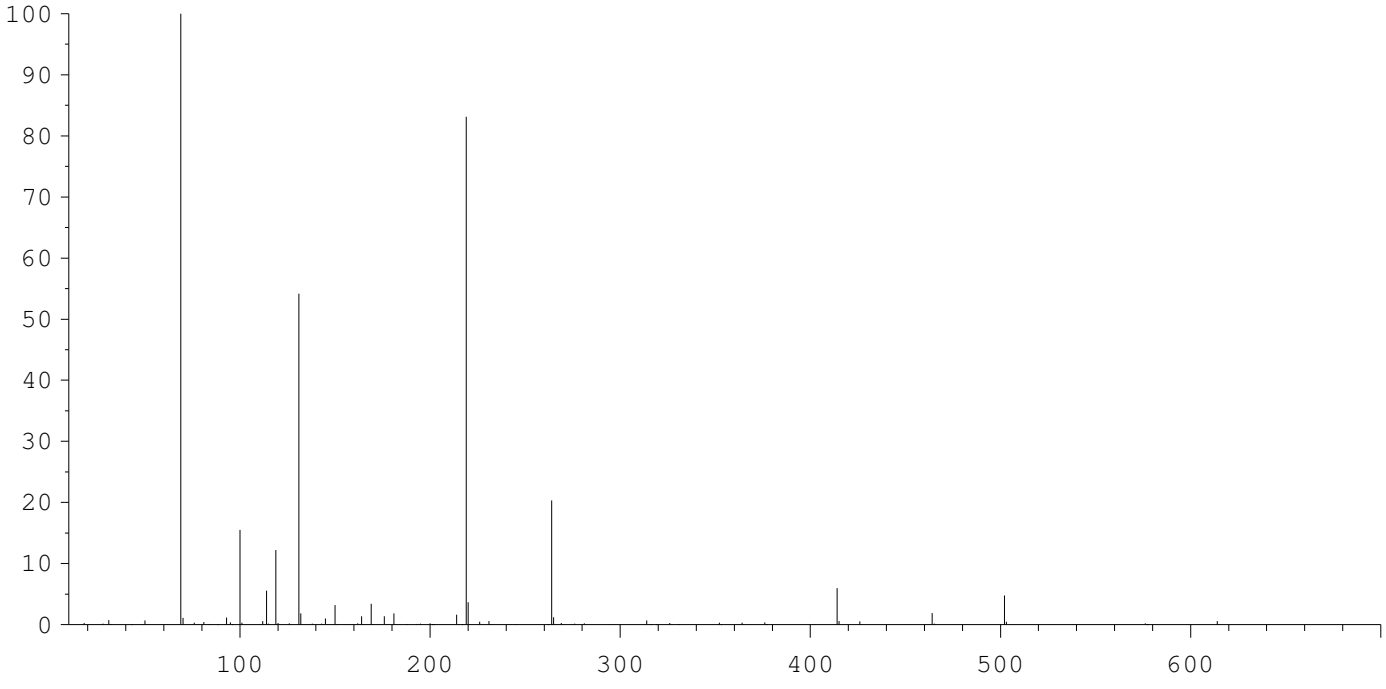
Ion Pol	POS	MassGain	22
		MassOffs	-14
Emission	34.6	AmuGain	2185
EleEnergy	69.9	AmuOffs	128
Filament	2	Wid219	0.011
		DC Pol	POS
Repeller	26.77		
IonFocus	68.3	HED	ON
EntLens	11.5	EMVolts	1365
EntOffs	17.32		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

Zones:

MS Source	230	Foreline	79
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100

121 peaks Base: 69.00 Abundance: 448000



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	448000	100.00	70.00	5033	1.12
219.00	372352	83.11	220.00	16424	4.41
502.20	21448	4.79	503.10	2205	10.28

TARGET MASS:	50	69	131	219	414	502
TARGET ABUND(%):	1.0	100.0	55.0	45.0	3.5	2.5
ACTUAL TUNE ABUND(%):	0.7	100.0	54.1	87.1	6.0	4.8

Response Factor Report GC/MS #6

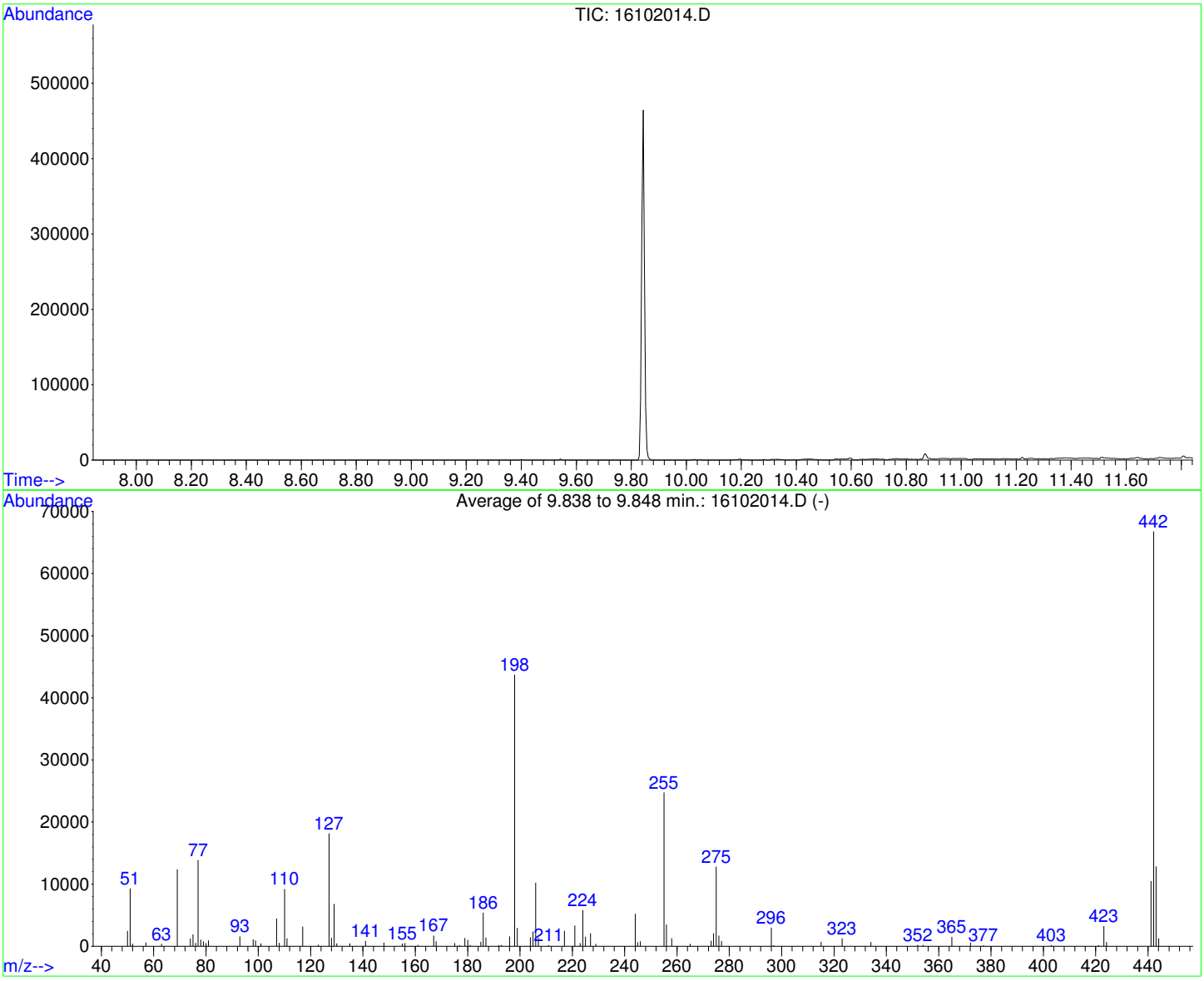
Method Path : F:\IC\GCMS#10\
Method File : PP161020.M
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response Via : Initial Calibration

Calibration Files
1 =16102015.D 2 =16102016.D 3 =16102017.D 4 =16102018.D 5 =16102019.D 6 =16102020.D 7 =16102021.D
8 =16102022.D

		Compound	1	2	3	4	5	6	7	8	Avg	%RSD	Fit	RSD/CF	Constant	Linear	Quad
1)	I	Naphthalene-d8	----------ISTD----------														
2)	CP	Naphthalene	0.764	0.642	0.735	0.735	0.734	0.721	0.715	0.716	0.720	4.90	A	0.0490	0.0000	0.7201	0.0000
3)	CP	2-Methyl napht...	0.508	0.464	0.540	0.565	0.560	0.558	0.545	0.546	0.536	6.38	A	0.0638	0.0000	0.5359	0.0000
4)	T	1-Methyl napht...	0.498	0.456	0.505	0.528	0.517	0.511	0.495	0.494	0.501	4.28	A	0.0428	0.0000	0.5007	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.293	1.160	1.301	1.245	1.339	1.308	1.284	1.251	1.273	4.30#	A	0.0430	0.0000	1.2726	0.0000
7)	S	2-Fluorobiphenyl	1.085	1.046	1.197	1.146	1.253	1.222	1.212	1.186	1.168	6.10	A	0.0610	0.0000	1.1682	0.0000
8)	CP	Acenaphthylene	1.402	1.236	1.412	1.476	1.459	1.453	1.448	1.419	1.413	5.37	A	0.0537	0.0000	1.4131	0.0000
9)	CP	Acenaphthene	0.834	0.753	0.864	0.904	0.870	0.852	0.846	0.842	0.846#	5.09	A	0.0509	0.0000	0.8457	0.0000
10)	CP	Fluorene	1.018	0.906	1.046	1.105	1.076	1.063	1.043	1.023	1.035	5.71	A	0.0571	0.0000	1.0351	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	0.841	0.716	0.763	0.817	0.795	0.783	0.771	0.744	0.779	5.10	A	0.0510	0.0000	0.7789	0.0000
13)	CP	Anthracene	0.840	0.722	0.807	0.855	0.818	0.808	0.790	0.773	0.802	5.15	A	0.0515	0.0000	0.8017	0.0000
14)	CP	Fluoranthene	0.955	0.843	0.931	0.980	0.941	0.926	0.908	0.876	0.920	4.77	A	0.0477	0.0000	0.9199	0.0000
15)	CP	Pyrene	1.037	0.902	0.976	1.020	0.956	0.940	0.924	0.889	0.955	5.58	A	0.0558	0.0000	0.9553	0.0000
16)	S	4-Terphenyl-d14	0.845	0.760	0.826	0.785	0.834	0.814	0.799	0.764	0.803	3.96	A	0.0396	0.0000	0.8034	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...	0.853	0.709	0.769	0.817	0.794	0.780	0.771	0.762	0.782#	5.40	A	0.0540	0.0000	0.7820	0.0000
19)	CP	Chrysene	0.741	0.665	0.722	0.763	0.753	0.734	0.713	0.705	0.724	4.30	A	0.0430	0.0000	0.7245	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	0.905	0.828	0.853	0.912	0.902	0.879	0.947	0.881	0.888	4.15	A	0.0415	0.0000	0.8883	0.0000
22)	CP	Benzo[k]fluora...	0.835	0.745	0.887	0.914	0.807	0.842	0.737	0.782	0.819	7.74	A	0.0774	0.0000	0.8188	0.0000
23)	CP	Benzo(j)fluora...	0.833	0.739	0.822	0.769	0.821	0.782	0.779	0.790	0.792	3.99	A	0.0399	0.0000	0.7919	0.0000
24)	T	Benzo[e]pyrene	0.820	0.755	0.817	0.770	0.811	0.799	0.787	0.788	0.793	2.89	A	0.0289	0.0000	0.7933	0.0000
25)	CP	Benzo[a]pyrene	0.839	0.747	0.819	0.862	0.817	0.806	0.794	0.795	0.810	4.20	A	0.0420	0.0000	0.8099	0.0000
26)	CP	Dibenz[a,h]ant...	0.910	0.761	0.856	0.905	0.859	0.849	0.824	0.842	0.851	5.51	A	0.0551	0.0000	0.8508	0.0000
27)	CP	Indeno[1,2,3-c...	0.832	0.748	0.832	0.873	0.833	0.826	0.810	0.820	0.822	4.25	A	0.0425	0.0000	0.8219	0.0000
28)	CP	Benzo[g,h,i]pe...	0.933	0.790	0.874	0.912	0.872	0.859	0.847	0.861	0.868	4.95	A	0.0495	0.0000	0.8685	0.0000

(#) = Out of Range

Data File : C:\HPCHEM\1\DATA\161020\16102014.D Vial: 1
Acq On : 20 Oct 2016 4:10 pm Operator: LG
Sample : DFTPP-161020 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 797, 798, 799; Background Corrected with Scan 792

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	21.3	9307	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	28.4	12400	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.6	18168	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	43720	PASS
199	198	5	9	6.7	2945	PASS
275	198	10	60	29.3	12809	PASS
365	198	1	200	3.5	1520	PASS
441	442	0.01	24	15.7	10489	PASS
442	198	50	400	152.8	66792	PASS
443	442	15	24	19.3	12867	PASS

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102015.D Vial: 2
Acq On : 20 Oct 2016 4:37 pm Operator: LG
Sample : CAL1 5PPB Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 12:12 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

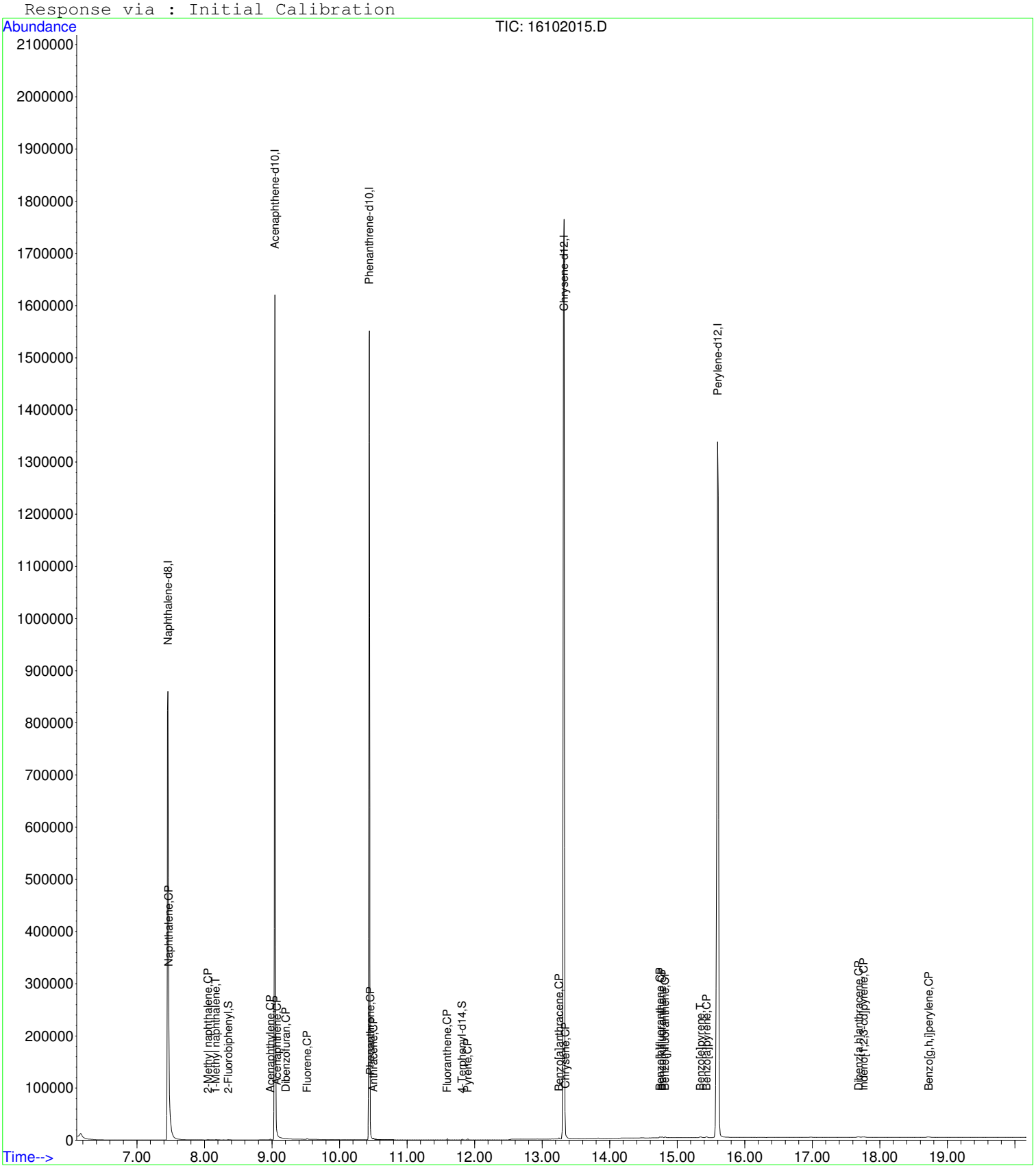
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1104031	4000.00	ug/kg	101
5) Acenaphthene-d10	9.04	164	663810	4000.00	ug/kg	105
11) Phenanthrene-d10	10.44	188	1243895	4000.00	ug/kg	104
17) Chrysene-d12	13.32	240	1645676	4000.00	ug/kg	107
20) Perylene-d12	15.60	264	1632131	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	900	4.64	ug/kg	0.03
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.12%#		
16) 4-Terphenyl-d14	11.82	244	1314	5.26	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.13%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	1054	5.30	ug/kg	98
3) 2-Methyl naphthalene	8.06	142	701	4.74	ug/kg	96
4) 1-Methyl naphthalene	8.17	142	687	4.97	ug/kg	90
6) Dibenzofuran	9.21	168	1073	5.08	ug/kg#	86
8) Acenaphthylene	8.98	152	1163	4.96	ug/kg	98
9) Acenaphthene	9.08	154	692	4.93	ug/kg	98
10) Fluorene	9.52	166	845	4.92	ug/kg	99
12) Phenanthrene	10.46	178	1308	5.40	ug/kg	99
13) Anthracene	10.50	178	1306	5.24	ug/kg	98
14) Fluoranthene	11.59	202	1485	5.19	ug/kg	99
15) Pyrene	11.90	202	1613	5.43	ug/kg	99
18) Benzo[a]anthracene	13.25	228	1755	5.45	ug/kg	99
19) Chrysene	13.35	228	1524	5.11	ug/kg	99
21) Benzo[b]fluoranthene	14.75	252	1847	5.10	ug/kg	95
22) Benzo[k]fluoranthene	14.78	252	1704	5.10	ug/kg	96
23) Benzo(j)fluoranthene	14.82	252	1699	5.26	ug/kg	99
24) Benzo[e]pyrene	15.34	252	1673	5.17	ug/kg	97
25) Benzo[a]pyrene	15.43	252	1712	5.18	ug/kg	97
26) Dibenz[a,h]anthracene	17.69	278	1857	5.35	ug/kg	90
27) Indeno[1,2,3-cd]pyrene	17.76	276	1697	5.06	ug/kg	96
28) Benzo[g,h,i]perylene	18.73	276	1903	5.37	ug/kg	94

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102015.D Vial: 2
Acq On : 20 Oct 2016 4:37 pm Operator: LG
Sample : CAL1 5PPB Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 12:12 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102016.D Vial: 3
Acq On : 20 Oct 2016 5:05 pm Operator: LG
Sample : CAL2 10PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

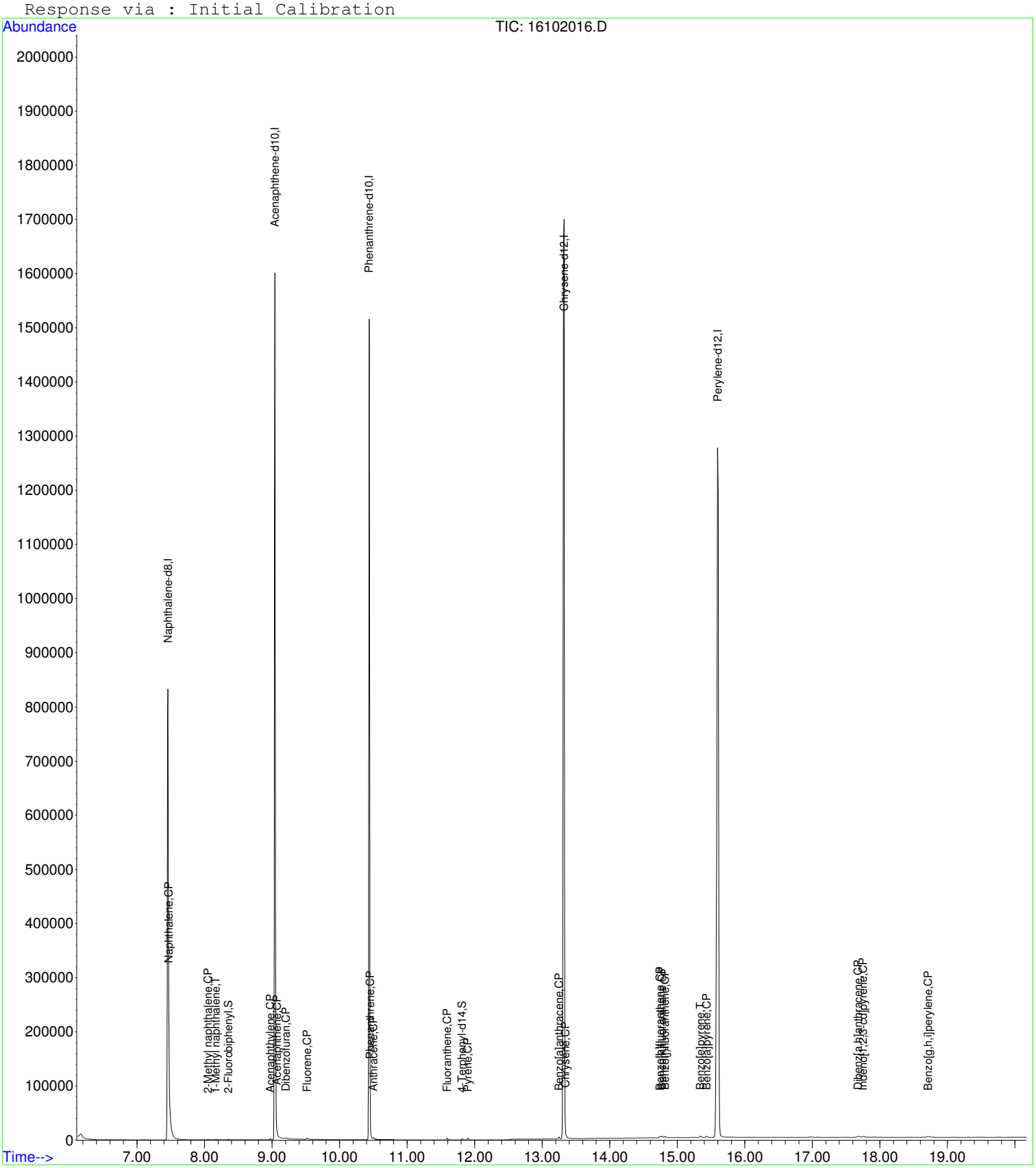
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1059596	4000.00	ug/kg	97
5) Acenaphthene-d10	9.04	164	650945	4000.00	ug/kg	103
11) Phenanthrene-d10	10.44	188	1218263	4000.00	ug/kg	102
17) Chrysene-d12	13.32	240	1574859	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	1544067	4000.00	ug/kg	102
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	1702	8.95	ug/kg	0.03
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.22%#		
16) 4-Terphenyl-d14	11.81	244	2315	9.46	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.24%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	1700	8.91	ug/kg	100
3) 2-Methyl naphthalene	8.05	142	1228	8.65	ug/kg	96
4) 1-Methyl naphthalene	8.17	142	1209	9.12	ug/kg	95
6) Dibenzofuran	9.20	168	1888	9.12	ug/kg	100
8) Acenaphthylene	8.98	152	2012	8.75	ug/kg	99
9) Acenaphthene	9.08	154	1226	8.91	ug/kg	93
10) Fluorene	9.52	166	1475	8.76	ug/kg	96
12) Phenanthrene	10.46	178	2182	9.20	ug/kg	99
13) Anthracene	10.50	178	2199	9.01	ug/kg	98
14) Fluoranthene	11.59	202	2566	9.16	ug/kg	97
15) Pyrene	11.90	202	2746	9.44	ug/kg	98
18) Benzo[a]anthracene	13.25	228	2792	9.07	ug/kg	99
19) Chrysene	13.35	228	2617	9.17	ug/kg	98
21) Benzo[b]fluoranthene	14.75	252	3196	9.32	ug/kg	96
22) Benzo[k]fluoranthene	14.78	252	2876	9.10	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	2854	9.34	ug/kg	95
24) Benzo[e]pyrene	15.34	252	2913	9.51	ug/kg	90
25) Benzo[a]pyrene	15.43	252	2885	9.23	ug/kg	98
26) Dibenz[a,h]anthracene	17.68	278	2938	8.95	ug/kg	94
27) Indeno[1,2,3-cd]pyrene	17.76	276	2888	9.10	ug/kg	95
28) Benzo[g,h,i]perylene	18.72	276	3048	9.09	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102016.D Vial: 3
Acq On : 20 Oct 2016 5:05 pm Operator: LG
Sample : CAL2 10PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102017.D Vial: 4
Acq On : 20 Oct 2016 5:32 pm Operator: LG
Sample : CAL3 50PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

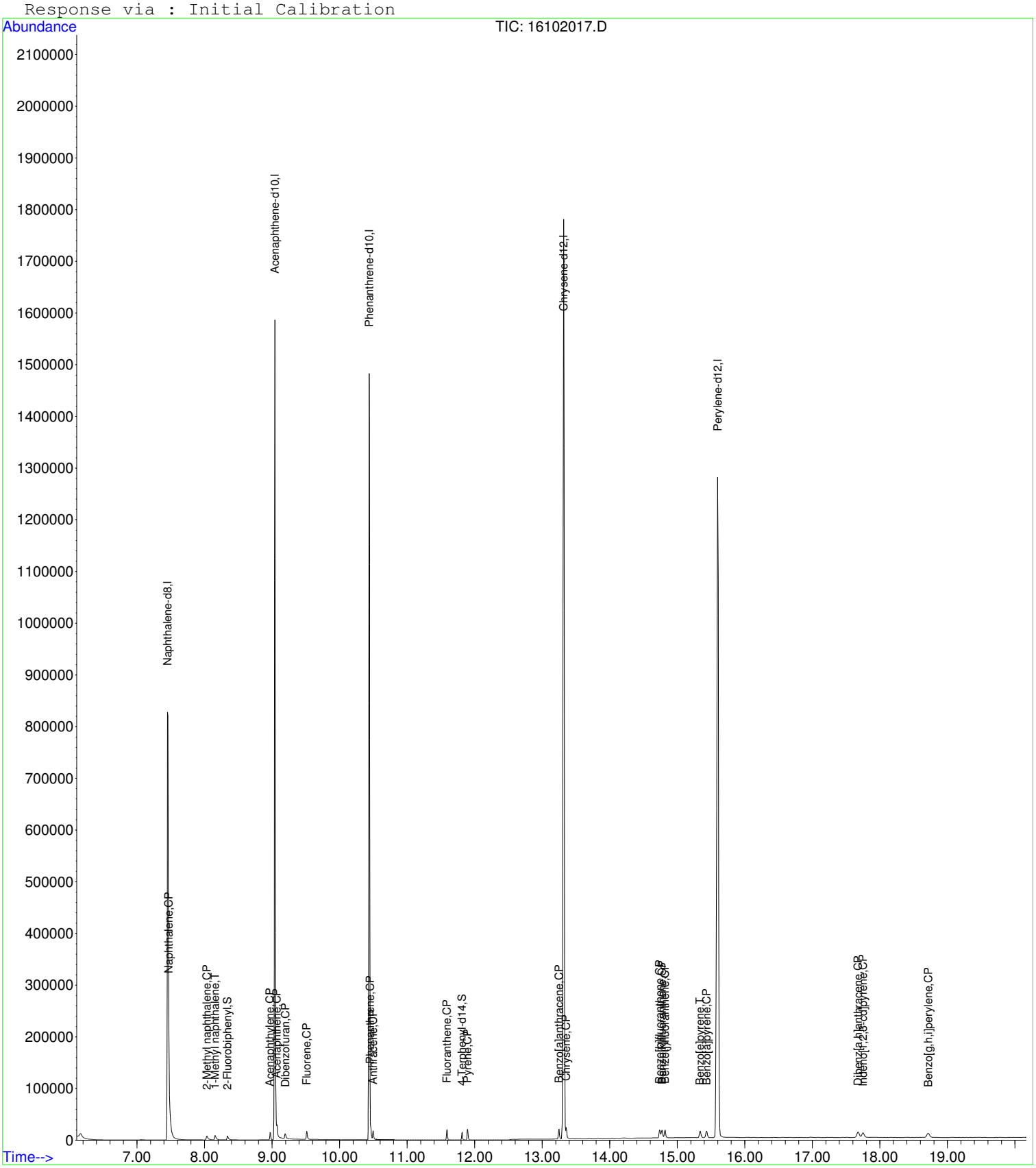
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1069876	4000.00	ug/kg	98
5) Acenaphthene-d10	9.04	164	639900	4000.00	ug/kg	101
11) Phenanthrene-d10	10.44	188	1199553	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1556495	4000.00	ug/kg	101
20) Perylene-d12	15.60	264	1510453	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.34	172	9571	51.21	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.28%#		
16) 4-Terphenyl-d14	11.81	244	12381	51.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.28%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	9826	51.02	ug/kg	99
3) 2-Methyl naphthalene	8.03	142	7228	50.43	ug/kg	94
4) 1-Methyl naphthalene	8.16	142	6749	50.40	ug/kg	94
6) Dibenzofuran	9.20	168	10409	51.13	ug/kg	99
8) Acenaphthylene	8.97	152	11296	49.97	ug/kg	99
9) Acenaphthene	9.08	154	6911	51.08	ug/kg	99
10) Fluorene	9.51	166	8365	50.52	ug/kg	98
12) Phenanthrene	10.46	178	11442	48.99	ug/kg	99
13) Anthracene	10.50	178	12107	50.36	ug/kg	98
14) Fluoranthene	11.59	202	13956	50.59	ug/kg	100
15) Pyrene	11.89	202	14634	51.08	ug/kg	99
18) Benzo[a]anthracene	13.25	228	14964	49.18	ug/kg	98
19) Chrysene	13.35	228	14045	49.82	ug/kg	98
21) Benzo[b]fluoranthene	14.74	252	16099	47.99	ug/kg	98
22) Benzo[k]fluoranthene	14.78	252	16740	54.14	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	15526	51.92	ug/kg	98
24) Benzo[e]pyrene	15.34	252	15417	51.46	ug/kg	99
25) Benzo[a]pyrene	15.43	252	15472	50.59	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	16166	50.32	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.75	276	15710	50.62	ug/kg	98
28) Benzo[g,h,i]perylene	18.72	276	16503	50.32	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102017.D Vial: 4
Acq On : 20 Oct 2016 5:32 pm Operator: LG
Sample : CAL3 50PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102018.D Vial: 5
Acq On : 20 Oct 2016 6:00 pm Operator: LG
Sample : CAL4 100PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

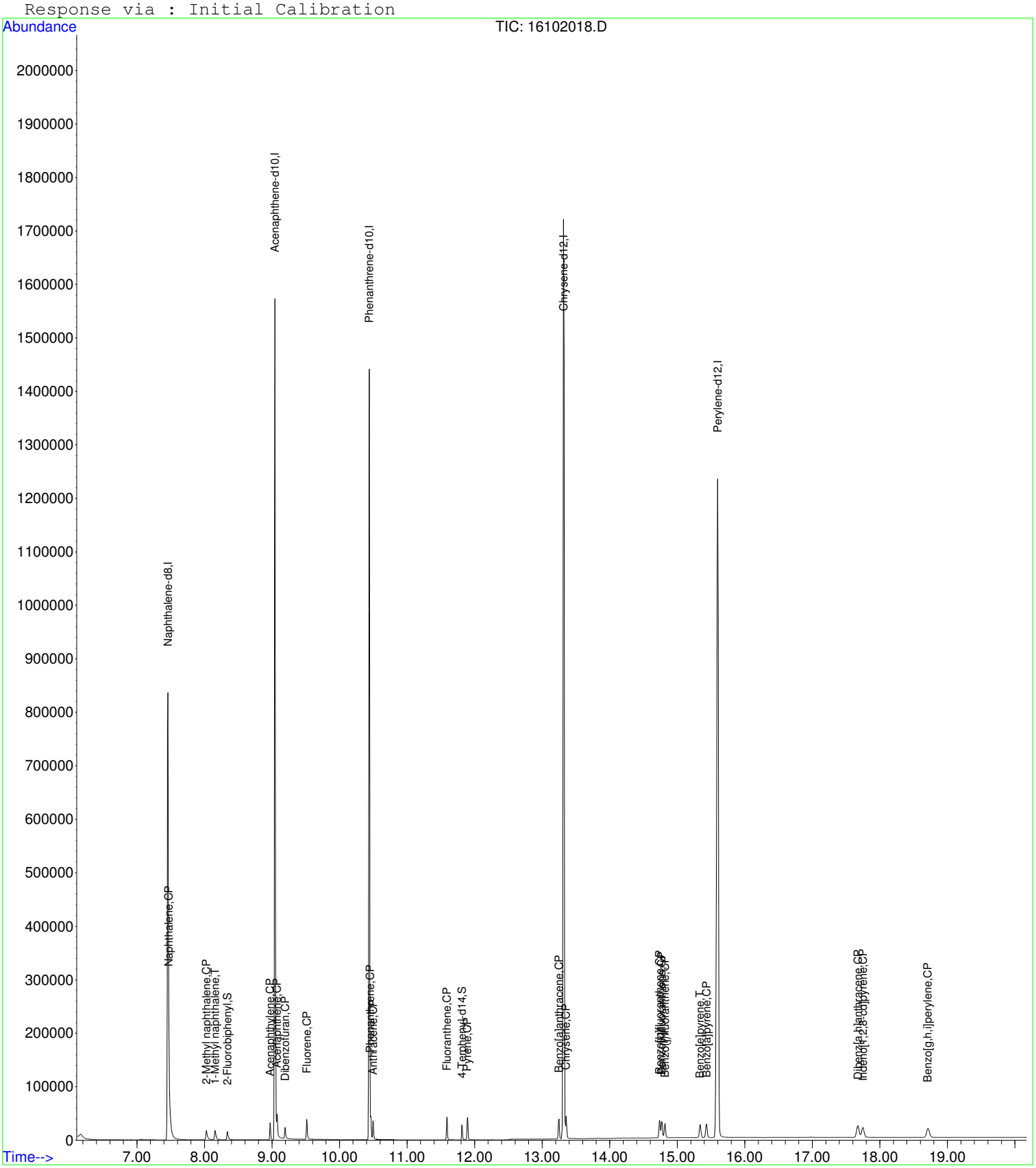
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040067	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	629544	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1179032	4000.00	ug/kg	98
17) Chrysene-d12	13.32	240	1524929	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1486769	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.34	172	18041	98.12	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.45%#		
16) 4-Terphenyl-d14	11.81	244	23153	97.77	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.44%#		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	19110	102.06	ug/kg	99
3) 2-Methyl naphthalene	8.03	142	14691	105.43	ug/kg	95
4) 1-Methyl naphthalene	8.16	142	13737	105.53	ug/kg	94
6) Dibenzofuran	9.19	168	19596	97.83	ug/kg	98
8) Acenaphthylene	8.97	152	23230	104.45	ug/kg	100
9) Acenaphthene	9.08	154	14222	106.85	ug/kg	97
10) Fluorene	9.51	166	17388	106.74	ug/kg	100
12) Phenanthrene	10.46	178	24086	104.92	ug/kg	99
13) Anthracene	10.49	178	25202	106.65	ug/kg	99
14) Fluoranthene	11.59	202	28875	106.49	ug/kg	99
15) Pyrene	11.89	202	30065	106.77	ug/kg	99
18) Benzo[a]anthracene	13.25	228	31153	104.50	ug/kg	99
19) Chrysene	13.35	228	29098	105.35	ug/kg	98
21) Benzo[b]fluoranthene	14.74	252	33911	102.71	ug/kg	99
22) Benzo[k]fluoranthene	14.77	252	33987	111.68	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	28571	97.07	ug/kg	98
24) Benzo[e]pyrene	15.34	252	28638	97.12	ug/kg	99
25) Benzo[a]pyrene	15.43	252	32027	106.39	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	33641	106.38	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.75	276	32454	106.23	ug/kg	98
28) Benzo[g,h,i]perylene	18.71	276	33915	105.06	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102018.D Vial: 5
Acq On : 20 Oct 2016 6:00 pm Operator: LG
Sample : CAL4 100PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:45 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102019.D Vial: 6
Acq On : 20 Oct 2016 6:28 pm Operator: LG
Sample : CAL5 500PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

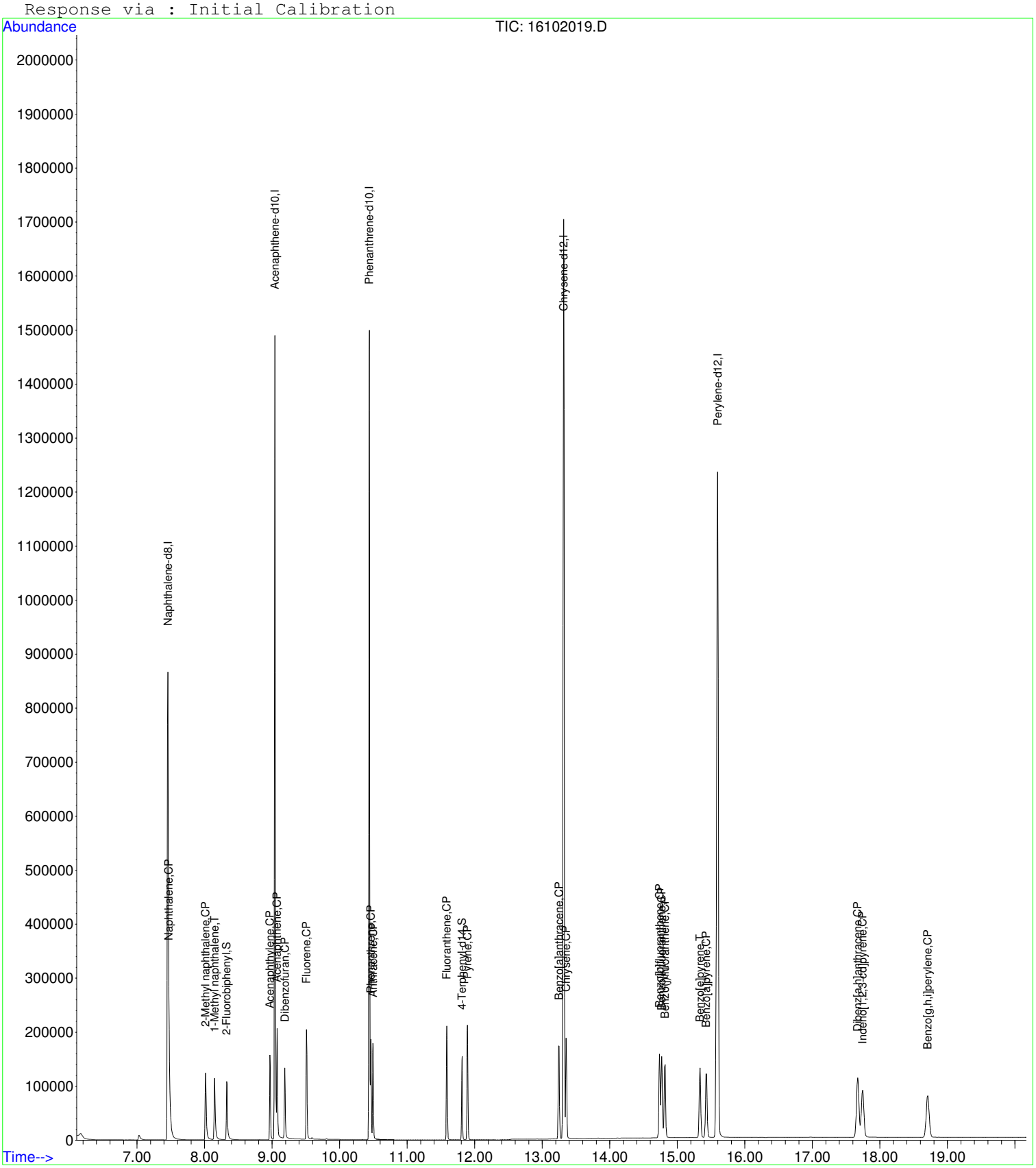
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040959	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	616557	4000.00	ug/kg	97
11) Phenanthrene-d10	10.44	188	1169580	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1497950	4000.00	ug/kg	97
20) Perylene-d12	15.60	264	1474044	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	96550	536.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 13.40%#			
16) 4-Terphenyl-d14	11.81	244	121909	518.97	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.97%#			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	95501	509.60	ug/kg	100
3) 2-Methyl naphthalene	8.02	142	72925	522.90	ug/kg	95
4) 1-Methyl naphthalene	8.15	142	67336	516.82	ug/kg	92
6) Dibenzofuran	9.19	168	103229	526.23	ug/kg	99
8) Acenaphthylene	8.97	152	112445	516.24	ug/kg	99
9) Acenaphthene	9.07	154	67042	514.30	ug/kg	98
10) Fluorene	9.51	166	82939	519.85	ug/kg	98
12) Phenanthrene	10.46	178	116156	510.05	ug/kg	100
13) Anthracene	10.49	178	119534	509.95	ug/kg	100
14) Fluoranthene	11.59	202	137568	511.44	ug/kg	99
15) Pyrene	11.89	202	139711	500.15	ug/kg	99
18) Benzo[a]anthracene	13.25	228	148744	507.92	ug/kg	99
19) Chrysene	13.35	228	141022	519.78	ug/kg	99
21) Benzo[b]fluoranthene	14.74	252	166152	507.57	ug/kg	98
22) Benzo[k]fluoranthene	14.77	252	148773	493.08	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	151187	518.10	ug/kg	98
24) Benzo[e]pyrene	15.34	252	149352	510.86	ug/kg	98
25) Benzo[a]pyrene	15.43	252	150503	504.25	ug/kg	98
26) Dibenz[a,h]anthracene	17.67	278	158215	504.64	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.74	276	153526	506.88	ug/kg	99
28) Benzo[g,h,i]perylene	18.71	276	160601	501.81	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102019.D Vial: 6
Acq On : 20 Oct 2016 6:28 pm Operator: LG
Sample : CAL5 500PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102020.D Vial: 7
Acq On : 20 Oct 2016 6:56 pm Operator: LG
Sample : CAL6 1000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

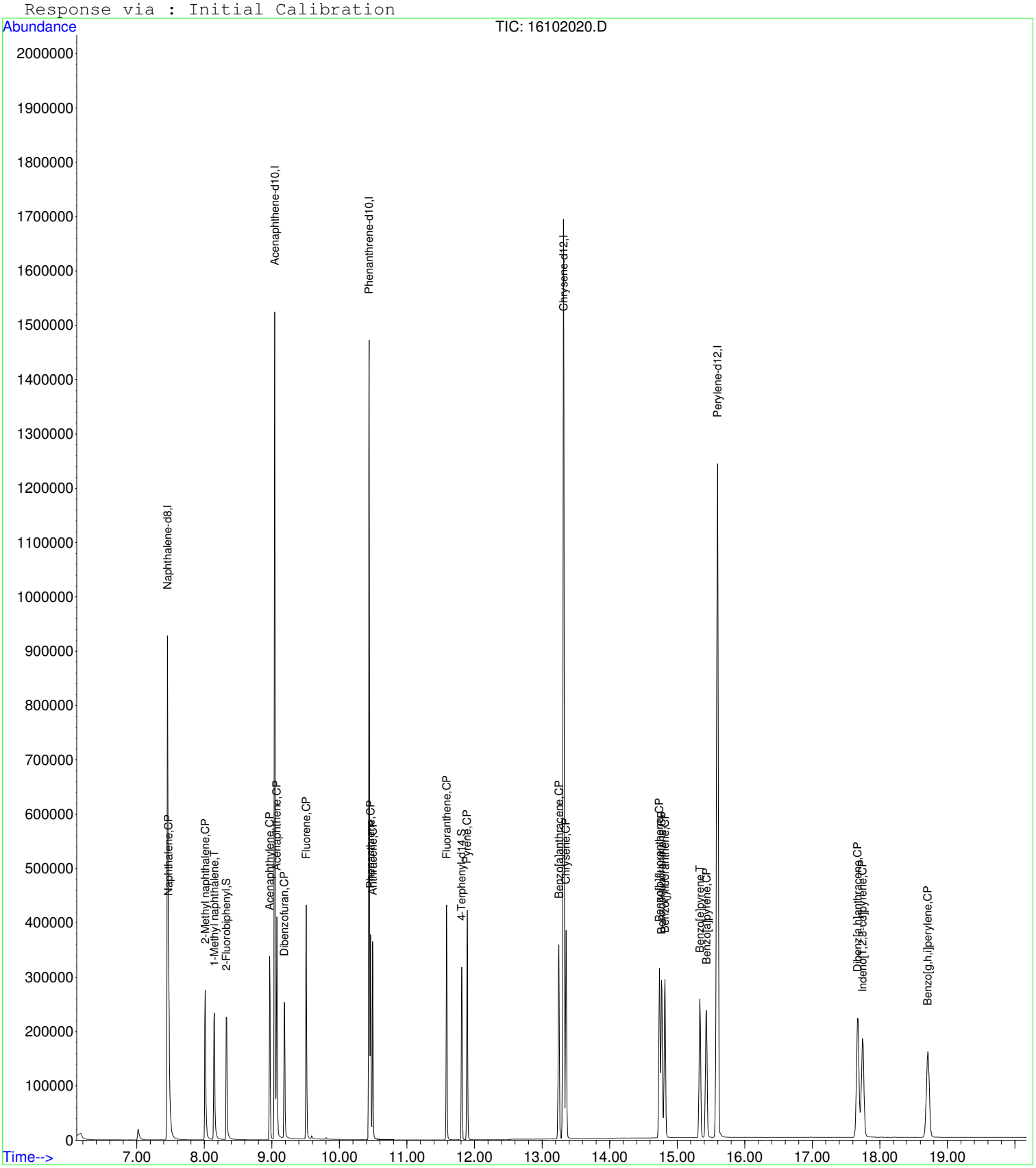
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1048894	4000.00	ug/kg	96
5) Acenaphthene-d10	9.04	164	626534	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1187118	4000.00	ug/kg	99
17) Chrysene-d12	13.32	240	1520400	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1497511	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	191429	1046.17	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	26.15%#		
16) 4-Terphenyl-d14	11.81	244	241549	1013.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	25.33%#		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	189020	1001.00	ug/kg	100
3) 2-Methyl naphthalene	8.01	142	146428	1042.00	ug/kg	97
4) 1-Methyl naphthalene	8.15	142	133996	1020.67	ug/kg	91
6) Dibenzofuran	9.19	168	204839	1027.59	ug/kg	99
8) Acenaphthylene	8.97	152	227633	1028.42	ug/kg	100
9) Acenaphthene	9.07	154	133512	1007.91	ug/kg	99
10) Fluorene	9.51	166	166447	1026.66	ug/kg	99
12) Phenanthrene	10.46	178	232447	1005.62	ug/kg	99
13) Anthracene	10.49	178	239736	1007.64	ug/kg	99
14) Fluoranthene	11.59	202	274903	1006.91	ug/kg	100
15) Pyrene	11.89	202	278891	983.65	ug/kg	99
18) Benzo[a]anthracene	13.25	228	296594	997.83	ug/kg	99
19) Chrysene	13.35	228	279060	1013.38	ug/kg	99
21) Benzo[b]fluoranthene	14.74	252	329092	989.58	ug/kg	99
22) Benzo[k]fluoranthene	14.77	252	315203	1028.31	ug/kg	98
23) Benzo(j)fluoranthene	14.82	252	292754	987.52	ug/kg	98
24) Benzo[e]pyrene	15.34	252	299206	1007.40	ug/kg	98
25) Benzo[a]pyrene	15.43	252	301906	995.66	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	317822	997.83	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.74	276	309360	1005.38	ug/kg	100
28) Benzo[g,h,i]perylene	18.71	276	321446	988.64	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102020.D Vial: 7
Acq On : 20 Oct 2016 6:56 pm Operator: LG
Sample : CAL6 1000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102021.D Vial: 8
Acq On : 20 Oct 2016 7:24 pm Operator: LG
Sample : CAL7 2000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

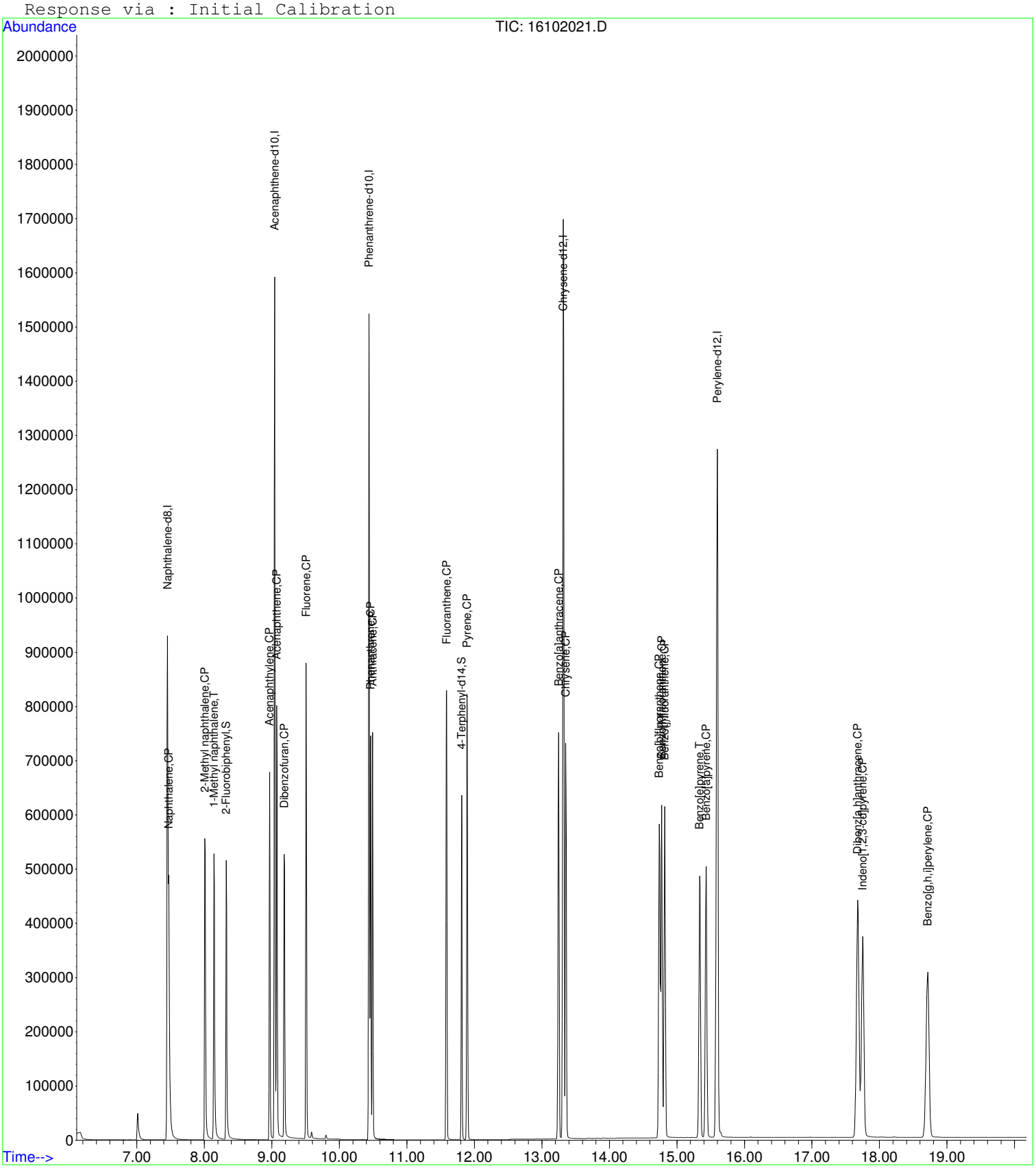
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1091786	4000.00	ug/kg	100
5) Acenaphthene-d10	9.04	164	633848	4000.00	ug/kg	100
11) Phenanthrene-d10	10.44	188	1200220	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1541952	4000.00	ug/kg	100
20) Perylene-d12	15.60	264	1517090	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	384078	2074.78	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.87%			
16) 4-Terphenyl-d14	11.81	244	479633	1989.70	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.74%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	390302	1985.73	ug/kg	100
3) 2-Methyl naphthalene	8.01	142	297716	2035.34	ug/kg	100
4) 1-Methyl naphthalene	8.14	142	270306	1978.08	ug/kg	100
6) Dibenzofuran	9.19	168	406812	2017.25	ug/kg	100
8) Acenaphthylene	8.97	152	458773	2048.77	ug/kg	100
9) Acenaphthene	9.07	154	268073	2000.38	ug/kg	100
10) Fluorene	9.51	166	330653	2015.96	ug/kg	100
12) Phenanthrene	10.46	178	462874	1980.64	ug/kg	100
13) Anthracene	10.49	178	474385	1972.14	ug/kg	100
14) Fluoranthene	11.59	202	545193	1975.13	ug/kg	100
15) Pyrene	11.89	202	554395	1934.00	ug/kg	100
18) Benzo[a]anthracene	13.25	228	594548	1972.27	ug/kg	100
19) Chrysene	13.35	228	549735	1968.41	ug/kg	100
21) Benzo[b]fluoranthene	14.74	252	718108	2131.48	ug/kg	100
22) Benzo[k]fluoranthene	14.77	252	559144	1800.59	ug/kg	100
23) Benzo(j)fluoranthene	14.82	252	590891	1967.47	ug/kg	100
24) Benzo[e]pyrene	15.34	252	597297	1985.08	ug/kg	100
25) Benzo[a]pyrene	15.43	252	602075	1959.97	ug/kg	100
26) Dibenz[a,h]anthracene	17.68	278	625235	1937.65	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.75	276	614639	1971.72	ug/kg	100
28) Benzo[g,h,i]perylene	18.72	276	642670	1951.09	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102021.D Vial: 8
Acq On : 20 Oct 2016 7:24 pm Operator: LG
Sample : CAL7 2000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102022.D Vial: 9
Acq On : 20 Oct 2016 7:52 pm Operator: LG
Sample : CAL8 5000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

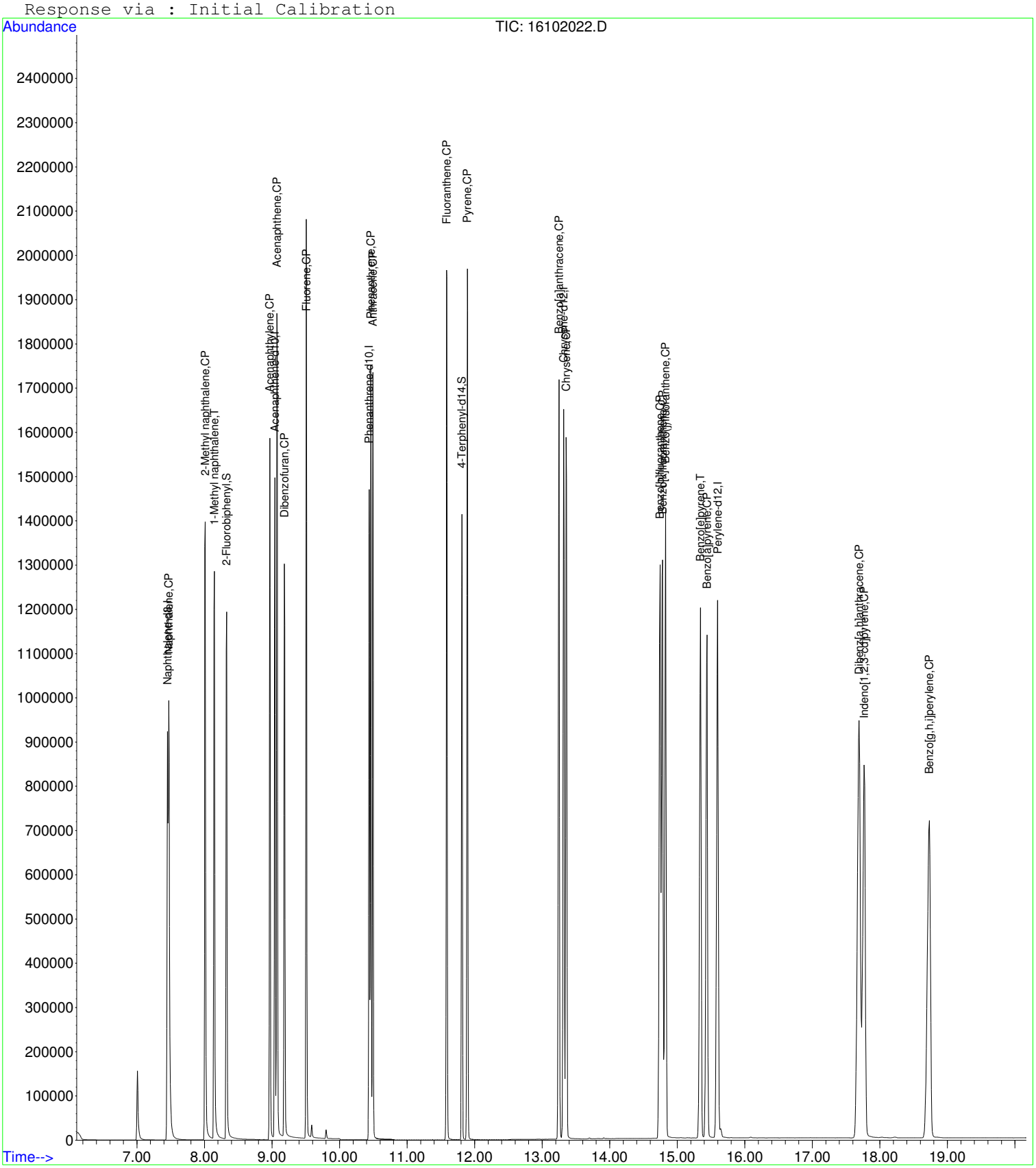
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1041865	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	606729	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1156115	4000.00	ug/kg	96
17) Chrysene-d12	13.32	240	1468571	4000.00	ug/kg	95
20) Perylene-d12	15.60	264	1438518	4000.00	ug/kg	95
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	899137	5074.21	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 126.86%			
16) 4-Terphenyl-d14	11.81	244	1103576	4752.70	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 118.82%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	932459	4971.35	ug/kg	99
3) 2-Methyl naphthalene	8.01	142	711066	5094.15	ug/kg	99
4) 1-Methyl naphthalene	8.15	142	643834	4937.28	ug/kg	90
6) Dibenzofuran	9.19	168	948517	4913.62	ug/kg	98
8) Acenaphthylene	8.97	152	1076114	5020.48	ug/kg	99
9) Acenaphthene	9.08	154	638925	4980.82	ug/kg	94
10) Fluorene	9.51	166	775875	4941.87	ug/kg	99
12) Phenanthrene	10.46	178	1075043	4775.60	ug/kg	98
13) Anthracene	10.49	178	1117103	4821.25	ug/kg	99
14) Fluoranthene	11.59	202	1265556	4759.78	ug/kg	98
15) Pyrene	11.89	202	1284240	4650.97	ug/kg	99
18) Benzo[a]anthracene	13.25	228	1398116	4869.66	ug/kg	99
19) Chrysene	13.35	228	1293823	4864.21	ug/kg	99
21) Benzo[b]fluoranthene	14.75	252	1583462	4956.73	ug/kg	98
22) Benzo[k]fluoranthene	14.78	252	1406704	4777.39	ug/kg	98
23) Benzo(j)fluoranthene	14.83	252	1421031	4989.99	ug/kg	99
24) Benzo[e]pyrene	15.34	252	1416645	4965.30	ug/kg	97
25) Benzo[a]pyrene	15.44	252	1429283	4906.97	ug/kg	98
26) Dibenz[a,h]anthracene	17.69	278	1513569	4946.87	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.77	276	1474949	4989.98	ug/kg	99
28) Benzo[g,h,i]perylene	18.73	276	1549045	4959.63	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102022.D Vial: 9
Acq On : 20 Oct 2016 7:52 pm Operator: LG
Sample : CAL8 5000PPB Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102023.D Vial: 10
Acq On : 20 Oct 2016 8:19 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

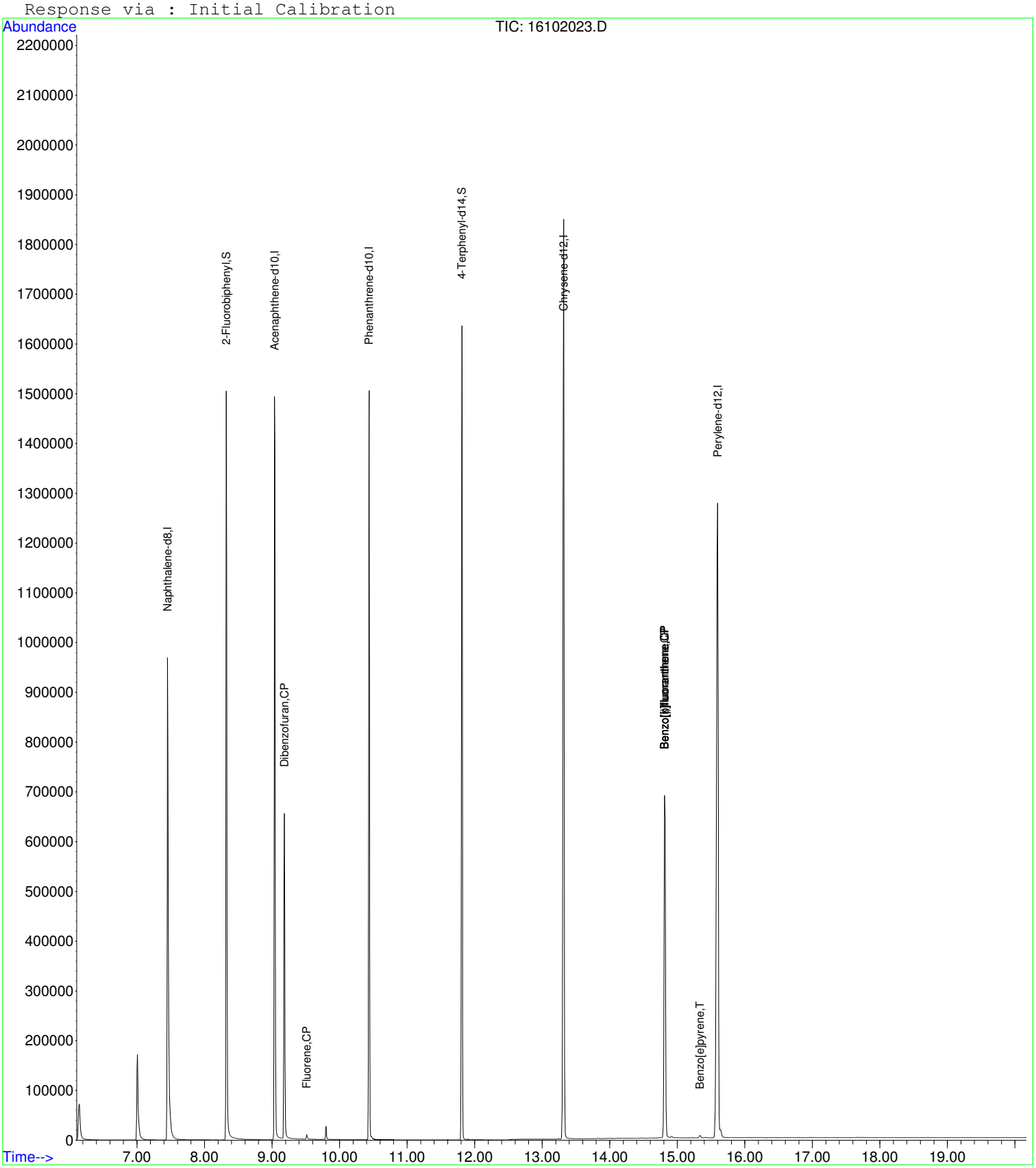
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1171217	4000.00	ug/kg	107
5) Acenaphthene-d10	9.04	164	648893	4000.00	ug/kg	102
11) Phenanthrene-d10	10.44	188	1210829	4000.00	ug/kg	101
17) Chrysene-d12	13.32	240	1579392	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	1559784	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	1045019	5514.27	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 137.86%			
16) 4-Terphenyl-d14	11.81	244	1313734	5402.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 135.05%			
Target Compounds						Qvalue
6) Dibenzofuran	9.18	168	476465	2307.86	ug/kg	100
10) Fluorene	9.51	166	4465	26.59	ug/kg	100
21) ~~Benzo[b]fluoranthene~~	~~14.81~~	~~252~~	~~738803~~	~~2132.88~~	~~ug/kg~~	~~96~~
22) ~~Benzo[k]fluoranthene~~	~~14.81~~	~~252~~	~~739383~~	~~2315.84~~	~~ug/kg~~	~~95~~
23) Benzo(j)fluoranthene	14.81	252	739383	2394.51	ug/kg	98
24) Benzo[e]pyrene	15.34	252	5583	18.05	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102023.D Vial: 10
Acq On : 20 Oct 2016 8:19 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161020\16102024.D Vial: 11
Acq On : 20 Oct 2016 8:47 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

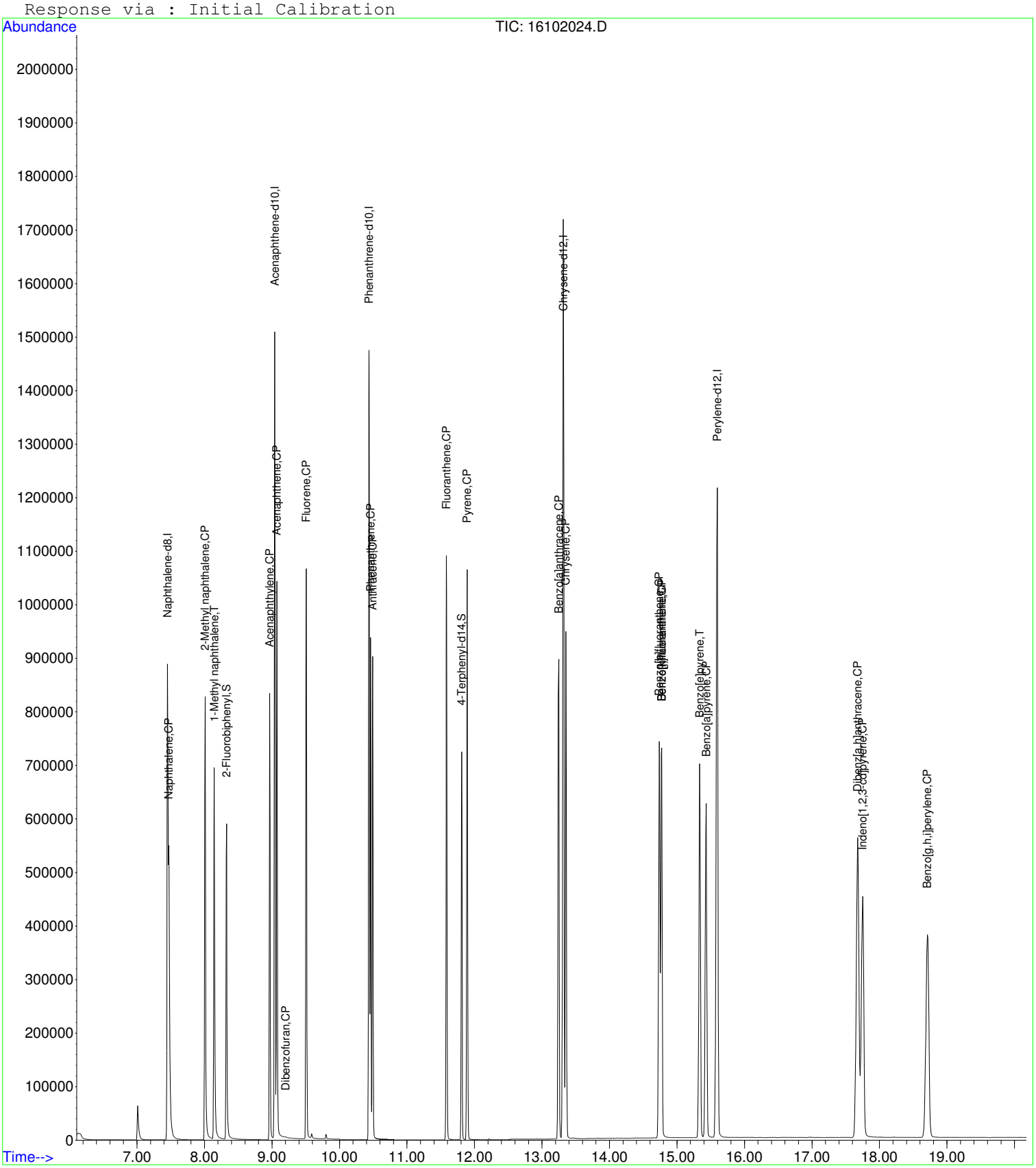
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1036180	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	609450	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1158659	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1508270	4000.00	ug/kg	98
20) Perylene-d12	15.60	264	1454395	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	448215	2518.17	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	62.95%		
16) 4-Terphenyl-d14	11.81	244	551388	2369.41	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	59.24%		
Target Compounds						Qvalue
2) Naphthalene	7.48	128	475797	2550.60	ug/kg	99
3) 2-Methyl naphthalene	8.01	142	395608	2849.73	ug/kg	98
4) 1-Methyl naphthalene	8.14	142	354416	2732.77	ug/kg	92
6) ~~Dibenzofuran~~	~~9.20~~	~~168~~	~~1432~~	~~7.39~~	~~ug/kg~~	~~97~~
8) Acenaphthylene	8.97	152	559039	2596.48	ug/kg	100
9) Acenaphthene	9.07	154	341082	2647.07	ug/kg	99
10) Fluorene	9.51	166	414488	2628.26	ug/kg	99
12) Phenanthrene	10.46	178	567945	2517.41	ug/kg	100
13) Anthracene	10.49	178	584466	2516.93	ug/kg	100
14) Fluoranthene	11.58	202	686532	2576.39	ug/kg	99
15) Pyrene	11.89	202	693705	2506.79	ug/kg	100
18) Benzo[a]anthracene	13.25	228	739481	2507.83	ug/kg	99
19) Chrysene	13.35	228	693654	2539.20	ug/kg	100
21) Benzo[b]fluoranthene	14.74	252	796577	2466.31	ug/kg	99
22) Benzo[k]fluoranthene	14.77	252	753964	2532.63	ug/kg	99
23) Benzo(j)fluoranthene	14.77	252	755048	2622.43	ug/kg	95
24) Benzo[e]pyrene	15.34	252	810913	2811.20	ug/kg	98
25) Benzo[a]pyrene	15.43	252	757583	2572.52	ug/kg	99
26) Dibenz[a,h]anthracene	17.68	278	799215	2583.60	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.75	276	741482	2481.16	ug/kg	100
28) Benzo[g,h,i]perylene	18.71	276	771487	2443.13	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161020\16102024.D Vial: 11
Acq On : 20 Oct 2016 8:47 pm Operator: LG
Sample : SSCV 2500PPB Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 21 10:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration



GCMS8
For

DHL Work Order
1611053

GCMS8_161123A
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS8_161123A
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report	X		x
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			x
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS	X			
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS	X			
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)	X			

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis	7 days (Aq) - extraction			X	
1. Are all sample hold times met?	14 days (Soil) - extraction	X			
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only	X			x
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			x
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE	All deviations from the method and SOP that affect data quality			X	x
1. Are all non-conformances included and noted?					
2. Are all corrective actions included?				X	
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS ___LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
___ Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

Analyst: Don Winston Date: 11/25/2016

Second-Level Review: Janice Whitt Date: 11/29/2016

REVIEWED BY
By Janice Whitt at 1:16:42 PM, 11/29/2016

DHL Analytical, Inc.

Run ID: GCMS8_161123A **Run No.:** 89136

Analytical Run Date: 11/23/2016 **InstrumentID:** GCMS8

Analyst: Duston Bezner **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 707 **Column ID:** 0.18mm

Column Length: 20m

Cal Comments: PP161021.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161123	1	PAH_LL_SDOD1	TUNE	R89136	11/23/2016 11:30:00 AM		
ICV-161123	1	PAH_LL_SDOD1	ICV	R89136	11/23/2016 11:58:00 AM		
LCS-77972	1	PAH_LL_SDOD1	LCS	77972	11/23/2016 12:27:00 PM		
LCS-77983	1	PAH_LL_SDOD1	LCS	77983	11/23/2016 12:56:00 PM		
MB-77972	1	PAH_LL_SDOD1	MBLK	77972	11/23/2016 1:24:00 PM		
MB-77983	1	PAH_LL_SDOD1	MBLK	77983	11/23/2016 1:53:00 PM		
1611053-03A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 2:22:00 PM		
1611053-08A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 2:51:00 PM		
1611053-28A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 3:19:00 PM		
1611053-33A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 3:48:00 PM		
1611053-38A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 4:17:00 PM		
1611071-03A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 4:45:00 PM		
1611071-06A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 5:14:00 PM		
1611071-13A	10	PAH_LL_SDOD1	SAMP	77972	11/23/2016 5:43:00 PM		
1611071-23A	10	PAH_LL_SDOD1	SAMP	77983	11/23/2016 6:11:00 PM		
1611053-03AMS	10	PAH_LL_SDOD1	MS	77972	11/23/2016 6:40:00 PM		
1611053-03AMSD	10	PAH_LL_SDOD1	MSD	77972	11/23/2016 7:09:00 PM		
CCV1-161123	1	PAH_LL_SDOD1	CCV	R89136	11/23/2016 7:38:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/21/2017
PAHICV161020	2 PPM PAH ICV	ICV	01/18/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\msdchem\1\sequence\161123.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\161123\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line		Sample Name/Misc Info		
1)	Sample	1	16112301 DFTPPPAH	DFTPP-161123
2)	Sample	2	16112302 PP161021	ICV-161123
3)	Sample	3	16112303 PP161021	LCS-77972
4)	Sample	4	16112304 PP161021	LCS-77983
5)	Sample	5	16112305 PP161021	MB-77972
6)	Sample	6	16112306 PP161021	MB-77983
7)	Sample	7	16112307 PP161021	1611053-03A
8)	Sample	8	16112308 PP161021	1611053-08A
9)	Sample	9	16112309 PP161021	1611053-28A
10)	Sample	10	16112310 PP161021	1611053-33A
11)	Sample	11	16112311 PP161021	1611053-38A
12)	Sample	12	16112312 PP161021	1611071-03A
13)	Sample	13	16112313 PP161021	1611071-06A
14)	Sample	14	16112314 PP161021	1611071-13A
15)	Sample	15	16112315 PP161021	1611071-23A
16)	Sample	16	16112316 PP161021	1611053-03AMS
17)	Sample	17	16112317 PP161021	1611053-03AMSD
18)	Sample	18	16112318 PP161021	CCV1-161123

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/17/2016 1:19:38 PM**
Digestion:
Prep End Date: 11/17/16 4:50PM

Prep Batch **77972** Prep Code: **3550_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-03A	Soil		10.10	10	1.000	1 of 1	
	Extract and Hold						
1611053-03AMS	Soil		10.32	10	1.000	of	
1611053-03AMSD	Soil		10.39	10	1.000	of	
1611053-04A	Soil		10.28	10	1.000	1 of 1	
	Extract and Hold						
1611053-05A	Soil		10.04	10	1.000	1 of 1	
	Extract and Hold						
1611053-08A	Soil		10.51	10	1.000	1 of 1	
	Extract and Hold						
1611053-09A	Soil		10.14	10	1.000	1 of 1	
	Extract and Hold						
1611053-10A	Soil		10.46	10	1.000	1 of 1	
	Extract and Hold						
1611053-28A	Soil		10.17	10	1.000	1 of 1	
	Extract and Hold						
1611053-29A	Soil		10.22	10	1.000	1 of 1	
	Extract and Hold						
1611053-30A	Soil		10.48	10	1.000	1 of 1	
	Extract and Hold						
1611053-33A	Soil		10.14	10	1.000	1 of 1	
	Extract and Hold						
1611053-34A	Soil		10.52	10	1.000	1 of 1	
	Extract and Hold						
1611053-35A	Soil		10.16	10	1.000	1 of 1	
	Extract and Hold						

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 12:33:17 PM, 11/29/2016

11/17/16

11/17/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/17/2016 1:19:38 PM**
Digestion:
Prep End Date: 11/17/16 4:50PM

Prep Batch **77972** Prep Code: **3550_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-38A	Soil		10.80	10	1.000	1 of 1	
	Extract and Hold						
1611053-39A	Soil		10.20	10	1.000	1 of 1	
	Extract and Hold						
1611053-40A	Soil		10.30	10	1.000	1 of 1	
	Extract and Hold						
1611071-03A	Soil		10.96	10	1.000	1 of 1	Standing Water
	Extract and Hold						
1611071-06A	Soil		10.15	10	1.000	1 of 1	
	Extract and Hold						
1611071-07A	Soil		10.12	10	1.000	1 of 1	
	Extract and Hold						
1611071-13A	Soil		10.12	10	1.000	1 of 1	
	Extract and Hold						
1611071-14A	Soil		10.33	10	1.000	1 of 1	
	Extract and Hold						
LCS-77972	Soil		10	10	1.000	of	
MB-77972	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890		120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 12:33:21 PM, 11/29/2016

11/17/16

11/17/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/17/2016 1:19:38 PM**
Digestion:
Prep End Date: **11/17/2016 4:50:00 PM**

Prep Batch **77972** Prep Code: **3550_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-03A	Soil		10.1	10	0.990	1 of 1	
1611053-03AMS	Soil		10.32	10	0.969	of	
1611053-03AMSD	Soil		10.39	10	0.962	of	
1611053-04A	Soil		10.28	10	0.973	1 of 1	
	Extract and Hold						
1611053-05A	Soil		10.04	10	0.996	1 of 1	
	Extract and Hold						
1611053-08A	Soil		10.51	10	0.951	1 of 1	
1611053-09A	Soil		10.14	10	0.986	1 of 1	
	Extract and Hold						
1611053-10A	Soil		10.46	10	0.956	1 of 1	
	Extract and Hold						
1611053-28A	Soil		10.17	10	0.983	1 of 1	
1611053-29A	Soil		10.22	10	0.978	1 of 1	
	Extract and Hold						
1611053-30A	Soil		10.48	10	0.954	1 of 1	
	Extract and Hold						
1611053-33A	Soil		10.14	10	0.986	1 of 1	
1611053-34A	Soil		10.52	10	0.951	1 of 1	
	Extract and Hold						
1611053-35A	Soil		10.15	10	0.985	1 of 1	
	Extract and Hold						
1611053-38A	Soil		10.3	10	0.971	1 of 1	
1611053-39A	Soil		10.2	10	0.980	1 of 1	
	Extract and Hold						
1611053-40A	Soil		10.3	10	0.971	1 of 1	
	Extract and Hold						

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 12:33:25 PM, 11/29/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/17/2016 1:19:38 PM**
Digestion:
Prep End Date: **11/17/2016 4:50:00 PM**

Prep Batch **77972** Prep Code: **3550_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-03A	Soil		10.96	10	0.912	1 of 1	
1611071-06A	Soil		10.15	10	0.985	1 of 1	
1611071-07A	Soil		10.12	10	0.988	1 of 1	
	Extract and Hold						
1611071-13A	Soil		10.12	10	0.988	1 of 1	
1611071-14A	Soil		10.33	10	0.968	1 of 1	
	Extract and Hold						
LCS-77972	Soil		10	10	1.000	of	
MB-77972	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10651	Methylene Chloride	8	ml	08/15/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10890	1:1 MeCl2/Acetone	120	ml	11/17/2026

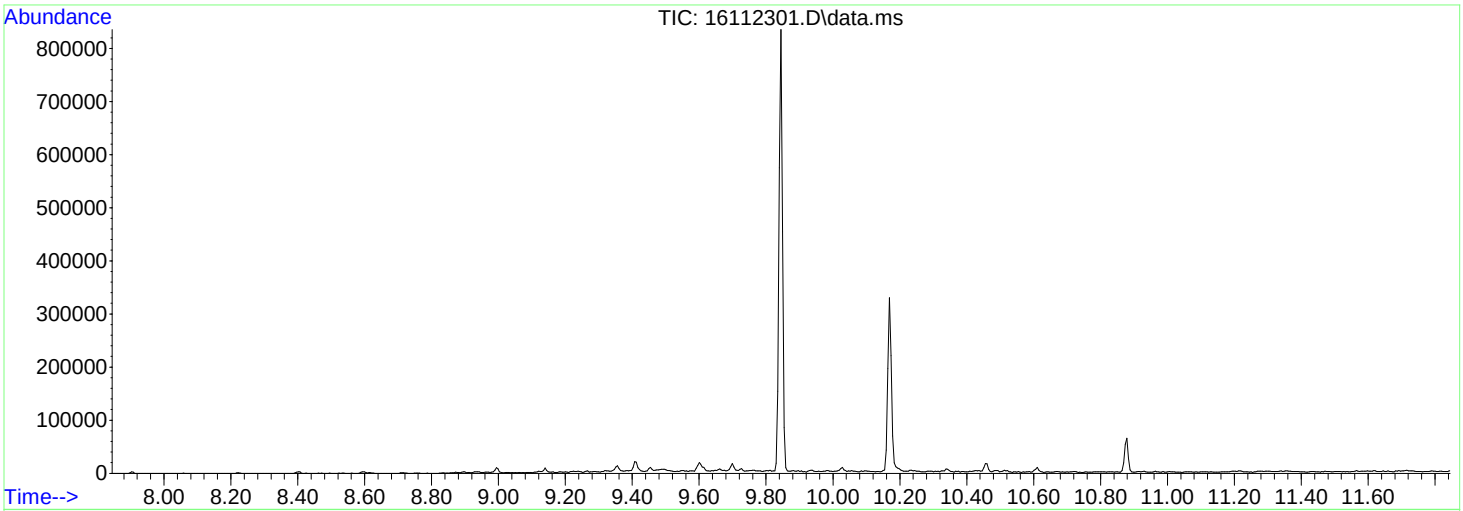
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161114	40 PPM Surrogate Standard	ALL	0.25	02/13/2017

REVIEWED BY
By Janice Whitt at 12:33:30 PM, 11/29/2016

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112301.D
Acq On : 23 Nov 2016 11:30 am
Operator :
Sample : DFTPP-161123
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 798, 799, 800; Background Corrected with Scan 793

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	49.9	29678	PASS
68	69	0.00	2	0.0	0	PASS
70	69	0.00	2	0.5	178	PASS
127	198	10	80	54.6	32482	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	59437	PASS
199	198	5	9	7.0	4178	PASS
275	198	10	60	28.1	16683	PASS
365	198	1	200	3.2	1910	PASS
441	442	0.01	24	16.6	17521	PASS
442	198	50	400	177.9	105717	PASS
443	442	15	24	19.8	20932	PASS

REVIEWED BY
By Janice Whitt at 12:34:18 PM, 11/29/2016

Manual Integrations Tracking Form - DoD QSM 4.2 Requirement

Instrument ID: GCMS#8 **Data Folder: GCMS8_161123A**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611071-23A	Benzo(k)fluoranthene – integrated wrong peak.			

***Manually Integrated = MI**

Don Winston 11-25-16

Analyst **Date**

Janice Whitt 11/29/2016

2nd Level Review **Date**

MI_GCMS8

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112302.D
Acq On : 23 Nov 2016 11:58 am
Operator :
Sample : ICV-161123
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 25 09:53:50 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1320859	4000.00	ug/kg	150
5) Acenaphthene-d10	9.057	164	643497	4000.00	ug/kg	81
11) Phenanthrene-d10	10.457	188	1123303	4000.00	ug/kg	80
17) Chrysene-d12	13.359	240	1203345	4000.00	ug/kg	72
20) Perylene-d12	15.666	264	1242700	4000.00	ug/kg	71

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.334	172	448059	2143.70	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 53.59%			
16) 4-Terphenyl-d14	11.839	244	414172	1918.19	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 47.95%			

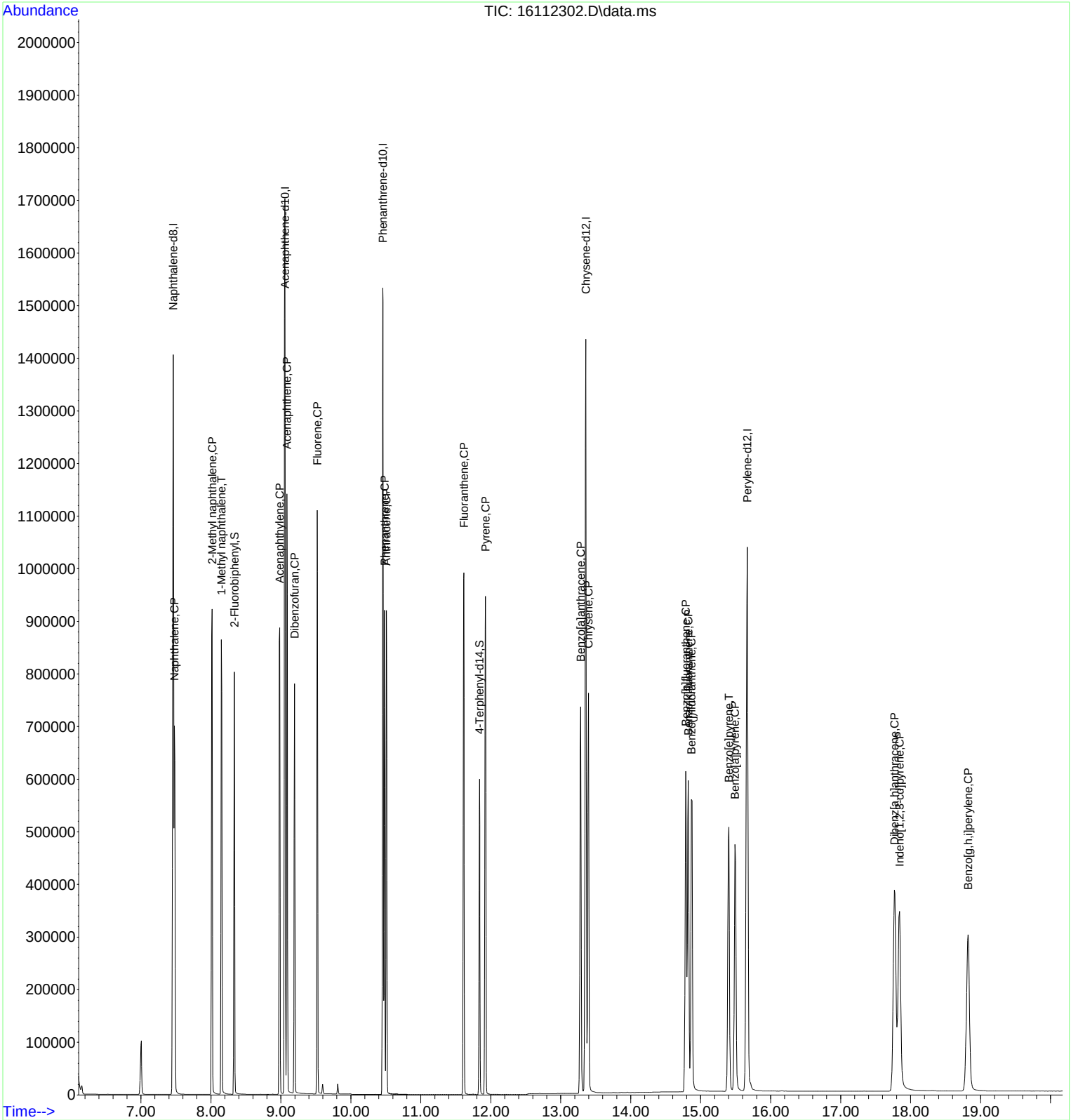
Target Compounds						Qvalue
2) Naphthalene	7.479	128	552158	2152.56	ug/kg	99
3) 2-Methyl naphthalene	8.016	142	389227	1371.19	ug/kg	98
4) 1-Methyl naphthalene	8.155	142	346114	1350.55	ug/kg	94
6) Dibenzofuran	9.195	168	473294	2023.67	ug/kg	99
8) Acenaphthylene	8.983	152	574016	2139.56	ug/kg	98
9) Acenaphthene	9.086	154	328883	2116.15	ug/kg	98
10) Fluorene	9.519	166	396285	2035.75	ug/kg	97
12) Phenanthrene	10.482	178	524028	1985.75	ug/kg	100
13) Anthracene	10.509	178	529765	1971.93	ug/kg	100
14) Fluoranthene	11.614	202	585480	1876.58	ug/kg	99
15) Pyrene	11.923	202	577918	1804.18	ug/kg	100
18) Benzo[a]anthracene	13.286	228	597035	2106.93	ug/kg	100
19) Chrysene	13.396	228	547714	2131.97	ug/kg	99
21) Benzo[b]fluoranthene	14.787	252	609753	1966.63	ug/kg	99
22) Benzo[k]fluoranthene	14.824	252	598674	2136.21	ug/kg	99
23) Benzo(j)fluoranthene	14.875	252	586144	2126.28	ug/kg	99
24) Benzo[e]pyrene	15.403	252	577962	2079.64	ug/kg	97
25) Benzo[a]pyrene	15.491	252	577823	2034.94	ug/kg	97
26) Dibenz[a,h]anthracene	17.776	278	567523	1943.53	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.842	276	552239	1939.06	ug/kg	99
28) Benzo[g,h,i]perylene	18.823	276	577393	1914.31	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112302.D
Acq On : 23 Nov 2016 11:58 am
Operator :
Sample : ICV-161123
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

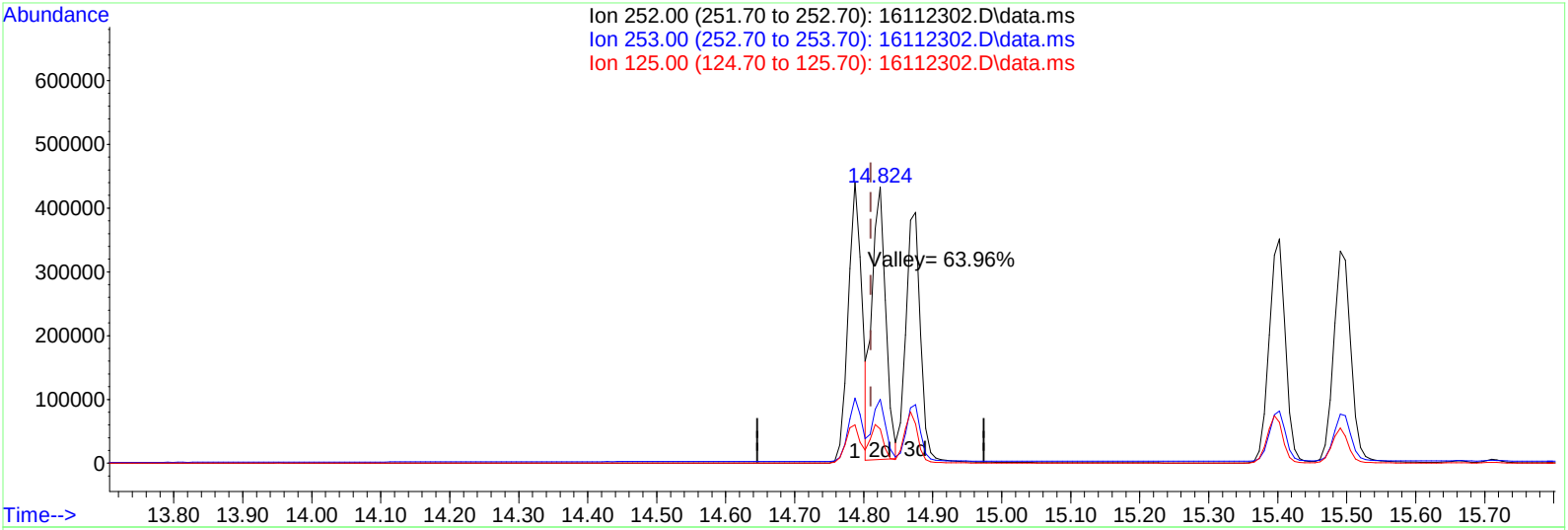
Quant Time: Nov 25 09:53:50 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

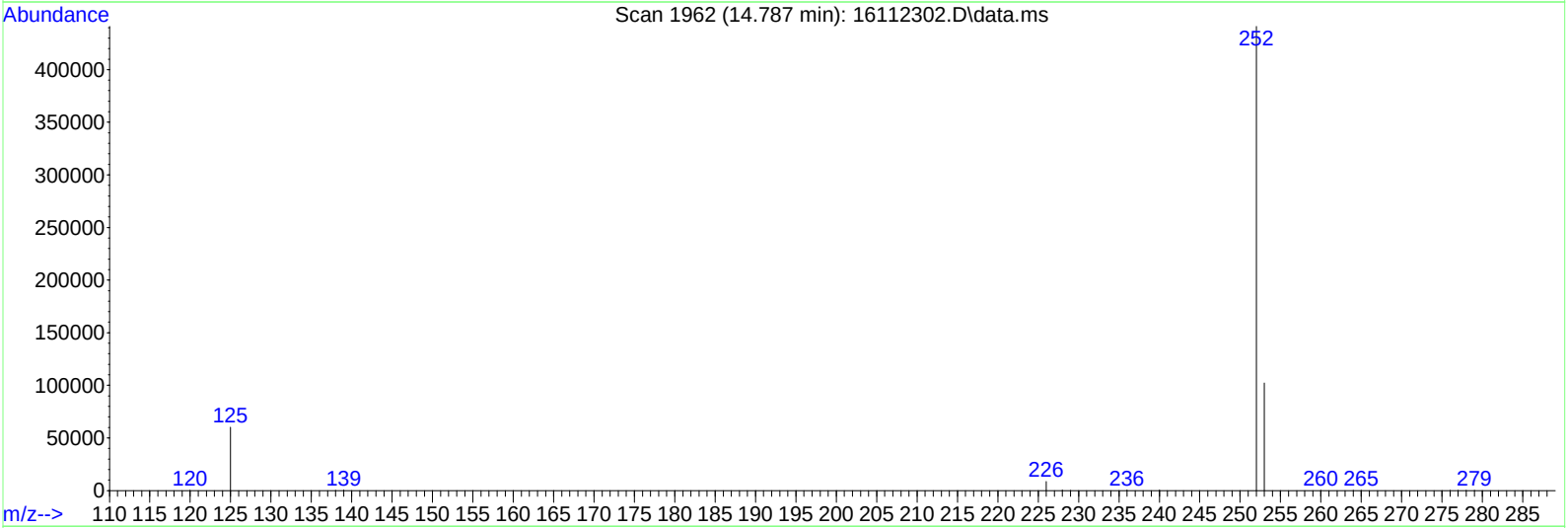


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112302.D
Acq On : 23 Nov 2016 11:58 am
Operator :
Sample : ICV-161123
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 25 09:52:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration





TIC: 16112302.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.787min (-0.023) 1966.63ug/kg

response 609753

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.52
125.00	12.90	13.59
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112303.D
Acq On : 23 Nov 2016 12:27 pm
Operator :
Sample : LCS-77972
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 25 09:53:53 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

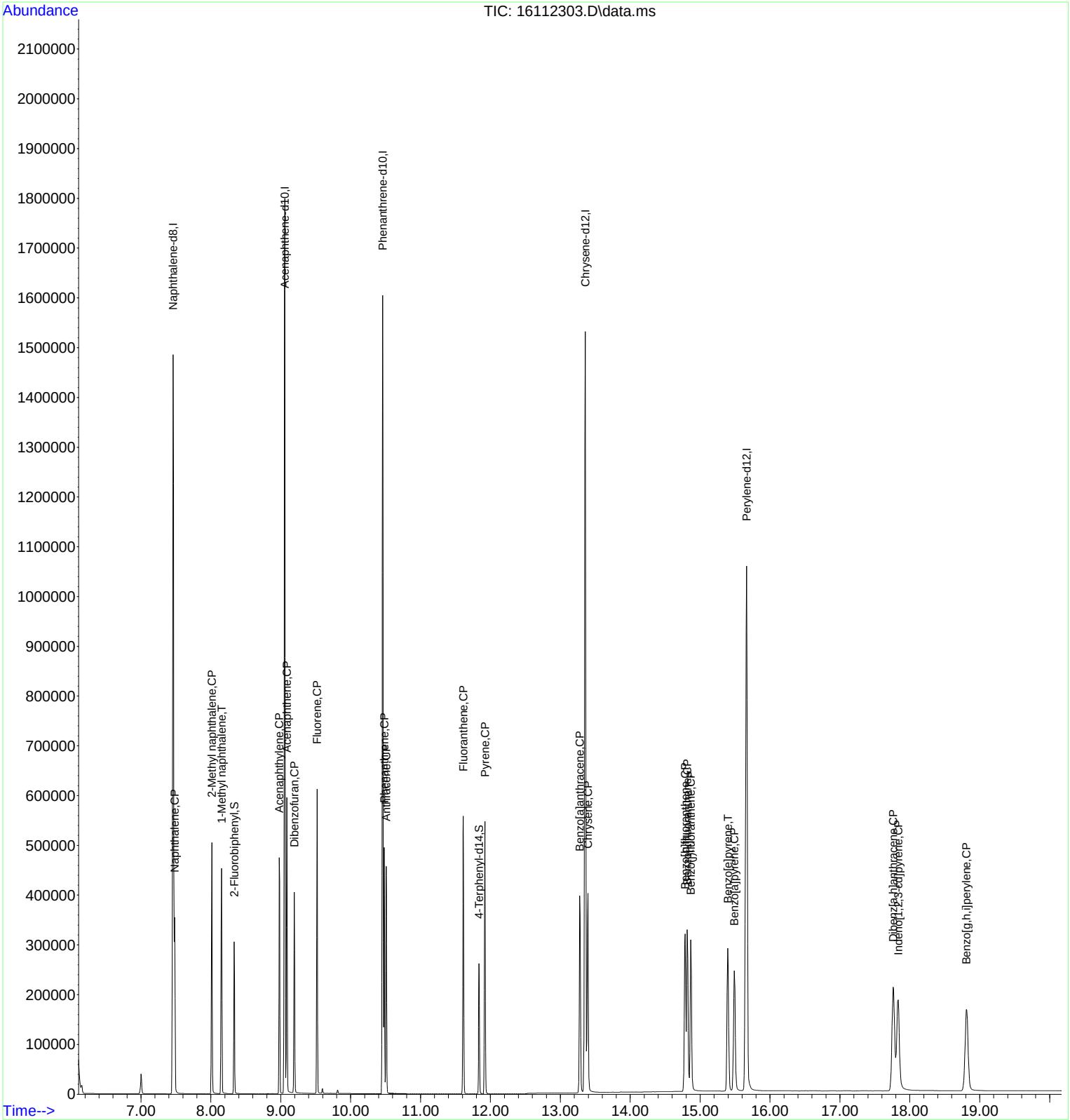
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	1376983	4000.00	ug/kg	156
5) Acenaphthene-d10	9.057	164	682083	4000.00	ug/kg	86
11) Phenanthrene-d10	10.459	188	1170589	4000.00	ug/kg	83
17) Chrysene-d12	13.358	240	1269923	4000.00	ug/kg	76
20) Perylene-d12	15.665	264	1277918	4000.00	ug/kg	73
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.332	172	179640	810.85	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.27%#			
16) 4-Terphenyl-d14	11.836	244	178864	794.92	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.87%#			
Target Compounds						Qvalue
2) Naphthalene	7.482	128	260827	975.38	ug/kg	99
3) 2-Methyl naphthalene	8.014	142	189678	640.97	ug/kg	96
4) 1-Methyl naphthalene	8.152	142	171291	641.14	ug/kg	99
6) Dibenzofuran	9.195	168	244572	986.56	ug/kg	100
8) Acenaphthylene	8.979	152	293189	1031.00	ug/kg	99
9) Acenaphthene	9.087	154	166577	1011.18	ug/kg	99
10) Fluorene	9.519	166	208902	1012.44	ug/kg	99
12) Phenanthrene	10.480	178	282403	1026.91	ug/kg	99
13) Anthracene	10.509	178	265401	947.99	ug/kg	99
14) Fluoranthene	11.612	202	323099	993.76	ug/kg	99
15) Pyrene	11.920	202	321298	962.53	ug/kg	99
18) Benzo[a]anthracene	13.277	228	323562	1081.98	ug/kg	98
19) Chrysene	13.394	228	304595	1123.47	ug/kg	99
21) Benzo[b]fluoranthene	14.786	252	349656	1096.66	ug/kg	99
22) Benzo[k]fluoranthene	14.815	252	316756	1099.11	ug/kg	98
23) Benzo(j)fluoranthene	14.867	252	299613	1056.92	ug/kg	97
24) Benzo[e]pyrene	15.394	252	317443	1110.75	ug/kg	99
25) Benzo[a]pyrene	15.489	252	298343	1021.73	ug/kg	98
26) Dibenz[a,h]anthracene	17.767	278	309101	1029.37	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.833	276	303679	1036.91	ug/kg	99
28) Benzo[g,h,i]perylene	18.815	276	316294	1019.75	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112303.D
Acq On : 23 Nov 2016 12:27 pm
Operator :
Sample : LCS-77972
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 25 09:53:53 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112304.D
Acq On : 23 Nov 2016 12:56 pm
Operator :
Sample : LCS-77983
Misc : LCS
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 25 09:53:56 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1344690	4000.00	ug/kg	153
5) Acenaphthene-d10	9.057	164	648957	4000.00	ug/kg	82
11) Phenanthrene-d10	10.456	188	1136241	4000.00	ug/kg	80
17) Chrysene-d12	13.351	240	1244350	4000.00	ug/kg	74
20) Perylene-d12	15.659	264	1250653	4000.00	ug/kg	71

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.334	172	186681	885.64	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.14%#			
16) 4-Terphenyl-d14	11.836	244	180757	827.62	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.69%#			

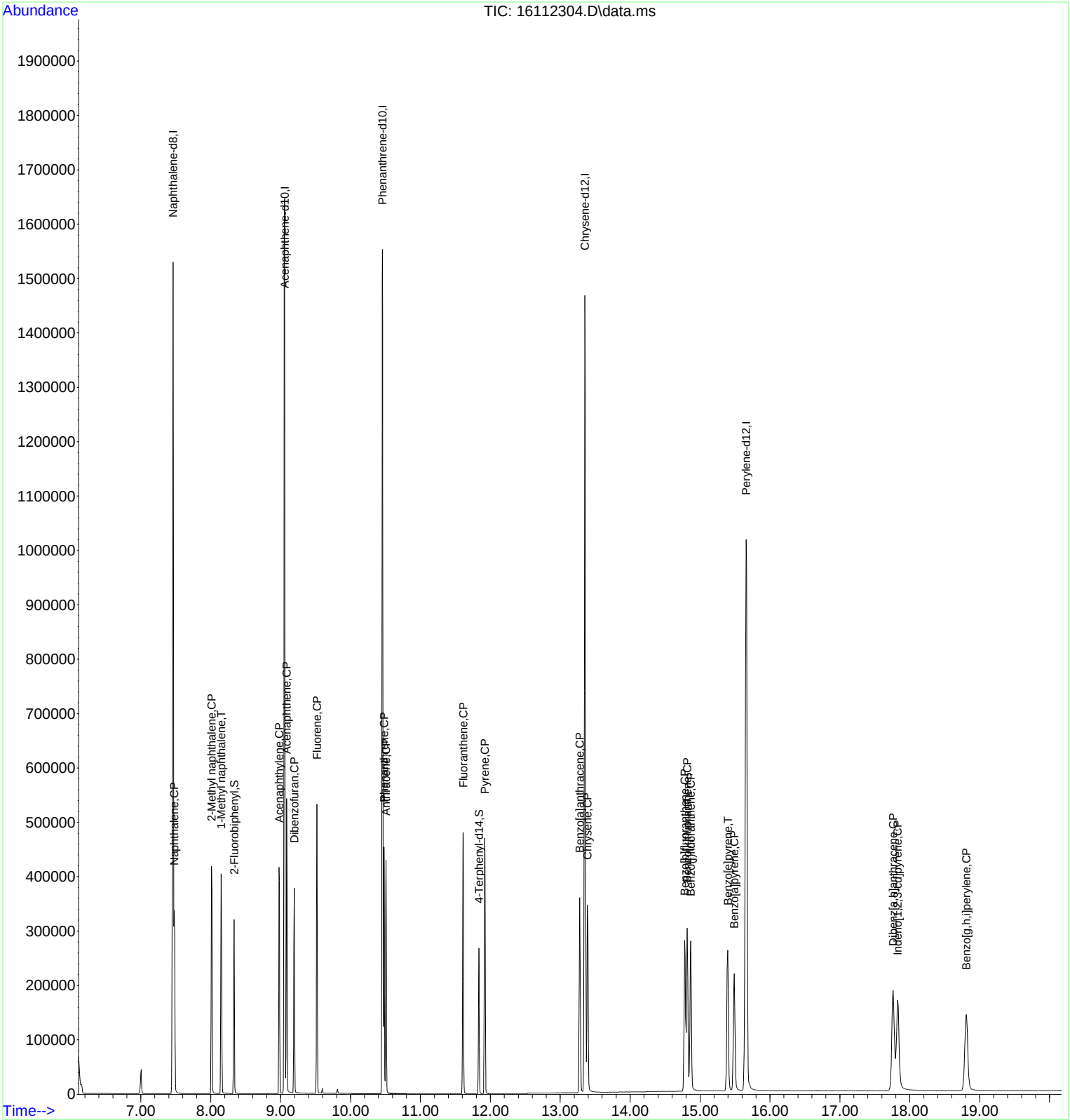
Target Compounds						Qvalue
2) Naphthalene	7.479	128	245143	938.74	ug/kg	99
3) 2-Methyl naphthalene	8.016	142	172913	598.35	ug/kg	95
4) 1-Methyl naphthalene	8.149	142	153798	589.49	ug/kg	90
6) Dibenzofuran	9.194	168	227876	966.14	ug/kg	100
8) Acenaphthylene	8.978	152	265628	981.76	ug/kg	99
9) Acenaphthene	9.086	154	149279	952.43	ug/kg	99
10) Fluorene	9.518	166	183073	932.55	ug/kg	99
12) Phenanthrene	10.480	178	250073	936.83	ug/kg	99
13) Anthracene	10.507	178	246399	906.72	ug/kg	99
14) Fluoranthene	11.611	202	283386	897.97	ug/kg	99
15) Pyrene	11.920	202	281148	867.71	ug/kg	99
18) Benzo[a]anthracene	13.278	228	281294	959.97	ug/kg	99
19) Chrysene	13.388	228	263269	991.00	ug/kg	99
21) Benzo[b]fluoranthene	14.780	252	310732	995.83	ug/kg	98
22) Benzo[k]fluoranthene	14.816	252	262507	930.73	ug/kg	97
23) Benzo(j)fluoranthene	14.868	252	280078	1009.54	ug/kg	99
24) Benzo[e]pyrene	15.395	252	288342	1030.92	ug/kg	97
25) Benzo[a]pyrene	15.490	252	264920	927.05	ug/kg	99
26) Dibenz[a,h]anthracene	17.761	278	264358	899.56	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.827	276	264200	921.78	ug/kg	98
28) Benzo[g,h,i]perylene	18.808	276	272663	898.25	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112304.D
Acq On : 23 Nov 2016 12:56 pm
Operator :
Sample : LCS-77983
Misc : LCS
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 25 09:53:56 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112305.D
Acq On : 23 Nov 2016 1:24 pm
Operator :
Sample : MB-77972
Misc : MBLK
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 25 09:53:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1390867	4000.00	ug/kg	158
5) Acenaphthene-d10	9.056	164	706020	4000.00	ug/kg	89
11) Phenanthrene-d10	10.458	188	1191217	4000.00	ug/kg	84
17) Chrysene-d12	13.358	240	1309443	4000.00	ug/kg	78
20) Perylene-d12	15.666	264	1329514	4000.00	ug/kg	75

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.334	172	186471	813.15	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.33%#			
16) 4-Terphenyl-d14	11.838	244	181559	792.93	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.82%#			

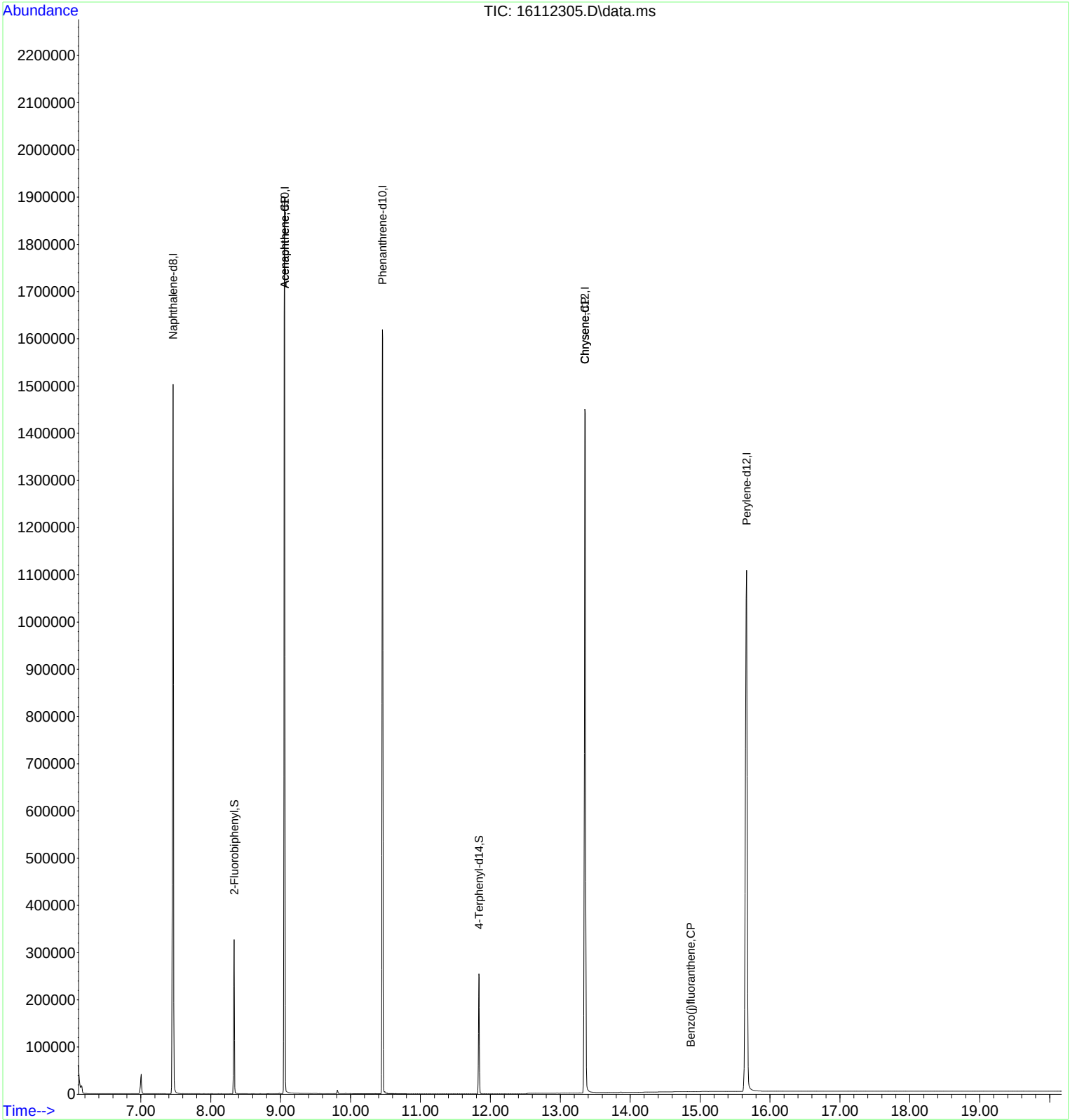
Target Compounds						Qvalue
9) Acenaphthene	9.056	154	2646	15.52	ug/kg#	12
19) Chrysene	13.351	228	3591	12.85	ug/kg	71
23) Benzo(j)fluoranthene	14.867	252	95	0.32	ug/kg#	45

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112305.D
Acq On : 23 Nov 2016 1:24 pm
Operator :
Sample : MB-77972
Misc : MBLK
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 25 09:53:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112306.D
Acq On : 23 Nov 2016 1:53 pm
Operator :
Sample : MB-77983
Misc : MBLK
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 25 09:54:00 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1381909	4000.00	ug/kg	157
5) Acenaphthene-d10	9.053	164	683742	4000.00	ug/kg	86
11) Phenanthrene-d10	10.456	188	1187269	4000.00	ug/kg	84
17) Chrysene-d12	13.352	240	1314748	4000.00	ug/kg	79
20) Perylene-d12	15.666	264	1312771	4000.00	ug/kg	75

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.333	172	188100	846.98	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 21.17%#			
16) 4-Terphenyl-d14	11.838	244	184809	809.81	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.25%#			

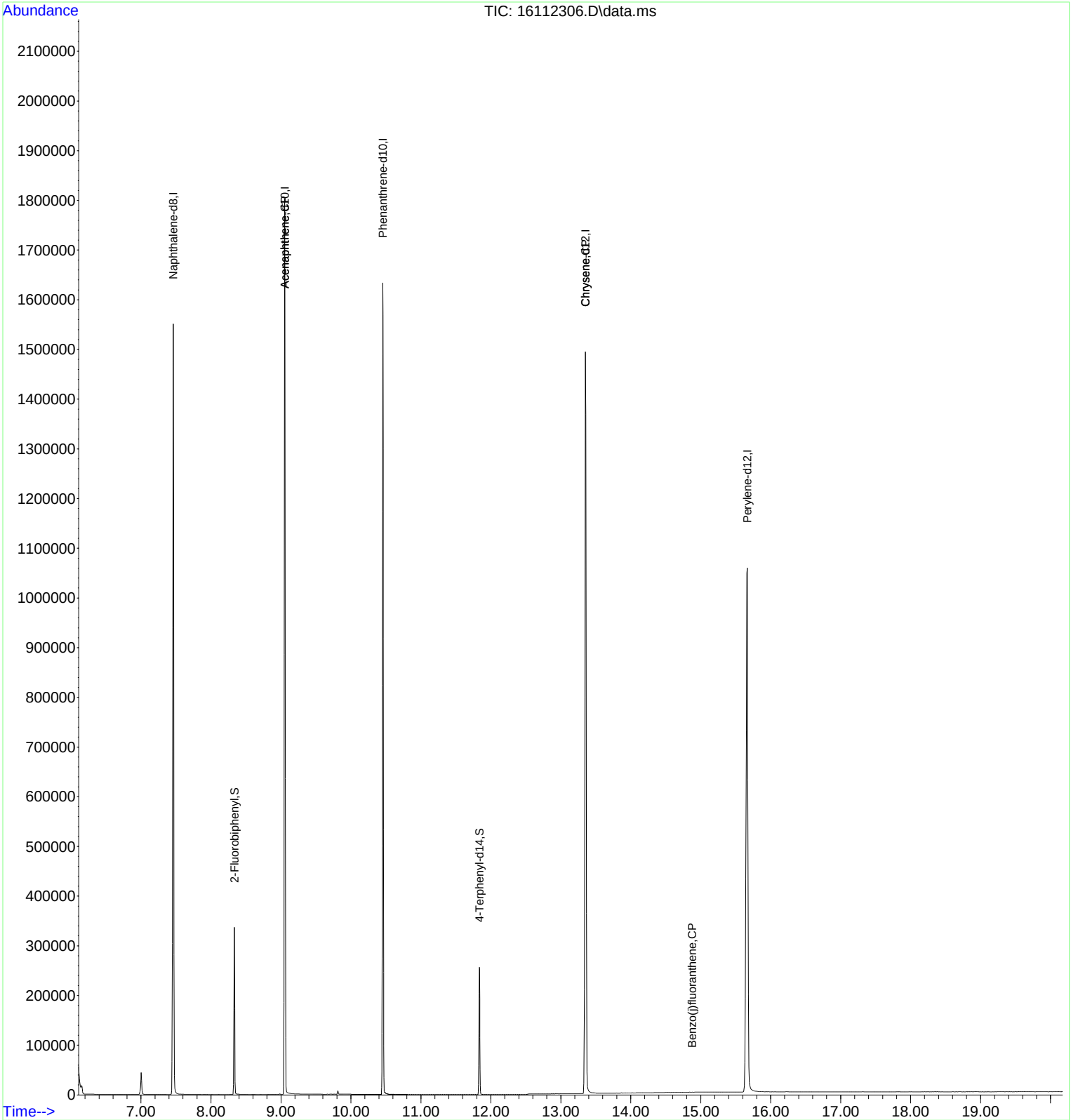
Target Compounds						Qvalue
9) Acenaphthene	9.053	154	2616	15.84	ug/kg#	10
19) Chrysene	13.352	228	3591	12.79	ug/kg	71
23) Benzo(j)fluoranthene	14.868	252	57	0.20	ug/kg#	53

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112306.D
Acq On : 23 Nov 2016 1:53 pm
Operator :
Sample : MB-77983
Misc : MBLK
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 25 09:54:00 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112307.D
Acq On : 23 Nov 2016 2:22 pm
Operator :
Sample : 1611053-03A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: Nov 25 09:55:00 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.462	136	1388710	4000.00	ug/kg	158
5) Acenaphthene-d10	9.052	164	689712	4000.00	ug/kg	87
11) Phenanthrene-d10	10.456	188	1182669	4000.00	ug/kg	84
17) Chrysene-d12	13.352	240	1319678	4000.00	ug/kg	79
20) Perylene-d12	15.659	264	1312059	4000.00	ug/kg	74

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.335	172	19457	86.85	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.17%#			
16) 4-Terphenyl-d14	11.834	244	19397	85.33	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.13%#			

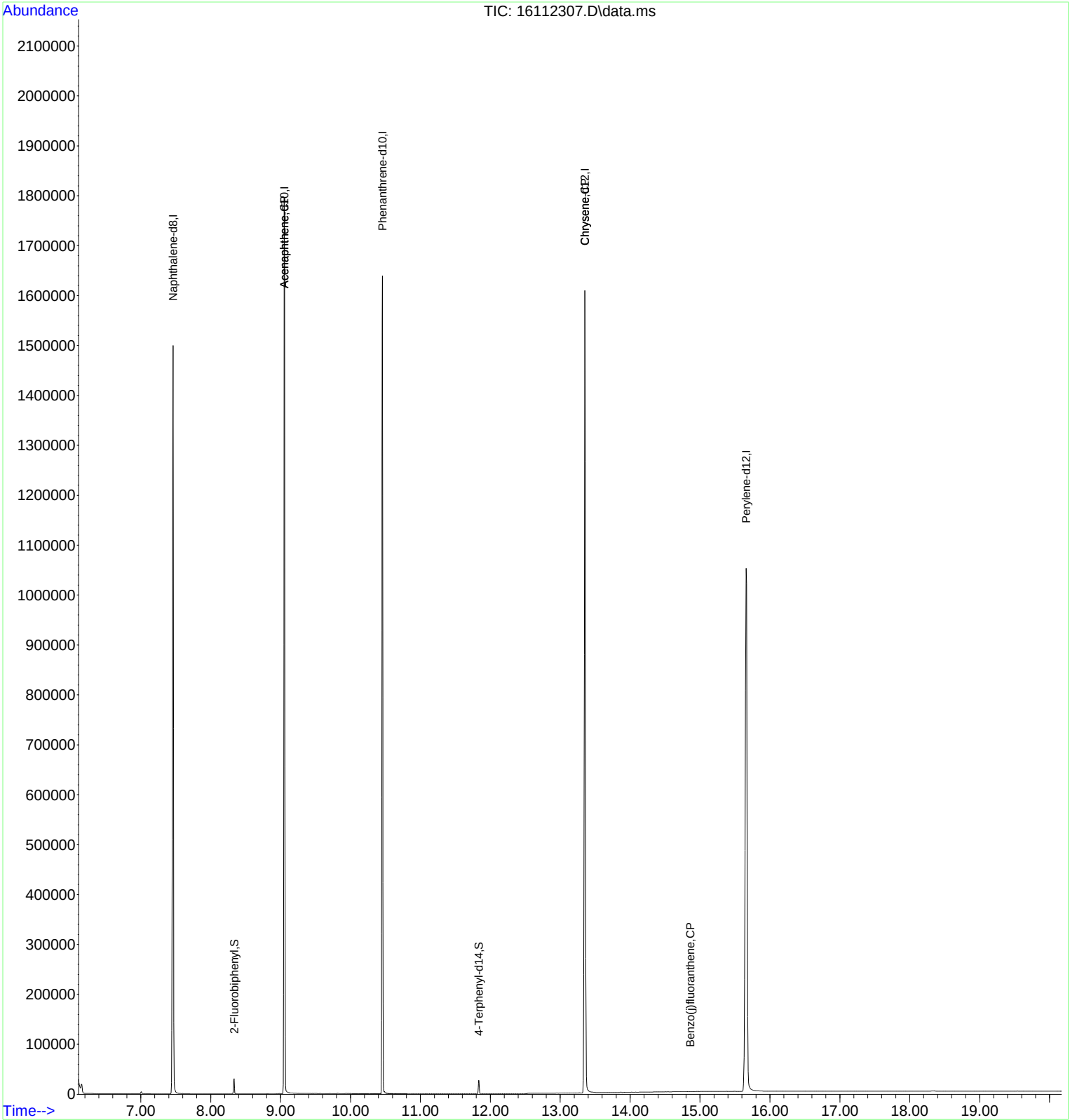
Target Compounds						Qvalue
9) Acenaphthene	9.052	154	2575	15.46	ug/kg#	10
19) Chrysene	13.352	228	3453	12.26	ug/kg	69
23) Benzo(j)fluoranthene	14.861	252	65	0.22	ug/kg#	53

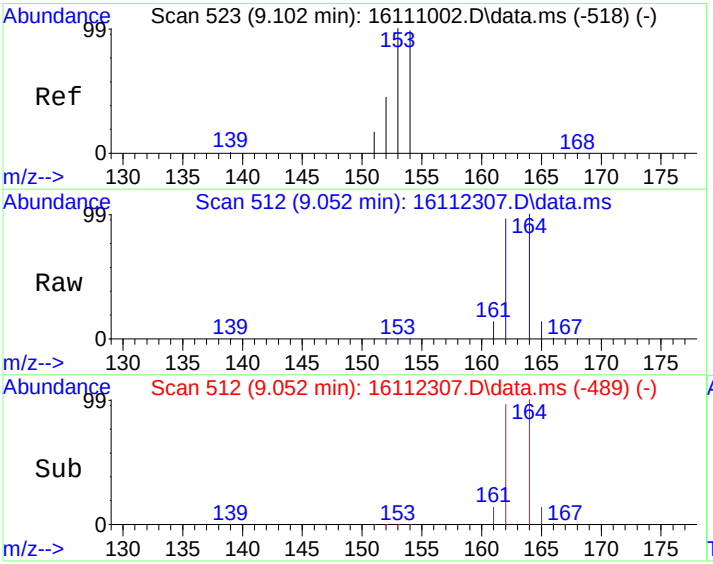
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112307.D
Acq On : 23 Nov 2016 2:22 pm
Operator :
Sample : 1611053-03A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: Nov 25 09:55:00 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

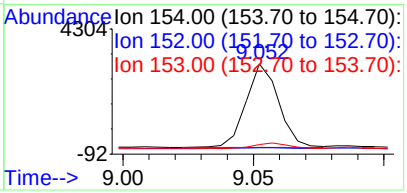


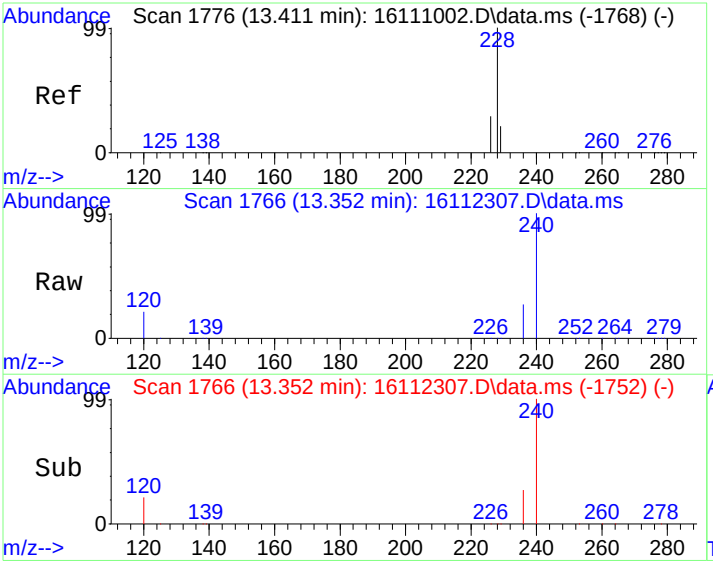


#9
Acenaphthene
Concen: 15.46 ug/kg
RT: 9.052 min Scan# 512
Delta R.T. -0.049 min
Lab File: 16112307.D
Acq: 23 Nov 2016 2:22 pm

Tgt Ion:154 Resp: 2575

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	5.0	76.8	136.8#

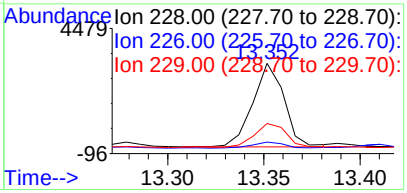


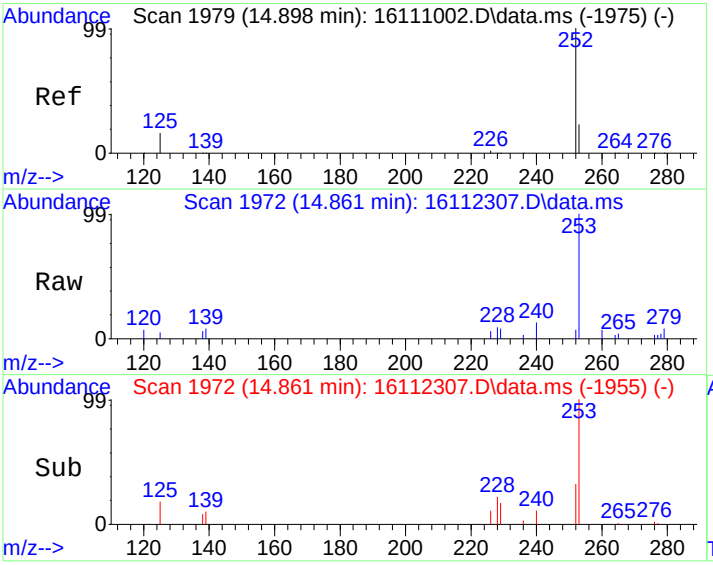


#19
Chrysene
Concen: 12.26 ug/kg
RT: 13.352 min Scan# 1766
Delta R.T. -0.059 min
Lab File: 16112307.D
Acq: 23 Nov 2016 2:22 pm

Tgt Ion:228 Resp: 3453

Ion	Ratio	Lower	Upper
228	100		
226	6.9	0.0	58.7
229	28.4	0.0	50.4

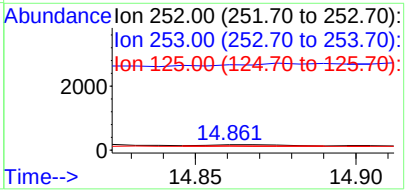




#23
Benzo(j)fluoranthene
Concen: 0.22 ug/kg
RT: 14.861 min Scan# 1972
Delta R.T. -0.037 min
Lab File: 16112307.D
Acq: 23 Nov 2016 2:22 pm

Tgt Ion:252 Resp: 65

Ion	Ratio	Lower	Upper
252	100		
253	59.5	2.7	42.7#
125	19.0	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112308.D
Acq On : 23 Nov 2016 2:51 pm
Operator :
Sample : 1611053-08A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: Nov 25 09:55:03 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.461	136	1361429	4000.00	ug/kg	155
5) Acenaphthene-d10	9.056	164	681003	4000.00	ug/kg	86
11) Phenanthrene-d10	10.456	188	1159731	4000.00	ug/kg	82
17) Chrysene-d12	13.351	240	1263879	4000.00	ug/kg	76
20) Perylene-d12	15.659	264	1293386	4000.00	ug/kg	73

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.334	172	18988	85.84	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.15%#			
16) 4-Terphenyl-d14	11.835	244	18534	83.14	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.08%#			

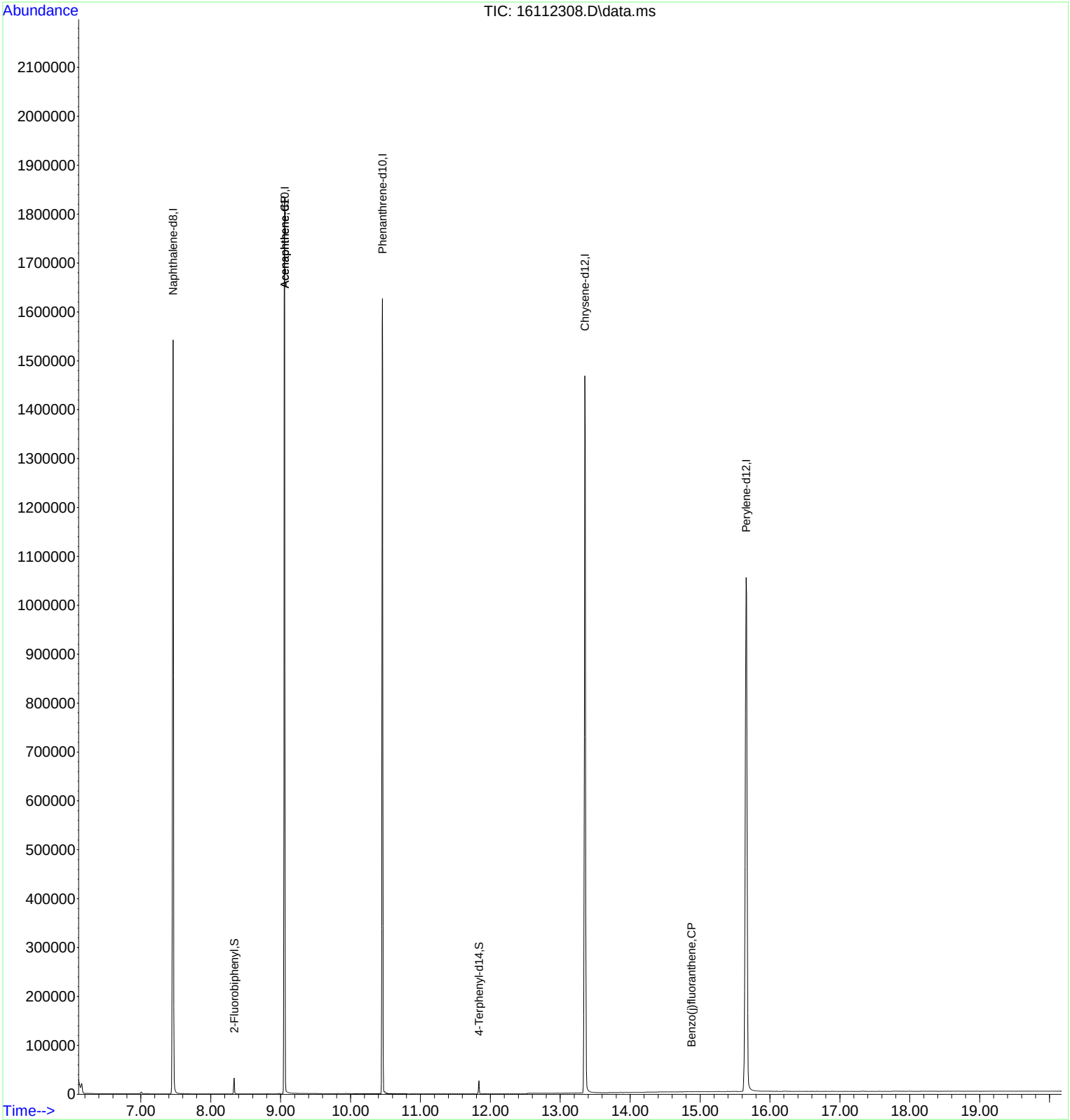
Target Compounds						Qvalue
9) Acenaphthene	9.051	154	2587	15.73	ug/kg#	10
23) Benzo(j)fluoranthene	14.867	252	94	0.33	ug/kg#	1

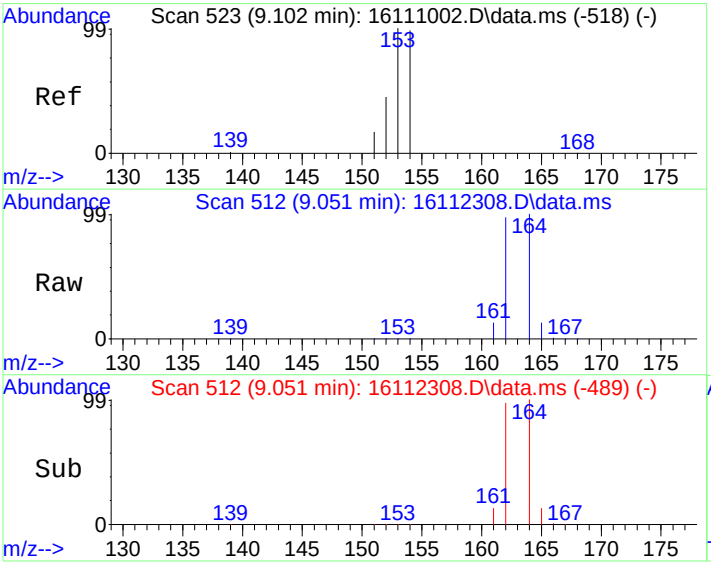
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112308.D
Acq On : 23 Nov 2016 2:51 pm
Operator :
Sample : 1611053-08A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: Nov 25 09:55:03 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

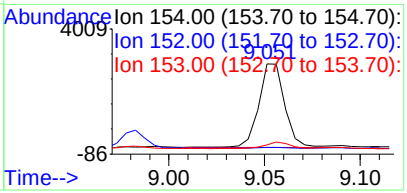


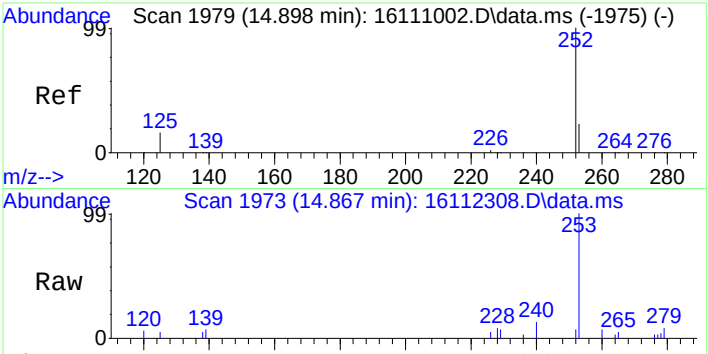


#9
Acenaphthene
Concen: 15.73 ug/kg
RT: 9.051 min Scan# 512
Delta R.T. -0.050 min
Lab File: 16112308.D
Acq: 23 Nov 2016 2:51 pm

Tgt Ion:154 Resp: 2587

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	4.4	76.8	136.8#

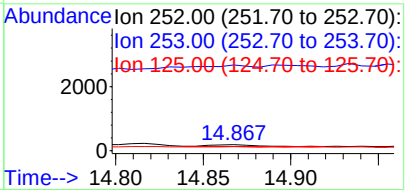




#23
Benzo(j)fluoranthene
Concen: 0.33 ug/kg
RT: 14.867 min Scan# 1973
Delta R.T. -0.031 min
Lab File: 16112308.D
Acq: 23 Nov 2016 2:51 pm

Tgt Ion:252 Resp: 94

Ion	Ratio	Lower	Upper
252	100		
253	130.9	2.7	42.7#
125	16.4	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112309.D
Acq On : 23 Nov 2016 3:19 pm
Operator :
Sample : 1611053-28A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: Nov 25 09:55:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

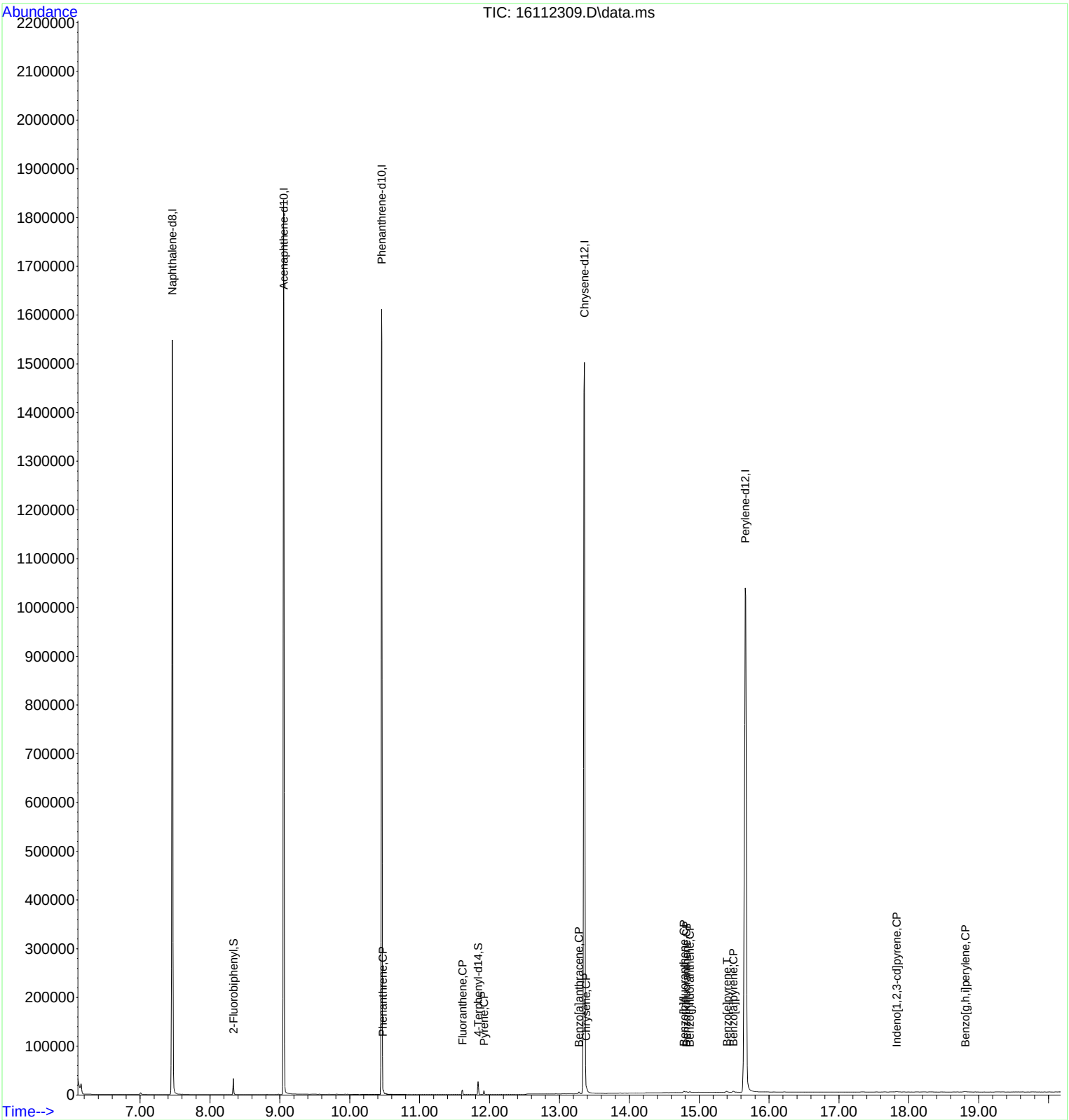
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1383717	4000.00	ug/kg	157
5) Acenaphthene-d10	9.053	164	691414	4000.00	ug/kg	87
11) Phenanthrene-d10	10.456	188	1183469	4000.00	ug/kg	84
17) Chrysene-d12	13.359	240	1311439	4000.00	ug/kg	78
20) Perylene-d12	15.659	264	1312263	4000.00	ug/kg	74
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.333	172	18850	83.94	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.10%#			
16) 4-Terphenyl-d14	11.836	244	18896	83.07	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.08%#			
Target Compounds						Qvalue
12) Phenanthrene	10.479	178	2803	10.08	ug/kg	97
14) Fluoranthene	11.612	202	6045	18.39	ug/kg	97
15) Pyrene	11.921	202	5111	15.14	ug/kg	98
18) Benzo[a]anthracene	13.279	228	3047	9.87	ug/kg	99
19) Chrysene	13.388	228	3023	10.80	ug/kg	98
21) Benzo[b]fluoranthene	14.780	252	3202	9.78	ug/kg	93
22) Benzo[k]fluoranthene	14.817	252	1560	5.27	ug/kg	91
23) Benzo(j)fluoranthene	14.868	252	1552	5.33	ug/kg	96
24) Benzo[e]pyrene	15.396	252	2285	7.79	ug/kg	96
25) Benzo[a]pyrene	15.491	252	2907	9.70	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.827	276	1932	6.42	ug/kg	95
28) Benzo[g,h,i]perylene	18.809	276	1961	6.16	ug/kg	97

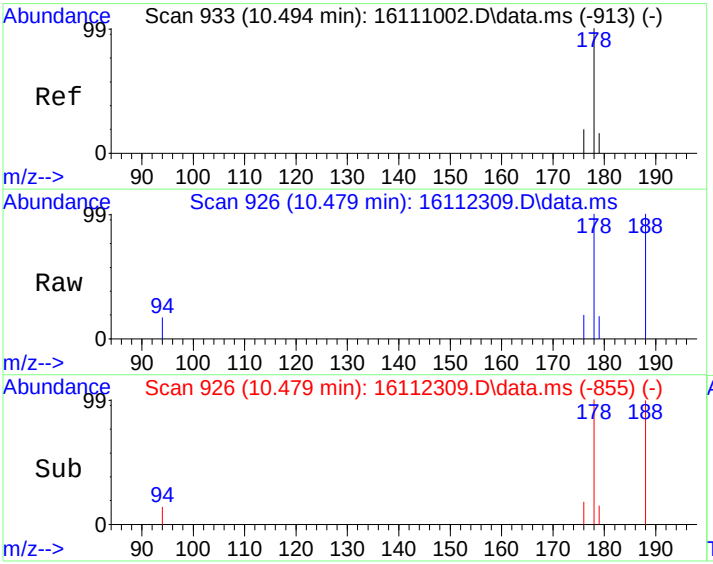
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112309.D
Acq On : 23 Nov 2016 3:19 pm
Operator :
Sample : 1611053-28A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: Nov 25 09:55:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

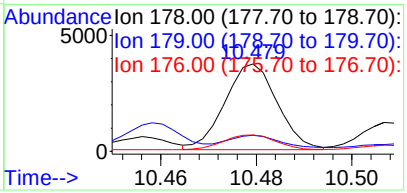


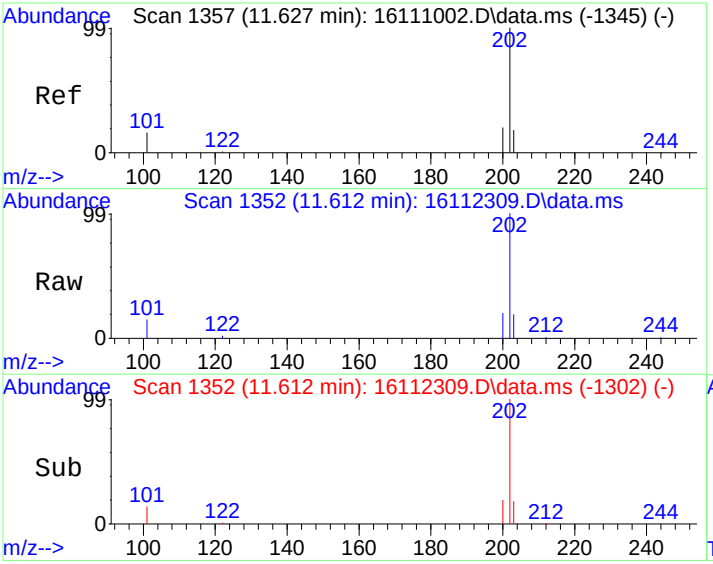


#12
Phenanthrene
Concen: 10.08 ug/kg
RT: 10.479 min Scan# 926
Delta R.T. -0.015 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:178 Resp: 2803

Ion	Ratio	Lower	Upper
178	100		
179	14.5	0.0	46.2
176	17.5	0.0	48.4

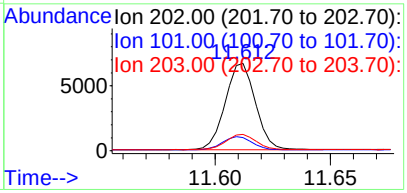


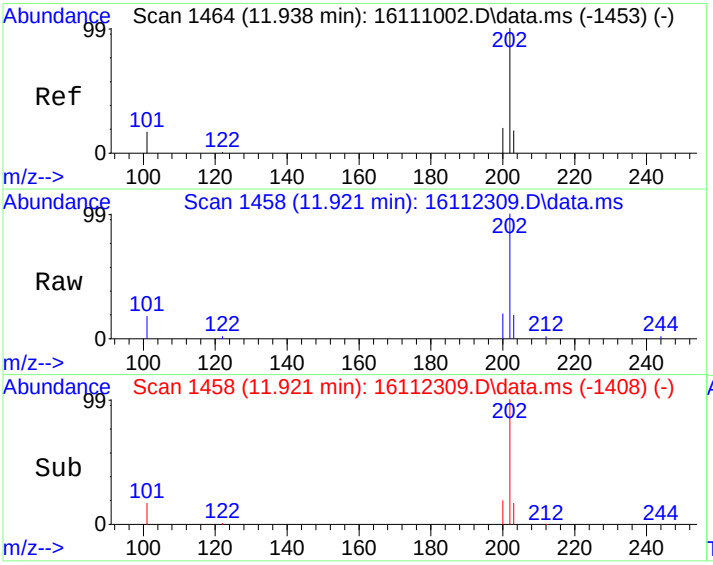


#14
Fluoranthene
Concen: 18.39 ug/kg
RT: 11.612 min Scan# 1352
Delta R.T. -0.014 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:202 Resp: 6045

Ion	Ratio	Lower	Upper
202	100		
101	14.2	0.0	45.8
203	17.6	0.0	48.2

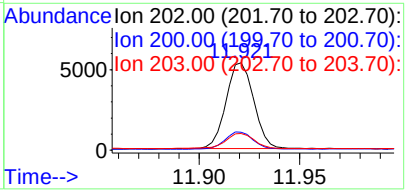


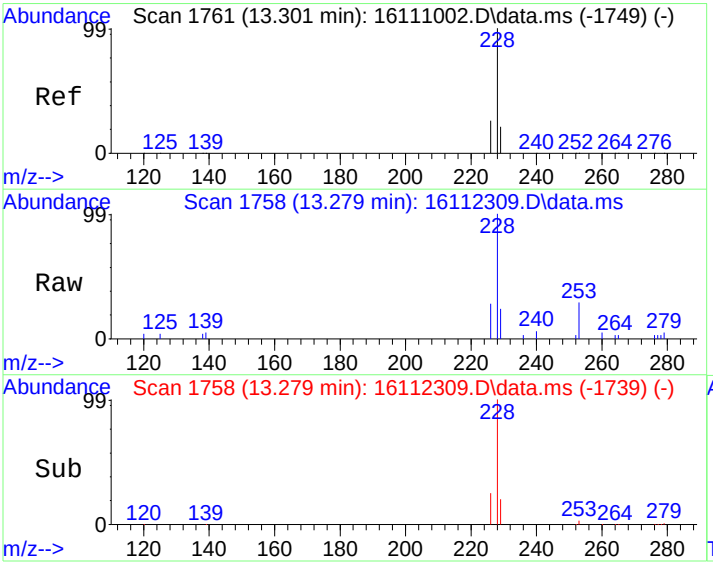


#15
Pyrene
Concen: 15.14 ug/kg
RT: 11.921 min Scan# 1458
Delta R.T. -0.017 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:202 Resp: 5111

Ion	Ratio	Lower	Upper
202	100		
200	19.4	0.0	50.3
203	17.4	0.0	48.2

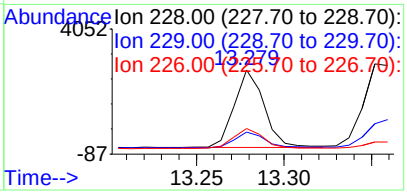


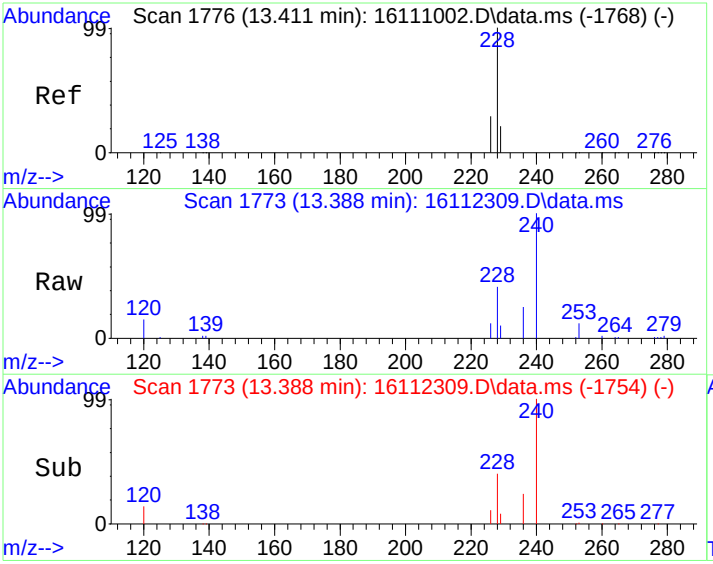


#18
Benzo[a]anthracene
Concen: 9.87 ug/kg
RT: 13.279 min Scan# 1758
Delta R.T. -0.022 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:228 Resp: 3047

Ion	Ratio	Lower	Upper
228	100		
229	20.2	0.0	50.8
226	25.6	0.0	55.5

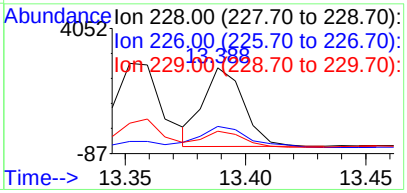


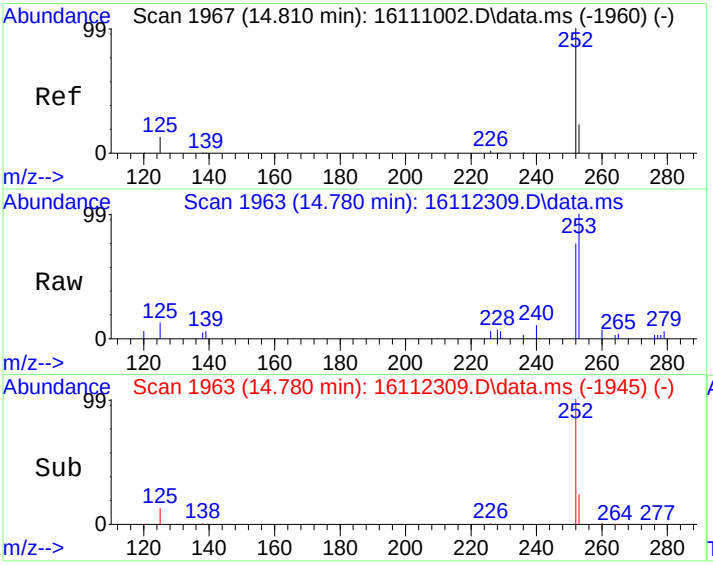


#19
Chrysene
Concen: 10.80 ug/kg
RT: 13.388 min Scan# 1773
Delta R.T. -0.023 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:228 Resp: 3023

Ion	Ratio	Lower	Upper
228	100		
226	27.2	0.0	58.7
229	20.2	0.0	50.4

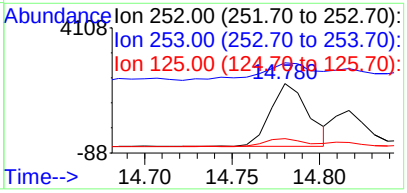


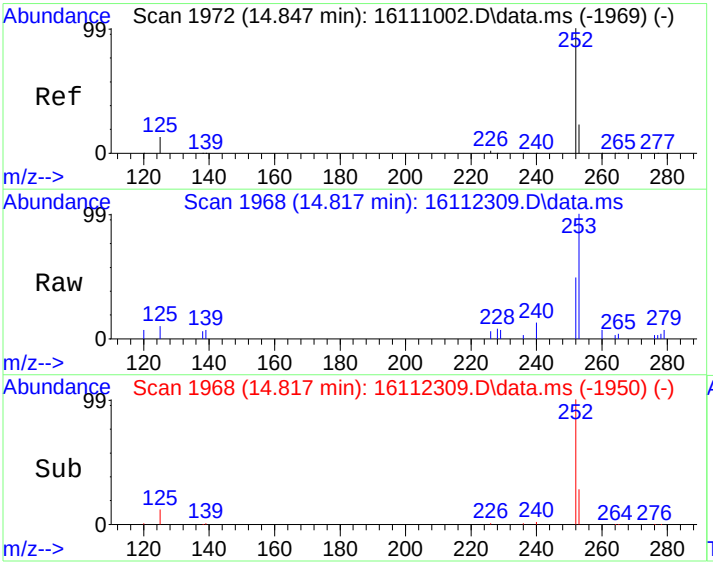


#21
Benzo[b]fluoranthene
Concen: 9.78 ug/kg
RT: 14.780 min Scan# 1963
Delta R.T. -0.030 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:252 Resp: 3202

Ion	Ratio	Lower	Upper
252	100		
253	27.8	0.0	52.7
125	12.8	0.0	42.9

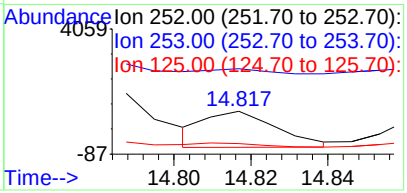


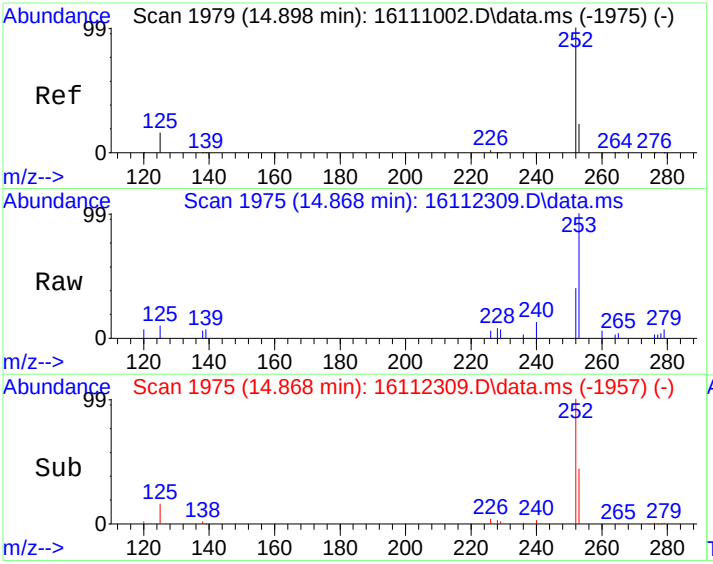


#22
Benzo[k]fluoranthene
Concen: 5.27 ug/kg
RT: 14.817 min Scan# 1968
Delta R.T. -0.029 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:252 Resp: 1560

Ion	Ratio	Lower	Upper
252	100		
253	16.6	2.8	42.8
125	12.1	0.0	31.3

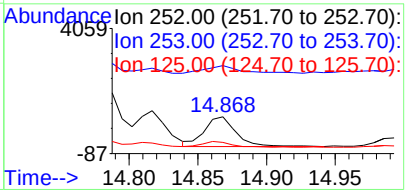


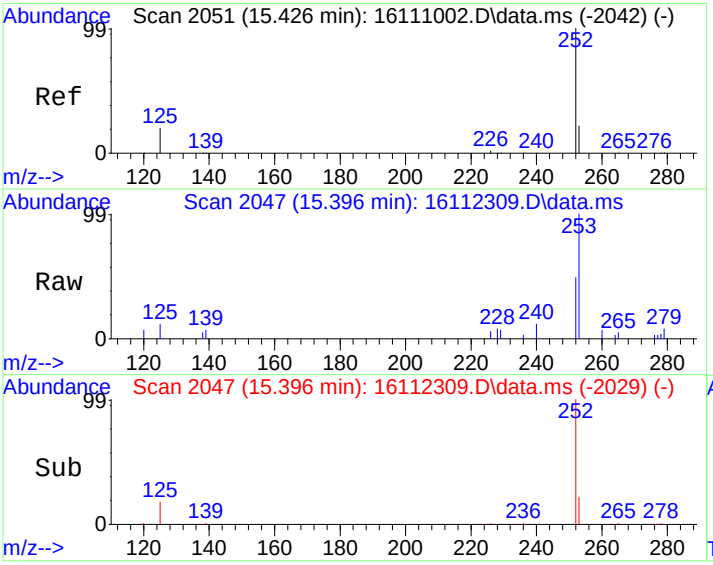


#23
Benzo(j)fluoranthene
Concen: 5.33 ug/kg
RT: 14.868 min Scan# 1975
Delta R.T. -0.030 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:252 Resp: 1552

Ion	Ratio	Lower	Upper
252	100		
253	25.4	2.7	42.7
125	16.9	0.0	36.4

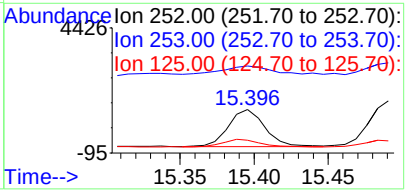


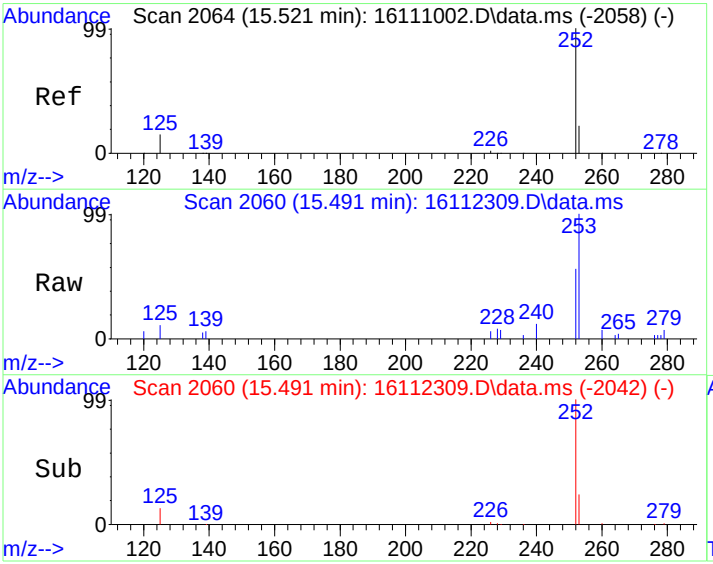


#24
Benzo[e]pyrene
Concen: 7.79 ug/kg
RT: 15.396 min Scan# 2047
Delta R.T. -0.029 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:252 Resp: 2285

Ion	Ratio	Lower	Upper
252	100		
253	21.9	2.5	42.5
125	18.0	0.9	40.9

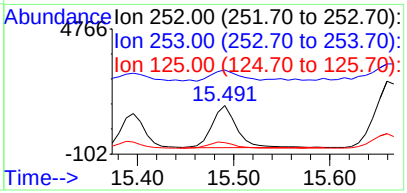


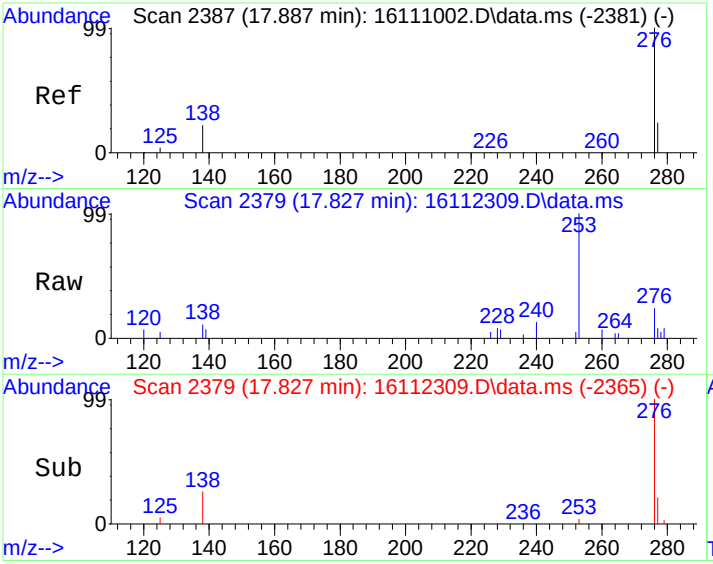


#25
Benzo[a]pyrene
Concen: 9.70 ug/kg
RT: 15.491 min Scan# 2060
Delta R.T. -0.029 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:252 Resp: 2907

Ion	Ratio	Lower	Upper
252	100		
253	25.2	2.7	42.7
125	13.3	0.0	33.9

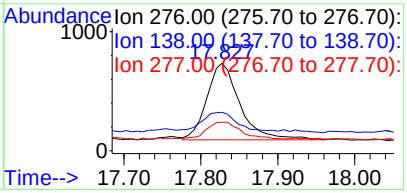


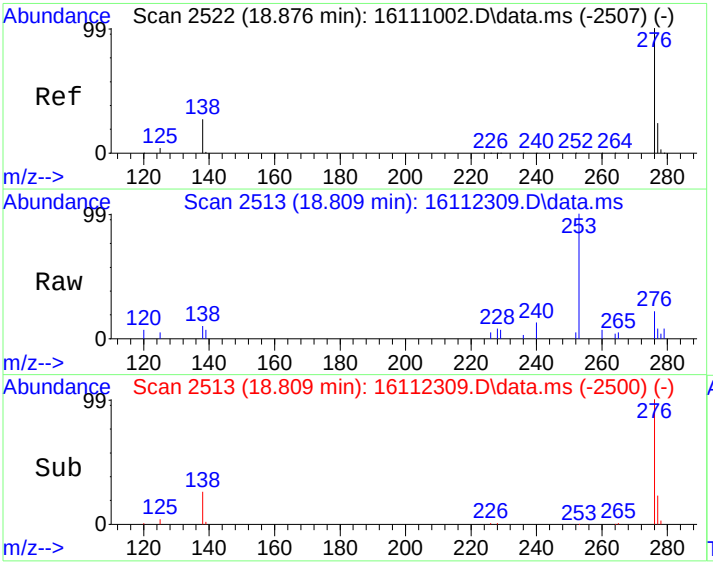


#27
Indeno[1,2,3-cd]pyrene
Concen: 6.42 ug/kg
RT: 17.827 min Scan# 2379
Delta R.T. -0.059 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:276 Resp: 1932

Ion	Ratio	Lower	Upper
276	100		
138	26.7	4.4	44.4
277	22.0	4.4	44.4

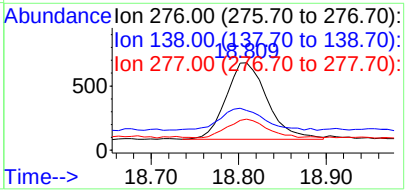




#28
Benzo[g,h,i]perylene
Concen: 6.16 ug/kg
RT: 18.809 min Scan# 2513
Delta R.T. -0.066 min
Lab File: 16112309.D
Acq: 23 Nov 2016 3:19 pm

Tgt Ion:276 Resp: 1961

Ion	Ratio	Lower	Upper
276	100		
138	24.7	7.7	47.7
277	24.2	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112310.D
Acq On : 23 Nov 2016 3:48 pm
Operator :
Sample : 1611053-33A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: Nov 25 09:55:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1374885	4000.00	ug/kg	156
5) Acenaphthene-d10	9.052	164	688340	4000.00	ug/kg	87
11) Phenanthrene-d10	10.457	188	1182360	4000.00	ug/kg	84
17) Chrysene-d12	13.351	240	1313125	4000.00	ug/kg	79
20) Perylene-d12	15.659	264	1314124	4000.00	ug/kg	75

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.332	172	18993	84.95	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.12%#			
16) 4-Terphenyl-d14	11.836	244	18451	81.19	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.03%#			

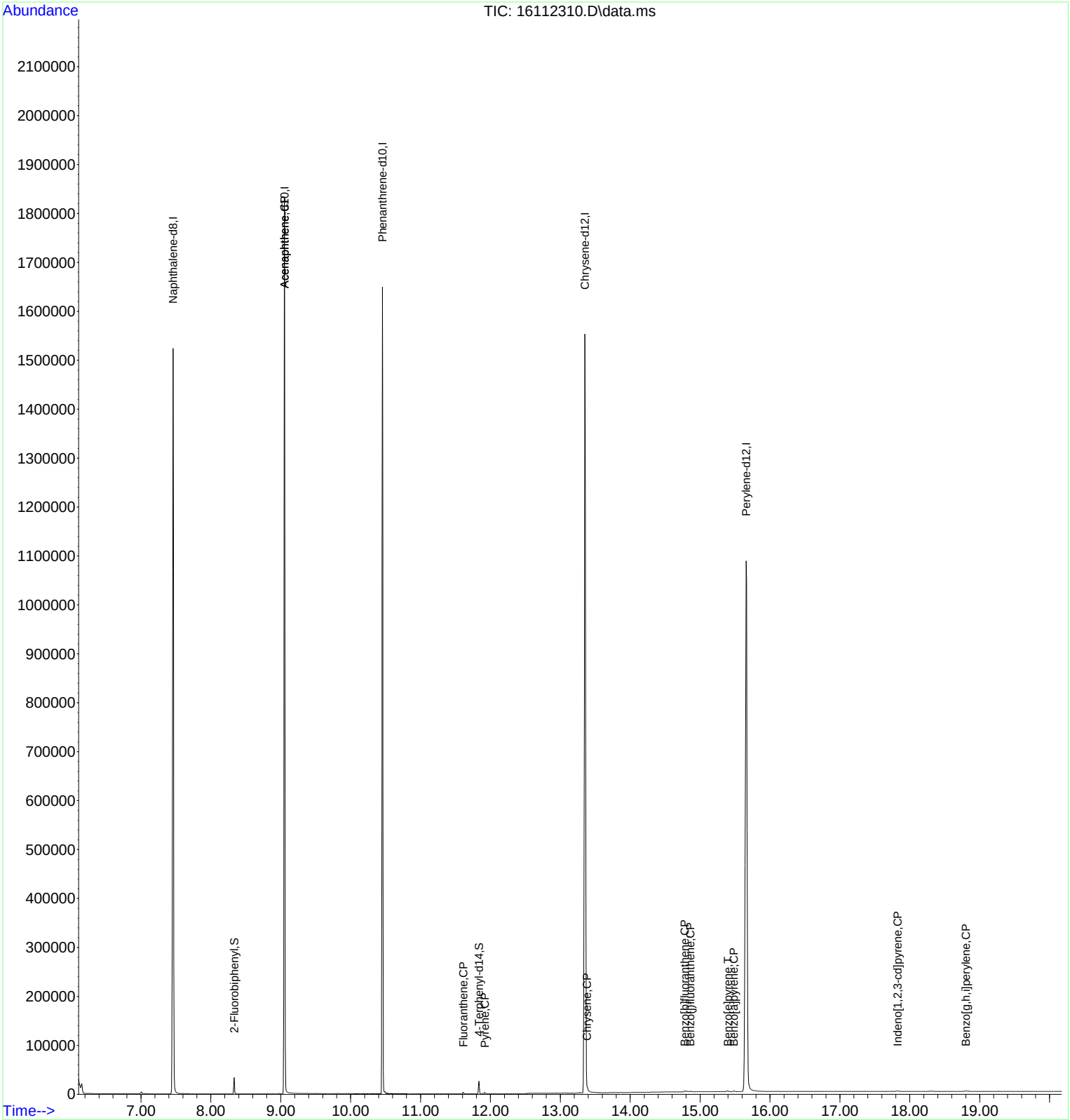
Target Compounds						Qvalue
9) Acenaphthene	9.052	154	2599	15.63	ug/kg#	11
14) Fluoranthene	11.611	202	2221	6.76	ug/kg	98
15) Pyrene	11.920	202	2116	6.28	ug/kg	97
19) Chrysene	13.388	228	1560	5.56	ug/kg	98
21) Benzo[b]fluoranthene	14.780	252	2380	7.26	ug/kg	98
23) Benzo(j)fluoranthene	14.860	252	1060	3.64	ug/kg	87
24) Benzo[e]pyrene	15.395	252	1790	6.09	ug/kg	92
25) Benzo[a]pyrene	15.490	252	1782	5.93	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.827	276	1899	6.31	ug/kg	99
28) Benzo[g,h,i]perylene	18.801	276	2092	6.56	ug/kg	97

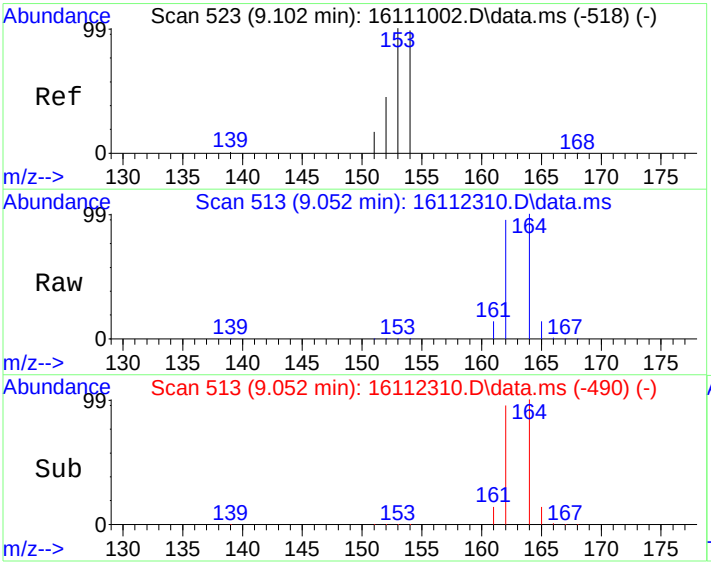
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112310.D
Acq On : 23 Nov 2016 3:48 pm
Operator :
Sample : 1611053-33A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: Nov 25 09:55:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

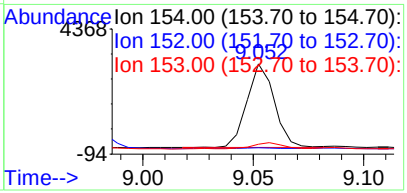


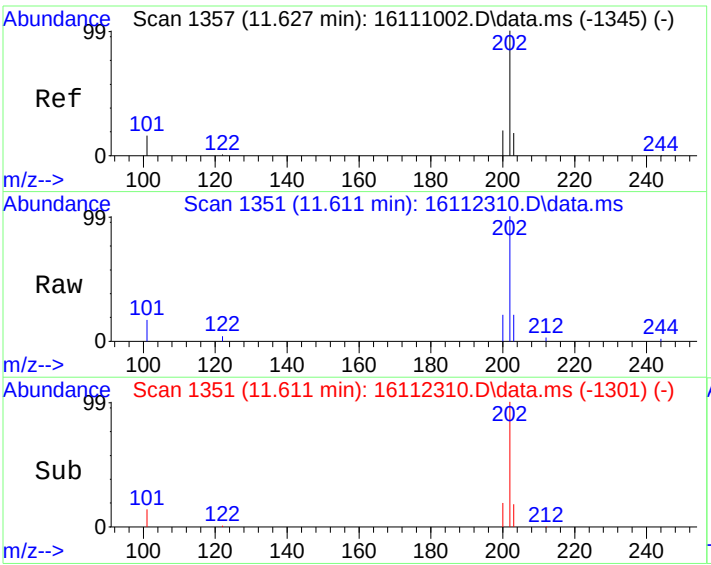


#9
Acenaphthene
Concen: 15.63 ug/kg
RT: 9.052 min Scan# 513
Delta R.T. -0.049 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:154 Resp: 2599

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	5.4	76.8	136.8#

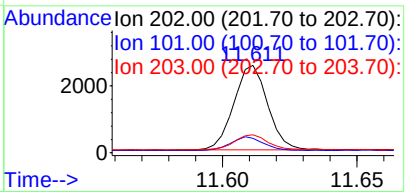


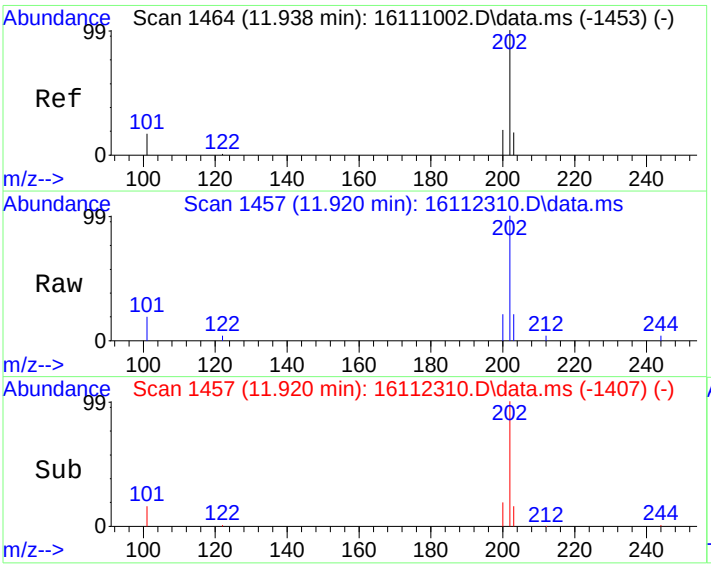


#14
Fluoranthene
Concen: 6.76 ug/kg
RT: 11.611 min Scan# 1351
Delta R.T. -0.015 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:202 Resp: 2221

Ion	Ratio	Lower	Upper
202	100		
101	14.3	0.0	45.8
203	17.8	0.0	48.2

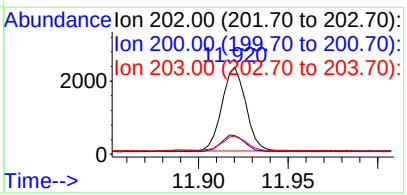


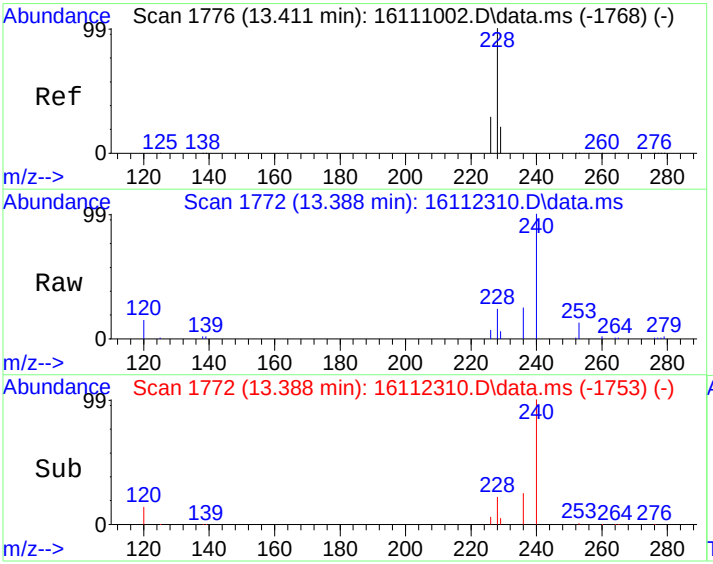


#15
Pyrene
Concen: 6.28 ug/kg
RT: 11.920 min Scan# 1457
Delta R.T. -0.018 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:202 Resp: 2116

Ion	Ratio	Lower	Upper
202	100		
200	19.0	0.0	50.3
203	17.0	0.0	48.2

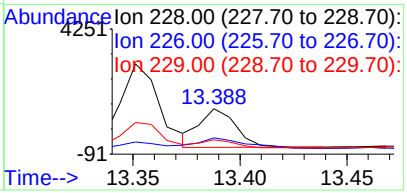


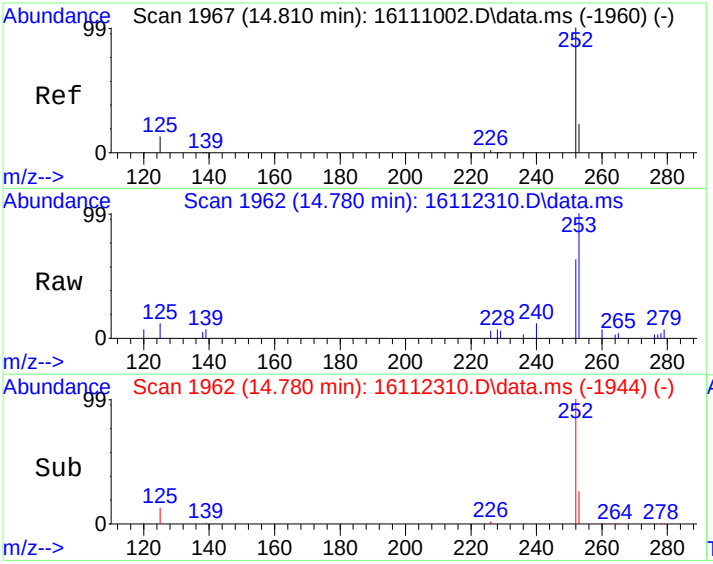


#19
Chrysene
Concen: 5.56 ug/kg
RT: 13.388 min Scan# 1772
Delta R.T. -0.023 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:228 Resp: 1560

Ion	Ratio	Lower	Upper
228	100		
226	27.2	0.0	58.7
229	20.7	0.0	50.4

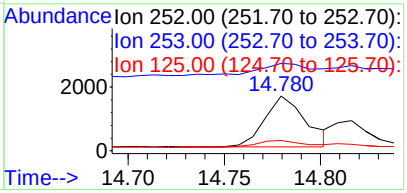


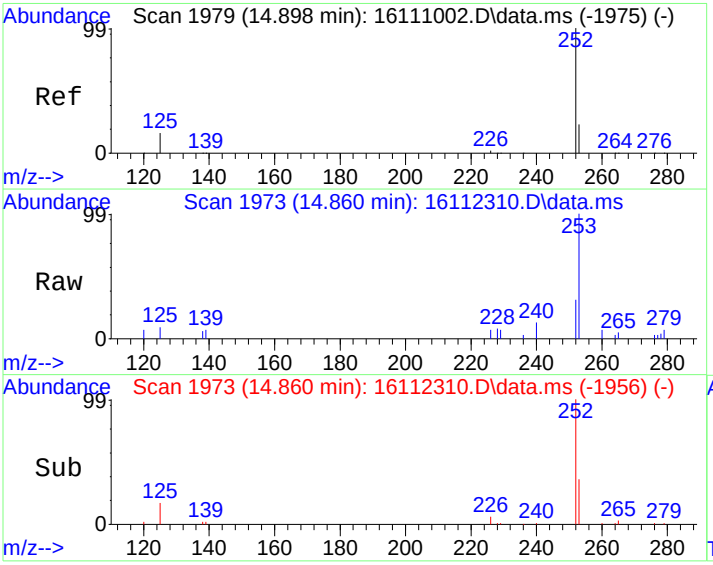


#21
Benzo[b]fluoranthene
Concen: 7.26 ug/kg
RT: 14.780 min Scan# 1962
Delta R.T. -0.030 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:252 Resp: 2380

Ion	Ratio	Lower	Upper
252	100		
253	23.7	0.0	52.7
125	13.6	0.0	42.9

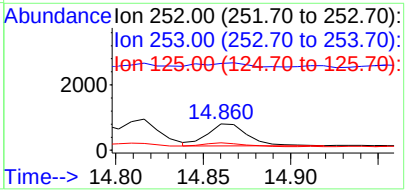


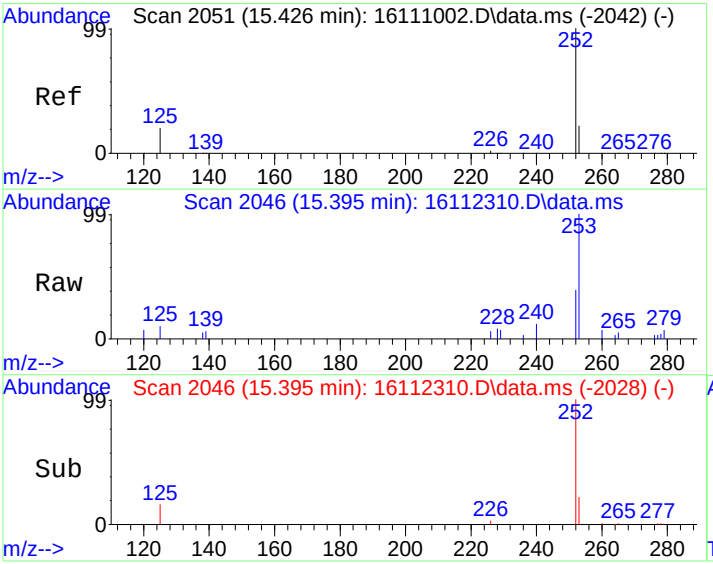


#23
Benzo(j)fluoranthene
Concen: 3.64 ug/kg
RT: 14.860 min Scan# 1973
Delta R.T. -0.038 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:252 Resp: 1060

Ion	Ratio	Lower	Upper
252	100		
253	12.3	2.7	42.7
125	16.8	0.0	36.4

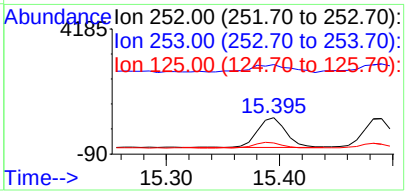


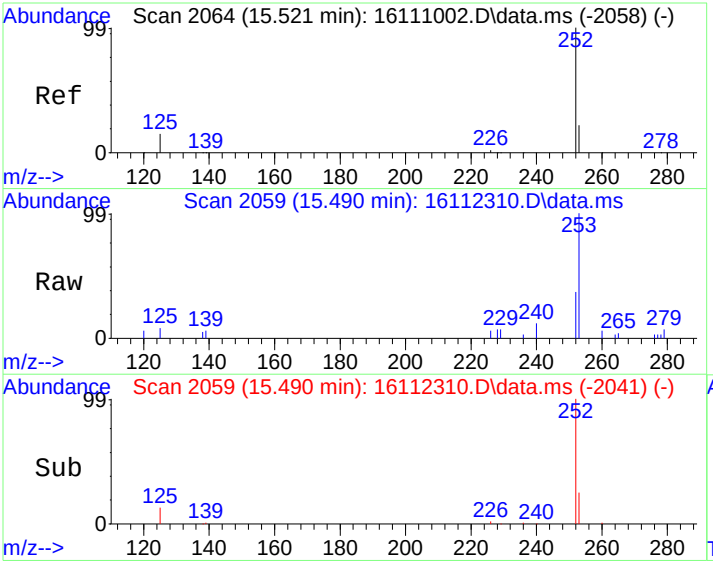


#24
Benzo[e]pyrene
Concen: 6.09 ug/kg
RT: 15.395 min Scan# 2046
Delta R.T. -0.030 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:252 Resp: 1790

Ion	Ratio	Lower	Upper
252	100		
253	25.0	2.5	42.5
125	15.9	0.9	40.9

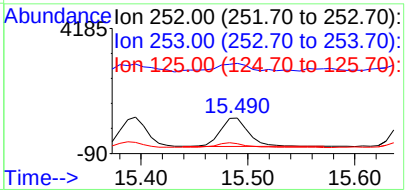


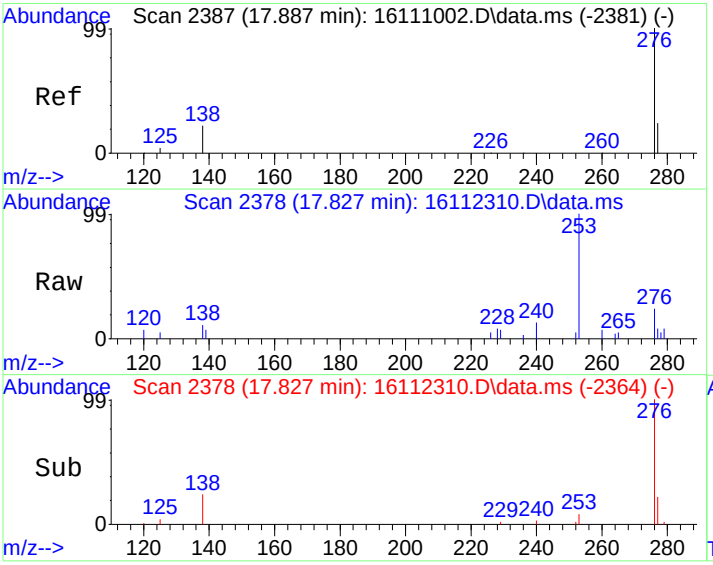


#25
Benzo[a]pyrene
Concen: 5.93 ug/kg
RT: 15.490 min Scan# 2059
Delta R.T. -0.030 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:252 Resp: 1782

Ion	Ratio	Lower	Upper
252	100		
253	25.0	2.7	42.7
125	13.3	0.0	33.9

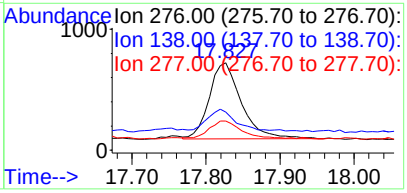


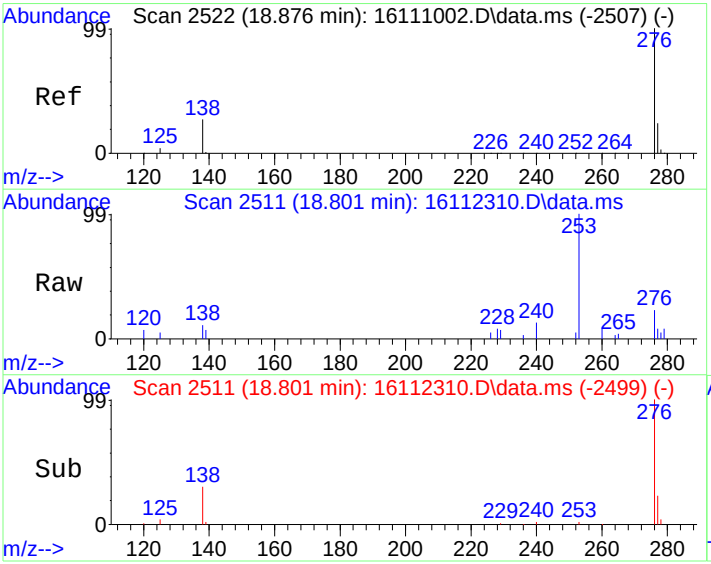


#27
Indeno[1,2,3-cd]pyrene
Concen: 6.31 ug/kg
RT: 17.827 min Scan# 2378
Delta R.T. -0.059 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:276 Resp: 1899

Ion	Ratio	Lower	Upper
276	100		
138	24.6	4.4	44.4
277	23.6	4.4	44.4

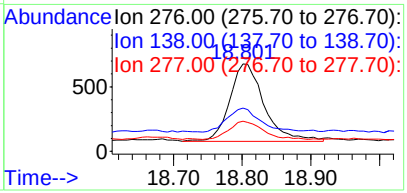




#28
Benzo[g,h,i]perylene
Concen: 6.56 ug/kg
RT: 18.801 min Scan# 2511
Delta R.T. -0.074 min
Lab File: 16112310.D
Acq: 23 Nov 2016 3:48 pm

Tgt Ion:276 Resp: 2092

Ion	Ratio	Lower	Upper
276	100		
138	30.2	7.7	47.7
277	23.2	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112311.D
Acq On : 23 Nov 2016 4:17 pm
Operator :
Sample : 1611053-38A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: Nov 25 09:55:17 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1331549	4000.00	ug/kg	151
5) Acenaphthene-d10	9.053	164	668400	4000.00	ug/kg	84
11) Phenanthrene-d10	10.456	188	1142430	4000.00	ug/kg	81
17) Chrysene-d12	13.352	240	1261899	4000.00	ug/kg	75
20) Perylene-d12	15.659	264	1267376	4000.00	ug/kg	72

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.333	172	18450	84.98	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.12%#			
16) 4-Terphenyl-d14	11.836	244	18690	85.11	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.13%#			

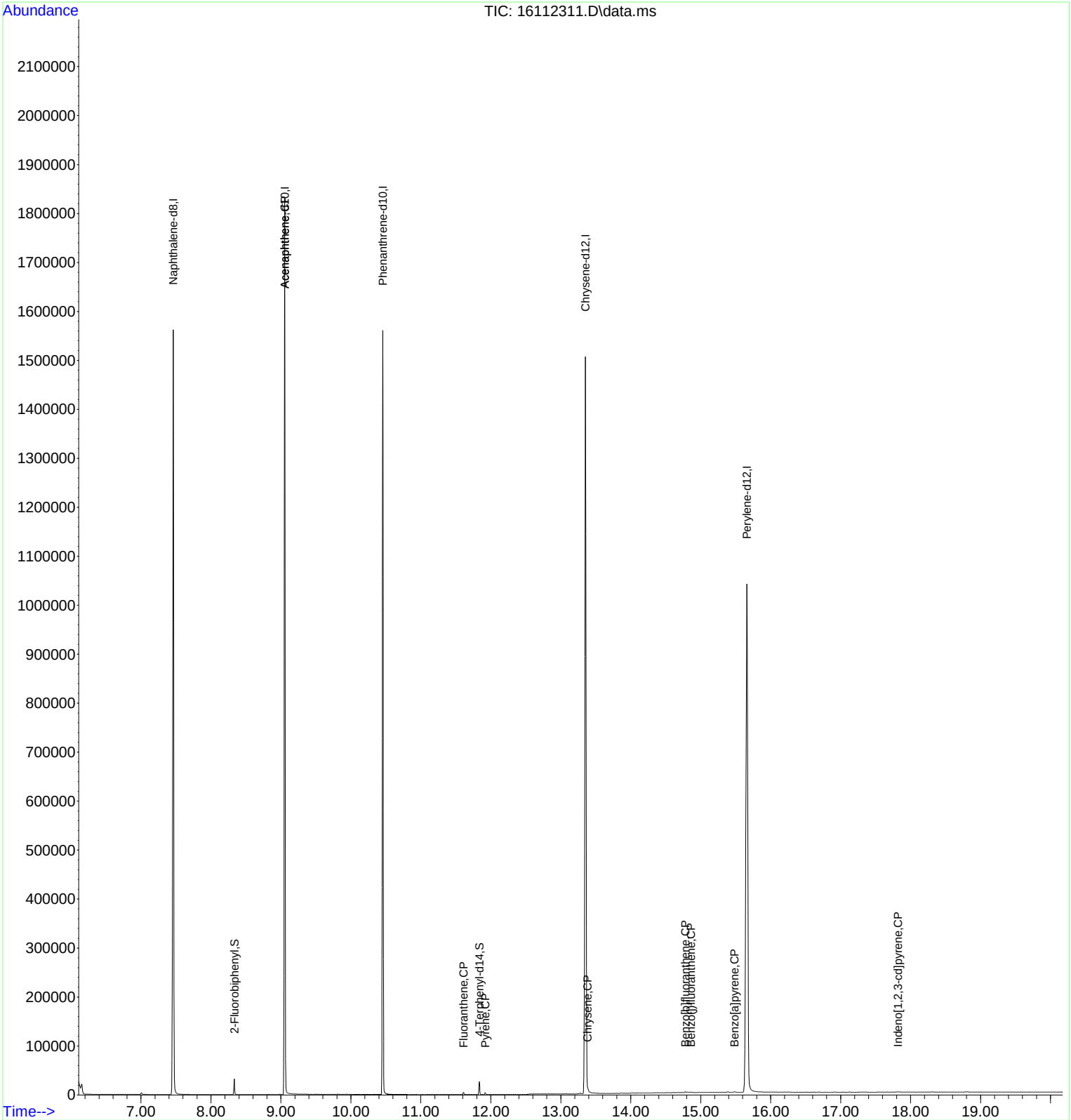
Target Compounds						Qvalue
9) Acenaphthene	9.053	154	2487	15.41	ug/kg#	11
14) Fluoranthene	11.608	202	2791	8.80	ug/kg	98
15) Pyrene	11.920	202	2497	7.66	ug/kg	98
19) Chrysene	13.389	228	1545	5.73	ug/kg	97
21) Benzo[b]fluoranthene	14.780	252	2057	6.51	ug/kg	97
23) Benzo(j)fluoranthene	14.861	252	852	3.03	ug/kg	89
25) Benzo[a]pyrene	15.484	252	1573	5.43	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.820	276	1459	5.02	ug/kg	93

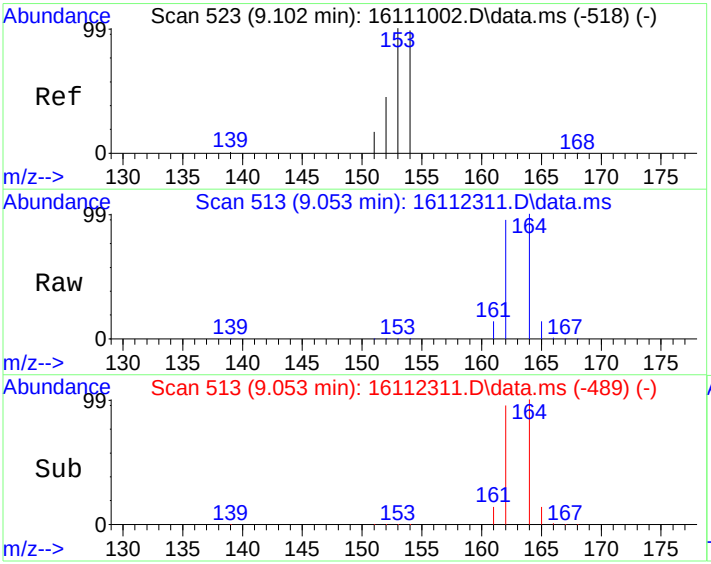
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112311.D
Acq On : 23 Nov 2016 4:17 pm
Operator :
Sample : 1611053-38A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: Nov 25 09:55:17 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

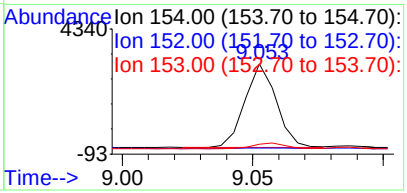


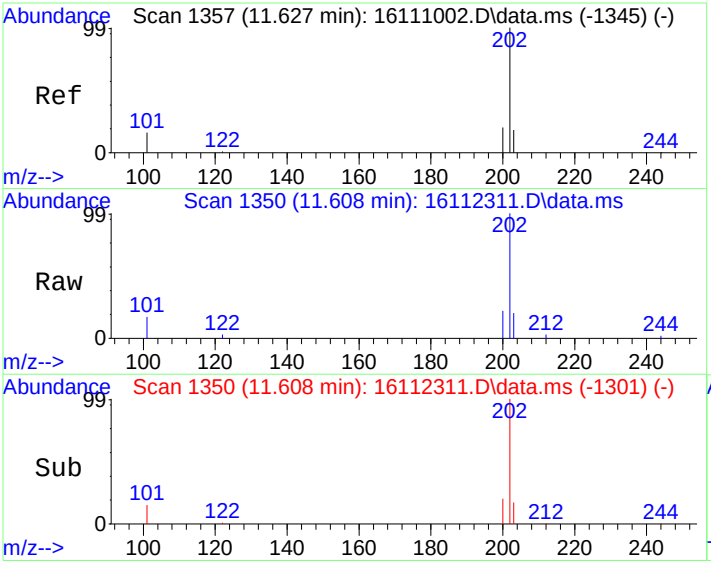


#9
Acenaphthene
Concen: 15.41 ug/kg
RT: 9.053 min Scan# 513
Delta R.T. -0.048 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:154 Resp: 2487

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	5.5	76.8	136.8#

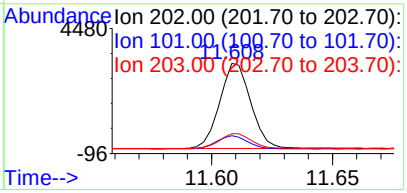


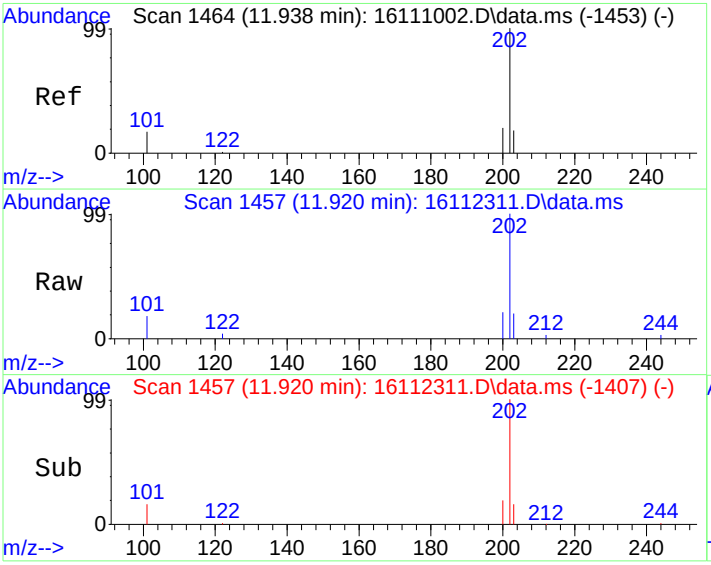


#14
Fluoranthene
Concen: 8.80 ug/kg
RT: 11.608 min Scan# 1350
Delta R.T. -0.018 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:202 Resp: 2791

Ion	Ratio	Lower	Upper
202	100		
101	15.4	0.0	45.8
203	17.3	0.0	48.2

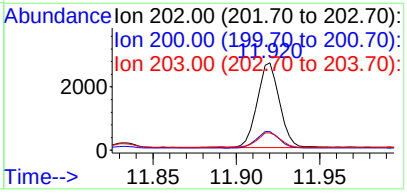


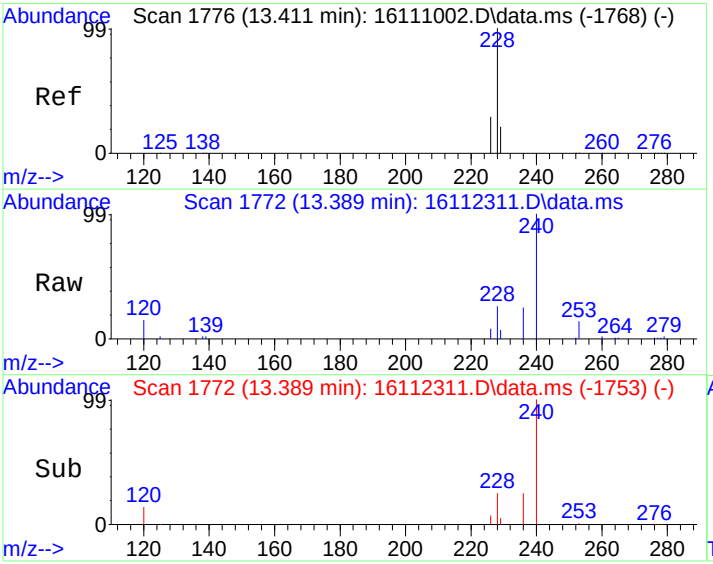


#15
Pyrene
Concen: 7.66 ug/kg
RT: 11.920 min Scan# 1457
Delta R.T. -0.018 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:202 Resp: 2497

Ion	Ratio	Lower	Upper
202	100		
200	19.1	0.0	50.3
203	17.2	0.0	48.2

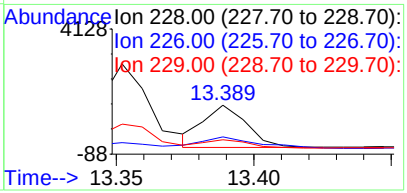


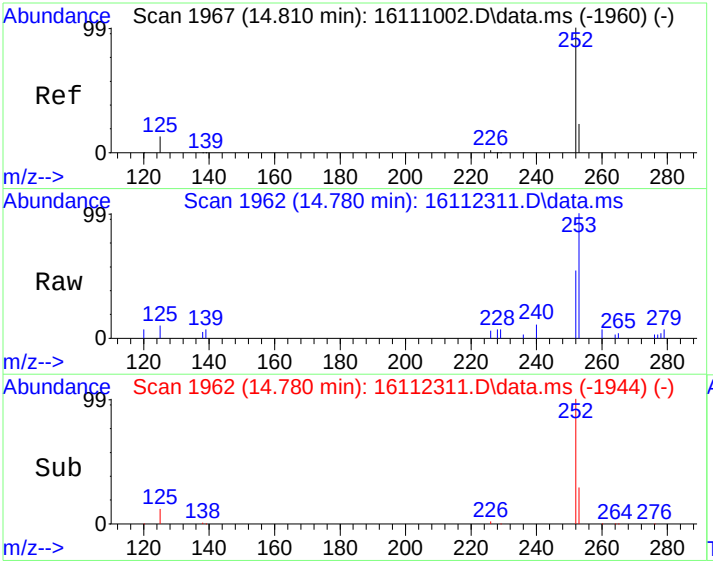


#19
Chrysene
Concen: 5.73 ug/kg
RT: 13.389 min Scan# 1772
Delta R.T. -0.022 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:228 Resp: 1545

Ion	Ratio	Lower	Upper
228	100		
226	26.5	0.0	58.7
229	19.7	0.0	50.4

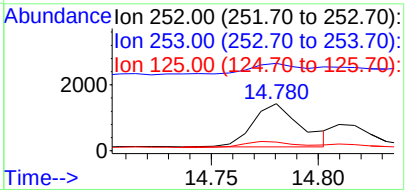


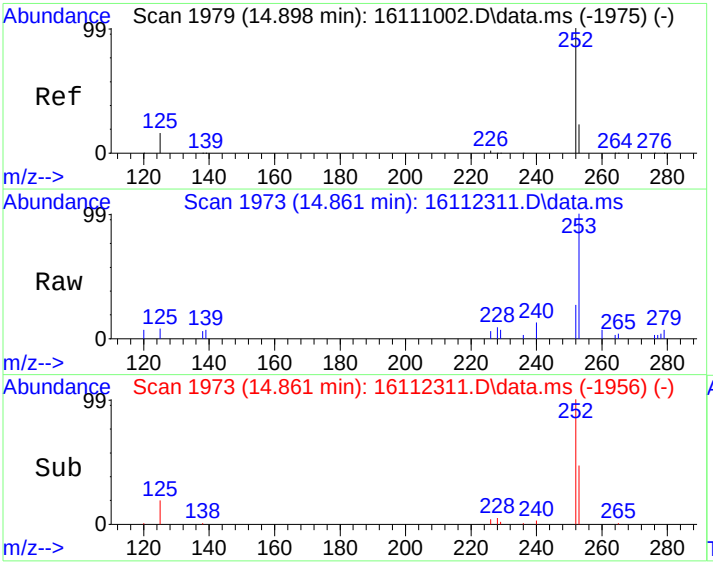


#21
Benzo[b]fluoranthene
Concen: 6.51 ug/kg
RT: 14.780 min Scan# 1962
Delta R.T. -0.030 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:252 Resp: 2057

Ion	Ratio	Lower	Upper
252	100		
253	24.5	0.0	52.7
125	12.4	0.0	42.9

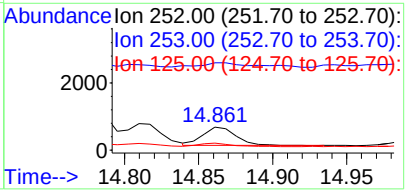


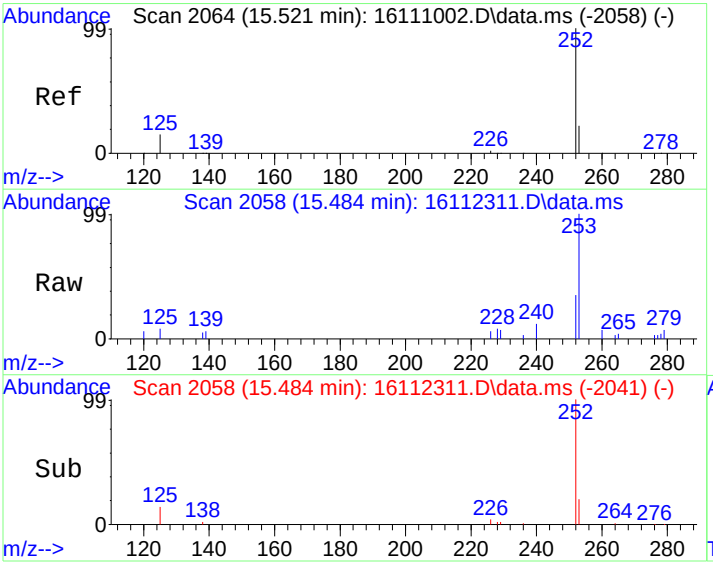


#23
Benzo(j)fluoranthene
Concen: 3.03 ug/kg
RT: 14.861 min Scan# 1973
Delta R.T. -0.037 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:252 Resp: 852

Ion	Ratio	Lower	Upper
252	100		
253	15.7	2.7	42.7
125	19.0	0.0	36.4

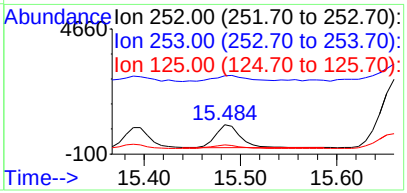


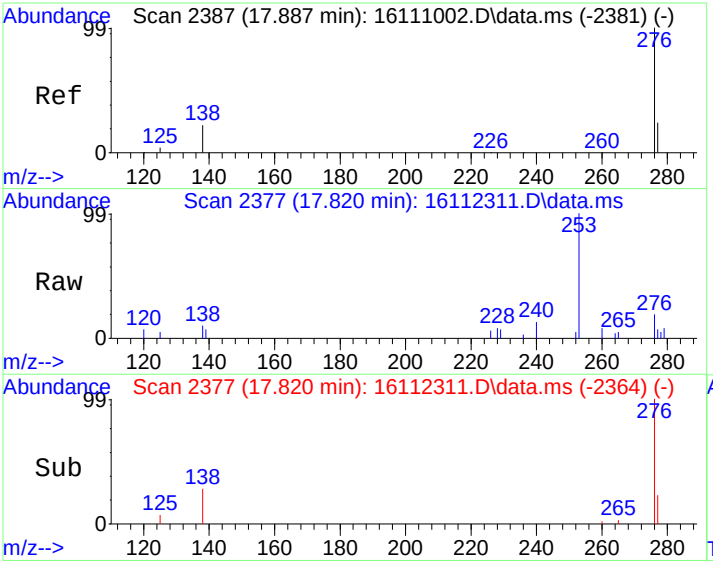


#25
Benzo[a]pyrene
Concen: 5.43 ug/kg
RT: 15.484 min Scan# 2058
Delta R.T. -0.036 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:252 Resp: 1573

Ion	Ratio	Lower	Upper
252	100		
253	25.5	2.7	42.7
125	14.9	0.0	33.9

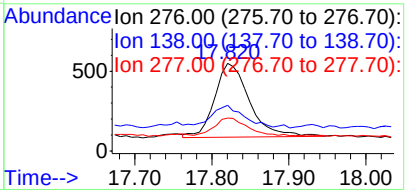




#27
Indeno[1,2,3-cd]pyrene
Concen: 5.02 ug/kg
RT: 17.820 min Scan# 2377
Delta R.T. -0.066 min
Lab File: 16112311.D
Acq: 23 Nov 2016 4:17 pm

Tgt Ion:276 Resp: 1459

Ion	Ratio	Lower	Upper
276	100		
138	31.1	4.4	44.4
277	23.6	4.4	44.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112316.D
Acq On : 23 Nov 2016 6:40 pm
Operator :
Sample : 1611053-03AMS
Misc : MS
ALS Vial : 16 Sample Multiplier: 10

Quant Time: Nov 25 09:54:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	1338209	4000.00	ug/kg	152
5) Acenaphthene-d10	9.053	164	669312	4000.00	ug/kg	85
11) Phenanthrene-d10	10.454	188	1144918	4000.00	ug/kg	81
17) Chrysene-d12	13.352	240	1272421	4000.00	ug/kg	76
20) Perylene-d12	15.660	264	1265218	4000.00	ug/kg	72

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.333	172	18351	84.41	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.11%#			
16) 4-Terphenyl-d14	11.833	244	17881	81.25	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.03%#			

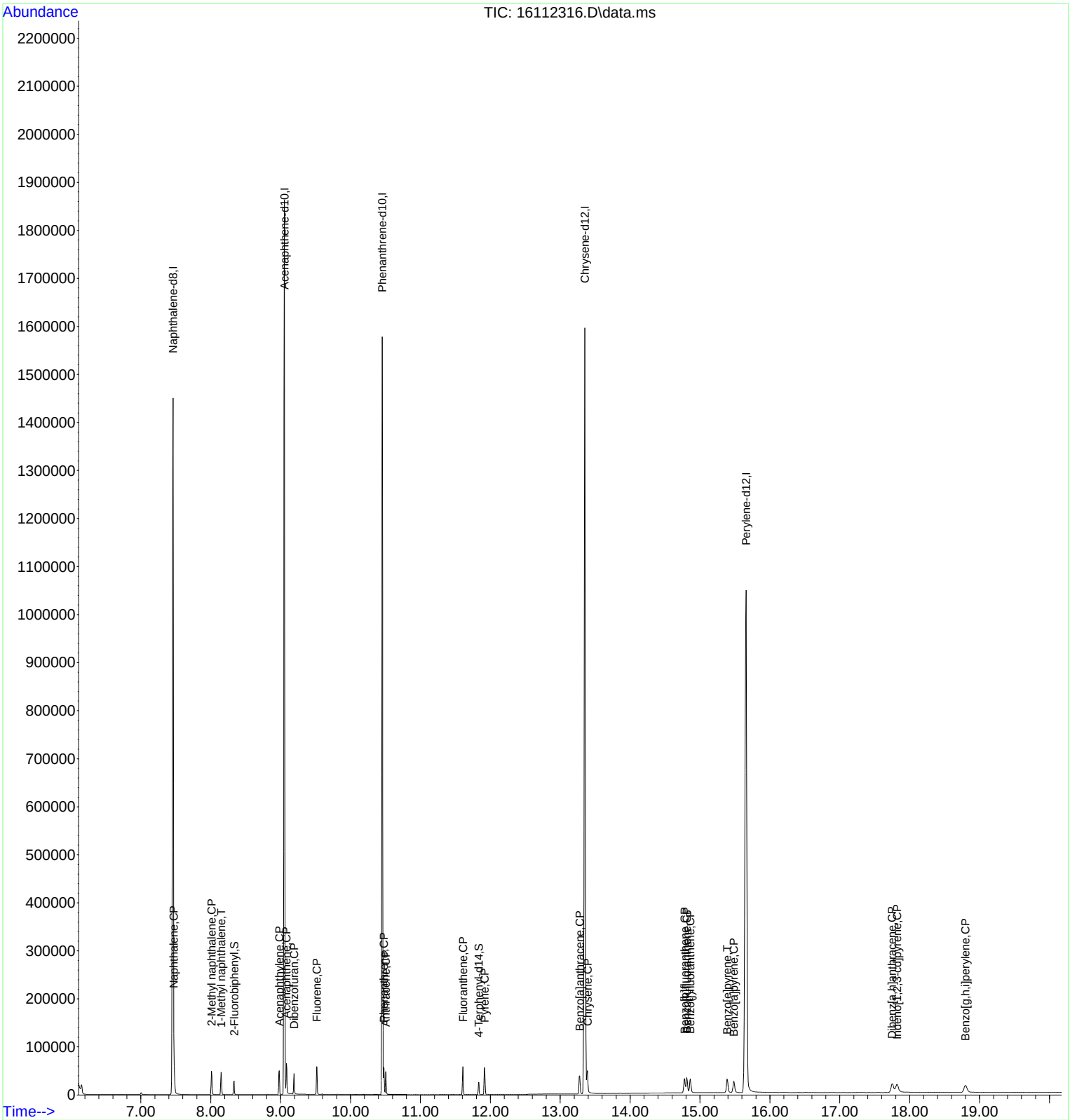
Target Compounds						Qvalue
2) Naphthalene	7.478	128	27514	105.87	ug/kg	99
3) 2-Methyl naphthalene	8.009	142	20014	69.59	ug/kg	89
4) 1-Methyl naphthalene	8.148	142	18356	70.70	ug/kg	95
6) Dibenzofuran	9.190	168	25947	106.66	ug/kg	99
8) Acenaphthylene	8.979	152	30857	110.58	ug/kg	97
9) Acenaphthene	9.082	154	17395	107.61	ug/kg	98
10) Fluorene	9.519	166	21533	106.35	ug/kg	98
12) Phenanthrene	10.475	178	29132	108.31	ug/kg	98
13) Anthracene	10.505	178	27251	99.52	ug/kg	98
14) Fluoranthene	11.608	202	33843	106.43	ug/kg	97
15) Pyrene	11.917	202	34287	105.02	ug/kg	98
18) Benzo[a]anthracene	13.279	228	32336	107.92	ug/kg	98
19) Chrysene	13.389	228	29997	110.42	ug/kg	98
21) Benzo[b]fluoranthene	14.781	252	34859	110.43	ug/kg	98
22) Benzo[k]fluoranthene	14.810	252	31591	110.72	ug/kg	97
23) Benzo(j)fluoranthene	14.861	252	30931	110.21	ug/kg	98
24) Benzo[e]pyrene	15.389	252	31838	112.52	ug/kg	98
25) Benzo[a]pyrene	15.484	252	30057	103.97	ug/kg	99
26) Dibenz[a,h]anthracene	17.755	278	29326	98.64	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.821	276	29595	102.07	ug/kg	99
28) Benzo[g,h,i]perylene	18.795	276	31199	101.60	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112316.D
Acq On : 23 Nov 2016 6:40 pm
Operator :
Sample : 1611053-03AMS
Misc : MS
ALS Vial : 16 Sample Multiplier: 10

Quant Time: Nov 25 09:54:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112317.D
Acq On : 23 Nov 2016 7:09 pm
Operator :
Sample : 1611053-03AMSD
Misc : MSD
ALS Vial : 17 Sample Multiplier: 10

Quant Time: Nov 25 09:54:06 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	1343144	4000.00	ug/kg	153
5) Acenaphthene-d10	9.053	164	668068	4000.00	ug/kg	84
11) Phenanthrene-d10	10.454	188	1159552	4000.00	ug/kg	82
17) Chrysene-d12	13.352	240	1261438	4000.00	ug/kg	75
20) Perylene-d12	15.659	264	1276572	4000.00	ug/kg	72

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.332	172	16435	75.74	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.89%#			
16) 4-Terphenyl-d14	11.833	244	17947	80.52	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.01%#			

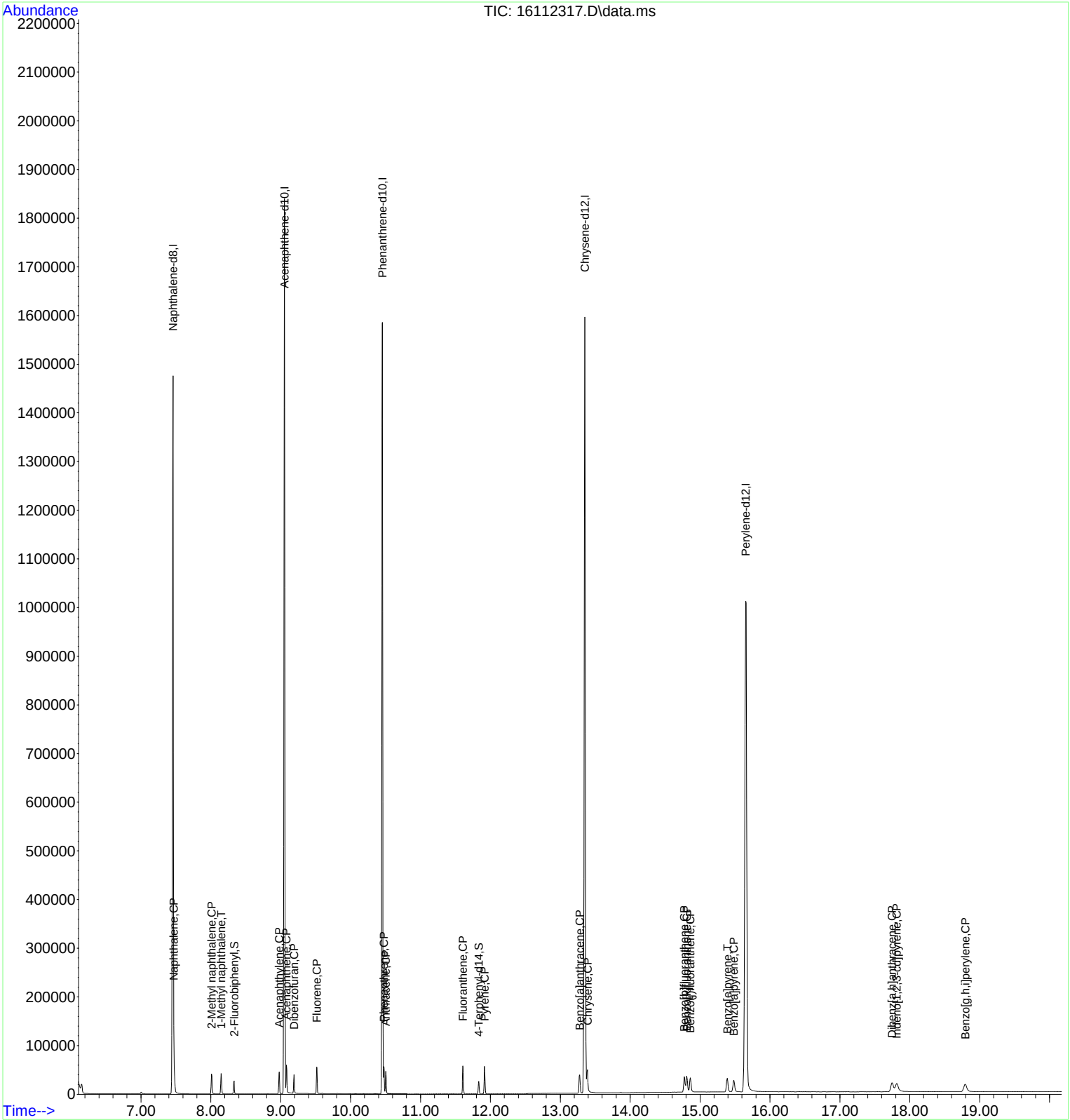
Target Compounds						Qvalue
2) Naphthalene	7.477	128	24642	94.47	ug/kg	99
3) 2-Methyl naphthalene	8.014	142	17869	61.91	ug/kg	98
4) 1-Methyl naphthalene	8.147	142	16439	63.08	ug/kg	92
6) Dibenzofuran	9.190	168	24092	99.22	ug/kg	100
8) Acenaphthylene	8.979	152	27996	100.51	ug/kg	98
9) Acenaphthene	9.082	154	15684	97.20	ug/kg	96
10) Fluorene	9.519	166	20259	100.24	ug/kg	98
12) Phenanthrene	10.475	178	28720	105.43	ug/kg	98
13) Anthracene	10.503	178	26671	96.17	ug/kg	98
14) Fluoranthene	11.608	202	34108	105.91	ug/kg	97
15) Pyrene	11.917	202	34269	103.64	ug/kg	98
18) Benzo[a]anthracene	13.279	228	32566	109.63	ug/kg	99
19) Chrysene	13.389	228	30573	113.52	ug/kg	98
21) Benzo[b]fluoranthene	14.773	252	35775	112.32	ug/kg	97
22) Benzo[k]fluoranthene	14.810	252	32287	112.15	ug/kg	98
23) Benzo(j)fluoranthene	14.861	252	31686	111.89	ug/kg	98
24) Benzo[e]pyrene	15.388	252	32684	114.48	ug/kg	98
25) Benzo[a]pyrene	15.484	252	30430	104.32	ug/kg	99
26) Dibenz[a,h]anthracene	17.747	278	29843	99.49	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.813	276	30335	103.69	ug/kg	97
28) Benzo[g,h,i]perylene	18.795	276	32064	103.49	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112317.D
Acq On : 23 Nov 2016 7:09 pm
Operator :
Sample : 1611053-03AMSD
Misc : MSD
ALS Vial : 17 Sample Multiplier: 10

Quant Time: Nov 25 09:54:06 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112318.D
Acq On : 23 Nov 2016 7:38 pm
Operator :
Sample : CCV1-161123
Misc : CCV
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 25 09:54:09 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	1309699	4000.00	ug/kg	149
5) Acenaphthene-d10	9.052	164	648305	4000.00	ug/kg	82
11) Phenanthrene-d10	10.452	188	1127726	4000.00	ug/kg	80
17) Chrysene-d12	13.352	240	1213914	4000.00	ug/kg	73
20) Perylene-d12	15.660	264	1231269	4000.00	ug/kg	70

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.332	172	222205	1055.23	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 26.38%#			
16) 4-Terphenyl-d14	11.832	244	204888	945.19	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 23.63%#			

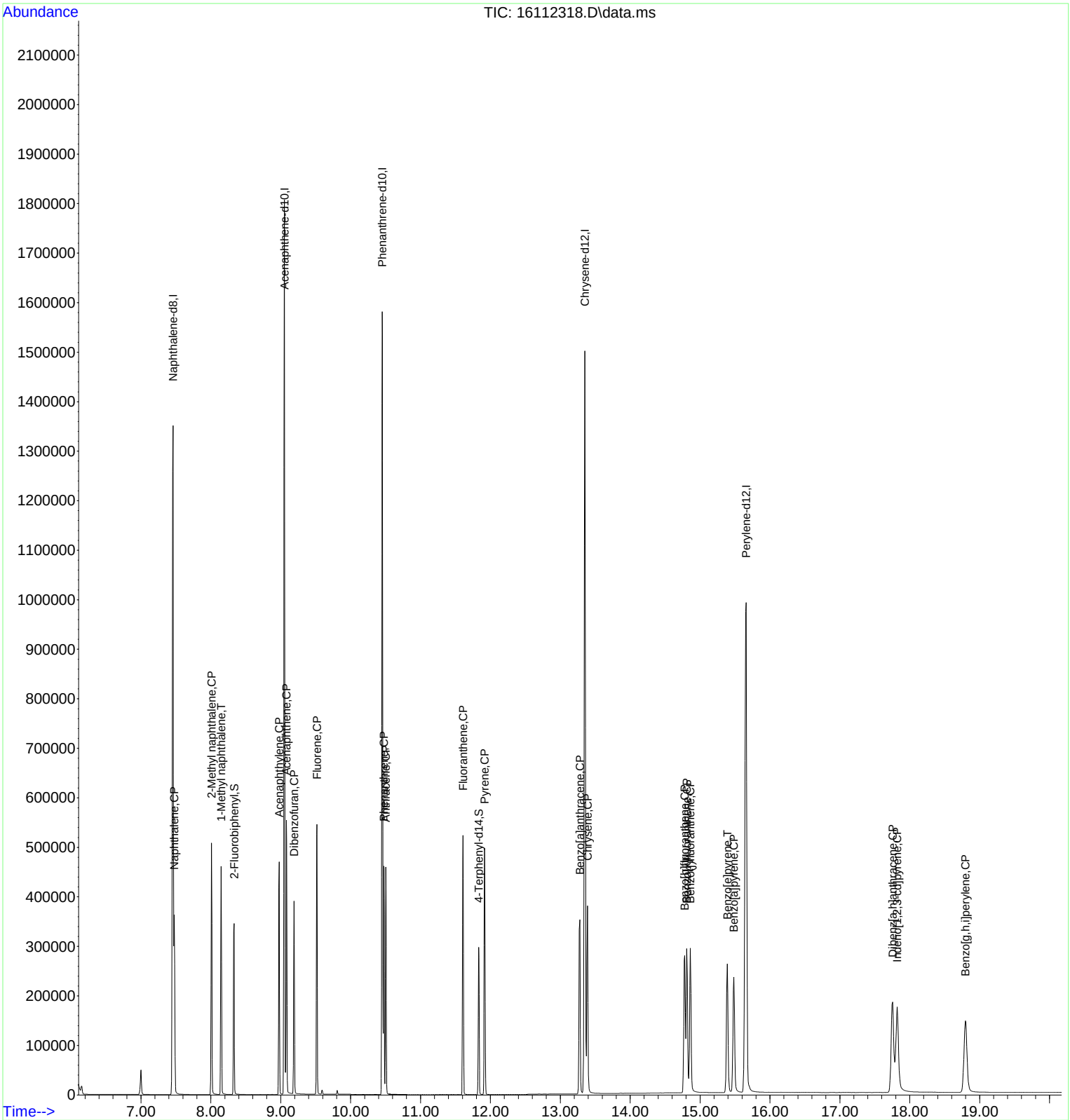
Target Compounds						Qvalue
2) Naphthalene	7.476	128	269395	1059.17	ug/kg	99
3) 2-Methyl naphthalene	8.008	142	192106	682.53	ug/kg	91
4) 1-Methyl naphthalene	8.147	142	171458	674.73	ug/kg	96
6) Dibenzofuran	9.189	168	240657	1021.35	ug/kg	100
8) Acenaphthylene	8.978	152	289255	1070.16	ug/kg	98
9) Acenaphthene	9.081	154	163034	1041.24	ug/kg	97
10) Fluorene	9.518	166	197999	1009.59	ug/kg	98
12) Phenanthrene	10.475	178	262463	990.67	ug/kg	99
13) Anthracene	10.505	178	262339	972.67	ug/kg	99
14) Fluoranthene	11.608	202	295282	942.73	ug/kg	99
15) Pyrene	11.917	202	293190	911.71	ug/kg	99
18) Benzo[a]anthracene	13.279	228	294072	1028.74	ug/kg	99
19) Chrysene	13.389	228	273157	1054.00	ug/kg	99
21) Benzo[b]fluoranthene	14.781	252	313015	1018.94	ug/kg	98
22) Benzo[k]fluoranthene	14.810	252	281625	1014.23	ug/kg	98
23) Benzo(j)fluoranthene	14.861	252	287340	1052.02	ug/kg	98
24) Benzo[e]pyrene	15.388	252	284637	1033.70	ug/kg	98
25) Benzo[a]pyrene	15.484	252	282067	1002.59	ug/kg	99
26) Dibenz[a,h]anthracene	17.754	278	273554	945.50	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.820	276	271906	963.60	ug/kg	98
28) Benzo[g,h,i]perylene	18.802	276	283954	950.17	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161123\
Data File : 16112318.D
Acq On : 23 Nov 2016 7:38 pm
Operator :
Sample : CCV1-161123
Misc : CCV
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 25 09:54:09 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration



GCMS8
Calibration Curve
For

DHL Work Order
1611053

CAL ID: 707

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #8 **Calibration File Name:** PP161021.CAL

Target Concentration	Solvent Amount mL	Standard Preparation Stocks and Surrogate (µL/mL)	Final Volume mL
5 ppb	0.999	0.001 mL of 5000 ppb	1
10 ppb	0.998	0.002 mL of 5000 ppb	1
50 ppb	0.990	0.01 mL of 5000 ppb	1
100 ppb	0.980	0.02 mL of 5000 ppb	1
500 ppb	0.900	0.10 mL of 5000 ppb	1
1000 ppb	0.800	0.20 mL of 5000 ppb	1
2000 ppb	0.600	0.40 mL of 5000 ppb	1
5000 ppb	----	PAHCAL161020	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV161005-1	1
SSCV 2500 ppb	----	PAHSSCV161020-2	1

Standards Used for the Calibration Curve

1 uL Internal Standard SV160510-5 spiked in all.

Primary Stock STDs	DHL Standard ID	Second Source (SS) Stock STDs	DHL Standard ID
5 PPM (5000 PPB) PAH CAL STD	**PAHCAL161020**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV161005-1**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV161020-2**

Review Item	Acceptance Criteria	Yes	No	N/A	2nd Level Review
1. Are all standards within expiration dates?	Primary Stocks = 1 year Intermediate Standards = 6 months	X			X
2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)**	Manual Integration Tracking Form			X	
3. Does the tune and resolution check meet criteria?	Benzo(b) / Benzo(k)phenanthrene Valley > 50% See Tune Eval Report	X			
4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15%	%RSD < 15% COD ≥ 0.990	X			
5. Has the low point been reprocessed under the new ICAL curve and meets criteria?	70-130% recovery	X			
6. Has the SSCV been analyzed and meets criteria?	80-120% recovery	X			

Analyst: Dustin Beyer Karyn Lane Date: 11/01/2016

Second-Level Review: Date: 11/02/2016

CAL 2 is the reporting limit for PAH - all analytes meet the ± 30% acceptance criteria.

Response Factor Report GCMS #8

Method Path : C:\msdchem\1\METHODS\
Method File : PP161021.M
Title : PAH Calibration
Last Update : Tue Nov 01 15:45:22 2016
Response Via : Initial Calibration

Calibration Files
1 =16102106.D 2 =16102107.D 3 =16102108.D 4 =16102109.D 5 =16102110.D 6 =16102111.D 7 =16102112.D
8 =16102113.D

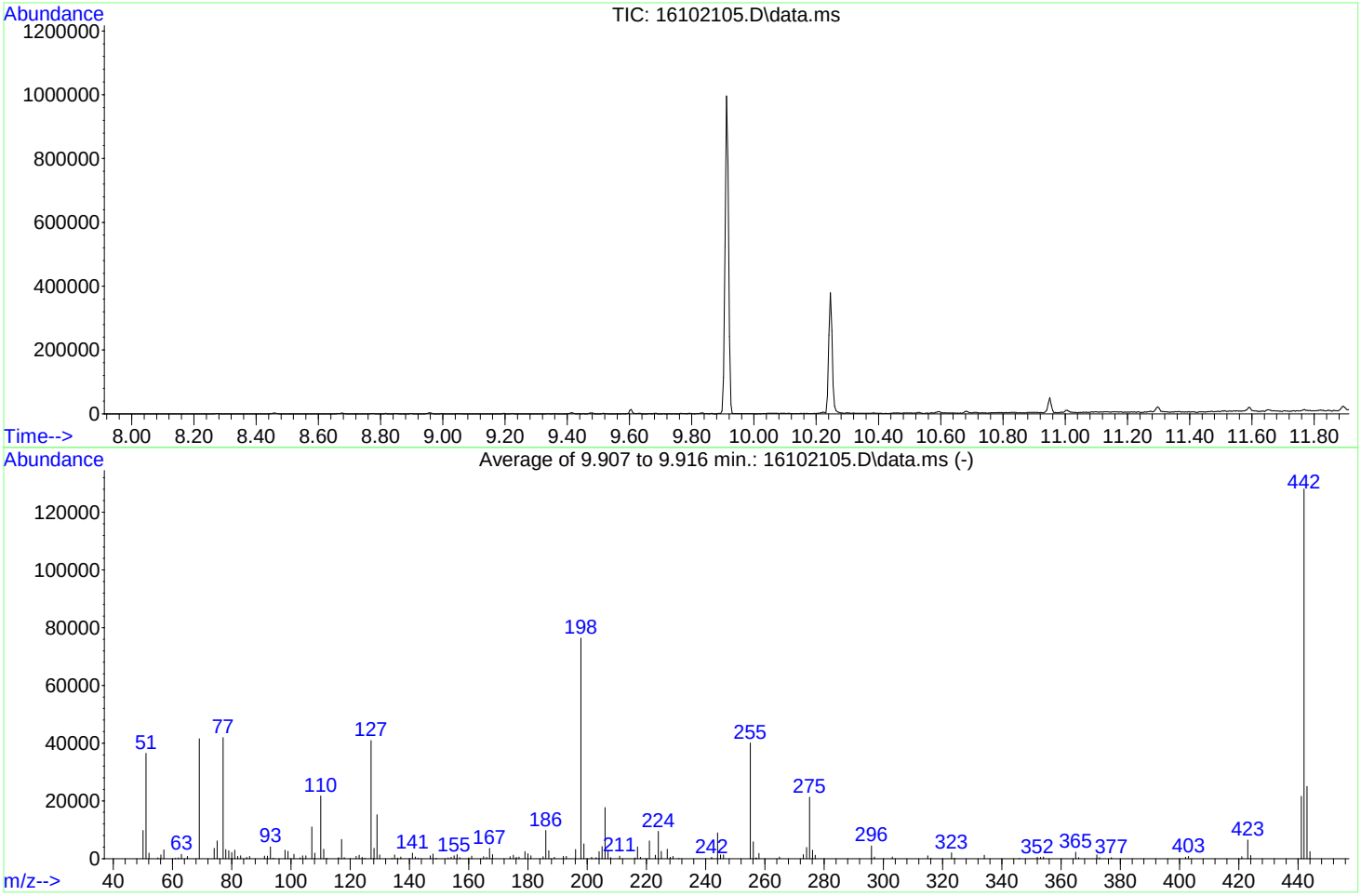
		Compound	1	2	3	4	5	6	7	8	Avg	%RSD	Fit	RSD/CF	Constant	Linear	Quad
1)	I	Naphthalene-d8	----------ISTD----------														
2)	CP	Naphthalene	0.915	0.744	0.777	0.767	0.765	0.755	0.751	0.740	0.777	7.38	A	0.0738	0.0000	0.7768	0.0000
3)	CP	2-Methyl napht...	0.837	0.783	0.874	0.922	0.909	0.878	0.874	0.801	0.860	5.71	A	0.0571	0.0000	0.8596	0.0000
4)	T	1-Methyl napht...	0.751	0.694	0.790	0.833	0.824	0.793	0.794	0.729	0.776	6.15	A	0.0615	0.0000	0.7761	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.606	1.389	1.511	1.446	1.498	1.451	1.404	1.326	1.454	5.90#	A	0.0590	0.0000	1.4538	0.0000
7)	S	2-Fluorobiphenyl	1.359	1.235	1.372	1.286	1.349	1.307	1.278	1.207	1.299	4.56	A	0.0456	0.0000	1.2992	0.0000
8)	CP	Acenaphthylene	1.785	1.538	1.704	1.762	1.718	1.673	1.622	1.540	1.668	5.63	A	0.0563	0.0000	1.6677	0.0000
9)	CP	Acenaphthene	1.013	0.906	0.995	1.016	0.979	0.963	0.951	0.906	0.966	4.48	A	0.0448	0.0000	0.9661	0.0000
10)	CP	Fluorene	1.344	1.132	1.241	1.298	1.242	1.193	1.147	1.083	1.210	7.24	A	0.0724	0.0000	1.2100	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	1.140	0.934	0.939	0.976	0.927	0.913	0.872	0.817	0.940	10.01	A	0.1001	0.0000	0.9397	0.0000
13)	CP	Anthracene	1.140	0.930	0.979	1.014	0.949	0.932	0.885	0.824	0.957	9.81	A	0.0981	0.0000	0.9567	0.0000
14)	CP	Fluoranthene	1.405	1.125	1.124	1.169	1.083	1.055	1.007	0.921	1.111	12.76	A	0.1276	0.0000	1.1110	0.0000
15)	CP	Pyrene	1.499	1.172	1.154	1.191	1.089	1.069	1.015	0.935	1.141	14.75	A	0.1475	0.0000	1.1406	0.0000
16)	S	4-Terphenyl-d14	0.867	0.761	0.806	0.766	0.782	0.772	0.727	0.670	0.769	7.41	A	0.0741	0.0000	0.7689	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...	1.078	0.899	0.950	0.988	0.942	0.923	0.906	0.849	0.942	7.26	A	0.0726	0.0000	0.9419	0.0000
19)	CP	Chrysene	0.922	0.817	0.848	0.902	0.877	0.850	0.843	0.772	0.854	5.54	A	0.0554	0.0000	0.8540	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	1.110	0.971	1.051	1.000	1.027	0.978	0.939	0.908	0.998	6.44	A	0.0644	0.0000	0.9980	0.0000
22)	CP	Benzo[k]fluora...	0.994	0.846	0.901	1.001	0.881	0.889	0.868	0.837	0.902	6.93	A	0.0693	0.0000	0.9021	0.0000
23)	CP	Benzo(j)fluora...	0.968	0.834	0.920	0.894	0.897	0.893	0.861	0.832	0.887	5.10	A	0.0510	0.0000	0.8873	0.0000
24)	T	Benzo[e]pyrene	0.989	0.860	0.923	0.866	0.911	0.892	0.871	0.844	0.895	5.22	A	0.0522	0.0000	0.8946	0.0000
25)	CP	Benzo[a]pyrene	1.018	0.864	0.933	0.967	0.911	0.894	0.875	0.851	0.914	6.18	A	0.0618	0.0000	0.9140	0.0000
26)	CP	Dibenz[a,h]ant...	1.008	0.910	0.933	0.978	0.942	0.925	0.914	0.909	0.940	3.80	A	0.0380	0.0000	0.9399	0.0000
27)	CP	Indeno[1,2,3-c...	0.983	0.867	0.932	0.964	0.920	0.909	0.887	0.871	0.917	4.59	A	0.0459	0.0000	0.9167	0.0000
28)	CP	Benzo[g,h,i]pe...	1.079	0.913	0.973	1.019	0.971	0.949	0.941	0.923	0.971	5.63	A	0.0563	0.0000	0.9709	0.0000

(#) = Out of Range

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102105.D
Acq On : 21 Oct 2016 3:47 pm
Operator :
Sample : DFTPP-161021
Misc : TUNE
ALS Vial : 2 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : PAH Calibration
Last Update : Tue Jun 28 10:28:09 2011



AutoFind: Scans 812, 813, 814; Background Corrected with Scan 807

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	47.7	36437	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	54.4	41533	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	53.6	40938	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	76370	PASS
199	198	5	9	6.8	5158	PASS
275	198	10	60	27.9	21292	PASS
365	198	1	200	3.0	2258	PASS
441	442	0.01	24	16.9	21604	PASS
442	198	50	400	167.8	128112	PASS
443	442	15	24	19.5	25022	PASS

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102106.D
Acq On : 21 Oct 2016 4:15 pm
Operator :
Sample : CAL1 (5 ppb)
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 15:56:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	1007734	4000.00	ug/kg	114
5) Acenaphthene-d10	9.120	164	836003	4000.00	ug/kg	106
11) Phenanthrene-d10	10.532	188	1505356	4000.00	ug/kg	107
17) Chrysene-d12	13.462	240	1840981	4000.00	ug/kg	110
20) Perylene-d12	15.828	264	1946884	4000.00	ug/kg	111

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.396	172	1420	5.23	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.13%#			
16) 4-Terphenyl-d14	11.926	244	1632	5.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.14%#			

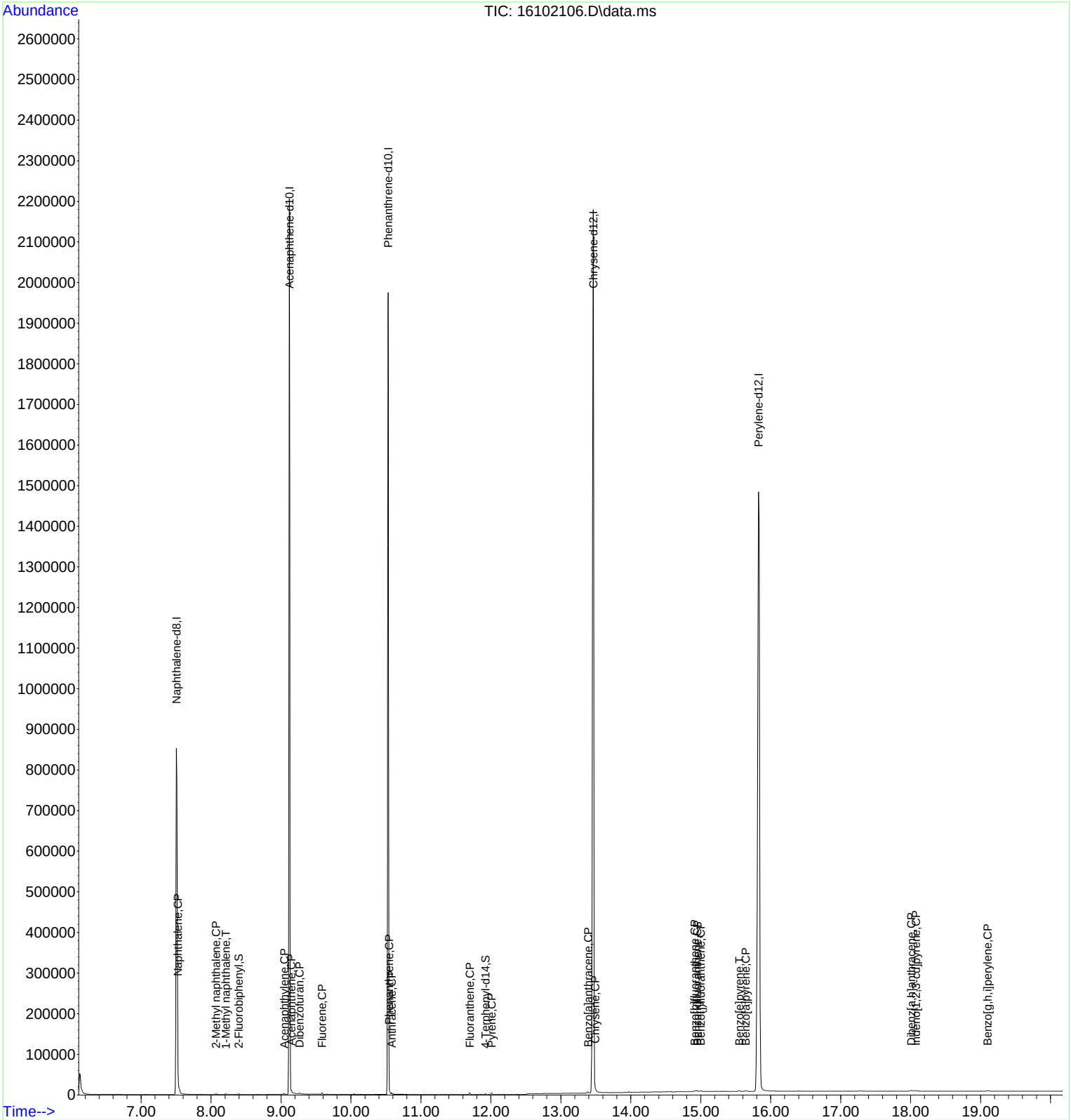
Target Compounds						Qvalue
2) Naphthalene	7.529	128	1153	5.89	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	1054	4.87	ug/kg	94
4) 1-Methyl naphthalene	8.211	142	946	4.84	ug/kg	99
6) Dibenzofuran	9.263	168	1678	5.52	ug/kg	88
8) Acenaphthylene	9.047	152	1865	5.35	ug/kg	97
9) Acenaphthene	9.155	154	1059	5.24	ug/kg	97
10) Fluorene	9.587	166	1404	5.55	ug/kg	95
12) Phenanthrene	10.553	178	2145	6.07	ug/kg	98
13) Anthracene	10.583	178	2146	5.96	ug/kg	96
14) Fluoranthene	11.698	202	2643	6.32	ug/kg	98
15) Pyrene	12.010	202	2821	6.57	ug/kg	99
18) Benzo[a]anthracene	13.389	228	2480	5.72	ug/kg	99
19) Chrysene	13.499	228	2121	5.40	ug/kg	96
21) Benzo[b]fluoranthene	14.920	252	2702	5.56	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	2420	5.51	ug/kg	95
23) Benzo(j)fluoranthene	15.000	252	2356	5.46	ug/kg	95
24) Benzo[e]pyrene	15.550	252	2408	5.53	ug/kg	97
25) Benzo[a]pyrene	15.645	252	2477	5.57	ug/kg	97
26) Dibenz[a,h]anthracene	18.011	278	2454	5.36	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	18.084	276	2393	5.36	ug/kg	98
28) Benzo[g,h,i]perylene	19.102	276	2625	5.56	ug/kg	95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102106.D
Acq On : 21 Oct 2016 4:15 pm
Operator :
Sample : CAL1 (5 ppb)
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 15:56:44 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102107.D
Acq On : 21 Oct 2016 4:43 pm
Operator :
Sample : CAL2 (10 ppb)
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Reprocessed low point.

Quant Time: Nov 01 15:56:47 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

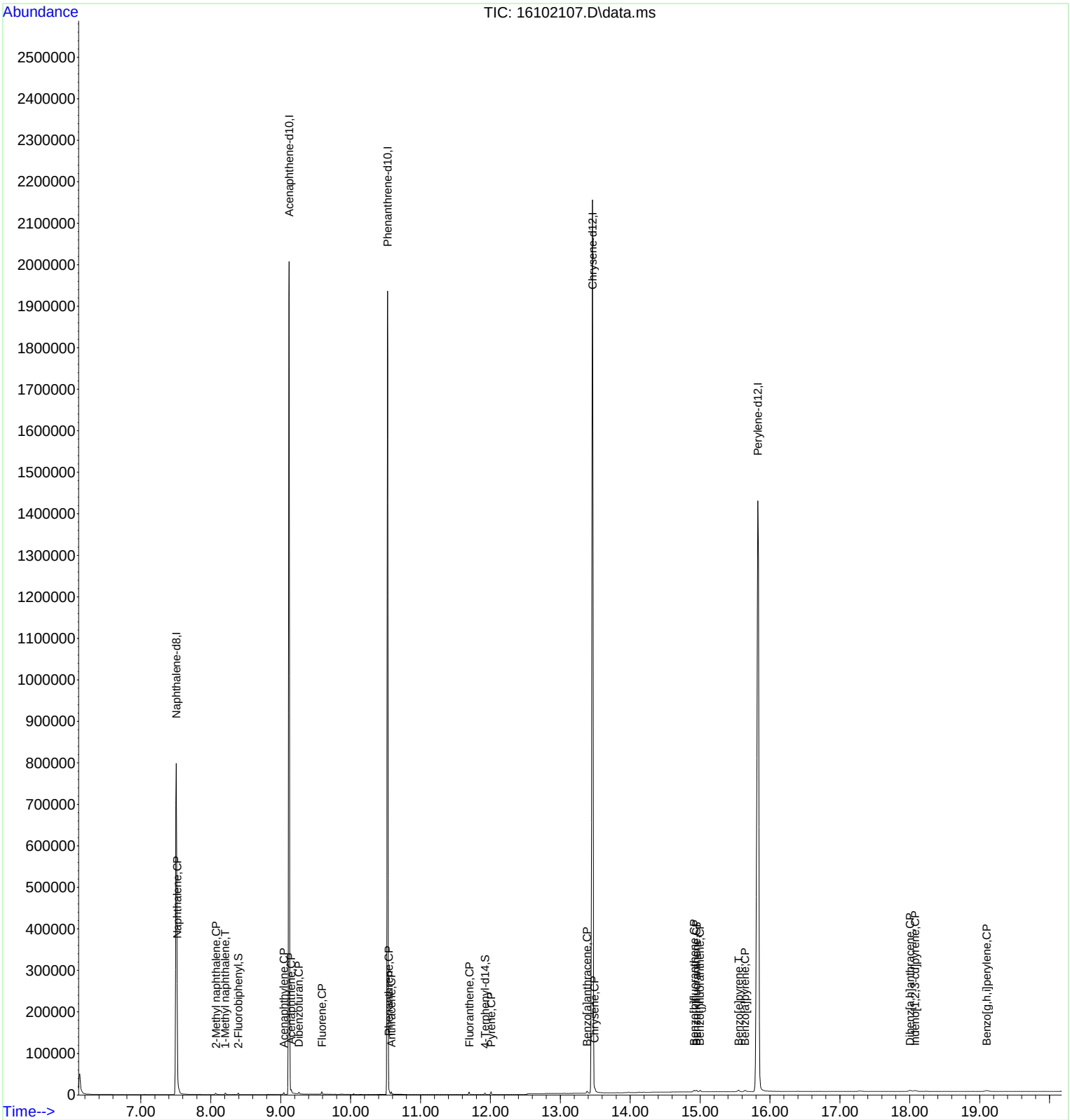
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	937897	4000.00	ug/kg	107
5) Acenaphthene-d10	9.121	164	819436	4000.00	ug/kg	104
11) Phenanthrene-d10	10.530	188	1470089	4000.00	ug/kg	104
17) Chrysene-d12	13.462	240	1782452	4000.00	ug/kg	107
20) Perylene-d12	15.828	264	1849102	4000.00	ug/kg	105
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	2530	9.51	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.24%#			
16) 4-Terphenyl-d14	11.924	244	2796	9.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.25%#			
Target Compounds						Qvalue
2) Naphthalene	7.524	128	1744	9.58	ug/kg	99
3) 2-Methyl naphthalene	8.073	142	1836	9.11	ug/kg	99
4) 1-Methyl naphthalene	8.212	142	1627	8.94	ug/kg	98
6) Dibenzofuran	9.264	168	2845	9.55	ug/kg	96
8) Acenaphthylene	9.043	152	3150	9.22	ug/kg	98
9) Acenaphthene	9.151	154	1857	9.38	ug/kg	99
10) Fluorene	9.588	166	2320	9.36	ug/kg	96
12) Phenanthrene	10.553	178	3433	9.94	ug/kg	98
13) Anthracene	10.580	178	3419	9.72	ug/kg	98
14) Fluoranthene	11.696	202	4133	10.12	ug/kg	97
15) Pyrene	12.008	202	4309	10.28	ug/kg	99
18) Benzo[a]anthracene	13.381	228	4007	9.55	ug/kg	97
19) Chrysene	13.498	228	3641	9.57	ug/kg	98
21) Benzo[b]fluoranthene	14.912	252	4488	9.73	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	3910	9.38	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	3855	9.40	ug/kg	95
24) Benzo[e]pyrene	15.549	252	3974	9.61	ug/kg	97
25) Benzo[a]pyrene	15.644	252	3994	9.45	ug/kg	96
26) Dibenz[a,h]anthracene	18.010	278	4207	9.68	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	18.076	276	4008	9.46	ug/kg	95
28) Benzo[g,h,i]perylene	19.102	276	4221	9.41	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102107.D
Acq On : 21 Oct 2016 4:43 pm
Operator :
Sample : CAL2 (10 ppb)
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 01 15:56:47 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102108.D
Acq On : 21 Oct 2016 5:12 pm
Operator :
Sample : CAL3 (50 ppb)
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 01 15:56:52 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

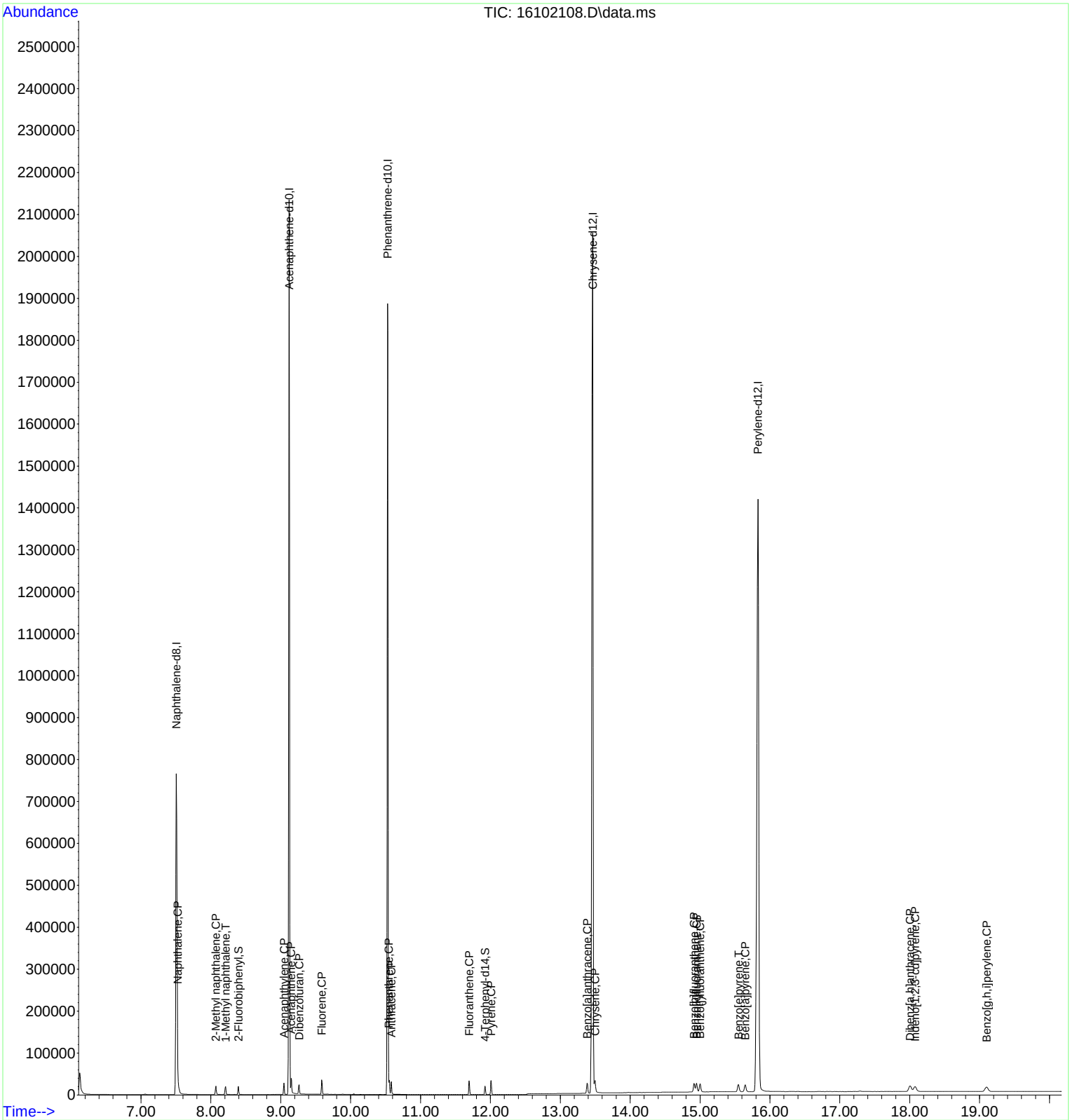
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	907873	4000.00	ug/kg	103
5) Acenaphthene-d10	9.120	164	805692	4000.00	ug/kg	102
11) Phenanthrene-d10	10.530	188	1436293	4000.00	ug/kg	102
17) Chrysene-d12	13.462	240	1731298	4000.00	ug/kg	104
20) Perylene-d12	15.828	264	1793721	4000.00	ug/kg	102
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.395	172	13819	52.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.32%#			
16) 4-Terphenyl-d14	11.923	244	14463	52.39	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 1.31%#			
Target Compounds						Qvalue
2) Naphthalene	7.528	128	8818	50.01	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	9924	50.86	ug/kg	97
4) 1-Methyl naphthalene	8.210	142	8968	50.91	ug/kg	98
6) Dibenzofuran	9.263	168	15217	51.97	ug/kg	98
8) Acenaphthylene	9.047	152	17161	51.09	ug/kg	98
9) Acenaphthene	9.150	154	10017	51.48	ug/kg	98
10) Fluorene	9.587	166	12497	51.27	ug/kg	96
12) Phenanthrene	10.553	178	16863	49.98	ug/kg	98
13) Anthracene	10.582	178	17569	51.15	ug/kg	98
14) Fluoranthene	11.695	202	20181	50.59	ug/kg	98
15) Pyrene	12.010	202	20726	50.60	ug/kg	98
18) Benzo[a]anthracene	13.382	228	20559	50.43	ug/kg	98
19) Chrysene	13.499	228	18358	49.67	ug/kg	98
21) Benzo[b]fluoranthene	14.913	252	23556	52.64	ug/kg	97
22) Benzo[k]fluoranthene	14.949	252	20200	49.94	ug/kg	99
23) Benzo(j)fluoranthene	15.000	252	20621	51.82	ug/kg	97
24) Benzo[e]pyrene	15.550	252	20694	51.59	ug/kg	96
25) Benzo[a]pyrene	15.645	252	20917	51.04	ug/kg	98
26) Dibenz[a,h]anthracene	18.004	278	20925	49.65	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	18.077	276	20889	50.82	ug/kg	99
28) Benzo[g,h,i]perylene	19.102	276	21809	50.09	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102108.D
Acq On : 21 Oct 2016 5:12 pm
Operator :
Sample : CAL3 (50 ppb)
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 01 15:56:52 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102109.D
Acq On : 21 Oct 2016 5:39 pm
Operator :
Sample : CAL4 (100 ppb)
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 01 15:56:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

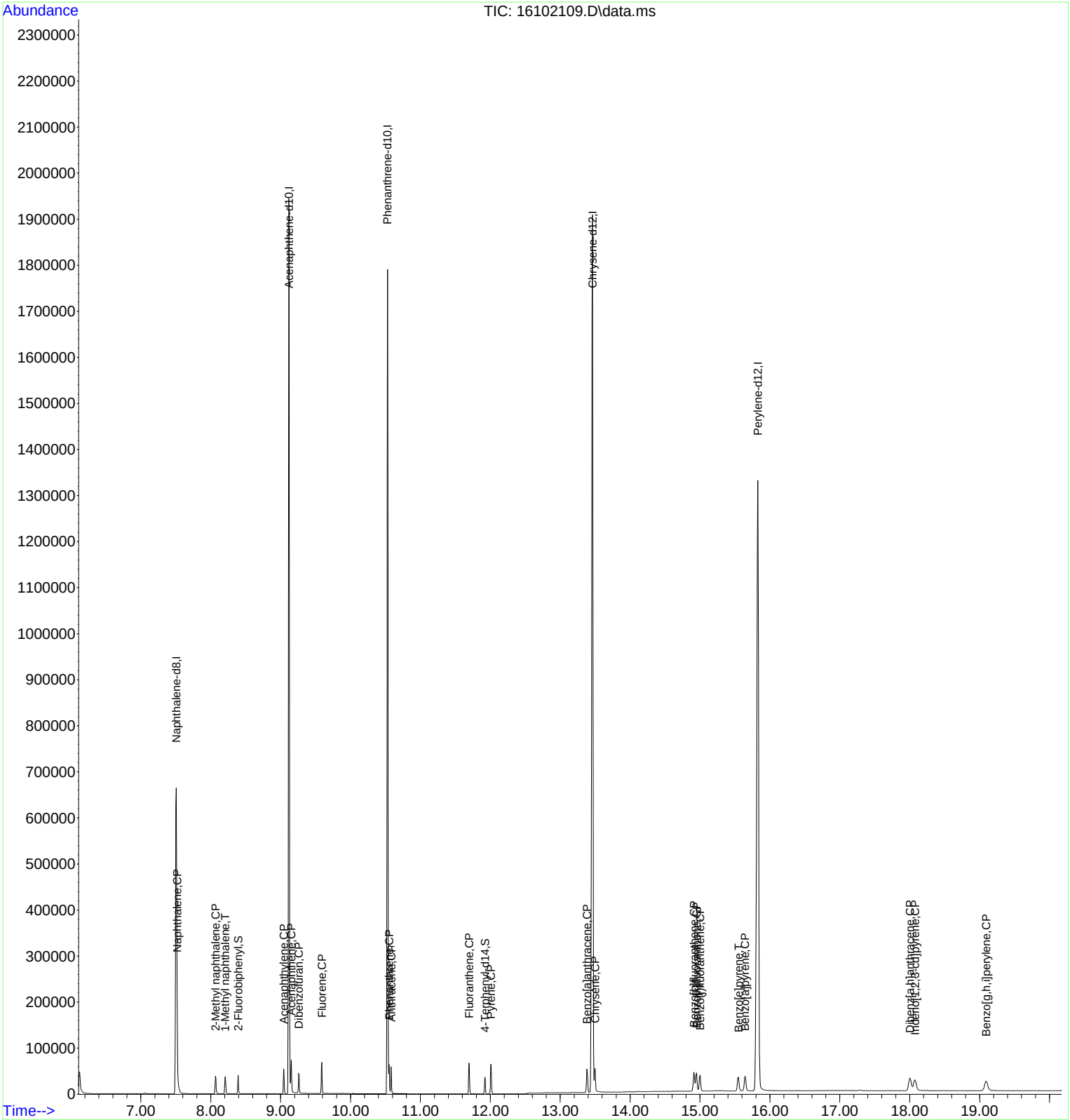
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.507	136	814464	4000.00	ug/kg	93
5) Acenaphthene-d10	9.117	164	764275	4000.00	ug/kg	97
11) Phenanthrene-d10	10.530	188	1364880	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1647563	4000.00	ug/kg	99
20) Perylene-d12	15.828	264	1699180	4000.00	ug/kg	96
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	24578	99.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.48%#			
16) 4-Terphenyl-d14	11.923	244	26128	99.59	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.49%#			
Target Compounds						Qvalue
2) Naphthalene	7.524	128	15623	98.77	ug/kg	99
3) 2-Methyl naphthalene	8.067	142	18767	107.22	ug/kg	92
4) 1-Methyl naphthalene	8.206	142	16967	107.37	ug/kg	92
6) Dibenzofuran	9.259	168	27637	99.49	ug/kg	97
8) Acenaphthylene	9.043	152	33668	105.66	ug/kg	98
9) Acenaphthene	9.151	154	19405	105.13	ug/kg	99
10) Fluorene	9.588	166	24795	107.25	ug/kg	99
12) Phenanthrene	10.551	178	33292	103.83	ug/kg	98
13) Anthracene	10.581	178	34602	106.00	ug/kg	98
14) Fluoranthene	11.695	202	39881	105.20	ug/kg	98
15) Pyrene	12.007	202	40645	104.43	ug/kg	99
18) Benzo[a]anthracene	13.381	228	40694	104.89	ug/kg	98
19) Chrysene	13.499	228	37157	105.64	ug/kg	98
21) Benzo[b]fluoranthene	14.912	252	42476	100.19	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	42502	110.91	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	37964	100.72	ug/kg	99
24) Benzo[e]pyrene	15.550	252	36769	96.76	ug/kg	95
25) Benzo[a]pyrene	15.645	252	41057	105.75	ug/kg	98
26) Dibenz[a,h]anthracene	18.003	278	41537	104.03	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.077	276	40950	105.16	ug/kg	99
28) Benzo[g,h,i]perylene	19.095	276	43273	104.93	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102109.D
Acq On : 21 Oct 2016 5:39 pm
Operator :
Sample : CAL4 (100 ppb)
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 01 15:56:55 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102110.D
Acq On : 21 Oct 2016 6:08 pm
Operator :
Sample : CAL5 (500 ppb)
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 01 15:56:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

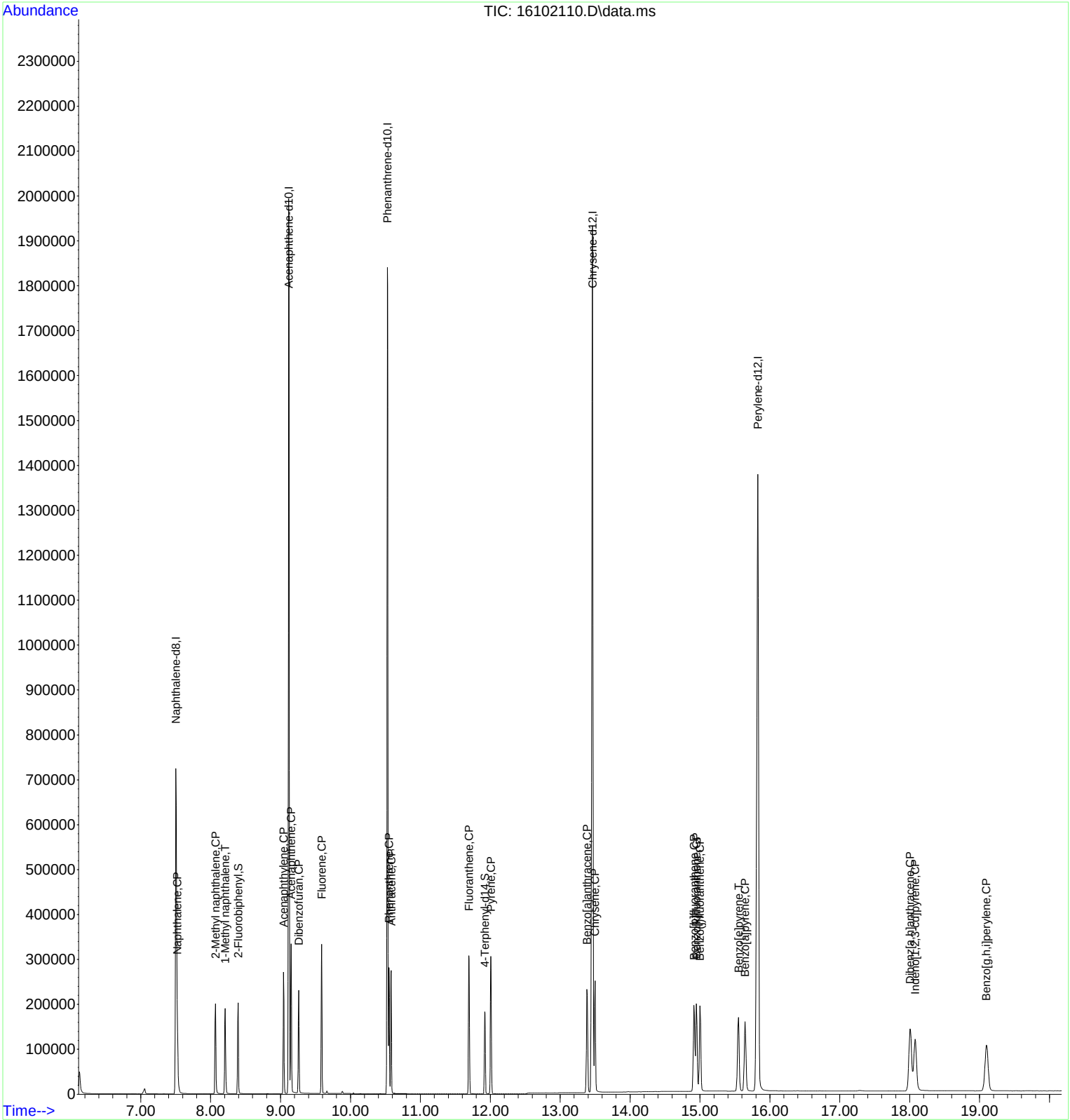
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.502	136	831350	4000.00	ug/kg	94
5) Acenaphthene-d10	9.117	164	772407	4000.00	ug/kg	98
11) Phenanthrene-d10	10.528	188	1391715	4000.00	ug/kg	99
17) Chrysene-d12	13.462	240	1670934	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1723109	4000.00	ug/kg	98
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.392	172	130253	519.18	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.98%#			
16) 4-Terphenyl-d14	11.924	244	136074	508.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.72%#			
Target Compounds						Qvalue
2) Naphthalene	7.525	128	79455	492.14	ug/kg	100
3) 2-Methyl naphthalene	8.069	142	94443	528.61	ug/kg	98
4) 1-Methyl naphthalene	8.207	142	85655	531.03	ug/kg	99
6) Dibenzofuran	9.259	168	144637	515.22	ug/kg	98
8) Acenaphthylene	9.043	152	165894	515.15	ug/kg	99
9) Acenaphthene	9.151	154	94522	506.68	ug/kg	99
10) Fluorene	9.588	166	119914	513.20	ug/kg	99
12) Phenanthrene	10.551	178	161199	493.04	ug/kg	99
13) Anthracene	10.581	178	165075	495.95	ug/kg	98
14) Fluoranthene	11.693	202	188351	487.27	ug/kg	98
15) Pyrene	12.008	202	189435	477.33	ug/kg	99
18) Benzo[a]anthracene	13.381	228	196787	500.12	ug/kg	98
19) Chrysene	13.498	228	183185	513.51	ug/kg	99
21) Benzo[b]fluoranthene	14.912	252	221293	514.74	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	189752	488.31	ug/kg	98
23) Benzo(j)fluoranthene	15.000	252	193224	505.51	ug/kg	97
24) Benzo[e]pyrene	15.549	252	196240	509.25	ug/kg	96
25) Benzo[a]pyrene	15.645	252	196298	498.57	ug/kg	98
26) Dibenz[a,h]anthracene	18.011	278	202882	501.08	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.077	276	198214	501.94	ug/kg	97
28) Benzo[g,h,i]perylene	19.102	276	209116	500.01	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102110.D
Acq On : 21 Oct 2016 6:08 pm
Operator :
Sample : CAL5 (500 ppb)
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 01 15:56:58 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102111.D
Acq On : 21 Oct 2016 6:36 pm
Operator :
Sample : CAL6 (1000 ppb)
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 01 15:57:01 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	901614	4000.00	ug/kg	102
5) Acenaphthene-d10	9.116	164	794582	4000.00	ug/kg	100
11) Phenanthrene-d10	10.530	188	1399389	4000.00	ug/kg	99
17) Chrysene-d12	13.461	240	1692646	4000.00	ug/kg	101
20) Perylene-d12	15.827	264	1757120	4000.00	ug/kg	100

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.390	172	259542	1005.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 25.14%#			
16) 4-Terphenyl-d14	11.923	244	269949	1003.58	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 25.09%#			

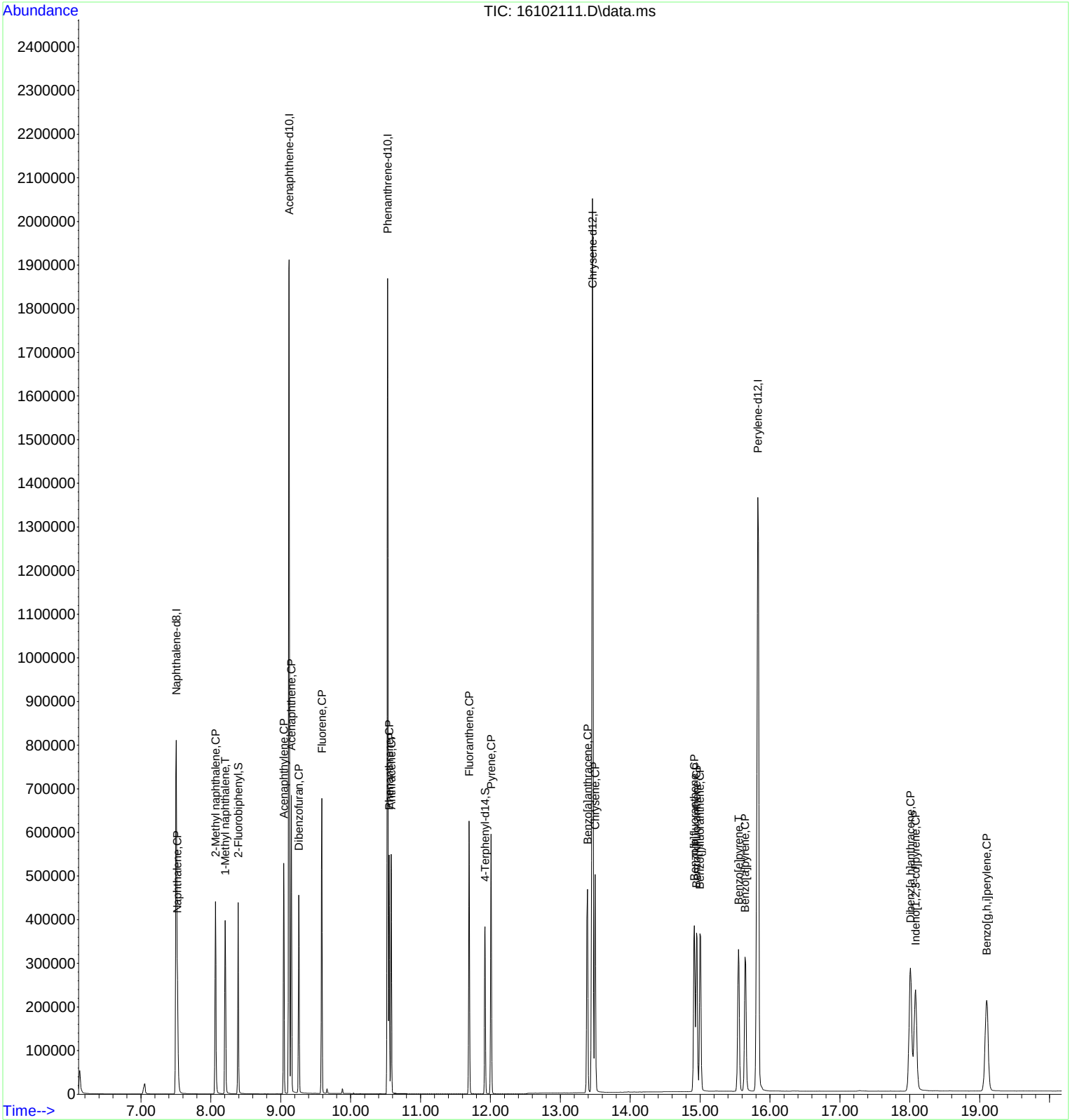
Target Compounds						Qvalue
2) Naphthalene	7.523	128	170246	972.31	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	197841	1021.05	ug/kg	95
4) 1-Methyl naphthalene	8.205	142	178787	1022.03	ug/kg	94
6) Dibenzofuran	9.258	168	288201	997.96	ug/kg	99
8) Acenaphthylene	9.042	152	332310	1003.12	ug/kg	99
9) Acenaphthene	9.150	154	191204	996.34	ug/kg	100
10) Fluorene	9.587	166	236963	985.84	ug/kg	99
12) Phenanthrene	10.551	178	319436	971.65	ug/kg	99
13) Anthracene	10.580	178	325965	973.95	ug/kg	99
14) Fluoranthene	11.695	202	369240	950.00	ug/kg	99
15) Pyrene	12.010	202	373880	936.92	ug/kg	99
18) Benzo[a]anthracene	13.387	228	390743	980.32	ug/kg	99
19) Chrysene	13.497	228	359880	995.88	ug/kg	99
21) Benzo[b]fluoranthene	14.918	252	429468	979.64	ug/kg	99
22) Benzo[k]fluoranthene	14.948	252	390453	985.34	ug/kg	96
23) Benzo(j)fluoranthene	15.006	252	392179	1006.16	ug/kg	98
24) Benzo[e]pyrene	15.548	252	392031	997.64	ug/kg	99
25) Benzo[a]pyrene	15.643	252	392501	977.60	ug/kg	97
26) Dibenz[a,h]anthracene	18.009	278	406240	983.91	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.083	276	399385	991.79	ug/kg	99
28) Benzo[g,h,i]perylene	19.101	276	416758	977.21	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102111.D
Acq On : 21 Oct 2016 6:36 pm
Operator :
Sample : CAL6 (1000 ppb)
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 01 15:57:01 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.501	136	880262	4000.00	ug/kg	100
5) Acenaphthene-d10	9.120	164	791347	4000.00	ug/kg	100
11) Phenanthrene-d10	10.527	188	1411842	4000.00	ug/kg	100
17) Chrysene-d12	13.462	240	1671788	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1761772	4000.00	ug/kg	100

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	505850	1968.02	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.20%			
16) 4-Terphenyl-d14	11.923	244	513510	1892.21	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 47.31%			

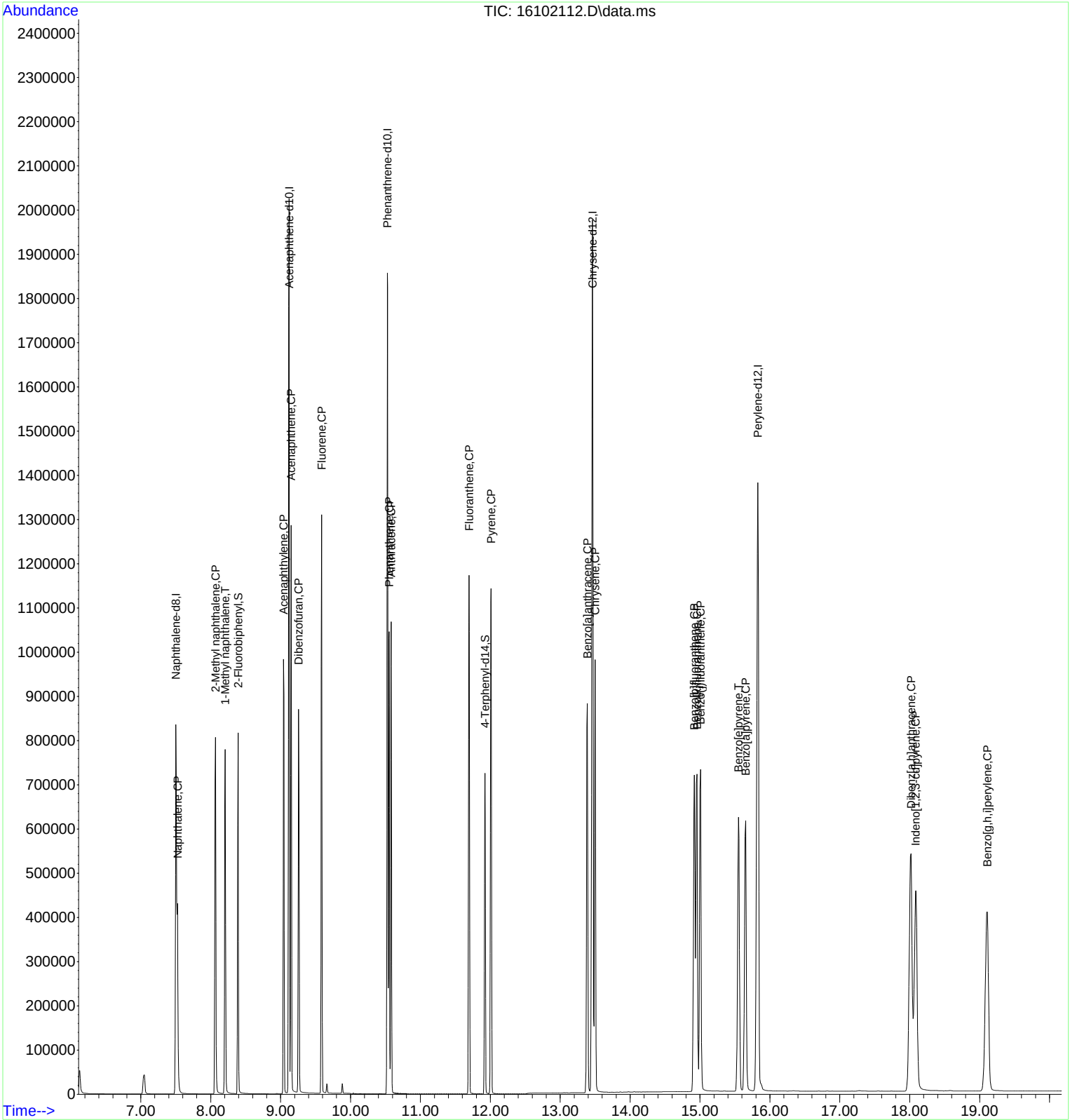
Target Compounds						Qvalue
2) Naphthalene	7.524	128	330707	1934.55	ug/kg	100
3) 2-Methyl naphthalene	8.068	142	384466	2032.34	ug/kg	100
4) 1-Methyl naphthalene	8.206	142	349288	2045.12	ug/kg	100
6) Dibenzofuran	9.258	168	555424	1931.14	ug/kg	100
8) Acenaphthylene	9.041	152	641652	1944.82	ug/kg	100
9) Acenaphthene	9.149	154	376319	1968.97	ug/kg	100
10) Fluorene	9.587	166	453958	1896.32	ug/kg	100
12) Phenanthrene	10.553	178	615418	1855.46	ug/kg	100
13) Anthracene	10.580	178	624605	1849.80	ug/kg	100
14) Fluoranthene	11.695	202	710697	1812.38	ug/kg	100
15) Pyrene	12.010	202	716680	1780.12	ug/kg	100
18) Benzo[a]anthracene	13.388	228	757231	1923.48	ug/kg	100
19) Chrysene	13.498	228	704842	1974.82	ug/kg	100
21) Benzo[b]fluoranthene	14.919	252	826991	1881.43	ug/kg	100
22) Benzo[k]fluoranthene	14.956	252	764441	1924.04	ug/kg	100
23) Benzo(j)fluoranthene	15.007	252	758348	1940.45	ug/kg	100
24) Benzo[e]pyrene	15.549	252	767440	1947.82	ug/kg	100
25) Benzo[a]pyrene	15.652	252	770646	1914.38	ug/kg	100
26) Dibenz[a,h]anthracene	18.018	278	805016	1944.59	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.091	276	781589	1935.80	ug/kg	100
28) Benzo[g,h,i]perylene	19.109	276	829323	1939.46	ug/kg	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

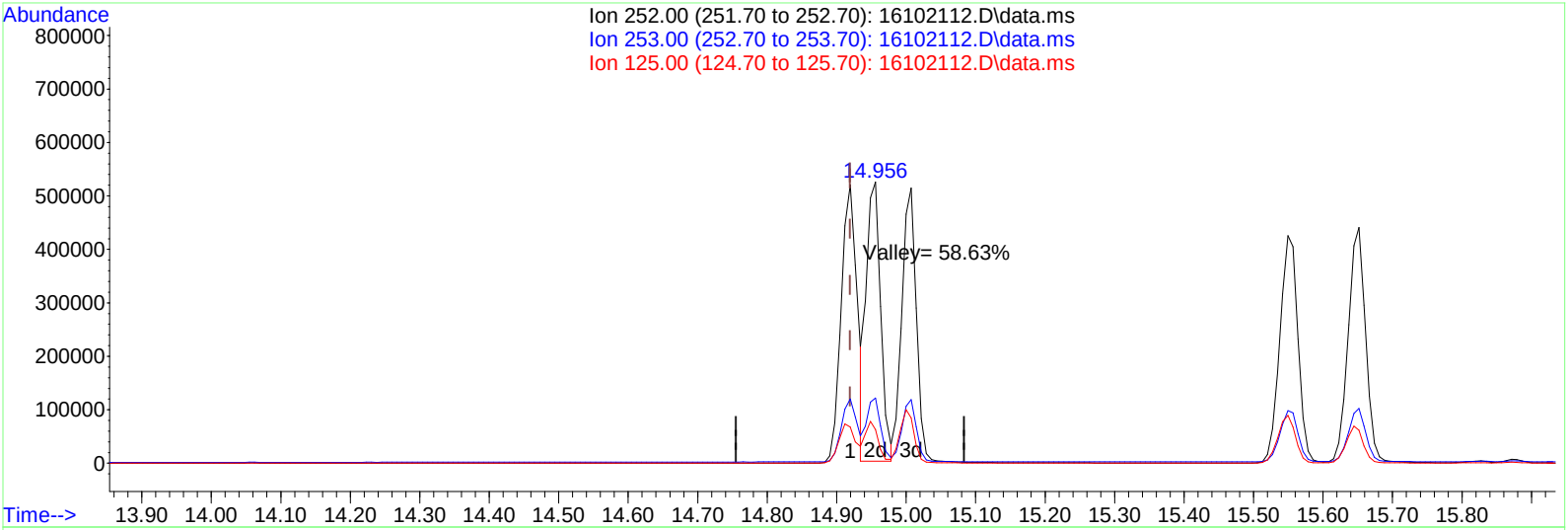
Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

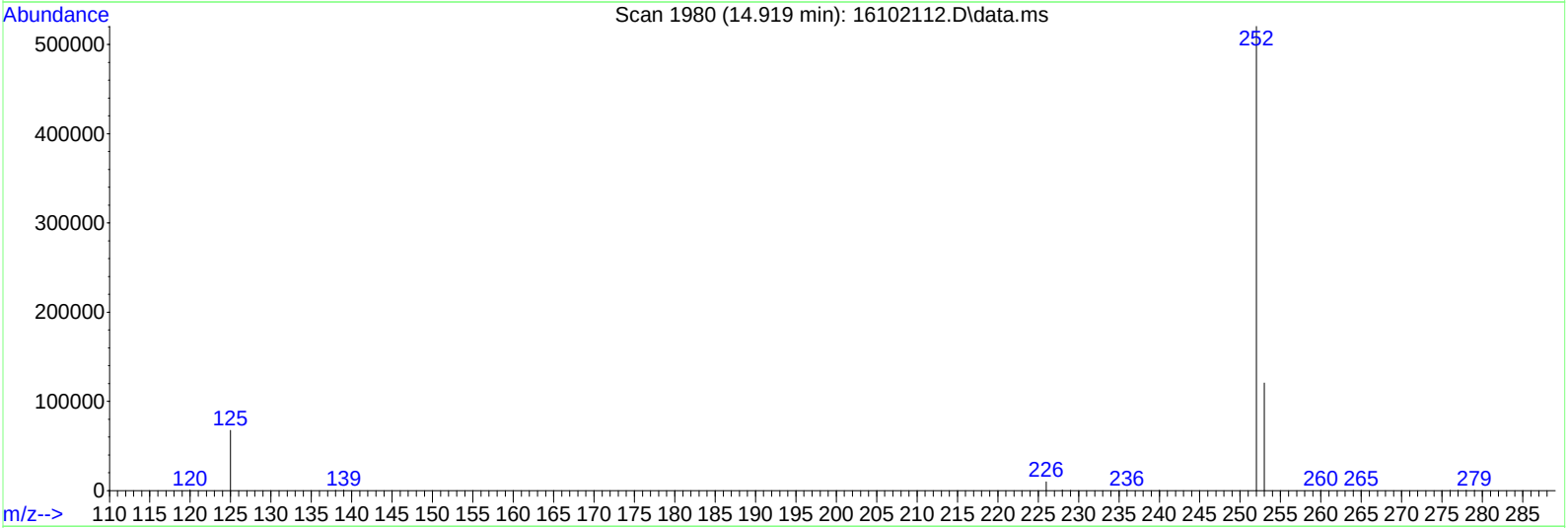


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102112.D
Acq On : 21 Oct 2016 7:05 pm
Operator :
Sample : CAL7 (2000 ppb)
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration





TIC: 16102112.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.919min (0.000) 1881.43ug/kg

response 826991

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.68
125.00	12.90	12.93
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102113.D
Acq On : 21 Oct 2016 7:33 pm
Operator :
Sample : CAL8 (5000 ppb)
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 01 15:57:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	918505	4000.00	ug/kg	104
5) Acenaphthene-d10	9.120	164	761139	4000.00	ug/kg	96
11) Phenanthrene-d10	10.530	188	1363680	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1617869	4000.00	ug/kg	97
20) Perylene-d12	15.828	264	1675682	4000.00	ug/kg	95

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.389	172	1148781	4646.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 116.17%			
16) 4-Terphenyl-d14	11.925	244	1142675	4359.30	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 108.98%			

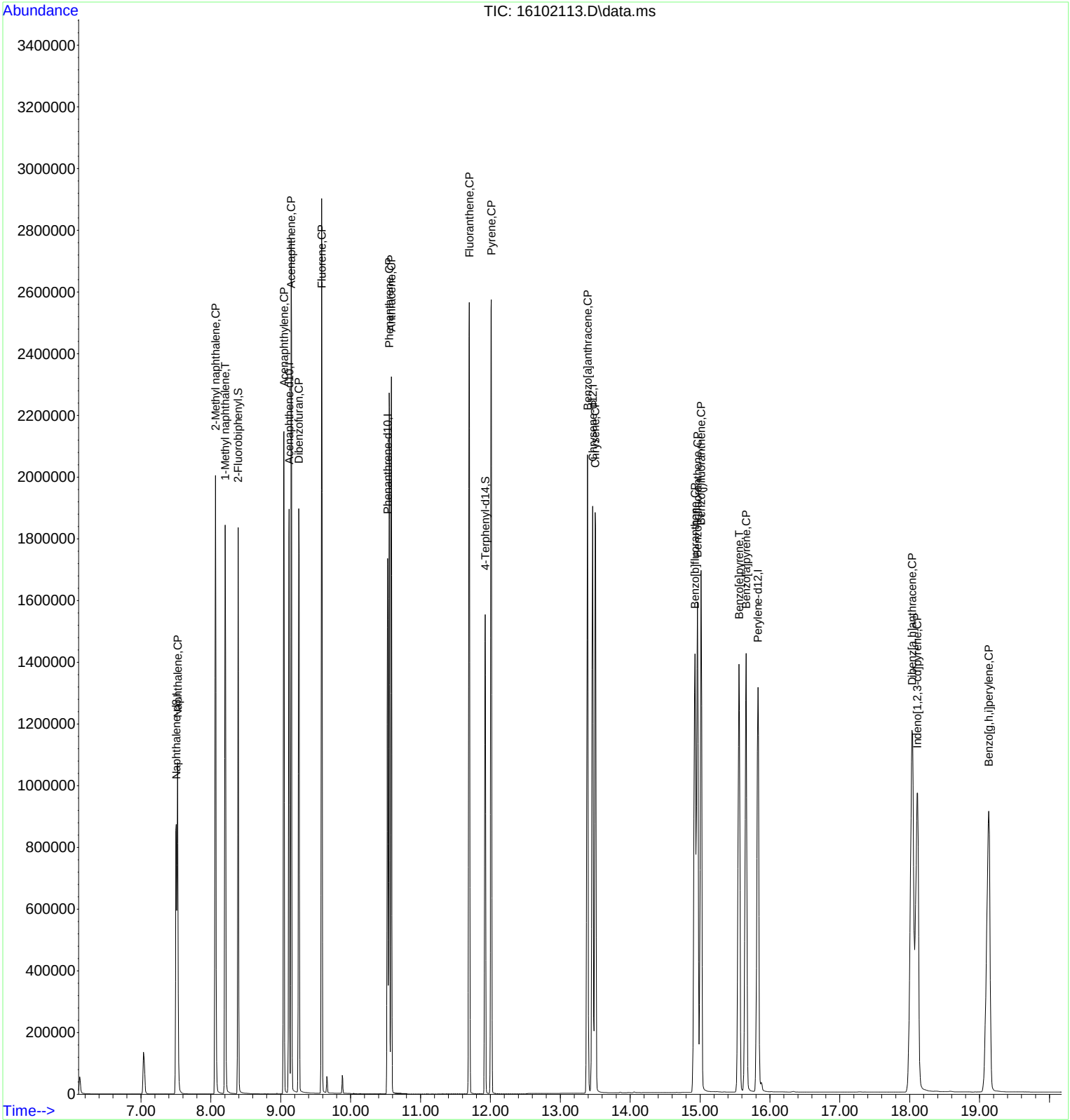
Target Compounds						Qvalue
2) Naphthalene	7.522	128	849321	4761.45	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	919664	4659.07	ug/kg	95
4) 1-Methyl naphthalene	8.204	142	837317	4698.46	ug/kg	93
6) Dibenzofuran	9.263	168	1261471	4560.05	ug/kg	97
8) Acenaphthylene	9.047	152	1465458	4618.04	ug/kg	99
9) Acenaphthene	9.150	154	861859	4688.38	ug/kg	99
10) Fluorene	9.587	166	1030857	4477.11	ug/kg	98
12) Phenanthrene	10.553	178	1393061	4348.35	ug/kg	97
13) Anthracene	10.582	178	1405259	4308.73	ug/kg	97
14) Fluoranthene	11.698	202	1569940	4144.98	ug/kg	97
15) Pyrene	12.013	202	1593940	4098.92	ug/kg	97
18) Benzo[a]anthracene	13.389	228	1717232	4507.40	ug/kg	97
19) Chrysene	13.499	228	1561030	4519.44	ug/kg	97
21) Benzo[b]fluoranthene	14.927	252	1902600	4550.84	ug/kg	97
22) Benzo[k]fluoranthene	14.964	252	1753695	4640.69	ug/kg	96
23) Benzo(j)fluoranthene	15.015	252	1743381	4690.11	ug/kg	95
24) Benzo[e]pyrene	15.557	252	1767858	4717.48	ug/kg	98
25) Benzo[a]pyrene	15.660	252	1782235	4654.76	ug/kg	97
26) Dibenz[a,h]anthracene	18.040	278	1904385	4836.56	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	18.114	276	1824269	4750.38	ug/kg	98
28) Benzo[g,h,i]perylene	19.132	276	1932569	4751.72	ug/kg	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102113.D
Acq On : 21 Oct 2016 7:33 pm
Operator :
Sample : CAL8 (5000 ppb)
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 01 15:57:07 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102114.D
Acq On : 21 Oct 2016 8:01 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 11 Sample Multiplier: 1

sscv for dibenzofuran & benzo (j) fluoranthene

Quant Time: Nov 01 15:57:10 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	1563492	4000.00	ug/kg	178
5) Acenaphthene-d10	9.117	164	794379	4000.00	ug/kg	100
11) Phenanthrene-d10	10.527	188	1388007	4000.00	ug/kg	98
17) Chrysene-d12	13.462	240	1693163	4000.00	ug/kg	101
20) Perylene-d12	15.828	264	1752733	4000.00	ug/kg	99

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.391	172	1298360	5032.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 125.80%			
16) 4-Terphenyl-d14	11.924	244	1298161	4865.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 121.64%			

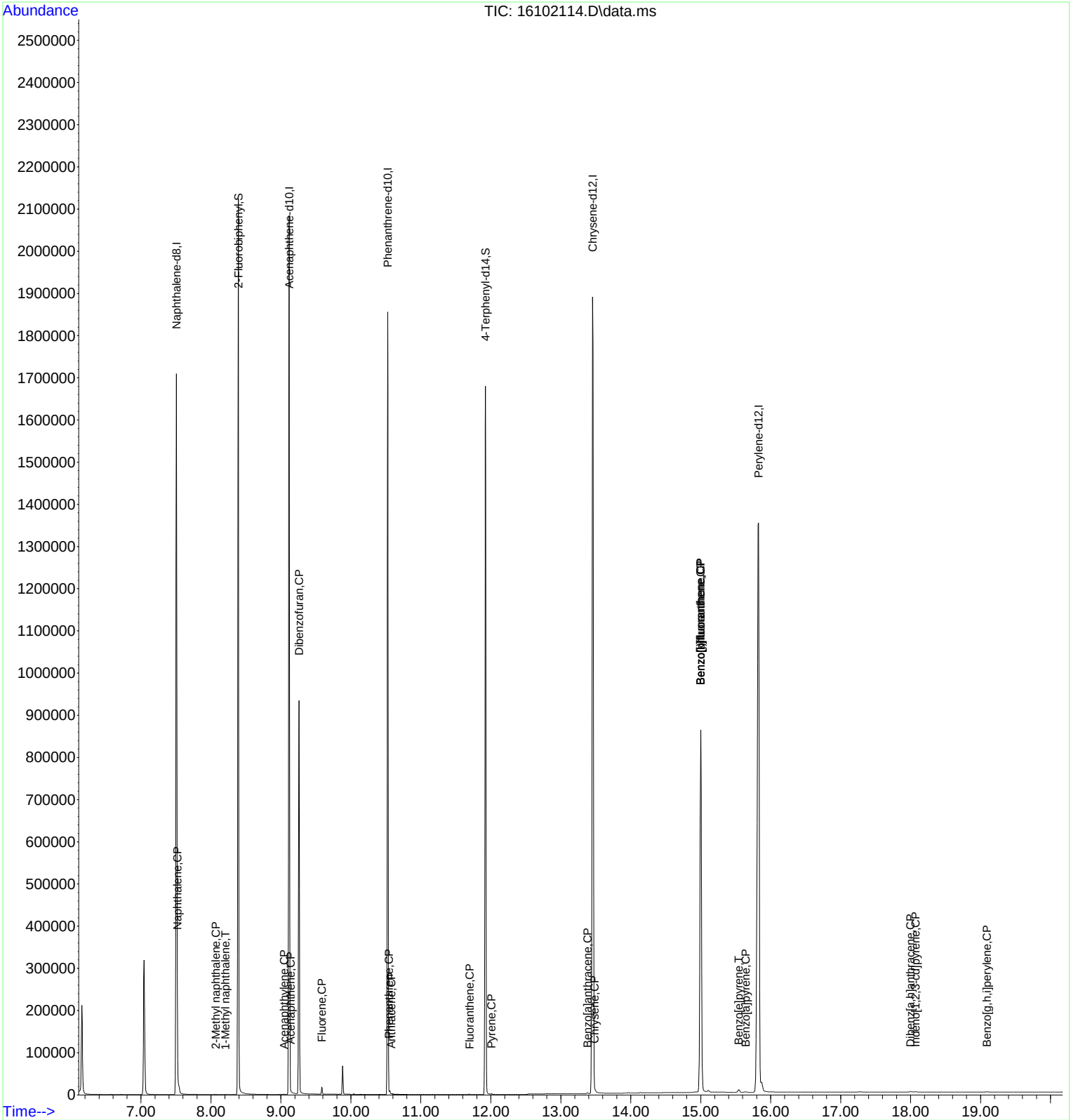
Target Compounds						Qvalue
2) Naphthalene	7.524	128	965	3.18	ug/kg#	1
3) 2-Methyl naphthalene	8.067	142	275	0.82	ug/kg	89
4) 1-Methyl naphthalene	8.206	142	169	0.56	ug/kg	93
6) Dibenzofuran	9.259	168	624874	2164.32	ug/kg	100
8) Acenaphthylene	9.043	152	414	1.25	ug/kg	95
9) Acenaphthene	9.146	154	322	1.68	ug/kg	97
10) Fluorene	9.583	166	6246	25.99	ug/kg	97
12) Phenanthrene	10.550	178	812	2.49	ug/kg	96
13) Anthracene	10.578	178	818	2.46	ug/kg	95
14) Fluoranthene	11.694	202	919	2.38	ug/kg	98
15) Pyrene	12.006	202	1080	2.73	ug/kg	98
18) Benzo[a]anthracene	13.381	228	1421	3.56	ug/kg	98
19) Chrysene	13.491	228	1285	3.55	ug/kg	98
21) Benzo[b]fluoranthene	15.000	252	903024	2065.00	ug/kg	94
22) Benzo[k]fluoranthene	15.000	252	905438	2290.67	ug/kg	93
23) Benzo(j)fluoranthene	15.000	252	905438	2328.76	ug/kg	97
24) Benzo[e]pyrene	15.542	252	7069	18.03	ug/kg	97
25) Benzo[a]pyrene	15.645	252	1594	3.98	ug/kg	91
26) Dibenz[a,h]anthracene	17.996	278	1752	4.25	ug/kg	90
27) Indeno[1,2,3-cd]pyrene	18.069	276	1462	3.64	ug/kg	98
28) Benzo[g,h,i]perylene	19.088	276	1627	3.82	ug/kg	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102114.D
Acq On : 21 Oct 2016 8:01 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 01 15:57:10 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102115.D
Acq On : 21 Oct 2016 8:30 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 01 15:57:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

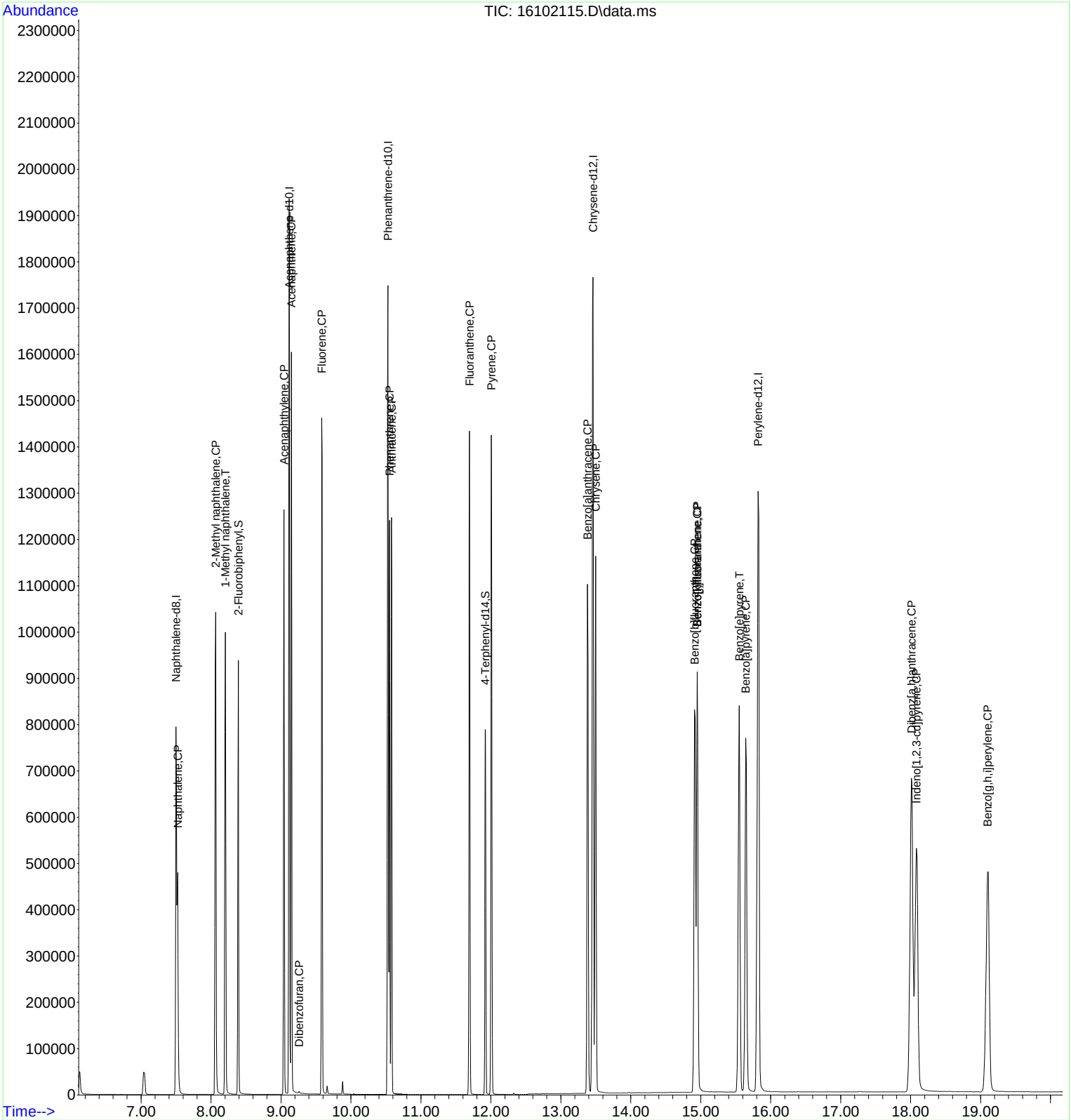
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.500	136	807543	4000.00	ug/kg	92
5) Acenaphthene-d10	9.116	164	750573	4000.00	ug/kg	95
11) Phenanthrene-d10	10.528	188	1351727	4000.00	ug/kg	96
17) Chrysene-d12	13.462	240	1612314	4000.00	ug/kg	96
20) Perylene-d12	15.820	264	1670522	4000.00	ug/kg	95
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.390	172	573032	2350.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 58.76%			
16) 4-Terphenyl-d14	11.923	244	585065	2251.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 56.29%			
Target Compounds						Qvalue
2) Naphthalene	7.523	128	388136	2474.96	ug/kg	100
3) 2-Methyl naphthalene	8.066	142	503626	2901.97	ug/kg	99
4) 1-Methyl naphthalene	8.205	142	443047	2827.68	ug/kg	99
6) ~~Dibenzofuran~~	~~9.258~~	~~168~~	~~2021~~	~~7.41~~	~~ug/kg~~	~~98~~
8) Acenaphthylene	9.042	152	769105	2457.77	ug/kg	99
9) Acenaphthene	9.150	154	467331	2578.00	ug/kg	98
10) Fluorene	9.582	166	555684	2447.36	ug/kg	98
12) Phenanthrene	10.551	178	745409	2347.32	ug/kg	99
13) Anthracene	10.580	178	744165	2301.90	ug/kg	100
14) Fluoranthene	11.695	202	870665	2319.07	ug/kg	99
15) Pyrene	12.007	202	882139	2288.54	ug/kg	99
18) Benzo[a]anthracene	13.381	228	918996	2420.50	ug/kg	98
19) Chrysene	13.498	228	851866	2474.79	ug/kg	99
21) Benzo[b]fluoranthene	14.912	252	1042059	2500.21	ug/kg	98
22) Benzo[k]fluoranthene	14.949	252	879521	2334.61	ug/kg	97
23) Benzo(j)fluoranthene	14.949	252	882686	2381.97	ug/kg	99
24) Benzo[e]pyrene	15.549	252	1010441	2704.66	ug/kg	99
25) Benzo[a]pyrene	15.645	252	953973	2499.24	ug/kg	98
26) Dibenz[a,h]anthracene	18.018	278	1001809	2552.15	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	18.084	276	926742	2420.68	ug/kg	97
28) Benzo[g,h,i]perylene	19.109	276	967677	2386.63	ug/kg	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161021\
Data File : 16102115.D
Acq On : 21 Oct 2016 8:30 pm
Operator :
Sample : SSCV (2500 ppb)
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 01 15:57:13 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration



ICP-MS3
For

DHL Work Order
1611053

ICP-MS3_161116A
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS3_161116A SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			X
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			
P/A Factor	Before ICAL	Increasing trend	X			X
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			X
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X			
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125/80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			X
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted	X			
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: Cara Van Dyke Date of Completion: 11/16/2016

Second-Level Review: Angie O'Donnell Date Stamp: 11/18/2016

DHL Analytical, Inc.

Run ID: **ICP-MS3_161116A** **Run No.:** 89004

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS3

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TW	CAL	R89004	11/15/2016 11:08:00 AM		
L2-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:14:00 AM		
L-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:20:00 AM		
10X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:26:00 AM		
5X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:32:00 AM		
2X-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:38:00 AM		
H-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:44:00 AM		
H2-161115	1	ICPMS_TW	CAL	R89004	11/15/2016 11:50:00 AM		
ICSA-161115	1	ICPMS_TW	ICSA	R89004	11/15/2016 12:13:00 PM		
ICSAB-161115	1	ICPMS_TW	ICSB	R89004	11/15/2016 12:19:00 PM		
ICV1-161115	1	ICPMS_TW	ICV	R89004	11/15/2016 12:37:00 PM		
ICB1-161115	1	ICPMS_TW	ICB	R89004	11/15/2016 12:43:00 PM		
ILCVL-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 1:17:00 PM		
MB-77899	1	ICPMS_DW	MBLK	77899	11/15/2016 1:29:00 PM		
FB-77899	1	ICPMS_DW	MBLK	77899	11/15/2016 1:35:00 PM		
LCS-77899	1	ICPMS_DW	LCS	77899	11/15/2016 1:41:00 PM		
LCSD-77899	1	ICPMS_DW	LCSD	77899	11/15/2016 1:47:00 PM		
1611118-02E	1	ICPMS_DW	SAMP	77899	11/15/2016 1:59:00 PM		
1611118-02E SD	5	ICPMS_DW	SD	77899	11/15/2016 2:05:00 PM		
1611095-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:11:00 PM		
1611095-02E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:17:00 PM		
1611095-03E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:23:00 PM		
1611095-04E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:29:00 PM		
1611095-05E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:35:00 PM		
1611095-06E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:47:00 PM		
1611095-07E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:53:00 PM		
1611095-08E	1	ICPMS_DW	SAMP	77899	11/15/2016 2:59:00 PM		
1611095-09E	1	ICPMS_DW	SAMP	77899	11/15/2016 3:05:00 PM		
1611118-02E PDS	1	ICPMS_DW	PDS	77899	11/15/2016 3:11:00 PM		
1611118-02E MS	1	ICPMS_DW	MS	77899	11/15/2016 3:17:00 PM		

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

1611118-02E MSD	1	ICPMS_DW	MSD	77899	11/15/2016 3:23:00 PM		
CCV1-161115	1	ICPMS_TW	CCV	R89004	11/15/2016 5:06:00 PM		
CCB1-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 5:12:00 PM		
LCVL1-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 5:18:00 PM		
1611118-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:25:00 PM		
1611118-03E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:31:00 PM		
1611118-04E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:37:00 PM		
1611118-05E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:43:00 PM		
1611118-06E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:49:00 PM		
1611118-07E	1	ICPMS_DW	SAMP	77899	11/15/2016 5:55:00 PM		
1611118-10E	1	ICPMS_DW	SAMP	77899	11/15/2016 6:01:00 PM		
1611095-01E	1	ICPMS_DW	SAMP	77899	11/15/2016 6:08:00 PM		
1611118-02E	5	ICPMS_DW	SAMP	77899	11/15/2016 6:14:00 PM		
1611118-02E SD	25	ICPMS_DW	SD	77899	11/15/2016 6:20:00 PM		
1611118-02E PDS	5	ICPMS_DW	PDS	77899	11/15/2016 6:26:00 PM		
CCV2-16115	1	ICPMS_TW	CCV	R89004	11/15/2016 6:32:00 PM		
CCB2-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 6:44:00 PM		
LCVL2-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 6:50:00 PM		
MB-77925	1	ICPMS_TW	MBLK	77925	11/15/2016 6:56:00 PM		
LCS-77925	1	ICPMS_TW	LCS	77925	11/15/2016 7:02:00 PM		
LCSD-77925	1	ICPMS_TW	LCSD	77925	11/15/2016 7:08:00 PM		
1611120-01A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:20:00 PM		
1611120-01A SD	5	ICPMS_TW	SD	77925	11/15/2016 7:26:00 PM		
1611120-02A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:32:00 PM		
1611120-03A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:39:00 PM		
1611120-04A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:45:00 PM		
1611120-05A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:51:00 PM		
1611120-06A	1	ICPMS_TW	SAMP	77925	11/15/2016 7:57:00 PM		
1611120-07A	1	ICPMS_TW	SAMP	77925	11/15/2016 8:03:00 PM		
1611120-01A PDS	1	ICPMS_TW	PDS	77925	11/15/2016 8:09:00 PM		
CCV3-161115	1	ICPMS_TW	CCV	R89004	11/15/2016 8:15:00 PM		
LCVL3-161115	1	ICPMS_TW	LCVL	R89004	11/15/2016 8:27:00 PM		
CCB3-161115	1	ICPMS_TW	CCB	R89004	11/15/2016 8:33:00 PM		

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

Analytical Run Date: 11/16/2016 **InstrumentID:** ICP-MS3

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:40:00 AM		
L2-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:46:00 AM		
L-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:52:00 AM		
10X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 10:58:00 AM		
5X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:04:00 AM		
2X-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:10:00 AM		
H-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:16:00 AM		
H2-161116	1	ICPMS_TWDOD	CAL	R89004	11/16/2016 11:22:00 AM		
ICSA-161116	1	ICPMS_TWDOD	ICSA	R89004	11/16/2016 11:46:00 AM		
ICSAB-161116	1	ICPMS_TWDOD	ICSB	R89004	11/16/2016 11:52:00 AM		
ICV1-161116	1	ICPMS_TWDOD	ICV	R89004	11/16/2016 12:10:00 PM		
ILCVL-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 12:22:00 PM		
ICB1-161116	1	ICPMS_TWDOD	ICB	R89004	11/16/2016 12:28:00 PM		
CCV1-161116	1	ICPMS_TWDOD	CCV	R89004	11/16/2016 1:35:00 PM		
CCB1-161116	1	ICPMS_TWDOD	CCB	R89004	11/16/2016 1:41:00 PM		
LCVL1-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 1:47:00 PM		
MB-77913	1	ICPMS_TWDOD	MBLK	77913	11/16/2016 1:53:00 PM		
LCS-77913	1	ICPMS_TWDOD	LCS	77913	11/16/2016 1:59:00 PM		
LCSD-77913	1	ICPMS_TWDOD	LCSD	77913	11/16/2016 2:05:00 PM		
1611028-26A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:17:00 PM		
1611028-26A SD	5	ICPMS_TWDOD	SD	77913	11/16/2016 2:24:00 PM		
1611022-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:30:00 PM		
1611022-26A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:36:00 PM		
1611028-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:42:00 PM		
1611044-13A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:48:00 PM		
1611053-42A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 2:54:00 PM		
1611071-36A	1	ICPMS_TWDOD	SAMP	77913	11/16/2016 3:00:00 PM		
1611028-26A PDS	1	ICPMS_TWDOD	PDS	77913	11/16/2016 3:06:00 PM		
1611028-26A MS	1	ICPMS_TWDOD	MS	77913	11/16/2016 3:12:00 PM		
1611028-26A MSD	1	ICPMS_TWDOD	MSD	77913	11/16/2016 3:18:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICSA-160908	ICS-A Solution (Interference Che		12/27/2016
MET-ICSAB-16090	ICS-AB Solution (Interference Ch		12/27/2016
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161019	INTERNAL STANDARD 1 PPM		01/16/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016
MET-TUNECHECK	TUNE CHECK 100 PPB SOLUTI		12/22/2016
MET-TUNING-160	ICP-MS TUNING SOLUTION - 10		12/05/2016

DHL Analytical, Inc.

Run ID: ICP-MS3_161116A **Run No.:** 89004

CCV2-161116	1	ICPMS_TWDOD	CCV	R89004	11/16/2016 3:24:00 PM		
CCB2-161116	1	ICPMS_TWDOD	CCB	R89004	11/16/2016 3:36:00 PM		
LCVL2-161116	1	ICPMS_TWDOD	LCVL	R89004	11/16/2016 3:43:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICSA-160908	ICS-A Solution (Interference Che		12/27/2016
MET-ICSAB-16090	ICS-AB Solution (Interference Ch		12/27/2016
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161019	INTERNAL STANDARD 1 PPM		01/16/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016
MET-TUNECHECK	TUNE CHECK 100 PPB SOLUTI		12/22/2016
MET-TUNING-160	ICP-MS TUNING SOLUTION - 10		12/05/2016

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
1		Keyword		CALBEG	Start of CALIB						
2	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
3	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
4	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
5	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalBlk	2101		BLANK STD 1	CAL ICPMS_TW	Level 1				
6	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2102		L2-161116	CAL ICPMS_TW	Level 2				
7	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2103		L-161116	CAL ICPMS_TW	Level 3				
8	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2104		10X-161116	CAL ICPMS_TW	Level 4				
9	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2105		5X-161116	CAL ICPMS_TW	Level 5				
10	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2106		2X-161116	CAL ICPMS_TW	Level 6				
11	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2107		H-161116	CAL ICPMS_TW	Level 7				
12	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CalStd	2108		H2-161116	CAL ICPMS_TW	Level 8				
13	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
14	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
15		Keyword		CALEND	End of CALIB						
16		Keyword		ICSBEG	Start of ICS						
17	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		RINSE	CAL ICPMS_TW	1.000				
18	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICS-A	2109		ICSA-161116	ICSAICPMS_TW	1.000				
19	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICS-AB	2110		ICSAB-161116	ICSBICPMS_TW	1.000				
20	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		RINSE	CAL ICPMS_TW	1.000				
21	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		RINSE	CAL ICPMS_TW	1.000				
22		Keyword		ICSEND	End of ICS						
23		Keyword		SMPLBEG	Start of SMPL						
24	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICV	2111		ICV1-161116	ICV ICPMS_TW	1.000				
25	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICB	1104		ICB1-161116	ICB ICPMS_TW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
26	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2112		ILCVL-161116	LCVLICPMS_TW	1.000				
27	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	ICB	1104		ICB1-161116	ICB ICPMS_TW	1.000				
28	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2201		1611118-02E	SAMPICPMS_DW	5.000				
29	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2202		1611118-02E SD	SD_ICPMS_DW	25.00				
30	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2203		1611095-01E	SAMPICPMS_DW	5.000				
31	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2204		1611118-03E	SAMPICPMS_DW	1.000				
32	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2205		1611118-10E	SAMPICPMS_DW	1.000				
33	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2206		1611118-02E PDS	PDS ICPMS_DW	5.000				
34	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
35	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2207		1611120-01A	SAMPICPMS_TW	1.000				
36	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2208		1611120-01A SD	SD_ICPMS_TW	5.000				
37	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2209		1611120-01A PDS	PDS ICPMS_TW	1.000				
38	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV1-161116	CCV ICPMS_TW	1.000				
39	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB1-161116	CCB ICPMS_TW	1.000				
40	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL1-161116	LCVLICPMS_TW	1.000				
41	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PB W	2301		MB-77913	MBLKICPMS_TW	1.000				
42	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	2302		LCS-77913	LCS ICPMS_TW	1.000				
43	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	2303		LCSD-77913	LCSDICPMS_TW	1.000				
44	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
45	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	2304		1611028-26A	SAMPICPMS_TW	1.000				
46	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	2305		1611028-26A SD	SD_ICPMS_TW	5.000				
47	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2306		1611022-13A	SAMPICPMS_TW	1.000				
48	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2307		1611022-26A	SAMPICPMS_TW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
49	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2308		1611028-13A	SAMPICPMS_TW	1.000				
50	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2309		1611044-13A	SAMPICPMS_TW	1.000				
51	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2310		1611053-42A	SAMPICPMS_TW	1.000				
52	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	2311		1611071-36A	SAMPICPMS_TW	1.000				
53	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	2312		1611028-26A PDS	PDS ICPMS_TW	1.000				
54	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	2401		1610181-01C MS	MS_ICPMS_TW	1.000				
55	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	2402		1610181-01C MSD	MSD ICPMS_TW	1.000				
56	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV2-161116	CCV ICPMS_TW	1.000				
57	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB2-161116	CCB ICPMS_TW	1.000				
58	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		CCB2-161116	CCB ICPMS_TW	1.000				
59	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL2-161116	LCVLICPMS_TW	1.000				
60	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PB W	3101		MB-77922	MBLKICPMS_DW	1.000				
61	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	3102		LCS-77922	LCS ICPMS_DW	1.000				
62	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCS W	3103		LCSD-77922	LCSDICPMS_DW	1.000				
63	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		RINSE	CCB ICPMS_TW	1.000				
64	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	3104		1611091-01B	SAMPICPMS_DW	1.000				
65	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	3105		1611091-01B SD	SD_ICPMS_DW	5.000				
66	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3106		1611091-02B	SAMPICPMS_DW	1.000				
67	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3107		1611091-03B	SAMPICPMS_DW	1.000				
68	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3108		1611091-04B	SAMPICPMS_DW	1.000				
69	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3109		1611091-05B	SAMPICPMS_DW	1.000				
70	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3110		1611091-06B	SAMPICPMS_DW	1.000				
71	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3111		1611091-07B	SAMPICPMS_DW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
72	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3112		1611091-08B	SAMPICPMS_DW	1.000				
73	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3201		1611091-09B	SAMPICPMS_DW	1.000				
74	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3202		1611091-10B	SAMPICPMS_DW	1.000				
75	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	3203		1611091-01B PDS	PDS ICPMS_DW	1.000				
76	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3204		1611091-01B MS	MS_ICPMS_DW	1.000				
77	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3205		1611091-01B MSD	MSD ICPMS_DW	1.000				
78	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV3-161116	CCV ICPMS_TW	1.000				
79	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB3-161116	CCB ICPMS_TW	1.000				
80	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL3-161116	LCVLICPMS_TW	1.000				
81	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB3-161116	CCB ICPMS_TW	1.000				
82		Keyword		StandBy							
83	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3206		1611091-11B	SAMPICPMS_DW	1.000				
84	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3207		1611089-01B	SAMPICPMS_DW	1.000				
85	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	SampleW	3208		1611089-02B	SAMPICPMS_DW	1.000				
86	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV4-161116	CCV ICPMS_TW	1.000				
87	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB4-161116	CCB ICPMS_TW	1.000				
88	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL4-161116	LCVLICPMS_TW	1.000				
89	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB4-161116	CCB ICPMS_TW	1.000				
90	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	AllRef	3301		1610181-01C	SAMPICPMS_DW	1.000				
91	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	DT	3302		1610181-01C SD	SD_ICPMS_DW	5.000				
92	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	PDS	3303		1610181-01C PDS	PDS ICPMS_DW	1.000				
93	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3304		1610181-01C MS	MS_ICPMS_DW	1.000				
94	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	MS_W	3305		1610181-01C MSD	MSD ICPMS_DW	1.000				

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	ISTD Conc	Action on Failure	Skip	Result
95	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCV1	1307		CCV5-161028	CCV ICPMS_TW	1.000				
96	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB5-161028	CCB ICPMS_TW	1.000				
97	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2511		LCVL5-161028	LCVLICPMS_TW	1.000				
98	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	LCVL5	2512		LCVL5-161028	LCVLICPMS_TW	1.000				
99	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		CCB5-161028	CCB ICPMS_TW	1.000				
100	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1102		BLANK	CAL ICPMS_TW	1.000				
101	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1103		BLANK	CAL ICPMS_TW	1.000				
102	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
103	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
104	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1101		BLANK	CAL ICPMS_TW	1.000				
105	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1102		BLANK	CAL ICPMS_TW	1.000				
106	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1103		BLANK	CAL ICPMS_TW	1.000				
107	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1104		BLANK	CAL ICPMS_TW	1.000				
108	C:\ICPCHEM\1\METHODS\DHL_3Fe.M	CCB	1105		BLANK	CAL ICPMS_TW	1.000				
109		Keyword		StandBy							
110		Keyword		SMPLEND	End of SMPL						
111		Keyword		End	End of Sequence						
112		Keyword		CCVBEG	Start of CCV						
113		Keyword		CCVEND	End of CCV						
114		Keyword		BLKBEG	Start of BLANK						
115		Keyword		BLKEND	End of BLANK						
116		Keyword		ERRBEG	Start of ERRTERM						
117		Keyword		ERREND	End of ERRTERM						

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/15/2016 9:08:38 AM**
Digestion:
Prep End Date:

Prep Batch **77913** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List
Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13A	Equip Blank		50	50	1.000	1 of 1	
1611022-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-13A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A MS/MSD	Equip Blank		50	50	1.000	1 of 1	
1611044-13A	Equip Blank		50	50	1.000	1 of 1	
1611053-42A	Equip Blank		50	50	1.000	1 of 1	
1611071-36A	Equip Blank		50	50	1.000	1 of 1	
LCS-77913	Aqueous		50	50	1.000	of	
LCSD-77913	Aqueous		50	50	1.000	of	
MB-77913	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	ml	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026

9:30 - 15:15

Spk ID	Spike Name	Samp Type	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.1	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	0.2	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

11/15/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/15/2016 9:08:38 AM**
Digestion: **Start: 11/15/2016 9:30:00 AM / Stop: 11/15/2016 3:15:00 PM**
Prep End Date: **11/15/2016 3:40:43 PM**

Prep Batch **77913** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List

Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-13A	Equip Blank		50	50	1.000	1 of 1	
1611022-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-13A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A	Equip Blank		50	50	1.000	1 of 1	
1611028-26A MS	Equip Blank		50	50	1.000	of	
1611028-26A MSD	Equip Blank		50	50	1.000	of	
1611028-26A PDS	Equip Blank		50	50	1.000	of	
1611028-26A SD	Equip Blank		50	50	1.000	of	
1611044-13A	Equip Blank		50	50	1.000	1 of 1	
1611053-42A	Equip Blank		50	50	1.000	1 of 1	
1611071-36A	Equip Blank		50	50	1.000	1 of 1	
LCS-77913	Aqueous		50	50	1.000	of	
LCSD-77913	Aqueous		50	50	1.000	of	
MB-77913	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	ml	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.1	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	0.2	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	BALANCE #:	26	
TEST DATE:	11/07/2016	Water is at Room Temperatue (70-73°F) / (21-23°C)		
PIPETTER LAB ID:	P-01, P-09	WATER TEMP (°C):	21-23°C	
TEST VOLUME:	See Below	WATER DENSITY:	0.998	(0.9980-0.9976)

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-01	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	5.00	5.0094	5.0194	100.39	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		5.0129	5.0229	100.46		
3		5.0114	5.0214	100.43		
AVERAGE (MEAN)		5.011	5.021	100.43		0.035
						PASS

PIPETTE ID: P-09	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	0.20	0.2014	0.2018	100.90	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.2021	0.2025	101.25		
3		0.2011	0.2015	100.75		
AVERAGE (MEAN)		0.202	0.202	100.97		0.255
						PASS

PIPETTE ID:	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1						RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2						
3						
AVERAGE (MEAN)						

11/7/16
Analyst / Date

11/18/2016
Review and Approved / Date

X:\LOGS\Syringe and Pipetter Cal Logbook\MET-HG PREP\Pipetter Accuracy Check-SP-11.7.16

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	11/16/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**2.50**	2.5077	2.5027	**100.11**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		2.4916	2.4866	**99.46**		
3		2.4988	2.4938	**99.75**		
AVERAGE (MEAN)		**2.499**	**2.494**	**99.77**		**0.323**
						PASS

PIPETTE ID: P-21	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**1.00**	1.0003	0.9983	**99.83**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		1.0023	1.0003	**100.03**		
3		1.0015	0.9995	**99.95**		
AVERAGE (MEAN)		**1.001**	**0.999**	**99.94**		**0.101**
						PASS

PIPETTE ID: P-39	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.200**	0.1994	0.1990	**99.50**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1998	0.1994	**99.70**		
3		0.1992	0.1988	**99.40**		
AVERAGE (MEAN)		**0.199**	**0.199**	**99.53**		**0.153**
						PASS

11/16/16
Analyst / Date

11/17/2016
Review and Approved / Date

Calibration Summary Report

Instrument: ICPMS3
Current Method: C:\ICPCHEM\1\METHODS\DHL_3Fe.M
Calibration: C:\ICPCHEM\1\CALIB\DHL_3Fe.c
Last Update: Nov 16 2016 11:25 am
Cal Type: Y=aX+[blank]

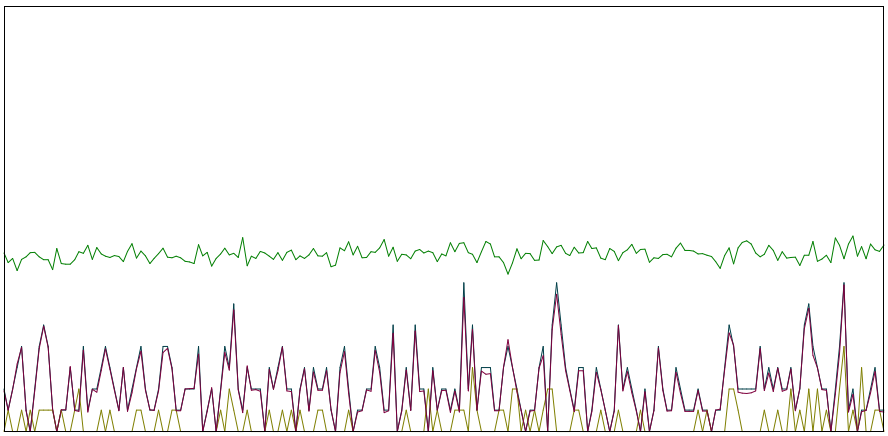
Standard	Date Acquired	File
BLANK STD 1	Nov 16 2016 10:40 am	c:\icpchem\1\data\16k16k01.b\004calb.d\
L2-161116	Nov 16 2016 10:46 am	c:\icpchem\1\data\16k16k01.b\005cals.d\
L-161116	Nov 16 2016 10:52 am	c:\icpchem\1\data\16k16k01.b\006cals.d\
10X-161116	Nov 16 2016 10:58 am	c:\icpchem\1\data\16k16k01.b\007cals.d\
5X-161116	Nov 16 2016 11:04 am	c:\icpchem\1\data\16k16k01.b\008cals.d\
2X-161116	Nov 16 2016 11:10 am	c:\icpchem\1\data\16k16k01.b\009cals.d\

Element Name	Corr Coef	Coef A	Coef B	Lvl 2	Lvl 6	Lvl 7	L7 %R	Lvl 8	L8 %R
Li	0.9999	0.3313	0.03237	1.02	264	527		1991	
Be	0.9998	0.09611	0.002377	1.03	261	541	108%	1,988	99%
B	0.9997	0.08221	0.1272	--------	245	539	108%	1,991	100%
Na	0.9998	0.4139	47.21	--------	5,281	10,310	103%	24,820	99%
Mg	1.0000	0.2117	0.3813	20.00	4,957	10,030	100%	--------	#VALUE!
Al	1.0000	0.05086	0.5022	20.00	5,059	9,975	100%	--------	#VALUE!
K	0.9999	0.06744	3.253	21.26	5,090	9,961	100%	--------	#VALUE!
Ca	1.0000	0.009243	0.2339	20.07	5,050	9,994	100%	--------	#VALUE!
Ti	1.0000	0.03191	0.001971	0.58	256	502	100%	1,999	100%
V	1.0000	1.437	0.07144	1.02	253	495	99%	2,001	100%
Cr	1.0000	1.887	0.1675	1.00	254	500	100%	2,000	100%
Mn	1.0000	0.6683	0.02252	1.05	262	513	103%	1,995	100%
Fe	0.9999	2.679	2.425	20.28	5,090	9,942	99%	--------	#VALUE!
Co	1.0000	7.139	0.07247	1.02	259	512	102%	1,996	100%
Ni	0.9999	2.115	0.3363	1.01	264	518	104%	1,993	100%
Cu	1.0000	6.009	1.191	1.07	262	514	103%	1,995	100%
Zn	0.9999	0.4809	0.1951	1.29	269	520	104%	1,992	100%
As	1.0000	0.2175	0.0223	1.02	260	506	101%	1,997	100%
Se	0.9999	0.009772	0.002323	1.16	264	516	103%	1,994	100%
Sr	1.0000	0.3182	0.03494	0.98	255	505	101%	1,998	100%
Mo	1.0000	0.05912	0.001576	1.00	249	501	100%	--------	#VALUE!
Ag	1.0000	0.1615	0.0008623	1.00	253	499	100%	--------	#VALUE!
Cd	1.0000	0.03376	0.0006484	0.97	251	497	99%	2,001	100%
Sn	0.9999	0.09384	0.01935	1.69	252	526	105%	1,993	100%
Sb	0.9999	0.1124	0.005881	1.00	245	504	101%	--------	#VALUE!
Ba	1.0000	0.04764	0.001721	0.91	244	488	98%	2,004	100%
Tl	1.0000	0.3456	0.005299	0.95	256	506	101%	1,998	100%
Pb	1.0000	0.4662	0.01099	0.98	253	516	103%	1,996	100%

REVIEWED BY
By Janice Whitt at 9:05:54 AM, 11/17/2016

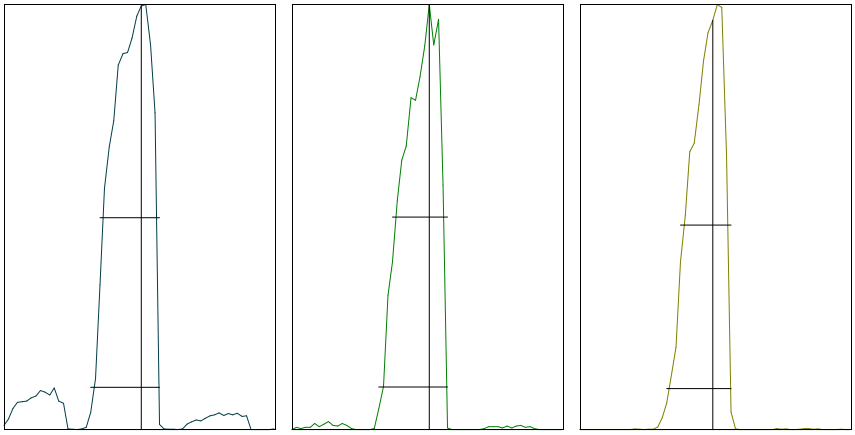
Tune Report

Tune File : He.U
Comment :



Integration Time: 0.1000 sec
Sampling Period: 0.3100 sec
n: 200
Oxide: 156/140 0.151%
Doubly Charged: 70/140 4.162%

m/z	Range	Count	Mean	RSD%	Background
51	20	1.0	2.2	67.60	0.20
59	5,000	2192.0	2087.9	3.80	0.10
75	20	0.0	0.4	160.53	0.10
51/59	1	0.046%	0.104%	67.38	



m/z:	59	89	205
Height:	2,169	652	1,868
Axis:	59.05	89.05	205.00
W-50%:	0.65	0.60	0.55
W-10%:	0.7500	0.7500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.5600 sec

Y axis : Linear

Generated : Nov 16, 2016 09:52:48
Printed : Nov 16, 2016 09:52:50

Tune Report

Tune File : He.U
Comment :

Tuning Parameters

===Plasma Condition===				===Ion Lenses===				===Q-Pole Parameters===			
RF Power	:	1600	W	Extract 1	:	0	V	AMU Gain	:	124	
RF Matching	:	1.6	V	Extract 2	:	-130	V	AMU Offset	:	120	
Smpl Depth	:	9	mm	Omega Bias-ce	:	-20	V	Axis Gain	:	0.9993	
Torch-H	:	0.2	mm	Omega Lens-ce	:	0	V	Axis Offset	:	-0.03	
Torch-V	:	0.8	mm	Cell Entrance	:	-40	V	QP Bias	:	-16.5	V
Carrier Gas	:	1.15	L/min	QP Focus	:	-10	V				
Makeup Gas	:	0	L/min	Cell Exit	:	-40	V	===Detector Parameters===			
Optional Gas	:	---	%					Discriminator	:	8	mV
Nebulizer Pump	:	0.1	rps	===Octopole Parameters===				Analog HV	:	1720	V
Sample Pump	:	---	rps	OctP RF	:	170	V	Pulse HV	:	1570	V
S/C Temp	:	2	degC	OctP Bias	:	-21.4	V				

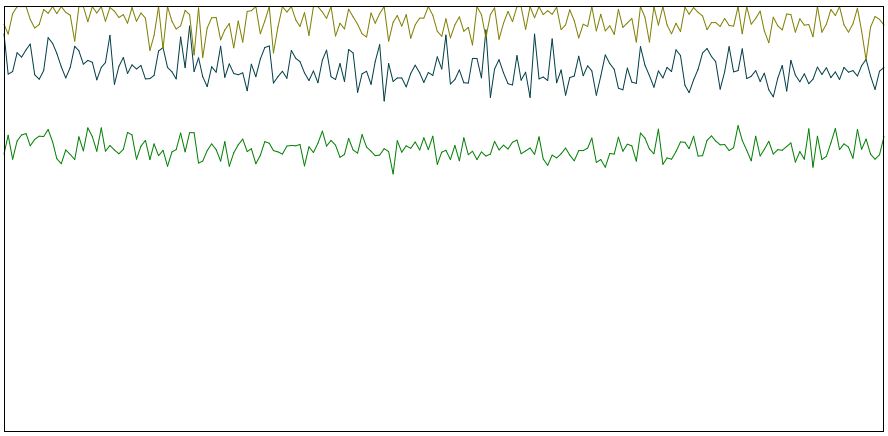
===Reaction Cell===

Reaction Mode	:	ON									
H2 Gas	:	0	mL/min	He Gas	:	5	mL/min	Optional Gas	:	---	%

Generated : Nov 16, 2016 09:52:48
Printed : Nov 16, 2016 09:52:52

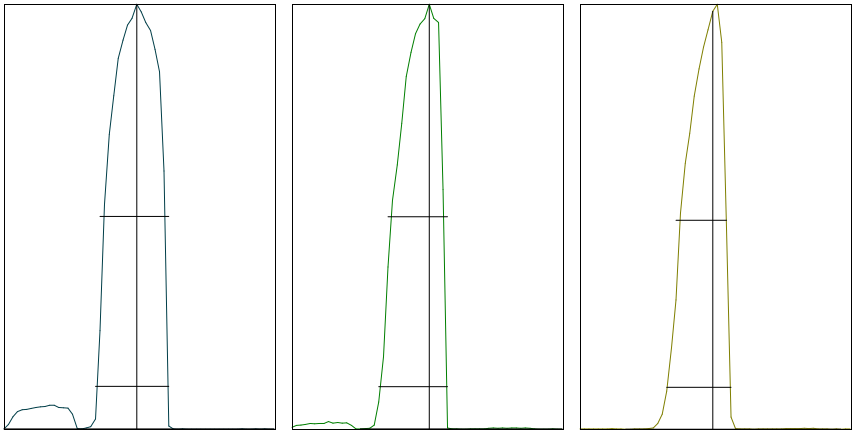
Tune Report

Tune File : nogas.u
Comment :



Integration Time:	0.1000 sec	
Sampling Period:	0.8200 sec	
n:	200	
Oxide:	156/140	0.968%
Doubly Charged:	70/140	2.530%

m/z	Range	Count	Mean	RSD%	Background
7	10,000	8565.0	8520.6	3.96	1.70
89	20,000	13881.0	13317.4	3.35	3.90
205	10,000	9563.0	9688.1	3.44	9.10
156/140	2	0.887%	0.917%	12.72	
70/140	10	6.063%	3.723%	70.43	
63	5,000	2809.0	2640.3	3.81	3.20
23	100,000	75583.0	75359.3	3.15	1.90



m/z:	7	89	205
Height:	8,748	13,674	9,778
Axis:	7.00	89.05	205.00
W-50%:	0.75	0.65	0.55
W-10%:	0.800	0.7500	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Nov 16, 2016 09:47:34
Printed : Nov 16, 2016 09:47:36

Tune Report

Tune File : nogas.u
Comment :

Tuning Parameters

===Plasma Condition===				===Ion Lenses===				===Q-Pole Parameters===		
RF Power	:	1600	W	Extract 1	:	0	V	AMU Gain	:	124
RF Matching	:	1.6	V	Extract 2	:	-130	V	AMU Offset	:	120
Smpl Depth	:	9	mm	Omega Bias-ce	:	-30	V	Axis Gain	:	0.9993
Torch-H	:	0.2	mm	Omega Lens-ce	:	0.2	V	Axis Offset	:	-0.03
Torch-V	:	0.8	mm	Cell Entrance	:	-26	V	QP Bias	:	-3 V
Carrier Gas	:	1.15	L/min	QP Focus	:	0	V			
Makeup Gas	:	0	L/min	Cell Exit	:	-40	V	===Detector Parameters===		
Optional Gas	:	---	%					Discriminator	:	8 mV
Nebulizer Pump	:	0.1	rps	===Octopole Parameters===				Analog HV	:	1720 V
Sample Pump	:	---	rps	OctP RF	:	170	V	Pulse HV	:	1570 V
S/C Temp	:	2	degC	OctP Bias	:	-6	V			

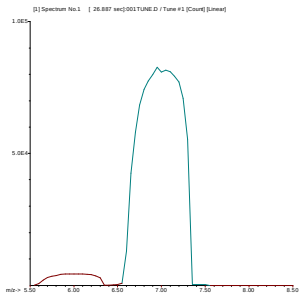
===Reaction Cell===										
Reaction Mode	:	OFF								
H2 Gas	:	0	mL/min	He Gas	:	0	mL/min	Optional Gas	:	--- %

6020 QC Tune Report

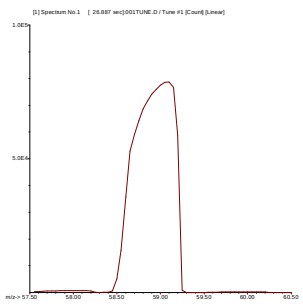
Data File: C:\ICPCHEM\1\DATA\16K16k00.B\001TUNE.D
Date Acquired: Nov 16 2016 10:02 am
Acq. Method: TN6020.M
Operator: CVD
Sample Name: TUNE CHECK
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020.M

RSD (%)

Element	Actual	Required	Flag
7 Li	2.25	5.00	
59 Co	1.98	5.00	
115 In	1.34	5.00	
205 Tl	2.26	5.00	

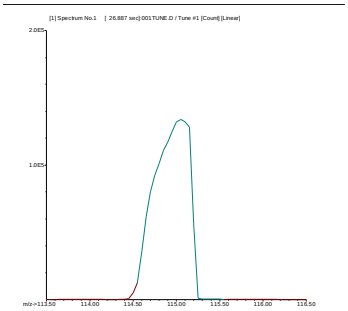


7 Li
Mass Calib.
Actual: 7.00
Required: 6.90 - 7.10
Flag:
Peak Width
Actual: 0.70
Required: 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.05
Required: 58.90 - 59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.90
Flag:

REVIEWED BY
By Janice Whitt at 9:06:08 AM, 11/17/2016



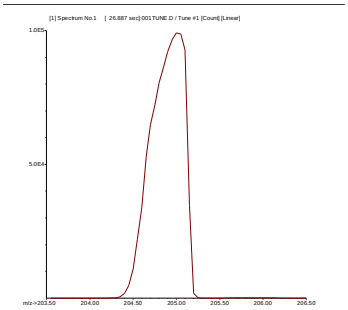
115 In

Mass Calib.

Actual:	115.05	
Required:	114.90 -	115.10
Flag:		

Peak Width

Actual:	0.60
Required:	0.90
Flag:	



205 Tl

Mass Calib.

Actual:	205.00	
Required:	204.90 -	205.10
Flag:		

Peak Width

Actual:	0.60
Required:	0.90
Flag:	

REVIEWED BY
By Janice Whitt at 9:06:14 AM, 11/17/2016

P/A Factor Tuning Report

Acquired:Nov 16 2016 09:56 am

Mass[amu]	Element	P/A Factor
6	Li	0.071848
9		0.081564
23	Na	0.088525
24	Mg	0.092232
27	Al	0.095169
39	K	0.095731
44	Ca	Sensitivity too low
45	Sc	0.096357
47	Ti	Sensitivity too low
51	V	0.098514
52	Cr	0.100915
55	Mn	0.102208
59	Co	0.105372
60	Ni	0.107449
63	Cu	0.109136
66	Zn	0.108745
72	Ge	0.107766
75	As	0.107197
78	Se	Sensitivity too low
88	Sr	0.108184
95	Mo	0.107211
106	(Cd)	0.112742
107	Ag	Sensitivity too low
108	(Cd)	0.113093
111	Cd	0.114248
115	In	0.113847
118	Sn	0.113428
121	Sb	0.113141
137	Ba	Sensitivity too low
205	Tl	0.121389
206	(Pb)	0.121400
207	(Pb)	0.121442
208	Pb	0.121598
209	Bi	0.121204
238		0.121002

===Detector Parameters===
Discriminator: 8.0 mV
Analog HV: 1720 V
Pulse HV: 1570 V

REVIEWED BY
By Janice Whitt at 9:06:19 AM, 11/17/2016

Calibration Blank QC Report

Acq. Method: DHL_3Fe.M Sample Name: BLANK STD 1
Operator: CVD Instrument: ICPMS3
Last Cal. Update: Nov 16 2016 10:44 am
Date Acquired: Nov 16 2016 10:40 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)
6	Li	2	---	23.38	P	18.49	79.07
7	Li	2	45	663.38	P	121.20	18.27
9	Be	2	45	48.89	P	44.26	90.53
11	B	2	45	2605.93	P	94.62	3.63
23	Na	1	45	21422.32	P	256.70	1.20
24	Mg	1	45	173.34	P	37.86	21.84
27	Al	1	45	228.01	P	17.49	7.67
39	K	1	45	1475.71	P	60.04	4.07
44	Ca	2	45	4791.12	P	138.70	2.89
45	Sc	1	---	90770.48	P	1026.00	1.13
45	Sc	2	---	4095698.00	A	29570.00	0.72
47	Ti	1	45	0.89	P	0.77	86.60
51	V	1	45	32.45	P	4.07	12.55
51	V	2	---		P		
52	Cr	1	45	76.00	P	14.85	19.54
55	Mn	1	45	10.22	P	0.77	7.53
56	Fe	1	72	580.02	P	20.96	3.61
59	Co	1	72	17.33	P	5.81	33.53
60	Ni	1	72	80.45	P	27.74	34.48
60	Ni	2	---		P		
63	Cu	1	72	284.90	P	16.13	5.66
63	Cu	2	---		P		
66	Zn	1	72	46.67	P	4.00	8.57
66	Zn	2	---		P		
72	Ge	1	---	47835.73	P	48.72	0.10
72	Ge	2	---		P		
75	As	1	72	5.33	P	0.67	12.50
78	Se	1	72	0.56	P	0.11	20.00
88	Sr	2	###	1082.32	P	83.83	7.75
95	Mo	2	###	48.89	P	25.02	51.18
107	Ag	2	###	26.67	P	6.67	25.00
111	Cd	2	###	20.29	P	32.60	160.69
115	In	2	---	6191712.00	A	62140.00	1.00
118	Sn	2	###	598.93	P	36.57	6.11
121	Sb	2	###	182.23	P	26.94	14.78
137	Ba	2	###	53.34	P	8.82	16.54
205	Tl	2	###	148.90	P	95.83	64.36
208	Pb	2	###	308.91	P	120.10	38.88
209	Bi	2	---	5622254.00	A	32120.00	0.57

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L2-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:46 am
Last Cal. Update: Nov 16 2016 10:44 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-325.11	P	23.49	7.23	ISFail
7	Li	2	45	7637.06	P	169.90	2.22	
9	Be	2	45	2088.04	P	152.70	7.31	
11	B	2	45	4444.30	P	87.64	1.97	
23	Na	1	45	25685.93	P	483.20	1.88	
24	Mg	1	45	2114.71	P	58.73	2.78	
27	Al	1	45	696.03	P	19.37	2.78	
39	K	1	45	2146.94	P	39.31	1.83	
44	Ca	2	45	8680.06	P	226.10	2.60	
45	Sc	1	---	91628.10	P	1045.00	1.14	
45	Sc	2	---	4139009.00	A	24110.00	0.58	
47	Ti	1	45	9.33	P	1.33	14.28	
51	V	1	45	707.14	P	23.49	3.32	
51	V	2	---		P			
52	Cr	1	45	942.27	P	12.60	1.34	
55	Mn	1	45	331.57	P	16.99	5.12	
56	Fe	1	72	13712.25	P	130.50	0.95	
59	Co	1	72	1784.16	P	41.06	2.30	
60	Ni	1	72	598.69	P	19.91	3.33	
60	Ni	2	---		P			
63	Cu	1	72	1835.28	P	48.62	2.65	
63	Cu	2	---		P			
66	Zn	1	72	196.89	P	6.16	3.13	
66	Zn	2	---		P			
72	Ge	1	---	48321.38	P	161.80	0.33	
72	Ge	2	---		P			
75	As	1	72	59.19	P	2.04	3.44	
78	Se	1	72	3.30	P	0.80	24.39	
88	Sr	2	115	10816.41	P	333.80	3.09	
95	Mo	2	115	1893.56	P	152.20	8.04	
107	Ag	2	115	5106.87	P	185.40	3.63	
111	Cd	2	115	1046.65	P	24.53	2.34	
115	In	2	---	6265959.00	A	89250.00	1.42	
118	Sn	2	115	5535.18	P	3561.00	64.33	
121	Sb	2	115	3716.29	P	126.10	3.39	
137	Ba	2	115	1413.48	P	96.45	6.82	
205	Tl	2	209	9389.83	P	188.10	2.00	
208	Pb	2	209	13092.45	P	339.80	2.60	
209	Bi	2	---	5605939.00	A	42190.00	0.75	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-325.11	7.23	23.38	-1390.3	70 - 120	ISFail
45	Sc	1	91628.10	1.14	90770.48	100.9	70 - 120	
45	Sc	2	4139008.80	0.58	4095698.00	101.1	70 - 120	
72	Ge	1	48321.38	0.33	47835.73	101.0	70 - 120	
115	In	2	6265959.50	1.42	6191712.50	101.2	70 - 120	
209	Bi	2	5605938.50	0.75	5622254.50	99.7	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:52 am
Last Cal. Update: Nov 16 2016 10:50 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-3466.32	P	91.44	2.64	ISFail
7	Li	2	45	73685.96	P	1379.00	1.87	Fail
9	Be	2	45	21490.11	P	249.70	1.16	Fail
11	B	2	45	19995.60	P	214.70	1.07	
23	Na	1	45	62713.27	P	1249.00	1.99	
24	Mg	1	45	20505.31	P	367.70	1.79	Fail
27	Al	1	45	5019.75	P	71.78	1.43	Fail
39	K	1	45	8126.31	P	175.70	2.16	Fail
44	Ca	2	45	43140.82	P	572.40	1.33	Fail
45	Sc	1	---	96059.89	P	883.40	0.92	
45	Sc	2	---	4243062.00	A	52280.00	1.23	
47	Ti	1	45	161.34	P	18.52	11.48	Fail
51	V	1	45	6940.73	P	71.84	1.04	Fail
51	V	2	---		P			
52	Cr	1	45	9225.80	P	36.79	0.40	Fail
55	Mn	1	45	3300.95	P	136.40	4.13	Fail
56	Fe	1	72	136367.80	P	798.20	0.59	Fail
59	Co	1	72	18291.57	P	318.80	1.74	
60	Ni	1	72	5553.34	P	61.23	1.10	Fail
60	Ni	2	---		P			
63	Cu	1	72	16096.53	P	166.30	1.03	Fail
63	Cu	2	---		P			
66	Zn	1	72	1388.99	P	36.41	2.62	Fail
66	Zn	2	---		P			
72	Ge	1	---	49867.77	P	90.84	0.18	
72	Ge	2	---		P			
75	As	1	72	575.05	P	4.10	0.71	Fail
78	Se	1	72	26.74	P	2.28	8.54	Fail
88	Sr	2	115	100132.50	P	2415.00	2.41	Fail
95	Mo	2	115	18322.39	P	411.60	2.25	Fail
107	Ag	2	115	50894.10	P	682.00	1.34	Fail
111	Cd	2	115	11204.70	P	362.40	3.23	Fail
115	In	2	---	6443397.00	A	70110.00	1.09	
118	Sn	2	115	30983.53	P	891.90	2.88	Fail
121	Sb	2	115	35373.87	P	621.70	1.76	Fail
137	Ba	2	115	14844.39	P	337.80	2.28	Fail
205	Tl	2	209	96034.58	P	951.50	0.99	Fail
208	Pb	2	209	132055.50	P	2442.00	1.85	Fail
209	Bi	2	---	5744355.00	A	38890.00	0.68	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-3466.32	2.64	23.38	-14823.3	70 - 120	ISFail
45	Sc	1	96059.88	0.92	90770.48	105.8	70 - 120	
45	Sc	2	4243062.00	1.23	4095698.00	103.6	70 - 120	
72	Ge	1	49867.77	0.18	47835.73	104.2	70 - 120	
115	In	2	6443397.50	1.09	6191712.50	104.1	70 - 120	
209	Bi	2	5744355.00	0.68	5622254.50	102.2	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 10X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 10:58 am
Last Cal. Update: Nov 16 2016 10:56 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-16021.90	P	543.90	3.39	ISFail
7	Li	2	45	356781.50	P	5955.00	1.67	Fail
9	Be	2	45	102766.00	P	2134.00	2.08	Fail
11	B	2	45	86211.03	P	809.10	0.94	Fail
23	Na	1	45	220366.41	P	3312.00	1.50	Fail
24	Mg	1	45	99222.16	P	1186.00	1.20	
27	Al	1	45	24296.22	P	324.60	1.34	Fail
39	K	1	45	33140.80	P	734.00	2.21	Fail
44	Ca	2	45	185075.30	P	1505.00	0.81	Fail
45	Sc	1	---	94419.48	P	101.50	0.11	
45	Sc	2	---	4032744.00	A	1666.00	0.04	
47	Ti	1	45	786.26	P	28.67	3.65	
51	V	1	45	33501.97	P	161.10	0.48	
51	V	2	---		P			
52	Cr	1	45	45286.06	P	99.36	0.22	
55	Mn	1	45	16324.34	P	302.70	1.85	
56	Fe	1	72	669114.00	P	3608.00	0.54	
59	Co	1	72	90960.04	P	927.60	1.02	
60	Ni	1	72	27493.59	P	389.30	1.42	
60	Ni	2	---		P			
63	Cu	1	72	77490.97	P	1014.00	1.31	
63	Cu	2	---		P			
66	Zn	1	72	6531.18	P	174.70	2.67	Fail
66	Zn	2	---		P			
72	Ge	1	---	48776.45	P	147.60	0.30	
72	Ge	2	---		P			
75	As	1	72	2757.94	P	5.54	0.20	
78	Se	1	72	129.41	P	3.09	2.39	Fail
88	Sr	2	115	480478.00	P	2789.00	0.58	Fail
95	Mo	2	115	89495.32	P	958.50	1.07	Fail
107	Ag	2	115	247555.70	P	4646.00	1.88	Fail
111	Cd	2	115	52293.60	P	861.80	1.65	Fail
115	In	2	---	6117921.00	A	74920.00	1.22	
118	Sn	2	115	144122.30	P	1135.00	0.79	Fail
121	Sb	2	115	167770.00	P	2049.00	1.22	Fail
137	Ba	2	115	70270.03	P	375.30	0.53	Fail
205	Tl	2	209	458581.91	P	7224.00	1.58	Fail
208	Pb	2	209	629293.69	P	9458.00	1.50	Fail
209	Bi	2	---	5485656.00	A	9765.00	0.18	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-16021.91	3.39	23.38	-68515.5	70 - 120	ISFail
45	Sc	1	94419.48	0.11	90770.48	104.0	70 - 120	
45	Sc	2	4032744.30	0.04	4095698.00	98.5	70 - 120	
72	Ge	1	48776.45	0.30	47835.73	102.0	70 - 120	
115	In	2	6117920.50	1.22	6191712.50	98.8	70 - 120	
209	Bi	2	5485656.00	0.18	5622254.50	97.6	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 5X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:04 am
Last Cal. Update: Nov 16 2016 11:02 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-33695.50	P	260.10	0.77	ISFail
7	Li	2	45	716696.38	A	4826.00	0.67	Fail
9	Be	2	45	203307.41	P	1638.00	0.81	Fail
11	B	2	45	165872.70	P	1185.00	0.71	Fail
23	Na	1	45	409738.69	P	3574.00	0.87	Fail
24	Mg	1	45	193141.09	P	2624.00	1.36	
27	Al	1	45	46901.11	P	234.40	0.50	Fail
39	K	1	45	63235.13	P	487.60	0.77	Fail
44	Ca	2	45	361474.00	P	3689.00	1.02	Fail
45	Sc	1	---	92753.74	P	547.10	0.59	
45	Sc	2	---	4012334.00	A	50760.00	1.27	
47	Ti	1	45	1458.33	P	84.72	5.81	
51	V	1	45	65307.82	P	978.10	1.50	
51	V	2	---		P			
52	Cr	1	45	88147.01	P	1566.00	1.78	
55	Mn	1	45	31759.30	P	214.70	0.68	
56	Fe	1	72	1325957.00	A	18650.00	1.41	
59	Co	1	72	176644.20	P	2408.00	1.36	
60	Ni	1	72	53601.22	P	415.90	0.78	
60	Ni	2	---		P			
63	Cu	1	72	151988.00	P	879.70	0.58	
63	Cu	2	---		P			
66	Zn	1	72	12386.86	P	120.70	0.97	
66	Zn	2	---		P			
72	Ge	1	---	48172.42	P	152.60	0.32	
72	Ge	2	---		P			
75	As	1	72	5384.89	P	32.02	0.59	
78	Se	1	72	244.00	P	3.63	1.49	
88	Sr	2	115	970970.63	M	8519.00	0.88	Fail
95	Mo	2	115	178060.30	P	2033.00	1.14	Fail
107	Ag	2	115	488002.41	P	7122.00	1.46	Fail
111	Cd	2	115	105026.50	P	1792.00	1.71	Fail
115	In	2	---	6177524.00	A	100100.00	1.62	
118	Sn	2	115	288260.41	P	3751.00	1.30	Fail
121	Sb	2	115	335841.59	P	3816.00	1.14	Fail
137	Ba	2	115	141232.91	P	3656.00	2.59	Fail
205	Tl	2	209	919560.00	P	7513.00	0.82	Fail
208	Pb	2	209	1253953.00	P	12380.00	0.99	Fail
209	Bi	2	---	5438235.00	A	68080.00	1.25	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-33695.51	0.77	23.38	-144094.4	70 - 120	ISFail
45	Sc	1	92753.74	0.59	90770.48	102.2	70 - 120	
45	Sc	2	4012334.30	1.27	4095698.00	98.0	70 - 120	
72	Ge	1	48172.42	0.32	47835.73	100.7	70 - 120	
115	In	2	6177524.50	1.62	6191712.50	99.8	70 - 120	
209	Bi	2	5438235.50	1.25	5622254.50	96.7	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 2X-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:10 am
Last Cal. Update: Nov 16 2016 11:08 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-82197.35	P	1684.00	2.05	ISFail
7	Li	2	45	1756272.00	A	31650.00	1.80	Fail
9	Be	2	45	502819.41	P	8910.00	1.77	Fail
11	B	2	45	405599.19	P	4942.00	1.22	Fail
23	Na	1	45	1055851.00	A	4522.00	0.43	Fail
24	Mg	1	45	496209.69	P	2495.00	0.50	
27	Al	1	45	121898.90	P	1265.00	1.04	
39	K	1	45	163821.30	P	485.00	0.30	Fail
44	Ca	2	45	940867.00	A	20390.00	2.17	Fail
45	Sc	1	---	94557.81	P	202.60	0.21	
45	Sc	2	---	4010890.00	A	56170.00	1.40	
47	Ti	1	45	3858.43	P	80.43	2.08	
51	V	1	45	171838.59	P	403.90	0.24	
51	V	2	---		A			
52	Cr	1	45	226800.41	P	1205.00	0.53	
55	Mn	1	45	82836.01	P	276.30	0.33	
56	Fe	1	72	3346696.00	A	46230.00	1.38	
59	Co	1	72	453934.91	P	4584.00	1.01	
60	Ni	1	72	137166.59	P	905.40	0.66	
60	Ni	2	---		P			
63	Cu	1	72	386972.19	P	1514.00	0.39	
63	Cu	2	---		P			
66	Zn	1	72	31840.18	P	133.30	0.42	
66	Zn	2	---		P			
72	Ge	1	---	49081.54	P	383.60	0.78	
72	Ge	2	---		P			
75	As	1	72	13864.30	P	70.98	0.51	
78	Se	1	72	634.50	P	11.11	1.75	
88	Sr	2	115	2445578.00	A	59740.00	2.44	Fail
95	Mo	2	115	444199.59	P	4321.00	0.97	Fail
107	Ag	2	115	1231442.00	A	12290.00	1.00	
111	Cd	2	115	255518.50	P	4962.00	1.94	Fail
115	In	2	---	6036126.00	A	110900.00	1.84	
118	Sn	2	115	713190.19	P	10830.00	1.52	Fail
121	Sb	2	115	829296.13	P	13890.00	1.67	Fail
137	Ba	2	115	351025.41	P	6241.00	1.78	Fail
205	Tl	2	209	2387211.00	A	37530.00	1.57	Fail
208	Pb	2	209	3181300.00	A	59360.00	1.87	Fail
209	Bi	2	---	5393114.00	A	83250.00	1.54	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-82197.36	2.05	23.38	-351506.1	70 - 120	ISFail
45	Sc	1	94557.81	0.21	90770.48	104.2	70 - 120	
45	Sc	2	4010890.30	1.40	4095698.00	97.9	70 - 120	
72	Ge	1	49081.54	0.78	47835.73	102.6	70 - 120	
115	In	2	6036126.00	1.84	6191712.50	97.5	70 - 120	
209	Bi	2	5393113.50	1.54	5622254.50	95.9	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:16 am
Last Cal. Update: Nov 16 2016 11:14 am

QC&ISTD Elements

Element				CPS Mean		SD	RSD(%)	Flag
6	Li	2	---	-155470.70	P	1205.00	0.78	ISFail
7	Li	2	45	3392275.00	A	33330.00	0.98	Fail
9	Be	2	45	1010402.00	A	18590.00	1.84	
11	B	2	45	863696.19	A	7873.00	0.91	Fail
23	Na	1	45	2003555.00	A	6466.00	0.32	Fail
24	Mg	1	45	985613.31	A	3201.00	0.32	
27	Al	1	45	235728.00	P	1513.00	0.64	
39	K	1	45	313337.50	P	1816.00	0.58	Fail
44	Ca	2	45	1798666.00	A	17970.00	1.00	Fail
45	Sc	1	---	92840.94	P	582.10	0.63	
45	Sc	2	---	3884529.00	A	41680.00	1.07	
47	Ti	1	45	7432.11	P	115.80	1.56	
51	V	1	45	330007.59	P	3950.00	1.20	
51	V	2	---		A			
52	Cr	1	45	437879.41	P	2230.00	0.51	
55	Mn	1	45	159267.20	P	54.81	0.03	
56	Fe	1	72	6365510.00	A	29600.00	0.47	
59	Co	1	72	873256.00	P	3607.00	0.41	
60	Ni	1	72	261953.41	P	529.90	0.20	
60	Ni	2	---		P			
63	Cu	1	72	738468.81	P	3867.00	0.52	
63	Cu	2	---		A			
66	Zn	1	72	59796.74	P	159.10	0.27	
66	Zn	2	---		P			
72	Ge	1	---	47795.27	P	120.60	0.25	
72	Ge	2	---		P			
75	As	1	72	26333.29	P	99.58	0.38	
78	Se	1	72	1205.91	P	15.04	1.25	
88	Sr	2	115	4681398.00	A	81770.00	1.75	Fail
95	Mo	2	115	863108.00	P	10710.00	1.24	Fail
107	Ag	2	115	2348615.00	A	18460.00	0.79	
111	Cd	2	115	488805.59	P	7036.00	1.44	Fail
115	In	2	---	5826379.00	A	47830.00	0.82	
118	Sn	2	115	1438582.00	A	27750.00	1.93	Fail
121	Sb	2	115	1648562.00	A	21790.00	1.32	Fail
137	Ba	2	115	676808.69	P	6959.00	1.03	Fail
205	Tl	2	209	4508400.00	A	62690.00	1.39	
208	Pb	2	209	6208421.00	A	53970.00	0.87	Fail
209	Bi	2	---	5160738.00	A	67330.00	1.30	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-155470.75	0.78	23.38	-664850.0	70 - 120	ISFail
45	Sc	1	92840.94	0.63	90770.48	102.3	70 - 120	
45	Sc	2	3884529.30	1.07	4095698.00	94.8	70 - 120	
72	Ge	1	47795.27	0.25	47835.73	99.9	70 - 120	
115	In	2	5826379.50	0.82	6191712.50	94.1	70 - 120	
209	Bi	2	5160738.00	1.30	5622254.50	91.8	70 - 120	

Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H2-161116
Operator: CVD Instrument: ICPMS3
Date Acquired: Nov 16 2016 11:22 am
Last Cal. Update: Nov 16 2016 11:20 am

QC&ISTD Elements

Element			CPS Mean		SD	RSD(%)	Flag
6 Li	2	---	-605384.88	P	15520.00	2.56	ISFail
7 Li	2	45	13240260.00	A	197000.00	1.49	Fail
9 Be	2	45	3835686.00	A	44780.00	1.17	
11 B	2	45	3287995.00	A	33210.00	1.01	Fail
23 Na	1	45	4644786.00	A	51300.00	1.10	Fail
24 Mg	1	45	2325867.00	A	25180.00	1.08	
27 Al	1	45	405.35	P	153.80	37.94	Fail
39 K	1	45	761738.81	P	2725.00	0.36	
44 Ca	2	45	4566148.00	A	14220.00	0.31	Fail
45 Sc	1	---	90018.81	P	830.80	0.92	
45 Sc	2	---	4015165.00	A	32510.00	0.81	
47 Ti	1	45	28712.13	P	502.20	1.75	
51 V	1	45	1294073.00	A	10700.00	0.83	
51 V	2	---		A			
52 Cr	1	45	1698758.00	A	22000.00	1.30	
55 Mn	1	45	600121.31	P	3756.00	0.63	
56 Fe	1	72	205006.30	P	1697.00	0.83	
59 Co	1	72	3304110.00	A	44490.00	1.35	
60 Ni	1	72	977508.88	P	8334.00	0.85	
60 Ni	2	---		A			
63 Cu	1	72	2779555.00	A	25970.00	0.93	
63 Cu	2	---		A			
66 Zn	1	72	222215.41	P	2192.00	0.99	
66 Zn	2	---		A			
72 Ge	1	---	46379.17	P	402.60	0.87	
72 Ge	2	---		P			
75 As	1	72	100746.40	P	956.50	0.95	
78 Se	1	72	4518.73	P	34.17	0.76	
88 Sr	2	115	18704270.00	A	20310.00	0.11	Fail
95 Mo	2	115	3602003.00	A	45470.00	1.26	
107 Ag	2	115	1491.28	P	262.80	17.62	Fail
111 Cd	2	115	1986643.00	A	12650.00	0.64	
115 In	2	---	5882654.00	A	30820.00	0.52	
118 Sn	2	115	5502601.00	A	11170.00	0.20	Fail
121 Sb	2	115	2212.54	P	94.57	4.27	Fail
137 Ba	2	115	2808326.00	A	20530.00	0.73	
205 Tl	2	209	17466340.00	A	182100.00	1.04	
208 Pb	2	209	23536200.00	A	157200.00	0.67	
209 Bi	2	---	5059584.00	A	51510.00	1.02	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	2		-605385.00	2.56	23.38	#########	70 - 120	ISFail
45 Sc	1		90018.81	0.92	90770.48	99.2	70 - 120	
45 Sc	2		4015165.00	0.81	4095698.00	98.0	70 - 120	
72 Ge	1		46379.17	0.87	47835.73	97.0	70 - 120	
115 In	2		5882654.50	0.52	6191712.50	95.0	70 - 120	
209 Bi	2		5059583.50	1.02	5622254.50	90.0	70 - 120	

ICSA QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\015ICSA.D\015ICSA.D#

Date Acquired:	Nov 16 2016 11:46 am	Sample Name:	**ICSA-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSAICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	RL S	RL Aq	Flag
7	Li	2	45	0.199	ppb	18.55	8.00	5.00	
9	Be	2	45	0.106	ppb	27.36	0.32	0.80	
11	B	2	45	6.528	ppb	4.53	30.00	30.00	
23	Na	1	45	99240.000	ppb	1.25	#######	#######	
24	Mg	1	45	84750.000	ppb	1.11	#######	#######	
27	Al	1	45	95800.000	ppb	2.34	#######	#######	
39	K	1	45	94500.000	ppb	1.12	#######	#######	
44	Ca	2	45	89820.000	ppb	2.12	#######	#######	
47	Ti	1	45	1919.000	ppb	0.88	10.00	10.00	
51	V	1	45	0.132	ppb	32.00	10.00	10.00	
52	Cr	1	45	0.886	ppb	4.70	8.00	5.00	
55	Mn	1	45	1.463	ppb	7.33	8.00	10.00	
56	Fe	1	72	93160.000	ppb	1.55	#######	#######	
59	Co	1	72	1.326	ppb	4.65	8.00	10.00	
60	Ni	1	72	0.500	ppb	8.10	8.00	10.00	
63	Cu	1	72	2.255	ppb	0.29	8.00	10.00	
66	Zn	1	72	2.274	ppb	3.23	10.00	5.00	
75	As	1	72	0.440	ppb	9.49	4.00	5.00	
78	Se	1	72	0.387	ppb	22.79	2.00	5.00	
88	Sr	2	115	1.245	ppb	3.79	10.00	10.00	
95	Mo	2	115	1941.000	ppb	2.64	8.00	5.00	
107	Ag	2	115	0.103	ppb	6.19	0.80	2.00	
111	Cd	2	115	0.443	ppb	0.27	1.20	1.00	
118	Sn	2	115	0.624	ppb	8.97	10.00	10.00	
121	Sb	2	115	0.083	ppb	17.08	4.00	2.50	
137	Ba	2	115	0.587	ppb	8.62	8.00	10.00	
205	Tl	2	209	0.218	ppb	18.06	4.00	1.50	
208	Pb	2	209	0.294	ppb	10.72	1.20	1.00	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-50.57	115.37	23.38	-216.2	70 - 120	ISFail
45	Sc	1	90887.23	0.27	90770.48	100.1	70 - 120	
45	Sc	2	3822910.80	1.56	4095698.00	93.3	70 - 120	
72	Ge	1	46142.36	1.14	47835.73	96.5	70 - 120	
115	In	2	5535271.00	1.34	6191712.50	89.4	70 - 120	
209	Bi	2	4601251.50	1.38	5622254.50	81.8	70 - 120	

ICS-AB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\016ICSB.D\016ICSB.D#

Date Acquired:	Nov 16 2016 11:52 am	Sample Name:	**ICSAB-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSBICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)			Flag
7	Li	2	45	0.17	ppb	14.77	---	80 -		120	
9	Be	2	45	0.07	ppb	44.97	---	80 -		120	
11	B	2	45	5.33	ppb	1.84	---	80 -		120	
23	Na	1	45	93340.00	ppb	0.80	100000.00	80 -		120	
24	Mg	1	45	87090.00	ppb	0.75	100000.00	80 -		120	
27	Al	1	45	96280.00	ppb	0.21	100000.00	80 -		120	
39	K	1	45	94390.00	ppb	0.93	100000.00	80 -		120	
44	Ca	2	45	88670.00	ppb	1.50	100000.00	80 -		120	
47	Ti	1	45	1899.00	ppb	1.14	---	80 -		120	
51	V	1	45	38.02	ppb	1.10	40.00	80 -		120	
52	Cr	1	45	20.10	ppb	1.66	20.00	80 -		120	
55	Mn	1	45	20.08	ppb	2.66	20.00	80 -		120	
56	Fe	1	72	93980.00	ppb	0.49	100000.00	80 -		120	
59	Co	1	72	38.61	ppb	0.81	40.00	80 -		120	
60	Ni	1	72	36.69	ppb	0.52	40.00	80 -		120	
63	Cu	1	72	20.28	ppb	1.91	20.00	80 -		120	
66	Zn	1	72	20.31	ppb	0.96	20.00	80 -		120	
75	As	1	72	19.24	ppb	0.54	20.00	80 -		120	
78	Se	1	72	19.78	ppb	4.19	20.00	80 -		120	
88	Sr	2	115	1.21	ppb	2.82	---	80 -		120	
95	Mo	2	115	1974.00	ppb	1.95	---	80 -		120	
107	Ag	2	115	18.01	ppb	1.78	20.00	80 -		120	
111	Cd	2	115	8.95	ppb	4.08	10.00	80 -		120	
118	Sn	2	115	0.40	ppb	8.80	---	80 -		120	
121	Sb	2	115	0.02	ppb	21.91	---	80 -		120	
137	Ba	2	115	1.73	ppb	0.51	---	80 -		120	
205	Tl	2	209	0.13	ppb	27.92	---	80 -		120	
208	Pb	2	209	0.31	ppb	11.45	---	80 -		120	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-0.37	######	23.38	-1.6	70 -		120	ISFail
45	Sc	1	92230.56	0.29	90770.48	101.6	70 -		120	
45	Sc	2	3819958.80	0.94	4095698.00	93.3	70 -		120	
72	Ge	1	46357.60	0.45	47835.73	96.9	70 -		120	
115	In	2	5557602.50	0.90	6191712.50	89.8	70 -		120	
209	Bi	2	4692885.00	1.07	5622254.50	83.5	70 -		120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\019ICV.D\019ICV.D#

Date Acquired:	Nov 16 2016 12:10 pm	Sample Name:	**ICV1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	98.58	ppb	1.17	100.00	90 -	110	98.6	
9	Be	2	45	101.90	ppb	1.39	100.00	90 -	110	101.9	
11	B	2	45	98.60	ppb	1.62	100.00	90 -	110	98.6	
23	Na	1	45	2579.00	ppb	1.25	2500.00	90 -	110	103.2	
24	Mg	1	45	2500.00	ppb	1.04	2500.00	90 -	110	100.0	
27	Al	1	45	2559.00	ppb	0.14	2500.00	90 -	110	102.4	
39	K	1	45	2542.00	ppb	0.97	2500.00	90 -	110	101.7	
44	Ca	2	45	2346.00	ppb	1.43	2500.00	90 -	110	93.8	
47	Ti	1	45	102.80	ppb	5.00	100.00	90 -	110	102.8	
51	V	1	45	99.29	ppb	0.35	100.00	90 -	110	99.3	
52	Cr	1	45	103.20	ppb	0.86	100.00	90 -	110	103.2	
55	Mn	1	45	102.60	ppb	0.43	100.00	90 -	110	102.6	
56	Fe	1	72	2602.00	ppb	1.91	2500.00	90 -	110	104.1	
59	Co	1	72	101.70	ppb	1.10	100.00	90 -	110	101.7	
60	Ni	1	72	103.10	ppb	0.88	100.00	90 -	110	103.1	
63	Cu	1	72	101.30	ppb	1.11	100.00	90 -	110	101.3	
66	Zn	1	72	105.40	ppb	1.23	100.00	90 -	110	105.4	
75	As	1	72	100.50	ppb	0.74	100.00	90 -	110	100.5	
78	Se	1	72	103.30	ppb	1.93	100.00	90 -	110	103.3	
88	Sr	2	115	97.18	ppb	3.43	100.00	90 -	110	97.2	
95	Mo	2	115	95.21	ppb	2.05	100.00	90 -	110	95.2	
107	Ag	2	115	100.40	ppb	1.98	100.00	90 -	110	100.4	
111	Cd	2	115	98.26	ppb	1.31	100.00	90 -	110	98.3	
118	Sn	2	115	99.88	ppb	2.10	100.00	90 -	110	99.9	
121	Sb	2	115	97.31	ppb	1.95	100.00	90 -	110	97.3	
137	Ba	2	115	96.86	ppb	1.47	100.00	90 -	110	96.9	
205	Tl	2	209	95.89	ppb	1.24	100.00	90 -	110	95.9	
208	Pb	2	209	97.93	ppb	1.10	100.00	90 -	110	97.9	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-18452.37	3.78	23.38	-78909.1	70 -	120		ISFail
45	Sc	1	100059.49	0.81	90770.48	110.2	70 -	120		
45	Sc	2	3808175.30	1.10	4095698.00	93.0	70 -	120		
72	Ge	1	51962.61	0.51	47835.73	108.6	70 -	120		
115	In	2	6057315.00	0.73	6191712.50	97.8	70 -	120		
209	Bi	2	5531796.50	0.46	5622254.50	98.4	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\021LCVL.D\021LCVL.D#

Date Acquired:	Nov 16 2016 12:22 pm	Sample Name:	**ILCVL-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.83	ppb	1.77	10.00	70 -	130	98.3	
9	Be	2	45	1.04	ppb	4.57	1.00	70 -	130	104.2	
11	B	2	45	20.76	ppb	0.72	20.00	70 -	130	103.8	
23	Na	1	45	104.20	ppb	2.54	100.00	70 -	130	104.2	
24	Mg	1	45	104.70	ppb	3.66	100.00	70 -	130	104.7	
27	Al	1	45	112.30	ppb	1.73	100.00	70 -	130	112.3	
39	K	1	45	111.80	ppb	5.72	100.00	70 -	130	111.8	
44	Ca	2	45	100.80	ppb	4.71	100.00	70 -	130	100.8	
47	Ti	1	45	5.25	ppb	1.56	5.00	70 -	130	104.9	
51	V	1	45	1.05	ppb	2.94	1.00	70 -	130	104.5	
52	Cr	1	45	5.26	ppb	1.24	5.00	70 -	130	105.2	
55	Mn	1	45	5.74	ppb	1.32	5.00	70 -	130	114.8	
56	Fe	1	72	112.70	ppb	2.97	100.00	70 -	130	112.7	
59	Co	1	72	5.21	ppb	1.16	5.00	70 -	130	104.2	
60	Ni	1	72	5.39	ppb	1.46	5.00	70 -	130	107.7	
63	Cu	1	72	5.34	ppb	0.74	5.00	70 -	130	106.8	
66	Zn	1	72	5.96	ppb	3.72	5.00	70 -	130	119.2	
75	As	1	72	5.34	ppb	1.81	5.00	70 -	130	106.7	
78	Se	1	72	5.50	ppb	9.83	5.00	70 -	130	110.0	
88	Sr	2	115	4.96	ppb	1.55	5.00	70 -	130	99.1	
95	Mo	2	115	5.06	ppb	3.18	5.00	70 -	130	101.1	
107	Ag	2	115	2.03	ppb	1.91	2.00	70 -	130	101.3	
111	Cd	2	115	1.00	ppb	5.38	1.00	70 -	130	100.0	
118	Sn	2	115	5.33	ppb	1.28	5.00	70 -	130	106.5	
121	Sb	2	115	2.00	ppb	0.10	2.00	70 -	130	100.2	
137	Ba	2	115	4.92	ppb	3.10	5.00	70 -	130	98.3	
205	Tl	2	209	1.05	ppb	2.64	1.00	70 -	130	105.4	
208	Pb	2	209	1.04	ppb	3.51	1.00	70 -	130	103.8	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigh	-1756.23	16.43	23.38	-7510.3	70 -	120	ISFail
45	Sc	1		100736.46	1.05	90770.48	111.0	70 -	120	
45	Sc	2		3951775.00	0.28	4095698.00	96.5	70 -	120	
72	Ge	1		52685.69	0.74	47835.73	110.1	70 -	120	
115	In	2		6229485.50	0.14	6191712.50	100.6	70 -	120	
209	Bi	2		5626409.50	1.10	5622254.50	100.1	70 -	120	

ICB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\022_ICB.D\022_ICB.D#

Date Acquired:	Nov 16 2016 12:28 pm	Sample Name:	**ICB1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Instrument:	ICPMS3

QC Elements

Element				Conc.		RSD(%)	High Limit	Flag
7	Li	2	45	0.07	ppb	6.74	2.00	
9	Be	2	45	0.03	ppb	8.27	0.40	
11	B	2	45	1.12	ppb	1.34	10.00	
23	Na	1	45	3.11	ppb	1.93	50.00	
24	Mg	1	45	3.18	ppb	44.76	50.00	
27	Al	1	45	13.72	ppb	9.63	50.00	Failaq
39	K	1	45	0.53	ppb	4.24	50.00	
44	Ca	2	45	-2.97	ppb	8.71	50.00	
47	Ti	1	45	0.10	ppb	86.59	4.00	
51	V	1	45	0.06	ppb	18.96	4.00	
52	Cr	1	45	0.04	ppb	12.40	2.00	
55	Mn	1	45	0.08	ppb	24.14	2.00	
56	Fe	1	72	3.12	ppb	41.56	50.00	
59	Co	1	72	0.04	ppb	30.04	2.00	
60	Ni	1	72	-0.05	ppb	13.97	2.00	
63	Cu	1	72	-0.03	ppb	6.90	2.00	
66	Zn	1	72	0.21	ppb	22.62	4.00	
75	As	1	72	0.07	ppb	5.55	2.00	
78	Se	1	72	0.30	ppb	39.97	0.60	
88	Sr	2	115	0.01	ppb	13.91	4.00	
95	Mo	2	115	0.16	ppb	18.27	2.00	
107	Ag	2	115	0.03	ppb	35.78	0.40	
111	Cd	2	115	0.02	ppb	9.31	0.40	
118	Sn	2	115	0.05	ppb	12.84	20.00	
121	Sb	2	115	0.01	ppb	16.37	2.00	
137	Ba	2	115	0.03	ppb	30.74	2.00	
205	Tl	2	209	0.06	ppb	9.03	2.00	
208	Pb	2	209	0.05	ppb	11.52	0.40	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2 RHig	-4.19	######	23.38	-17.9	70 - 120	ISFail
45	Sc	1	105863.35	0.92	90770.48	116.6	70 - 120	
45	Sc	2	3961297.00	0.29	4095698.00	96.7	70 - 120	
72	Ge	1	54610.23	0.56	47835.73	114.2	70 - 120	
115	In	2	6298239.50	1.06	6191712.50	101.7	70 - 120	
209	Bi	2	5745486.50	0.89	5622254.50	102.2	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\033CCV1.D\033CCV1.D#

Date Acquired:	Nov 16 2016 01:35 pm	Sample Name:	**CCV1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	221.30	ppb	1.98	200.00	90 -	110	110.7	Fail
9	Be	2	45	208.70	ppb	1.77	200.00	90 -	110	104.4	
11	B	2	45	197.80	ppb	0.59	200.00	90 -	110	98.9	
23	Na	1	45	5550.00	ppb	0.31	5000.00	90 -	110	111.0	Fail
24	Mg	1	45	5094.00	ppb	1.24	5000.00	90 -	110	101.9	
27	Al	1	45	5319.00	ppb	0.75	5000.00	90 -	110	106.4	
39	K	1	45	5369.00	ppb	0.86	5000.00	90 -	110	107.4	
44	Ca	2	45	5082.00	ppb	0.86	5000.00	90 -	110	101.6	
47	Ti	1	45	205.90	ppb	0.84	200.00	90 -	110	103.0	
51	V	1	45	207.40	ppb	0.74	200.00	90 -	110	103.7	
52	Cr	1	45	210.30	ppb	0.61	200.00	90 -	110	105.2	
55	Mn	1	45	219.60	ppb	0.21	200.00	90 -	110	109.8	
56	Fe	1	72	5327.00	ppb	1.42	5000.00	90 -	110	106.5	
59	Co	1	72	209.80	ppb	0.80	200.00	90 -	110	104.9	
60	Ni	1	72	211.90	ppb	0.90	200.00	90 -	110	106.0	
63	Cu	1	72	211.20	ppb	0.56	200.00	90 -	110	105.6	
66	Zn	1	72	223.50	ppb	1.33	200.00	90 -	110	111.8	Fail
75	As	1	72	217.60	ppb	0.84	200.00	90 -	110	108.8	
78	Se	1	72	228.00	ppb	1.97	200.00	90 -	110	114.0	Fail
88	Sr	2	115	215.90	ppb	0.31	200.00	90 -	110	108.0	
95	Mo	2	115	208.90	ppb	0.84	200.00	90 -	110	104.5	
107	Ag	2	115	211.20	ppb	1.16	200.00	90 -	110	105.6	
111	Cd	2	115	208.80	ppb	1.28	200.00	90 -	110	104.4	
118	Sn	2	115	212.20	ppb	1.60	200.00	90 -	110	106.1	
121	Sb	2	115	209.10	ppb	1.13	200.00	90 -	110	104.6	
137	Ba	2	115	205.30	ppb	0.66	200.00	90 -	110	102.7	
205	Tl	2	209	215.60	ppb	1.55	200.00	90 -	110	107.8	
208	Pb	2	209	211.30	ppb	0.45	200.00	90 -	110	105.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-54481.09	2.40	23.38	-232981.1	70 -	120		ISFail
45	Sc	1	75101.60	0.94	90770.48	82.7	70 -	120		
45	Sc	2	3128611.30	0.31	4095698.00	76.4	70 -	120		
72	Ge	1	39785.70	0.79	47835.73	83.2	70 -	120		
115	In	2	4811983.50	1.99	6191712.50	77.7	70 -	120		
209	Bi	2	4366653.50	0.54	5622254.50	77.7	70 -	120		

CCB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\034_CCB.D\034_CCB.D#

Date Acquired:	Nov 16 2016 01:41 pm	Sample Name:	**CCB1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.232	ppb	2.72	2.00	2.00	
9	Be	2	45	0.192	ppb	14.94	0.40	0.30	
11	B	2	45	4.617	ppb	1.72	10.00	10.00	
23	Na	1	45	145.400	ppb	3.38	50.00	#####	Failsoil
24	Mg	1	45	5.221	ppb	9.33	50.00	#####	
27	Al	1	45	16.290	ppb	2.60	50.00	10.00	FailAq
39	K	1	45	9.520	ppb	4.06	50.00	#####	
44	Ca	2	45	7.488	ppb	3.20	50.00	#####	
47	Ti	1	45	0.125	ppb	173.20	4.00	3.00	
51	V	1	45	0.206	ppb	2.94	4.00	3.00	
52	Cr	1	45	0.202	ppb	11.75	2.00	2.00	
55	Mn	1	45	0.275	ppb	10.22	2.00	3.00	
56	Fe	1	72	5.460	ppb	4.33	50.00	30.00	
59	Co	1	72	0.219	ppb	0.85	2.00	3.00	
60	Ni	1	72	0.102	ppb	2.52	2.00	3.00	
63	Cu	1	72	0.171	ppb	9.48	2.00	2.00	
66	Zn	1	72	0.665	ppb	17.04	4.00	2.00	
75	As	1	72	0.252	ppb	15.07	2.00	2.00	
78	Se	1	72	0.408	ppb	10.19	0.60	2.00	
88	Sr	2	115	0.197	ppb	5.20	4.00	3.00	
95	Mo	2	115	0.410	ppb	7.08	2.00	2.00	
107	Ag	2	115	0.168	ppb	7.57	0.40	1.00	
111	Cd	2	115	0.203	ppb	9.05	0.40	0.30	
118	Sn	2	115	0.341	ppb	6.09	20.00	3.00	
121	Sb	2	115	0.546	ppb	3.34	2.00	0.80	
137	Ba	2	115	0.193	ppb	15.11	2.00	3.00	
205	Tl	2	209	0.411	ppb	2.67	2.00	0.50	
208	Pb	2	209	0.191	ppb	7.93	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-39.26	20.31	23.38	-167.9	70 - 120	ISFail
45	Sc	1		73997.24	1.42	90770.48	81.5	70 - 120	
45	Sc	2		3061413.00	1.31	4095698.00	74.7	70 - 120	
72	Ge	1		39921.27	1.06	47835.73	83.5	70 - 120	
115	In	2		4756063.00	0.57	6191712.50	76.8	70 - 120	
209	Bi	2		4354632.00	1.12	5622254.50	77.5	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\035LCVL.D\035LCVL.D#

Date Acquired:	Nov 16 2016 01:47 pm	Sample Name:	**LCVL1-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	10.14	ppb	1.28	10.00	70 -	130	101.4	
9	Be	2	45	1.09	ppb	6.17	1.00	70 -	130	109.2	
11	B	2	45	21.56	ppb	1.99	20.00	70 -	130	107.8	
23	Na	1	45	211.60	ppb	1.36	100.00	70 -	130	211.6	Fail
24	Mg	1	45	101.30	ppb	1.29	100.00	70 -	130	101.3	
27	Al	1	45	100.90	ppb	3.89	100.00	70 -	130	100.9	
39	K	1	45	110.50	ppb	1.53	100.00	70 -	130	110.5	
44	Ca	2	45	104.00	ppb	0.21	100.00	70 -	130	104.0	
47	Ti	1	45	5.07	ppb	2.13	5.00	70 -	130	101.3	
51	V	1	45	1.13	ppb	2.40	1.00	70 -	130	113.2	
52	Cr	1	45	5.29	ppb	2.07	5.00	70 -	130	105.7	
55	Mn	1	45	5.52	ppb	2.44	5.00	70 -	130	110.5	
56	Fe	1	72	102.30	ppb	1.35	100.00	70 -	130	102.3	
59	Co	1	72	5.08	ppb	1.48	5.00	70 -	130	101.6	
60	Ni	1	72	5.21	ppb	1.33	5.00	70 -	130	104.3	
63	Cu	1	72	5.24	ppb	0.53	5.00	70 -	130	104.8	
66	Zn	1	72	5.61	ppb	2.33	5.00	70 -	130	112.3	
75	As	1	72	5.33	ppb	2.44	5.00	70 -	130	106.5	
78	Se	1	72	6.12	ppb	3.95	5.00	70 -	130	122.3	
88	Sr	2	115	5.12	ppb	3.15	5.00	70 -	130	102.5	
95	Mo	2	115	5.12	ppb	2.22	5.00	70 -	130	102.4	
107	Ag	2	115	2.07	ppb	5.31	2.00	70 -	130	103.3	
111	Cd	2	115	1.12	ppb	8.34	1.00	70 -	130	112.0	
118	Sn	2	115	5.39	ppb	2.15	5.00	70 -	130	107.8	
121	Sb	2	115	2.33	ppb	0.78	2.00	70 -	130	116.3	
137	Ba	2	115	5.00	ppb	1.88	5.00	70 -	130	100.1	
205	Tl	2	209	1.14	ppb	3.62	1.00	70 -	130	113.6	
208	Pb	2	209	1.07	ppb	3.09	1.00	70 -	130	107.2	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2 RHigl	-1612.30	9.05	23.38	-6894.8	70 -	120	ISFail
45	Sc	1	76576.46	0.81	90770.48	84.4	70 -	120	
45	Sc	2	3110479.00	0.96	4095698.00	75.9	70 -	120	
72	Ge	1	41515.24	0.80	47835.73	86.8	70 -	120	
115	In	2	4836370.50	1.36	6191712.50	78.1	70 -	120	
209	Bi	2	4455664.00	1.55	5622254.50	79.3	70 -	120	

PB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\036__PB.D\036__PB.D#

Date Acquired:	Nov 16 2016 01:53 pm	Sample Name:	MB-77913
Acq. Method:	DHL_3Fe.M	Misc Info:	MBLKICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	MDL	RL	Flag
7	Li	2	45	0.143	ppb	6.80	2.0	5.00	
9	Be	2	45	0.029	ppb	15.02	0.3	1.00	
11	B	2	45	23.090	ppb	4.39	10.0	30.00	J
23	Na	1	45	86.320	ppb	3.78	100.0	#####	
24	Mg	1	45	16.490	ppb	6.40	100.0	#####	
27	Al	1	45	140.400	ppb	2.73	10.0	30.00	Fail
39	K	1	45	18.660	ppb	1.81	100.0	#####	
44	Ca	2	45	301.200	ppb	0.92	100.0	#####	Fail
47	Ti	1	45	0.256	ppb	57.72	3.0	10.00	
51	V	1	45	0.144	ppb	15.48	3.0	10.00	
52	Cr	1	45	0.198	ppb	6.70	2.0	5.00	
55	Mn	1	45	0.333	ppb	4.22	3.0	10.00	
56	Fe	1	72	5.643	ppb	3.52	30.0	#####	
59	Co	1	72	0.048	ppb	15.64	3.0	10.00	
60	Ni	1	72	-0.034	ppb	16.50	3.0	10.00	
63	Cu	1	72	0.085	ppb	7.12	2.0	10.00	
66	Zn	1	72	2.415	ppb	5.56	2.0	5.00	J
75	As	1	72	0.074	ppb	30.59	2.0	5.00	
78	Se	1	72	0.175	ppb	71.84	2.0	5.00	
88	Sr	2	115	2.063	ppb	2.11	3.0	10.00	
95	Mo	2	115	0.092	ppb	9.55	2.0	5.00	
107	Ag	2	115	0.038	ppb	8.55	1.0	2.00	
111	Cd	2	115	0.030	ppb	30.41	0.3	1.00	
118	Sn	2	115	0.058	ppb	5.52	3.0	10.00	
121	Sb	2	115	0.163	ppb	10.43	0.8	2.50	
137	Ba	2	115	0.456	ppb	7.87	3.0	10.00	
205	Tl	2	209	0.069	ppb	2.52	0.5	1.50	
208	Pb	2	209	0.083	ppb	2.33	0.3	1.00	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHig	-23.25	60.04	23.38	-99.4	70 - 120	ISFail
45	Sc	1		78779.15	0.59	90770.48	86.8	70 - 120	
45	Sc	2		3126302.80	0.62	4095698.00	76.3	70 - 120	
72	Ge	1		42207.38	0.46	47835.73	88.2	70 - 120	
115	In	2		4894609.50	1.47	6191712.50	79.1	70 - 120	
209	Bi	2		4485356.50	0.45	5622254.50	79.8	70 - 120	

LCS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\037_LCS.D\037_LCS.D#

Date Acquired:	Nov 16 2016 01:59 pm	Sample Name:	**LCS-77913**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.70	ppb	0.66	200.00	80 -	120	97.9	
9	Be	2	45	190.70	ppb	0.51	200.00	80 -	120	95.4	
11	B	2	45	193.70	ppb	1.62	200.00	80 -	120	96.9	
23	Na	1	45	5152.00	ppb	1.29	5000.00	80 -	120	103.0	
24	Mg	1	45	4827.00	ppb	0.95	5000.00	80 -	120	96.5	
27	Al	1	45	5060.00	ppb	0.67	5000.00	80 -	120	101.2	
39	K	1	45	4987.00	ppb	0.39	5000.00	80 -	120	99.7	
44	Ca	2	45	4988.00	ppb	1.72	5000.00	80 -	120	99.8	
47	Ti	1	45	200.30	ppb	3.05	200.00	80 -	120	100.2	
51	V	1	45	195.80	ppb	0.52	200.00	80 -	120	97.9	
52	Cr	1	45	196.90	ppb	1.04	200.00	80 -	120	98.5	
55	Mn	1	45	205.00	ppb	0.89	200.00	80 -	120	102.5	
56	Fe	1	72	4946.00	ppb	1.49	5000.00	80 -	120	98.9	
59	Co	1	72	194.80	ppb	1.17	200.00	80 -	120	97.4	
60	Ni	1	72	197.10	ppb	1.52	200.00	80 -	120	98.6	
63	Cu	1	72	197.80	ppb	0.68	200.00	80 -	120	98.9	
66	Zn	1	72	210.60	ppb	1.44	200.00	80 -	120	105.3	
75	As	1	72	201.90	ppb	0.68	200.00	80 -	120	101.0	
78	Se	1	72	212.40	ppb	1.24	200.00	80 -	120	106.2	
88	Sr	2	115	202.10	ppb	1.55	200.00	80 -	120	101.1	
95	Mo	2	115	194.00	ppb	0.94	200.00	80 -	120	97.0	
107	Ag	2	115	189.90	ppb	0.59	200.00	80 -	120	95.0	
111	Cd	2	115	194.00	ppb	1.87	200.00	80 -	120	97.0	
118	Sn	2	115	195.90	ppb	1.93	200.00	80 -	120	98.0	
121	Sb	2	115	191.10	ppb	1.83	200.00	80 -	120	95.6	
137	Ba	2	115	193.30	ppb	0.89	200.00	80 -	120	96.7	
205	Tl	2	209	201.10	ppb	0.56	200.00	80 -	120	100.6	
208	Pb	2	209	192.60	ppb	0.78	200.00	80 -	120	96.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47051.68	1.35	23.38	-201210.2	70 -	120	ISFail
45	Sc	1	76791.60	0.33	90770.48	84.6	70 -	120	
45	Sc	2	3089002.30	0.73	4095698.00	75.4	70 -	120	
72	Ge	1	40839.87	0.92	47835.73	85.4	70 -	120	
115	In	2	4794189.50	1.15	6191712.50	77.4	70 -	120	
209	Bi	2	4398718.50	0.41	5622254.50	78.2	70 -	120	

LCS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\038_LCS.D\038_LCS.D#

Date Acquired:	Nov 16 2016 02:05 pm	Sample Name:	**LCSD-77913**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCSDICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	1.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.60	ppb	1.27	200.00	80 -	120	97.8	
9	Be	2	45	192.30	ppb	1.18	200.00	80 -	120	96.2	
11	B	2	45	190.40	ppb	0.75	200.00	80 -	120	95.2	
23	Na	1	45	5154.00	ppb	1.38	5000.00	80 -	120	103.1	
24	Mg	1	45	4876.00	ppb	1.33	5000.00	80 -	120	97.5	
27	Al	1	45	5013.00	ppb	1.07	5000.00	80 -	120	100.3	
39	K	1	45	5054.00	ppb	0.60	5000.00	80 -	120	101.1	
44	Ca	2	45	4970.00	ppb	1.99	5000.00	80 -	120	99.4	
47	Ti	1	45	195.90	ppb	2.18	200.00	80 -	120	98.0	
51	V	1	45	194.20	ppb	1.00	200.00	80 -	120	97.1	
52	Cr	1	45	194.30	ppb	1.04	200.00	80 -	120	97.2	
55	Mn	1	45	202.70	ppb	1.96	200.00	80 -	120	101.4	
56	Fe	1	72	4880.00	ppb	1.27	5000.00	80 -	120	97.6	
59	Co	1	72	191.90	ppb	0.62	200.00	80 -	120	96.0	
60	Ni	1	72	195.90	ppb	1.15	200.00	80 -	120	98.0	
63	Cu	1	72	195.50	ppb	0.62	200.00	80 -	120	97.8	
66	Zn	1	72	207.90	ppb	2.36	200.00	80 -	120	104.0	
75	As	1	72	201.00	ppb	0.63	200.00	80 -	120	100.5	
78	Se	1	72	205.90	ppb	0.74	200.00	80 -	120	103.0	
88	Sr	2	115	199.70	ppb	1.81	200.00	80 -	120	99.9	
95	Mo	2	115	193.80	ppb	1.78	200.00	80 -	120	96.9	
107	Ag	2	115	190.20	ppb	1.33	200.00	80 -	120	95.1	
111	Cd	2	115	193.00	ppb	1.50	200.00	80 -	120	96.5	
118	Sn	2	115	196.80	ppb	1.69	200.00	80 -	120	98.4	
121	Sb	2	115	193.20	ppb	1.77	200.00	80 -	120	96.6	
137	Ba	2	115	191.20	ppb	2.34	200.00	80 -	120	95.6	
205	Tl	2	209	196.80	ppb	2.73	200.00	80 -	120	98.4	
208	Pb	2	209	191.70	ppb	2.96	200.00	80 -	120	95.9	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47734.52	3.69	23.38	-204130.3	70 -	120	ISFail
45	Sc	1	78607.66	0.85	90770.48	86.6	70 -	120	
45	Sc	2	3078442.00	2.00	4095698.00	75.2	70 -	120	
72	Ge	1	41923.94	1.66	47835.73	87.6	70 -	120	
115	In	2	4774978.50	1.25	6191712.50	77.1	70 -	120	
209	Bi	2	4418151.50	2.45	5622254.50	78.6	70 -	120	

DT QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\041DT1.D\041DT1.D#

Date Acquired:	Nov 16 2016 02:24 pm	Sample Name:	**1611028-26A SD**
Acq. Method:	DHL_3Fe.M	Misc Info:	SD ICPMS_TW
Operator:	CVD	Bench Diln:	5.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)	Rec(%)	Flag
7	Li	2	45	0.06	ppb	10.79	-2.71	90 - 110	-10.6	
9	Be	2	45	0.02	ppb	18.94	0.05	90 - 110	232.7	
11	B	2	45	6.99	ppb	2.32	24.49	90 - 110	142.7	
23	Na	1	45	51.81	ppb	0.98	100.00	90 - 110	259.1	
24	Mg	1	45	1.63	ppb	11.89	4.56	90 - 110	179.0	
27	Al	1	45	2.30	ppb	7.65	10.14	90 - 110	113.6	
39	K	1	45	11.19	ppb	1.13	9.76	90 - 110	573.3	
44	Ca	2	45	6.24	ppb	0.90	20.25	90 - 110	154.2	
47	Ti	1	45	-0.03	ppb	173.20	0.08	90 - 110	-178.4	
51	V	1	45	0.06	ppb	7.22	0.12	90 - 110	254.3	
52	Cr	1	45	0.08	ppb	13.03	0.11	90 - 110	344.4	
55	Mn	1	45	1.20	ppb	11.44	0.19	90 - 110	3179.4	
56	Fe	1	72	16.92	ppb	0.86	4.56	90 - 110	1855.7	
59	Co	1	72	0.04	ppb	14.40	0.09	90 - 110	243.1	
60	Ni	1	72	0.13	ppb	15.89	0.03	90 - 110	2418.9	
63	Cu	1	72	0.91	ppb	2.22	0.08	90 - 110	5947.2	
66	Zn	1	72	0.24	ppb	16.04	0.38	90 - 110	312.6	
75	As	1	72	0.06	ppb	22.50	0.11	90 - 110	266.8	
78	Se	1	72	0.33	ppb	9.09	0.35	90 - 110	472.8	
88	Sr	2	115	0.05	ppb	7.25	0.17	90 - 110	140.2	
95	Mo	2	115	0.14	ppb	12.55	0.34	90 - 110	207.3	
107	Ag	2	115	0.03	ppb	19.63	0.05	90 - 110	309.5	
111	Cd	2	115	0.02	ppb	36.97	0.05	90 - 110	186.1	
118	Sn	2	115	0.08	ppb	1.61	0.06	90 - 110	670.0	
121	Sb	2	115	0.12	ppb	12.84	0.16	90 - 110	361.9	
137	Ba	2	115	0.03	ppb	31.24	0.09	90 - 110	192.3	
205	Tl	2	209	0.09	ppb	9.90	0.14	90 - 110	343.3	
208	Pb	2	209	0.04	ppb	22.71	0.07	90 - 110	258.1	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHig	-2.71	696.51	23.38	-11.6	70 -	120	ISFail
45	Sc	1		81710.48	1.31	90770.48	90.0	70 -	120	
45	Sc	2		3181941.80	1.12	4095698.00	77.7	70 -	120	
72	Ge	1		43990.27	0.86	47835.73	92.0	70 -	120	
115	In	2		4971032.00	0.64	6191712.50	80.3	70 -	120	
209	Bi	2		4608186.00	1.31	5622254.50	82.0	70 -	120	

Sample QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\046SMPL.D\046SMPL.D#

Date Acquired:	Nov 16 2016 02:54 pm	Sample Name:	**1611053-42A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TW
Operator:	CVD	Bench Diln:	1
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	0.075	ppb	#REF!	3.56	2000.00	ND
9	Be	2	45	-0.009	ppb	#REF!	28.57	2000.00	ND
11	B	2	45	31.200	ppb	#REF!	2.35	2000.00	>RL
23	Na	1	45	114.800	ppb	#REF!	0.27	25000.00	J
24	Mg	1	45	12.440	ppb	#REF!	2.88	25000.00	ND
27	Al	1	45	95.290	ppb	#REF!	1.05	10000.00	>RL
39	K	1	45	15.990	ppb	#REF!	2.35	25000.00	ND
44	Ca	2	45	182.100	ppb	#REF!	1.24	25000.00	J
47	Ti	1	45	0.241	ppb	#REF!	33.32	2000.00	ND
51	V	1	45	0.106	ppb	#REF!	8.33	2000.00	ND
52	Cr	1	45	0.416	ppb	#REF!	7.64	2000.00	ND
55	Mn	1	45	0.344	ppb	#REF!	7.80	2000.00	ND
56	Fe	1	72	22.670	ppb	#REF!	3.74	10000.00	ND
59	Co	1	72	0.011	ppb	#REF!	10.58	2000.00	ND
60	Ni	1	72	0.055	ppb	#REF!	17.07	2000.00	ND
63	Cu	1	72	-0.040	ppb	#REF!	9.47	2000.00	ND
66	Zn	1	72	1.214	ppb	#REF!	2.50	2000.00	ND
75	As	1	72	0.059	ppb	#REF!	6.63	2000.00	ND
78	Se	1	72	0.227	ppb	#REF!	19.25	2000.00	ND
88	Sr	2	115	1.243	ppb	#REF!	2.94	2000.00	ND
95	Mo	2	115	0.045	ppb	#REF!	21.72	2000.00	ND
107	Ag	2	115	0.005	ppb	#REF!	8.33	500.00	ND
111	Cd	2	115	0.005	ppb	#REF!	37.01	2000.00	ND
118	Sn	2	115	-0.070	ppb	#REF!	8.44	2000.00	ND
121	Sb	2	115	0.042	ppb	#REF!	7.37	500.00	ND
137	Ba	2	115	1.057	ppb	#REF!	4.88	2000.00	ND
205	Tl	2	209	0.010	ppb	#REF!	9.55	2000.00	ND
208	Pb	2	209	0.045	ppb	#REF!	6.00	2000.00	ND

ISTD Elements

Element			CPS Mean	RSD(%)		Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-2.14	747.12	RHigh	23.38	-9.2	70 - 120	ISFail
45	Sc	1	82776.49	1.03		90770.48	91.2	70 - 120	
45	Sc	2	3121619.00	0.92		4095698.00	76.2	70 - 120	
72	Ge	1	44051.90	0.44		47835.73	92.1	70 - 120	
115	In	2	4917930.00	1.34		6191712.50	79.4	70 - 120	
209	Bi	2	4599651.00	0.76		5622254.50	81.8	70 - 120	

PDS QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\048_PDS.D\048_PDS.D#

Date Acquired:	Nov 16 2016 03:06 pm	Sample Name:	**1611028-26A PDS**
Acq. Method:	DHL_3Fe.M	Misc Info:	PDS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	198.40	ppb	1.25	-31101.69	200	75-125	######	Fail
9	Be	2	45	196.10	ppb	0.44	0.05	200	75-125	98.0	
11	B	2	45	199.40	ppb	2.54	24.49	200	75-125	87.5	
23	Na	1	45	5188.00	ppb	1.53	100.00	5000	75-125	101.8	
24	Mg	1	45	4804.00	ppb	1.17	4.56	5000	75-125	96.0	
27	Al	1	45	5030.00	ppb	1.38	10.14	5000	75-125	100.4	
39	K	1	45	5115.00	ppb	1.08	9.76	5000	75-125	102.1	
44	Ca	2	45	4657.00	ppb	3.52	20.25	5000	75-125	92.7	
47	Ti	1	45	195.50	ppb	3.29	0.08	200	75-125	97.7	
51	V	1	45	196.40	ppb	0.68	0.12	200	75-125	98.1	
52	Cr	1	45	203.10	ppb	1.17	0.11	200	75-125	101.5	
55	Mn	1	45	205.10	ppb	1.09	0.19	200	75-125	102.5	
56	Fe	1	72	4984.00	ppb	1.32	4.56	5000	75-125	99.6	
59	Co	1	72	194.40	ppb	1.06	0.09	200	75-125	97.2	
60	Ni	1	72	196.50	ppb	0.75	0.03	200	75-125	98.2	
63	Cu	1	72	190.80	ppb	0.55	0.08	200	75-125	95.4	
66	Zn	1	72	204.80	ppb	0.88	0.38	200	75-125	102.2	
75	As	1	72	199.30	ppb	1.05	0.11	200	75-125	99.6	
78	Se	1	72	205.30	ppb	1.45	0.35	200	75-125	102.5	
88	Sr	2	115	200.50	ppb	1.81	0.17	200	75-125	100.2	
95	Mo	2	115	190.10	ppb	2.07	0.34	200	75-125	94.9	
107	Ag	2	115	186.80	ppb	2.47	0.05	200	75-125	93.4	
111	Cd	2	115	192.30	ppb	3.06	0.05	200	75-125	96.1	
118	Sn	2	115	202.40	ppb	2.19	0.06	200	75-125	101.2	
121	Sb	2	115	189.80	ppb	1.76	0.16	200	75-125	94.8	
137	Ba	2	115	194.40	ppb	2.62	0.09	200	75-125	97.2	
205	Tl	2	209	202.80	ppb	2.31	0.14	200	75-125	101.3	
208	Pb	2	209	196.60	ppb	2.95	0.07	200	75-125	98.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-31101.69	4.76	23.38	-133002.2	70 - 120	ISFail
45	Sc	1	83978.49	0.79	90770.48	92.5	70 - 120	
45	Sc	2	3107189.80	2.26	4095698.00	75.9	70 - 120	
72	Ge	1	44375.64	0.41	47835.73	92.8	70 - 120	
115	In	2	4842685.00	1.74	6191712.50	78.2	70 - 120	
209	Bi	2	4457390.50	1.49	5622254.50	79.3	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\049_MS.D\049_MS.D#

1611028-26A MS

Date Acquired:	Nov 16 2016 03:12 pm	Sample Name:	~~1610181-01C MS~~
Acq. Method:	DHL_3Fe.M	Misc Info:	MS ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	196.80	ppb	0.66	########	200	80-120	######	Fail
9	Be	2	45	193.20	ppb	1.29	0.05	200	80-120	96.6	
11	B	2	45	212.40	ppb	3.14	24.49	200	80-120	94.0	
23	Na	1	45	5220.00	ppb	1.68	100.00	5000	80-120	102.4	
24	Mg	1	45	4791.00	ppb	1.38	4.56	5000	80-120	95.7	
27	Al	1	45	4991.00	ppb	1.42	10.14	5000	80-120	99.6	
39	K	1	45	5055.00	ppb	1.30	9.76	5000	80-120	100.9	
44	Ca	2	45	4893.00	ppb	3.49	20.25	5000	80-120	97.5	
47	Ti	1	45	188.30	ppb	2.41	0.08	200	80-120	94.1	
51	V	1	45	189.20	ppb	0.78	0.12	200	80-120	94.5	
52	Cr	1	45	190.70	ppb	1.17	0.11	200	80-120	95.3	
55	Mn	1	45	201.10	ppb	1.18	0.19	200	80-120	100.5	
56	Fe	1	72	4880.00	ppb	2.03	4.56	5000	80-120	97.5	
59	Co	1	72	190.20	ppb	1.18	0.09	200	80-120	95.1	
60	Ni	1	72	191.40	ppb	1.44	0.03	200	80-120	95.7	
63	Cu	1	72	191.30	ppb	0.95	0.08	200	80-120	95.6	
66	Zn	1	72	200.10	ppb	1.00	0.38	200	80-120	99.9	
75	As	1	72	196.50	ppb	1.11	0.11	200	80-120	98.2	
78	Se	1	72	205.90	ppb	2.13	0.35	200	80-120	102.8	
88	Sr	2	115	199.70	ppb	2.35	0.17	200	80-120	99.8	
95	Mo	2	115	191.50	ppb	1.78	0.34	200	80-120	95.6	
107	Ag	2	115	191.20	ppb	2.10	0.05	200	80-120	95.6	
111	Cd	2	115	191.20	ppb	2.12	0.05	200	80-120	95.6	
118	Sn	2	115	197.60	ppb	1.29	0.06	200	80-120	98.8	
121	Sb	2	115	191.90	ppb	2.00	0.16	200	80-120	95.9	
137	Ba	2	115	190.40	ppb	1.30	0.09	200	80-120	95.2	
205	Tl	2	209	199.40	ppb	0.67	0.14	200	80-120	99.6	
208	Pb	2	209	193.10	ppb	3.00	0.07	200	80-120	96.5	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-46741.06	0.98	23.38	########	70 - 120	ISFail
45	Sc	1	84787.74	0.31	90770.48	93.4	70 - 120	
45	Sc	2	3060665.80	1.99	4095698.00	74.7	70 - 120	
72	Ge	1	44533.09	0.64	47835.73	93.1	70 - 120	
115	In	2	4815742.00	1.01	6191712.50	77.8	70 - 120	
209	Bi	2	4452220.50	0.81	5622254.50	79.2	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\050_MS.D\050_MS.D#

1611028-26A MSD

Date Acquired:	Nov 16 2016 03:18 pm	Sample Name:	~~1610181-01C MSD~~
Acq. Method:	DHL_3Fe.M	Misc Info:	MSD ICPMS_TW
Operator:	CVD	Bench Diln:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	1.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	195.20	ppb	1.14	########	200	80-120	######	Fail
9	Be	2	45	190.50	ppb	1.55	0.05	200	80-120	95.2	
11	B	2	45	205.90	ppb	2.24	24.49	200	80-120	90.7	
23	Na	1	45	5188.00	ppb	0.78	100.00	5000	80-120	101.8	
24	Mg	1	45	4813.00	ppb	0.62	4.56	5000	80-120	96.2	
27	Al	1	45	4975.00	ppb	0.90	10.14	5000	80-120	99.3	
39	K	1	45	5062.00	ppb	0.54	9.76	5000	80-120	101.0	
44	Ca	2	45	4881.00	ppb	2.27	20.25	5000	80-120	97.2	
47	Ti	1	45	196.00	ppb	1.98	0.08	200	80-120	98.0	
51	V	1	45	191.50	ppb	0.59	0.12	200	80-120	95.7	
52	Cr	1	45	194.00	ppb	0.24	0.11	200	80-120	96.9	
55	Mn	1	45	201.30	ppb	0.50	0.19	200	80-120	100.6	
56	Fe	1	72	4958.00	ppb	0.81	4.56	5000	80-120	99.1	
59	Co	1	72	195.00	ppb	0.30	0.09	200	80-120	97.5	
60	Ni	1	72	195.80	ppb	0.62	0.03	200	80-120	97.9	
63	Cu	1	72	195.10	ppb	0.08	0.08	200	80-120	97.5	
66	Zn	1	72	204.60	ppb	1.55	0.38	200	80-120	102.1	
75	As	1	72	199.80	ppb	0.23	0.11	200	80-120	99.8	
78	Se	1	72	208.10	ppb	1.95	0.35	200	80-120	103.9	
88	Sr	2	115	197.50	ppb	2.89	0.17	200	80-120	98.7	
95	Mo	2	115	191.00	ppb	1.70	0.34	200	80-120	95.3	
107	Ag	2	115	189.60	ppb	1.97	0.05	200	80-120	94.8	
111	Cd	2	115	191.10	ppb	2.17	0.05	200	80-120	95.5	
118	Sn	2	115	197.70	ppb	1.78	0.06	200	80-120	98.8	
121	Sb	2	115	190.80	ppb	2.08	0.16	200	80-120	95.3	
137	Ba	2	115	189.30	ppb	1.20	0.09	200	80-120	94.6	
205	Tl	2	209	200.50	ppb	2.04	0.14	200	80-120	100.2	
208	Pb	2	209	191.70	ppb	1.45	0.07	200	80-120	95.8	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-46453.83	1.84	23.38	########	70 - 120	ISFail
45	Sc	1	81711.51	0.43	90770.48	90.0	70 - 120	
45	Sc	2	3042212.80	2.19	4095698.00	74.3	70 - 120	
72	Ge	1	42633.91	0.49	47835.73	89.1	70 - 120	
115	In	2	4811446.50	1.27	6191712.50	77.7	70 - 120	
209	Bi	2	4385258.00	0.90	5622254.50	78.0	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\051CCV1.D\051CCV1.D#

Date Acquired:	Nov 16 2016 03:24 pm	Sample Name:	**CCV2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	207.70	ppb	0.35	200.00	90 -	110	103.9	
9	Be	2	45	205.30	ppb	0.83	200.00	90 -	110	102.7	
11	B	2	45	190.50	ppb	2.10	200.00	90 -	110	95.3	
23	Na	1	45	5446.00	ppb	1.83	5000.00	90 -	110	108.9	
24	Mg	1	45	5071.00	ppb	1.69	5000.00	90 -	110	101.4	
27	Al	1	45	5298.00	ppb	1.34	5000.00	90 -	110	106.0	
39	K	1	45	5422.00	ppb	1.69	5000.00	90 -	110	108.4	
44	Ca	2	45	5027.00	ppb	2.35	5000.00	90 -	110	100.5	
47	Ti	1	45	212.30	ppb	1.92	200.00	90 -	110	106.2	
51	V	1	45	208.30	ppb	1.07	200.00	90 -	110	104.2	
52	Cr	1	45	210.20	ppb	1.07	200.00	90 -	110	105.1	
55	Mn	1	45	219.60	ppb	1.48	200.00	90 -	110	109.8	
56	Fe	1	72	5261.00	ppb	2.06	5000.00	90 -	110	105.2	
59	Co	1	72	206.20	ppb	1.04	200.00	90 -	110	103.1	
60	Ni	1	72	207.70	ppb	1.07	200.00	90 -	110	103.9	
63	Cu	1	72	208.10	ppb	1.11	200.00	90 -	110	104.1	
66	Zn	1	72	218.80	ppb	1.05	200.00	90 -	110	109.4	
75	As	1	72	215.60	ppb	1.11	200.00	90 -	110	107.8	
78	Se	1	72	220.70	ppb	2.39	200.00	90 -	110	110.4	Fail
88	Sr	2	115	215.80	ppb	1.83	200.00	90 -	110	107.9	
95	Mo	2	115	209.40	ppb	2.13	200.00	90 -	110	104.7	
107	Ag	2	115	213.90	ppb	2.17	200.00	90 -	110	107.0	
111	Cd	2	115	212.40	ppb	1.28	200.00	90 -	110	106.2	
118	Sn	2	115	215.30	ppb	2.03	200.00	90 -	110	107.7	
121	Sb	2	115	213.90	ppb	1.11	200.00	90 -	110	107.0	
137	Ba	2	115	210.40	ppb	1.01	200.00	90 -	110	105.2	
205	Tl	2	209	215.40	ppb	1.56	200.00	90 -	110	107.7	
208	Pb	2	209	211.30	ppb	2.81	200.00	90 -	110	105.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-48540.40	1.53	23.38	-207576.6	70 -	120		ISFail
45	Sc	1	82595.88	1.16	90770.48	91.0	70 -	120		
45	Sc	2	3021088.80	2.40	4095698.00	73.8	70 -	120		
72	Ge	1	43802.78	1.36	47835.73	91.6	70 -	120		
115	In	2	4699487.00	2.10	6191712.50	75.9	70 -	120		
209	Bi	2	4394438.50	1.36	5622254.50	78.2	70 -	120		

CCB QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\053_CCB.D\053_CCB.D#

Date Acquired:	Nov 16 2016 03:36 pm	Sample Name:	**CCB2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.164	ppb	20.76	2.00	2.00	
9	Be	2	45	0.134	ppb	14.38	0.40	0.30	
11	B	2	45	2.530	ppb	2.12	10.00	10.00	
23	Na	1	45	36.990	ppb	1.31	50.00	#####	
24	Mg	1	45	3.605	ppb	13.62	50.00	#####	
27	Al	1	45	15.900	ppb	4.48	50.00	10.00	FailAq
39	K	1	45	9.372	ppb	4.23	50.00	#####	
44	Ca	2	45	0.901	ppb	2.04	50.00	#####	
47	Ti	1	45	0.005	ppb	86.60	4.00	3.00	
51	V	1	45	0.154	ppb	18.39	4.00	3.00	
52	Cr	1	45	0.168	ppb	18.58	2.00	2.00	
55	Mn	1	45	0.219	ppb	28.75	2.00	3.00	
56	Fe	1	72	3.709	ppb	22.32	50.00	30.00	
59	Co	1	72	0.145	ppb	23.14	2.00	3.00	
60	Ni	1	72	0.036	ppb	19.40	2.00	3.00	
63	Cu	1	72	0.070	ppb	17.40	2.00	2.00	
66	Zn	1	72	0.240	ppb	16.11	4.00	2.00	
75	As	1	72	0.169	ppb	28.47	2.00	2.00	
78	Se	1	72	0.564	ppb	25.79	0.60	2.00	
88	Sr	2	115	0.105	ppb	12.62	4.00	3.00	
95	Mo	2	115	0.202	ppb	19.12	2.00	2.00	
107	Ag	2	115	0.112	ppb	20.66	0.40	1.00	
111	Cd	2	115	0.093	ppb	13.50	0.40	0.30	
118	Sn	2	115	0.173	ppb	7.18	20.00	3.00	
121	Sb	2	115	0.268	ppb	12.56	2.00	0.80	
137	Ba	2	115	0.120	ppb	14.70	2.00	3.00	
205	Tl	2	209	0.214	ppb	8.17	2.00	0.50	
208	Pb	2	209	0.136	ppb	17.50	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-41.11	37.85	23.38	-175.8	70 - 120	ISFail
45	Sc	1		83184.97	0.95	90770.48	91.6	70 - 120	
45	Sc	2		3064456.80	0.50	4095698.00	74.8	70 - 120	
72	Ge	1		44409.53	0.79	47835.73	92.8	70 - 120	
115	In	2		4842320.00	1.15	6191712.50	78.2	70 - 120	
209	Bi	2		4498236.50	0.41	5622254.50	80.0	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\054LCVL.D\054LCVL.D#

Date Acquired:	Nov 16 2016 03:43 pm	Sample Name:	**LCVL2-161116**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	CVD	Diln Factor:	1.00
Last Cal. Update:	Nov 16 2016 11:25 am		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.77	ppb	0.89	10.00	70 -	130	97.7	
9	Be	2	45	1.04	ppb	2.99	1.00	70 -	130	103.7	
11	B	2	45	20.70	ppb	2.05	20.00	70 -	130	103.5	
23	Na	1	45	129.30	ppb	0.61	100.00	70 -	130	129.3	
24	Mg	1	45	98.44	ppb	1.58	100.00	70 -	130	98.4	
27	Al	1	45	103.00	ppb	1.39	100.00	70 -	130	103.0	
39	K	1	45	113.60	ppb	3.31	100.00	70 -	130	113.6	
44	Ca	2	45	98.83	ppb	0.90	100.00	70 -	130	98.8	
47	Ti	1	45	5.91	ppb	18.93	5.00	70 -	130	118.3	
51	V	1	45	1.07	ppb	7.04	1.00	70 -	130	106.9	
52	Cr	1	45	5.24	ppb	2.35	5.00	70 -	130	104.7	
55	Mn	1	45	5.72	ppb	1.82	5.00	70 -	130	114.4	
56	Fe	1	72	101.80	ppb	0.80	100.00	70 -	130	101.8	
59	Co	1	72	5.00	ppb	0.66	5.00	70 -	130	99.9	
60	Ni	1	72	5.17	ppb	2.72	5.00	70 -	130	103.4	
63	Cu	1	72	4.98	ppb	2.25	5.00	70 -	130	99.5	
66	Zn	1	72	5.81	ppb	6.81	5.00	70 -	130	116.2	
75	As	1	72	5.37	ppb	1.86	5.00	70 -	130	107.4	
78	Se	1	72	5.64	ppb	8.49	5.00	70 -	130	112.8	
88	Sr	2	115	4.98	ppb	1.61	5.00	70 -	130	99.6	
95	Mo	2	115	4.96	ppb	2.42	5.00	70 -	130	99.3	
107	Ag	2	115	2.04	ppb	2.57	2.00	70 -	130	102.0	
111	Cd	2	115	1.05	ppb	7.89	1.00	70 -	130	105.0	
118	Sn	2	115	5.29	ppb	1.48	5.00	70 -	130	105.8	
121	Sb	2	115	2.16	ppb	3.05	2.00	70 -	130	107.9	
137	Ba	2	115	5.03	ppb	3.01	5.00	70 -	130	100.5	
205	Tl	2	209	1.09	ppb	0.52	1.00	70 -	130	109.0	
208	Pb	2	209	1.04	ppb	1.93	1.00	70 -	130	104.2	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2 RHigl	-1331.39	6.76	23.38	-5693.5	70 -	120	ISFail
45	Sc	1	83820.43	1.91	90770.48	92.3	70 -	120	
45	Sc	2	3092937.80	1.04	4095698.00	75.5	70 -	120	
72	Ge	1	44883.67	0.58	47835.73	93.8	70 -	120	
115	In	2	4854223.00	1.97	6191712.50	78.4	70 -	120	
209	Bi	2	4527704.00	1.02	5622254.50	80.5	70 -	120	

ICP-MS4
For

DHL Work Order
1611053

ICP-MS4_161111D
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS4_161111D SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			x
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			
P/A Factor	Before ICAL	Increasing trend	X			x
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			x
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			x
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit			X	
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X			
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125 / 80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			x
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted			X	
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	x
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: _____ Date of Completion: 11/14/2016

Second-Level Review: Janice Whitt Date Stamp: 11/14/2016

REVIEWED BY
By Janice Whitt at 10:30:06 AM, 11/14/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161111D **Run No.:** 88958

Analytical Run Date: 11/11/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:49:00 AM		
L2-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:51:00 AM		
L-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:53:00 AM		
10X-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:55:00 AM		
5X-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:57:00 AM		
2X-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 9:59:00 AM		
H-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 10:01:00 AM		
H2-161111	1	ICPMS_TWDOD	CAL	R88958	11/11/2016 10:03:00 AM		
ICSA-161111	1	ICPMS_TWDOD	ICSA	R88958	11/11/2016 10:09:00 AM		
ICSAB-161111	1	ICPMS_TWDOD	ICSB	R88958	11/11/2016 10:11:00 AM		
ICV-161111	1	ICPMS_TWDOD	ICV	R88958	11/11/2016 10:18:00 AM		
LCVL-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 10:24:00 AM		
ICB-161111	1	ICPMS_TWDOD	ICB	R88958	11/11/2016 10:29:00 AM		
CCV4-161111	1	ICPMS_TWDOD	CCV	R88958	11/11/2016 1:11:00 PM		
LCVL4-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 1:15:00 PM		
CCB4-161111	1	ICPMS_TWDOD	CCB	R88958	11/11/2016 1:20:00 PM		
MB-77842	5	ICPMS_TSDOD1	MBLK	77842	11/11/2016 1:22:00 PM		
LCS-77842	5	ICPMS_TSDOD1	LCS	77842	11/11/2016 1:24:00 PM		
LCSD-77842	5	ICPMS_TSDOD1	LCSD	77842	11/11/2016 1:26:00 PM		
1611053-16A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:30:00 PM		
1611053-16A SD	25	ICPMS_TSDOD1	SD	77842	11/11/2016 1:32:00 PM		
1611044-14A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:34:00 PM		
1611044-15A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:36:00 PM		
1611044-18A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:38:00 PM		
1611044-21A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:40:00 PM		
1611053-01A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:42:00 PM		
1611053-06A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:44:00 PM		
1611053-11A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:46:00 PM		
1611053-21A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:48:00 PM		
1611053-26A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 1:50:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		11/21/2016
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161111D **Run No.:** 88958

1611053-16A PDS	5	ICPMS_TSDOD1	PDS	77842	11/11/2016 1:52:00 PM		
1611053-16A MS	5	ICPMS_TSDOD1	MS	77842	11/11/2016 1:54:00 PM		
1611053-16A MSD	5	ICPMS_TSDOD1	MSD	77842	11/11/2016 1:56:00 PM		
CCV5-161111	1	ICPMS_TWDOD	CCV	R88958	11/11/2016 1:58:00 PM		
LCVL5-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 2:02:00 PM		
CCB5-161111	1	ICPMS_TWDOD	CCB	R88958	11/11/2016 2:11:00 PM		
1611053-31A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:13:00 PM		
1611053-36A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:15:00 PM		
1611053-41A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:17:00 PM		
1611071-01A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:19:00 PM		
1611071-04A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:21:00 PM		
1611071-08A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:23:00 PM		
1611071-11A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:25:00 PM		
1611071-16A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:27:00 PM		
1611071-21A	5	ICPMS_TSDOD1	SAMP	77842	11/11/2016 2:29:00 PM		
CCV6-161111	1	ICPMS_TWDOD	CCV	R88958	11/11/2016 2:31:00 PM		
LCVL6-161111	1	ICPMS_TWDOD	LCVL	R88958	11/11/2016 2:35:00 PM		
CCB6-161111	1	ICPMS_TWDOD	CCB	R88958	11/11/2016 2:55:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		11/21/2016
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\161111.b

Acquisition Order

#	Sequence Flow
1	Calibration Standards
2	Unknown Samples
3	Blank Samples

Calibration Standards:

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
1	CCB		CAL ICPMS_TW		1101	
2	CCB		CAL ICPMS_TW		1101	
3	CCB		CAL ICPMS_TW		1101	
4	CCB		CAL ICPMS_TW		1102	
5	CCB		CAL ICPMS_TW		1102	
6	CCB		CAL ICPMS_TW		1102	
7	CCB		CAL ICPMS_TW		1102	
8	CCB		CAL ICPMS_TW		1103	
9	CCB		CAL ICPMS_TW		1103	
10	CCB		CAL ICPMS_TW		1103	
11	CCB		CAL ICPMS_TW		1103	
12	CalBlk	BLANK STD 1	CAL ICPMS_TW	1	2101	
13	CalStd	L2-161111	CAL ICPMS_TW	2	2102	
14	CalStd	L-161111	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161111	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161111	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161111	CAL ICPMS_TW	6	2106	
18	CalStd	H-161111	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161111	CAL ICPMS_TW	8	2108	
20	ICB	BLANK	CCB ICPMS_TW		1101	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
21	ICB	BLANK	CCB ICPMS_TW		1102	
22	ICSA	ICSA-161111	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-161111	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-161111	ICV ICPMS_TW		2111	
27	ICB	ICB-161111	ICB ICPMS_TW		1101	
28	ICB	ICB-161111	ICB ICPMS_TW		1103	
29	LLICV	LCVL-161111	LCVLICPMS_TW		2112	
30	ICB	ICB-161111	ICB ICPMS_TW		1102	
31	ICB	ICB-161111	ICB ICPMS_TW		1103	
32	PB_W	MB-77850	MBLKTCLP_MET		2201	1
33	PB_W	MB-77840-TCLP	MBLKTCLP_MET		2202	1
34	LCS_W	LCS-77850	LCS TCLP_MET		2203	1
35	LCS_W	LCSD-77850	LCSDTCLP_MET		2204	1
36	CCB	RINSE	CCB ICPMS_TW		1101	
37	AllRef	1611031-01A	SAMPTCLP_MET		2205	1
38	SD	1611031-01A SD	SD TCLP_MET		2206	5
39	SAMP_W	1611072-01A	SAMPTCLP_MET		2207	1
40	PDS	1611031-01A PDS	PDS TCLP_MET		2208	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	MS_W	1611031-01A MS	MS TCLP_MET		2209	1
42	MS_W	1611031-01A MSD	MSD TCLP_MET		2210	1
43	CCB	RINSE	CCB ICPMS_TW		1101	
44	CCB	RINSE	CCB ICPMS_TW		1102	
45	CCB	RINSE	CCB ICPMS_TW		1103	
46	SAMP_W	1611026-08B	SAMPICPMS_DW		2301	100
47	SAMP_W	1611026-09B	SAMPICPMS_DW		2302	100

Sample List

48	SAMP_W	1611026-10B	SAMPICPMS_DW		2303	500
49	SAMP_W	1611026-10B	SAMPICPMS_DW		2304	100
50	SAMP_W	1611026-11B	SAMPICPMS_DW		2305	100
51	CCV	CCV1-161111	CCV ICPMS_TW		1207	
52	CCB	CCB1-161111	CCB ICPMS_TW		1102	
53	LLCCV	LCVL1-161111	LCVLICPMS_TW		2112	
54	CCB	CCB1-161111	CCB ICPMS_TW		1103	
55	PB_W	MB-77843	MBLK6020A_W		3101	1
56	LCS_W	LCS-77843	LCS 6020A_W		3102	1
57	LCS_W	LCSD-77843	LCSD6020A_W		3103	1
58	CCB	RINSE	CCB ICPMS_TW		1101	
59	AllRef	1611070-12A	SAMP6020A_W		3104	1
60	SD	1611070-12A SD	SD 6020A_W		3105	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	SAMP_W	1611067-01A	SAMPICPMS_TW		3106	10
62	SAMP_W	1611067-02A	SAMPICPMS_TW		3107	100
63	SAMP_W	1611067-03A	SAMPICPMS_TW		3108	10
64	SAMP_W	1611083-01A	SAMPICPMS_TW		3109	10
65	SAMP_W	1611070-01A	SAMP6020A_W		3110	1
66	SAMP_W	1611070-02A	SAMP6020A_W		3111	1
67	SAMP_W	1611070-03A	SAMP6020A_W		3112	1
68	SAMP_W	1611070-04A	SAMP6020A_W		3201	1
69	SAMP_W	1611070-05A	SAMP6020A_W		3202	1
70	PDS	1611070-12A PDS	PDS 6020A_W		3203	1
71	MS_W	1611070-12A MS	MS 6020A_W		3204	1
72	MS_W	1611070-12A MSD	MSD 6020A_W		3205	1
73	CCV	CCV2-161111	CCV ICPMS_TW		1207	
74	CCB	CCB2-161111	CCB ICPMS_TW		1102	
75	LLCCV	LCVL2-161111	LCVLICPMS_TW		2112	
76	CCB	CCB2-161111	CCB ICPMS_TW		1103	

Sample List

77	SAMP_W	1611083-01A	SAMPICPMS_TW		2401	1
78	SAMP_W	1611070-06A	SAMP6020A_W		3206	1
79	SAMP_W	1611070-07A	SAMP6020A_W		3207	1
80	SAMP_W	1611070-08A	SAMP6020A_W		3208	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	SAMP_W	1611070-09A	SAMP6020A_W		3209	1
82	SAMP_W	1611070-10A	SAMP6020A_W		3210	1
83	SAMP_W	1611070-11A	SAMP6020A_W		3211	1
84	SAMP_W	1611070-13A	SAMP6020A_W		3212	1
85	SAMP_W	1611070-14A	SAMP6020A_W		3301	1
86	SAMP_W	1611070-15A	SAMP6020A_W		3302	1
87	CCB	RINSE	CCB ICPMS_TW		1102	
88	CCB	RINSE	CCB ICPMS_TW		1103	
89	CCV	CCV3-161111	CCV ICPMS_TW		1207	
90	CCB	CCB3-161111	CCB ICPMS_TW		1102	
91	LLCCV	LCVL3-161111	LCVLICPMS_TW		2512	
92	CCB	CCB3-161111	CCB ICPMS_TW		1103	
93	SAMP_W	1611070-16A	SAMP6020A_W		3303	1
94	CCV	CCV4-161111	CCV ICPMS_TW		1207	
95	CCB	CCB4-161111	CCB ICPMS_TW		1102	
96	LLCCV	LCVL4-161111	LCVLICPMS_TW		2512	
97	CCB	CCB4-161111	CCB ICPMS_TW		1103	
98	PB	MB-77842	MBLKICPMS_TSDOD1		4101	5
99	LCS_S	LCS-77842	LCS ICPMS_TSDOD1		4102	5
100	LCS_S	LCSD-77842	LCSDICPMS_TSDOD1		4103	5

#	Skip
81	
82	
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Sample List

84
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93 Skip
94 Skip
95 Skip
96 Skip
97 Skip
98 Skip
99 Skip
100 Skip

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	CCB	RINSE	CCB ICPMS_TW		1101	
102	AllRef	1611053-16A	SAMPICPMS_TSDOD1		4104	5
103	SD	1611053-16A SD	SD ICPMS_TSDOD1		4105	25
104	Sample	1611044-14A	SAMPICPMS_TSDOD1		4106	5
105	Sample	1611044-15A	SAMPICPMS_TSDOD1		4107	5
106	Sample	1611044-18A	SAMPICPMS_TSDOD1		4108	5
107	Sample	1611044-21A	SAMPICPMS_TSDOD1		4109	5
108	Sample	1611053-01A	SAMPICPMS_TSDOD1		4110	5
109	Sample	1611053-06A	SAMPICPMS_TSDOD1		4111	5
110	Sample	1611053-11A	SAMPICPMS_TSDOD1		4112	5
111	Sample	1611053-21A	SAMPICPMS_TSDOD1		4201	5
112	Sample	1611053-26A	SAMPICPMS_TSDOD1		4202	5
113	PDS	1611053-16A PDS	PDS ICPMS_TSDOD1		4203	5
114	MS_S	1611053-16A MS	MS ICPMS_TSDOD1		4204	5
115	MS_S	1611053-16A MSD	MSD ICPMS_TSDOD1		4205	5
116	CCV	CCV5-161111	CCV ICPMS_TW		1207	
117	CCB	CCB5-161111	CCB ICPMS_TW		1102	
118	LLCCV	LCVL5-161111	LCVLICPMS_TW		2511	
119	CCB	CCB5-161111	CCB ICPMS_TW		1102	
120	Sample	1611053-31A	SAMPICPMS_TSDOD1		4206	5

#	Skip
101	Skip
102	Skip
103	Skip
104	Skip
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106	Skip
107	Skip
108	Skip
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111	Skip
112	Skip

Sample List

113 Skip
114 Skip
115 Skip
116 Skip
117 Skip
118 Skip
119 Skip
120 Skip

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1611053-36A	SAMPICPMS_TSDOD1		4207	5
122	Sample	1611053-41A	SAMPICPMS_TSDOD1		4208	5
123	Sample	1611071-01A	SAMPICPMS_TSDOD1		4209	5
124	Sample	1611071-04A	SAMPICPMS_TSDOD1		4210	5
125	Sample	1611071-08A	SAMPICPMS_TSDOD1		4211	5
126	Sample	1611071-11A	SAMPICPMS_TSDOD1		4212	5
127	Sample	1611071-16A	SAMPICPMS_TSDOD1		4301	5
128	Sample	1611071-21A	SAMPICPMS_TSDOD1		4302	5
129	CCV	CCV6-161111	CCV ICPMS_TW		1207	
130	CCB	CCB6-161111	CCB ICPMS_TW		1102	
131	LLCCV	LCVL6-161111	LCVLICPMS_TW		2511	
132	CCB	CCB6-161111	CCB ICPMS_TW		1102	
133	CCB	CCB6-161111	CCB ICPMS_TW		1102	
134	CCB	CCB6-161111	CCB ICPMS_TW		1102	
135	CCB	CCB6-161111	CCB ICPMS_TW		1102	
136	CCB	CCB6-161111	CCB ICPMS_TW		1103	
137	CCB	CCB6-161111	CCB ICPMS_TW		1103	
138	CCB	CCB6-161111	CCB ICPMS_TW		1103	
139	CCB	CCB6-161111	CCB ICPMS_TW		1103	

#	Skip
121	Skip
122	Skip
123	Skip
124	Skip
125	Skip
126	Skip
127	Skip
128	Skip
129	Skip
130	Skip
131	Skip
132	Skip
133	Skip
134	Skip
135	Skip
136	Skip
137	Skip
138	Skip
139	Skip

Unknown Samples:

Sample List

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 2:30:25 PM**
Digestion:
Prep End Date:

Prep Batch **77842** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List
Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #3
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		1.12	50	50.000	1 of 1	
1611044-15A	Soil		1.04	50	50.000	1 of 1	
1611044-18A	Soil		1.05	50	50.000	1 of 1	
1611044-21A	Soil		1.08	50	50.000	1 of 1	
1611053-01A	Soil		1.08	50	50.000	1 of 1	
1611053-06A	Soil		1.09	50	50.000	1 of 1	
1611053-11A	Soil		1.03	50	50.000	1 of 1	
1611053-16A MS/MSD	Soil		1.10	50	50.000	1 of 1	
1611053-21A	Soil		1.03	50	50.000	1 of 1	
1611053-26A	Soil		1.10	50	50.000	1 of 1	
1611053-31A	Soil		1.14	50	50.000	1 of 1	
1611053-36A	Soil		1.07	50	50.000	1 of 1	
1611053-41A	Soil		1.01	50	50.000	1 of 1	
1611071-01A	Soil		1.12	50	50.000	1 of 1	
1611071-04A	Soil		1.09	50	50.000	1 of 1	
1611071-08A	Soil		1.08	50	50.000	1 of 1	
1611071-11A	Soil		1.10	50	50.000	1 of 1	
1611071-16A	Soil		1.07	50	50.000	1 of 1	
1611071-21A	Soil		1.05	50	50.000	1 of 1	
LCS-77842	Soil		1	50	50.000	of	
LCSD-77842	Soil		1	50	50.000	of	
MB-77842	Soil		1	50	50.000	of	

053-16A MS 1.08
053-16A MSD 1.09

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

8:30 - 8:40
8:45 - 10:45
11:00 - 13:00
13:15 - 13:30

11/10/16

REVIEWED BY
By Janice Whitt at 10:19:44 AM, 11/14/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	11/10/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	P-01, P-09	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE	**% TEST VOL = Volume of H2O at °C/Test Volume * 100**
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.	**%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100**
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.	
4) DETERMINE TOTAL WT.	
5) CALCULATE VOLUME OF H2O AT °C (in mL)	**VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY**

					BIAS	PRECISION
PIPETTE ID: P-01	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**5.00**	4.9913	5.0013	**100.03**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		4.9827	4.9927	**99.85**		
3		4.9901	5.0001	**100.00**		
AVERAGE (MEAN)		**4.988**	**4.998**	**99.96**		**0.093**
						PASS

PIPETTE ID: P-09	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.20**	0.1992	0.1996	**99.80**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1986	0.1990	**99.50**		
3		0.1998	0.2002	**100.10**		
AVERAGE (MEAN)		**0.199**	**0.200**	**99.80**		**0.301**
						PASS

PIPETTE ID:	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1						**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2						
3						
AVERAGE (MEAN)						

Check done by Sydney Powers see initials above.

Analyst / Date

REVIEWED BY
By Janice Whitt at 10:19:56 AM, 11/14/2016

Review and Approved / Date

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	RO	**BALANCE #:**	30	
TEST DATE:	11/11/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	4.00	3.9940	3.9860	99.65	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		3.9899	3.9819	99.55		
3		3.9879	3.9799	99.50		
AVERAGE (MEAN)		3.991	3.983	99.57		0.078
						PASS

PIPETTE ID: P-21	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	1.00	1.0004	0.9984	99.84	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.9992	0.9972	99.72		
3		1.0004	0.9984	99.84		
AVERAGE (MEAN)		1.000	0.998	99.80		0.069
						PASS

PIPETTE ID: P-39	TEST VOLUME (mL)	TOTAL WT (g)	Volume of H_2O at °C	% TEST VOL (98-102%)	MEAN CRITERIA (± 2%)	% RSD Calculated
1	0.500	0.5014	0.5004	100.08	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.4999	0.4989	99.78		
3		0.5019	0.5009	100.18		
AVERAGE (MEAN)		0.501	0.500	100.01		0.208
						PASS

11/12/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:20:47 AM, 11/14/2016
Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 2:30:25 PM**
Digestion: **Start: 11/10/2016 8:30:00 AM / Stop: 11/10/2016 1:30:00 PM**
Prep End Date: **11/10/2016 2:00:00 PM**

Prep Batch **77842** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

- Thermometer #71
- Pipette#-P-09
- Pipette #P-01
- Hot Block #3
- Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		1.12	50	44.643	1 of 1	
1611044-15A	Soil		1.04	50	48.077	1 of 1	
1611044-18A	Soil		1.05	50	47.619	1 of 1	
1611044-21A	Soil		1.08	50	46.296	1 of 1	
1611053-01A	Soil		1.08	50	46.296	1 of 1	
1611053-06A	Soil		1.09	50	45.872	1 of 1	
1611053-11A	Soil		1.03	50	48.544	1 of 1	
1611053-16A	Soil		1.1	50	45.455	1 of 1	
1611053-16A MS	Soil		1.08	50	46.296	of	
1611053-16A MSD	Soil		1.09	50	45.872	of	
1611053-16A PDS	Soil		1.1	50	45.455	of	
1611053-16A SD	Soil		1.1	50	45.455	of	
1611053-21A	Soil		1.03	50	48.544	1 of 1	
1611053-26A	Soil		1.1	50	45.455	1 of 1	
1611053-31A	Soil		1.14	50	43.860	1 of 1	
1611053-36A	Soil		1.07	50	46.729	1 of 1	
1611053-41A	Soil		1.01	50	49.505	1 of 1	
1611071-01A	Soil		1.12	50	44.643	1 of 1	
1611071-04A	Soil		1.09	50	45.872	1 of 1	
1611071-08A	Soil		1.08	50	46.296	1 of 1	
1611071-11A	Soil		1.1	50	45.455	1 of 1	
1611071-16A	Soil		1.07	50	46.729	1 of 1	
1611071-21A	Soil		1.05	50	47.619	1 of 1	
LCS-77842	Soil		1	50	50.000	of	
LCSD-77842	Soil		1	50	50.000	of	
MB-77842	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161005-1	2500 PPM Narurals Spike	LCS/MS/MSD	0.5	04/03/2017
MET-SPIKE-161005-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	04/03/2017
MET-SPIKE-161005-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	04/03/2017

REVIEWED BY
By Janice Whitt at 10:19:48 AM, 11/14/2016

Calibration Summary Report

Date Acquired 11/11/2016 9:49
Data Batch 161111.b

Level	Calibration File Name
1	012CALB.d
2	013CALS.d
3	014CALS.d
4	015CALS.d
5	016CALS.d
6	017CALS.d
7	018CALS.d
8	019CALS.d

Calibration Table

Ele	Corr Coef	Curve Equation
As	0.9999	y = 0.0010 * x + 2.4683E-004
Be	0.9998	y = 3.7123E-005 * x + 2.1508E-006
B	1.0000	y = 1.5658E-005 * x + 7.5707E-005
Na	0.9999	y = 7.5738E-004 * x + 0.0807
Mg	0.9999	y = 3.9367E-004 * x + 5.2268E-004
Al	1.0000	y = 1.6433E-004 * x + 5.2738E-004
K	1.0000	y = 4.3092E-004 * x + 0.0576
Ca	1.0000	y = 2.3767E-005 * x + 6.9871E-004
Ti	1.0000	y = 1.3784E-004 * x + 2.3919E-006
V	0.9999	y = 0.0040 * x + 0.0016
Cr	0.9999	y = 0.0045 * x + 0.0011
Mn	1.0000	y = 0.0029 * x + 2.8525E-004
Fe	0.9999	y = 0.0040 * x + 0.0061
Co	0.9999	y = 0.0106 * x + 1.8809E-004
Ni	0.9999	y = 0.0028 * x + 5.7883E-004
Cu	0.9999	y = 0.0076 * x + 0.0022
Zn	0.9999	y = 0.0013 * x + 4.1461E-004
Se	0.9999	y = 7.4437E-005 * x + 2.3691E-004
Sr	0.9999	y = 6.7918E-004 * x + 3.4359E-005
Mo	0.9999	y = 4.7325E-004 * x + 1.1558E-005
Ag	1.0000	y = 0.0014 * x + 9.8961E-006
Cd	0.9998	y = 2.1397E-004 * x + 2.4996E-006
Sn	0.9999	y = 4.9787E-004 * x + 1.0201E-004
Sb	1.0000	y = 7.3876E-004 * x + 6.1766E-005
Tl	0.9999	y = 0.0016 * x + 7.5789E-006
Ba	0.9998	y = 2.4614E-004 * x + 4.1672E-006
Pb	0.9999	y = 0.0011 * x + 7.0139E-005
Li	1.0000	y = 2.8193E-005 * x + 9.0842E-006

REVIEWED BY
By Janice Whitt at 10:20:53 AM, 11/14/2016

Calibration Summary Report

Level 7 Cal

Ele	Conc	Calc	%Rec
As	500	518.34	104
Be	500	529.80	106
B	500	508.04	102
Na	10000	10293.16	103
Mg	10000	10232.26	102
Al	10000	9970.91	100
K	10000	10029.72	100
Ca	10000	9978.30	100
Ti	500	517.41	103
V	500	522.47	104
Cr	500	528.12	106
Mn	500	516.07	103
Fe	10000	9945.33	99
Co	500	528.95	106
Ni	500	528.54	106
Cu	500	524.16	105
Zn	500	523.99	105
Se	500	519.56	104
Sr	500	527.06	105
Mo	500	530.67	106
Ag	500	500.99	100
Cd	500	533.16	107
Sn	500	528.43	106
Sb	500	501.18	100
Tl	500	529.93	106
Ba	500	537.02	107
Pb	500	524.94	105

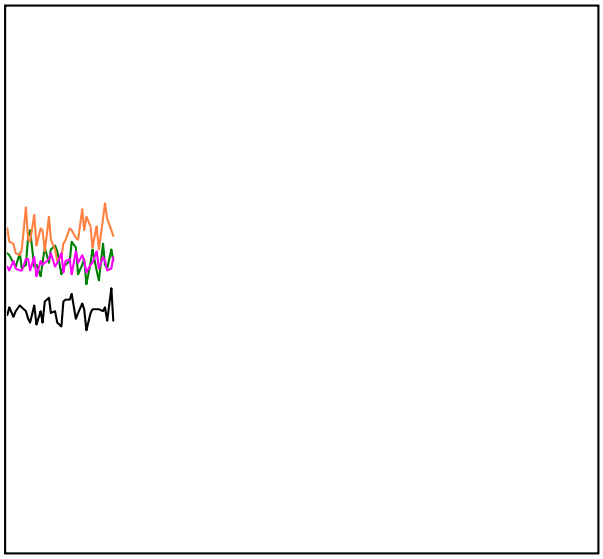
Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1993.94	100
Be	2000	1990.39	100
B	2000	1995.94	100
Na	25000	24876.04	100
Mg	25000	24879.39	100
K	25000	24966.47	100
Ca	25000		#DIV/0!
Ti	2000	1994.53	100
V	2000	1992.63	100
Cr	2000	1990.50	100
Mn	2000	1994.31	100
Co	2000	1990.09	100
Ni	2000	1990.04	101
Cu	2000	1991.29	100
Zn	2000	1991.66	100
Se	2000	1993.06	100
Sr	2000	1991.52	100
Mo	2000	1990.96	100
Cd	2000	1989.71	101
Sn	2000	1991.06	100
Tl	2000	1991.15	100
Ba	2000	1988.83	101
Pb	2000	1992.05	100
Li	2000	1995.50	100

Use Level 7 Cal. jw 11/14/2016

REVIEWED BY
By Janice Whitt at 10:20:59 AM, 11/14/2016

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	212	213.0	8.98
59	2000	1069	1072.0	4.10
89	2000	1158	1162.3	4.70
140	5000	2702	2646.3	2.31
205	5000	2129	2209.0	3.94
156/140	1	0.407 %	0.340 %	42.69
51	200	108	103.6	16.35
56	5000	2155	2138.1	3.24
75	20	9	8.0	44.68
78	50	22	20.8	33.66

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.50
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.3
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	0.4		

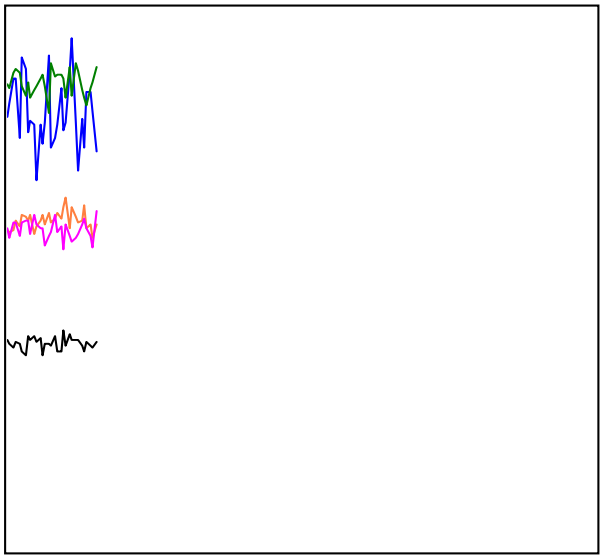
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.44E+2	Pa	Carrier Gas(BP)	1.01E+2	kPa
Analyzer Press	1.44E-4	Pa	Reflected Power	4	W
Forward Power	1549	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	367	402.6	7.83
59	2000	1784	1722.0	2.67
89	5000	2996	3041.8	2.74
140	5000	3133	2954.7	3.07
205	5000	1927	1912.3	2.84
156/140	2	0.575 %	0.862 %	25.15
51	20000	15545	15666.6	1.83
56	200000	175375	181391.2	2.23
75	5000	4009	4142.5	2.71
78	5000	2756	2735.3	2.78

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.50
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	8.3
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	7.0		

Cell Parameters

Use Gas	false	3rd Gas Flow	0
He Flow	4.2	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.42E+2	Pa	Carrier Gas(BP)	1.01E+2	kPa
Analyzer Press	9.01E-5	Pa	Reflected Power	5	W
Forward Power	1548	W			

US EPA Tune Check Sample Report

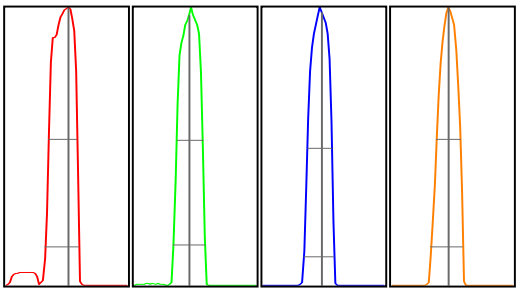
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	460461	0.32	5.00	
59	1074757	0.75	5.00	
115	1541357	0.80	5.00	
205	1116203	1.67	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	459524	460987	458756	460432	462603
59	1062304	1071951	1077509	1083063	1078961
115	1531949	1537368	1537699	1536754	1563017
205	1088791	1108327	1117743	1132973	1133182

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	69118	7.05	6.9 - 7.1		0.821	0.850	
59	176774	58.90	58.9 - 59.1		0.759	0.850	
115	275275	115.00	114.9 - 115.1		0.736	0.850	
205	204508	204.95	204.9 - 205.1		0.766	0.850	

X% = 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Nebulizer Pump	0.10	rps
RF Matching	1.90	V	S/C Temp	2	℃
Smpl Depth	8.0	mm	Gas Switch	Dilution Gas	
Carrier Gas	0.50	L/min	Makeup/Dilution Gas	0.55	L/min
Option Gas	0.0	%			

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Cell Entrance	-40	V
Extract 2	-200.0	V	Cell Exit	-60	V
Omega Bias	-100	V	Deflect	7.0	V
Omega Lens	8.3	V	Plate Bias	-60	V

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	200	V
H2 Flow	0.0	mL/min	Energy Discrimination	3.0	V
3rd Gas Flow	0	%			

REVIEWED BY
By Janice Whitt at 10:21:25 AM, 11/14/2016

P/A Factor Tuning Report

Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 11/11/2016 09:49:21

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1930 V
PulseHV: 1013 V

Acquired: 11/11/2016 09:16:00

Mass[u]	Element	P/A Factor
6	Li	0.099872
9	Be	0.111288
23	Na	0.118621
24	Mg	0.123657
27	Al	0.127665
39	K	0.129853
45	Sc	0.131498
48		0.131938
51	V	0.133676
52	Cr	0.136806
55	Mn	0.138422
59	Co	0.141372
60	Ni	0.141787
63	Cu	0.145417
66	Zn	0.145154
72		0.143869
74	Ge	0.144163
75	As	0.143674
88	Sr	0.144503
89		0.143200
95		0.143330
97	Mo	0.143661
98	Mo	0.144023
99	[Mo]	0.145465
101		0.146070
105		0.149197
111	Cd	0.149887
114	Cd	0.149951
115	In	0.150494
118	Sn	0.149882
121		0.149969
123	Sb	0.149862
135	Ba	0.148531
138		0.150708
175		0.156726
193		0.156699
205	Tl	0.156943
206	[Pb]	0.157009
207	[Pb]	0.157080
208	Pb	0.157818
209	Bi	0.158185
232		0.158459
238	U	0.158262
44	Ca	Signal too low
78	Se	Signal too low
107	Ag	Signal too low
172		Signal too low

REVIEWED BY
By Janice Whitt at 10:21:28 AM, 11/14/2016

Calibration Blank Report

Date Acquired	11/11/2016 9:49	Sample Name	BLANK STD 1
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	13	4.56
9	Be	45	3	33.33
11	B	45	106	7.94
23	Na	45	112520	0.79
24	Mg	45	729	4.67
27	Al	45	736	6.35
39	K	45	80299	0.74
44	Ca	45	974	4.62
47	Ti	45	3	100.05
51	V	45	2195	4.00
52	Cr	45	1603	3.61
55	Mn	45	398	23.24
56	Fe	45	8470	2.02
59	Co	72	168	8.27
60	Ni	72	517	12.31
63	Cu	72	1987	2.86
66	Zn	72	370	2.38
75	As	72	220	4.88
78	Se	72	211	2.64
88	Sr	115	274	11.98
95	Mo	115	92	23.24
107	Ag	115	79	24.39
111	Cd	115	20	44.10
118	Sn	115	814	6.55
121	Sb	115	493	9.46
137	Ba	115	33	52.92
205	Tl	209	112	32.72
208	Pb	209	1042	6.21

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1394564	0.44
72	Ge	892468	0.89
115	In	7983264	0.91
209	Bi	14868144	2.25

Calibration Standard Report

Date Acquired	11/11/2016 9:51	Sample Name	L2-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	52	6.93
9	Be	45	62	10.80
11	B	45	147	30.07
23	Na	45	133206	0.73
24	Mg	45	12272	1.44
27	Al	45	5262	2.46
39	K	45	92237	0.55
44	Ca	45	1568	1.91
47	Ti	45	220	2.62
51	V	45	7995	6.84
52	Cr	45	8368	2.32
55	Mn	45	4674	1.87
56	Fe	45	119617	1.01
59	Co	72	10423	2.54
60	Ni	72	3099	4.37
63	Cu	72	9321	1.46
66	Zn	72	1503	5.98
75	As	72	1155	7.27
78	Se	72	254	14.80
88	Sr	115	5884	0.75
95	Mo	115	3994	2.83
107	Ag	115	11348	2.16
111	Cd	115	1871	2.96
118	Sn	115	4729	2.39
121	Sb	115	6414	3.02
137	Ba	115	2086	5.17
205	Tl	209	24217	2.55
208	Pb	209	18332	1.86

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1390372	0.12	1394564	99.70	70	120	
72	Ge	890224	0.54	892468	99.75	70	120	
115	In	7962643	1.38	7983264	99.74	70	120	
209	Bi	14955346	1.82	14868144	100.59	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:53	Sample Name	L-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	415	6.75
9	Be	45	559	9.19
11	B	45	321	10.40
23	Na	45	323081	0.43
24	Mg	45	113106	0.53
27	Al	45	46375	2.18
39	K	45	200931	0.81
44	Ca	45	7581	3.71
47	Ti	45	1905	4.20
51	V	45	60620	2.23
52	Cr	45	67951	0.83
55	Mn	45	43557	0.68
56	Fe	45	1121018	0.84
59	Co	72	101107	0.97
60	Ni	72	27515	1.67
63	Cu	72	74844	0.72
66	Zn	72	12427	2.01
75	As	72	9912	2.04
78	Se	72	835	5.73
88	Sr	115	57192	0.87
95	Mo	115	39767	0.76
107	Ag	115	112575	0.85
111	Cd	115	17926	2.27
118	Sn	115	42431	2.25
121	Sb	115	58691	0.57
137	Ba	115	20621	1.60
205	Tl	209	242462	0.73
208	Pb	209	173486	0.87

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1391848	0.47	1394564	99.81	70	120	
72	Ge	883624	0.30	892468	99.01	70	120	
115	In	8111244	1.16	7983264	101.60	70	120	
209	Bi	14960651	0.38	14868144	100.62	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:55	Sample Name	10X-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2008	1.87
9	Be	45	2684	2.11
11	B	45	1206	9.81
23	Na	45	1171850	0.39
24	Mg	45	550464	0.49
27	Al	45	229977	0.37
39	K	45	682649	0.53
44	Ca	45	33730	1.07
47	Ti	45	9767	0.73
51	V	45	290022	1.49
52	Cr	45	335604	1.25
55	Mn	45	212681	1.02
56	Fe	45	5619370	0.95
59	Co	72	497957	1.69
60	Ni	72	132395	1.18
63	Cu	72	362037	1.44
66	Zn	72	61185	0.45
75	As	72	47834	0.83
78	Se	72	3625	2.82
88	Sr	115	282925	0.88
95	Mo	115	193690	1.29
107	Ag	115	570107	0.27
111	Cd	115	90544	0.15
118	Sn	115	206250	1.51
121	Sb	115	290675	0.91
137	Ba	115	102936	1.40
205	Tl	209	1229254	0.74
208	Pb	209	875046	0.71

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1389200	0.40	1394564	99.62	70	120	
72	Ge	872627	0.12	892468	97.78	70	120	
115	In	8023801	1.15	7983264	100.51	70	120	
209	Bi	15131406	1.40	14868144	101.77	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:57	Sample Name	5X-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	3959	1.56
9	Be	45	5219	4.47
11	B	45	2400	6.50
23	Na	45	2230543	0.93
24	Mg	45	1108006	0.71
27	Al	45	454227	0.68
39	K	45	1282612	0.76
44	Ca	45	66756	0.09
47	Ti	45	19364	0.60
51	V	45	576456	0.20
52	Cr	45	659967	0.52
55	Mn	45	421702	0.46
56	Fe	45	11268390	0.44
59	Co	72	996572	0.88
60	Ni	72	262548	1.19
63	Cu	72	714861	0.67
66	Zn	72	122164	1.13
75	As	72	95146	0.24
78	Se	72	7069	2.19
88	Sr	115	564810	0.79
95	Mo	115	389227	0.35
107	Ag	115	1133919	0.37
111	Cd	115	180398	1.23
118	Sn	115	415000	0.46
121	Sb	115	581167	0.50
137	Ba	115	205309	0.54
205	Tl	209	2444934	0.97
208	Pb	209	1732858	0.79

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1381641	0.56	1394564	99.07	70	120	
72	Ge	870338	0.32	892468	97.52	70	120	
115	In	7961075	1.31	7983264	99.72	70	120	
209	Bi	14916823	1.42	14868144	100.33	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 9:59	Sample Name	2X-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	9969	1.84
9	Be	45	13466	0.91
11	B	45	5731	1.62
23	Na	45	5292784	2.57
24	Mg	45	2748619	0.80
27	Al	45	1133304	0.66
39	K	45	3072045	1.00
44	Ca	45	164282	0.83
47	Ti	45	48475	0.50
51	V	45	1440395	0.38
52	Cr	45	1653269	0.28
55	Mn	45	1047618	0.63
56	Fe	45	27840771	0.91
59	Co	72	2444397	0.34
60	Ni	72	647152	0.21
63	Cu	72	1763163	0.13
66	Zn	72	299388	0.47
75	As	72	235128	0.94
78	Se	72	17143	0.10
88	Sr	115	1398149	0.89
95	Mo	115	966194	0.99
107	Ag	115	2783209	0.70
111	Cd	115	442877	0.18
118	Sn	115	1029253	0.50
121	Sb	115	1444121	0.64
137	Ba	115	509282	0.46
205	Tl	209	6132280	0.28
208	Pb	209	4367122	0.20

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1362532	0.56	1394564	97.70	70	120	
72	Ge	863428	0.61	892468	96.75	70	120	
115	In	7851590	0.36	7983264	98.35	70	120	
209	Bi	14928413	0.79	14868144	100.41	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 10:01	Sample Name	H-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	19496	1.08
9	Be	45	26499	0.97
11	B	45	10818	1.69
23	Na	45	10610889	2.01
24	Mg	45	5427202	2.20
27	Al	45	2208012	0.44
39	K	45	5899956	1.58
44	Ca	45	320425	0.88
47	Ti	45	96083	1.03
51	V	45	2833503	0.37
52	Cr	45	3230195	0.58
55	Mn	45	2044110	0.92
56	Fe	45	53727270	2.64
59	Co	72	4773197	0.76
60	Ni	72	1256863	0.83
63	Cu	72	3407609	0.74
66	Zn	72	583599	0.06
75	As	72	462980	0.41
78	Se	72	33160	1.23
88	Sr	115	2731530	1.09
95	Mo	115	1916243	1.28
107	Ag	115	5449949	0.45
111	Cd	115	870491	0.69
118	Sn	115	2008242	0.80
121	Sb	115	2825541	0.03
137	Ba	115	1008596	0.15
205	Tl	209	12238835	1.61
208	Pb	209	8549251	0.91

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1347146	0.06	1394564	96.60	70	120	
72	Ge	852207	0.26	892468	95.49	70	120	
115	In	7600312	0.49	7983264	95.20	70	120	
209	Bi	14579984	1.74	14868144	98.06	70	120	

Calibration Standard Report

Date Acquired	11/11/2016 10:03	Sample Name	H2-161111
Data Batch	161111.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	74131	0.59
9	Be	45	97351	0.74
11	B	45	41269	2.34
23	Na	45	24928719	0.91
24	Mg	45	12905387	2.45
27	Al	45	2337	14.10
39	K	45	14249124	1.00
44	Ca	45	804034	0.89
47	Ti	45	362210	0.42
51	V	45	10561500	2.30
52	Cr	45	11901501	1.21
55	Mn	45	7723646	0.72
56	Fe	45	1471836	0.67
59	Co	72	17590199	0.64
60	Ni	72	4633947	0.60
63	Cu	72	12675430	0.94
66	Zn	72	2171799	0.44
75	As	72	1743900	0.25
78	Se	72	124038	0.87
88	Sr	115	10332492	1.25
95	Mo	115	7198029	2.15
107	Ag	115	2244	26.00
111	Cd	115	3252145	0.97
118	Sn	115	7572707	0.71
121	Sb	115	6449	10.70
137	Ba	115	3739295	0.73
205	Tl	209	45285962	1.07
208	Pb	209	31949321	0.45

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1317501	0.89	1394564	94.47	70	120	
72	Ge	834747	0.36	892468	93.53	70	120	
115	In	7525878	0.93	7983264	94.27	70	120	
209	Bi	14356406	0.80	14868144	96.56	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	11/11/2016 10:09	Sample Name	ICSA-161111
Data Batch	161111.b	Comment	ICSAICPMS_TW
Data File Name	022ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.071	6	55.5	1.2	0.8	
11	B	22.557	568	5.5	30	30	
51	V	0.039	2291	6.3	10	10	
52	Cr	0.862	6701	1.6	8	5	
55	Mn	0.466	2192	3.6	8	10	
59	Co	1.313	11709	0.7	8	10	
60	Ni	0.456	1538	7.5	8	10	
63	Cu	2.344	16698	1.4	8	10	
66	Zn	2.486	3043	3.6	10	5	
75	As	0.472	616	5.5	4	5	
78	Se	0.459	225	12.7	2	5	
88	Sr	1.184	6158	4.9	10	10	
107	Ag	0.117	1292	4.2	0.8	2	
111	Cd	0.654	1047	8.9	1.2	1	
118	Sn	1.220	5205	4.2	10	10	
121	Sb	0.174	1397	2.8	4	2.5	
137	Ba	0.544	1013	6.0	8	10	
205	Tl	0.111	2475	5.2	4	1.5	
208	Pb	0.393	6878	1.3	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1323813	0.97	1394564	94.93	70	120	
72	Ge	830874	0.61	892468	93.10	70	120	
115	In	7341247	0.87	7983264	91.96	70	120	
209	Bi	13503243	0.70	14868144	90.82	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	11/11/2016 10:11	Sample Name	ICSAB-161111
Data Batch	161111.b	Comment	ICSBICPMS_TW
Data File Name	023ICSB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
51	V	45	39.072	211013	0.45	40	97.7	80	120	
52	Cr	45	20.937	127827	0.87	20	104.7	80	120	
55	Mn	45	19.717	77423	2.08	20	98.6	80	120	
59	Co	72	39.827	353915	0.71	40	99.6	80	120	
60	Ni	72	38.048	89507	1.92	40	95.1	80	120	
63	Cu	72	21.274	137931	1.08	20	106.4	80	120	
66	Zn	72	21.685	24107	0.88	20	108.4	80	120	
75	As	72	19.535	17375	1.82	20	97.7	80	120	
78	Se	72	19.460	1414	7.03	20	97.3	80	120	
107	Ag	115	18.564	197913	0.15	20	92.8	80	120	
111	Cd	115	9.895	15845	0.75	10	98.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1329225	0.14	1394564	95.31	70	120	
72	Ge	838862	0.37	892468	93.99	70	120	
115	In	7474949	0.15	7983264	93.63	70	120	
209	Bi	13592596	0.77	14868144	91.42	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	11/11/2016 10:18	Sample Name	ICV-161111
Data Batch	161111.b	Comment	ICV ICPMS_TW
Data File Name	026_ICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	97.194	3784	1.28	100	97.2	90	110	
9	Be	45	102.326	5232	0.70	100	102.3	90	110	
11	B	45	110.399	2484	1.76	100	110.4	90	110	Fail
23	Na	45	2483.518	2700170	0.94	2500	99.3	90	110	
24	Mg	45	2484.909	1347252	0.68	2500	99.4	90	110	
27	Al	45	2489.357	563820	0.95	2500	99.6	90	110	
39	K	45	2428.558	1519805	0.96	2500	97.1	90	110	
44	Ca	45	2389.297	79132	1.65	2500	95.6	90	110	
47	Ti	45	101.577	19276	2.53	100	101.6	90	110	
51	V	45	102.904	571981	0.99	100	102.9	90	110	
52	Cr	45	106.543	667117	0.28	100	106.5	90	110	
55	Mn	45	100.243	406028	1.09	100	100.2	90	110	
56	Fe	45	2526.334	13951838	0.96	2500	101.1	90	110	
59	Co	72	105.498	972900	0.18	100	105.5	90	110	
60	Ni	72	106.090	258181	0.93	100	106.1	90	110	
63	Cu	72	104.910	698464	0.91	100	104.9	90	110	
66	Zn	72	104.645	119381	1.30	100	104.6	90	110	
75	As	72	101.837	93114	0.51	100	101.8	90	110	
78	Se	72	104.161	6958	1.90	100	104.2	90	110	
88	Sr	115	102.200	559246	0.18	100	102.2	90	110	
95	Mo	115	99.903	380863	1.05	100	99.9	90	110	
107	Ag	115	97.847	1123573	1.28	100	97.8	90	110	
111	Cd	115	100.980	174020	0.27	100	101.0	90	110	
118	Sn	115	102.238	410760	1.48	100	102.2	90	110	
121	Sb	115	97.112	578236	0.79	100	97.1	90	110	
137	Ba	115	102.057	202341	1.02	100	102.1	90	110	
205	Tl	209	98.227	2369140	1.23	100	98.2	90	110	
208	Pb	209	101.162	1721660	0.75	100	101.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1376505	0.68	1394564	98.71	70	120	
72	Ge	870780	0.42	892468	97.57	70	120	
115	In	8047896	1.52	7983264	100.81	70	120	
209	Bi	15224587	1.17	14868144	102.40	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 10:24	Sample Name	LCVL-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	029LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.503	379	7.51	1	950.3	70	130	Fail
9	Be	45	1.033	55	36.20	1	103.3	70	130	
11	B	45	26.095	662	2.77	20	130.5	70	130	Fail
23	Na	45	97.332	211120	0.52	100	97.3	70	130	
24	Mg	45	99.435	54239	0.19	100	99.4	70	130	
27	Al	45	97.909	22722	2.82	100	97.9	70	130	
39	K	45	93.150	133613	1.16	100	93.1	70	130	
44	Ca	45	97.771	4133	2.05	100	97.8	70	130	
47	Ti	45	4.929	932	4.33	5	98.6	70	130	
51	V	45	1.033	7835	2.09	1	103.3	70	130	
52	Cr	45	5.251	34157	0.84	5	105.0	70	130	
55	Mn	45	5.462	22345	0.16	5	109.2	70	130	
56	Fe	45	100.623	559967	0.29	100	100.6	70	130	
59	Co	72	5.246	49076	0.11	5	104.9	70	130	
60	Ni	72	5.170	13208	1.33	5	103.4	70	130	
63	Cu	72	5.208	36926	1.82	5	104.2	70	130	
66	Zn	72	5.240	6391	1.92	5	104.8	70	130	
75	As	72	5.202	5016	1.52	5	104.0	70	130	
78	Se	72	4.849	526	3.72	5	97.0	70	130	
88	Sr	115	5.092	27916	1.50	5	101.8	70	130	
95	Mo	115	5.238	19904	0.83	5	104.8	70	130	
107	Ag	115	1.980	22653	2.63	2	99.0	70	130	
111	Cd	115	1.073	1856	4.16	1	107.3	70	130	
118	Sn	115	5.328	22020	1.81	5	106.6	70	130	
121	Sb	115	1.967	12109	5.10	2	98.4	70	130	
137	Ba	115	5.171	10210	3.00	5	103.4	70	130	
205	Tl	209	1.004	23853	1.89	1	100.4	70	130	
208	Pb	209	1.112	19590	1.96	1	111.2	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1367356	0.46	1394564	98.05	70	120	
72	Ge	880582	0.45	892468	98.67	70	120	
115	In	7993884	1.57	7983264	100.13	70	120	
209	Bi	14928212	0.66	14868144	100.40	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	11/11/2016 10:29	Sample Name	ICB-161111
Data Batch	161111.b	Comment	ICB ICPMS_TW
Data File Name	031_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.166	6	28.9	2	5	
9	Be	45	0.034	5	101.3	0.4	0.3	
11	B	45	4.406	198	1.0	10	10	
23	Na	45	-2.497	107694	1.1	50	100	
24	Mg	45	0.004	717	2.8	50	100	
27	Al	45	1.224	996	10.7	50	10	
39	K	45	-6.074	75125	1.0	50	100	
44	Ca	45	-2.142	886	7.8	50	100	
47	Ti	45	0.012	6	124.9	4	3	
51	V	45	0.017	2246	5.3	4	3	
52	Cr	45	-0.021	1443	6.6	2	2	
55	Mn	45	0.022	477	12.6	2	3	
56	Fe	45	0.527	11186	4.7	50	50	
59	Co	72	-0.003	139	22.8	2	3	
60	Ni	72	-0.063	352	3.8	2	3	
63	Cu	72	-0.028	1756	1.0	2	2	
66	Zn	72	-0.060	293	23.7	4	2	
75	As	72	-0.007	208	7.1	2	2	
78	Se	72	-0.356	183	10.2	1	2	
88	Sr	115	0.006	311	20.9	4	3	
95	Mo	115	0.122	559	13.7	2	2	
107	Ag	115	0.007	162	1.2	0.4	1	
111	Cd	115	0.001	22	48.2	0.4	0.3	
118	Sn	115	0.186	1573	5.9	4	3	
121	Sb	115	0.006	533	8.9	2	0.8	
137	Ba	115	0.017	67	15.0	2	3	
205	Tl	209	0.002	172	2.2	2	0.5	
208	Pb	209	0.048	1867	0.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1366837	0.34	1394564	98.01	70	120	
72	Ge	871195	0.25	892468	97.62	70	120	
115	In	8079229	1.58	7983264	101.20	70	120	
209	Bi	15139673	1.31	14868144	101.83	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/11/2016 13:11	Sample Name	CCV4-161111
Data Batch	161111.b	Comment	CCV ICPMS_TW
Data File Name	094_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	206.881	7287	0.70	200	103.4	90	110	
9	Be	45	210.646	9757	0.54	200	105.3	90	110	
11	B	45	246.330	4906	3.82	200	123.2	90	110	Fail
23	Na	45	5295.642	5103668	0.35	5000	105.9	90	110	
24	Mg	45	5026.427	2469032	1.09	5000	100.5	90	110	
27	Al	45	4958.641	1017080	0.21	5000	99.2	90	110	
39	K	45	4942.631	2728621	0.75	5000	98.9	90	110	
44	Ca	45	4622.923	137928	0.77	5000	92.5	90	110	
47	Ti	45	196.632	33811	1.02	200	98.3	90	110	
51	V	45	200.090	1005980	0.86	200	100.0	90	110	
52	Cr	45	202.985	1150493	0.38	200	101.5	90	110	
55	Mn	45	200.402	735221	0.42	200	100.2	90	110	
56	Fe	45	5096.854	25497242	2.79	5000	101.9	90	110	
59	Co	72	206.609	1713685	1.20	200	103.3	90	110	
60	Ni	72	208.771	456553	0.62	200	104.4	90	110	
63	Cu	72	209.657	1253763	0.97	200	104.8	90	110	
66	Zn	72	208.048	213168	1.52	200	104.0	90	110	
75	As	72	205.316	168667	0.85	200	102.7	90	110	
78	Se	72	206.369	12218	1.24	200	103.2	90	110	
88	Sr	115	199.046	1006715	0.87	200	99.5	90	110	
95	Mo	115	197.538	696064	0.29	200	98.8	90	110	
107	Ag	115	192.769	2046071	0.32	200	96.4	90	110	
111	Cd	115	200.755	319823	0.52	200	100.4	90	110	
118	Sn	115	197.198	731764	1.36	200	98.6	90	110	
121	Sb	115	192.139	1057231	0.40	200	96.1	90	110	
137	Ba	115	199.899	366339	0.99	200	99.9	90	110	
205	Tl	209	193.606	4416167	0.63	200	96.8	90	110	
208	Pb	209	195.477	3145612	1.02	200	97.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1247424	0.61	1394564	89.45	70	120	
72	Ge	783257	0.58	892468	87.76	70	120	
115	In	7445653	1.40	7983264	93.27	70	120	
209	Bi	14403840	2.73	14868144	96.88	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 13:15	Sample Name	LCVL4-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	096LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.861	362	8.77	1	986.1	70	130	Fail
9	Be	45	1.092	54	33.49	1	109.2	70	130	
11	B	45	40.578	898	9.32	20	202.9	70	130	Fail
23	Na	45	135.478	231457	0.52	100	135.5	70	130	Fail
24	Mg	45	101.363	51053	1.33	100	101.4	70	130	
27	Al	45	99.075	21225	1.76	100	99.1	70	130	
39	K	45	103.276	128913	1.16	100	103.3	70	130	
44	Ca	45	90.206	3590	2.45	100	90.2	70	130	
47	Ti	45	5.312	928	4.20	5	106.2	70	130	
51	V	45	1.160	7878	0.53	1	116.0	70	130	
52	Cr	45	5.260	31593	0.20	5	105.2	70	130	
55	Mn	45	5.541	20926	1.77	5	110.8	70	130	
56	Fe	45	101.029	519184	1.10	100	101.0	70	130	
59	Co	72	5.292	44925	0.30	5	105.8	70	130	
60	Ni	72	5.549	12828	1.06	5	111.0	70	130	
63	Cu	72	5.422	34806	0.44	5	108.4	70	130	
66	Zn	72	5.642	6219	0.75	5	112.8	70	130	
75	As	72	5.322	4652	4.63	5	106.4	70	130	
78	Se	72	5.460	514	2.67	5	109.2	70	130	
88	Sr	115	5.208	27027	2.36	5	104.2	70	130	
95	Mo	115	5.085	18295	0.62	5	101.7	70	130	
107	Ag	115	1.929	20886	0.79	2	96.5	70	130	
111	Cd	115	1.000	1639	2.89	1	100.0	70	130	
118	Sn	115	5.188	20312	1.72	5	103.8	70	130	
121	Sb	115	1.921	11205	2.40	2	96.1	70	130	
137	Ba	115	5.228	9765	3.32	5	104.6	70	130	
205	Tl	209	0.989	23049	1.60	1	98.9	70	130	
208	Pb	209	0.981	17076	1.61	1	98.1	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1262846	0.90	1394564	90.55	70	120	
72	Ge	798979	0.48	892468	89.52	70	120	
115	In	7567165	1.45	7983264	94.79	70	120	
209	Bi	14646243	0.82	14868144	98.51	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/11/2016 13:20	Sample Name	CCB4-161111
Data Batch	161111.b	Comment	CCB ICPMS_TW
Data File Name	097_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.073	9	29.4	2	5	
9	Be	45	-0.030	1	86.6	0.4	0.3	
11	B	45	20.054	500	16.3	10	10	FailAq FailSoil
23	Na	45	24.709	127484	0.2	50	100	
24	Mg	45	-0.252	543	6.6	50	100	
27	Al	45	2.521	1208	5.6	50	10	
39	K	45	4.149	76146	1.4	50	100	
44	Ca	45	-3.762	781	9.3	50	100	
47	Ti	45	0.008	4	86.6	4	3	
51	V	45	0.058	2317	3.6	4	3	
52	Cr	45	-0.029	1307	7.3	2	2	
55	Mn	45	0.042	526	9.2	2	3	
56	Fe	45	0.004	7812	1.9	50	50	
59	Co	72	-0.006	106	14.2	2	3	
60	Ni	72	-0.041	379	4.3	2	3	
63	Cu	72	-0.034	1606	2.9	2	2	
66	Zn	72	0.138	486	2.6	4	2	
75	As	72	-0.014	190	11.8	2	2	
78	Se	72	0.017	194	11.2	1	2	
88	Sr	115	0.034	437	21.4	4	3	
95	Mo	115	0.040	231	3.6	2	2	
107	Ag	115	0.004	119	35.5	0.4	1	
111	Cd	115	-0.006	10	57.7	0.4	0.3	
118	Sn	115	-0.041	624	9.2	4	3	
121	Sb	115	-0.022	349	22.4	2	0.8	
137	Ba	115	0.009	48	22.4	2	3	
205	Tl	209	0.006	252	6.8	2	0.5	
208	Pb	209	-0.026	608	7.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1282563	0.36	1394564	91.97	70	120	
72	Ge	816044	0.90	892468	91.44	70	120	
115	In	7633862	1.59	7983264	95.62	70	120	
209	Bi	14945897	1.42	14868144	100.52	70	120	

Method Blank Report

Date Acquired	11/11/16 1:22 PM	Sample Name	MB-77842
Data Batch	161111.b	Comment	MBLKICPMS_TSDOD1
Data File Name	098_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.026	11	10.83		
9	Be	45	-0.051	0	173.21		
11	B	45	21.420	524	11.76		J
23	Na	45	31.925	133800	0.63		
24	Mg	45	3.851	2601	2.98		
27	Al	45	2.591	1216	6.99		
39	K	45	8.846	78332	0.27		
44	Ca	45	13.859	1312	3.58		
47	Ti	45	0.600	108	138.41		
51	V	45	0.074	2387	4.34		
52	Cr	45	0.568	4755	8.52		
55	Mn	45	0.188	1070	6.83		
56	Fe	45	4.630	31435	1.06		
59	Co	72	0.006	203	32.91		
60	Ni	72	0.080	654	7.06		
63	Cu	72	0.039	2059	9.32		
66	Zn	72	0.757	1146	2.64		
75	As	72	-0.038	169	7.62		
78	Se	72	-0.010	193	3.23		
88	Sr	115	0.084	701	10.33		
95	Mo	115	0.044	250	1.33		
107	Ag	115	0.007	151	4.59		
111	Cd	115	-0.006	10	88.20		
118	Sn	115	3.864	15556	1.84		
121	Sb	115	-0.038	257	7.23		
137	Ba	115	0.039	107	19.52		
205	Tl	209	0.006	263	12.85		
208	Pb	209	0.052	1958	9.88		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1275964	0.91	1394564	91.50	70	120	
72	Ge	816401	0.30	892468	91.48	70	120	
115	In	7681692	1.74	7983264	96.22	70	120	
209	Bi	15223458	2.93	14868144	102.39	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/11/2016 13:24	Sample Name	LCS-77842
Data Batch	161111.b	Comment	LCS ICPMS_TSDOD1
Data File Name	099_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	210.227	7597	2.62	200	105.1	80	120	
9	Be	45	209.259	9943	1.62	200	104.6	80	120	
11	B	45	220.198	4508	2.81	200	110.1	80	120	
23	Na	45	5201.931	5145412	1.28	1000	520.2	80	120	Fail
24	Mg	45	5064.506	2552044	0.45	1000	506.5	80	120	Fail
27	Al	45	985.311	207880	0.50	1000	98.5	80	120	
39	K	45	4976.586	2818052	0.67	1000	497.7	80	120	Fail
44	Ca	45	4547.141	139195	1.09	1000	454.7	80	120	Fail
47	Ti	45	200.816	35426	0.32	200	100.4	80	120	
51	V	45	202.572	1044835	0.44	200	101.3	80	120	
52	Cr	45	206.899	1203007	0.46	200	103.4	80	120	
55	Mn	45	200.189	753424	0.77	200	100.1	80	120	
56	Fe	45	991.313	5093983	0.71	1000	99.1	80	120	
59	Co	72	207.133	1787058	1.16	200	103.6	80	120	
60	Ni	72	207.812	472725	1.29	200	103.9	80	120	
63	Cu	72	207.950	1293523	0.19	200	104.0	80	120	
66	Zn	72	204.476	217923	0.59	200	102.2	80	120	
75	As	72	203.642	174013	0.70	200	101.8	80	120	
78	Se	72	200.880	12374	1.61	200	100.4	80	120	
88	Sr	115	195.861	1024425	0.59	200	97.9	80	120	
95	Mo	115	198.980	725048	0.18	200	99.5	80	120	
107	Ag	115	192.042	2108139	1.17	200	96.0	80	120	
111	Cd	115	197.640	325604	0.66	200	98.8	80	120	
118	Sn	115	203.395	780466	1.09	200	101.7	80	120	
121	Sb	115	193.151	1099069	0.89	200	96.6	80	120	
137	Ba	115	199.036	377196	0.60	200	99.5	80	120	
205	Tl	209	194.214	4545248	1.43	200	97.1	80	120	
208	Pb	209	196.462	3243673	0.59	200	98.2	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1279749	0.85	1394564	91.77	70	120	
72	Ge	814713	0.52	892468	91.29	70	120	
115	In	7700025	1.77	7983264	96.45	70	120	
209	Bi	14775006	1.40	14868144	99.37	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/11/2016 13:26	Sample Name	LCSD-77842
Data Batch	161111.b	Comment	LCSDICPMS_TSDOD1
Data File Name	100_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	209.150	7569	1.05	200	104.6	80	120	
9	Be	45	210.225	10005	0.62	200	105.1	80	120	
11	B	45	227.968	4672	4.11	200	114.0	80	120	
23	Na	45	5141.704	5094379	1.05	1000	514.2	80	120	Fail
24	Mg	45	5010.932	2528786	1.41	1000	501.1	80	120	Fail
27	Al	45	990.790	209343	1.36	1000	99.1	80	120	
39	K	45	4958.571	2812321	0.14	1000	495.9	80	120	Fail
44	Ca	45	4581.295	140447	1.81	1000	458.1	80	120	Fail
47	Ti	45	198.649	35099	1.72	200	99.3	80	120	
51	V	45	201.964	1043291	0.41	200	101.0	80	120	
52	Cr	45	205.795	1198422	0.77	200	102.9	80	120	
55	Mn	45	200.249	754814	1.33	200	100.1	80	120	
56	Fe	45	989.248	5091341	0.76	1000	98.9	80	120	
59	Co	72	205.557	1769588	0.62	200	102.8	80	120	
60	Ni	72	206.600	468938	0.90	200	103.3	80	120	
63	Cu	72	207.602	1288587	1.55	200	103.8	80	120	
66	Zn	72	205.238	218259	1.16	200	102.6	80	120	
75	As	72	203.776	173747	0.58	200	101.9	80	120	
78	Se	72	200.906	12350	1.20	200	100.5	80	120	
88	Sr	115	195.986	1024592	0.80	200	98.0	80	120	
95	Mo	115	199.756	727578	0.16	200	99.9	80	120	
107	Ag	115	191.348	2099185	1.25	200	95.7	80	120	
111	Cd	115	198.647	327121	0.29	200	99.3	80	120	
118	Sn	115	203.161	779202	0.20	200	101.6	80	120	
121	Sb	115	194.079	1103770	1.25	200	97.0	80	120	
137	Ba	115	198.521	376079	0.33	200	99.3	80	120	
205	Tl	209	196.993	4567374	0.42	200	98.5	80	120	
208	Pb	209	198.603	3248402	1.05	200	99.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1281647	0.41	1394564	91.90	70	120	
72	Ge	812943	0.74	892468	91.09	70	120	
115	In	7697218	1.79	7983264	96.42	70	120	
209	Bi	14636024	1.20	14868144	98.44	70	120	

Sample Report

Date Acquired	11/11/16 1:30 PM	Sample Name	1611053-16A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	102_ARF.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	41.524	1495	2.24	2000	>RL
9	Be	45	2.018	98	11.04	2000	>RL
11	B	45	43.732	963	10.08	2000	>RL
23	Na	45	818.325	887650	0.73	25000	>RL
24	Mg	45	10113.992	5046299	0.15	25000	>RL
27	Al	45	39253.539	8174654	1.42	10000	OUTCAL
39	K	45	8013.924	4449104	0.72	25000	>RL
44	Ca	45	111460.892	3357935	0.40	25000	OUTCAL
47	Ti	45	922.450	161127	1.80	2000	>RL
51	V	45	87.881	449987	0.74	2000	>RL
52	Cr	45	38.935	225375	1.42	2000	>RL
55	Mn	45	716.043	2667831	0.51	2000	>RL
56	Fe	45	46614.284	236854462	0.83	10000	OUTCAL
59	Co	72	16.011	131887	0.47	2000	>RL
60	Ni	72	29.266	63882	1.07	2000	>RL
63	Cu	72	21.168	127147	0.72	2000	>RL
66	Zn	72	187.024	190141	0.52	2000	>RL
75	As	72	16.601	13707	0.47	2000	>RL
78	Se	72	3.825	406	6.87	2000	>RL
88	Sr	115	492.733	2451836	0.65	2000	>RL
95	Mo	115	1.427	5034	4.44	2000	
107	Ag	115	0.178	1937	1.49	500	
111	Cd	115	0.498	799	9.41	2000	>RL
118	Sn	115	5.351	20267	1.35	2000	>RL
121	Sb	115	2.852	15892	0.90	500	>RL
137	Ba	115	538.707	971449	0.32	2000	>RL
205	Tl	209	0.519	11766	0.71	2000	
208	Pb	209	33.924	538730	0.97	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1267267	0.49	1394564	90.87	70	120	
72	Ge	777139	1.19	892468	87.08	70	120	
115	In	7326496	1.01	7983264	91.77	70	120	
209	Bi	14188752	1.32	14868144	95.43	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/11/2016 13:32	Sample Name	1611053-16A SD
Data Batch	161111.b	Comment	SD ICPMS_TSDOD1
Data File Name	103_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	8.697	325	10.20	41.5	104.7	110	90	Good
9	Be	45	0.342	19	18.23	2.0	84.8	110	90	
11	B	45	19.148	480	6.84	43.7	218.9	110	90	
23	Na	45	176.646	274131	0.18	818.3	107.9	110	90	Good
24	Mg	45	2042.398	1028344	0.32	10114.0	101.0	110	90	Good
27	Al	45	7924.125	1665030	0.58	39253.5	100.9	110	90	Good
39	K	45	1648.359	981479	0.30	8013.9	102.8	110	90	Good
44	Ca	45	22876.581	695842	0.89	111460.9	102.6	110	90	Good
47	Ti	45	189.356	33364	1.32	922.4	102.6	110	90	Good
51	V	45	17.832	93699	0.51	87.9	101.5	110	90	Good
52	Cr	45	7.938	47513	1.91	38.9	101.9	110	90	Good
55	Mn	45	147.325	553918	0.30	716.0	102.9	110	90	Good
56	Fe	45	9648.239	49453628	0.25	46614.3	103.5	110	90	Good
59	Co	72	3.315	27898	2.77	16.0	103.5	110	90	Good
60	Ni	72	6.015	13718	2.43	29.3	102.8	110	90	Good
63	Cu	72	4.402	28282	1.00	21.2	104.0	110	90	Good
66	Zn	72	39.472	41074	0.18	187.0	105.5	110	90	Good
75	As	72	3.462	3061	0.45	16.6	104.3	110	90	Good
78	Se	72	0.833	236	12.62	3.8	108.8	110	90	Good
88	Sr	115	99.393	508669	1.29	492.7	100.9	110	90	Good
95	Mo	115	0.311	1193	4.23	1.4	108.8	110	90	Good
107	Ag	115	0.046	564	8.27	0.2	127.6	110	90	
111	Cd	115	0.107	192	23.54	0.5	107.6	110	90	Good
118	Sn	115	1.005	4535	2.17	5.4	93.9	110	90	Good
121	Sb	115	0.557	3564	6.67	2.9	97.7	110	90	Good
137	Ba	115	109.209	202436	0.21	538.7	101.4	110	90	Good
205	Tl	209	0.121	2926	1.69	0.5	116.7	110	90	
208	Pb	209	6.832	113050	0.25	33.9	100.7	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1278158	0.17	1394564	91.65	70	120	
72	Ge	790368	0.56	892468	88.56	70	120	
115	In	7533108	2.66	7983264	94.36	70	120	
209	Bi	14679620	1.88	14868144	98.73	70	120	

Sample Report

Date Acquired	11/11/16 1:42 PM	Sample Name	1611053-01A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	108SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	52.061	1962	1.94	2000	>RL
9	Be	45	2.220	112	13.48	2000	>RL
11	B	45	85.930	1888	1.64	2000	>RL
23	Na	45	972.025	1085142	0.79	25000	>RL
24	Mg	45	12216.234	6389260	1.69	25000	>RL
27	Al	45	57876.827	12635168	2.68	10000	OUTCAL
39	K	45	13657.902	7894634	0.75	25000	>RL
44	Ca	45	80449.525	2540869	0.40	25000	OUTCAL
47	Ti	45	172.568	31602	1.03	2000	>RL
51	V	45	89.180	478651	0.67	2000	>RL
52	Cr	45	55.274	334741	0.34	2000	>RL
55	Mn	45	586.177	2289400	0.29	2000	>RL
56	Fe	45	55506.818	295648095	1.78	10000	OUTCAL
59	Co	72	22.583	195396	0.46	2000	>RL
60	Ni	72	37.233	85269	0.98	2000	>RL
63	Cu	72	31.622	198676	0.91	2000	>RL
66	Zn	72	265.685	283676	0.67	2000	>RL
75	As	72	21.834	18878	0.20	2000	>RL
78	Se	72	3.711	419	2.93	2000	>RL
88	Sr	115	373.142	1907752	0.49	2000	>RL
95	Mo	115	2.057	7414	3.80	2000	>RL
107	Ag	115	0.185	2061	3.59	500	
111	Cd	115	0.670	1098	3.06	2000	>RL
118	Sn	115	5.621	21831	2.51	2000	>RL
121	Sb	115	3.558	20250	1.72	500	>RL
137	Ba	115	545.017	1009740	0.59	2000	>RL
205	Tl	209	0.479	11145	3.68	2000	
208	Pb	209	73.233	1190703	0.54	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1328389	0.29	1394564	95.25	70	120	
72	Ge	816494	0.29	892468	91.49	70	120	
115	In	7526742	0.73	7983264	94.28	70	120	
209	Bi	14541229	0.47	14868144	97.80	70	120	

Sample Report

Date Acquired	11/11/16 1:44 PM	Sample Name	1611053-06A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	109SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	41.285	1555	2.25	2000	>RL
9	Be	45	2.327	117	5.67	2000	>RL
11	B	45	68.304	1518	5.16	2000	>RL
23	Na	45	279.040	387066	0.37	25000	>RL
24	Mg	45	9563.025	4990711	2.44	25000	>RL
27	Al	45	53771.660	11712601	0.67	10000	OUTCAL
39	K	45	13193.966	7612226	0.79	25000	>RL
44	Ca	45	37817.425	1192264	0.51	25000	OUTCAL
47	Ti	45	193.744	35400	2.11	2000	>RL
51	V	45	83.268	446069	0.89	2000	>RL
52	Cr	45	48.364	292434	0.85	2000	>RL
55	Mn	45	628.019	2447363	1.13	2000	>RL
56	Fe	45	53431.214	283966602	0.83	10000	OUTCAL
59	Co	72	21.455	186926	0.29	2000	>RL
60	Ni	72	33.777	77933	0.12	2000	>RL
63	Cu	72	28.775	182204	0.61	2000	>RL
66	Zn	72	252.228	271189	0.81	2000	>RL
75	As	72	18.296	15961	0.38	2000	>RL
78	Se	72	3.482	408	1.91	2000	>RL
88	Sr	115	240.531	1247657	0.70	2000	>RL
95	Mo	115	1.392	5118	1.86	2000	
107	Ag	115	0.114	1320	2.87	500	
111	Cd	115	0.533	890	4.22	2000	>RL
118	Sn	115	5.258	20768	1.14	2000	>RL
121	Sb	115	2.078	12193	2.13	500	>RL
137	Ba	115	394.427	741328	0.58	2000	>RL
205	Tl	209	0.459	10657	3.42	2000	
208	Pb	209	51.219	830597	1.19	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1325457	0.17	1394564	95.04	70	120	
72	Ge	822144	0.36	892468	92.12	70	120	
115	In	7639038	2.31	7983264	95.69	70	120	
209	Bi	14497318	0.80	14868144	97.51	70	120	

Sample Report

Date Acquired	11/11/16 1:46 PM	Sample Name	1611053-11A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	110SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	47.378	1786	1.95	2000	>RL
9	Be	45	1.848	94	11.70	2000	>RL
11	B	45	74.372	1647	6.78	2000	>RL
23	Na	45	373.852	483195	0.56	25000	>RL
24	Mg	45	10206.169	5336716	2.95	25000	>RL
27	Al	45	54207.938	11830700	0.33	10000	OUTCAL
39	K	45	13789.413	7968572	2.20	25000	>RL
44	Ca	45	19764.646	624781	0.45	25000	>RL
47	Ti	45	151.387	27716	1.17	2000	>RL
51	V	45	79.640	427554	0.33	2000	>RL
52	Cr	45	49.885	302176	0.23	2000	>RL
55	Mn	45	417.042	1628525	0.41	2000	>RL
56	Fe	45	53129.566	282925980	2.00	10000	OUTCAL
59	Co	72	18.927	163848	0.96	2000	>RL
60	Ni	72	30.111	69072	1.07	2000	>RL
63	Cu	72	19.334	122222	0.75	2000	>RL
66	Zn	72	214.128	228778	0.66	2000	>RL
75	As	72	18.309	15869	0.53	2000	>RL
78	Se	72	3.364	398	0.85	2000	>RL
88	Sr	115	189.212	976356	0.34	2000	>RL
95	Mo	115	0.992	3652	2.16	2000	
107	Ag	115	0.199	2232	4.08	500	
111	Cd	115	0.538	892	5.62	2000	>RL
118	Sn	115	5.225	20541	2.52	2000	>RL
121	Sb	115	4.016	23004	1.24	500	>RL
137	Ba	115	269.495	503866	0.50	2000	>RL
205	Tl	209	0.415	9502	1.83	2000	
208	Pb	209	50.177	801314	0.72	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1328073	0.69	1394564	95.23	70	120	
72	Ge	816817	0.47	892468	91.52	70	120	
115	In	7599303	2.77	7983264	95.19	70	120	
209	Bi	14276871	0.32	14868144	96.02	70	120	

Sample Report

Date Acquired	11/11/16 1:48 PM	Sample Name	1611053-21A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	111SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	47.904	1806	5.07	2000	>RL
9	Be	45	2.146	109	13.15	2000	>RL
11	B	45	85.724	1883	9.21	2000	>RL
23	Na	45	261.649	370377	0.28	25000	>RL
24	Mg	45	9752.334	5099945	0.67	25000	>RL
27	Al	45	49255.791	10751403	2.31	10000	OUTCAL
39	K	45	12090.870	6996813	1.49	25000	>RL
44	Ca	45	70345.609	2221596	0.27	25000	OUTCAL
47	Ti	45	146.480	26821	2.52	2000	>RL
51	V	45	83.527	448382	0.12	2000	>RL
52	Cr	45	47.261	286403	0.41	2000	>RL
55	Mn	45	443.488	1731992	0.08	2000	>RL
56	Fe	45	46999.164	250306595	1.38	10000	OUTCAL
59	Co	72	17.358	150198	0.93	2000	>RL
60	Ni	72	30.448	69804	1.37	2000	>RL
63	Cu	72	26.954	169592	1.20	2000	>RL
66	Zn	72	203.666	217502	0.56	2000	>RL
75	As	72	18.515	16037	0.94	2000	>RL
78	Se	72	3.021	377	8.37	2000	>RL
88	Sr	115	251.390	1312256	1.01	2000	>RL
95	Mo	115	1.182	4387	1.22	2000	
107	Ag	115	0.400	4458	5.09	500	
111	Cd	115	0.463	781	2.35	2000	>RL
118	Sn	115	4.938	19677	1.93	2000	>RL
121	Sb	115	2.813	16444	0.67	500	>RL
137	Ba	115	699.175	1322489	0.07	2000	>RL
205	Tl	209	0.406	9398	3.18	2000	
208	Pb	209	67.163	1084779	0.13	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1328226	0.22	1394564	95.24	70	120	
72	Ge	816385	0.64	892468	91.47	70	120	
115	In	7684704	0.69	7983264	96.26	70	120	
209	Bi	14445317	1.33	14868144	97.16	70	120	

Sample Report

Date Acquired	11/11/16 1:50 PM	Sample Name	1611053-26A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	112SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	48.731	1828	2.31	2000	>RL
9	Be	45	2.169	109	18.16	2000	>RL
11	B	45	84.133	1841	2.83	2000	>RL
23	Na	45	191.516	298363	0.21	25000	>RL
24	Mg	45	11345.896	5904296	0.74	25000	>RL
27	Al	45	57455.435	12479860	0.27	10000	OUTCAL
39	K	45	16464.870	9454175	1.81	25000	>RL
44	Ca	45	54282.273	1706167	0.98	25000	OUTCAL
47	Ti	45	176.017	32071	4.11	2000	>RL
51	V	45	85.695	457713	0.57	2000	>RL
52	Cr	45	51.253	308949	1.40	2000	>RL
55	Mn	45	517.892	2012604	0.62	2000	>RL
56	Fe	45	54889.163	290892922	0.41	10000	OUTCAL
59	Co	72	20.487	176740	0.50	2000	>RL
60	Ni	72	35.967	82132	0.33	2000	>RL
63	Cu	72	34.531	216125	0.55	2000	>RL
66	Zn	72	204.603	217870	0.55	2000	>RL
75	As	72	22.709	19566	0.45	2000	>RL
78	Se	72	3.639	413	3.75	2000	>RL
88	Sr	115	203.076	1048414	1.43	2000	>RL
95	Mo	115	1.386	5073	3.67	2000	
107	Ag	115	0.113	1297	9.00	500	
111	Cd	115	0.737	1218	5.59	2000	>RL
118	Sn	115	5.746	22520	1.69	2000	>RL
121	Sb	115	4.133	23676	1.09	500	>RL
137	Ba	115	533.458	998053	0.61	2000	>RL
205	Tl	209	0.480	11003	2.15	2000	
208	Pb	209	77.979	1248054	0.75	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1321748	0.45	1394564	94.78	70	120	
72	Ge	814016	0.52	892468	91.21	70	120	
115	In	7601898	1.67	7983264	95.22	70	120	
209	Bi	14314677	0.76	14868144	96.28	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/11/2016 13:52	Sample Name	1611053-16A PDS
Data Batch	161111.b	Comment	PDS ICPMS_TSDOD1
Data File Name	113_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	241.654	8844	1.08	41.5	200	100.1	75	125	
9	Be	45	206.992	9966	3.00	2.0	200	102.5	75	125	
11	B	45	241.203	4994	1.53	43.7	200	98.7	75	125	
23	Na	45	5858.081	5856503	1.33	818.3	5000	100.8	75	125	
24	Mg	45	15270.376	7793784	1.89	10114.0	5000	103.1	75	125	
27	Al	45	45447.715	9682711	2.35	39253.5	5000	123.9	75	125	
39	K	45	13278.052	7492452	0.48	8013.9	5000	105.3	75	125	
44	Ca	45	########	3617559	0.54	111460.9	5000	118.3	75	125	
47	Ti	45	1139.650	203663	0.64	922.4	200	108.6	75	125	
51	V	45	290.430	1516690	0.49	87.9	200	101.3	75	125	
52	Cr	45	245.441	1445516	0.40	38.9	200	103.3	75	125	
55	Mn	45	917.856	3498397	0.64	716.0	200	100.9	75	125	
56	Fe	45	51607.089	268271243	0.93	46614.3	5000	99.9	75	125	
59	Co	72	218.543	1857730	0.67	16.0	200	101.3	75	125	
60	Ni	72	228.983	513174	1.40	29.3	200	99.9	75	125	
63	Cu	72	217.064	1330305	1.18	21.2	200	97.9	75	125	
66	Zn	72	386.935	406017	0.31	187.0	200	100.0	75	125	
75	As	72	218.673	184093	0.41	16.6	200	101.0	75	125	
78	Se	72	199.846	12131	1.19	3.8	200	98.0	75	125	
88	Sr	115	695.254	3511078	0.24	492.7	200	101.3	75	125	
95	Mo	115	196.843	692723	0.63	1.4	200	97.7	75	125	
107	Ag	115	181.265	1921589	0.70	0.2	200	90.5	75	125	
111	Cd	115	191.458	304612	0.39	0.5	200	95.5	75	125	
118	Sn	115	206.469	765060	0.35	5.4	200	100.6	75	125	
121	Sb	115	200.317	1100761	0.35	2.9	200	98.7	75	125	
137	Ba	115	743.914	1361453	0.61	538.7	200	102.6	75	125	
205	Tl	209	191.653	4296002	0.88	0.5	200	95.6	75	125	
208	Pb	209	227.680	3600031	0.56	33.9	200	96.9	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1296458	0.47	1394564	92.97	70	120	
72	Ge	802735	0.47	892468	89.95	70	120	
115	In	7435509	1.02	7983264	93.14	70	120	
209	Bi	14149775	0.65	14868144	95.17	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/11/2016 13:54	Sample Name	1611053-16A MS
Data Batch	161111.b	Comment	MS ICPMS_TSDOD1
Data File Name	114_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	238.741	8643	1.85	41.5	200	98.6	80	120	
9	Be	45	204.667	9746	0.76	2.0	200	101.3	80	120	
11	B	45	239.191	4900	5.06	43.7	200	97.7	80	120	
23	Na	45	5637.854	5579079	0.73	818.3	1000	482.0	80	120	Fail
24	Mg	45	14910.697	7527854	1.57	10114.0	1000	479.7	80	120	Fail
27	Al	45	41830.000	8815320	0.99	39253.5	1000	257.6	80	120	Fail
39	K	45	13166.927	7349705	1.82	8013.9	1000	515.3	80	120	Fail
44	Ca	45	########	3369432	0.75	111460.9	1000	-93.5	80	120	Fail
47	Ti	45	1183.572	209211	0.25	922.4	200	130.6	80	120	Fail
51	V	45	282.233	1457916	0.14	87.9	200	97.2	80	120	
52	Cr	45	235.454	1371678	0.37	38.9	200	98.3	80	120	
55	Mn	45	881.596	3323676	0.68	716.0	200	82.8	80	120	
56	Fe	45	46092.588	236998399	0.42	46614.3	1000	-52.2	80	120	Fail
59	Co	72	217.965	1828993	0.60	16.0	200	101.0	80	120	
60	Ni	72	228.310	505073	0.29	29.3	200	99.5	80	120	
63	Cu	72	218.386	1321135	1.03	21.2	200	98.6	80	120	
66	Zn	72	379.371	392966	0.20	187.0	200	96.2	80	120	
75	As	72	212.971	176991	0.24	16.6	200	98.2	80	120	
78	Se	72	199.071	11930	1.90	3.8	200	97.6	80	120	
88	Sr	115	682.333	3371732	0.50	492.7	200	94.8	80	120	
95	Mo	115	193.401	665969	0.32	1.4	200	96.0	80	120	
107	Ag	115	189.767	1968431	0.13	0.2	200	94.8	80	120	
111	Cd	115	196.518	305937	0.30	0.5	200	98.0	80	120	
118	Sn	115	205.359	744593	0.25	5.4	200	100.0	80	120	
121	Sb	115	80.831	434898	0.42	2.9	200	39.0	80	120	Fail
137	Ba	115	733.588	1313713	0.76	538.7	200	97.4	80	120	
205	Tl	209	193.750	4316348	0.03	0.5	200	96.6	80	120	
208	Pb	209	225.088	3537103	0.31	33.9	200	95.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1282337	0.17	1394564	91.95	70	120	
72	Ge	792411	0.48	892468	88.79	70	120	
115	In	7275596	0.83	7983264	91.14	70	120	
209	Bi	14062720	0.86	14868144	94.58	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/11/2016 13:56	Sample Name	1611053-16A MSD
Data Batch	161111.b	Comment	MSD ICPMS_TSDOD1
Data File Name	115_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	239.961	8562	2.58	41.5	200	99.2	80	120	
9	Be	45	205.228	9632	1.63	2.0	200	101.6	80	120	
11	B	45	233.923	4725	3.50	43.7	200	95.1	80	120	
23	Na	45	5940.876	5788073	3.63	818.3	1000	512.3	80	120	Fail
24	Mg	45	15331.971	7629190	2.00	10114.0	1000	521.8	80	120	Fail
27	Al	45	42983.625	8927776	0.99	39253.5	1000	373.0	80	120	Fail
39	K	45	13321.587	7328331	2.35	8013.9	1000	530.8	80	120	Fail
44	Ca	45	########	3569331	0.41	111460.9	1000	733.8	80	120	Fail
47	Ti	45	1212.216	211191	1.12	922.4	200	144.9	80	120	Fail
51	V	45	282.498	1438293	1.37	87.9	200	97.3	80	120	
52	Cr	45	233.810	1342483	0.24	38.9	200	97.4	80	120	
55	Mn	45	893.668	3320662	0.67	716.0	200	88.8	80	120	
56	Fe	45	46452.950	235393920	1.90	46614.3	1000	-16.1	80	120	Fail
59	Co	72	216.474	1770309	0.61	16.0	200	100.2	80	120	
60	Ni	72	229.811	495473	1.36	29.3	200	100.3	80	120	
63	Cu	72	219.969	1296913	1.09	21.2	200	99.4	80	120	
66	Zn	72	380.639	384259	1.19	187.0	200	96.8	80	120	
75	As	72	215.306	174380	0.30	16.6	200	99.4	80	120	
78	Se	72	197.310	11525	1.51	3.8	200	96.7	80	120	
88	Sr	115	712.523	3447327	0.24	492.7	200	109.9	80	120	
95	Mo	115	192.117	647758	0.80	1.4	200	95.3	80	120	
107	Ag	115	190.267	1932301	0.16	0.2	200	95.0	80	120	
111	Cd	115	196.153	299008	1.04	0.5	200	97.8	80	120	
118	Sn	115	206.933	734627	0.57	5.4	200	100.8	80	120	
121	Sb	115	77.857	410164	0.62	2.9	200	37.5	80	120	Fail
137	Ba	115	757.616	1328290	0.68	538.7	200	109.5	80	120	
205	Tl	209	194.900	4199859	1.23	0.5	200	97.2	80	120	
208	Pb	209	228.941	3480050	0.35	33.9	200	97.5	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1263870	0.48	1394564	90.63	70	120	
72	Ge	772256	0.20	892468	86.53	70	120	
115	In	7124822	2.04	7983264	89.25	70	120	
209	Bi	13602340	0.39	14868144	91.49	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/11/2016 13:58	Sample Name	CCV5-161111
Data Batch	161111.b	Comment	CCV ICPMS_TW
Data File Name	116_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.258	7324	2.10	200	101.6	90	110	
9	Be	45	206.510	9785	2.40	200	103.3	90	110	
11	B	45	226.167	4615	3.19	200	113.1	90	110	Fail
23	Na	45	5125.106	5055899	0.44	5000	102.5	90	110	
24	Mg	45	5032.134	2528388	0.77	5000	100.6	90	110	
27	Al	45	4969.662	1042715	0.04	5000	99.4	90	110	
39	K	45	4973.398	2808071	0.61	5000	99.5	90	110	
44	Ca	45	4624.706	141142	0.98	5000	92.5	90	110	
47	Ti	45	198.270	34876	1.81	200	99.1	90	110	
51	V	45	199.943	1028309	0.26	200	100.0	90	110	
52	Cr	45	203.564	1180226	0.42	200	101.8	90	110	
55	Mn	45	199.569	748940	0.31	200	99.8	90	110	
56	Fe	45	5004.305	25610601	0.50	5000	100.1	90	110	
59	Co	72	208.543	1757910	1.30	200	104.3	90	110	
60	Ni	72	210.480	467777	0.91	200	105.2	90	110	
63	Cu	72	211.135	1283030	0.85	200	105.6	90	110	
66	Zn	72	207.532	216080	0.22	200	103.8	90	110	
75	As	72	206.546	172431	0.58	200	103.3	90	110	
78	Se	72	208.542	12543	1.60	200	104.3	90	110	
88	Sr	115	200.870	1015080	0.52	200	100.4	90	110	
95	Mo	115	200.235	704990	0.94	200	100.1	90	110	
107	Ag	115	194.178	2059363	0.56	200	97.1	90	110	
111	Cd	115	202.037	321594	0.78	200	101.0	90	110	
118	Sn	115	200.350	742757	0.29	200	100.2	90	110	
121	Sb	115	196.262	1078966	0.71	200	98.1	90	110	
137	Ba	115	203.418	372480	0.53	200	101.7	90	110	
205	Tl	209	193.791	4448260	0.43	200	96.9	90	110	
208	Pb	209	194.507	3149892	0.81	200	97.3	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1275989	0.13	1394564	91.50	70	120	
72	Ge	796003	1.07	892468	89.19	70	120	
115	In	7438775	0.57	7983264	93.18	70	120	
209	Bi	14494407	2.25	14868144	97.49	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 14:02	Sample Name	LCVL5-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	118LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.418	394	5.71	1	1041.8	70	130	Fail
9	Be	45	1.274	64	10.11	1	127.4	70	130	
11	B	45	35.462	821	3.50	20	177.3	70	130	Fail
23	Na	45	115.084	218435	0.89	100	115.1	70	130	
24	Mg	45	100.790	52317	1.42	100	100.8	70	130	
27	Al	45	101.104	22308	2.05	100	101.1	70	130	
39	K	45	102.117	132199	0.19	100	102.1	70	130	
44	Ca	45	89.120	3666	7.66	100	89.1	70	130	
47	Ti	45	5.123	922	9.97	5	102.5	70	130	
51	V	45	1.031	7443	1.37	1	103.1	70	130	
52	Cr	45	5.240	32441	0.11	5	104.8	70	130	
55	Mn	45	5.380	20951	2.38	5	107.6	70	130	
56	Fe	45	102.353	541973	0.26	100	102.4	70	130	
59	Co	72	5.358	46879	1.33	5	107.2	70	130	
60	Ni	72	5.297	12644	4.03	5	105.9	70	130	
63	Cu	72	5.348	35415	0.55	5	107.0	70	130	
66	Zn	72	5.716	6490	2.20	5	114.3	70	130	
75	As	72	5.326	4799	2.09	5	106.5	70	130	
78	Se	72	5.144	510	6.12	5	102.9	70	130	
88	Sr	115	5.226	27327	1.29	5	104.5	70	130	
95	Mo	115	5.159	18706	2.04	5	103.2	70	130	
107	Ag	115	1.970	21487	1.22	2	98.5	70	130	
111	Cd	115	0.960	1585	6.26	1	96.0	70	130	
118	Sn	115	5.272	20791	2.66	5	105.4	70	130	
121	Sb	115	2.012	11806	2.41	2	100.6	70	130	
137	Ba	115	5.266	9915	1.23	5	105.3	70	130	
205	Tl	209	1.060	24324	0.59	1	106.0	70	130	
208	Pb	209	1.033	17655	1.01	1	103.3	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1301378	0.34	1394564	93.32	70	120	
72	Ge	823577	0.19	892468	92.28	70	120	
115	In	7624964	0.42	7983264	95.51	70	120	
209	Bi	14426429	1.88	14868144	97.03	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/11/2016 14:11	Sample Name	CCB5-161111
Data Batch	161111.b	Comment	CCB ICPMS_TW
Data File Name	119_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.063	14	31.5	2	5	
9	Be	45	-0.010	2	65.5	0.4	0.3	
11	B	45	11.892	346	5.3	10	10	FailAq FailSoil
23	Na	45	8.881	115339	1.2	50	100	
24	Mg	45	-0.489	436	11.6	50	100	
27	Al	45	4.334	1636	8.8	50	10	
39	K	45	1.037	76568	0.4	50	100	
44	Ca	45	-2.654	839	6.0	50	100	
47	Ti	45	0.019	7	86.6	4	3	
51	V	45	-0.015	1995	2.7	4	3	
52	Cr	45	-0.041	1273	16.3	2	2	
55	Mn	45	0.019	449	7.9	2	3	
56	Fe	45	0.461	10455	2.7	50	50	
59	Co	72	-0.002	137	33.0	2	3	
60	Ni	72	-0.044	377	11.6	2	3	
63	Cu	72	-0.038	1603	3.6	2	2	
66	Zn	72	0.144	498	10.3	4	2	
75	As	72	-0.028	179	3.8	2	2	
78	Se	72	0.220	209	3.8	1	2	
88	Sr	115	0.015	343	7.9	4	3	
95	Mo	115	0.034	213	12.5	2	2	
107	Ag	115	0.010	186	1.0	0.4	1	
111	Cd	115	-0.002	16	12.4	0.4	0.3	
118	Sn	115	-0.018	718	4.1	4	3	
121	Sb	115	-0.018	374	18.3	2	0.8	
137	Ba	115	0.014	59	34.6	2	3	
205	Tl	209	0.015	460	11.2	2	0.5	
208	Pb	209	-0.011	864	3.5	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1319528	0.38	1394564	94.62	70	120	
72	Ge	826892	1.10	892468	92.65	70	120	
115	In	7733075	0.94	7983264	96.87	70	120	
209	Bi	14813750	1.18	14868144	99.63	70	120	

Sample Report

Date Acquired	11/11/16 2:13 PM	Sample Name	1611053-31A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	120SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	52.146	1951	2.46	2000	>RL
9	Be	45	2.474	124	14.18	2000	>RL
11	B	45	104.887	2266	2.80	2000	>RL
23	Na	45	1042.599	1147827	0.66	25000	>RL
24	Mg	45	11689.701	6069955	2.04	25000	>RL
27	Al	45	51781.474	11222776	1.68	10000	OUTCAL
39	K	45	13122.551	7533732	1.46	25000	>RL
44	Ca	45	93079.696	2918481	0.91	25000	OUTCAL
47	Ti	45	255.786	46504	1.72	2000	>RL
51	V	45	89.554	477192	0.17	2000	>RL
52	Cr	45	65.678	394609	0.47	2000	>RL
55	Mn	45	531.551	2061161	0.23	2000	>RL
56	Fe	45	60600.240	320450663	1.56	10000	OUTCAL
59	Co	72	19.446	168103	0.44	2000	>RL
60	Ni	72	33.328	76293	0.35	2000	>RL
63	Cu	72	23.941	150701	0.88	2000	>RL
66	Zn	72	263.926	281503	1.07	2000	>RL
75	As	72	21.948	18955	0.96	2000	>RL
78	Se	72	3.482	405	10.06	2000	>RL
88	Sr	115	306.986	1558184	1.36	2000	>RL
95	Mo	115	2.055	7352	3.66	2000	>RL
107	Ag	115	0.114	1291	12.32	500	
111	Cd	115	0.572	933	9.37	2000	>RL
118	Sn	115	10.478	39742	0.50	2000	>RL
121	Sb	115	11.189	62224	1.03	500	>RL
137	Ba	115	972.667	1788902	1.11	2000	>RL
205	Tl	209	0.454	10545	1.26	2000	
208	Pb	209	150.390	2436145	0.73	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1318843	0.39	1394564	94.57	70	120	
72	Ge	815633	0.10	892468	91.39	70	120	
115	In	7472092	0.96	7983264	93.60	70	120	
209	Bi	14493605	0.74	14868144	97.48	70	120	

Sample Report

Date Acquired	11/11/16 2:15 PM	Sample Name	1611053-36A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	121SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	46.410	1742	2.10	2000	>RL
9	Be	45	1.748	89	16.93	2000	>RL
11	B	45	98.622	2141	5.83	2000	>RL
23	Na	45	328.208	435242	0.70	25000	>RL
24	Mg	45	9925.810	5166275	1.00	25000	>RL
27	Al	45	44470.470	9662046	2.31	10000	OUTCAL
39	K	45	10991.627	6337318	1.07	25000	>RL
44	Ca	45	59871.802	1882020	0.63	25000	OUTCAL
47	Ti	45	212.633	38747	0.46	2000	>RL
51	V	45	74.524	398366	0.52	2000	>RL
52	Cr	45	62.936	379078	0.34	2000	>RL
55	Mn	45	498.835	1938921	0.91	2000	>RL
56	Fe	45	51222.805	271495180	0.73	10000	OUTCAL
59	Co	72	17.082	149461	1.24	2000	>RL
60	Ni	72	30.221	70058	0.53	2000	>RL
63	Cu	72	26.882	171019	0.65	2000	>RL
66	Zn	72	234.260	252902	1.11	2000	>RL
75	As	72	18.882	16532	1.16	2000	>RL
78	Se	72	3.162	390	4.75	2000	>RL
88	Sr	115	245.875	1273831	0.47	2000	>RL
95	Mo	115	1.621	5939	2.26	2000	
107	Ag	115	0.137	1570	4.26	500	
111	Cd	115	0.655	1088	11.14	2000	>RL
118	Sn	115	6.330	24815	2.06	2000	>RL
121	Sb	115	11.262	63923	0.70	500	>RL
137	Ba	115	1265.350	2375345	0.11	2000	>RL
205	Tl	209	0.406	9525	1.98	2000	
208	Pb	209	110.598	1808107	1.22	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1322000	1.10	1394564	94.80	70	120	
72	Ge	825439	0.07	892468	92.49	70	120	
115	In	7627381	1.34	7983264	95.54	70	120	
209	Bi	14625626	0.93	14868144	98.37	70	120	

Sample Report

Date Acquired	11/11/16 2:17 PM	Sample Name	1611053-41A
Data Batch	161111.b	Comment	SAMPICPMS_TSDOD1
Data File Name	122SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	52.132	1937	0.99	2000	>RL
9	Be	45	2.314	115	20.78	2000	>RL
11	B	45	93.031	2007	6.53	2000	>RL
23	Na	45	928.421	1026578	0.88	25000	>RL
24	Mg	45	11745.284	6056105	1.68	25000	>RL
27	Al	45	58023.348	12488056	0.91	10000	OUTCAL
39	K	45	13195.719	7522340	1.33	25000	>RL
44	Ca	45	59338.788	1848022	0.75	25000	OUTCAL
47	Ti	45	177.953	32129	0.22	2000	>RL
51	V	45	85.872	454481	0.53	2000	>RL
52	Cr	45	53.835	321474	1.05	2000	>RL
55	Mn	45	531.468	2046526	1.01	2000	>RL
56	Fe	45	52537.066	275898149	0.57	10000	OUTCAL
59	Co	72	21.020	180594	0.80	2000	>RL
60	Ni	72	34.759	79067	1.51	2000	>RL
63	Cu	72	28.832	180026	1.65	2000	>RL
66	Zn	72	246.526	261376	0.32	2000	>RL
75	As	72	20.080	17254	0.88	2000	>RL
78	Se	72	3.483	402	3.33	2000	>RL
88	Sr	115	328.988	1673997	0.44	2000	>RL
95	Mo	115	1.747	6279	2.67	2000	
107	Ag	115	0.161	1790	7.59	500	
111	Cd	115	0.598	979	12.36	2000	>RL
118	Sn	115	5.503	21290	0.61	2000	>RL
121	Sb	115	3.047	17324	0.55	500	>RL
137	Ba	115	450.859	831297	0.52	2000	>RL
205	Tl	209	0.461	10490	1.21	2000	
208	Pb	209	69.826	1110999	1.08	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1309712	0.50	1394564	93.92	70	120	
72	Ge	810703	0.21	892468	90.84	70	120	
115	In	7492978	1.96	7983264	93.86	70	120	
209	Bi	14230364	0.95	14868144	95.71	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/11/2016 14:31	Sample Name	CCV6-161111
Data Batch	161111.b	Comment	CCV ICPMS_TW
Data File Name	129_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	202.408	7642	1.11	200	101.2	90	110	
9	Be	45	205.232	10190	1.43	200	102.6	90	110	
11	B	45	215.841	4621	3.64	200	107.9	90	110	
23	Na	45	5043.240	5214893	0.90	5000	100.9	90	110	
24	Mg	45	4934.663	2598149	1.19	5000	98.7	90	110	
27	Al	45	4914.346	1080457	0.94	5000	98.3	90	110	
39	K	45	4951.601	2929912	0.19	5000	99.0	90	110	
44	Ca	45	4586.692	146688	0.52	5000	91.7	90	110	
47	Ti	45	197.685	36435	1.39	200	98.8	90	110	
51	V	45	200.020	1077913	1.57	200	100.0	90	110	
52	Cr	45	202.335	1229197	1.09	200	101.2	90	110	
55	Mn	45	198.238	779543	0.58	200	99.1	90	110	
56	Fe	45	5038.808	27019968	1.20	5000	100.8	90	110	
59	Co	72	208.504	1819066	0.68	200	104.3	90	110	
60	Ni	72	210.258	483678	0.51	200	105.1	90	110	
63	Cu	72	210.476	1324121	1.64	200	105.2	90	110	
66	Zn	72	209.649	225960	1.00	200	104.8	90	110	
75	As	72	207.713	179498	1.08	200	103.9	90	110	
78	Se	72	205.822	12818	0.44	200	102.9	90	110	
88	Sr	115	201.991	1056638	0.75	200	101.0	90	110	
95	Mo	115	202.250	737074	1.18	200	101.1	90	110	
107	Ag	115	195.094	2141948	0.27	200	97.5	90	110	
111	Cd	115	201.781	332507	0.81	200	100.9	90	110	
118	Sn	115	198.601	762239	0.47	200	99.3	90	110	
121	Sb	115	195.056	1110184	0.60	200	97.5	90	110	
137	Ba	115	202.087	383060	0.74	200	101.0	90	110	
205	Tl	209	193.330	4507514	0.36	200	96.7	90	110	
208	Pb	209	197.301	3245430	1.14	200	98.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1337106	0.71	1394564	95.88	70	120	
72	Ge	823946	1.00	892468	92.32	70	120	
115	In	7701612	1.40	7983264	96.47	70	120	
209	Bi	14720452	1.85	14868144	99.01	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/11/2016 14:35	Sample Name	LCVL6-161111
Data Batch	161111.b	Comment	LCVLICPMS_TW
Data File Name	131LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.639	412	1.82	1	1063.9	70	130	Fail
9	Be	45	1.149	60	7.74	1	114.9	70	130	
11	B	45	34.209	814	8.27	20	171.0	70	130	Fail
23	Na	45	105.079	213505	0.24	100	105.1	70	130	
24	Mg	45	100.700	53506	1.32	100	100.7	70	130	
27	Al	45	100.041	22602	1.00	100	100.0	70	130	
39	K	45	102.744	135693	0.77	100	102.7	70	130	
44	Ca	45	89.934	3778	0.79	100	89.9	70	130	
47	Ti	45	5.023	926	6.16	5	100.5	70	130	
51	V	45	1.048	7711	2.70	1	104.8	70	130	
52	Cr	45	5.251	33273	1.32	5	105.0	70	130	
55	Mn	45	5.358	21366	2.62	5	107.2	70	130	
56	Fe	45	102.738	556886	1.05	100	102.7	70	130	
59	Co	72	5.290	47386	1.56	5	105.8	70	130	
60	Ni	72	5.524	13477	2.18	5	110.5	70	130	
63	Cu	72	5.344	36225	0.48	5	106.9	70	130	
66	Zn	72	5.769	6701	2.62	5	115.4	70	130	
75	As	72	5.376	4956	0.99	5	107.5	70	130	
78	Se	72	5.748	560	1.66	5	115.0	70	130	
88	Sr	115	5.149	27942	0.78	5	103.0	70	130	
95	Mo	115	5.003	18825	0.73	5	100.1	70	130	
107	Ag	115	1.916	21691	2.84	2	95.8	70	130	
111	Cd	115	0.975	1670	6.03	1	97.5	70	130	
118	Sn	115	5.079	20814	0.64	5	101.6	70	130	
121	Sb	115	1.941	11831	2.78	2	97.0	70	130	
137	Ba	115	5.123	10010	2.87	5	102.5	70	130	
205	Tl	209	1.011	23806	1.71	1	101.1	70	130	
208	Pb	209	1.030	18067	2.88	1	103.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1332215	0.68	1394564	95.53	70	120	
72	Ge	843042	0.71	892468	94.46	70	120	
115	In	7911940	0.11	7983264	99.11	70	120	
209	Bi	14800673	2.09	14868144	99.55	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/11/2016 14:55	Sample Name	CCB6-161111
Data Batch	161111.b	Comment	CCB ICPMS_TW
Data File Name	139_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.011	12	46.1	2	5	
9	Be	45	-0.017	2	100.0	0.4	0.3	
11	B	45	7.066	244	18.6	10	10	
23	Na	45	3.519	109339	0.7	50	100	
24	Mg	45	-0.648	351	19.4	50	100	
27	Al	45	2.812	1298	4.6	50	10	
39	K	45	3.670	77610	0.9	50	100	
44	Ca	45	-3.158	818	1.1	50	100	
47	Ti	45	0.007	4	114.6	4	3	
51	V	45	-0.009	2018	4.0	4	3	
52	Cr	45	-0.047	1228	0.8	2	2	
55	Mn	45	-0.011	331	1.2	2	3	
56	Fe	45	0.301	9553	3.7	50	50	
59	Co	72	-0.008	84	43.5	2	3	
60	Ni	72	-0.049	366	9.5	2	3	
63	Cu	72	-0.041	1585	5.8	2	2	
66	Zn	72	0.092	442	4.8	4	2	
75	As	72	-0.043	167	12.7	2	2	
78	Se	72	0.286	214	10.7	1	2	
88	Sr	115	0.002	278	8.7	4	3	
95	Mo	115	0.007	116	4.4	2	2	
107	Ag	115	0.006	146	27.6	0.4	1	
111	Cd	115	-0.009	4	43.4	0.4	0.3	
118	Sn	115	-0.075	502	7.1	4	3	
121	Sb	115	-0.041	244	21.7	2	0.8	
137	Ba	115	0.015	61	8.3	2	3	
205	Tl	209	0.003	181	3.8	2	0.5	
208	Pb	209	0.008	1166	3.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1311813	0.38	1394564	94.07	70	120	
72	Ge	827634	0.28	892468	92.74	70	120	
115	In	7782058	1.74	7983264	97.48	70	120	
209	Bi	14738696	0.27	14868144	99.13	70	120	

ICP-MS4_161118B
For

DHL Work Order
1611053

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG	Run ID: ICP-MS4_161118B SOP: MET-ICPMS-01			
Review Item	**Yes**	**No**	**N/A**	**2nd Level Review**
Data Folder Contents 1. Is the Prep Batch Report included? ***Check the Prep Start/End Dates, Sample Amounts, Bottle #s***	X			
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			X
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**		2nd Level Review
Tune	Before ICAL	RSD ≤ 5% / Peak Width@10% <0.9amu	X			
P/A Factor	Before ICAL	Increasing trend	X			X
Initial Calibration Curve (ICAL) (Blank + 4 Standards)	Prior to samples and when ICV fails	R ≥ 0.995 (DoD) R ≥ 0.998 (6020A)	X			
Review Item	**Frequency**	**Limits**	**Pass**	**Fail**	**N/A**	**Review**
ICSA (N/A for Method 200.8+U)	After calibration & every 12 hours	< RL (except Mn & Zn)	X			X
ICSAB (N/A for Method 200.8+U)	After calibration & every 12 hours	80-120% (correct for ICSA result)	X			
Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions						
ICV (Second Source Verification)	After ICAL	90-110%	X			
ICB	After calibration	< MDL	X			
CCV	Every 10 samples	90-110%	X			
CCB	Every 10 samples	< MDL (ALL + DoD)	X			
Internal Standards	Every sample and QC sample	> 70% (6020A) 60-125% (200.8) 30-120% (DoD)	X			
LCVL (6020A test code)	After ICAL, every 10 samples and end of run	70-130%			X	
LCVL (All metals test codes except 200.8/6020A)	After ICAL and end of run	70-130%	X			
Method Blank (MB)	Every Batch	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			X
Filter/TCLP/SPLP Blank	Filter-Dissolved only TCLP / SPLP	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			
Lab Control Sample (LCS)	Every Batch	80-120%	X			
Lab Control Sample Dup (LCSD)	Every Batch	80-120%	X			
LCSD - RPD	Every LCS/LCSD	15 (H2O) / 20 (Soil)	X			
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	Every Batch	80-120%	X			
MSD - RPD	Every MS/MSD	15 (H2O) / 20 (Soil)	X			
Dilution Test (SD) - RPD	Every Batch	10	X			
Post Digestion Spike (PDS)	Every Batch	75-125 / 80-120 (6020A)	X			

Lab Data Review Check List
EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	6 months	X			X
2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	All results > high point of ICAL must be diluted	X			
3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?		X	**Confirm with analyst if LIMS result does not match Labcore**		

VARIANCE REPORT

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.

NON-CONFORMANCES / VARIANCE	Criteria	Yes	No	N/A	2nd Level
1. Are all non-conformances and corrective actions included and noted?	All deviations from the method and SOP that affect data quality			X	X
2. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
__ CCV out of control (± 10%)	__ Carryover from previous run	__ Reanalyze QC to confirm
__ CCB out of control (> MDL / >½ RL)	__ Cross contamination	__ Recalibrate
__ MB out of control (> RL / >½ RL)	__ Lab Artifact	__ Reprep/Reanalyze sample
__ LCS __ LCSD out of control (± 20%)	__ Prep Spike error (describe)	__ Reprep/Reanalyze Batch
__ MS __ MSD out of control (± 20%)	__ Matrix Effect	__ Reanalyze Batch/Sample/QC
__ RPD out of control for MS/MSD (15/25)	__ High Levels of Target Metals	__ Verify reagents are clean
__ Internal Standard(s) out of control (see Method)	__ Insufficient sample for QC	__ Reanalyze sample to confirm
__ No MS/MSD prepared - LCS/LCSD used instead	__ Digestion/Prep Error	__ Sample results ND w/ dilution
__ Missing QC (other than MS/MSD)	__ Analytical Error	__ Client notified and approved
__ QC sample(s) was mis-spiked	__ Client Request	__ Flag Data/ Case Narative
__ ICSA/ICSAB missing or out of control (± 20%)		__ Accept data
__ LCVL out of control (± 30%)		__ Cal Std high and sample ND
__ Other (describe below)	__ Other (describe below)	__ Other (describe below)

General Comments and Impact on Data: See Run Log

Analyst: Cassie Van Dyke Date of Completion: 11/21/2016

Second-Level Review: Sherri Herschmann Date Stamp: 11/22/2016

REVIEWED/APPROVED
By Sherri Herschmann at 11:56:46 AM, 11/22/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161118B **Run No.:** 89084

Analytical Run Date: 11/18/2016 **InstrumentID:** ICP-MS4

Analyst: Cassie Van Dyke

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 10:49:00 AM		
L2-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 10:52:00 AM		
L-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 10:55:00 AM		
10X-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 10:58:00 AM		
5X-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 11:01:00 AM		
2X-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 11:04:00 AM		
H-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 11:07:00 AM		
H2-161118	1	ICPMS_TWDOD	CAL	R89084	11/18/2016 11:10:00 AM		
ICSAB-161118	1	ICPMS_TWDOD	ICSB	R89084	11/18/2016 11:21:00 AM		
ICSA-161118	1	ICPMS_TWDOD	ICSA	R89084	11/18/2016 11:36:00 AM		
ICV-161118	1	ICPMS_TWDOD	ICV	R89084	11/18/2016 11:57:00 AM		
LCVL-161118	1	ICPMS_TWDOD	LCVL	R89084	11/18/2016 12:06:00 PM		
ICB-161118	1	ICPMS_TWDOD	ICB	R89084	11/18/2016 12:08:00 PM		
CCV5-161118	1	ICPMS_TWDOD	CCV	R89084	11/18/2016 3:09:00 PM		
LCVL5-161118	1	ICPMS_TWDOD	LCVL	R89084	11/18/2016 3:13:00 PM		
CCB5-161118	1	ICPMS_TWDOD	CCB	R89084	11/18/2016 3:15:00 PM		
MB-77967	5	ICPMS_TSDOD1	MBLK	77967	11/18/2016 3:17:00 PM		
LCS-77967	5	ICPMS_TSDOD1	LCS	77967	11/18/2016 3:19:00 PM		
LCSD-77967	5	ICPMS_TSDOD1	LCSD	77967	11/18/2016 3:21:00 PM		
1611053-02A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:25:00 PM		
1611053-02A SD	25	ICPMS_TSDOD1	SD	77967	11/18/2016 3:27:00 PM		
1611053-07A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:29:00 PM		
1611053-27A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:31:00 PM		
1611053-32A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:33:00 PM		
1611053-37A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:35:00 PM		
1611071-02A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:37:00 PM		
1611071-05A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:39:00 PM		
1611071-12A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:41:00 PM		
1611071-22A	5	ICPMS_TSDOD1	SAMP	77967	11/18/2016 3:43:00 PM		
1611053-02A PDS	5	ICPMS_TSDOD1	PDS	77967	11/18/2016 3:45:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

REVIEWED/APPROVED

By Sherri Herschmann at 11:56:48 AM, 11/22/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161118B **Run No.:** 89084

1611053-02A MS	5	ICPMS_TSDOD1	MS	77967	11/18/2016 3:47:00 PM		
1611053-02A MSD	5	ICPMS_TSDOD1	MSD	77967	11/18/2016 3:49:00 PM		
CCV6-161118	1	ICPMS_TWDOD	CCV	R89084	11/18/2016 3:51:00 PM		
LCVL6-161118	1	ICPMS_TWDOD	LCVL	R89084	11/18/2016 3:56:00 PM		
CCB6-161118	1	ICPMS_TWDOD	CCB	R89084	11/18/2016 4:00:00 PM		
MB-77968	5	ICPMS_TSDOD1	MBLK	77968	11/18/2016 4:02:00 PM		
LCS-77968	5	ICPMS_TSDOD1	LCS	77968	11/18/2016 4:04:00 PM		
LCSD-77968	5	ICPMS_TSDOD1	LCSD	77968	11/18/2016 4:06:00 PM		
1611071-27A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:10:00 PM		
1611071-24A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:14:00 PM		
1611071-27A SD	25	ICPMS_TSDOD1	SD	77968	11/18/2016 4:16:00 PM		
1611071-25A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:18:00 PM		
1611071-26A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:20:00 PM		
1611071-28A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:22:00 PM		
1611071-29A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:24:00 PM		
1611071-30A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:26:00 PM		
1611071-31A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:28:00 PM		
1611071-32A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:31:00 PM		
1611071-33A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 4:33:00 PM		
1611071-27A PDS	5	ICPMS_TSDOD1	PDS	77968	11/18/2016 4:35:00 PM		
1611071-27A MS	5	ICPMS_TSDOD1	MS	77968	11/18/2016 4:37:00 PM		
1611071-27A MSD	5	ICPMS_TSDOD1	MSD	77968	11/18/2016 4:39:00 PM		
CCV7-161118	1	ICPMS_TWDOD	CCV	R89084	11/18/2016 4:41:00 PM		
LCVL7-161118	1	ICPMS_TWDOD	LCVL	R89084	11/18/2016 4:45:00 PM		
CCB7-161118	1	ICPMS_TWDOD	CCB	R89084	11/18/2016 4:47:00 PM		
1611071-34A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 5:03:00 PM		
1611071-35A	5	ICPMS_TSDOD1	SAMP	77968	11/18/2016 5:05:00 PM		
CCV8-161118	1	ICPMS_TWDOD	CCV	R89084	11/18/2016 5:17:00 PM		
LCVL8-161118	1	ICPMS_TWDOD	LCVL	R89084	11/18/2016 5:21:00 PM		
CCB8-161118	1	ICPMS_TWDOD	CCB	R89084	11/18/2016 5:23:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-161019	ICPMS CCV 200/5000 PPB		01/17/2017
MET-H2CAL-1610	ICPMS High Cal2 2000ppb std 8		01/17/2017
MET-HCAL-16101	ICPMS High Cal 500ppb/10ppm s		01/17/2017
MET-ICV-161019	ICPMS ICV 100 ppb		01/17/2017
MET-IS-161027	INTERNAL STANDARD 1 PPM		01/25/2017
MET-L2CAL-16101	ICPMS Low Cal2 1/20ppb std 2		01/17/2017
MET-LCAL-161019	ICPMS Low Cal 10/200ppb std 3		01/17/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		01/17/2017
MET-LCAL5X-161	ICPMS Low Cal 10/200ppb std 5		01/17/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-161019	ICPMS PA FACTOR SOLUTION		04/17/2017
MET-PDS-160927-	10 PPM Ag+Sb PDS		12/26/2016
MET-PDS-160927-	10 PPM CUSTOM PDS SOLUTI		12/26/2016
MET-PDS-160927-	250 PPM Naturals+Al+Fe PDS		12/26/2016

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\161118.b

Acquisition Order

#	Sequence Flow
1	Calibration Standards
2	Unknown Samples
3	Blank Samples

Calibration Standards:

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
1	CCB		CAL ICPMS_TW		1101	
2	CCB		CAL ICPMS_TW		1101	
3	CCB		CAL ICPMS_TW		1101	
4	CCB		CAL ICPMS_TW		1102	
5	CCB		CAL ICPMS_TW		1102	
6	CCB		CAL ICPMS_TW		1102	
7	CCB		CAL ICPMS_TW		1102	
8	CCB		CAL ICPMS_TW		1103	
9	CCB		CAL ICPMS_TW		1103	
10	CCB		CAL ICPMS_TW		1103	
11	CCB		CAL ICPMS_TW		1103	
12	CalBlk	BLANK STD 1	CAL ICPMS_TW	1	2101	
13	CalStd	L2-161118	CAL ICPMS_TW	2	2102	
14	CalStd	L-161118	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161118	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161118	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161118	CAL ICPMS_TW	6	2106	
18	CalStd	H-161118	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161118	CAL ICPMS_TW	8	2108	
20	ICB	BLANK	CCB ICPMS_TW		1101	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
21	ICB	BLANK	CCB ICPMS_TW		1102	
22	ICSA	ICSA-161118	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-161118	ICSBICPMS_TW		2110	
24	ICSA	ICSA-161118	ICSAICPMS_TW		2109	
25	ICSA	ICSA-161118	ICSAICPMS_TW		2109	
26	ICB	BLANK	CCB ICPMS_TW		1101	
27	ICB	BLANK	CCB ICPMS_TW		1102	
28	ICV	ICV-161118	ICV ICPMS_TW		2111	
29	ICB	ICB-161118	ICB ICPMS_TW		1101	
30	ICB	ICB-161118	ICB ICPMS_TW		1101	
31	ICV	ICV-161118	ICV ICPMS_TW		2111	
32	LLICV	LCVL-161118	LCVLICPMS_TW		2112	
33	ICB	ICB-161118	ICB ICPMS_TW		1102	
34	LLICV	LCVL-161118	LCVLICPMS_TW		2511	
35	ICB	ICB-161118	ICB ICPMS_TW		1103	
36	AllRef	1611116-06B	SAMPICPMS_DW		2201	10
37	SD	1611116-06B SD	SD ICPMS_DW		2202	50
38	SAMP_W	1611116-01B	SAMPICPMS_DW		2203	50
39	SAMP_W	1611116-02B	SAMPICPMS_DW		2204	10
40	SAMP_W	1611116-03B	SAMPICPMS_DW		2205	10

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	SAMP_W	1611116-04B	SAMPICPMS_DW		2206	50
42	SAMP_W	1611116-05B	SAMPICPMS_DW		2207	50
43	SAMP_W	1611116-07B	SAMPICPMS_DW		2208	50
44	SAMP_W	1611116-08B	SAMPICPMS_DW		2209	10
45	SAMP_W	1611116-09B	SAMPICPMS_DW		2210	500
46	SAMP_W	1611116-10B	SAMPICPMS_DW		2211	500
47	PDS	1611116-06B PDS	PDS ICPMS_DW		2212	~~50~~ 10 KL

Sample List

48	CCV	CCV1-161118	CCV ICPMS_TW		1207	
49	CCB	CCB1-161118	CCB ICPMS_TW		1102	
50	LLCCV	LCVL1-161118	LCVLICPMS_TW		2112	
51	CCB	CCB1-161118	CCB ICPMS_TW		1103	
52	SAMP_W	1611116-09B	SAMPICPMS_DW		2301	100
53	SAMP_W	1611116-10B	SAMPICPMS_DW		2302	100
54	SAMP_W	1611116-11B	SAMPICPMS_DW		2303	500
55	SAMP_W	1611116-12B	SAMPICPMS_DW		2304	500
56	SAMP_W	1611116-13B	SAMPICPMS_DW		2305	100
57	SAMP_W	1611116-14B	SAMPICPMS_DW		2306	100
58	SAMP_W	1611116-15B	SAMPICPMS_DW		2307	500
59	SAMP_W	1611116-16B	SAMPICPMS_DW		2308	500
60	SAMP_W	1611116-08B	SAMPICPMS_DW		2209	50

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	CCB	CCB2-161118	CCB ICPMS_TW		1102	
62	CCB	CCB2-161118	CCB ICPMS_TW		1102	
63	SAMP_W	1611116-08B	SAMPICPMS_DW		2309	50
64	SAMP_W	1611116-12B	SAMPICPMS_DW		2310	10
65	CCV	CCV2-161118	CCV ICPMS_TW		1207	
66	LLCCV	LCVL2-161118	LCVLICPMS_TW		2112	
67	CCB	CCB2-161118	CCB ICPMS_TW		1103	
68	CCB	CCB2-161118	CCB ICPMS_TW		1102	
69	LLCCV	LCVL2-161118	LCVLICPMS_TW		2112	
70	SAMP_W	1611116-11B	SAMPICPMS_DW		3301	10
71	SAMP_W	1611116-15B	SAMPICPMS_DW		2307	10
72	SAMP_W	1611116-16B	SAMPICPMS_DW		2308	10
73	CCB	RINSE	CCB ICPMS_TW		1101	
74	SAMP_W	1611116-15B	SAMPICPMS_DW		3303	10
75	SAMP_W	1611116-16B	SAMPICPMS_DW		3304	10
76	CCB	RINSE	CCB ICPMS_TW		1101	

Sample List

77	PB_W	MB-77886	MBLKICPMS_TW	3501	1
78	LCS_W	LCS-77886	LCS ICPMS_TW	3502	1
79	LCS_W	LCSD-77886	LCSDICPMS_TW	3503	1
80	CCB	RINSE	CCB ICPMS_TW	1101	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	AllRef	1611126-01A	SAMPICPMS_TW		3504	1
82	SD	1611126-01A SD	SD ICPMS_TW		3505	5
83	SAMP_W	1611126-02A	SAMPICPMS_TW		3506	1
84	PDS	1611126-01A PDS	PDS ICPMS_TW		3507	1
85	MS_W	1611126-01A MS	MS ICPMS_TW		3508	1
86	MS_W	1611126-01A MSD	MSD ICPMS_TW		3509	1
87	CCB	RINSE	CCB ICPMS_TW		1101	
88	CCV	CCV3-161118	CCV ICPMS_TW		1207	
89	CCB	CCB3-161118	CCB ICPMS_TW		1102	
90	LLCCV	LCVL3-161118	LCVLICPMS_TW		2512	
91	CCB	CCB3-161118	CCB ICPMS_TW		1103	
92	PB_W	MB-77922	MBLKICPMS_DW		3101	1
93	LCS_W	LCS-77922	LCS ICPMS_DW		3102	1
94	LCS_W	LCSD-77922	LCSDICPMS_DW		3103	1
95	CCB	RINSE	CCB ICPMS_TW		1101	
96	AllRef	1611091-01B	SAMPICPMS_DW		3104	1
97	SD	1611091-01B SD	SD ICPMS_DW		3105	5
98	SAMP_W	1611091-02B	SAMPICPMS_DW		3106	1
99	SAMP_W	1611091-03B	SAMPICPMS_DW		3107	1
100	SAMP_W	1611091-04B	SAMPICPMS_DW		3108	1

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	SAMP_W	1611091-05B	SAMPICPMS_DW		3109	1
102	SAMP_W	1611091-06B	SAMPICPMS_DW		3110	1
103	SAMP_W	1611091-07B	SAMPICPMS_DW		3111	1
104	SAMP_W	1611091-08B	SAMPICPMS_DW		3112	1
105	SAMP_W	1611091-09B	SAMPICPMS_DW		3201	1
106	SAMP_W	1611091-10B	SAMPICPMS_DW		3202	1
107	PDS	1611091-01B PDS	PDS ICPMS_DW		3203	1
108	MS_W	1611091-01B MS	MS ICPMS_DW		3204	1
109	MS_W	1611091-01B MSD	MSD ICPMS_DW		3205	1
110	CCV	CCV4-161118	CCV ICPMS_TW		1207	
111	CCB	CCB4-161118	CCB ICPMS_TW		1102	
112	LLCCV	LCVL4-161118	LCVLICPMS_TW		2512	
113	CCB	CCB4-161118	CCB ICPMS_TW		1103	
114	SAMP_W	1611091-11B	SAMPICPMS_DW		3206	1
115	SAMP_W	1611089-01A	SAMPICPMS_DW		3207	1
116	SAMP_W	1611089-02A	SAMPICPMS_DW		3208	1
117	SAMP_W	1611091-06B	SAMPICPMS_DW		3209	5
118	CCV	CCV5-161118	CCV ICPMS_TW		1207	
119	CCB	CCB5-161118	CCB ICPMS_TW		1102	
120	LLCCV	LCVL5-161118	LCVLICPMS_TW		2511	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	CCB	CCB5-161118	CCB ICPMS_TW		1103	
122	PB	MB-77967	MBLKICPMS_TSDOD		4101	5
123	LCS_S	LCS-77967	LCS ICPMS_TSDOD		4102	5
124	LCS_S	LCSD-77967	LCSDICPMS_TSDOD		4103	5
125	CCB	RINSE	CCB ICPMS_TSDOD		1101	5
126	AllRef	1611053-02A	SAMPICPMS_TSDOD		4104	25
127	SD	1611053-02A SD	SD ICPMS_TSDOD		4105	5
128	Sample	1611053-07A	SAMPICPMS_DW		4106	5
129	Sample	1611053-27A	SAMPICPMS_DW		4107	5
130	Sample	1611053-32A	SAMPICPMS_DW		4108	5
131	Sample	1611053-37A	SAMPICPMS_DW		4109	5
132	Sample	1611071-02A	SAMPICPMS_TSDOD		4110	5
133	Sample	1611071-05A	SAMPICPMS_TSDOD		4111	5
134	Sample	1611071-12A	SAMPICPMS_TSDOD		4112	5
135	Sample	1611071-22A	SAMPICPMS_TSDOD		4201	5
136	PDS	1611053-02A PDS	PDS ICPMS_TSDOD		4202	5
137	MS_S	1611053-02A MS	MS ICPMS_TSDOD		4203	5
138	MS_S	1611053-02A MSD	MSD ICPMS_TSDOD		4204	5
139	CCV	CCV6-161118	CCV ICPMS_TW		1207	
140	CCB	CCB6-161118	CCB ICPMS_TW		1102	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	LLCCV	LCVL6-161118	LCVLICPMS_TW		2511	
142	CCB	CCB6-161118	CCB ICPMS_TW		1103	
143	PB	MB-77968	MBLKICPMS_TSDOD		2401	5
144	LCS_S	LCS-77968	LCS ICPMS_TSDOD		2402	5
145	LCS_S	LCSD-77968	LCSDICPMS_TSDOD		2403	5
146	CCB	RINSE	CCB ICPMS_TSDOD		1101	1
147	AllRef	1611071-27A	SAMPICPMS_TSDOD		2404	25
148	SD	1611071-27A SD	SD ICPMS_TSDOD		2405	5
149	Sample	1611071-24A	SAMPICPMS_TSDOD		2406	5
150	SD	1611071-27A SD	SD ICPMS_TSDOD		2405	5
151	Sample	1611071-25A	SAMPICPMS_TSDOD		2407	5
152	Sample	1611071-26A	SAMPICPMS_TSDOD		2408	5
153	Sample	1611071-28A	SAMPICPMS_TSDOD		2409	5
154	Sample	1611071-29A	SAMPICPMS_TSDOD		2410	5
155	Sample	1611071-30A	SAMPICPMS_TSDOD		2411	5
156	Sample	1611071-31A	SAMPICPMS_TSDOD		2412	5
157	Sample	1611071-32A	SAMPICPMS_TSDOD		2501	5
158	Sample	1611071-33A	SAMPICPMS_TSDOD		2502	5
159	PDS	1611071-27A PDS	PDS ICPMS_TSDOD		2503	5
160	MS_S	1611071-27A MS	MS ICPMS_TSDOD		2504	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
161	MS_S	1611071-27A MSD	MSD ICPMS_TSDOD		2505	5
162	CCV	CCV7-161118	CCV ICPMS_TW		1207	
163	CCB	CCB7-161118	CCB ICPMS_TW		1102	
164	LLCCV	LCVL7-161118	LCVLICPMS_TW		2511	
165	CCB	CCB7-161118	CCB ICPMS_TW		1102	
166	PB_W	MB-77886	MBLKTCLP_MET		3401	1
167	PB_W	MB-77976-TCLP	MBLKTCLP_MET		3402	1
168	LCS_W	LCS-77986	LCS TCLP_MET		3403	1

Sample List

169	LCS_W	LCSD-77986	LCSDTCLP_MET	3404	1
170	CCB	RINSE	CCB ICPMS_TW	1101	1
171	AllRef	1611171-01A	SAMPTCLP_MET	3405	1
172	SD	1611171-01A SD	SD TCLP_MET	3406	5
173	Sample	1611071-34A	SAMPICPMS_TSDOD	2311	5
174	Sample	1611071-35A	SAMPICPMS_TSDOD	2312	5
175	Sample	1611174-11A	SAMPPB_WIPE	2511	5
176	Sample	1611174-12A	SAMPPB_WIPE	2512	5
177	PDS	1611171-01A PDS	PDS TCLP_MET	3407	1
178	MS_W	1611171-01A MS	MS TCLP_MET	3408	1
179	MS_W	1611171-01A MSD	MSD TCLP_MET	3409	1
180	CCV	CCV8-161118	CCV ICPMS_TW	1207	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
181	CCB	CCB8-161118	CCB ICPMS_TW		1102	
182	LLCCV	LCVL8-161118	LCVLICPMS_TW		2511	
183	CCB	CCB8-161118	CCB ICPMS_TW		1102	
184	PB	MB-77988	MBLKPB_WIPE		4401	5
185	LCS_S	LCS-77988	LCS PB_WIPE		4402	5
186	LCS_S	LCSD-77988	LCSDPB_WIPE		4403	5
187	CCB	RINSE	CCB ICPMS_TW		1101	
188	AllRef	1611174-01A	SAMPPB_WIPE		4404	5
189	SD	1611174-01A SD	SD PB_WIPE		4405	25
190	Sample	1611174-02A	SAMPPB_WIPE		4406	5
191	Sample	1611174-03A	SAMPPB_WIPE		4407	5
192	Sample	1611174-04A	SAMPPB_WIPE		4408	5
193	Sample	1611174-05A	SAMPPB_WIPE		4409	5
194	Sample	1611174-06A	SAMPPB_WIPE		4410	5
195	Sample	1611174-07A	SAMPPB_WIPE		4411	5
196	Sample	1611174-08A	SAMPPB_WIPE		4412	5
197	Sample	1611174-09A	SAMPPB_WIPE		4501	5

Sample List

198	Sample	1611174-10A	SAMPPB_WIPE	4502	5
199	PDS	1611174-01A PDS	PDS PB_WIPE	4503	5
200	CCV	CCV9-161118	CCV ICPMS_TW	1207	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
201	CCB	CCB9-161118	CCB ICPMS_TW		1102	
202	LLCCV	LCVL9-161118	LCVLICPMS_TW		2511	
203	CCB	CCB9-161118	CCB ICPMS_TW		1102	

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Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/17/2016 11:01:42 AM**
Digestion:
Prep End Date:

Prep Batch **77967** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List
Thermometer #71
Pipette#-P-09
Pipette #P-01
Hot Block #4
Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-02A MS/MSD	Soil		1.03	50	50.000	1 of 1	
1611053-07A	Soil		1.09	50	50.000	1 of 1	
1611053-27A	Soil		1.04	50	50.000	1 of 1	
1611053-32A	Soil		1.07	50	50.000	1 of 1	
1611053-37A	Soil		1.01	50	50.000	1 of 1	
1611071-02A	Soil		1.01	50	50.000	1 of 1	
1611071-05A	Soil		1.06	50	50.000	1 of 1	
1611071-12A	Soil		1.17	50	50.000	1 of 1	
1611071-22A	Soil		1.04	50	50.000	1 of 1	
LCS-77967	Soil		1	50	50.000	of	
LCSD-77967	Soil		1	50	50.000	of	
MB-77967	Soil		1	50	50.000	of	

53-02A MS 1.02
53-02A MSD 1.03

REVIEWED/APPROVED
By Sherri Herschmann at 11:59:29 AM, 11/22/2016

Number	Reagent Name	Amt	Units	Exp. Da
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017
10884	Digestion vessels	1	vessel	11/16/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161116-1	2500 PPM Naturals Spike	LCS/MS/MSD	0.5	05/14/2017
MET-SPIKE-161116-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	05/14/2017
MET-SPIKE-161116-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	05/14/2017

11:50-12:00
12:05-14:05
14:20-16:20
16:30-16:45

11/17/16

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	11/17/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	P-01, P-09	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT / WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-01	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**5.00**	4.9918	5.0018	**100.04**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		4.9951	5.0051	**100.10**		
3		4.9898	4.9998	**100.00**		
AVERAGE (MEAN)		**4.992**	**5.002**	**100.04**		**0.054**
						PASS

PIPETTE ID: P-09	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.20**	0.1986	0.1990	**99.50**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1998	0.2002	**100.10**		
3		0.1998	0.2002	**100.10**		
AVERAGE (MEAN)		**0.199**	**0.200**	**99.90**		**0.347**
						PASS

PIPETTE ID:	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1						**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2						
3						
AVERAGE (MEAN)						

Analyst / Date 11/17/16

Review and Approved / Date 11/22/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	11/18/2016	**Water is at Room Temperatue (70-73°F) / (21-23°C)**		
PIPETTER LAB ID:	See Below	**WATER TEMP (°C):**	**21-23°C**	
TEST VOLUME:	See Below	**WATER DENSITY:**	**0.998**	**(0.9980-0.9976)**

REFERENCE:	DoD QSM 5.0
# of REPLICATES:	3
LABWARE TYPE:	MECHANICAL VOLUMETRIC PIPETTE
FREQUENCY:	DAILY BEFORE USE
MEAN CRITERIA:	± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME)
RSD CRITERIA:	< 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS)

1) RECORD ROOM AND WATER TEMPERATURE
2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.
3) WEIGH 3 REPLICATES AT THE TEST VOLUME.
4) DETERMINE TOTAL WT.
5) CALCULATE VOLUME OF H2O AT °C (in mL)

% TEST VOL = Volume of H2O at °C/Test Volume * 100

%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100

VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY

					BIAS	PRECISION
PIPETTE ID: P-31	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**5.00**	4.9926	4.9826	**99.65**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		4.9947	4.9847	**99.69**		
3		4.9905	4.9805	**99.61**		
AVERAGE (MEAN)		**4.993**	**4.983**	**99.65**		**0.042**
						PASS

PIPETTE ID: P-21	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**1.00**	1.0016	0.9996	**99.96**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		1.0010	0.9990	**99.90**		
3		1.0024	1.0004	**100.04**		
AVERAGE (MEAN)		**1.002**	**1.000**	**99.97**		**0.070**
						PASS

PIPETTE ID: P-39	**TEST VOLUME (mL)**	**TOTAL WT (g)**	**Volume of H_2O at °C**	**% TEST VOL (98-102%)**	**MEAN CRITERIA (± 2%)**	**% RSD Calculated**
1	**0.200**	0.1997	0.1993	**99.65**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.1993	0.1989	**99.45**		
3		0.2008	0.2004	**100.20**		
AVERAGE (MEAN)		**0.200**	**0.200**	**99.77**		**0.389**
						PASS

11/18/16
Analyst / Date

11/22/2016
Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/17/2016 11:01:42 AM**
Digestion: **Start: 11/17/2016 11:50:00 AM / Stop: 11/17/2016 4:45:00 PM**
Prep End Date: **11/17/2016 5:16:29 PM**

Prep Batch **77967** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

- Thermometer #71
- Pipette#-P-09
- Pipette #P-01
- Hot Block #4
- Balance #20

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-02A	Soil		1.03	50	48.544	1 of 1	
1611053-02A MS	Soil		1.02	50	49.020	of	
1611053-02A MSD	Soil		1.03	50	48.544	of	
1611053-02A PDS	Soil		1.03	50	48.544	of	
1611053-02A SD	Soil		1.03	50	48.544	of	
1611053-07A	Soil		1.09	50	45.872	1 of 1	
1611053-27A	Soil		1.04	50	48.077	1 of 1	
1611053-32A	Soil		1.07	50	46.729	1 of 1	
1611053-37A	Soil		1.01	50	49.505	1 of 1	
1611071-02A	Soil		1.01	50	49.505	1 of 1	
1611071-05A	Soil		1.06	50	47.170	1 of 1	
1611071-12A	Soil		1.17	50	42.735	1 of 1	
1611071-22A	Soil		1.04	50	48.077	1 of 1	
LCS-77967	Soil		1	50	50.000	of	
LCSD-77967	Soil		1	50	50.000	of	
MB-77967	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10400	Hydrochloric Acid (trace metal grade)	5	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	10	ml	07/14/2026
10646	Hydrogen Peroxide, 30%	3	ml	02/08/2017
10884	Digestion vessels	1	vessel	11/16/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-160712-1	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-160712-2	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/05/2017
MET-SPIKE-161116-1	2500 PPM Naturals Spike	LCS/MS/MSD	0.5	05/14/2017
MET-SPIKE-161116-2	Sb+Ag 50 PPM	LCS/MS/MSD	1	05/14/2017
MET-SPIKE-161116-3	50 PPM Custom+Sb,Ti,B,Mo,Sr,Li	LCS/MS/MSD	1	05/14/2017

REVIEWED/APPROVED
By Sherri Herschmann at 11:59:35 AM, 11/22/2016

Calibration Summary Report

Date Acquired 11/18/2016 10:49
Data Batch 161118.b

Level	Calibration File Name
1	012CALB.d
2	013CALS.d
3	014CALS.d
4	015CALS.d
5	016CALS.d
6	017CALS.d
7	018CALS.d
8	019CALS.d

Calibration Table

Ele	Corr Coef	Curve Equation
As	1.0000	y = 0.0011 * x + 2.6027E-004
Be	1.0000	y = 4.9752E-005 * x + 1.9900E-006
B	1.0000	y = 2.0294E-005 * x + 9.4901E-005
Na	1.0000	y = 7.8722E-004 * x + 0.0688
Mg	0.9999	y = 4.0472E-004 * x + 0.0010
Al	1.0000	y = 1.6983E-004 * x + 0.0013
K	1.0000	y = 4.0907E-004 * x + 0.0599
Ca	0.9998	y = 2.4673E-005 * x + 5.6431E-004
Ti	1.0000	y = 1.3994E-004 * x + 1.1038E-005
V	1.0000	y = 0.0044 * x + 0.0023
Cr	1.0000	y = 0.0049 * x + 9.8406E-004
Mn	1.0000	y = 0.0031 * x + 5.3114E-004
Fe	1.0000	y = 0.0044 * x + 0.0065
Co	1.0000	y = 0.0116 * x + 2.3747E-004
Ni	1.0000	y = 0.0031 * x + 0.0016
Cu	1.0000	y = 0.0085 * x + 0.0060
Zn	1.0000	y = 0.0014 * x + 0.0234
Se	1.0000	y = 7.5408E-005 * x + 1.5347E-004
Sr	1.0000	y = 6.6846E-004 * x + 8.0765E-005
Mo	1.0000	y = 5.0115E-004 * x + 9.9357E-006
Ag	1.0000	y = 0.0015 * x + 8.7184E-006
Cd	1.0000	y = 2.3101E-004 * x + 1.7103E-006
Sn	1.0000	y = 5.1249E-004 * x + 1.4808E-004
Sb	1.0000	y = 7.8398E-004 * x + 7.0989E-005
Tl	1.0000	y = 0.0017 * x + 9.5275E-006
Ba	1.0000	y = 2.6030E-004 * x + 5.9772E-006
Pb	1.0000	y = 0.0012 * x + 2.2830E-004
Li	1.0000	y = 4.3649E-005 * x + 9.9129E-006

REVIEWED
By Carlos Castro at 4:08:01 PM, 11/21/2016

Calibration Summary Report

Level 7 Cal

Ele	Conc	Calc	%Rec
As	500	492.43	98
Be	500	509.58	102
B	500	502.43	100
Na	10000	10034.68	100
Mg	10000	10196.44	102
Al	10000	9971.29	100
K	10000	10015.82	100
Ca	10000	9559.97	96
Ti	500	510.14	102
V	500	495.77	99
Cr	500	515.17	103
Mn	500	497.52	100
Fe	10000	9977.20	100
Co	500	504.34	101
Ni	500	503.89	101
Cu	500	499.34	100
Zn	500	493.77	99
Se	500	496.00	99
Sr	500	492.59	99
Mo	500	501.56	100
Ag	500	498.51	100
Cd	500	504.95	101
Sn	500	508.38	102
Sb	500	498.68	100
Tl	500	500.09	100
Ba	500	505.21	101
Pb	500	501.74	100

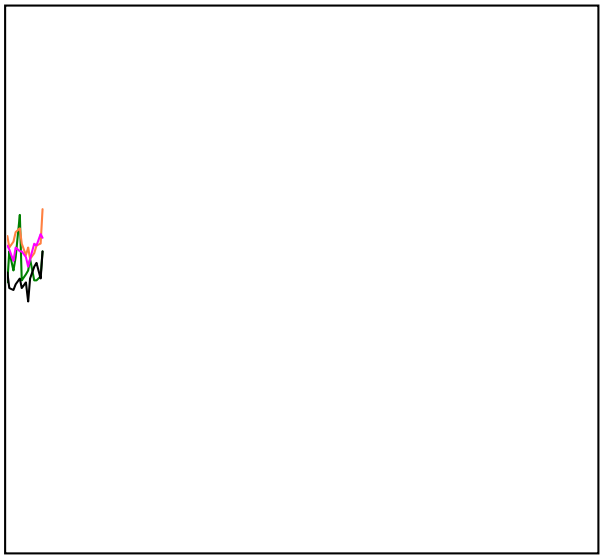
Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	2002.27	100
Be	2000	1997.41	100
B	2000	1998.45	100
Na	25000	24981.60	100
Mg	25000	24881.42	100
K	25000	24975.81	100
Ca	25000	25230.16	99
Ti	2000	1996.99	100
V	2000	2001.42	100
Cr	2000	1995.08	100
Mn	2000	2000.49	100
Co	2000	1998.70	100
Ni	2000	1998.79	100
Cu	2000	1999.75	100
Zn	2000	2001.05	100
Se	2000	2000.95	100
Sr	2000	2001.97	100
Mo	2000	1999.28	100
Cd	2000	1997.95	100
Sn	2000	1996.59	100
Tl	2000	2000.95	100
Ba	2000	1998.04	100
Pb	2000	1999.96	100
Li	2000	2000.43	100

REVIEWED/APPROVED

By Sherri Herschmann at 12:03:53 PM, 11/22/2016

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	1000	785	771.3	4.54
59	2000	1103	1051.6	6.62
89	2000	1254	1138.2	4.15
140	5000	2877	2765.6	3.11
205	5000	2757	2505.7	4.80
156/140	1	0.591 %	0.258 %	54.31
51	200	121	128.8	11.23
56	5000	3346	3322.9	2.66
75	20	17	8.8	51.24
78	50	26	17.9	24.79

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.49
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	7.5
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-85	Cell Exit	-60
Deflect	0.8		

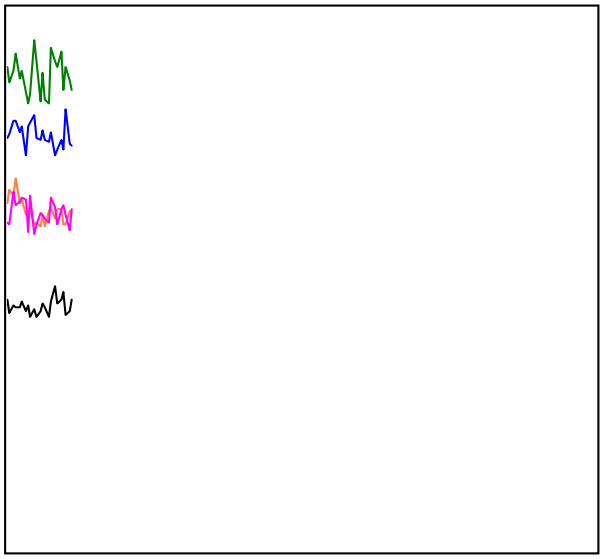
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.44E+2	Pa	Carrier Gas(BP)	1.21E+2	kPa
Analyzer Press	1.44E-4	Pa	Reflected Power	5	W
Forward Power	1549	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	2000	1490	1529.8	2.96
59	2000	1699	1748.3	3.96
89	5000	3101	3131.5	3.58
140	5000	3147	3108.2	3.73
205	5000	2319	2253.3	3.11
156/140	2	0.572 %	0.734 %	29.99
51	50000	21826	21425.4	1.90
56	200000	123970	126015.3	1.09
75	5000	4507	4569.2	2.40
78	5000	2328	2322.2	2.56

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.49
RF Matching	1.90	Option Gas	0.0
Smpl Depth	8.0	Nebulizer Pump	0.10
S/C Temp	2		

Lenses Parameters

Extract 1	0.0	Omega Lens	7.5
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-85	Cell Exit	-60
Deflect	7.0		

Cell Parameters

Use Gas	false	3rd Gas Flow	0
He Flow	4.2	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	200
Energy Discrimination	3.0		

Meters

IF/BK Press	2.42E+2	Pa	Carrier Gas(BP)	1.21E+2	kPa
Analyzer Press	9.30E-5	Pa	Reflected Power	5	W
Forward Power	1551	W			

US EPA Tune Check Sample Report

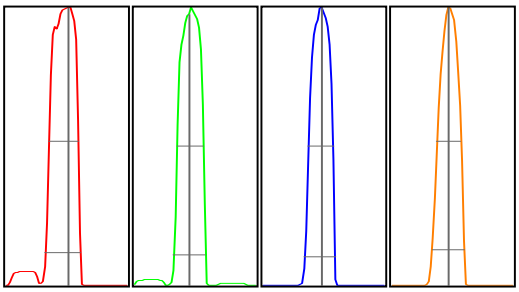
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	578622	0.44	5.00	
59	939489	0.39	5.00	
115	1506318	2.22	5.00	
205	1320437	3.60	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	578469	576694	575795	580001	582154
59	938898	937311	944684	941417	935132
115	1544737	1505451	1497125	1527590	1456686
205	1392072	1284815	1290389	1346616	1288292

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	84145	7.05	6.9 - 7.1		0.853	0.850	[F]
59	152401	58.90	58.9 - 59.1		0.767	0.850	
115	272542	115.00	114.9 - 115.1		0.725	0.850	
205	241304	204.95	204.9 - 205.1		0.780	0.850	

X% = 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

Tune Parameters

Plasma Paramters

ParameterName	Value	Unit	ParameterName	Value	Unit
RF Power	1550	W	Nebulizer Pump	0.10	rps
RF Matching	1.90	V	S/C Temp	2	℃
Smpl Depth	8.0	mm	Gas Switch	Dilution Gas	
Carrier Gas	0.49	L/min	Makeup/Dilution Gas	0.56	L/min
Option Gas	0.0	%			

Lenses Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Extract 1	0.0	V	Cell Entrance	-40	V
Extract 2	-200.0	V	Cell Exit	-60	V
Omega Bias	-85	V	Deflect	7.0	V
Omega Lens	7.5	V	Plate Bias	-60	V

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	200	V
H2 Flow	0.0	mL/min	Energy Discrimination	3.0	V
3rd Gas Flow	0	%			

P/A Factor Tuning Report

Current Sample

Sample Name: CCV7-161118
Data File: 162_CCV.d
Acquired: 11/18/2016 16:41:02

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1922 V
PulseHV: 1038 V

Acquired: 11/18/2016 09:56:37

Mass[u]	Element	P/A Factor
6	Li	0.097376
9	Be	0.108898
23	Na	0.116776
24	Mg	0.121432
27	Al	0.125829
39	K	0.127548
45	Sc	0.129850
48		0.130578
51	V	0.131960
52	Cr	0.135096
55	Mn	0.137934
59	Co	0.140873
60	Ni	0.141566
63	Cu	0.144184
66	Zn	0.144054
72		0.142976
74	Ge	0.143886
75	As	0.142443
88	Sr	0.144459
89		0.142858
95		0.141709
97	Mo	0.142370
98	Mo	0.143454
99	[Mo]	0.145915
101		0.145523
105		0.148673
111	Cd	0.149363
114	Cd	0.150632
115	In	0.150694
118	Sn	0.150035
121		0.149851
123	Sb	0.150228
135	Ba	0.148459
138		0.151028
175		0.157402
193		0.156847
205	Tl	0.158575
206	[Pb]	0.158459
207	[Pb]	0.158387
208	Pb	0.159213
209	Bi	0.159363
232		0.159583
238	U	0.159916
44	Ca	Signal too low
78	Se	Signal too low
107	Ag	Signal too low
172		Signal too low

Calibration Blank Report

Date Acquired	11/18/2016 10:49	Sample Name	BLANK STD 1
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	10	17.32
9	Be	45	2	86.60
11	B	45	96	41.62
23	Na	45	69337	0.30
24	Mg	45	1043	1.94
27	Al	45	1326	7.30
39	K	45	60362	0.04
44	Ca	45	569	7.44
47	Ti	45	11	45.82
51	V	45	2364	5.92
52	Cr	45	992	13.34
55	Mn	45	536	8.72
56	Fe	45	6520	1.29
59	Co	72	163	5.40
60	Ni	72	1101	0.87
63	Cu	72	4133	2.35
66	Zn	72	16123	1.76
75	As	72	179	11.62
78	Se	72	106	5.60
88	Sr	115	524	1.47
95	Mo	115	64	32.85
107	Ag	115	57	17.65
111	Cd	115	11	45.82
118	Sn	115	961	11.83
121	Sb	115	461	15.59
137	Ba	115	39	54.42
205	Tl	209	136	13.54
208	Pb	209	3246	4.48

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1008168	0.63
72	Ge	687591	1.25
115	In	6493768	1.04
209	Bi	14217989	1.81

Calibration Standard Report

Date Acquired	11/18/2016 10:52	Sample Name	L2-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	51	21.65
9	Be	45	64	17.05
11	B	45	103	3.23
23	Na	45	85439	1.13
24	Mg	45	9537	5.06
27	Al	45	4682	3.98
39	K	45	67823	1.36
44	Ca	45	1063	8.31
47	Ti	45	167	2.00
51	V	45	6840	0.43
52	Cr	45	5836	0.80
55	Mn	45	3603	2.83
56	Fe	45	93927	1.69
59	Co	72	8099	1.56
60	Ni	72	3346	2.24
63	Cu	72	9513	2.44
66	Zn	72	19433	2.39
75	As	72	926	2.08
78	Se	72	163	2.11
88	Sr	115	4677	0.50
95	Mo	115	3310	3.96
107	Ag	115	10001	4.56
111	Cd	115	1489	3.44
118	Sn	115	4165	3.24
121	Sb	115	5388	1.68
137	Ba	115	1731	5.68
205	Tl	209	23093	3.22
208	Pb	209	19515	2.32

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	996730	0.64	1008168	98.87	70	120	
72	Ge	678557	0.23	687591	98.69	70	120	
115	In	6319970	0.91	6493768	97.32	70	120	
209	Bi	13941196	1.37	14217989	98.05	70	120	

Calibration Standard Report

Date Acquired	11/18/2016 10:55	Sample Name	L-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	427	3.34
9	Be	45	500	8.46
11	B	45	298	7.62
23	Na	45	225261	0.80
24	Mg	45	83669	1.92
27	Al	45	34690	1.76
39	K	45	140629	0.32
44	Ca	45	5301	7.25
47	Ti	45	1469	8.54
51	V	45	44907	2.07
52	Cr	45	50972	0.61
55	Mn	45	31579	2.38
56	Fe	45	868658	0.36
59	Co	72	78201	1.58
60	Ni	72	22281	0.75
63	Cu	72	60996	0.53
66	Zn	72	28257	0.78
75	As	72	7618	1.52
78	Se	72	625	6.84
88	Sr	115	41981	0.78
95	Mo	115	31318	2.34
107	Ag	115	98167	0.80
111	Cd	115	14555	2.98
118	Sn	115	33474	0.79
121	Sb	115	50015	0.48
137	Ba	115	16086	1.65
205	Tl	209	222579	0.93
208	Pb	209	162316	0.54

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	980097	0.56	1008168	97.22	70	120	
72	Ge	667366	0.63	687591	97.06	70	120	
115	In	6364605	0.62	6493768	98.01	70	120	
209	Bi	14035072	0.99	14217989	98.71	70	120	

Calibration Standard Report

Date Acquired	11/18/2016 10:58	Sample Name	10X-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2070	1.17
9	Be	45	2496	3.74
11	B	45	1090	9.48
23	Na	45	841266	0.67
24	Mg	45	412459	0.09
27	Al	45	168868	1.18
39	K	45	467588	0.68
44	Ca	45	23714	0.79
47	Ti	45	7104	3.13
51	V	45	216140	0.46
52	Cr	45	250705	0.99
55	Mn	45	153448	0.36
56	Fe	45	4339176	0.76
59	Co	72	389748	1.12
60	Ni	72	104259	0.58
63	Cu	72	288275	0.76
66	Zn	72	66155	1.66
75	As	72	37031	1.21
78	Se	72	2657	3.24
88	Sr	115	208175	0.43
95	Mo	115	157240	1.30
107	Ag	115	489258	0.73
111	Cd	115	73914	1.10
118	Sn	115	165394	1.02
121	Sb	115	248180	0.45
137	Ba	115	81605	0.87
205	Tl	209	1113592	0.54
208	Pb	209	800850	1.37

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	980947	1.08	1008168	97.30	70	120	
72	Ge	659124	0.37	687591	95.86	70	120	
115	In	6287563	1.36	6493768	96.82	70	120	
209	Bi	14096246	1.66	14217989	99.14	70	120	

Calibration Standard Report

Date Acquired	11/18/2016 11:01	Sample Name	5X-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	4230	0.33
9	Be	45	4947	0.80
11	B	45	2075	5.18
23	Na	45	1627348	0.67
24	Mg	45	821206	0.68
27	Al	45	337017	0.25
39	K	45	876439	0.37
44	Ca	45	47426	0.89
47	Ti	45	13857	0.99
51	V	45	429912	0.46
52	Cr	45	495402	0.22
55	Mn	45	307084	1.27
56	Fe	45	8742656	0.66
59	Co	72	783967	1.25
60	Ni	72	210881	0.79
63	Cu	72	577064	0.23
66	Zn	72	112862	0.54
75	As	72	74877	1.25
78	Se	72	5122	0.64
88	Sr	115	419806	0.48
95	Mo	115	318135	1.31
107	Ag	115	982922	1.11
111	Cd	115	148216	1.15
118	Sn	115	333107	0.84
121	Sb	115	499912	1.05
137	Ba	115	167546	1.40
205	Tl	209	2284165	0.44
208	Pb	209	1615468	0.02

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	986642	0.22	1008168	97.86	70	120	
72	Ge	666516	0.63	687591	96.93	70	120	
115	In	6317772	1.64	6493768	97.29	70	120	
209	Bi	14095640	1.65	14217989	99.14	70	120	

Calibration Standard Report

Date Acquired	11/18/2016 11:04	Sample Name	2X-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	10690	0.67
9	Be	45	12242	0.51
11	B	45	5223	7.95
23	Na	45	3940206	0.40
24	Mg	45	2052321	0.23
27	Al	45	842792	0.33
39	K	45	2093788	0.11
44	Ca	45	115867	0.17
47	Ti	45	34766	1.86
51	V	45	1071375	0.59
52	Cr	45	1248118	0.66
55	Mn	45	767416	0.15
56	Fe	45	21783217	1.28
59	Co	72	1941656	0.49
60	Ni	72	515275	0.55
63	Cu	72	1436164	1.07
66	Zn	72	257453	0.85
75	As	72	186113	0.26
78	Se	72	12690	2.58
88	Sr	115	1052030	1.05
95	Mo	115	798006	0.16
107	Ag	115	2461753	0.62
111	Cd	115	372526	0.65
118	Sn	115	838767	0.28
121	Sb	115	1247479	0.17
137	Ba	115	417882	0.62
205	Tl	209	5738859	0.11
208	Pb	209	4075997	0.72

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	980236	0.52	1008168	97.23	70	120	
72	Ge	667282	0.97	687591	97.05	70	120	
115	In	6292428	0.46	6493768	96.90	70	120	
209	Bi	14276963	0.86	14217989	100.41	70	120	

Calibration Standard Report

Date Acquired	11/18/2016 11:07	Sample Name	H-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	21411	0.50
9	Be	45	24912	0.85
11	B	45	10112	3.30
23	Na	45	7828742	1.05
24	Mg	45	4055377	0.52
27	Al	45	1665104	0.33
39	K	45	4084365	0.14
44	Ca	45	232298	0.56
47	Ti	45	70157	1.46
51	V	45	2145928	0.71
52	Cr	45	2496971	0.17
55	Mn	45	1523484	0.22
56	Fe	45	43206198	0.52
59	Co	72	3888204	0.86
60	Ni	72	1030748	0.35
63	Cu	72	2823664	0.43
66	Zn	72	486646	1.24
75	As	72	369141	0.38
78	Se	72	24968	1.23
88	Sr	115	2094448	0.31
95	Mo	115	1598476	0.16
107	Ag	115	4898555	0.29
111	Cd	115	741797	0.42
118	Sn	115	1657689	0.48
121	Sb	115	2486561	0.46
137	Ba	115	836306	0.83
205	Tl	209	11594813	0.86
208	Pb	209	8128555	1.21

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	982533	0.70	1008168	97.46	70	120	
72	Ge	664848	0.29	687591	96.69	70	120	
115	In	6334793	0.94	6493768	97.55	70	120	
209	Bi	14041649	1.38	14217989	98.76	70	120	

Calibration Standard Report

Date Acquired	11/18/2016 11:10	Sample Name	H2-161118
Data Batch	161118.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	86760	0.83
9	Be	45	98735	0.46
11	B	45	40389	1.91
23	Na	45	19607054	0.43
24	Mg	45	10005586	0.92
27	Al	45	9548	0.84
39	K	45	10210153	1.08
44	Ca	45	619047	0.39
47	Ti	45	277669	0.56
51	V	45	8752947	0.67
52	Cr	45	9775636	1.69
55	Mn	45	6192825	1.39
56	Fe	45	23379	12.35
59	Co	72	15264147	0.26
60	Ni	72	4047114	0.21
63	Cu	72	11189448	1.55
66	Zn	72	1906569	0.27
75	As	72	1486393	0.56
78	Se	72	99481	1.12
88	Sr	115	8552882	2.11
95	Mo	115	6403077	0.84
107	Ag	115	1949	17.98
111	Cd	115	2949613	1.08
118	Sn	115	6539688	0.39
121	Sb	115	4215	6.25
137	Ba	115	3323626	0.59
205	Tl	209	46838286	0.60
208	Pb	209	32702659	1.48

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	993528	0.21	1008168	98.55	70	120	
72	Ge	658628	0.86	687591	95.79	70	120	
115	In	6293180	0.75	6493768	96.91	70	120	
209	Bi	14175948	0.52	14217989	99.70	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	11/18/2016 11:21	Sample Name	ICSAB-161118
Data Batch	161118.b	Comment	ICSBICPMS_TW
Data File Name	023ICSB.d	Dilution	1

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	945824	0.50	1008168	93.82	70	120	
72	Ge	642670	0.44	687591	93.47	70	120	
115	In	5862150	0.56	6493768	90.27	70	120	
209	Bi	12825296	0.41	14217989	90.20	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	11/18/2016 11:36	Sample Name	ICSA-161118
Data Batch	161118.b	Comment	ICSAICPMS_TW
Data File Name	025ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.003	2	50.0	1.2	0.8	
11	B	11.390	308	7.2	30	30	
51	V	-0.025	2111	3.2	10	10	
52	Cr	0.818	4735	3.1	8	5	
55	Mn	0.440	1796	8.8	8	10	
59	Co	1.250	9351	2.4	8	10	
60	Ni	0.367	1732	3.6	8	10	
63	Cu	2.092	15095	1.2	8	10	
66	Zn	-0.981	13994	0.6	10	5	
75	As	0.320	394	9.5	4	5	
78	Se	1.010	146	5.5	2	5	
88	Sr	1.133	4937	4.9	10	10	
107	Ag	0.111	1058	2.5	0.8	2	
111	Cd	0.531	732	9.7	1.2	1	
118	Sn	0.437	2191	7.9	10	10	
121	Sb	0.033	570	9.7	4	2.5	
137	Ba	0.481	772	7.0	8	10	
205	Tl	0.018	511	16.0	4	1.5	
208	Pb	0.326	7747	3.3	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	944207	0.51	1008168	93.66	70	120	
72	Ge	634886	0.40	687591	92.33	70	120	
115	In	5886702	1.56	6493768	90.65	70	120	
209	Bi	12810305	1.32	14217989	90.10	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	11/18/2016 11:57	Sample Name	ICV-161118
Data Batch	161118.b	Comment	ICV ICPMS_TW
Data File Name	031_ICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	99.649	4047	0.99	100	99.6	90	110	
9	Be	45	101.334	4682	1.30	100	101.3	90	110	
11	B	45	106.833	2101	3.91	100	106.8	90	110	
23	Na	45	2496.192	1888211	0.43	2500	99.8	90	110	
24	Mg	45	2537.188	954267	0.44	2500	101.5	90	110	
27	Al	45	2498.712	395197	0.65	2500	99.9	90	110	
39	K	45	2464.705	991635	0.19	2500	98.6	90	110	
44	Ca	45	2414.465	55831	0.31	2500	96.6	90	110	
47	Ti	45	103.080	13402	1.50	100	103.1	90	110	
51	V	45	101.255	415865	0.06	100	101.3	90	110	
52	Cr	45	106.263	487413	0.78	100	106.3	90	110	
55	Mn	45	99.159	287306	0.53	100	99.2	90	110	
56	Fe	45	2462.646	10081527	0.75	2500	98.5	90	110	
59	Co	72	104.153	743972	0.46	100	104.2	90	110	
60	Ni	72	103.752	197394	1.01	100	103.8	90	110	
63	Cu	72	101.560	534971	0.40	100	101.6	90	110	
66	Zn	72	95.504	98845	0.40	100	95.5	90	110	
75	As	72	99.708	69370	0.70	100	99.7	90	110	
78	Se	72	100.451	4760	1.06	100	100.5	90	110	
88	Sr	115	100.267	396412	0.49	100	100.3	90	110	
95	Mo	115	99.718	295288	0.44	100	99.7	90	110	
107	Ag	115	104.470	953702	0.47	100	104.5	90	110	
111	Cd	115	100.322	136917	0.40	100	100.3	90	110	
118	Sn	115	104.897	318447	0.16	100	104.9	90	110	
121	Sb	115	101.722	471516	0.20	100	101.7	90	110	
137	Ba	115	101.902	156722	0.45	100	101.9	90	110	
205	Tl	209	96.526	2118198	0.42	100	96.5	90	110	
208	Pb	209	98.705	1515802	0.62	100	98.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	928424	0.64	1008168	92.09	70	120	
72	Ge	615898	0.62	687591	89.57	70	120	
115	In	5903335	1.32	6493768	90.91	70	120	
209	Bi	13288765	0.34	14217989	93.46	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/18/2016 12:06	Sample Name	LCVL-161118
Data Batch	161118.b	Comment	LCVLICPMS_TW
Data File Name	034LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.584	415	4.21	1	958.4	70	130	Fail
9	Be	45	1.109	55	18.55	1	110.9	70	130	
11	B	45	24.556	574	2.34	20	122.8	70	130	
23	Na	45	109.637	150169	0.73	100	109.6	70	130	
24	Mg	45	104.671	42021	0.39	100	104.7	70	130	
27	Al	45	102.622	18149	2.10	100	102.6	70	130	
39	K	45	102.653	98639	0.49	100	102.7	70	130	
44	Ca	45	99.873	2933	2.56	100	99.9	70	130	
47	Ti	45	5.662	778	8.92	5	113.2	70	130	
51	V	45	1.034	6674	2.30	1	103.4	70	130	
52	Cr	45	5.386	26668	1.96	5	107.7	70	130	
55	Mn	45	5.583	17357	3.41	5	111.7	70	130	
56	Fe	45	103.583	448269	0.51	100	103.6	70	130	
59	Co	72	5.269	40232	1.59	5	105.4	70	130	
60	Ni	72	5.333	11801	3.29	5	106.7	70	130	
63	Cu	72	5.040	32023	1.90	5	100.8	70	130	
66	Zn	72	-3.366	12211	1.42	5	-67.3	70	130	Fail
75	As	72	5.160	3984	0.60	5	103.2	70	130	
78	Se	72	5.925	393	11.75	5	118.5	70	130	
88	Sr	115	5.110	22102	1.07	5	102.2	70	130	
95	Mo	115	5.149	16374	2.13	5	103.0	70	130	
107	Ag	115	2.026	19837	2.37	2	101.3	70	130	
111	Cd	115	1.087	1598	2.52	1	108.7	70	130	
118	Sn	115	5.367	18324	2.68	5	107.3	70	130	
121	Sb	115	1.976	10238	1.78	2	98.8	70	130	
137	Ba	115	5.311	8776	1.77	5	106.2	70	130	
205	Tl	209	0.996	23262	2.08	1	99.6	70	130	
208	Pb	209	0.980	19093	3.64	1	98.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	968313	0.29	1008168	96.05	70	120	
72	Ge	655864	0.63	687591	95.39	70	120	
115	In	6321172	0.90	6493768	97.34	70	120	
209	Bi	14059061	0.21	14217989	98.88	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	11/18/2016 12:08	Sample Name	ICB-161118
Data Batch	161118.b	Comment	ICB ICPMS_TW
Data File Name	035_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.023	9	29.0	2	5	
9	Be	45	-0.006	2	91.7	0.4	0.3	
11	B	45	4.708	186	12.2	10	10	
23	Na	45	-0.342	66673	0.5	50	100	
24	Mg	45	-0.890	657	5.5	50	100	
27	Al	45	-5.134	431	3.8	50	10	
39	K	45	-9.294	54565	1.1	50	100	
44	Ca	45	-12.090	259	5.8	50	100	
47	Ti	45	-0.030	7	100.0	4	3	
51	V	45	0.007	2311	4.5	4	3	
52	Cr	45	-0.029	820	8.5	2	2	
55	Mn	45	-0.085	260	11.4	2	3	
56	Fe	45	0.085	6654	4.7	50	50	
59	Co	72	-0.005	118	1.6	2	3	
60	Ni	72	-0.237	576	5.7	2	3	
63	Cu	72	-0.240	2621	4.1	2	2	
66	Zn	72	-9.611	6366	3.5	4	2	
75	As	72	0.010	179	18.2	2	2	
78	Se	72	0.598	131	11.6	1	2	
88	Sr	115	-0.084	158	12.7	4	3	
95	Mo	115	0.103	390	13.2	2	2	
107	Ag	115	0.016	209	10.4	0.4	1	
111	Cd	115	0.008	22	22.9	0.4	0.3	
118	Sn	115	0.092	1236	13.2	4	3	
121	Sb	115	-0.022	339	26.9	2	0.8	
137	Ba	115	0.001	39	52.4	2	3	
205	Tl	209	0.003	209	20.8	2	0.5	
208	Pb	209	-0.043	2466	4.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	973332	1.36	1008168	96.54	70	120	
72	Ge	659315	1.15	687591	95.89	70	120	
115	In	6331699	1.17	6493768	97.50	70	120	
209	Bi	13776532	0.82	14217989	96.90	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/18/2016 15:09	Sample Name	CCV5-161118
Data Batch	161118.b	Comment	CCV ICPMS_TW
Data File Name	118_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	199.211	7843	2.22	200	99.6	90	110	
9	Be	45	207.315	9297	2.10	200	103.7	90	110	
11	B	45	287.249	5340	3.92	200	143.6	90	110	Fail
23	Na	45	5145.096	3711879	0.67	5000	102.9	90	110	
24	Mg	45	5191.617	1894336	0.77	5000	103.8	90	110	
27	Al	45	4998.367	766147	0.59	5000	100.0	90	110	
39	K	45	5167.335	1958775	0.68	5000	103.3	90	110	
44	Ca	45	4723.606	105531	0.72	5000	94.5	90	110	
47	Ti	45	205.455	25919	1.47	200	102.7	90	110	
51	V	45	200.588	797549	0.62	200	100.3	90	110	
52	Cr	45	207.910	924776	0.83	200	104.0	90	110	
55	Mn	45	200.804	564226	0.18	200	100.4	90	110	
56	Fe	45	5109.193	20294626	0.16	5000	102.2	90	110	
59	Co	72	203.762	1439898	0.16	200	101.9	90	110	
60	Ni	72	204.316	383640	0.40	200	102.2	90	110	
63	Cu	72	203.708	1057942	0.36	200	101.9	90	110	
66	Zn	72	191.134	181421	1.00	200	95.6	90	110	
75	As	72	207.717	142802	0.90	200	103.9	90	110	
78	Se	72	205.516	9537	0.68	200	102.8	90	110	
88	Sr	115	205.353	777642	0.60	200	102.7	90	110	
95	Mo	115	207.376	588374	0.85	200	103.7	90	110	
107	Ag	115	206.612	1807558	0.37	200	103.3	90	110	
111	Cd	115	209.883	274517	0.34	200	104.9	90	110	
118	Sn	115	208.922	607005	0.34	200	104.5	90	110	
121	Sb	115	207.510	921294	1.33	200	103.8	90	110	
137	Ba	115	207.041	305082	1.62	200	103.5	90	110	
205	Tl	209	195.539	4121129	1.29	200	97.8	90	110	
208	Pb	209	198.455	2924204	0.46	200	99.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	901148	0.93	1008168	89.38	70	120	
72	Ge	609366	0.63	687591	88.62	70	120	
115	In	5653783	1.92	6493768	87.06	70	120	
209	Bi	12763441	0.36	14217989	89.77	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/18/2016 15:13	Sample Name	LCVL5-161118
Data Batch	161118.b	Comment	LCVLICPMS_TW
Data File Name	120LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.594	434	6.93	1	1059.4	70	130	Fail
9	Be	45	0.893	43	11.56	1	89.3	70	130	
11	B	45	117.280	2276	3.81	20	586.4	70	130	Fail
23	Na	45	147.003	169640	0.40	100	147.0	70	130	Fail
24	Mg	45	106.657	40640	0.47	100	106.7	70	130	
27	Al	45	98.046	16520	1.71	100	98.0	70	130	
39	K	45	114.423	98089	0.15	100	114.4	70	130	
44	Ca	45	94.715	2668	5.25	100	94.7	70	130	
47	Ti	45	5.585	729	6.88	5	111.7	70	130	
51	V	45	1.047	6389	3.67	1	104.7	70	130	
52	Cr	45	5.445	25593	1.05	5	108.9	70	130	
55	Mn	45	5.624	16600	3.06	5	112.5	70	130	
56	Fe	45	103.779	426464	0.69	100	103.8	70	130	
59	Co	72	5.317	39006	0.84	5	106.3	70	130	
60	Ni	72	5.014	10722	1.44	5	100.3	70	130	
63	Cu	72	4.983	30461	2.26	5	99.7	70	130	
66	Zn	72	-10.295	5469	3.26	5	-205.9	70	130	Fail
75	As	72	5.374	3981	0.92	5	107.5	70	130	
78	Se	72	6.303	396	7.66	5	126.1	70	130	
88	Sr	115	5.267	21449	1.53	5	105.3	70	130	
95	Mo	115	5.297	15867	1.95	5	105.9	70	130	
107	Ag	115	2.087	19263	1.32	2	104.4	70	130	
111	Cd	115	1.018	1411	6.21	1	101.8	70	130	
118	Sn	115	5.361	17244	1.39	5	107.2	70	130	
121	Sb	115	2.176	10584	1.30	2	108.8	70	130	
137	Ba	115	5.310	8267	4.11	5	106.2	70	130	
205	Tl	209	1.021	22337	1.27	1	102.1	70	130	
208	Pb	209	0.886	16473	1.35	1	88.6	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	919479	0.57	1008168	91.20	70	120	
72	Ge	630239	0.70	687591	91.66	70	120	
115	In	5955573	0.59	6493768	91.71	70	120	
209	Bi	13178274	1.89	14217989	92.69	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/18/2016 15:15	Sample Name	CCB5-161118
Data Batch	161118.b	Comment	CCB ICPMS_TW
Data File Name	121_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.002	9	24.7	2	5	
9	Be	45	-0.004	2	91.7	0.4	0.3	
11	B	45	103.365	2048	1.0	10	10	FailAq FailSoil
23	Na	45	34.436	89554	0.4	50	100	
24	Mg	45	-0.822	656	9.4	50	100	
27	Al	45	-5.550	348	8.4	50	10	
39	K	45	4.555	57663	1.0	50	100	
44	Ca	45	-8.073	341	24.6	50	100	
47	Ti	45	0.023	13	66.1	4	3	
51	V	45	0.017	2258	3.2	4	3	
52	Cr	45	-0.024	809	4.8	2	2	
55	Mn	45	-0.014	457	16.6	2	3	
56	Fe	45	-0.127	5517	2.8	50	50	
59	Co	72	-0.002	139	6.0	2	3	
60	Ni	72	-0.397	243	6.3	2	3	
63	Cu	72	-0.305	2189	1.0	2	2	
66	Zn	72	-15.975	337	12.2	4	2	
75	As	72	0.007	172	6.3	2	2	
78	Se	72	0.765	135	23.8	1	2	
88	Sr	115	-0.042	321	18.3	4	3	
95	Mo	115	0.087	326	19.0	2	2	
107	Ag	115	0.018	222	20.0	0.4	1	
111	Cd	115	0.001	11	62.5	0.4	0.3	
118	Sn	115	-0.017	848	13.4	4	3	
121	Sb	115	0.036	603	14.5	2	0.8	
137	Ba	115	0.005	44	18.9	2	3	
205	Tl	209	0.013	423	6.3	2	0.5	
208	Pb	209	-0.147	797	3.3	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	934006	1.01	1008168	92.64	70	120	
72	Ge	639639	0.40	687591	93.03	70	120	
115	In	6077583	1.29	6493768	93.59	70	120	
209	Bi	13441775	0.66	14217989	94.54	70	120	

Method Blank Report

Date Acquired	11/18/16 3:17 PM	Sample Name	MB-77967
Data Batch	161118.b	Comment	MBLKICPMS_TSDOD
Data File Name	122_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	0.052	11	35.66		
9	Be	45	0.010	2	65.47		
11	B	45	97.876	1938	5.77		FAIL
23	Na	45	44.580	96688	1.90		
24	Mg	45	9.917	4698	5.30		
27	Al	45	-1.127	1046	14.99		
39	K	45	7.563	58617	0.35		
44	Ca	45	17.906	937	8.21		
47	Ti	45	0.049	17	72.11		
51	V	45	0.133	2729	8.62		
52	Cr	45	1.011	5555	1.25		
55	Mn	45	0.263	1256	5.42		
56	Fe	45	7.843	38192	0.70		
59	Co	72	0.015	270	11.78		
60	Ni	72	0.072	1212	4.26		
63	Cu	72	-0.303	2288	5.26		
66	Zn	72	-13.404	2805	5.64		
75	As	72	0.002	175	11.69		
78	Se	72	0.394	122	1.23		
88	Sr	115	0.033	629	10.09		
95	Mo	115	0.544	1735	4.92		
107	Ag	115	0.026	304	12.21		
111	Cd	115	0.007	20	57.73		
118	Sn	115	4.082	13739	1.01		J
121	Sb	115	0.024	549	8.77		
137	Ba	115	0.072	152	8.85		
205	Tl	209	0.014	447	1.49		
208	Pb	209	-0.097	1578	9.36		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	930934	0.70	1008168	92.34	70	120	
72	Ge	665334	0.67	687591	96.76	70	120	
115	In	6133122	0.65	6493768	94.45	70	120	
209	Bi	13604994	1.22	14217989	95.69	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/18/2016 15:19	Sample Name	LCS-77967
Data Batch	161118.b	Comment	LCS ICPMS_TSDOD
Data File Name	123_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	202.040	8186	0.73	200	101.0	80	120	
9	Be	45	210.812	9726	0.56	200	105.4	80	120	
11	B	45	306.823	5862	5.75	200	153.4	80	120	
23	Na	45	5182.746	3846586	0.71	1000	518.3	80	120	Fail
24	Mg	45	5260.889	1974995	0.42	1000	526.1	80	120	Fail
27	Al	45	1008.938	160090	0.60	1000	100.9	80	120	
39	K	45	5189.833	2023888	0.43	1000	519.0	80	120	Fail
44	Ca	45	4794.982	110212	0.27	1000	479.5	80	120	Fail
47	Ti	45	208.463	27058	2.16	200	104.2	80	120	
51	V	45	204.410	836203	0.55	200	102.2	80	120	
52	Cr	45	212.359	971835	0.69	200	106.2	80	120	
55	Mn	45	204.827	592153	0.53	200	102.4	80	120	
56	Fe	45	1021.175	4178310	0.15	1000	102.1	80	120	
59	Co	72	201.059	1508468	0.70	200	100.5	80	120	
60	Ni	72	200.926	400584	1.48	200	100.5	80	120	
63	Cu	72	198.755	1096021	0.41	200	99.4	80	120	
66	Zn	72	184.168	186142	0.23	200	92.1	80	120	
75	As	72	201.753	147270	0.33	200	100.9	80	120	
78	Se	72	196.471	9685	2.21	200	98.2	80	120	
88	Sr	115	200.531	808325	0.92	200	100.3	80	120	
95	Mo	115	205.024	619310	1.07	200	102.5	80	120	
107	Ag	115	199.889	1861468	0.46	200	99.9	80	120	
111	Cd	115	203.464	283285	0.87	200	101.7	80	120	
118	Sn	115	212.392	656907	0.74	200	106.2	80	120	
121	Sb	115	203.716	962932	1.21	200	101.9	80	120	
137	Ba	115	204.494	320819	1.07	200	102.2	80	120	
205	Tl	209	200.927	4357678	0.97	200	100.5	80	120	
208	Pb	209	202.752	3074424	1.75	200	101.4	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	927159	0.53	1008168	91.96	70	120	
72	Ge	646950	0.44	687591	94.09	70	120	
115	In	6017433	1.21	6493768	92.66	70	120	
209	Bi	13134704	1.53	14217989	92.38	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/18/2016 15:21	Sample Name	LCSD-77967
Data Batch	161118.b	Comment	LCSDICPMS_TSDOD
Data File Name	124_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.792	8259	1.04	200	101.9	80	120	
9	Be	45	208.348	9615	1.25	200	104.2	80	120	
11	B	45	310.763	5937	0.57	200	155.4	80	120	
23	Na	45	5209.115	3866646	0.52	1000	520.9	80	120	Fail
24	Mg	45	5280.352	1982836	1.34	1000	528.0	80	120	Fail
27	Al	45	1004.165	159380	0.93	1000	100.4	80	120	
39	K	45	5223.600	2037100	0.61	1000	522.4	80	120	Fail
44	Ca	45	4781.138	109924	1.03	1000	478.1	80	120	Fail
47	Ti	45	210.331	27305	1.29	200	105.2	80	120	
51	V	45	206.449	844713	0.41	200	103.2	80	120	
52	Cr	45	213.326	976475	0.40	200	106.7	80	120	
55	Mn	45	204.946	592612	0.84	200	102.5	80	120	
56	Fe	45	1030.171	4216137	0.87	1000	103.0	80	120	
59	Co	72	200.259	1509341	0.31	200	100.1	80	120	
60	Ni	72	202.009	404586	0.64	200	101.0	80	120	
63	Cu	72	199.395	1104539	0.31	200	99.7	80	120	
66	Zn	72	186.280	188970	0.36	200	93.1	80	120	
75	As	72	201.942	148082	0.47	200	101.0	80	120	
78	Se	72	195.280	9671	0.85	200	97.6	80	120	
88	Sr	115	203.018	809089	0.84	200	101.5	80	120	
95	Mo	115	209.094	624405	1.51	200	104.5	80	120	
107	Ag	115	203.656	1875194	1.06	200	101.8	80	120	
111	Cd	115	207.151	285153	0.82	200	103.6	80	120	
118	Sn	115	216.531	662073	1.40	200	108.3	80	120	
121	Sb	115	207.173	968227	0.33	200	103.6	80	120	
137	Ba	115	207.206	321415	0.13	200	103.6	80	120	
205	Tl	209	201.823	4423020	0.08	200	100.9	80	120	
208	Pb	209	203.797	3122539	0.55	200	101.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	927406	1.00	1008168	91.99	70	120	
72	Ge	649966	1.16	687591	94.53	70	120	
115	In	5949204	1.01	6493768	91.61	70	120	
209	Bi	13272659	1.19	14217989	93.35	70	120	

Sample Report

Date Acquired	11/18/16 3:25 PM	Sample Name	1611053-02A
Data Batch	161118.b	Comment	SAMPICPMS_TSDOD
Data File Name	126_ARF.d	Dilution	~~25~~ 5

REVIEWED/APPROVED
By Sherri Herschmann at 12:06:14 PM, 11/22/2016

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	62.839	2491	0.88	2000	>RL
9	Be	45	2.551	117	12.55	2000	>RL
11	B	45	158.994	3005	4.90	2000	>RL
23	Na	45	1076.981	829299	0.78	25000	>RL
24	Mg	45	12954.676	4744593	1.15	25000	>RL
27	Al	45	64587.108	9925481	0.72	10000	OUTCAL
39	K	45	13764.855	5148522	0.21	25000	>RL
44	Ca	45	58876.877	1314801	0.57	25000	OUTCAL
47	Ti	45	171.510	21725	3.03	2000	>RL
51	V	45	97.028	388437	0.36	2000	>RL
52	Cr	45	60.025	268683	0.72	2000	>RL
55	Mn	45	577.395	1628026	0.98	2000	>RL
56	Fe	45	64346.265	256559376	0.33	10000	OUTCAL
59	Co	72	26.547	190631	0.63	2000	>RL
60	Ni	72	39.618	76344	0.34	2000	>RL
63	Cu	72	18.902	103067	0.12	2000	>RL
66	Zn	72	181.900	176042	1.32	2000	>RL
75	As	72	20.679	14583	0.44	2000	>RL
78	Se	72	4.653	312	4.18	2000	>RL
88	Sr	115	287.124	1065263	0.28	2000	>RL
95	Mo	115	1.839	5168	2.19	2000	
107	Ag	115	0.145	1293	1.61	500	
111	Cd	115	0.478	622	9.60	2000	>RL
118	Sn	115	5.954	17750	0.37	2000	>RL
121	Sb	115	2.195	9943	4.08	500	>RL
137	Ba	115	532.038	768362	0.97	2000	>RL
205	Tl	209	0.540	11657	0.42	2000	
208	Pb	209	43.739	655058	0.58	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	904747	0.56	1008168	89.74	70	120	
72	Ge	618835	0.76	687591	90.00	70	120	
115	In	5547814	0.82	6493768	85.43	70	120	
209	Bi	12927436	0.74	14217989	90.92	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/18/2016 15:27	Sample Name	1611053-02A SD
Data Batch	161118.b	Comment	SD ICPMS_TSDOD
Data File Name	127_SD.d	Dilution	~~5~~ 25

REVIEWED/APPROVED
By Sherri Herschmann at 12:06:31 PM, 11/22/2016

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	12.849	524	6.06	62.8	102.2	110	90	Good
9	Be	45	0.485	24	18.16	2.6	95.1	110	90	Good
11	B	45	93.785	1836	5.02	159.0	294.9	110	90	
23	Na	45	245.565	240770	0.46	1077.0	114.0	110	90	
24	Mg	45	2614.331	972936	0.32	12954.7	100.9	110	90	Good
27	Al	45	12720.454	1985826	0.58	64587.1	98.5	110	90	Good
39	K	45	2786.001	1101969	1.06	13764.9	101.2	110	90	Good
44	Ca	45	11946.051	271290	1.55	58876.9	101.4	110	90	Good
47	Ti	45	35.293	4547	6.61	171.5	102.9	110	90	Good
51	V	45	19.758	82027	1.08	97.0	101.8	110	90	Good
52	Cr	45	12.408	57113	0.84	60.0	103.4	110	90	Good
55	Mn	45	119.130	341454	0.35	577.4	103.2	110	90	Good
56	Fe	45	13322.114	53939105	1.22	64346.3	103.5	110	90	Good
59	Co	72	5.569	40017	0.35	26.5	104.9	110	90	Good
60	Ni	72	8.166	16487	2.13	39.6	103.1	110	90	Good
63	Cu	72	3.707	23154	0.41	18.9	98.1	110	90	Good
66	Zn	72	26.218	37708	1.09	181.9	72.1	110	90	
75	As	72	4.483	3280	1.38	20.7	108.4	110	90	Good
78	Se	72	1.902	183	3.21	4.7	204.4	110	90	
88	Sr	115	55.647	220654	1.48	287.1	96.9	110	90	Good
95	Mo	115	0.402	1250	6.66	1.8	109.3	110	90	Good
107	Ag	115	0.049	494	14.15	0.1	167.0	110	90	
111	Cd	115	0.103	152	21.04	0.5	108.2	110	90	Good
118	Sn	115	1.078	4145	2.85	6.0	90.5	110	90	Good
121	Sb	115	0.407	2309	5.87	2.2	92.6	110	90	Good
137	Ba	115	103.590	159673	0.96	532.0	97.4	110	90	Good
205	Tl	209	0.117	2748	4.04	0.5	108.1	110	90	Good
208	Pb	209	8.685	139075	0.85	43.7	99.3	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	918649	0.05	1008168	91.12	70	120	
72	Ge	617452	0.21	687591	89.80	70	120	
115	In	5922388	2.68	6493768	91.20	70	120	
209	Bi	13575778	1.28	14217989	95.48	70	120	

Sample Report

Date Acquired	11/18/16 3:29 PM	Sample Name	1611053-07A
Data Batch	161118.b	Comment	SAMPICPMS_TSDOD
Data File Name	128SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	55.838	2202	4.17	2000	>RL
9	Be	45	3.066	139	8.30	2000	>RL
11	B	45	143.610	2709	6.00	2000	>RL
23	Na	45	797.725	626942	0.51	25000	>RL
24	Mg	45	13067.779	4759197	0.54	25000	>RL
27	Al	45	69148.109	10567764	1.16	10000	OUTCAL
39	K	45	16068.930	5967938	0.53	25000	>RL
44	Ca	45	34409.277	764389	0.21	25000	OUTCAL
47	Ti	45	207.860	26181	0.57	2000	>RL
51	V	45	99.811	397319	0.28	2000	>RL
52	Cr	45	64.432	286774	0.89	2000	>RL
55	Mn	45	544.084	1525730	0.71	2000	>RL
56	Fe	45	68253.784	270605314	1.63	10000	OUTCAL
59	Co	72	24.608	175213	0.82	2000	>RL
60	Ni	72	38.294	73196	0.85	2000	>RL
63	Cu	72	18.300	99048	1.28	2000	>RL
66	Zn	72	174.256	167799	1.14	2000	>RL
75	As	72	24.358	17001	2.57	2000	>RL
78	Se	72	5.713	359	8.24	2000	>RL
88	Sr	115	236.527	878104	0.95	2000	>RL
95	Mo	115	1.440	4061	4.94	2000	
107	Ag	115	0.113	1020	3.77	500	
111	Cd	115	0.387	506	11.89	2000	
118	Sn	115	6.050	18032	0.89	2000	>RL
121	Sb	115	1.283	5978	1.88	500	
137	Ba	115	335.453	484735	0.94	2000	>RL
205	Tl	209	0.551	11743	4.09	2000	
208	Pb	209	34.398	509457	0.50	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	899884	1.51	1008168	89.26	70	120	
72	Ge	613528	0.25	687591	89.23	70	120	
115	In	5550746	0.56	6493768	85.48	70	120	
209	Bi	12768222	0.71	14217989	89.80	70	120	

Sample Report

Date Acquired	11/18/16 3:31 PM	Sample Name	1611053-27A
Data Batch	161118.b	Comment	SAMPICPMS_TSDOD
Data File Name	129SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	65.373	2524	1.08	2000	>RL
9	Be	45	2.795	124	10.50	2000	>RL
11	B	45	149.903	2765	1.53	2000	>RL
23	Na	45	1929.436	1399238	0.49	25000	>RL
24	Mg	45	11927.931	4255427	0.50	25000	>RL
27	Al	45	58000.969	8682782	1.24	10000	OUTCAL
39	K	45	12137.372	4428567	0.30	25000	>RL
44	Ca	45	74899.168	1629185	0.72	25000	OUTCAL
47	Ti	45	153.190	18905	3.59	2000	>RL
51	V	45	97.307	379467	0.06	2000	>RL
52	Cr	45	55.103	240347	0.35	2000	>RL
55	Mn	45	531.060	1458658	0.14	2000	>RL
56	Fe	45	67126.639	260718070	0.98	10000	OUTCAL
59	Co	72	29.135	205040	0.35	2000	>RL
60	Ni	72	46.799	88209	0.65	2000	>RL
63	Cu	72	21.905	116484	0.15	2000	>RL
66	Zn	72	184.514	174805	0.04	2000	>RL
75	As	72	27.136	18706	1.26	2000	>RL
78	Se	72	4.547	301	6.10	2000	>RL
88	Sr	115	327.896	1202469	0.17	2000	>RL
95	Mo	115	1.404	3913	3.12	2000	
107	Ag	115	0.113	1002	7.48	500	
111	Cd	115	0.360	466	8.60	2000	
118	Sn	115	5.595	16536	1.64	2000	>RL
121	Sb	115	1.709	7735	0.75	500	
137	Ba	115	649.053	926607	1.03	2000	>RL
205	Tl	209	0.442	9302	1.65	2000	
208	Pb	209	40.832	595323	0.27	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	881321	0.24	1008168	87.42	70	120	
72	Ge	606499	0.34	687591	88.21	70	120	
115	In	5484201	1.10	6493768	84.45	70	120	
209	Bi	12581290	0.83	14217989	88.49	70	120	

Sample Report

Date Acquired	11/18/16 3:33 PM	Sample Name	1611053-32A
Data Batch	161118.b	Comment	SAMPICPMS_TSDOD
Data File Name	130SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	66.563	2588	2.61	2000	>RL
9	Be	45	2.797	125	2.30	2000	>RL
11	B	45	171.560	3176	3.53	2000	>RL
23	Na	45	2991.813	2152212	0.12	25000	>RL
24	Mg	45	14739.389	5297109	1.60	25000	>RL
27	Al	45	69614.503	10497677	2.64	10000	OUTCAL
39	K	45	15614.370	5724262	1.66	25000	>RL
44	Ca	45	71818.850	1573847	0.28	25000	OUTCAL
47	Ti	45	268.103	33322	0.64	2000	>RL
51	V	45	97.242	382053	0.99	2000	>RL
52	Cr	45	65.493	287646	1.45	2000	>RL
55	Mn	45	472.760	1308257	0.45	2000	>RL
56	Fe	45	73401.063	287215891	1.49	10000	OUTCAL
59	Co	72	23.905	166470	0.59	2000	>RL
60	Ni	72	37.580	70267	0.44	2000	>RL
63	Cu	72	13.968	74795	0.92	2000	>RL
66	Zn	72	166.430	157376	0.75	2000	>RL
75	As	72	20.375	13935	0.82	2000	>RL
78	Se	72	4.780	308	9.27	2000	>RL
88	Sr	115	322.763	1177454	0.85	2000	>RL
95	Mo	115	1.462	4052	4.86	2000	
107	Ag	115	0.102	903	3.38	500	
111	Cd	115	0.356	458	29.09	2000	
118	Sn	115	6.566	19164	2.32	2000	>RL
121	Sb	115	1.241	5696	6.91	500	
137	Ba	115	646.633	918261	0.36	2000	>RL
205	Tl	209	0.517	10728	3.31	2000	
208	Pb	209	31.867	459739	0.82	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	887907	0.75	1008168	88.07	70	120	
72	Ge	600054	0.91	687591	87.27	70	120	
115	In	5455217	0.58	6493768	84.01	70	120	
209	Bi	12434867	2.32	14217989	87.46	70	120	

Sample Report

Date Acquired	11/18/16 3:35 PM	Sample Name	1611053-37A
Data Batch	161118.b	Comment	SAMPICPMS_TSDOD
Data File Name	131SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	54.930	2137	2.11	2000	>RL
9	Be	45	2.880	129	12.03	2000	>RL
11	B	45	142.084	2645	7.07	2000	>RL
23	Na	45	317.050	282619	0.53	25000	>RL
24	Mg	45	11418.894	4103313	0.03	25000	>RL
27	Al	45	53786.261	8110209	0.39	10000	OUTCAL
39	K	45	13359.101	4904199	0.90	25000	>RL
44	Ca	45	51667.385	1132164	0.28	25000	OUTCAL
47	Ti	45	231.888	28819	1.22	2000	>RL
51	V	45	83.455	328108	0.86	2000	>RL
52	Cr	45	55.852	245367	0.25	2000	>RL
55	Mn	45	452.684	1252500	0.66	2000	>RL
56	Fe	45	61023.636	238727911	0.57	10000	OUTCAL
59	Co	72	20.904	147130	0.80	2000	>RL
60	Ni	72	32.885	62263	0.31	2000	>RL
63	Cu	72	16.930	90840	0.28	2000	>RL
66	Zn	72	159.180	152730	0.64	2000	>RL
75	As	72	22.369	15445	0.56	2000	>RL
78	Se	72	4.259	288	15.57	2000	>RL
88	Sr	115	259.613	951630	0.36	2000	>RL
95	Mo	115	1.377	3836	1.55	2000	
107	Ag	115	0.115	1022	4.14	500	
111	Cd	115	0.451	580	7.77	2000	>RL
118	Sn	115	5.946	17514	0.74	2000	>RL
121	Sb	115	4.641	20331	1.79	500	>RL
137	Ba	115	521.832	744546	0.62	2000	>RL
205	Tl	209	0.437	9294	3.50	2000	
208	Pb	209	37.743	556760	0.36	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	887761	1.04	1008168	88.06	70	120	
72	Ge	606388	0.27	687591	88.19	70	120	
115	In	5480940	0.77	6493768	84.40	70	120	
209	Bi	12725311	1.65	14217989	89.50	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/18/2016 15:45	Sample Name	1611053-02A PDS
Data Batch	161118.b	Comment	PDS ICPMS_TSDOD
Data File Name	136_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	254.754	10055	2.08	62.8	200	96.0	75	125	
9	Be	45	205.517	9241	2.37	2.6	200	101.5	75	125	
11	B	45	327.679	6093	4.92	159.0	200	84.3	75	125	
23	Na	45	5941.566	4288248	0.73	1077.0	5000	97.3	75	125	
24	Mg	45	17902.790	6547215	1.75	12954.7	5000	99.0	75	125	
27	Al	45	69871.061	10723415	3.10	64587.1	5000	105.7	75	125	
39	K	45	18925.453	7048877	1.17	13764.9	5000	103.2	75	125	
44	Ca	45	63226.080	1409999	0.02	58876.9	5000	87.0	75	125	
47	Ti	45	363.433	45966	2.04	171.5	200	96.0	75	125	
51	V	45	293.583	1169443	0.73	97.0	200	98.3	75	125	
52	Cr	45	264.750	1180488	1.33	60.0	200	102.4	75	125	
55	Mn	45	775.929	2184647	1.36	577.4	200	99.3	75	125	
56	Fe	45	69064.810	274987465	1.96	64346.3	5000	94.4	75	125	
59	Co	72	220.325	1568770	0.89	26.5	200	96.9	75	125	
60	Ni	72	231.245	437392	1.36	39.6	200	95.8	75	125	
63	Cu	72	207.823	1087437	0.66	18.9	200	94.5	75	125	
66	Zn	72	375.991	345648	0.91	181.9	200	97.0	75	125	
75	As	72	215.154	149025	0.61	20.7	200	97.2	75	125	
78	Se	72	193.458	9051	0.86	4.7	200	94.4	75	125	
88	Sr	115	488.112	1821860	0.28	287.1	200	100.5	75	125	
95	Mo	115	203.873	570410	0.43	1.8	200	101.0	75	125	
107	Ag	115	212.312	1831403	0.43	0.1	200	106.1	75	125	
111	Cd	115	201.199	259469	0.40	0.5	200	100.4	75	125	
118	Sn	115	218.179	625010	0.39	6.0	200	106.1	75	125	
121	Sb	115	209.712	918192	0.64	2.2	200	103.8	75	125	
137	Ba	115	745.911	1083868	0.44	532.0	200	106.9	75	125	
205	Tl	209	188.110	4064148	0.71	0.5	200	93.8	75	125	
208	Pb	209	235.888	3562617	0.32	43.7	200	96.1	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	903532	0.52	1008168	89.62	70	120	
72	Ge	613997	1.12	687591	89.30	70	120	
115	In	5573059	0.62	6493768	85.82	70	120	
209	Bi	13085673	1.35	14217989	92.04	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/18/2016 15:47	Sample Name	1611053-02A MS
Data Batch	161118.b	Comment	MS ICPMS_TSDOD
Data File Name	137_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	267.118	10547	0.89	62.8	200	102.1	80	120	
9	Be	45	208.530	9379	1.61	2.6	200	103.0	80	120	
11	B	45	347.509	6460	0.49	159.0	200	94.3	80	120	
23	Na	45	5998.509	4330295	0.54	1077.0	1000	492.2	80	120	Fail
24	Mg	45	18872.722	6904606	0.14	12954.7	1000	591.8	80	120	Fail
27	Al	45	76379.157	11725821	0.80	64587.1	1000	1179.2	80	120	Fail
39	K	45	20191.776	7519874	0.40	13764.9	1000	642.7	80	120	Fail
44	Ca	45	59562.351	1328807	0.47	58876.9	1000	68.5	80	120	Fail
47	Ti	45	377.377	47744	0.27	171.5	200	102.9	80	120	
51	V	45	315.317	1256332	0.67	97.0	200	109.1	80	120	
52	Cr	45	274.283	1223400	0.46	60.0	200	107.1	80	120	
55	Mn	45	790.844	2227511	0.16	577.4	200	106.7	80	120	
56	Fe	45	73648.060	293353642	1.34	64346.3	1000	930.2	80	120	Fail
59	Co	72	230.037	1642104	0.60	26.5	200	101.7	80	120	
60	Ni	72	239.969	454989	0.84	39.6	200	100.2	80	120	
63	Cu	72	216.887	1137633	0.66	18.9	200	99.0	80	120	
66	Zn	72	390.371	359255	0.67	181.9	200	104.2	80	120	
75	As	72	264.509	183661	0.43	20.7	200	121.9	80	120	Fail
78	Se	72	196.309	9207	1.42	4.7	200	95.8	80	120	
88	Sr	115	486.971	1830324	0.88	287.1	200	99.9	80	120	
95	Mo	115	200.046	563558	0.65	1.8	200	99.1	80	120	
107	Ag	115	202.115	1755786	0.72	0.1	200	101.0	80	120	
111	Cd	115	207.477	269457	0.66	0.5	200	103.5	80	120	
118	Sn	115	220.462	635974	0.41	6.0	200	107.3	80	120	
121	Sb	115	89.610	395305	0.64	2.2	200	43.7	80	120	Fail
137	Ba	115	755.930	1106054	0.33	532.0	200	111.9	80	120	
205	Tl	209	196.655	4231026	0.29	0.5	200	98.1	80	120	
208	Pb	209	242.987	3654320	0.78	43.7	200	99.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	903850	0.15	1008168	89.65	70	120	
72	Ge	615570	0.77	687591	89.53	70	120	
115	In	5614435	2.74	6493768	86.46	70	120	
209	Bi	13031532	1.82	14217989	91.66	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/18/2016 15:49	Sample Name	1611053-02A MSD
Data Batch	161118.b	Comment	MSD ICPMS_TSDOD
Data File Name	138_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	264.199	10474	0.59	62.8	200	100.7	80	120	
9	Be	45	210.017	9484	0.34	2.6	200	103.7	80	120	
11	B	45	344.598	6432	2.90	159.0	200	92.8	80	120	
23	Na	45	6052.183	4386187	0.13	1077.0	1000	497.5	80	120	Fail
24	Mg	45	19321.362	7097631	2.41	12954.7	1000	636.7	80	120	Fail
27	Al	45	75330.234	11611895	1.46	64587.1	1000	1074.3	80	120	Fail
39	K	45	20302.562	7591594	1.03	13764.9	1000	653.8	80	120	Fail
44	Ca	45	78102.284	1749337	0.19	58876.9	1000	1922.5	80	120	Fail
47	Ti	45	427.373	54286	1.12	171.5	200	127.9	80	120	Fail
51	V	45	307.080	1228518	0.06	97.0	200	105.0	80	120	
52	Cr	45	270.496	1211406	0.79	60.0	200	105.2	80	120	
55	Mn	45	783.592	2216010	0.80	577.4	200	103.1	80	120	
56	Fe	45	69004.899	275977198	0.17	64346.3	1000	465.9	80	120	Fail
59	Co	72	222.879	1589560	0.35	26.5	200	98.2	80	120	
60	Ni	72	236.146	447361	0.49	39.6	200	98.3	80	120	
63	Cu	72	212.261	1112443	0.11	18.9	200	96.7	80	120	
66	Zn	72	382.461	351954	0.70	181.9	200	100.3	80	120	
75	As	72	217.732	151076	0.73	20.7	200	98.5	80	120	
78	Se	72	194.739	9125	0.73	4.7	200	95.0	80	120	
88	Sr	115	526.991	1960173	0.34	287.1	200	119.9	80	120	
95	Mo	115	198.753	554186	0.76	1.8	200	98.5	80	120	
107	Ag	115	202.721	1742639	0.52	0.1	200	101.3	80	120	
111	Cd	115	206.421	265282	1.10	0.5	200	103.0	80	120	
118	Sn	115	220.728	630138	0.41	6.0	200	107.4	80	120	
121	Sb	115	87.467	381874	0.37	2.2	200	42.6	80	120	Fail
137	Ba	115	755.998	1094760	0.45	532.0	200	112.0	80	120	
205	Tl	209	198.778	4189786	1.06	0.5	200	99.1	80	120	
208	Pb	209	246.902	3637620	0.29	43.7	200	101.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	907518	0.28	1008168	90.02	70	120	
72	Ge	615011	0.44	687591	89.44	70	120	
115	In	5554214	1.04	6493768	85.53	70	120	
209	Bi	12764260	0.45	14217989	89.78	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/18/2016 15:51	Sample Name	CCV6-161118
Data Batch	161118.b	Comment	CCV ICPMS_TW
Data File Name	139_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	204.185	7943	3.33	200	102.1	90	110	
9	Be	45	212.712	9422	0.83	200	106.4	90	110	
11	B	45	264.572	4864	2.33	200	132.3	90	110	Fail
23	Na	45	5089.616	3627812	0.17	5000	101.8	90	110	
24	Mg	45	5177.182	1866066	0.55	5000	103.5	90	110	
27	Al	45	4975.857	753427	0.52	5000	99.5	90	110	
39	K	45	5117.303	1916732	0.30	5000	102.3	90	110	
44	Ca	45	4711.563	103985	1.17	5000	94.2	90	110	
47	Ti	45	207.089	25808	2.13	200	103.5	90	110	
51	V	45	202.395	794944	0.37	200	101.2	90	110	
52	Cr	45	210.845	926414	0.52	200	105.4	90	110	
55	Mn	45	202.721	562694	0.13	200	101.4	90	110	
56	Fe	45	5154.957	20227588	1.78	5000	103.1	90	110	
59	Co	72	205.778	1443307	0.07	200	102.9	90	110	
60	Ni	72	204.959	381982	0.77	200	102.5	90	110	
63	Cu	72	206.039	1062058	1.14	200	103.0	90	110	
66	Zn	72	193.885	182451	0.68	200	96.9	90	110	
75	As	72	207.071	141307	1.01	200	103.5	90	110	
78	Se	72	201.161	9267	1.27	200	100.6	90	110	
88	Sr	115	204.828	772518	0.49	200	102.4	90	110	
95	Mo	115	211.455	597603	0.31	200	105.7	90	110	
107	Ag	115	211.250	1840678	0.64	200	105.6	90	110	
111	Cd	115	211.173	275085	0.46	200	105.6	90	110	
118	Sn	115	211.850	613041	0.27	200	105.9	90	110	
121	Sb	115	209.837	928030	0.78	200	104.9	90	110	
137	Ba	115	210.193	308549	0.49	200	105.1	90	110	
205	Tl	209	194.628	4263779	0.82	200	97.3	90	110	
208	Pb	209	197.272	3021505	0.72	200	98.6	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	890165	0.19	1008168	88.30	70	120	
72	Ge	604818	0.32	687591	87.96	70	120	
115	In	5629673	0.27	6493768	86.69	70	120	
209	Bi	13267145	0.74	14217989	93.31	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/18/2016 15:56	Sample Name	LCVL6-161118
Data Batch	161118.b	Comment	LCVLICPMS_TW
Data File Name	141LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	11.195	444	6.80	1	1119.5	70	130	Fail
9	Be	45	1.224	56	17.22	1	122.4	70	130	
11	B	45	68.710	1327	6.57	20	343.5	70	130	Fail
23	Na	45	126.555	150022	0.48	100	126.6	70	130	
24	Mg	45	104.600	38635	0.72	100	104.6	70	130	
27	Al	45	123.990	19931	1.70	100	124.0	70	130	
39	K	45	106.792	92264	0.69	100	106.8	70	130	
44	Ca	45	92.076	2526	6.14	100	92.1	70	130	
47	Ti	45	5.600	708	4.57	5	112.0	70	130	
51	V	45	1.002	6018	3.37	1	100.2	70	130	
52	Cr	45	5.506	25066	2.39	5	110.1	70	130	
55	Mn	45	5.596	16007	0.84	5	111.9	70	130	
56	Fe	45	105.468	419839	0.43	100	105.5	70	130	
59	Co	72	5.300	37865	0.80	5	106.0	70	130	
60	Ni	72	4.866	10162	1.74	5	97.3	70	130	
63	Cu	72	4.890	29180	1.25	5	97.8	70	130	
66	Zn	72	-10.260	5356	1.37	5	-205.2	70	130	Fail
75	As	72	5.346	3858	1.57	5	106.9	70	130	
78	Se	72	5.753	360	1.57	5	115.1	70	130	
88	Sr	115	5.482	20917	2.00	5	109.6	70	130	
95	Mo	115	5.412	15205	1.08	5	108.2	70	130	
107	Ag	115	2.189	18938	1.60	2	109.4	70	130	
111	Cd	115	1.057	1373	2.18	1	105.7	70	130	
118	Sn	115	5.534	16669	1.46	5	110.7	70	130	
121	Sb	115	2.214	10089	0.82	2	110.7	70	130	
137	Ba	115	5.439	7941	1.57	5	108.8	70	130	
205	Tl	209	1.040	22575	3.48	1	104.0	70	130	
208	Pb	209	0.936	17098	1.91	1	93.6	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	890958	1.16	1008168	88.37	70	120	
72	Ge	613737	0.41	687591	89.26	70	120	
115	In	5585069	0.24	6493768	86.01	70	120	
209	Bi	13077864	0.48	14217989	91.98	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/18/2016 16:00	Sample Name	CCB6-161118
Data Batch	161118.b	Comment	CCB ICPMS_TW
Data File Name	142_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.298	21	24.4	2	5	
9	Be	45	-0.003	2	124.9	0.4	0.3	
11	B	45	54.276	1078	8.0	10	10	FailAq FailSoil
23	Na	45	18.576	75132	1.1	50	100	
24	Mg	45	-1.024	559	7.6	50	100	
27	Al	45	-2.834	751	9.9	50	10	
39	K	45	-1.571	53359	1.9	50	100	
44	Ca	45	-8.923	310	2.8	50	100	
47	Ti	45	-0.035	6	34.7	4	3	
51	V	45	-0.054	1898	7.2	4	3	
52	Cr	45	-0.033	738	1.9	2	2	
55	Mn	45	-0.058	314	17.7	2	3	
56	Fe	45	0.580	8129	3.4	50	50	
59	Co	72	-0.006	106	12.8	2	3	
60	Ni	72	-0.395	241	10.0	2	3	
63	Cu	72	-0.305	2128	8.1	2	2	
66	Zn	72	-15.955	344	22.4	4	2	
75	As	72	-0.016	151	5.2	2	2	
78	Se	72	0.530	120	4.8	1	2	
88	Sr	115	-0.055	252	17.6	4	3	
95	Mo	115	0.045	188	3.7	2	2	
107	Ag	115	0.019	216	25.5	0.4	1	
111	Cd	115	0.006	18	28.6	0.4	0.3	
118	Sn	115	-0.085	604	6.9	4	3	
121	Sb	115	0.006	437	15.3	2	0.8	
137	Ba	115	0.024	71	14.3	2	3	
205	Tl	209	0.018	527	11.1	2	0.5	
208	Pb	209	-0.119	1199	1.8	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	900843	0.40	1008168	89.35	70	120	
72	Ge	621574	0.80	687591	90.40	70	120	
115	In	5792279	3.66	6493768	89.20	70	120	
209	Bi	13193817	1.80	14217989	92.80	70	120	

Method Blank Report

Date Acquired	11/18/16 4:02 PM	Sample Name	MB-77968
Data Batch	161118.b	Comment	MBLKICPMS_TSDOD
Data File Name	143_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	0.372	24	17.59		
9	Be	45	0.004	2	86.60		
11	B	45	59.316	1176	5.35		FAIL
23	Na	45	23.902	79286	0.91		
24	Mg	45	2.785	1957	5.51		
27	Al	45	-1.504	959	4.75		
39	K	45	1.705	54826	0.69		
44	Ca	45	3.542	590	9.93		
47	Ti	45	0.096	22	56.80		
51	V	45	-0.009	2085	3.86		
52	Cr	45	0.293	2200	4.27		
55	Mn	45	0.123	828	8.26		
56	Fe	45	5.755	28805	8.76		
59	Co	72	0.010	231	5.83		
60	Ni	72	-0.334	374	8.92		
63	Cu	72	-0.302	2242	6.28		
66	Zn	72	-15.130	1130	1.18		
75	As	72	0.006	173	9.10		
78	Se	72	0.565	127	15.62		
88	Sr	115	-0.002	466	12.32		
95	Mo	115	0.070	263	5.52		
107	Ag	115	0.032	336	3.49		
111	Cd	115	0.008	21	86.96		
118	Sn	115	4.099	13108	2.55		J
121	Sb	115	-0.006	388	3.58		
137	Ba	115	0.302	492	18.19		
205	Tl	209	0.022	617	9.83		
208	Pb	209	-0.078	1859	3.09		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	905160	0.34	1008168	89.78	70	120	
72	Ge	650148	0.60	687591	94.55	70	120	
115	In	5831130	1.60	6493768	89.80	70	120	
209	Bi	13406641	1.51	14217989	94.29	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/18/2016 16:04	Sample Name	LCS-77968
Data Batch	161118.b	Comment	LCS ICPMS_TSDOD
Data File Name	144_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.493	8026	1.60	200	101.7	80	120	
9	Be	45	210.049	9436	0.51	200	105.0	80	120	
11	B	45	253.846	4735	5.85	200	126.9	80	120	
23	Na	45	5149.685	3721511	1.02	1000	515.0	80	120	Fail
24	Mg	45	5199.006	1900243	0.96	1000	519.9	80	120	Fail
27	Al	45	997.799	154163	0.35	1000	99.8	80	120	
39	K	45	5169.680	1963085	0.18	1000	517.0	80	120	Fail
44	Ca	45	4696.196	105114	1.18	1000	469.6	80	120	Fail
47	Ti	45	208.309	26326	2.27	200	104.2	80	120	
51	V	45	203.017	808608	0.99	200	101.5	80	120	
52	Cr	45	210.798	939255	0.36	200	105.4	80	120	
55	Mn	45	201.164	566275	0.63	200	100.6	80	120	
56	Fe	45	1018.110	4056088	0.13	1000	101.8	80	120	
59	Co	72	196.660	1472042	0.69	200	98.3	80	120	
60	Ni	72	195.604	389087	0.37	200	97.8	80	120	
63	Cu	72	195.137	1073659	0.32	200	97.6	80	120	
66	Zn	72	179.710	181590	0.44	200	89.9	80	120	
75	As	72	196.204	142892	0.72	200	98.1	80	120	
78	Se	72	189.533	9324	1.18	200	94.8	80	120	
88	Sr	115	199.651	778501	1.05	200	99.8	80	120	
95	Mo	115	207.974	607630	0.05	200	104.0	80	120	
107	Ag	115	202.962	1828274	0.30	200	101.5	80	120	
111	Cd	115	206.072	277516	0.28	200	103.0	80	120	
118	Sn	115	215.973	646131	0.77	200	108.0	80	120	
121	Sb	115	204.854	936635	0.58	200	102.4	80	120	
137	Ba	115	205.310	311585	0.57	200	102.7	80	120	
205	Tl	209	194.594	4259788	0.17	200	97.3	80	120	
208	Pb	209	199.778	3057541	0.43	200	99.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	902778	0.98	1008168	89.55	70	120	
72	Ge	645491	0.81	687591	93.88	70	120	
115	In	5821194	1.95	6493768	89.64	70	120	
209	Bi	13257116	0.75	14217989	93.24	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/18/2016 16:06	Sample Name	LCSD-77968
Data Batch	161118.b	Comment	LCSDICPMS_TSDOD
Data File Name	145_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	200.589	7977	0.95	200	100.3	80	120	
9	Be	45	213.124	9651	1.54	200	106.6	80	120	
11	B	45	263.645	4956	3.10	200	131.8	80	120	
23	Na	45	5129.835	3737792	0.28	1000	513.0	80	120	Fail
24	Mg	45	5212.563	1920801	0.54	1000	521.3	80	120	Fail
27	Al	45	998.909	155584	0.84	1000	99.9	80	120	
39	K	45	5192.276	1987517	0.54	1000	519.2	80	120	Fail
44	Ca	45	4775.846	107755	0.61	1000	477.6	80	120	Fail
47	Ti	45	208.140	26517	2.35	200	104.1	80	120	
51	V	45	205.228	824067	0.30	200	102.6	80	120	
52	Cr	45	213.153	957471	0.46	200	106.6	80	120	
55	Mn	45	205.146	582126	1.25	200	102.6	80	120	
56	Fe	45	1026.279	4121669	1.14	1000	102.6	80	120	
59	Co	72	196.926	1480761	0.77	200	98.5	80	120	
60	Ni	72	198.470	396583	0.38	200	99.2	80	120	
63	Cu	72	197.084	1089298	0.17	200	98.5	80	120	
66	Zn	72	181.201	183801	0.87	200	90.6	80	120	
75	As	72	198.527	145250	0.94	200	99.3	80	120	
78	Se	72	191.254	9451	1.12	200	95.6	80	120	
88	Sr	115	201.020	791435	0.87	200	100.5	80	120	
95	Mo	115	208.838	616183	0.27	200	104.4	80	120	
107	Ag	115	204.000	1855917	0.51	200	102.0	80	120	
111	Cd	115	206.451	280789	0.50	200	103.2	80	120	
118	Sn	115	215.195	650134	0.41	200	107.6	80	120	
121	Sb	115	206.276	952496	0.53	200	103.1	80	120	
137	Ba	115	207.272	317673	0.44	200	103.6	80	120	
205	Tl	209	198.757	4336615	0.67	200	99.4	80	120	
208	Pb	209	201.913	3080318	0.79	200	101.0	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	910102	0.67	1008168	90.27	70	120	
72	Ge	648425	0.49	687591	94.30	70	120	
115	In	5879579	2.39	6493768	90.54	70	120	
209	Bi	13215182	1.31	14217989	92.95	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/18/2016 16:16	Sample Name	1611071-27A SD
Data Batch	161118.b	Comment	SD ICPMS_TSDOD
Data File Name	150_SD.d	Dilution	~~5~~ 25

REVIEWED/APPROVED
By Sherri Herschmann at 12:25:48 PM, 11/22/2016

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	10.020	397	4.12	47.3	106.0	110	90	Good
9	Be	45	0.382	19	24.16	2.3	82.2	110	90	
11	B	45	56.946	1110	8.29	108.8	261.6	110	90	
23	Na	45	257.487	240967	0.97	1201.5	107.2	110	90	Good
24	Mg	45	2211.928	795492	0.68	10858.1	101.9	110	90	Good
27	Al	45	10813.259	1631211	0.54	53846.2	100.4	110	90	Good
39	K	45	2428.429	934914	1.27	11914.2	101.9	110	90	Good
44	Ca	45	12748.812	279701	0.62	62680.1	101.7	110	90	Good
47	Ti	45	81.222	10099	1.58	416.4	97.5	110	90	Good
51	V	45	16.525	66628	1.41	81.2	101.8	110	90	Good
52	Cr	45	10.796	48129	1.10	52.9	102.1	110	90	Good
55	Mn	45	125.934	348719	0.49	618.1	101.9	110	90	Good
56	Fe	45	10333.591	40426894	1.86	50573.5	102.2	110	90	Good
59	Co	72	3.365	23648	0.36	16.1	104.2	110	90	Good
60	Ni	72	6.476	12954	2.59	32.1	101.0	110	90	Good
63	Cu	72	11.347	61679	2.24	54.1	105.0	110	90	Good
66	Zn	72	42.875	51186	0.89	258.7	82.9	110	90	
75	As	72	4.821	3430	2.39	22.5	107.0	110	90	Good
78	Se	72	1.584	164	12.51	3.6	220.9	110	90	
88	Sr	115	62.940	234918	0.38	312.8	100.6	110	90	Good
95	Mo	115	0.281	841	3.55	1.3	105.8	110	90	Good
107	Ag	115	0.068	637	4.99	0.2	149.3	110	90	
111	Cd	115	0.133	181	16.50	0.6	109.7	110	90	Good
118	Sn	115	1.306	4556	1.80	7.1	91.8	110	90	Good
121	Sb	115	0.483	2508	1.24	2.8	87.2	110	90	
137	Ba	115	89.979	130557	0.36	457.1	98.4	110	90	Good
205	Tl	209	0.117	2638	5.57	0.6	103.3	110	90	Good
208	Pb	209	18.863	285328	0.79	94.6	99.6	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	887603	0.51	1008168	88.04	70	120	
72	Ge	602387	0.46	687591	87.61	70	120	
115	In	5572849	0.37	6493768	85.82	70	120	
209	Bi	12979474	0.75	14217989	91.29	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/18/2016 16:35	Sample Name	1611071-27A PDS
Data Batch	161118.b	Comment	PDS ICPMS_TSDOD
Data File Name	159_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	241.089	9470	1.51	47.3	200	96.9	75	125	
9	Be	45	208.891	9346	2.41	2.3	200	103.3	75	125	
11	B	45	294.939	5468	1.84	108.8	200	93.1	75	125	
23	Na	45	6083.974	4368565	0.77	1201.5	5000	97.7	75	125	
24	Mg	45	15963.648	5810616	1.43	10858.1	5000	102.1	75	125	
27	Al	45	59465.466	9082718	1.01	53846.2	5000	112.4	75	125	
39	K	45	17050.768	6326198	1.44	11914.2	5000	102.7	75	125	
44	Ca	45	67636.052	1501109	0.62	62680.1	5000	99.1	75	125	
47	Ti	45	616.193	77548	0.20	416.4	200	99.9	75	125	
51	V	45	278.596	1104558	0.94	81.2	200	98.7	75	125	
52	Cr	45	258.579	1147477	0.53	52.9	200	102.9	75	125	
55	Mn	45	810.487	2271042	0.56	618.1	200	96.2	75	125	
56	Fe	45	56194.074	222697667	1.38	50573.5	5000	112.4	75	125	
59	Co	72	212.333	1498361	1.25	16.1	200	98.1	75	125	
60	Ni	72	226.861	425269	0.12	32.1	200	97.4	75	125	
63	Cu	72	248.626	1288613	0.77	54.1	200	97.3	75	125	
66	Zn	72	462.213	417863	0.39	258.7	200	101.8	75	125	
75	As	72	217.244	149144	0.73	22.5	200	97.4	75	125	
78	Se	72	191.453	8879	1.00	3.6	200	93.9	75	125	
88	Sr	115	520.908	1918946	0.44	312.8	200	104.1	75	125	
95	Mo	115	205.347	567058	0.19	1.3	200	102.0	75	125	
107	Ag	115	212.588	1809918	0.83	0.2	200	106.2	75	125	
111	Cd	115	203.153	258581	0.51	0.6	200	101.3	75	125	
118	Sn	115	223.152	630924	0.77	7.1	200	108.0	75	125	
121	Sb	115	210.790	910901	0.54	2.8	200	104.0	75	125	
137	Ba	115	669.417	960081	0.39	457.1	200	106.2	75	125	
205	Tl	209	190.745	4022882	0.93	0.6	200	95.1	75	125	
208	Pb	209	290.354	4279932	0.47	94.6	200	97.9	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	899241	1.08	1008168	89.20	70	120	
72	Ge	608505	0.40	687591	88.50	70	120	
115	In	5500291	0.19	6493768	84.70	70	120	
209	Bi	12772068	0.19	14217989	89.83	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/18/2016 16:37	Sample Name	1611071-27A MS
Data Batch	161118.b	Comment	MS ICPMS_TSDOD
Data File Name	160_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	245.601	9497	0.22	47.3	200	99.2	80	120	
9	Be	45	208.137	9168	1.65	2.3	200	102.9	80	120	
11	B	45	300.692	5485	3.75	108.8	200	95.9	80	120	
23	Na	45	6196.209	4378170	0.20	1201.5	1000	499.5	80	120	Fail
24	Mg	45	16570.536	5936956	1.18	10858.1	1000	571.2	80	120	Fail
27	Al	45	61881.818	9303356	2.41	53846.2	1000	803.6	80	120	Fail
39	K	45	17916.001	6539739	1.08	11914.2	1000	600.2	80	120	Fail
44	Ca	45	69900.406	1527037	0.72	62680.1	1000	722.0	80	120	Fail
47	Ti	45	700.089	86726	1.06	416.4	200	141.9	80	120	Fail
51	V	45	284.393	1109811	0.23	81.2	200	101.6	80	120	
52	Cr	45	259.617	1134025	0.48	52.9	200	103.4	80	120	
55	Mn	45	824.474	2274027	0.32	618.1	200	103.2	80	120	
56	Fe	45	53661.093	209316321	0.61	50573.5	1000	308.8	80	120	Fail
59	Co	72	212.449	1488388	0.40	16.1	200	98.2	80	120	
60	Ni	72	229.430	426969	1.22	32.1	200	98.7	80	120	
63	Cu	72	246.822	1270109	0.06	54.1	200	96.4	80	120	
66	Zn	72	462.191	414840	0.05	258.7	200	101.7	80	120	
75	As	72	218.517	148936	0.39	22.5	200	98.0	80	120	
78	Se	72	191.450	8815	0.94	3.6	200	93.9	80	120	
88	Sr	115	537.675	1952130	0.39	312.8	200	112.4	80	120	
95	Mo	115	198.013	538922	0.44	1.3	200	98.3	80	120	
107	Ag	115	202.698	1700844	0.04	0.2	200	101.2	80	120	
111	Cd	115	207.691	260544	0.18	0.6	200	103.5	80	120	
118	Sn	115	222.804	620849	0.32	7.1	200	107.8	80	120	
121	Sb	115	82.628	352154	0.67	2.8	200	39.9	80	120	Fail
137	Ba	115	681.255	962963	0.73	457.1	200	112.1	80	120	
205	Tl	209	196.880	4073221	0.60	0.6	200	98.2	80	120	
208	Pb	209	308.058	4454316	0.03	94.6	200	106.7	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	885117	0.65	1008168	87.79	70	120	
72	Ge	604133	0.44	687591	87.86	70	120	
115	In	5420986	0.33	6493768	83.48	70	120	
209	Bi	12529253	0.59	14217989	88.12	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/18/2016 16:39	Sample Name	1611071-27A MSD
Data Batch	161118.b	Comment	MSD ICPMS_TSDOD
Data File Name	161_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	252.516	9528	1.09	47.3	200	102.6	80	120	
9	Be	45	213.104	9159	1.14	2.3	200	105.4	80	120	
11	B	45	301.233	5361	4.07	108.8	200	96.2	80	120	
23	Na	45	6328.910	4362446	0.02	1201.5	1000	512.7	80	120	Fail
24	Mg	45	16985.591	5938592	1.90	10858.1	1000	612.7	80	120	Fail
27	Al	45	62990.787	9241439	1.81	53846.2	1000	914.5	80	120	Fail
39	K	45	18352.213	6535763	0.59	11914.2	1000	643.8	80	120	Fail
44	Ca	45	72760.641	1551056	0.88	62680.1	1000	1008.1	80	120	Fail
47	Ti	45	739.011	89335	1.10	416.4	200	161.3	80	120	Fail
51	V	45	289.452	1102173	0.09	81.2	200	104.1	80	120	
52	Cr	45	263.957	1125074	0.61	52.9	200	105.5	80	120	
55	Mn	45	850.023	2287713	0.38	618.1	200	115.9	80	120	
56	Fe	45	56194.374	213888476	0.92	50573.5	1000	562.1	80	120	Fail
59	Co	72	215.634	1477070	0.64	16.1	200	99.7	80	120	
60	Ni	72	231.412	421081	0.57	32.1	200	99.7	80	120	
63	Cu	72	256.002	1287905	0.34	54.1	200	101.0	80	120	
66	Zn	72	475.528	416907	0.37	258.7	200	108.4	80	120	
75	As	72	220.912	147219	0.60	22.5	200	99.2	80	120	
78	Se	72	196.479	8842	0.79	3.6	200	96.4	80	120	
88	Sr	115	546.395	1962683	0.17	312.8	200	116.8	80	120	
95	Mo	115	198.919	535639	0.39	1.3	200	98.8	80	120	
107	Ag	115	204.917	1701141	0.84	0.2	200	102.3	80	120	
111	Cd	115	208.946	259328	0.37	0.6	200	104.2	80	120	
118	Sn	115	223.019	614875	1.29	7.1	200	108.0	80	120	
121	Sb	115	82.768	349012	1.25	2.8	200	40.0	80	120	Fail
137	Ba	115	696.531	974068	0.75	457.1	200	119.7	80	120	
205	Tl	209	196.540	4038870	0.53	0.6	200	98.0	80	120	
208	Pb	209	300.988	4322888	0.68	94.6	200	103.2	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	863701	0.73	1008168	85.67	70	120	
72	Ge	590692	0.54	687591	85.91	70	120	
115	In	5363456	0.63	6493768	82.59	70	120	
209	Bi	12449369	2.62	14217989	87.56	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/18/2016 16:41	Sample Name	CCV7-161118
Data Batch	161118.b	Comment	CCV ICPMS_TW
Data File Name	162_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.078	7788	1.27	200	101.5	90	110	
9	Be	45	213.188	9310	1.37	200	106.6	90	110	
11	B	45	240.599	4368	5.96	200	120.3	90	110	Fail
23	Na	45	5140.326	3611854	0.66	5000	102.8	90	110	
24	Mg	45	5211.274	1851848	1.24	5000	104.2	90	110	
27	Al	45	5040.478	752454	0.48	5000	100.8	90	110	
39	K	45	5184.148	1913719	0.42	5000	103.7	90	110	
44	Ca	45	4745.442	103253	0.84	5000	94.9	90	110	
47	Ti	45	208.803	25655	1.99	200	104.4	90	110	
51	V	45	202.348	783573	0.46	200	101.2	90	110	
52	Cr	45	211.552	916426	0.08	200	105.8	90	110	
55	Mn	45	203.806	557751	0.49	200	101.9	90	110	
56	Fe	45	5204.340	20134533	0.67	5000	104.1	90	110	
59	Co	72	205.546	1425664	0.89	200	102.8	90	110	
60	Ni	72	205.391	378529	0.50	200	102.7	90	110	
63	Cu	72	204.283	1041351	0.77	200	102.1	90	110	
66	Zn	72	192.381	179132	0.56	200	96.2	90	110	
75	As	72	207.480	140010	0.48	200	103.7	90	110	
78	Se	72	202.196	9211	0.93	200	101.1	90	110	
88	Sr	115	205.388	760562	0.88	200	102.7	90	110	
95	Mo	115	208.550	578714	1.66	200	104.3	90	110	
107	Ag	115	208.593	1784556	0.92	200	104.3	90	110	
111	Cd	115	210.227	268878	0.43	200	105.1	90	110	
118	Sn	115	212.013	602367	1.06	200	106.0	90	110	
121	Sb	115	210.486	914000	0.77	200	105.2	90	110	
137	Ba	115	211.394	304666	0.45	200	105.7	90	110	
205	Tl	209	196.826	4163087	0.52	200	98.4	90	110	
208	Pb	209	199.803	2954429	0.23	200	99.9	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	877654	0.61	1008168	87.05	70	120	
72	Ge	598100	0.66	687591	86.98	70	120	
115	In	5527407	0.49	6493768	85.12	70	120	
209	Bi	12811261	1.95	14217989	90.11	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/18/2016 16:45	Sample Name	LCVL7-161118
Data Batch	161118.b	Comment	LCVLICPMS_TW
Data File Name	164LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.901	441	4.01	1	1090.1	70	130	Fail
9	Be	45	1.126	53	8.97	1	112.6	70	130	
11	B	45	58.500	1163	10.32	20	292.5	70	130	Fail
23	Na	45	115.053	144698	0.27	100	115.1	70	130	
24	Mg	45	107.360	40396	1.76	100	107.4	70	130	
27	Al	45	211.406	33795	2.11	100	211.4	70	130	Fail
39	K	45	103.537	92826	0.82	100	103.5	70	130	
44	Ca	45	93.638	2611	6.73	100	93.6	70	130	
47	Ti	45	5.204	672	18.72	5	104.1	70	130	
51	V	45	1.017	6192	2.30	1	101.7	70	130	
52	Cr	45	5.421	25168	0.99	5	108.4	70	130	
55	Mn	45	5.528	16125	1.63	5	110.6	70	130	
56	Fe	45	105.561	428307	0.73	100	105.6	70	130	
59	Co	72	5.291	38171	0.93	5	105.8	70	130	
60	Ni	72	5.010	10536	2.48	5	100.2	70	130	
63	Cu	72	4.947	29768	2.30	5	98.9	70	130	
66	Zn	72	-10.274	5395	1.94	5	-205.5	70	130	Fail
75	As	72	5.277	3848	2.88	5	105.5	70	130	
78	Se	72	5.845	368	2.99	5	116.9	70	130	
88	Sr	115	5.199	20878	4.10	5	104.0	70	130	
95	Mo	115	5.277	15587	2.38	5	105.5	70	130	
107	Ag	115	2.138	19447	1.61	2	106.9	70	130	
111	Cd	115	1.153	1573	4.17	1	115.3	70	130	
118	Sn	115	5.354	16978	2.16	5	107.1	70	130	
121	Sb	115	2.179	10446	1.31	2	108.9	70	130	
137	Ba	115	5.241	8044	1.68	5	104.8	70	130	
205	Tl	209	1.027	22809	1.21	1	102.7	70	130	
208	Pb	209	0.941	17576	2.07	1	94.1	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	908135	1.15	1008168	90.08	70	120	
72	Ge	619793	1.14	687591	90.14	70	120	
115	In	5870811	0.23	6493768	90.41	70	120	
209	Bi	13384330	2.00	14217989	94.14	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/18/2016 16:47	Sample Name	CCB7-161118
Data Batch	161118.b	Comment	CCB ICPMS_TW
Data File Name	165_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.064	12	26.2	2	5	
9	Be	45	0.011	2	24.7	0.4	0.3	
11	B	45	33.788	717	14.0	10	10	FailAq FailSoil
23	Na	45	7.553	68615	1.7	50	100	
24	Mg	45	-0.673	700	10.3	50	100	
27	Al	45	-2.821	768	7.3	50	10	
39	K	45	-4.838	53163	0.9	50	100	
44	Ca	45	-10.359	283	15.0	50	100	
47	Ti	45	-0.044	4	43.4	4	3	
51	V	45	-0.046	1965	5.0	4	3	
52	Cr	45	-0.030	768	5.4	2	2	
55	Mn	45	-0.068	294	1.7	2	3	
56	Fe	45	0.962	9832	1.2	50	50	
59	Co	72	-0.001	140	4.8	2	3	
60	Ni	72	-0.397	239	12.7	2	3	
63	Cu	72	-0.415	1565	2.2	2	2	
66	Zn	72	-15.891	407	12.8	4	2	
75	As	72	0.004	166	6.0	2	2	
78	Se	72	0.715	130	6.6	1	2	
88	Sr	115	-0.058	249	24.9	4	3	
95	Mo	115	0.082	304	11.0	2	2	
107	Ag	115	0.024	277	13.6	0.4	1	
111	Cd	115	0.007	20	44.1	0.4	0.3	
118	Sn	115	-0.052	721	4.2	4	3	
121	Sb	115	0.024	536	12.5	2	0.8	
137	Ba	115	0.014	58	33.8	2	3	
205	Tl	209	0.038	967	6.1	2	0.5	
208	Pb	209	-0.089	1685	9.5	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	918312	0.89	1008168	91.09	70	120	
72	Ge	628574	0.84	687591	91.42	70	120	
115	In	5950360	3.17	6493768	91.63	70	120	
209	Bi	13384106	0.88	14217989	94.14	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/18/2016 17:17	Sample Name	CCV8-161118
Data Batch	161118.b	Comment	CCV ICPMS_TW
Data File Name	180_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	203.013	8232	1.20	200	101.5	90	110	
9	Be	45	211.153	9751	0.41	200	105.6	90	110	
11	B	45	233.987	4495	1.97	200	117.0	90	110	Fail
23	Na	45	5208.946	3869243	0.80	5000	104.2	90	110	
24	Mg	45	5225.372	1963497	0.72	5000	104.5	90	110	
27	Al	45	5082.833	802317	0.98	5000	101.7	90	110	
39	K	45	5173.130	2019441	0.31	5000	103.5	90	110	
44	Ca	45	4735.939	108966	0.31	5000	94.7	90	110	
47	Ti	45	207.408	26944	2.48	200	103.7	90	110	
51	V	45	201.159	823715	1.01	200	100.6	90	110	
52	Cr	45	208.671	955856	0.86	200	104.3	90	110	
55	Mn	45	202.653	586453	0.73	200	101.3	90	110	
56	Fe	45	5101.362	20869354	1.18	5000	102.0	90	110	
59	Co	72	206.484	1489946	0.16	200	103.2	90	110	
60	Ni	72	207.026	396927	0.43	200	103.5	90	110	
63	Cu	72	206.441	1094753	0.21	200	103.2	90	110	
66	Zn	72	195.591	189229	0.53	200	97.8	90	110	
75	As	72	210.769	147964	0.19	200	105.4	90	110	
78	Se	72	205.540	9740	0.93	200	102.8	90	110	
88	Sr	115	200.346	808570	0.17	200	100.2	90	110	
95	Mo	115	203.326	614922	0.69	200	101.7	90	110	
107	Ag	115	202.031	1883763	0.28	200	101.0	90	110	
111	Cd	115	204.234	284709	0.89	200	102.1	90	110	
118	Sn	115	203.367	629766	0.26	200	101.7	90	110	
121	Sb	115	202.467	958260	0.81	200	101.2	90	110	
137	Ba	115	204.080	320578	0.78	200	102.0	90	110	
205	Tl	209	196.252	4349053	0.76	200	98.1	90	110	
208	Pb	209	198.632	3077329	0.73	200	99.3	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	928057	0.62	1008168	92.05	70	120	
72	Ge	622226	0.23	687591	90.49	70	120	
115	In	6025063	1.11	6493768	92.78	70	120	
209	Bi	13420877	1.41	14217989	94.39	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/18/2016 17:21	Sample Name	LCVL8-161118
Data Batch	161118.b	Comment	LCVLICPMS_TW
Data File Name	182LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.646	434	3.47	1	1064.6	70	130	Fail
9	Be	45	1.045	49	4.22	1	104.5	70	130	
11	B	45	49.554	1006	3.01	20	247.8	70	130	Fail
23	Na	45	134.874	159851	0.65	100	134.9	70	130	Fail
24	Mg	45	104.978	39765	1.03	100	105.0	70	130	
27	Al	45	96.980	16250	0.48	100	97.0	70	130	
39	K	45	104.509	93767	0.52	100	104.5	70	130	
44	Ca	45	88.420	2509	3.84	100	88.4	70	130	
47	Ti	45	5.681	737	12.83	5	113.6	70	130	
51	V	45	0.997	6149	2.97	1	99.7	70	130	
52	Cr	45	5.346	24986	0.24	5	106.9	70	130	
55	Mn	45	5.378	15794	1.74	5	107.6	70	130	
56	Fe	45	101.694	415356	0.84	100	101.7	70	130	
59	Co	72	5.240	37711	1.30	5	104.8	70	130	
60	Ni	72	4.813	10135	0.77	5	96.3	70	130	
63	Cu	72	4.796	28897	1.43	5	95.9	70	130	
66	Zn	72	-10.453	5222	6.22	5	-209.1	70	130	Fail
75	As	72	5.449	3957	1.48	5	109.0	70	130	
78	Se	72	5.972	373	3.93	5	119.4	70	130	
88	Sr	115	5.227	20943	2.05	5	104.5	70	130	
95	Mo	115	5.340	15730	1.23	5	106.8	70	130	
107	Ag	115	2.078	18851	2.22	2	103.9	70	130	
111	Cd	115	1.035	1409	3.32	1	103.5	70	130	
118	Sn	115	5.419	17143	2.35	5	108.4	70	130	
121	Sb	115	2.205	10539	0.41	2	110.2	70	130	
137	Ba	115	5.160	7905	5.56	5	103.2	70	130	
205	Tl	209	1.061	23199	1.96	1	106.1	70	130	
208	Pb	209	0.896	16615	3.92	1	89.6	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	913682	0.58	1008168	90.63	70	120	
72	Ge	618202	0.79	687591	89.91	70	120	
115	In	5860906	3.33	6493768	90.25	70	120	
209	Bi	13168138	1.25	14217989	92.62	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/18/2016 17:23	Sample Name	CCB8-161118
Data Batch	161118.b	Comment	CCB ICPMS_TW
Data File Name	183_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.214	17	28.5	2	5	
9	Be	45	0.027	3	115.5	0.4	0.3	
11	B	45	25.069	543	8.0	10	10	FailAq FailSoil
23	Na	45	26.633	80775	1.2	50	100	
24	Mg	45	-1.011	563	5.6	50	100	
27	Al	45	-3.526	644	7.6	50	10	
39	K	45	1.711	54520	1.4	50	100	
44	Ca	45	-7.209	348	9.8	50	100	
47	Ti	45	-0.026	7	50.0	4	3	
51	V	45	-0.025	2012	7.9	4	3	
52	Cr	45	-0.025	774	11.7	2	2	
55	Mn	45	-0.072	277	8.4	2	3	
56	Fe	45	0.141	6379	2.2	50	50	
59	Co	72	0.004	173	25.4	2	3	
60	Ni	72	-0.409	213	21.9	2	3	
63	Cu	72	-0.418	1520	4.4	2	2	
66	Zn	72	-15.903	389	17.6	4	2	
75	As	72	0.034	185	3.7	2	2	
78	Se	72	0.846	134	18.4	1	2	
88	Sr	115	-0.064	218	16.8	4	3	
95	Mo	115	0.071	259	11.5	2	2	
107	Ag	115	0.029	301	12.3	0.4	1	
111	Cd	115	0.017	32	39.2	0.4	0.3	
118	Sn	115	-0.001	839	12.2	4	3	
121	Sb	115	0.057	659	7.4	2	0.8	
137	Ba	115	0.008	46	23.5	2	3	
205	Tl	209	0.040	990	5.7	2	0.5	
208	Pb	209	-0.127	1060	6.1	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	900075	0.15	1008168	89.28	70	120	
72	Ge	618363	0.19	687591	89.93	70	120	
115	In	5693510	2.02	6493768	87.68	70	120	
209	Bi	13041572	0.62	14217989	91.73	70	120	

Pmoist
For

DHL Work Order
1611053

PMOIST_161109A
For

DHL Work Order
1611053

DHL Analytical, Inc.

Run ID: **PMOIST_161109A** **Run No.:** 88920

Analytical Run Date: 11/9/2016 **InstrumentID:** Pmoist

Analyst: Sydney Powers

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
1611044-14A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-15A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-18A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-21A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-01A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-06A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-11A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-16A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-21A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-26A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-31A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-36A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611053-41A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-01A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-04A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-08A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-11A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-16A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611071-21A	1	PMOIST	SAMP	77841	11/10/2016 8:00:00 AM		
1611044-14A DUP	1	PMOIST	DUP	77841	11/10/2016 8:00:00 AM		

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 2:18:41 PM**
Digestion: **Start: 11/9/2016 4:00:00 PM / Stop: 11/10/2016 8:00:00 AM**
Prep End Date: **11/10/2016 10:25:43 AM**

Prep Batch **77841** Prep Code: **PMOIST_PREP** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10	10	1.000	1 of 1	
1611044-14A DUP	Soil		10	10	1.000	of	
1611044-15A	Soil		10	10	1.000	1 of 1	
1611044-18A	Soil		10	10	1.000	1 of 1	
1611044-21A	Soil		10	10	1.000	1 of 1	
1611053-01A	Soil		10	10	1.000	1 of 1	
1611053-06A	Soil		10	10	1.000	1 of 1	
1611053-11A	Soil		10	10	1.000	1 of 1	
1611053-16A	Soil		10	10	1.000	1 of 1	
1611053-21A	Soil		10	10	1.000	1 of 1	
1611053-26A	Soil		10	10	1.000	1 of 1	
1611053-31A	Soil		10	10	1.000	1 of 1	
1611053-36A	Soil		10	10	1.000	1 of 1	
1611053-41A	Soil		10	10	1.000	1 of 1	
1611071-01A	Soil		10	10	1.000	1 of 1	
1611071-04A	Soil		10	10	1.000	1 of 1	
1611071-08A	Soil		10	10	1.000	1 of 1	
1611071-11A	Soil		10	10	1.000	1 of 1	
1611071-16A	Soil		10	10	1.000	1 of 1	
1611071-21A	Soil		10	10	1.000	1 of 1	

REVIEWED BY
By Janice Whitt at 12:36:12 PM, 11/10/2016

Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

RUN ID:	161109 PMOIST A				
Date Started:	11/9/16	Date Ended:	11/10/16	Date Ended:	
Time Started:	16:00	Time Ended:	8:00	Time Ended:	
Analyst Start:	JW	Analyst End:	JW	Analyst End:	
Balance #	20	Balance #	20	Balance #	
Oven #	FISHER-2	Thermometer #	81 (10/05/16)	Dry Time >12hrs	
		Correction Factor	0.0	2nd Weighing - if 1st dry is <12 hrs	
Initial Temperature	108.0	Final Temperature	108.2		

Sample ID	Tare Wt (g)	Tare + Sample (g)	Final Wt (g)	2nd Weight	<0.1% (Y/N)
SampID					
1611044-14A	1.00	12.23	9.73		
1611044-15A	1.02	12.38	10.35		
1611044-18A	0.97	12.11	10.00		
1611044-21A	0.97	12.49	10.31		
1611053-01A	0.98	12.08	10.66		
1611053-06A	1.02	12.36	11.48		
1611053-11A	1.02	12.27	10.75		
1611053-16A	0.98	12.28	11.48		
1611053-21A	0.98	12.21	10.51		
1611053-26A	0.98	12.27	11.78		
1611053-31A	0.97	12.14	11.39		
1611053-36A	0.97	12.28	11.36		
1611053-41A	0.98	12.52	11.12		
1611071-01A	0.98	12.01	10.71		
1611071-04A	0.98	12.65	11.78		
1611071-08A	0.97	12.44	10.58		
1611071-11A	0.99	12.31	11.66		
1611071-16A	0.97	12.28	11.78		
1611071-21A	0.98	12.59	11.93		
044-14A DUP	0.97	12.14	9.68		

Data Folder Contents	Review Items	Check	2nd Level Review
Hard Copies MUST match LIMS data			
1. Is the Prep Batch Report included?	Prep Start/End Dates SampAmt=10, FinVol=10 20 field samples/batch, 1 DUP/batch	X	x
2. Is the Run Log included?	Test Code, Sample Type Batch ID, and Analysis Date/Time	X	
3. Is PMOIST bench sheet included?	Bench sheet vs. LIMS - Single Analyte Worksheet	X	
4. Is the RPD for the DUP ≤30%?	If RPD fails criteria, then state reason below:	X	

Comments:

Analyst: JW Date: 11/10/16

Second-Level Review: Janice Whitt Date: 11/10/2016

REVIEWED BY Janice Whitt at 12:39:22 PM, 11/10/2016

F:\QC\Pmoist\PMOIST 2016\161109 PMOIST A

PMOIST_161116A
For

DHL Work Order
1611053

DHL Analytical, Inc.

Run ID: **PMOIST_161116A** **Run No.:** 89033

Analytical Run Date: 11/16/2016 **InstrumentID:** Pmoist

Analyst: Sydney Powers

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
1611053-02A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611053-07A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611053-27A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611053-32A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611053-37A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611071-02A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611071-05A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611071-12A	1	PMOIST	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-02A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-03A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-04A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-05A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-06A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-07A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-08A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-09A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-10A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-11A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-12A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-13A	1	PMOIST_WW	SAMP	77953	11/17/2016 8:00:00 AM		
1611144-04A DUP	1	PMOIST_WW	DUP	77953	11/17/2016 8:00:00 AM		

REVIEWED/APPROVED

By Sherri Herschmann at 9:06:03 AM, 11/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/16/2016 2:17:59 PM**
Digestion: **Start: 11/16/2016 4:00:00 PM / Stop: 11/17/2016 8:00:00 AM**
Prep End Date: **11/17/2016 10:03:26 AM**

Prep Batch **77953** Prep Code: **PMOIST_PREP** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #			Cleanup
1611053-02A	Soil		10	10	1.000	1	of	1	
1611053-07A	Soil		10	10	1.000	1	of	1	
1611053-27A	Soil		10	10	1.000	1	of	1	
1611053-32A	Soil		10	10	1.000	1	of	1	
1611053-37A	Soil		10	10	1.000	1	of	1	
1611071-02A	Soil		10	10	1.000	1	of	1	
1611071-05A	Soil		10	10	1.000	1	of	1	
1611071-12A	Soil		10	10	1.000	1	of	1	
1611144-02A	Soil		10	10	1.000	1	of	1	
1611144-03A	Soil		10	10	1.000	1	of	1	
1611144-04A	Soil		10	10	1.000	1	of	1	
1611144-04A DUP	Soil		10	10	1.000		of		
1611144-05A	Soil		10	10	1.000	1	of	1	
1611144-06A	Soil		10	10	1.000	1	of	1	
1611144-07A	Soil		10	10	1.000	1	of	1	
1611144-08A	Soil		10	10	1.000		of	2	
1611144-09A	Soil		10	10	1.000	1	of	1	
1611144-10A	Soil		10	10	1.000	1	of	1	
1611144-11A	Soil		10	10	1.000	1	of	1	
1611144-12A	Soil		10	10	1.000	1	of	1	
1611144-13A	Soil		10	10	1.000	1	of	1	

REVIEWED/APPROVED
By Sherri Herschmann at 9:08:35 AM, 11/18/2016

Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

RUN ID:	161116 PMOIST A				
Date Started:	11/16/16	Date Ended:	11/17/16	Date Ended:	
Time Started:	16:00	Time Ended:	0800	Time Ended:	
Analyst Start:	[illegible]	Analyst End:	BTJ	Analyst End:	
Balance #	20	Balance #	20	Balance #	
Oven #	FISHER-2	Thermometer # / Correction Factor	81 (10/05/16) / 0.0	Dry Time >12hrs; 2nd Weighing - if 1st dry is <12 hrs	
Initial Temperature	108.7	Final Temperature	108.2		

Sample ID	Tare Wt (g)	Tare + Sample (g)	Final Wt (g)	2nd Weight	<0.1% (Y/N)
SampID					
1611053-02A	0.97	12.29	11.17		
1611053-07A	0.97	12.13	11.23		
1611053-27A	0.97	12.05	11.28		
1611053-32A	0.99	12.42	11.35		
1611053-37A	1.00	12.14	11.27		
1611071-02A	1.01	12.79	10.25		
1611071-05A	0.99	12.48	11.68		
1611071-12A	0.98	12.18	11.32		
1611144-02A	0.97	13.23	10.62		
1611144-03A	1.01	12.28	10.65		
1611144-04A	1.01	12.88	10.96		
1611144-05A	1.00	12.59	11.34		
1611144-06A	1.01	12.47	10.78		
1611144-07A	1.01	12.78	10.75		
1611144-08A	1.00	12.16	10.49		
1611144-09A	0.99	12.51	10.69		
1611144-10A	0.99	12.48	10.65		
1611144-11A	0.99	12.36	10.38		
1611144-12A	0.98	12.13	10.00		
1611144-13A	0.96	12.42	11.14		
144-04A DUP	0.99	12.70	10.79		

Data Folder Contents	Review Items	Check	2nd Level Review
Hard Copies MUST match LIMS data			
1. Is the Prep Batch Report included?	Prep Start/End Dates SampAmt=10, FinVol=10 20 field samples/batch, 1 DUP/batch	X	X
2. Is the Run Log included?	Test Code, Sample Type Batch ID, and Analysis Date/Time	X	
3. Is PMOIST bench sheet included?	Bench sheet vs. LIMS - Single Analyte Worksheet	X	
4. Is the RPD for the DUP ≤30%?	If RPD fails criteria, then state reason below:	X	

Comments:

Analyst: [illegible] Date: 11/17/16

Second-Level Review: [illegible] Date: 11/18/2016

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Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

RUN ID:	161116 PMOIST A				
Date Started:	11/16/16	Date Ended:	11/17/16	Date Ended:	
Time Started:	16:00	Time Ended:	0800	Time Ended:	
Analyst Start:	[illegible]	Analyst End:	BTJ	Analyst End:	
Balance #	20	Balance #	20	Balance #	
Oven #	FISHER-2	Thermometer # / Correction Factor	81 (10/05/16) / 0.0	Dry Time >12hrs; 2nd Weighing - if 1st dry is <12 hrs	
Initial Temperature	108.7	Final Temperature	108.2		

Sample ID	Tare Wt (g)	Tare + Sample (g)	Final Wt (g)	2nd Weight	<0.1% (Y/N)
SampID					
1611053-02A	0.97	12.29	11.17		
1611053-07A	0.97	12.13	11.23		
1611053-27A	0.97	12.05	11.28		
1611053-32A	0.99	12.42	11.35		
1611053-37A	1.00	12.14	11.27		
1611071-02A	1.01	12.79	10.25		
1611071-05A	0.99	12.48	11.68		
1611071-12A	0.98	12.18	11.32		
1611144-02A	0.97	13.23	10.62		
1611144-03A	1.01	12.28	10.65		
1611144-04A	1.01	12.88	10.96		
1611144-05A	1.00	12.59	11.34		
1611144-06A	1.01	12.47	10.78		
1611144-07A	1.01	12.78	10.75		
1611144-08A	1.00	12.16	10.49		
1611144-09A	0.99	12.51	10.69		
1611144-10A	0.99	12.48	10.65		
1611144-11A	0.99	12.36	10.38		
1611144-12A	0.98	12.13	10.00		
1611144-13A	0.96	12.42	11.14		
144-04A DUP	0.99	12.70	10.79		

Data Folder Contents	Review Items	Check	2nd Level Review
Hard Copies MUST match LIMS data			
1. Is the Prep Batch Report included?	Prep Start/End Dates SampAmt=10, FinVol=10 20 field samples/batch, 1 DUP/batch	X	X
2. Is the Run Log included?	Test Code, Sample Type Batch ID, and Analysis Date/Time	X	
3. Is PMOIST bench sheet included?	Bench sheet vs. LIMS - Single Analyte Worksheet	X	
4. Is the RPD for the DUP ≤30%?	If RPD fails criteria, then state reason below:	X	

Comments:

Analyst: [illegible] Date: 11/17/16

Second-Level Review: [illegible] Date: 11/18/2016

F:\IC\Pmoist\PMOIST 2016\161116 PMOIST A

PMOIST_161128A
For

DHL Work Order
1611053

Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

RUN ID:	161128 PMOIST A				
Date Started:	11/28/16	Date Ended:	11/29/16	Date Ended:	
Time Started:	15:30	Time Ended:	8:10	Time Ended:	
Analyst Start:	Qmt	Analyst End:	Qmt	Analyst End:	
Balance #	20	Balance #	20	Balance #	
Oven #	FISHER-2	Thermometer #	81 (10/05/16)	Dry Time >12hrs	
		Correction Factor	0.0	2nd Weighing - if 1st dry is <12 hrs	
Initial Temperature	107.5	Final Temperature	107.5		

Sample ID	Tare Wt (g)	Tare + Sample (g)	Final Wt (g)	2nd Weight	<0.1% (Y/N)
Samp ID					
1611053-03A	1.00	13.33	11.67		
1611053-08A	1.01	12.29	11.17		
1611053-28A	1.01	12.19	11.15		
1611053-33A	1.02	12.32	10.65		
1611053-38A	1.00	12.26	11.10		
1611071-03A	1.00	12.82	9.32		
1611071-06A	0.98	12.25	10.46		
1611071-13A	1.02	12.13	10.87		
1611071-23A	1.02	12.65	11.40		
1611187-05B	1.01	12.53	9.99		
1611198-01C	0.98	12.96	11.22		
1611198-02C	0.98	13.53	11.41		
1611198-03C	0.97	12.20	10.54		
1611198-04C	0.96	13.83	11.70		
1611198-05C	0.99	12.25	10.72		
1611198-06C	1.02	12.11	9.89		
1611198-07C	1.00	12.61	10.03		
1611198-08C	0.96	12.88	10.67		
1611198-09C	0.96	12.11	9.70		
1611198-10C	0.94	13.65	10.76		
053-33A DUP	1.00	12.40	10.69		

Data Folder Contents	Review Items	Check	2nd Level Review
Hard Copies MUST match LIMS data			
1. Is the Prep Batch Report included?	Prep Start/End Dates SampAmt=10, FinVol=10 20 field samples/batch, 1 DUP/batch	X	x
2. Is the Run Log included?	Test Code, Sample Type Batch ID, and Analysis Date/Time	X	
3. Is PMOIST bench sheet included?	Bench sheet vs. LIMS - Single Analyte Worksheet	X	
4. Is the RPD for the DUP ≤30%?	If RPD fails criteria, then state reason below:	X	

Comments:

Analyst: Qmt Date: 11/29/16

Second-Level Review: Janice Whitt Date: 11/29/2016

REVIEWED BY
By Janice Whitt at 10:27:22 AM, 11/29/2016

F:\IC Pmoist\PMOIST 2016\161128 PMOIST A

DHL Analytical, Inc.

Run ID: **PMOIST_161128A** **Run No.:** 89190

Analytical Run Date: 11/28/2016 **InstrumentID:** Pmoist

Analyst: Sydney Powers

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
1611053-03A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611053-08A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611053-28A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611053-33A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611053-38A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611071-03A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611071-06A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611071-13A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611071-23A	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611187-05B	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-01C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-02C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-03C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-04C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-05C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-06C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-07C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-08C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-09C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611198-10C	1	PMOIST	SAMP	78054	11/29/2016 8:10:00 AM		
1611053-33A DUP	1	PMOIST	DUP	78054	11/29/2016 8:10:00 AM		

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/28/2016 1:56:11 PM**
Digestion: **Start: 11/28/2016 3:30:00 PM / Stop: 11/28/2016 8:10:00 AM**
Prep End Date: **11/29/2016 9:24:01 AM**

Prep Batch **78054** Prep Code: **PMOIST_PREP** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611053-03A	Soil		10	10	1.000	1 of 1	
1611053-08A	Soil		10	10	1.000	1 of 1	
1611053-28A	Soil		10	10	1.000	1 of 1	
1611053-33A	Soil		10	10	1.000	1 of 1	
1611053-33A DUP	Soil		10	10	1.000	of	
1611053-38A	Soil		10	10	1.000	1 of 1	
1611071-03A	Soil		10	10	1.000	1 of 1	
1611071-06A	Soil		10	10	1.000	1 of 1	
1611071-13A	Soil		10	10	1.000	1 of 1	
1611071-23A	Soil		10	10	1.000	1 of 1	
1611187-05B	Soil		10	10	1.000	1 of 1	
1611198-01C	Soil		10	10	1.000	1 of 1	
1611198-02C	Soil		10	10	1.000	1 of 1	
1611198-03C	Soil		10	10	1.000	1 of 1	
1611198-04C	Soil		10	10	1.000	1 of 1	
1611198-05C	Soil		10	10	1.000	1 of 1	
1611198-06C	Soil		10	10	1.000	1 of 1	
1611198-07C	Soil		10	10	1.000	1 of 1	
1611198-08C	Soil		10	10	1.000	1 of 1	
1611198-09C	Soil		10	10	1.000	1 of 1	
1611198-10C	Soil		10	10	1.000	1 of 1	

REVIEWED BY
By Janice Whitt at 10:21:02 AM, 11/29/2016

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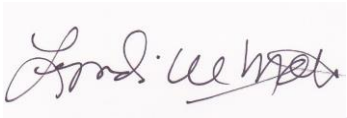

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Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73148 CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/7/2016 PAGE 1 OF 3
PO #: DHL WORK ORDER #: 1611071
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Lead | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Extra Cu / Hold 04/14 11/15/16 EMT Cu 11/22/16 Hold 04/14 11/22/16-KB

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
SGR-ROW03(2-4)	01	11/5/2016	1013	S	Jar	1				1		
SGR-ROW03(4-6)	02	11/5/2016	1014	S	Jar	1				1		Hold
SGR-ROW03(6-8)	03	11/5/2016	1015	S	Jar	1				1		Hold
SGR-ROW04(0.5-2)	04	11/5/2016	1002	S	Jar	1				1		
SGR-ROW04(2-4)	05	11/5/2016	1003	S	Jar	1				1		Hold
SGR-ROW01(4-6)	06	11/5/2016	1004	S	Jar	1				1		Hold
SGR-ROW04(6-8)	07	11/5/2016	1005	S	Jar	1				1		Hold
SGR-ROW07(4-6)	08	11/5/2016	0953	S	Jar	1				1		
SGR-ROW07(6-8)	09	11/5/2016	0954	S	Jar	1				1		Hold
SGR-ROW07(8-10)	10	11/5/2016	0955	S	Jar	1				1		Hold
SGR-ROW12(0-0.5)	11	11/5/2016	1115	S	Jar	1				1		
SGR-ROW12(0.5-2)	12	11/5/2016	1116	S	Jar	1				1		Hold
SGR-ROW12(2-4)	13	11/5/2016	1117	S	Jar	1				1		Hold
SGR-ROW12(4-6)	14	11/5/2016	1118	S	Jar	1				1		Hold
SGR-ROW12(6-8)	15	11/5/2016	1119	S	Jar	1				1		Hold
						X	Added per A. Walter 11/14/16 -KB					

RELINQUISHED BY: (Signature) DATE/TIME 11/7/2016 0920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/8/16 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.2, 0.7, 0.1, 0.0 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ UNTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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№ 73147

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/7/2016 PAGE 2 OF 3
PO #: DHL WORK ORDER #: 1611071
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042850B1.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
SGR-ROW17(0-0.5)	16	11/5/2016	1135	S	Jar	1				I		X X	
SGR-ROW17(0.5-2)	17	11/5/2016	1136	S	Jar	1				I		X X	Hold
SGR-ROW17(2-4)	18	11/5/2016	1137	S	Jar	1				I		X X	Hold
SGR-ROW17(4-6)	19	11/5/2016	1138	S	Jar	1				I		X X	Hold
SGR-ROW17(6-8)	20	11/5/2016	1139	S	Jar	1				I		X X	Hold
SGR-ROW18(0-0.5)	21	11/5/2016	1154	S	Jar	1				I		X X	
SGR-ROW18(0.5-2)	22	11/5/2016	1155	S	Jar	1				I		(X) (X)	Hold
SGR-ROW18(2-4)	23	11/5/2016	1156	S	Jar	1				I		X X	Hold
SGR-DU100-A	24	11/6/2016	1016	S	Bag	1				I		X X	
SGR-DU100-B	25	11/6/2016	1031	S	Bag	1				I		X X	
SGR-DU100-C	26	11/6/2016	1048	S	Bag	1				I		X X	
SGR-DU103-A	27	11/5/2016	1650	S	Bag	1				I		X X	
SGR-DU103-B	28	11/5/2016	1715	S	Bag	1				I		X X	
SGR-DU103-C	29	11/5/2016	1735	S	Bag	1				I		X X	
SGR-DU133-A	30	11/5/2016	1500	S	Bag	1				I		X X	

(X) added per A Walter 11/14/16 - mfc

Extract/Hold PAH 11/15/16 per AW
Extract/Hold Pb 11/15/16 per AW
PAH 1627M 11/23/16 - mfc

RELINQUISHED BY: (Signature) DATE/TIME 11/7/2016 0920 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 11/8/16 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP 1.2, 0.7, 0.1 THERM #: _____
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
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E-Mail: login@dhlanalytical.com

№ 73140

CHAIN-OF-CUSTODY

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DATE: 11/7/2016 PAGE 3 OF 3
PO #: DHL WORK ORDER #: 1611071
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042850B1.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 2008 ☐ DISS. METALS ☐ Lead	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	FIELD NOTES
SGR-DU133-B	31	11/5/2016	1615	S	Bag	1				1					X					X								
SGR-DU133-C	32	11/5/2016	1540	S	Bag	1				1					X					X								
SGR-DU172-A	33	11/6/2016	1124	S	Bag	1				1					X					X								
SGR-DU172-B	34	11/6/2016	1138	S	Bag	1				1					X					X								
SGR-DU172-C	35	11/6/2016	1153	S	Bag	1				1					X					X								
SGR-EBDU100(2016	1108 36	11/6/2016	1800	W	Bottle	2				1					X					X								

RELINQUISHED BY: (Signature) DATE/TIME 11/7/2016 0920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.2, 0.7, 1.1, 0.5 THERM #: 28
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/8/2016

Work Order Number 1611071 | Received by JB

Checklist completed by: Signature | 11/8/2016 Date | Reviewed by Initials | 11/8/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.2 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-01
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:13 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	36.6	0.101	0.304	0.152		mg/Kg-dry	5	11/11/16 02:19 PM
IS: Bismuth	93.2	0	30-120	0		%REC	5	11/11/16 02:19 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0811	0.0541	0.108	0.0811	U	mg/Kg-dry	10	11/12/16 12:13 AM
Acenaphthylene	0.0811	0.0541	0.108	0.0811	U	mg/Kg-dry	10	11/12/16 12:13 AM
Anthracene	0.0963	0.0541	0.108	0.0811	J	mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[a]anthracene	0.723	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[a]pyrene	0.878	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[b]fluoranthene	0.909	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[e]pyrene	0.677	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[g,h,i]perylene	0.693	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[j]fluoranthene	0.413	0.0541	0.108	0.0811	N	mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[k]fluoranthene	0.446	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Chrysene	1.06	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Dibenz[a,h]anthracene	0.138	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Fluoranthene	1.38	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Fluorene	0.0811	0.0541	0.108	0.0811	U	mg/Kg-dry	10	11/12/16 12:13 AM
Indeno[1,2,3-cd]pyrene	0.693	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Phenanthrene	0.538	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Pyrene	1.19	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
IS: Acenaphthene-d10	82.3	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Chrysene-d12	88.9	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Naphthalene-d8	87.3	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Perylene-d12	97.6	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Phenanthrene-d10	82.3	0	50-200	0		%REC	10	11/12/16 12:13 AM
Surr: 2-Fluorobiphenyl	99.2	0	46-115	0		%REC	10	11/12/16 12:13 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-01
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:13 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	110	0	58-133	0		%REC	10	11/12/16 12:13 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	11.8	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-02
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:14 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	5.74	0.126	0.379	0.189		mg/Kg-dry	5	11/18/16 03:37 PM
IS: Bismuth	89.7	0	30-120	0		%REC	5	11/18/16 03:37 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Acenaphthylene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Anthracene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[a]anthracene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[a]pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[b]fluoranthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[e]pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[g,h,i]perylene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[j]fluoranthene	0.0905	0.0603	0.121	0.0905	CNU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[k]fluoranthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Chrysene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Dibenz[a,h]anthracene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Fluoranthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Fluorene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Indeno[1,2,3-cd]pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Phenanthrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
IS: Acenaphthene-d10	113	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Chrysene-d12	101	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Naphthalene-d8	117	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Perylene-d12	95.6	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Phenanthrene-d10	108	0	50-200	0		%REC	10	11/30/16 05:08 PM
Surr: 2-Fluorobiphenyl	79.0	0	46-115	0		%REC	10	11/30/16 05:08 PM

UJL

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-02
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:14 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	75.3	0	58-133	0		%REC	10	11/30/16 05:08 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	21.6	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

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MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(6-8)
Project:	Laredo SGR	**Lab ID:**	1611071-03
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:15 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Acenaphthylene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Anthracene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[a]anthracene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[a]pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[b]fluoranthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[e]pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[g,h,i]perylene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[j]fluoranthene	0.104	0.0695	0.139	0.104	NU	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[k]fluoranthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Chrysene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Dibenz[a,h]anthracene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Fluoranthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Fluorene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Indeno[1,2,3-cd]pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Phenanthrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
IS: Acenaphthene-d10	88.6	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Chrysene-d12	78.4	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Naphthalene-d8	157	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Perylene-d12	74.8	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Phenanthrene-d10	84.6	0	50-200	0		%REC	10	11/23/16 04:45 PM
Surr: 2-Fluorobiphenyl	75.2	0	46-115	0		%REC	10	11/23/16 04:45 PM
Surr: 4-Terphenyl-d14	77.7	0	58-133	0		%REC	10	11/23/16 04:45 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	29.6	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-04
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:02 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	28.1	0.0991	0.297	0.149		mg/Kg-dry	5	11/11/16 02:21 PM
IS: Bismuth	93.1	0	30-120	0		%REC	5	11/11/16 02:21 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0740	0.0493	0.0987	0.0740	U	mg/Kg-dry	10	11/12/16 12:41 AM
Acenaphthylene	0.0740	0.0493	0.0987	0.0740	U	mg/Kg-dry	10	11/12/16 12:41 AM
Anthracene	0.0794	0.0493	0.0987	0.0740	J	mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[a]anthracene	0.804	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[a]pyrene	1.03	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[b]fluoranthene	0.985	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[e]pyrene	0.822	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[g,h,i]perylene	0.842	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[j]fluoranthene	0.482	0.0493	0.0987	0.0740	N	mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[k]fluoranthene	0.518	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Chrysene	1.17	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Dibenz[a,h]anthracene	0.163	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Fluoranthene	1.39	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Fluorene	0.0740	0.0493	0.0987	0.0740	U	mg/Kg-dry	10	11/12/16 12:41 AM
Indeno[1,2,3-cd]pyrene	0.822	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Phenanthrene	0.457	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Pyrene	1.24	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
IS: Acenaphthene-d10	81.7	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Chrysene-d12	89.1	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Naphthalene-d8	86.6	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Perylene-d12	97.7	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Phenanthrene-d10	81.8	0	50-200	0		%REC	10	11/12/16 12:41 AM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/12/16 12:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-04
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:02 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	112	0	58-133	0		%REC	10	11/12/16 12:41 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.46	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-05
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:03 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	12.8		0.101	0.304	0.152		mg/Kg-dry	5	11/18/16 03:39 PM
IS: Bismuth	89.5		0	30-120	0		%REC	5	11/18/16 03:39 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0764	UJL	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Acenaphthylene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Anthracene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[a]anthracene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[a]pyrene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[b]fluoranthene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[e]pyrene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[g,h,i]perylene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[j]fluoranthene	0.0764		0.0509	0.102	0.0764	CNU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[k]fluoranthene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Chrysene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Dibenz[a,h]anthracene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Fluoranthene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Fluorene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Indeno[1,2,3-cd]pyrene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Phenanthrene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Pyrene	0.0764		0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
IS: Acenaphthene-d10	111		0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Chrysene-d12	99.5		0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Naphthalene-d8	116		0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Perylene-d12	95.9		0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Phenanthrene-d10	107		0	50-200	0		%REC	10	11/30/16 05:36 PM
Surr: 2-Fluorobiphenyl	79.0		0	46-115	0		%REC	10	11/30/16 05:36 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-05
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:03 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	73.2	0	58-133	0		%REC	10	11/30/16 05:36 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	6.96	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-06
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:04 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Acenaphthylene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Anthracene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[a]anthracene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[a]pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[b]fluoranthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[e]pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[g,h,i]perylene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[j]fluoranthene	0.0851	0.0567	0.113	0.0851	NU	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[k]fluoranthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Chrysene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Dibenz[a,h]anthracene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Fluoranthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Fluorene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Indeno[1,2,3-cd]pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Phenanthrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
IS: Acenaphthene-d10	85.3	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Chrysene-d12	75.7	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Naphthalene-d8	153	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Perylene-d12	72.1	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Phenanthrene-d10	81.3	0	50-200	0		%REC	10	11/23/16 05:14 PM
Surr: 2-Fluorobiphenyl	78.2	0	46-115	0		%REC	10	11/23/16 05:14 PM
Surr: 4-Terphenyl-d14	77.7	0	58-133	0		%REC	10	11/23/16 05:14 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	15.9	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW07(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-08
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 09:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.64	0.111	0.332	0.166		mg/Kg-dry	5	11/11/16 02:23 PM
IS: Bismuth	94.6	0	30-120	0		%REC	5	11/11/16 02:23 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Acenaphthylene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[a]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[a]pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[b]fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[e]pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[g,h,i]perylene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[j]fluoranthene	0.0850	0.0567	0.113	0.0850	NU	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[k]fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Chrysene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Dibenz[a,h]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Fluorene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Indeno[1,2,3-cd]pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Phenanthrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
IS: Acenaphthene-d10	82.8	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Chrysene-d12	89.0	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Naphthalene-d8	88.3	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Perylene-d12	99.4	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Phenanthrene-d10	83.3	0	50-200	0		%REC	10	11/12/16 01:09 AM
Surr: 2-Fluorobiphenyl	95.6	0	46-115	0		%REC	10	11/12/16 01:09 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW07(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-08
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 09:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	104	0	58-133	0		%REC	10	11/12/16 01:09 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	16.2	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-11
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:15 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	30.0	0.0964	0.289	0.145		mg/Kg-dry	5	11/11/16 02:25 PM
IS: Bismuth	94.7	0	30-120	0		%REC	5	11/11/16 02:25 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0750	0.0500	0.100	0.0750	U	mg/Kg-dry	10	11/12/16 01:37 AM
Acenaphthylene	0.0750	0.0500	0.100	0.0750	U	mg/Kg-dry	10	11/12/16 01:37 AM
Anthracene	0.122	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[a]anthracene	1.33	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[a]pyrene	1.68	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[b]fluoranthene	1.63	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[e]pyrene	1.30	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[g,h,i]perylene	1.33	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[j]fluoranthene	0.754	0.0500	0.100	0.0750	N	mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[k]fluoranthene	0.794	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Chrysene	1.84	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Dibenz[a,h]anthracene	0.268	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Fluoranthene	2.22	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Fluorene	0.0750	0.0500	0.100	0.0750	U	mg/Kg-dry	10	11/12/16 01:37 AM
Indeno[1,2,3-cd]pyrene	1.34	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Phenanthrene	0.700	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Pyrene	1.94	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
IS: Acenaphthene-d10	81.1	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Chrysene-d12	88.3	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Naphthalene-d8	85.7	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Perylene-d12	97.0	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Phenanthrene-d10	81.1	0	50-200	0		%REC	10	11/12/16 01:37 AM
Surr: 2-Fluorobiphenyl	105	0	46-115	0		%REC	10	11/12/16 01:37 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-11
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:15 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	112	0	58-133	0		%REC	10	11/12/16 01:37 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	5.74	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-12
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	13.2		0.0926	0.278	0.139		mg/Kg-dry	5	11/18/16 03:41 PM
IS: Bismuth	88.1		0	30-120	0		%REC	5	11/18/16 03:41 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0749	UJL	0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Acenaphthylene	0.0749		0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Anthracene	0.0749		0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[a]anthracene	0.429	JL	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[a]pyrene	0.548		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[b]fluoranthene	0.547		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[e]pyrene	0.436		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[g,h,i]perylene	0.417		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[j]fluoranthene	0.256		0.0500	0.0999	0.0749	CN	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[k]fluoranthene	0.257		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Chrysene	0.547		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Dibenz[a,h]anthracene	0.0713		0.0500	0.0999	0.0749	JC	mg/Kg-dry	10	11/30/16 08:25 PM
Fluoranthene	0.642		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Fluorene	0.0749	UJL	0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Indeno[1,2,3-cd]pyrene	0.403	JL	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Phenanthrene	0.221		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Pyrene	0.577		0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
IS: Acenaphthene-d10	115		0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Chrysene-d12	103		0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Naphthalene-d8	121		0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Perylene-d12	100		0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Phenanthrene-d10	112		0	50-200	0		%REC	10	11/30/16 08:25 PM
Surr: 2-Fluorobiphenyl	79.7		0	46-115	0		%REC	10	11/30/16 08:25 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-12
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	72.0	0	58-133	0		%REC	10	11/30/16 08:25 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.68	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-13
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:17 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Acenaphthylene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Anthracene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[a]anthracene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[a]pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[b]fluoranthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[e]pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[g,h,i]perylene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[j]fluoranthene	0.0804	0.0536	0.107	0.0804	NU	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[k]fluoranthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Chrysene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Dibenz[a,h]anthracene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Fluoranthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Fluorene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Indeno[1,2,3-cd]pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Phenanthrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
IS: Acenaphthene-d10	83.5	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Chrysene-d12	74.0	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Naphthalene-d8	147	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Perylene-d12	69.7	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Phenanthrene-d10	79.5	0	50-200	0		%REC	10	11/23/16 05:43 PM
Surr: 2-Fluorobiphenyl	82.9	0	46-115	0		%REC	10	11/23/16 05:43 PM
Surr: 4-Terphenyl-d14	80.9	0	58-133	0		%REC	10	11/23/16 05:43 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	11.3	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW17(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-16
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:35 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	12.3	0.0978	0.293	0.147		mg/Kg-dry	5	11/11/16 02:27 PM
IS: Bismuth	94.3	0	30-120	0		%REC	5	11/11/16 02:27 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Acenaphthylene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[a]anthracene	0.0831	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[a]pyrene	0.114	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[b]fluoranthene	0.116	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[e]pyrene	0.0952	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[g,h,i]perylene	0.0969	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[j]fluoranthene	0.0534	0.0492	0.0983	0.0737	JN	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[k]fluoranthene	0.0615	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Chrysene	0.103 JH	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Dibenz[a,h]anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Fluoranthene	0.146 JH	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Fluorene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Indeno[1,2,3-cd]pyrene	0.0942	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Phenanthrene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Pyrene	0.136 JH	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
IS: Acenaphthene-d10	79.6	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Chrysene-d12	84.8	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Naphthalene-d8	82.8	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Perylene-d12	94.5	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Phenanthrene-d10	79.5	0	50-200	0		%REC	10	11/11/16 10:49 PM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/11/16 10:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW17(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-16
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:35 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	112	0	58-133	0		%REC	10	11/11/16 10:49 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	4.42	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-21
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:54 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	22.2	0.101	0.303	0.151		mg/Kg-dry	5	11/11/16 02:29 PM
IS: Bismuth	97.5	0	30-120	0		%REC	5	11/11/16 02:29 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0832	0.0513	0.103	0.0770	J	mg/Kg-dry	10	11/11/16 11:17 PM
Acenaphthylene	0.0770	0.0513	0.103	0.0770	U	mg/Kg-dry	10	11/11/16 11:17 PM
Anthracene	0.375	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[a]anthracene	2.57	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[a]pyrene	2.89	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[b]fluoranthene	2.79	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[e]pyrene	2.17	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[g,h,i]perylene	2.16	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[j]fluoranthene	1.32	0.0513	0.103	0.0770	N	mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[k]fluoranthene	1.35	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Chrysene	3.28	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Dibenz[a,h]anthracene	0.447	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Fluoranthene	4.94	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Fluorene	0.0770	0.0513	0.103	0.0770	U	mg/Kg-dry	10	11/11/16 11:17 PM
Indeno[1,2,3-cd]pyrene	2.21	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Phenanthrene	1.96	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Pyrene	4.23	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
IS: Acenaphthene-d10	86.6	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Chrysene-d12	93.1	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Naphthalene-d8	91.8	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Perylene-d12	103	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Phenanthrene-d10	85.6	0	50-200	0		%REC	10	11/11/16 11:17 PM
Surr: 2-Fluorobiphenyl	97.1	0	46-115	0		%REC	10	11/11/16 11:17 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-21
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:54 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	107	0	58-133	0		%REC	10	11/11/16 11:17 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	5.68	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-22
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:55 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **CVD**
Lead	11.6		0.107	0.320	0.160		mg/Kg-dry	5	11/18/16 03:43 PM
IS: Bismuth	91.8		0	30-120	0		%REC	5	11/18/16 03:43 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0785	UJL	0.0523	0.105	0.0785	CU	mg/Kg-dry	10	11/30/16 07:28 PM
Acenaphthylene	0.0785		0.0523	0.105	0.0785	CU	mg/Kg-dry	10	11/30/16 07:28 PM
Anthracene	0.170	JL	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[a]anthracene	0.878		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[a]pyrene	0.829		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[b]fluoranthene	0.858		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[e]pyrene	0.640		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[g,h,i]perylene	0.549		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[j]fluoranthene	0.412		0.0523	0.105	0.0785	CN	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[k]fluoranthene	0.421		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Chrysene	1.17		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Dibenz[a,h]anthracene	0.123		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Fluoranthene	1.65		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Fluorene	0.0785	UJL	0.0523	0.105	0.0785	CU	mg/Kg-dry	10	11/30/16 07:28 PM
Indeno[1,2,3-cd]pyrene	0.575	JL	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Phenanthrene	0.838		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Pyrene	1.30		0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
IS: Acenaphthene-d10	113		0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Chrysene-d12	102		0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Naphthalene-d8	118		0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Perylene-d12	100		0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Phenanthrene-d10	110		0	50-200	0		%REC	10	11/30/16 07:28 PM
Surr: 2-Fluorobiphenyl	81.9		0	46-115	0		%REC	10	11/30/16 07:28 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-22
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:55 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	74.8	0	58-133	0		%REC	10	11/30/16 07:28 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.83	0	0	0		WT%	1	11/18/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-23
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:56 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0808	0.0539	0.108	0.0808	U	mg/Kg-dry	10	11/23/16 06:11 PM
Acenaphthylene	0.0808	0.0539	0.108	0.0808	U	mg/Kg-dry	10	11/23/16 06:11 PM
Anthracene	0.0605	0.0539	0.108	0.0808	J	mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[a]anthracene	0.775	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[a]pyrene	1.07	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[b]fluoranthene	0.990	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[e]pyrene	0.846	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[g,h,i]perylene	0.800	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[j]fluoranthene	0.495	0.0539	0.108	0.0808	N	mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[k]fluoranthene	0.564	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Chrysene	1.16	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Dibenz[a,h]anthracene	0.0876	0.0539	0.108	0.0808	J	mg/Kg-dry	10	11/23/16 06:11 PM
Fluoranthene	1.15	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Fluorene	0.0808	0.0539	0.108	0.0808	U	mg/Kg-dry	10	11/23/16 06:11 PM
Indeno[1,2,3-cd]pyrene	0.748	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Phenanthrene	0.289	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Pyrene	1.06	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
IS: Acenaphthene-d10	83.8	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Chrysene-d12	75.0	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Naphthalene-d8	149	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Perylene-d12	71.7	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Phenanthrene-d10	80.7	0	50-200	0		%REC	10	11/23/16 06:11 PM
Surr: 2-Fluorobiphenyl	88.5	0	46-115	0		%REC	10	11/23/16 06:11 PM
Surr: 4-Terphenyl-d14	82.5	0	58-133	0		%REC	10	11/23/16 06:11 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	10.7	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-A
Project:	Laredo SGR	**Lab ID:**	1611071-24
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	20.9	0.0962	0.288	0.144		mg/Kg-dry	5	11/18/16 04:14 PM
IS: Bismuth	89.9	0	30-120	0		%REC	5	11/18/16 04:14 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Acenaphthylene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Anthracene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[a]anthracene	0.157	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[a]pyrene	0.207	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[b]fluoranthene	0.199	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[e]pyrene	0.162	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[g,h,i]perylene	0.169	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[j]fluoranthene	0.0958	0.0460	0.0920	0.0690	N	mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[k]fluoranthene	0.103	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Chrysene	0.199	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Dibenz[a,h]anthracene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Fluoranthene	0.303	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Fluorene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Indeno[1,2,3-cd]pyrene	0.164	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Phenanthrene	0.109	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Pyrene	0.267	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
IS: Acenaphthene-d10	87.3	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Naphthalene-d8	94.2	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Phenanthrene-d10	87.2	0	50-200	0		%REC	10	11/15/16 08:42 PM
Surr: 2-Fluorobiphenyl	104	0	46-115	0		%REC	10	11/15/16 08:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-A
Project:	Laredo SGR	**Lab ID:**	1611071-24
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	109	0	58-133	0		%REC	10	11/15/16 08:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-B
Project:	Laredo SGR	**Lab ID:**	1611071-25
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:31 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.0	0.0877	0.263	0.132		mg/Kg-dry	5	11/18/16 04:18 PM
IS: Bismuth	87.8	0	30-120	0		%REC	5	11/18/16 04:18 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Acenaphthylene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Anthracene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[a]anthracene	0.149	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[a]pyrene	0.200	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[b]fluoranthene	0.197	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[e]pyrene	0.162	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[g,h,i]perylene	0.171	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[j]fluoranthene	0.0939	0.0494	0.0987	0.0740	JN	mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[k]fluoranthene	0.0952	0.0494	0.0987	0.0740	J	mg/Kg-dry	10	11/15/16 09:11 PM
Chrysene	0.192	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Dibenz[a,h]anthracene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Fluoranthene	0.279	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Fluorene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Indeno[1,2,3-cd]pyrene	0.166	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Phenanthrene	0.0927	0.0494	0.0987	0.0740	J	mg/Kg-dry	10	11/15/16 09:11 PM
Pyrene	0.247	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
IS: Acenaphthene-d10	86.5	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Chrysene-d12	95.9	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Naphthalene-d8	93.3	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Phenanthrene-d10	86.9	0	50-200	0		%REC	10	11/15/16 09:11 PM
Surr: 2-Fluorobiphenyl	103	0	46-115	0		%REC	10	11/15/16 09:11 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-B
Project:	Laredo SGR	**Lab ID:**	1611071-25
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:31 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	107	0	58-133	0		%REC	10	11/15/16 09:11 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-C
Project:	Laredo SGR	**Lab ID:**	1611071-26
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:48 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	23.1	0.0990	0.297	0.149		mg/Kg-dry	5	11/18/16 04:20 PM
IS: Bismuth	88.5	0	30-120	0		%REC	5	11/18/16 04:20 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Acenaphthylene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Anthracene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[a]anthracene	0.200	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[a]pyrene	0.263	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[b]fluoranthene	0.260	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[e]pyrene	0.214	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[g,h,i]perylene	0.223	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[j]fluoranthene	0.123	0.0459	0.0917	0.0688	N	mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[k]fluoranthene	0.129	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Chrysene	0.254	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Dibenz[a,h]anthracene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Fluoranthene	0.378	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Fluorene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Indeno[1,2,3-cd]pyrene	0.211	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Phenanthrene	0.132	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Pyrene	0.329	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
IS: Acenaphthene-d10	89.1	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Naphthalene-d8	96.5	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Phenanthrene-d10	88.8	0	50-200	0		%REC	10	11/15/16 09:39 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/15/16 09:39 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-C
Project:	Laredo SGR	**Lab ID:**	1611071-26
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:48 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/15/16 09:39 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-A
Project:	Laredo SGR	**Lab ID:**	1611071-27
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:50 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	22.5	0.0952	0.286	0.143		mg/Kg-dry	5	11/18/16 04:10 PM
IS: Bismuth	91.9	0	30-120	0		%REC	5	11/18/16 04:10 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Acenaphthylene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[a]anthracene	0.0717	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[a]pyrene	0.0993	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[b]fluoranthene	0.0985	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[e]pyrene	0.0837	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[g,h,i]perylene	0.0843	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[j]fluoranthene	0.0500	0.0482	0.0964	0.0723	JN	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[k]fluoranthene	0.0539	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Chrysene	0.0878	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Dibenz[a,h]anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Fluoranthene	0.122	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
Fluorene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Indeno[1,2,3-cd]pyrene	0.0827	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Phenanthrene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Pyrene	0.109	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
IS: Acenaphthene-d10	104	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Chrysene-d12	97.4	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Naphthalene-d8	107	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Perylene-d12	96.9	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Phenanthrene-d10	102	0	50-200	0		%REC	10	11/16/16 04:15 PM
Surr: 2-Fluorobiphenyl	92.6	0	46-115	0		%REC	10	11/16/16 04:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-A
Project:	Laredo SGR	**Lab ID:**	1611071-27
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:50 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.4	0	58-133	0		%REC	10	11/16/16 04:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-B
Project:	Laredo SGR	**Lab ID:**	1611071-28
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	20.6	0.0980	0.294	0.147		mg/Kg-dry	5	11/18/16 04:22 PM
IS: Bismuth	89.8	0	30-120	0		%REC	5	11/18/16 04:22 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[a]anthracene	0.115	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[a]pyrene	0.147	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[b]fluoranthene	0.143	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[e]pyrene	0.121	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[g,h,i]perylene	0.132	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[j]fluoranthene	0.0733	0.0496	0.0992	0.0744	JN	mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[k]fluoranthene	0.0772	0.0496	0.0992	0.0744	J	mg/Kg-dry	10	11/15/16 06:22 PM
Chrysene	0.132	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Fluoranthene	0.197	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Indeno[1,2,3-cd]pyrene	0.126	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Phenanthrene	0.0600	0.0496	0.0992	0.0744	J	mg/Kg-dry	10	11/15/16 06:22 PM
Pyrene	0.179	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
IS: Acenaphthene-d10	87.4	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Chrysene-d12	93.7	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Naphthalene-d8	93.7	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Phenanthrene-d10	86.6	0	50-200	0		%REC	10	11/15/16 06:22 PM
Surr: 2-Fluorobiphenyl	112	0	46-115	0		%REC	10	11/15/16 06:22 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-B
Project:	Laredo SGR	**Lab ID:**	1611071-28
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	124	0	58-133	0		%REC	10	11/15/16 06:22 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-C
Project:	Laredo SGR	**Lab ID:**	1611071-29
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:35 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	30.7	0.0926	0.278	0.139		mg/Kg-dry	5	11/18/16 04:24 PM
IS: Bismuth	90.0	0	30-120	0		%REC	5	11/18/16 04:24 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Acenaphthylene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[a]anthracene	0.181	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[a]pyrene	0.209	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[b]fluoranthene	0.199	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[e]pyrene	0.163	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[g,h,i]perylene	0.167	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[j]fluoranthene	0.100	0.0471	0.0943	0.0707	N	mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[k]fluoranthene	0.106	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Chrysene	0.207	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Dibenz[a,h]anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Fluoranthene	0.387	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Fluorene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Indeno[1,2,3-cd]pyrene	0.167	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Phenanthrene	0.168	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Pyrene	0.331	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
IS: Acenaphthene-d10	88.2	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Naphthalene-d8	95.0	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Perylene-d12	103	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Phenanthrene-d10	88.5	0	50-200	0		%REC	10	11/15/16 06:51 PM
Surr: 2-Fluorobiphenyl	106	0	46-115	0		%REC	10	11/15/16 06:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-C
Project:	Laredo SGR	**Lab ID:**	1611071-29
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:35 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	117	0	58-133	0		%REC	10	11/15/16 06:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-A
Project:	Laredo SGR	**Lab ID:**	1611071-30
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:00 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.8	0.0980	0.294	0.147		mg/Kg-dry	5	11/18/16 04:26 PM
IS: Bismuth	91.1	0	30-120	0		%REC	5	11/18/16 04:26 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Acenaphthylene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Anthracene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[a]anthracene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[a]pyrene	0.0608	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[b]fluoranthene	0.0662	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[e]pyrene	0.0500	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[g,h,i]perylene	0.0529	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[j]fluoranthene	0.0730	0.0487	0.0974	0.0730	NU	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[k]fluoranthene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Chrysene	0.0542	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Dibenz[a,h]anthracene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Fluoranthene	0.0719	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Fluorene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Indeno[1,2,3-cd]pyrene	0.0513	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Phenanthrene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Pyrene	0.0679	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
IS: Acenaphthene-d10	105	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Chrysene-d12	97.0	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Naphthalene-d8	105	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Perylene-d12	98.2	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Phenanthrene-d10	103	0	50-200	0		%REC	10	11/16/16 02:51 PM
Surr: 2-Fluorobiphenyl	89.3	0	46-115	0		%REC	10	11/16/16 02:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-A
Project:	Laredo SGR	**Lab ID:**	1611071-30
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:00 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	119	0	58-133	0		%REC	10	11/16/16 02:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-B
Project:	Laredo SGR	**Lab ID:**	1611071-31
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.9	0.0909	0.273	0.136		mg/Kg-dry	5	11/18/16 04:28 PM
IS: Bismuth	91.5	0	30-120	0		%REC	5	11/18/16 04:28 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Acenaphthylene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Anthracene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[a]anthracene	0.0486	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[a]pyrene	0.0656	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[b]fluoranthene	0.0661	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[e]pyrene	0.0508	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[g,h,i]perylene	0.0554	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[j]fluoranthene	0.0694	0.0463	0.0926	0.0694	NU	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[k]fluoranthene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Chrysene	0.0629	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Dibenz[a,h]anthracene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Fluoranthene	0.0800	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Fluorene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Indeno[1,2,3-cd]pyrene	0.0522	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Phenanthrene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Pyrene	0.0721	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
IS: Acenaphthene-d10	104	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Chrysene-d12	96.9	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Naphthalene-d8	105	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Perylene-d12	96.3	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Phenanthrene-d10	102	0	50-200	0		%REC	10	11/16/16 03:19 PM
Surr: 2-Fluorobiphenyl	90.5	0	46-115	0		%REC	10	11/16/16 03:19 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-B
Project:	Laredo SGR	**Lab ID:**	1611071-31
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.3	0	58-133	0		%REC	10	11/16/16 03:19 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-C
Project:	Laredo SGR	**Lab ID:**	1611071-32
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:40 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.7	0.0952	0.286	0.143		mg/Kg-dry	5	11/18/16 04:31 PM
IS: Bismuth	91.8	0	30-120	0		%REC	5	11/18/16 04:31 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Acenaphthylene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Anthracene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[a]anthracene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[a]pyrene	0.0534	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[b]fluoranthene	0.0581	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[e]pyrene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[g,h,i]perylene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[j]fluoranthene	0.0725	0.0484	0.0967	0.0725	NU	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[k]fluoranthene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Chrysene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Dibenz[a,h]anthracene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Fluoranthene	0.0629	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
Fluorene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Indeno[1,2,3-cd]pyrene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Phenanthrene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Pyrene	0.0562	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
IS: Acenaphthene-d10	104	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Naphthalene-d8	106	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Perylene-d12	95.8	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Phenanthrene-d10	102	0	50-200	0		%REC	10	11/16/16 03:47 PM
Surr: 2-Fluorobiphenyl	92.1	0	46-115	0		%REC	10	11/16/16 03:47 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-C
Project:	Laredo SGR	**Lab ID:**	1611071-32
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:40 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	93.9	0	58-133	0		%REC	10	11/16/16 03:47 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-A
Project:	Laredo SGR	**Lab ID:**	1611071-33
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:24 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.4	0.0943	0.283	0.142		mg/Kg-dry	5	11/18/16 04:33 PM
IS: Bismuth	91.0	0	30-120	0		%REC	5	11/18/16 04:33 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[a]anthracene	0.165	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[a]pyrene	0.203	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[b]fluoranthene	0.214	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[e]pyrene	0.180	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[g,h,i]perylene	0.174	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[j]fluoranthene	0.106	0.0493	0.0985	0.0739	N	mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[k]fluoranthene	0.117	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Chrysene	0.188	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Fluoranthene	0.264	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Indeno[1,2,3-cd]pyrene	0.176	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Phenanthrene	0.0978	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/16/16 04:43 PM
Pyrene	0.240	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
IS: Acenaphthene-d10	109	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Chrysene-d12	103	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Naphthalene-d8	111	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Phenanthrene-d10	108	0	50-200	0		%REC	10	11/16/16 04:43 PM
Surr: 2-Fluorobiphenyl	87.8	0	46-115	0		%REC	10	11/16/16 04:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-A
Project:	Laredo SGR	**Lab ID:**	1611071-33
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:24 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.9	0	58-133	0		%REC	10	11/16/16 04:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-B
Project:	Laredo SGR	**Lab ID:**	1611071-34
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:38 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.7	0.0909	0.273	0.136		mg/Kg-dry	5	11/18/16 05:03 PM
IS: Bismuth	87.8	0	30-120	0		%REC	5	11/18/16 05:03 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Acenaphthylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[a]anthracene	0.0539	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[a]pyrene	0.0714	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[b]fluoranthene	0.0768	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[e]pyrene	0.0596	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[g,h,i]perylene	0.0655	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[j]fluoranthene	0.0746	0.0498	0.0995	0.0746	NU	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[k]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Chrysene	0.0639	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Dibenz[a,h]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Fluoranthene	0.0911	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Fluorene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Indeno[1,2,3-cd]pyrene	0.0640	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Phenanthrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Pyrene	0.0856	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
IS: Acenaphthene-d10	85.6	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Chrysene-d12	92.0	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Naphthalene-d8	92.7	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Phenanthrene-d10	85.4	0	50-200	0		%REC	10	11/15/16 07:46 PM
Surr: 2-Fluorobiphenyl	110	0	46-115	0		%REC	10	11/15/16 07:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-B
Project:	Laredo SGR	**Lab ID:**	1611071-34
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:38 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/15/16 07:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-C
Project:	Laredo SGR	**Lab ID:**	1611071-35
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	12.5	0.0935	0.280	0.140		mg/Kg-dry	5	11/18/16 05:05 PM
IS: Bismuth	89.1	0	30-120	0		%REC	5	11/18/16 05:05 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Acenaphthylene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[a]anthracene	0.0703	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[a]pyrene	0.0923	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[b]fluoranthene	0.102	0.0466	0.0931	0.0698		mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[e]pyrene	0.0787	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[g,h,i]perylene	0.0831	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[j]fluoranthene	0.0490	0.0466	0.0931	0.0698	JN	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[k]fluoranthene	0.0525	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Chrysene	0.0882	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Dibenz[a,h]anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Fluoranthene	0.143	0.0466	0.0931	0.0698		mg/Kg-dry	10	11/15/16 08:15 PM
Fluorene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Indeno[1,2,3-cd]pyrene	0.0821	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Phenanthrene	0.0475	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Pyrene	0.123	0.0466	0.0931	0.0698		mg/Kg-dry	10	11/15/16 08:15 PM
IS: Acenaphthene-d10	87.8	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Chrysene-d12	96.7	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Naphthalene-d8	93.9	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Perylene-d12	106	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Phenanthrene-d10	87.2	0	50-200	0		%REC	10	11/15/16 08:15 PM
Surr: 2-Fluorobiphenyl	103	0	46-115	0		%REC	10	11/15/16 08:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-C
Project:	Laredo SGR	**Lab ID:**	1611071-35
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/15/16 08:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBDU100(20161106)
Project:	Laredo SGR	**Lab ID:**	1611071-36
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 06:00 PM
Lab Order:	1611071	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.000900	0.000300	0.00100	0.000900	U	mg/L	1	11/16/16 03:00 PM
IS: Bismuth	81.1	0	30-120	0		%REC	1	11/16/16 03:00 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Acenaphthylene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Anthracene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[a]anthracene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[a]pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[b]fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[e]pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[g,h,i]perylene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[j]fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	NU	mg/L	1	11/11/16 10:00 AM
Benzo[k]fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Chrysene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Dibenz[a,h]anthracene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Fluorene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Indeno[1,2,3-cd]pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Phenanthrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
IS: Acenaphthene-d10	93.4	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Chrysene-d12	102	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Naphthalene-d8	95.6	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Perylene-d12	110	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Phenanthrene-d10	94.2	0	50-200	0		%REC	1	11/11/16 10:00 AM
Surr: 2-Fluorobiphenyl	70.7	0	53-106	0		%REC	1	11/11/16 10:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBDU100(20161106)
Project:	Laredo SGR	**Lab ID:**	1611071-36
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 06:00 PM
Lab Order:	1611071	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	87.8	0	58-132	0		%REC	1	11/11/16 10:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

December 05, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1611071

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 36 sample(s) on 11/8/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 5 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas & DoD Laboratory Certification Number: T104704211-16-17 & DoD-ELAP #L15-426

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GCMS8 Raw Data 449

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ICP-MS4 Raw Data 575

Pmoist Raw Data 717

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Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73148 CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/7/2016 PAGE 1 OF 3
PO #: DHL WORK ORDER #: 1611071
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Lead | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Extra Cu / Hold 04/14 11/15/16 EMT Cu 11/22/16 Hold 04/14 11/22/16-KB

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
SGR-ROW03(2-4)	01	11/5/2016	1013	S	Jar	1				1		
SGR-ROW03(4-6)	02	11/5/2016	1014	S	Jar	1				1		Hold
SGR-ROW03(6-8)	03	11/5/2016	1015	S	Jar	1				1		Hold
SGR-ROW04(0.5-2)	04	11/5/2016	1002	S	Jar	1				1		
SGR-ROW04(2-4)	05	11/5/2016	1003	S	Jar	1				1		Hold
SGR-ROW01(4-6)	06	11/5/2016	1004	S	Jar	1				1		Hold
SGR-ROW04(6-8)	07	11/5/2016	1005	S	Jar	1				1		Hold
SGR-ROW07(4-6)	08	11/5/2016	0953	S	Jar	1				1		
SGR-ROW07(6-8)	09	11/5/2016	0954	S	Jar	1				1		Hold
SGR-ROW07(8-10)	10	11/5/2016	0955	S	Jar	1				1		Hold
SGR-ROW12(0-0.5)	11	11/5/2016	1115	S	Jar	1				1		
SGR-ROW12(0.5-2)	12	11/5/2016	1116	S	Jar	1				1		Hold
SGR-ROW12(2-4)	13	11/5/2016	1117	S	Jar	1				1		Hold
SGR-ROW12(4-6)	14	11/5/2016	1118	S	Jar	1				1		Hold
SGR-ROW12(6-8)	15	11/5/2016	1119	S	Jar	1				1		Hold
						X	Added per A. Walter 11/14/16 -KB					

RELINQUISHED BY: (Signature) DATE/TIME 11/7/2016 0920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/8/16 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.2, 0.7, 0.1, 0.0 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ UNTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73147

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/7/2016 PAGE 2 OF 3
PO #: DHL WORK ORDER #: 1611071
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042850B1.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
SGR-ROW17(0-0.5)	16	11/5/2016	1135	S	Jar	1				I		X X	
SGR-ROW17(0.5-2)	17	11/5/2016	1136	S	Jar	1				I		X X	Hold
SGR-ROW17(2-4)	18	11/5/2016	1137	S	Jar	1				I		X X	Hold
SGR-ROW17(4-6)	19	11/5/2016	1138	S	Jar	1				I		X X	Hold
SGR-ROW17(6-8)	20	11/5/2016	1139	S	Jar	1				I		X X	Hold
SGR-ROW18(0-0.5)	21	11/5/2016	1154	S	Jar	1				I		X X	
SGR-ROW18(0.5-2)	22	11/5/2016	1155	S	Jar	1				I		(X) (X)	Hold
SGR-ROW18(2-4)	23	11/5/2016	1156	S	Jar	1				I		X X	Hold
SGR-DU100-A	24	11/6/2016	1016	S	Bag	1				I		X X	
SGR-DU100-B	25	11/6/2016	1031	S	Bag	1				I		X X	
SGR-DU100-C	26	11/6/2016	1048	S	Bag	1				I		X X	
SGR-DU103-A	27	11/5/2016	1650	S	Bag	1				I		X X	
SGR-DU103-B	28	11/5/2016	1715	S	Bag	1				I		X X	
SGR-DU103-C	29	11/5/2016	1735	S	Bag	1				I		X X	
SGR-DU133-A	30	11/5/2016	1500	S	Bag	1				I		X X	

(X) added per A Walter 11/14/16 - mfc

Extract/Hold PAH 11/15/16 per AW
Extract/Hold Pb 11/15/16 per AW
PAH 1627M 11/23/16 - mfc

RELINQUISHED BY: (Signature) DATE/TIME 11/7/2016 0920 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 11/8/16 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP 1.2, 0.7, 0.1 THERM #: _____
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73140

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: erika.denkenberger@arcadis.com

DATE: 11/7/2016 PAGE 3 OF 3
PO #: DHL WORK ORDER #: 1611071
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 042850B1.0000 COLLECTOR: AC/DC

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 2008 ☐ DISS. METALS ☐ Lead	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	FIELD NOTES
SGR-DU133-B	31	11/5/2016	1615	S	Bag	1				1					X					X								
SGR-DU133-C	32	11/5/2016	1540	S	Bag	1				1					X					X								
SGR-DU172-A	33	11/6/2016	1124	S	Bag	1				1					X					X								
SGR-DU172-B	34	11/6/2016	1138	S	Bag	1				1					X					X								
SGR-DU172-C	35	11/6/2016	1153	S	Bag	1				1					X					X								
SGR-EBDU100(2016	1108 36	11/6/2016	1800	W	Bottle	2				1					X					X								

RELINQUISHED BY: (Signature) DATE/TIME 11/7/2016 0920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.2, 0.7, 1.1, 0.5 THERM #: 28
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 07NOV16
ACTWGT: 64.50 LB
CAD: 006994463/SSFE1722
DIMS: 24x14x14 IN

BILL THIRD PARTY

TO **DHL ANALYTICAL**

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

3 of 5

MPS# 0263 7845 7028 5420

Mstr# 7845 7028 5408 0201

TUE - 08 NOV 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/7/2016
SIGNATURE

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

BILL THIRD PARTY

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

5441
11.08

5 of 5

MPS# 0263 7845 7028 5441

Mstr# 7845 7028 5408 0201

TUE - 08 NOV 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/7/2016

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 07NOV16
ACTWGT: 61.40 LB
CAD: 006994463/SSFE1722
DIMS: 24x14x14 IN

BILL THIRD PARTY

Part # 156297V-[illegible] EXP 08/17 •

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J162016101201uv

1 of 5

TRK# 0201 7845 7028 5408

MASTER

TUE - 08 NOV 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/7/2016
SIGNATURE

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 07NOV16
ACTWGT: 53.20 LB
CAD: 006994463/SSFE1722
DIMS: 24x14x14 IN

BILL THIRD PARTY

Part # 156297V-[illegible] EXP 08/17 •

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J162016101201uv

2 of 5

MPS# 0263 7845 7028 5419

Mstr# 7845 7028 5408 0201

TUE - 08 NOV 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/7/2016
SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/8/2016

Work Order Number 1611071 | Received by JB

Checklist completed by: Signature | 11/8/2016 Date | Reviewed by Initials | 11/8/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.2 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc.
Laboratory Review Checklist: Reportable Data

Project Name: Laredo SGR	**Date:** 12/5/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1611071
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?		X			**R3-01**
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?	X				
		7) Were % moisture (or solids) reported for all soil and sediment samples?	X				
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?	X				
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MQL?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?		X			**R7-04**
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: Laredo SGR | **Date:** 12/5/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1611071

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?		**X**			**S2-01**
		2) Were percent differences for each analyte within the method-required QC limits?	**X**				
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**		**X**		
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				**S5-02**
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on June 1-5, 2015. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director



Signature

12/05/16

Date

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611071

CASE NARRATIVE

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver. 5.0 and NELAC.

The "U" flag indicates the results for that sample are nondetect.

Samples were analyzed using the methods outlined in the following references:

Method SW8270D-LL - PAH Analysis (The compound Benzo[j]fluoranthene is not NELAC or DOD Certified)
Method SW6020A- Metals Analysis

Exception Report R1-01

Samples were received on and log-in performed on 11/8/2016. A total of 36 samples were received and 27 were analyzed. The samples arrived in good condition and were properly packaged. Analysis was added per the client's request on 11/14/2016 and 11/22/2016.

Exception Report R3-01

For PAH Analysis, four samples were extracted outside of the method specified holdtime, as per the client's request. These samples are "C" flagged in the Analytical Data Report. No further corrective action was taken.

Exception Report R7-03 and R7-04

For PAH Analysis, for soil batch 77875, the recoveries of up to five compounds for the Matrix Spike and Matrix Spike Duplicate (1611071-16 MS/MSD) were above of the method control limits. Additionally, the RPD of Fluoranthene for the Matrix Spike Duplicate (1611071-16 MSD) was above of the method control limit. These were flagged accordingly in the QC Summary Report. The recoveries of these compounds were within method control limits in the associated LCS. Client was informed and no further corrective action was taken.

Exception Report R10-01

For PAH Analysis, the samples were diluted due to observed color of extract; dilution meets project specifications.

DHL Analytical performed an Incremental Sampling Method (ISM) according to an internal SOP, as

approved by the client and included in the project QAPP on 12 of the surface soil samples in this workorder. These samples were passed through a #60 (250mm) sieve. Four of the surface samples contained debris and the entire sample mass was used for the analysis, per project specifications. The remaining discreet samples were collected in 4 ounce soil containers and the ISM process was not used, as per project specs.

Exception Report S2-01

For PAH Analysis, performed on 11/11/2016, the Matrix Spike Duplicate (1611071-16 MSD) and the ending Continuing Calibration Verification (CCV1-16111) were analyzed less than one hour outside of the method specified 12-hour window. All of the field sample were analyzed within the method specified 12-hour window. Client was informed and no further corrective action was taken.

Exception Report S5-02

For PAH Analysis, some samples and/or standards were manually integrated. Please refer to pages in each set of raw data for the full list of samples, standards, and the compounds that were manually integrated.

A summary of project communication follows:

The Subcontract Agreement No. D16-003 for Arcadis Project No. 04285081.0000.00043 was sent to DHL Analytical from client and signed on 1/6/2016, the contract for work signed and approved by both parties on 1/12/2016. A Modification No. 01-D16-003 was signed by both parties on 4/21/2016.

The bottlekit was requested from Alex Walters of Arcadis sent via email to John DuPont on 10/110/2016.
The following DHL Bottle Orders:
#7345 sent on 10/28/2016 via Lonestar Overnight Ground to arrive by 10/31/2016.
#7346 sent on 10/31/2016 via Lonestar Overnight Ground to arrive by 11/1/2016.
#7347 sent on 11/2/2016 via Lonestar Overnight Ground to arrive by 11/3/2016.

This sample delivery group arrives at DHL Analytical and Sample Summary was sent on 11/8/2016. Additional Sample Summary's sent on November 15 and 30, 2016. Associated shipping documents are kept in the project folder and/or client folder as part of the Administrative records filed in the QA office.

DHL project manager/qa staff discussed with client the following issues:
email communications 11/14/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding variance for tune frequency and some compounds for QC samples outside of the control limits. The client accepted the corrective action for the quality variances on 11/14/2016.
email communications 11/22/2016, 11/29-30/2016 - from A. O'Donnell to the Arcadis Kansas Laredo email group regarding extracting samples outside of the method specified holdtime. The client accepted

the corrective action for the deviation from the method.

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611071

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1611071-01	SGR-ROW03(2-4)		11/05/16 10:13 AM	11/8/2016
1611071-02	SGR-ROW03(4-6)		11/05/16 10:14 AM	11/8/2016
1611071-03	SGR-ROW03(6-8)		11/05/16 10:15 AM	11/8/2016
1611071-04	SGR-ROW04(0.5-2)		11/05/16 10:02 AM	11/8/2016
1611071-05	SGR-ROW04(2-4)		11/05/16 10:03 AM	11/8/2016
1611071-06	SGR-ROW04(4-6)		11/05/16 10:04 AM	11/8/2016
1611071-07	SGR-ROW04(6-8)		11/05/16 10:05 AM	11/8/2016
1611071-08	SGR-ROW07(4-6)		11/05/16 09:53 AM	11/8/2016
1611071-09	SGR-ROW07(6-8)		11/05/16 09:54 AM	11/8/2016
1611071-10	SGR-ROW07(8-10)		11/05/16 09:55 AM	11/8/2016
1611071-11	SGR-ROW12(0-0.5)		11/05/16 11:15 AM	11/8/2016
1611071-12	SGR-ROW12(0.5-2)		11/05/16 11:16 AM	11/8/2016
1611071-13	SGR-ROW12(2-4)		11/05/16 11:17 AM	11/8/2016
1611071-14	SGR-ROW12(4-6)		11/05/16 11:18 AM	11/8/2016
1611071-15	SGR-ROW12(6-8)		11/05/16 11:19 AM	11/8/2016
1611071-16	SGR-ROW17(0-0.5)		11/05/16 11:35 AM	11/8/2016
1611071-17	SGR-ROW17(0.5-2)		11/05/16 11:36 AM	11/8/2016
1611071-18	SGR-ROW17(2-4)		11/05/16 11:37 AM	11/8/2016
1611071-19	SGR-ROW17(4-6)		11/05/16 11:38 AM	11/8/2016
1611071-20	SGR-ROW17(6-8)		11/05/16 11:39 AM	11/8/2016
1611071-21	SGR-ROW18(0-0.5)		11/05/16 11:54 AM	11/8/2016
1611071-22	SGR-ROW18(0.5-2)		11/05/16 11:55 AM	11/8/2016
1611071-23	SGR-ROW18(2-4)		11/05/16 11:56 AM	11/8/2016
1611071-24	SGR-DU100-A		11/06/16 10:16 AM	11/8/2016
1611071-25	SGR-DU100-B		11/06/16 10:31 AM	11/8/2016
1611071-26	SGR-DU100-C		11/06/16 10:48 AM	11/8/2016
1611071-27	SGR-DU103-A		11/05/16 04:50 PM	11/8/2016
1611071-28	SGR-DU103-B		11/05/16 05:15 PM	11/8/2016
1611071-29	SGR-DU103-C		11/05/16 05:35 PM	11/8/2016
1611071-30	SGR-DU133-A		11/05/16 03:00 PM	11/8/2016
1611071-31	SGR-DU133-B		11/05/16 04:15 PM	11/8/2016
1611071-32	SGR-DU133-C		11/05/16 03:40 PM	11/8/2016
1611071-33	SGR-DU172-A		11/06/16 11:24 AM	11/8/2016
1611071-34	SGR-DU172-B		11/06/16 11:38 AM	11/8/2016
1611071-35	SGR-DU172-C		11/06/16 11:53 AM	11/8/2016
1611071-36	SGR-EBDU100(20161106)		11/06/16 06:00 PM	11/8/2016

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611071-01A	SGR-ROW03(2-4)	11/05/16 10:13 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW03(2-4)	11/05/16 10:13 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW03(2-4)	11/05/16 10:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611071-02A	SGR-ROW03(4-6)	11/05/16 10:14 AM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW03(4-6)	11/05/16 10:14 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW03(4-6)	11/05/16 10:14 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611071-03A	SGR-ROW03(6-8)	11/05/16 10:15 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW03(6-8)	11/05/16 10:15 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611071-04A	SGR-ROW04(0.5-2)	11/05/16 10:02 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW04(0.5-2)	11/05/16 10:02 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW04(0.5-2)	11/05/16 10:02 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611071-05A	SGR-ROW04(2-4)	11/05/16 10:03 AM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW04(2-4)	11/05/16 10:03 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW04(2-4)	11/05/16 10:03 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611071-06A	SGR-ROW04(4-6)	11/05/16 10:04 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW04(4-6)	11/05/16 10:04 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611071-08A	SGR-ROW07(4-6)	11/05/16 09:53 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW07(4-6)	11/05/16 09:53 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW07(4-6)	11/05/16 09:53 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611071-11A	SGR-ROW12(0-0.5)	11/05/16 11:15 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW12(0-0.5)	11/05/16 11:15 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW12(0-0.5)	11/05/16 11:15 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611071-12A	SGR-ROW12(0.5-2)	11/05/16 11:16 AM	Soil	D2216	Moisture Preparation	11/16/16 02:17 PM	77953
	SGR-ROW12(0.5-2)	11/05/16 11:16 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW12(0.5-2)	11/05/16 11:16 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611071-13A	SGR-ROW12(2-4)	11/05/16 11:17 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW12(2-4)	11/05/16 11:17 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/17/16 01:19 PM	77972
1611071-16A	SGR-ROW17(0-0.5)	11/05/16 11:35 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611071-16A	SGR-ROW17(0-0.5)	11/05/16 11:35 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW17(0-0.5)	11/05/16 11:35 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611071-21A	SGR-ROW18(0-0.5)	11/05/16 11:54 AM	Soil	D2216	Moisture Preparation	11/09/16 02:18 PM	77841
	SGR-ROW18(0-0.5)	11/05/16 11:54 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/11/16 12:55 PM	77875
	SGR-ROW18(0-0.5)	11/05/16 11:54 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/09/16 02:30 PM	77842
1611071-22A	SGR-ROW18(0.5-2)	11/05/16 11:55 AM	Soil	D2216	Moisture Preparation	11/17/16 01:52 PM	77974
	SGR-ROW18(0.5-2)	11/05/16 11:55 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/23/16 09:23 AM	78027
	SGR-ROW18(0.5-2)	11/05/16 11:55 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:01 AM	77967
1611071-23A	SGR-ROW18(2-4)	11/05/16 11:56 AM	Soil	D2216	Moisture Preparation	11/28/16 01:56 PM	78054
	SGR-ROW18(2-4)	11/05/16 11:56 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/18/16 08:52 AM	77983
1611071-24A	SGR-DU100-A	11/06/16 10:16 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU100-A	11/06/16 10:16 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-25A	SGR-DU100-B	11/06/16 10:31 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU100-B	11/06/16 10:31 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-26A	SGR-DU100-C	11/06/16 10:48 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU100-C	11/06/16 10:48 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-27A	SGR-DU103-A	11/05/16 04:50 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU103-A	11/05/16 04:50 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU103-A	11/05/16 04:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-28A	SGR-DU103-B	11/05/16 05:15 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU103-B	11/05/16 05:15 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-29A	SGR-DU103-C	11/05/16 05:35 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU103-C	11/05/16 05:35 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-30A	SGR-DU133-A	11/05/16 03:00 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU133-A	11/05/16 03:00 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU133-A	11/05/16 03:00 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-31A	SGR-DU133-B	11/05/16 04:15 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU133-B	11/05/16 04:15 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611071-31A	SGR-DU133-B	11/05/16 04:15 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-32A	SGR-DU133-C	11/05/16 03:40 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU133-C	11/05/16 03:40 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU133-C	11/05/16 03:40 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-33A	SGR-DU172-A	11/06/16 11:24 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU172-A	11/06/16 11:24 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU172-A	11/06/16 11:24 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-34A	SGR-DU172-B	11/06/16 11:38 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU172-B	11/06/16 11:38 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-35A	SGR-DU172-C	11/06/16 11:53 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/15/16 11:15 AM	77919
	SGR-DU172-C	11/06/16 11:53 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/17/16 11:04 AM	77968
1611071-36A	SGR-EBDU100(20161106)	11/06/16 06:00 PM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611071-36B	SGR-EBDU100(20161106)	11/06/16 06:00 PM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/10/16 09:00 AM	77851

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

ISM PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611071-24A	SGR-DU100-A	11/6/2016 10:16:00 AM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-25A	SGR-DU100-B	11/6/2016 10:31:00 AM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-26A	SGR-DU100-C	11/6/2016 10:48:00 AM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-27A	SGR-DU103-A	11/5/2016 4:50:00 PM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-28A	SGR-DU103-B	11/5/2016 5:15:00 PM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-29A	SGR-DU103-C	11/5/2016 5:35:00 PM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-30A	SGR-DU133-A	11/5/2016 3:00:00 PM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-31A	SGR-DU133-B	11/5/2016 4:15:00 PM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-32A	SGR-DU133-C	11/5/2016 3:40:00 PM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-33A	SGR-DU172-A	11/6/2016 11:24:00 AM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-34A	SGR-DU172-B	11/6/2016 11:38:00 AM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826
1611071-35A	SGR-DU172-C	11/6/2016 11:53:00 AM	Soil	ISM-1	Incremental Sample Prep 250µ Sieve	11/8/2016 12:05:00 PM	77826

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611071-01A	SGR-ROW03(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/12/16 12:13 AM	GCMS6_161111C
	SGR-ROW03(2-4)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW03(2-4)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:19 PM	ICP-MS4_161111D
1611071-02A	SGR-ROW03(4-6)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 05:08 PM	GCMS6_161130A
	SGR-ROW03(4-6)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW03(4-6)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:37 PM	ICP-MS4_161118B
1611071-03A	SGR-ROW03(6-8)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 04:45 PM	GCMS8_161123A
	SGR-ROW03(6-8)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611071-04A	SGR-ROW04(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/12/16 12:41 AM	GCMS6_161111C
	SGR-ROW04(0.5-2)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW04(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:21 PM	ICP-MS4_161111D
1611071-05A	SGR-ROW04(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 05:36 PM	GCMS6_161130A
	SGR-ROW04(2-4)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW04(2-4)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:39 PM	ICP-MS4_161118B
1611071-06A	SGR-ROW04(4-6)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 05:14 PM	GCMS8_161123A
	SGR-ROW04(4-6)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611071-08A	SGR-ROW07(4-6)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/12/16 01:09 AM	GCMS6_161111C
	SGR-ROW07(4-6)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW07(4-6)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:23 PM	ICP-MS4_161111D
1611071-11A	SGR-ROW12(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/12/16 01:37 AM	GCMS6_161111C
	SGR-ROW12(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW12(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:25 PM	ICP-MS4_161111D
1611071-12A	SGR-ROW12(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 08:25 PM	GCMS6_161130A
	SGR-ROW12(0.5-2)	Soil	D2216	Percent Moisture	77953	1	11/17/16 08:00 AM	PMOIST_161116A
	SGR-ROW12(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:41 PM	ICP-MS4_161118B
1611071-13A	SGR-ROW12(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77972	10	11/23/16 05:43 PM	GCMS8_161123A
	SGR-ROW12(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611071-16A	SGR-ROW17(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 10:49 PM	GCMS6_161111C

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611071-16A	SGR-ROW17(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW17(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:27 PM	ICP-MS4_161111D
1611071-21A	SGR-ROW18(0-0.5)	Soil	SW8270D-LL	PAHs: GC/MS	77875	10	11/11/16 11:17 PM	GCMS6_161111C
	SGR-ROW18(0-0.5)	Soil	D2216	Percent Moisture	77841	1	11/10/16 08:00 AM	PMOIST_161109A
	SGR-ROW18(0-0.5)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77842	5	11/11/16 02:29 PM	ICP-MS4_161111D
1611071-22A	SGR-ROW18(0.5-2)	Soil	SW8270D-LL	PAHs: GC/MS	78027	10	11/30/16 07:28 PM	GCMS6_161130A
	SGR-ROW18(0.5-2)	Soil	D2216	Percent Moisture	77974	1	11/18/16 08:00 AM	PMOIST_161117A
	SGR-ROW18(0.5-2)	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77967	5	11/18/16 03:43 PM	ICP-MS4_161118B
1611071-23A	SGR-ROW18(2-4)	Soil	SW8270D-LL	PAHs: GC/MS	77983	10	11/23/16 06:11 PM	GCMS8_161123A
	SGR-ROW18(2-4)	Soil	D2216	Percent Moisture	78054	1	11/29/16 08:10 AM	PMOIST_161128A
1611071-24A	SGR-DU100-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 08:42 PM	GCMS6_161115A
	SGR-DU100-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:14 PM	ICP-MS4_161118B
1611071-25A	SGR-DU100-B	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 09:11 PM	GCMS6_161115A
	SGR-DU100-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:18 PM	ICP-MS4_161118B
1611071-26A	SGR-DU100-C	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 09:39 PM	GCMS6_161115A
	SGR-DU100-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:20 PM	ICP-MS4_161118B
1611071-27A	SGR-DU103-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 05:54 PM	GCMS6_161115A
	SGR-DU103-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/16/16 04:15 PM	GCMS6_161116A
	SGR-DU103-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:10 PM	ICP-MS4_161118B
1611071-28A	SGR-DU103-B	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 06:22 PM	GCMS6_161115A
	SGR-DU103-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:22 PM	ICP-MS4_161118B
1611071-29A	SGR-DU103-C	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 06:51 PM	GCMS6_161115A
	SGR-DU103-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:24 PM	ICP-MS4_161118B
1611071-30A	SGR-DU133-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/16/16 02:51 PM	GCMS6_161116A
	SGR-DU133-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 04:30 PM	GCMS6_161115A
	SGR-DU133-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:26 PM	ICP-MS4_161118B
1611071-31A	SGR-DU133-B	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 04:58 PM	GCMS6_161115A
	SGR-DU133-B	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/16/16 03:19 PM	GCMS6_161116A

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611071-31A	SGR-DU133-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:28 PM	ICP-MS4_161118B
1611071-32A	SGR-DU133-C	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 05:26 PM	GCMS6_161115A
	SGR-DU133-C	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/16/16 03:47 PM	GCMS6_161116A
	SGR-DU133-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:31 PM	ICP-MS4_161118B
1611071-33A	SGR-DU172-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 07:18 PM	GCMS6_161115A
	SGR-DU172-A	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/16/16 04:43 PM	GCMS6_161116A
	SGR-DU172-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 04:33 PM	ICP-MS4_161118B
1611071-34A	SGR-DU172-B	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 07:46 PM	GCMS6_161115A
	SGR-DU172-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 05:03 PM	ICP-MS4_161118B
1611071-35A	SGR-DU172-C	Soil	SW8270D-LL	PAHs: GC/MS	77919	10	11/15/16 08:15 PM	GCMS6_161115A
	SGR-DU172-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77968	5	11/18/16 05:05 PM	ICP-MS4_161118B
1611071-36A	SGR-EBDU100(20161106)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 03:00 PM	ICP-MS3_161116A
1611071-36B	SGR-EBDU100(20161106)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77851	1	11/11/16 10:00 AM	GCMS6_161111A

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-01
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:13 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	36.6	0.101	0.304	0.152		mg/Kg-dry	5	11/11/16 02:19 PM
IS: Bismuth	93.2	0	30-120	0		%REC	5	11/11/16 02:19 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0811	0.0541	0.108	0.0811	U	mg/Kg-dry	10	11/12/16 12:13 AM
Acenaphthylene	0.0811	0.0541	0.108	0.0811	U	mg/Kg-dry	10	11/12/16 12:13 AM
Anthracene	0.0963	0.0541	0.108	0.0811	J	mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[a]anthracene	0.723	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[a]pyrene	0.878	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[b]fluoranthene	0.909	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[e]pyrene	0.677	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[g,h,i]perylene	0.693	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[j]fluoranthene	0.413	0.0541	0.108	0.0811	N	mg/Kg-dry	10	11/12/16 12:13 AM
Benzo[k]fluoranthene	0.446	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Chrysene	1.06	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Dibenz[a,h]anthracene	0.138	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Fluoranthene	1.38	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Fluorene	0.0811	0.0541	0.108	0.0811	U	mg/Kg-dry	10	11/12/16 12:13 AM
Indeno[1,2,3-cd]pyrene	0.693	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Phenanthrene	0.538	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
Pyrene	1.19	0.0541	0.108	0.0811		mg/Kg-dry	10	11/12/16 12:13 AM
IS: Acenaphthene-d10	82.3	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Chrysene-d12	88.9	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Naphthalene-d8	87.3	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Perylene-d12	97.6	0	50-200	0		%REC	10	11/12/16 12:13 AM
IS: Phenanthrene-d10	82.3	0	50-200	0		%REC	10	11/12/16 12:13 AM
Surr: 2-Fluorobiphenyl	99.2	0	46-115	0		%REC	10	11/12/16 12:13 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-01
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:13 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	110	0	58-133	0		%REC	10	11/12/16 12:13 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	11.8	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-02
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:14 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	5.74	0.126	0.379	0.189		mg/Kg-dry	5	11/18/16 03:37 PM
IS: Bismuth	89.7	0	30-120	0		%REC	5	11/18/16 03:37 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Acenaphthylene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Anthracene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[a]anthracene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[a]pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[b]fluoranthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[e]pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[g,h,i]perylene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[j]fluoranthene	0.0905	0.0603	0.121	0.0905	CNU	mg/Kg-dry	10	11/30/16 05:08 PM
Benzo[k]fluoranthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Chrysene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Dibenz[a,h]anthracene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Fluoranthene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Fluorene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Indeno[1,2,3-cd]pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Phenanthrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
Pyrene	0.0905	0.0603	0.121	0.0905	CU	mg/Kg-dry	10	11/30/16 05:08 PM
IS: Acenaphthene-d10	113	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Chrysene-d12	101	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Naphthalene-d8	117	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Perylene-d12	95.6	0	50-200	0		%REC	10	11/30/16 05:08 PM
IS: Phenanthrene-d10	108	0	50-200	0		%REC	10	11/30/16 05:08 PM
Surr: 2-Fluorobiphenyl	79.0	0	46-115	0		%REC	10	11/30/16 05:08 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-02
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:14 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	75.3	0	58-133	0		%REC	10	11/30/16 05:08 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	21.6	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW03(6-8)
Project:	Laredo SGR	**Lab ID:**	1611071-03
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:15 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Acenaphthylene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Anthracene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[a]anthracene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[a]pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[b]fluoranthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[e]pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[g,h,i]perylene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[j]fluoranthene	0.104	0.0695	0.139	0.104	NU	mg/Kg-dry	10	11/23/16 04:45 PM
Benzo[k]fluoranthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Chrysene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Dibenz[a,h]anthracene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Fluoranthene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Fluorene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Indeno[1,2,3-cd]pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Phenanthrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
Pyrene	0.104	0.0695	0.139	0.104	U	mg/Kg-dry	10	11/23/16 04:45 PM
IS: Acenaphthene-d10	88.6	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Chrysene-d12	78.4	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Naphthalene-d8	157	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Perylene-d12	74.8	0	50-200	0		%REC	10	11/23/16 04:45 PM
IS: Phenanthrene-d10	84.6	0	50-200	0		%REC	10	11/23/16 04:45 PM
Surr: 2-Fluorobiphenyl	75.2	0	46-115	0		%REC	10	11/23/16 04:45 PM
Surr: 4-Terphenyl-d14	77.7	0	58-133	0		%REC	10	11/23/16 04:45 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	29.6	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-04
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:02 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	28.1	0.0991	0.297	0.149		mg/Kg-dry	5	11/11/16 02:21 PM
IS: Bismuth	93.1	0	30-120	0		%REC	5	11/11/16 02:21 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0740	0.0493	0.0987	0.0740	U	mg/Kg-dry	10	11/12/16 12:41 AM
Acenaphthylene	0.0740	0.0493	0.0987	0.0740	U	mg/Kg-dry	10	11/12/16 12:41 AM
Anthracene	0.0794	0.0493	0.0987	0.0740	J	mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[a]anthracene	0.804	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[a]pyrene	1.03	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[b]fluoranthene	0.985	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[e]pyrene	0.822	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[g,h,i]perylene	0.842	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[j]fluoranthene	0.482	0.0493	0.0987	0.0740	N	mg/Kg-dry	10	11/12/16 12:41 AM
Benzo[k]fluoranthene	0.518	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Chrysene	1.17	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Dibenz[a,h]anthracene	0.163	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Fluoranthene	1.39	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Fluorene	0.0740	0.0493	0.0987	0.0740	U	mg/Kg-dry	10	11/12/16 12:41 AM
Indeno[1,2,3-cd]pyrene	0.822	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Phenanthrene	0.457	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
Pyrene	1.24	0.0493	0.0987	0.0740		mg/Kg-dry	10	11/12/16 12:41 AM
IS: Acenaphthene-d10	81.7	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Chrysene-d12	89.1	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Naphthalene-d8	86.6	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Perylene-d12	97.7	0	50-200	0		%REC	10	11/12/16 12:41 AM
IS: Phenanthrene-d10	81.8	0	50-200	0		%REC	10	11/12/16 12:41 AM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/12/16 12:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-04
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:02 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	112	0	58-133	0		%REC	10	11/12/16 12:41 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.46	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-05
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:03 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	12.8	0.101	0.304	0.152		mg/Kg-dry	5	11/18/16 03:39 PM
IS: Bismuth	89.5	0	30-120	0		%REC	5	11/18/16 03:39 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Acenaphthylene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Anthracene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[a]anthracene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[a]pyrene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[b]fluoranthene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[e]pyrene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[g,h,i]perylene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[j]fluoranthene	0.0764	0.0509	0.102	0.0764	CNU	mg/Kg-dry	10	11/30/16 05:36 PM
Benzo[k]fluoranthene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Chrysene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Dibenz[a,h]anthracene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Fluoranthene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Fluorene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Indeno[1,2,3-cd]pyrene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Phenanthrene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
Pyrene	0.0764	0.0509	0.102	0.0764	CU	mg/Kg-dry	10	11/30/16 05:36 PM
IS: Acenaphthene-d10	111	0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Chrysene-d12	99.5	0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Naphthalene-d8	116	0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Perylene-d12	95.9	0	50-200	0		%REC	10	11/30/16 05:36 PM
IS: Phenanthrene-d10	107	0	50-200	0		%REC	10	11/30/16 05:36 PM
Surr: 2-Fluorobiphenyl	79.0	0	46-115	0		%REC	10	11/30/16 05:36 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-05
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:03 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	73.2	0	58-133	0		%REC	10	11/30/16 05:36 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	6.96	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW04(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-06
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 10:04 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Acenaphthylene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Anthracene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[a]anthracene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[a]pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[b]fluoranthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[e]pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[g,h,i]perylene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[j]fluoranthene	0.0851	0.0567	0.113	0.0851	NU	mg/Kg-dry	10	11/23/16 05:14 PM
Benzo[k]fluoranthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Chrysene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Dibenz[a,h]anthracene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Fluoranthene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Fluorene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Indeno[1,2,3-cd]pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Phenanthrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
Pyrene	0.0851	0.0567	0.113	0.0851	U	mg/Kg-dry	10	11/23/16 05:14 PM
IS: Acenaphthene-d10	85.3	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Chrysene-d12	75.7	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Naphthalene-d8	153	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Perylene-d12	72.1	0	50-200	0		%REC	10	11/23/16 05:14 PM
IS: Phenanthrene-d10	81.3	0	50-200	0		%REC	10	11/23/16 05:14 PM
Surr: 2-Fluorobiphenyl	78.2	0	46-115	0		%REC	10	11/23/16 05:14 PM
Surr: 4-Terphenyl-d14	77.7	0	58-133	0		%REC	10	11/23/16 05:14 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	15.9	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW07(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-08
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 09:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.64	0.111	0.332	0.166		mg/Kg-dry	5	11/11/16 02:23 PM
IS: Bismuth	94.6	0	30-120	0		%REC	5	11/11/16 02:23 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Acenaphthylene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[a]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[a]pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[b]fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[e]pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[g,h,i]perylene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[j]fluoranthene	0.0850	0.0567	0.113	0.0850	NU	mg/Kg-dry	10	11/12/16 01:09 AM
Benzo[k]fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Chrysene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Dibenz[a,h]anthracene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Fluoranthene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Fluorene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Indeno[1,2,3-cd]pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Phenanthrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
Pyrene	0.0850	0.0567	0.113	0.0850	U	mg/Kg-dry	10	11/12/16 01:09 AM
IS: Acenaphthene-d10	82.8	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Chrysene-d12	89.0	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Naphthalene-d8	88.3	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Perylene-d12	99.4	0	50-200	0		%REC	10	11/12/16 01:09 AM
IS: Phenanthrene-d10	83.3	0	50-200	0		%REC	10	11/12/16 01:09 AM
Surr: 2-Fluorobiphenyl	95.6	0	46-115	0		%REC	10	11/12/16 01:09 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW07(4-6)
Project:	Laredo SGR	**Lab ID:**	1611071-08
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 09:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	104	0	58-133	0		%REC	10	11/12/16 01:09 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	16.2	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-11
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:15 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	30.0	0.0964	0.289	0.145		mg/Kg-dry	5	11/11/16 02:25 PM
IS: Bismuth	94.7	0	30-120	0		%REC	5	11/11/16 02:25 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0750	0.0500	0.100	0.0750	U	mg/Kg-dry	10	11/12/16 01:37 AM
Acenaphthylene	0.0750	0.0500	0.100	0.0750	U	mg/Kg-dry	10	11/12/16 01:37 AM
Anthracene	0.122	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[a]anthracene	1.33	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[a]pyrene	1.68	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[b]fluoranthene	1.63	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[e]pyrene	1.30	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[g,h,i]perylene	1.33	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[j]fluoranthene	0.754	0.0500	0.100	0.0750	N	mg/Kg-dry	10	11/12/16 01:37 AM
Benzo[k]fluoranthene	0.794	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Chrysene	1.84	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Dibenz[a,h]anthracene	0.268	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Fluoranthene	2.22	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Fluorene	0.0750	0.0500	0.100	0.0750	U	mg/Kg-dry	10	11/12/16 01:37 AM
Indeno[1,2,3-cd]pyrene	1.34	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Phenanthrene	0.700	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
Pyrene	1.94	0.0500	0.100	0.0750		mg/Kg-dry	10	11/12/16 01:37 AM
IS: Acenaphthene-d10	81.1	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Chrysene-d12	88.3	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Naphthalene-d8	85.7	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Perylene-d12	97.0	0	50-200	0		%REC	10	11/12/16 01:37 AM
IS: Phenanthrene-d10	81.1	0	50-200	0		%REC	10	11/12/16 01:37 AM
Surr: 2-Fluorobiphenyl	105	0	46-115	0		%REC	10	11/12/16 01:37 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-11
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:15 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	112	0	58-133	0		%REC	10	11/12/16 01:37 AM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	5.74	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-12
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	13.2	0.0926	0.278	0.139		mg/Kg-dry	5	11/18/16 03:41 PM
IS: Bismuth	88.1	0	30-120	0		%REC	5	11/18/16 03:41 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0749	0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Acenaphthylene	0.0749	0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Anthracene	0.0749	0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[a]anthracene	0.429	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[a]pyrene	0.548	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[b]fluoranthene	0.547	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[e]pyrene	0.436	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[g,h,i]perylene	0.417	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[j]fluoranthene	0.256	0.0500	0.0999	0.0749	CN	mg/Kg-dry	10	11/30/16 08:25 PM
Benzo[k]fluoranthene	0.257	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Chrysene	0.547	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Dibenz[a,h]anthracene	0.0713	0.0500	0.0999	0.0749	JC	mg/Kg-dry	10	11/30/16 08:25 PM
Fluoranthene	0.642	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Fluorene	0.0749	0.0500	0.0999	0.0749	CU	mg/Kg-dry	10	11/30/16 08:25 PM
Indeno[1,2,3-cd]pyrene	0.403	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Phenanthrene	0.221	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
Pyrene	0.577	0.0500	0.0999	0.0749	C	mg/Kg-dry	10	11/30/16 08:25 PM
IS: Acenaphthene-d10	115	0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Chrysene-d12	103	0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Naphthalene-d8	121	0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/30/16 08:25 PM
IS: Phenanthrene-d10	112	0	50-200	0		%REC	10	11/30/16 08:25 PM
Surr: 2-Fluorobiphenyl	79.7	0	46-115	0		%REC	10	11/30/16 08:25 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-12
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	72.0	0	58-133	0		%REC	10	11/30/16 08:25 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	7.68	0	0	0		WT%	1	11/17/16 08:00 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW12(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-13
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:17 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Acenaphthylene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Anthracene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[a]anthracene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[a]pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[b]fluoranthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[e]pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[g,h,i]perylene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[j]fluoranthene	0.0804	0.0536	0.107	0.0804	NU	mg/Kg-dry	10	11/23/16 05:43 PM
Benzo[k]fluoranthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Chrysene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Dibenz[a,h]anthracene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Fluoranthene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Fluorene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Indeno[1,2,3-cd]pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Phenanthrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
Pyrene	0.0804	0.0536	0.107	0.0804	U	mg/Kg-dry	10	11/23/16 05:43 PM
IS: Acenaphthene-d10	83.5	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Chrysene-d12	74.0	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Naphthalene-d8	147	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Perylene-d12	69.7	0	50-200	0		%REC	10	11/23/16 05:43 PM
IS: Phenanthrene-d10	79.5	0	50-200	0		%REC	10	11/23/16 05:43 PM
Surr: 2-Fluorobiphenyl	82.9	0	46-115	0		%REC	10	11/23/16 05:43 PM
Surr: 4-Terphenyl-d14	80.9	0	58-133	0		%REC	10	11/23/16 05:43 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	11.3	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW17(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-16
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:35 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	12.3	0.0978	0.293	0.147		mg/Kg-dry	5	11/11/16 02:27 PM
IS: Bismuth	94.3	0	30-120	0		%REC	5	11/11/16 02:27 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Acenaphthylene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[a]anthracene	0.0831	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[a]pyrene	0.114	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[b]fluoranthene	0.116	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[e]pyrene	0.0952	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[g,h,i]perylene	0.0969	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[j]fluoranthene	0.0534	0.0492	0.0983	0.0737	JN	mg/Kg-dry	10	11/11/16 10:49 PM
Benzo[k]fluoranthene	0.0615	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Chrysene	0.103	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Dibenz[a,h]anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Fluoranthene	0.146	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
Fluorene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Indeno[1,2,3-cd]pyrene	0.0942	0.0492	0.0983	0.0737	J	mg/Kg-dry	10	11/11/16 10:49 PM
Phenanthrene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/11/16 10:49 PM
Pyrene	0.136	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/11/16 10:49 PM
IS: Acenaphthene-d10	79.6	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Chrysene-d12	84.8	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Naphthalene-d8	82.8	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Perylene-d12	94.5	0	50-200	0		%REC	10	11/11/16 10:49 PM
IS: Phenanthrene-d10	79.5	0	50-200	0		%REC	10	11/11/16 10:49 PM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/11/16 10:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW17(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-16
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:35 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	112	0	58-133	0		%REC	10	11/11/16 10:49 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	4.42	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-21
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:54 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	22.2	0.101	0.303	0.151		mg/Kg-dry	5	11/11/16 02:29 PM
IS: Bismuth	97.5	0	30-120	0		%REC	5	11/11/16 02:29 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0832	0.0513	0.103	0.0770	J	mg/Kg-dry	10	11/11/16 11:17 PM
Acenaphthylene	0.0770	0.0513	0.103	0.0770	U	mg/Kg-dry	10	11/11/16 11:17 PM
Anthracene	0.375	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[a]anthracene	2.57	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[a]pyrene	2.89	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[b]fluoranthene	2.79	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[e]pyrene	2.17	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[g,h,i]perylene	2.16	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[j]fluoranthene	1.32	0.0513	0.103	0.0770	N	mg/Kg-dry	10	11/11/16 11:17 PM
Benzo[k]fluoranthene	1.35	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Chrysene	3.28	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Dibenz[a,h]anthracene	0.447	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Fluoranthene	4.94	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Fluorene	0.0770	0.0513	0.103	0.0770	U	mg/Kg-dry	10	11/11/16 11:17 PM
Indeno[1,2,3-cd]pyrene	2.21	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Phenanthrene	1.96	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
Pyrene	4.23	0.0513	0.103	0.0770		mg/Kg-dry	10	11/11/16 11:17 PM
IS: Acenaphthene-d10	86.6	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Chrysene-d12	93.1	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Naphthalene-d8	91.8	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Perylene-d12	103	0	50-200	0		%REC	10	11/11/16 11:17 PM
IS: Phenanthrene-d10	85.6	0	50-200	0		%REC	10	11/11/16 11:17 PM
Surr: 2-Fluorobiphenyl	97.1	0	46-115	0		%REC	10	11/11/16 11:17 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0-0.5)
Project:	Laredo SGR	**Lab ID:**	1611071-21
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:54 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	107	0	58-133	0		%REC	10	11/11/16 11:17 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	5.68	0	0	0		WT%	1	11/10/16 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-22
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:55 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.6	0.107	0.320	0.160		mg/Kg-dry	5	11/18/16 03:43 PM
IS: Bismuth	91.8	0	30-120	0		%REC	5	11/18/16 03:43 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0785	0.0523	0.105	0.0785	CU	mg/Kg-dry	10	11/30/16 07:28 PM
Acenaphthylene	0.0785	0.0523	0.105	0.0785	CU	mg/Kg-dry	10	11/30/16 07:28 PM
Anthracene	0.170	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[a]anthracene	0.878	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[a]pyrene	0.829	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[b]fluoranthene	0.858	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[e]pyrene	0.640	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[g,h,i]perylene	0.549	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[j]fluoranthene	0.412	0.0523	0.105	0.0785	CN	mg/Kg-dry	10	11/30/16 07:28 PM
Benzo[k]fluoranthene	0.421	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Chrysene	1.17	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Dibenz[a,h]anthracene	0.123	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Fluoranthene	1.65	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Fluorene	0.0785	0.0523	0.105	0.0785	CU	mg/Kg-dry	10	11/30/16 07:28 PM
Indeno[1,2,3-cd]pyrene	0.575	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Phenanthrene	0.838	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
Pyrene	1.30	0.0523	0.105	0.0785	C	mg/Kg-dry	10	11/30/16 07:28 PM
IS: Acenaphthene-d10	113	0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Chrysene-d12	102	0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Naphthalene-d8	118	0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Perylene-d12	100	0	50-200	0		%REC	10	11/30/16 07:28 PM
IS: Phenanthrene-d10	110	0	50-200	0		%REC	10	11/30/16 07:28 PM
Surr: 2-Fluorobiphenyl	81.9	0	46-115	0		%REC	10	11/30/16 07:28 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(0.5-2)
Project:	Laredo SGR	**Lab ID:**	1611071-22
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:55 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	74.8	0	58-133	0		%REC	10	11/30/16 07:28 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	9.83	0	0	0		WT%	1	11/18/16 08:00 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-ROW18(2-4)
Project:	Laredo SGR	**Lab ID:**	1611071-23
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 11:56 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0808	0.0539	0.108	0.0808	U	mg/Kg-dry	10	11/23/16 06:11 PM
Acenaphthylene	0.0808	0.0539	0.108	0.0808	U	mg/Kg-dry	10	11/23/16 06:11 PM
Anthracene	0.0605	0.0539	0.108	0.0808	J	mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[a]anthracene	0.775	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[a]pyrene	1.07	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[b]fluoranthene	0.990	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[e]pyrene	0.846	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[g,h,i]perylene	0.800	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[j]fluoranthene	0.495	0.0539	0.108	0.0808	N	mg/Kg-dry	10	11/23/16 06:11 PM
Benzo[k]fluoranthene	0.564	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Chrysene	1.16	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Dibenz[a,h]anthracene	0.0876	0.0539	0.108	0.0808	J	mg/Kg-dry	10	11/23/16 06:11 PM
Fluoranthene	1.15	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Fluorene	0.0808	0.0539	0.108	0.0808	U	mg/Kg-dry	10	11/23/16 06:11 PM
Indeno[1,2,3-cd]pyrene	0.748	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Phenanthrene	0.289	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
Pyrene	1.06	0.0539	0.108	0.0808		mg/Kg-dry	10	11/23/16 06:11 PM
IS: Acenaphthene-d10	83.8	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Chrysene-d12	75.0	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Naphthalene-d8	149	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Perylene-d12	71.7	0	50-200	0		%REC	10	11/23/16 06:11 PM
IS: Phenanthrene-d10	80.7	0	50-200	0		%REC	10	11/23/16 06:11 PM
Surr: 2-Fluorobiphenyl	88.5	0	46-115	0		%REC	10	11/23/16 06:11 PM
Surr: 4-Terphenyl-d14	82.5	0	58-133	0		%REC	10	11/23/16 06:11 PM
PERCENT MOISTURE			**D2216**					Analyst: **SP**
Percent Moisture	10.7	0	0	0		WT%	1	11/29/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-A
Project:	Laredo SGR	**Lab ID:**	1611071-24
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	20.9	0.0962	0.288	0.144		mg/Kg-dry	5	11/18/16 04:14 PM
IS: Bismuth	89.9	0	30-120	0		%REC	5	11/18/16 04:14 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Acenaphthylene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Anthracene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[a]anthracene	0.157	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[a]pyrene	0.207	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[b]fluoranthene	0.199	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[e]pyrene	0.162	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[g,h,i]perylene	0.169	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[j]fluoranthene	0.0958	0.0460	0.0920	0.0690	N	mg/Kg-dry	10	11/15/16 08:42 PM
Benzo[k]fluoranthene	0.103	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Chrysene	0.199	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Dibenz[a,h]anthracene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Fluoranthene	0.303	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Fluorene	0.0690	0.0460	0.0920	0.0690	U	mg/Kg-dry	10	11/15/16 08:42 PM
Indeno[1,2,3-cd]pyrene	0.164	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Phenanthrene	0.109	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
Pyrene	0.267	0.0460	0.0920	0.0690		mg/Kg-dry	10	11/15/16 08:42 PM
IS: Acenaphthene-d10	87.3	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Naphthalene-d8	94.2	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/15/16 08:42 PM
IS: Phenanthrene-d10	87.2	0	50-200	0		%REC	10	11/15/16 08:42 PM
Surr: 2-Fluorobiphenyl	104	0	46-115	0		%REC	10	11/15/16 08:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-A
Project:	Laredo SGR	**Lab ID:**	1611071-24
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:16 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	109	0	58-133	0		%REC	10	11/15/16 08:42 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-B
Project:	Laredo SGR	**Lab ID:**	1611071-25
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:31 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.0	0.0877	0.263	0.132		mg/Kg-dry	5	11/18/16 04:18 PM
IS: Bismuth	87.8	0	30-120	0		%REC	5	11/18/16 04:18 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Acenaphthylene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Anthracene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[a]anthracene	0.149	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[a]pyrene	0.200	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[b]fluoranthene	0.197	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[e]pyrene	0.162	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[g,h,i]perylene	0.171	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[j]fluoranthene	0.0939	0.0494	0.0987	0.0740	JN	mg/Kg-dry	10	11/15/16 09:11 PM
Benzo[k]fluoranthene	0.0952	0.0494	0.0987	0.0740	J	mg/Kg-dry	10	11/15/16 09:11 PM
Chrysene	0.192	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Dibenz[a,h]anthracene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Fluoranthene	0.279	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Fluorene	0.0740	0.0494	0.0987	0.0740	U	mg/Kg-dry	10	11/15/16 09:11 PM
Indeno[1,2,3-cd]pyrene	0.166	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
Phenanthrene	0.0927	0.0494	0.0987	0.0740	J	mg/Kg-dry	10	11/15/16 09:11 PM
Pyrene	0.247	0.0494	0.0987	0.0740		mg/Kg-dry	10	11/15/16 09:11 PM
IS: Acenaphthene-d10	86.5	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Chrysene-d12	95.9	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Naphthalene-d8	93.3	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/15/16 09:11 PM
IS: Phenanthrene-d10	86.9	0	50-200	0		%REC	10	11/15/16 09:11 PM
Surr: 2-Fluorobiphenyl	103	0	46-115	0		%REC	10	11/15/16 09:11 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-B
Project:	Laredo SGR	**Lab ID:**	1611071-25
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:31 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	107	0	58-133	0		%REC	10	11/15/16 09:11 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-C
Project:	Laredo SGR	**Lab ID:**	1611071-26
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:48 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	23.1	0.0990	0.297	0.149		mg/Kg-dry	5	11/18/16 04:20 PM
IS: Bismuth	88.5	0	30-120	0		%REC	5	11/18/16 04:20 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Acenaphthylene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Anthracene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[a]anthracene	0.200	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[a]pyrene	0.263	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[b]fluoranthene	0.260	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[e]pyrene	0.214	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[g,h,i]perylene	0.223	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[j]fluoranthene	0.123	0.0459	0.0917	0.0688	N	mg/Kg-dry	10	11/15/16 09:39 PM
Benzo[k]fluoranthene	0.129	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Chrysene	0.254	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Dibenz[a,h]anthracene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Fluoranthene	0.378	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Fluorene	0.0688	0.0459	0.0917	0.0688	U	mg/Kg-dry	10	11/15/16 09:39 PM
Indeno[1,2,3-cd]pyrene	0.211	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Phenanthrene	0.132	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
Pyrene	0.329	0.0459	0.0917	0.0688		mg/Kg-dry	10	11/15/16 09:39 PM
IS: Acenaphthene-d10	89.1	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Naphthalene-d8	96.5	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/15/16 09:39 PM
IS: Phenanthrene-d10	88.8	0	50-200	0		%REC	10	11/15/16 09:39 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/15/16 09:39 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100-C
Project:	Laredo SGR	**Lab ID:**	1611071-26
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 10:48 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/15/16 09:39 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-A
Project:	Laredo SGR	**Lab ID:**	1611071-27
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:50 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	22.5	0.0952	0.286	0.143		mg/Kg-dry	5	11/18/16 04:10 PM
IS: Bismuth	91.9	0	30-120	0		%REC	5	11/18/16 04:10 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Acenaphthylene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[a]anthracene	0.0717	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[a]pyrene	0.0993	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[b]fluoranthene	0.0985	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[e]pyrene	0.0837	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[g,h,i]perylene	0.0843	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[j]fluoranthene	0.0500	0.0482	0.0964	0.0723	JN	mg/Kg-dry	10	11/16/16 04:15 PM
Benzo[k]fluoranthene	0.0539	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Chrysene	0.0878	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Dibenz[a,h]anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Fluoranthene	0.122	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
Fluorene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Indeno[1,2,3-cd]pyrene	0.0827	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/16/16 04:15 PM
Phenanthrene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/16/16 04:15 PM
Pyrene	0.109	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/16/16 04:15 PM
IS: Acenaphthene-d10	104	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Chrysene-d12	97.4	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Naphthalene-d8	107	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Perylene-d12	96.9	0	50-200	0		%REC	10	11/16/16 04:15 PM
IS: Phenanthrene-d10	102	0	50-200	0		%REC	10	11/16/16 04:15 PM
Surr: 2-Fluorobiphenyl	92.6	0	46-115	0		%REC	10	11/16/16 04:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-A
Project:	Laredo SGR	**Lab ID:**	1611071-27
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:50 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.4	0	58-133	0		%REC	10	11/16/16 04:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-B
Project:	Laredo SGR	**Lab ID:**	1611071-28
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	20.6	0.0980	0.294	0.147		mg/Kg-dry	5	11/18/16 04:22 PM
IS: Bismuth	89.8	0	30-120	0		%REC	5	11/18/16 04:22 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[a]anthracene	0.115	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[a]pyrene	0.147	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[b]fluoranthene	0.143	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[e]pyrene	0.121	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[g,h,i]perylene	0.132	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[j]fluoranthene	0.0733	0.0496	0.0992	0.0744	JN	mg/Kg-dry	10	11/15/16 06:22 PM
Benzo[k]fluoranthene	0.0772	0.0496	0.0992	0.0744	J	mg/Kg-dry	10	11/15/16 06:22 PM
Chrysene	0.132	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Fluoranthene	0.197	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/15/16 06:22 PM
Indeno[1,2,3-cd]pyrene	0.126	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
Phenanthrene	0.0600	0.0496	0.0992	0.0744	J	mg/Kg-dry	10	11/15/16 06:22 PM
Pyrene	0.179	0.0496	0.0992	0.0744		mg/Kg-dry	10	11/15/16 06:22 PM
IS: Acenaphthene-d10	87.4	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Chrysene-d12	93.7	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Naphthalene-d8	93.7	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/15/16 06:22 PM
IS: Phenanthrene-d10	86.6	0	50-200	0		%REC	10	11/15/16 06:22 PM
Surr: 2-Fluorobiphenyl	112	0	46-115	0		%REC	10	11/15/16 06:22 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-B
Project:	Laredo SGR	**Lab ID:**	1611071-28
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	124	0	58-133	0		%REC	10	11/15/16 06:22 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-C
Project:	Laredo SGR	**Lab ID:**	1611071-29
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:35 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	30.7	0.0926	0.278	0.139		mg/Kg-dry	5	11/18/16 04:24 PM
IS: Bismuth	90.0	0	30-120	0		%REC	5	11/18/16 04:24 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Acenaphthylene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[a]anthracene	0.181	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[a]pyrene	0.209	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[b]fluoranthene	0.199	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[e]pyrene	0.163	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[g,h,i]perylene	0.167	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[j]fluoranthene	0.100	0.0471	0.0943	0.0707	N	mg/Kg-dry	10	11/15/16 06:51 PM
Benzo[k]fluoranthene	0.106	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Chrysene	0.207	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Dibenz[a,h]anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Fluoranthene	0.387	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Fluorene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/15/16 06:51 PM
Indeno[1,2,3-cd]pyrene	0.167	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Phenanthrene	0.168	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
Pyrene	0.331	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/15/16 06:51 PM
IS: Acenaphthene-d10	88.2	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Naphthalene-d8	95.0	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Perylene-d12	103	0	50-200	0		%REC	10	11/15/16 06:51 PM
IS: Phenanthrene-d10	88.5	0	50-200	0		%REC	10	11/15/16 06:51 PM
Surr: 2-Fluorobiphenyl	106	0	46-115	0		%REC	10	11/15/16 06:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103-C
Project:	Laredo SGR	**Lab ID:**	1611071-29
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 05:35 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	117	0	58-133	0		%REC	10	11/15/16 06:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-A
Project:	Laredo SGR	**Lab ID:**	1611071-30
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:00 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.8	0.0980	0.294	0.147		mg/Kg-dry	5	11/18/16 04:26 PM
IS: Bismuth	91.1	0	30-120	0		%REC	5	11/18/16 04:26 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Acenaphthylene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Anthracene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[a]anthracene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[a]pyrene	0.0608	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[b]fluoranthene	0.0662	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[e]pyrene	0.0500	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[g,h,i]perylene	0.0529	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[j]fluoranthene	0.0730	0.0487	0.0974	0.0730	NU	mg/Kg-dry	10	11/16/16 02:51 PM
Benzo[k]fluoranthene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Chrysene	0.0542	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Dibenz[a,h]anthracene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Fluoranthene	0.0719	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Fluorene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Indeno[1,2,3-cd]pyrene	0.0513	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
Phenanthrene	0.0730	0.0487	0.0974	0.0730	U	mg/Kg-dry	10	11/16/16 02:51 PM
Pyrene	0.0679	0.0487	0.0974	0.0730	J	mg/Kg-dry	10	11/16/16 02:51 PM
IS: Acenaphthene-d10	105	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Chrysene-d12	97.0	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Naphthalene-d8	105	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Perylene-d12	98.2	0	50-200	0		%REC	10	11/16/16 02:51 PM
IS: Phenanthrene-d10	103	0	50-200	0		%REC	10	11/16/16 02:51 PM
Surr: 2-Fluorobiphenyl	89.3	0	46-115	0		%REC	10	11/16/16 02:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-A
Project:	Laredo SGR	**Lab ID:**	1611071-30
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:00 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	119	0	58-133	0		%REC	10	11/16/16 02:51 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-B
Project:	Laredo SGR	**Lab ID:**	1611071-31
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.9	0.0909	0.273	0.136		mg/Kg-dry	5	11/18/16 04:28 PM
IS: Bismuth	91.5	0	30-120	0		%REC	5	11/18/16 04:28 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Acenaphthylene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Anthracene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[a]anthracene	0.0486	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[a]pyrene	0.0656	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[b]fluoranthene	0.0661	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[e]pyrene	0.0508	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[g,h,i]perylene	0.0554	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[j]fluoranthene	0.0694	0.0463	0.0926	0.0694	NU	mg/Kg-dry	10	11/16/16 03:19 PM
Benzo[k]fluoranthene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Chrysene	0.0629	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Dibenz[a,h]anthracene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Fluoranthene	0.0800	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Fluorene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Indeno[1,2,3-cd]pyrene	0.0522	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
Phenanthrene	0.0694	0.0463	0.0926	0.0694	U	mg/Kg-dry	10	11/16/16 03:19 PM
Pyrene	0.0721	0.0463	0.0926	0.0694	J	mg/Kg-dry	10	11/16/16 03:19 PM
IS: Acenaphthene-d10	104	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Chrysene-d12	96.9	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Naphthalene-d8	105	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Perylene-d12	96.3	0	50-200	0		%REC	10	11/16/16 03:19 PM
IS: Phenanthrene-d10	102	0	50-200	0		%REC	10	11/16/16 03:19 PM
Surr: 2-Fluorobiphenyl	90.5	0	46-115	0		%REC	10	11/16/16 03:19 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-B
Project:	Laredo SGR	**Lab ID:**	1611071-31
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 04:15 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.3	0	58-133	0		%REC	10	11/16/16 03:19 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-C
Project:	Laredo SGR	**Lab ID:**	1611071-32
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:40 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.7	0.0952	0.286	0.143		mg/Kg-dry	5	11/18/16 04:31 PM
IS: Bismuth	91.8	0	30-120	0		%REC	5	11/18/16 04:31 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Acenaphthylene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Anthracene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[a]anthracene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[a]pyrene	0.0534	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[b]fluoranthene	0.0581	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[e]pyrene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[g,h,i]perylene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[j]fluoranthene	0.0725	0.0484	0.0967	0.0725	NU	mg/Kg-dry	10	11/16/16 03:47 PM
Benzo[k]fluoranthene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Chrysene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Dibenz[a,h]anthracene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Fluoranthene	0.0629	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
Fluorene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Indeno[1,2,3-cd]pyrene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Phenanthrene	0.0725	0.0484	0.0967	0.0725	U	mg/Kg-dry	10	11/16/16 03:47 PM
Pyrene	0.0562	0.0484	0.0967	0.0725	J	mg/Kg-dry	10	11/16/16 03:47 PM
IS: Acenaphthene-d10	104	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Naphthalene-d8	106	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Perylene-d12	95.8	0	50-200	0		%REC	10	11/16/16 03:47 PM
IS: Phenanthrene-d10	102	0	50-200	0		%REC	10	11/16/16 03:47 PM
Surr: 2-Fluorobiphenyl	92.1	0	46-115	0		%REC	10	11/16/16 03:47 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133-C
Project:	Laredo SGR	**Lab ID:**	1611071-32
Project No:	04285081.0000.00043	**Collection Date:**	11/05/16 03:40 PM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	93.9	0	58-133	0		%REC	10	11/16/16 03:47 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-A
Project:	Laredo SGR	**Lab ID:**	1611071-33
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:24 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.4	0.0943	0.283	0.142		mg/Kg-dry	5	11/18/16 04:33 PM
IS: Bismuth	91.0	0	30-120	0		%REC	5	11/18/16 04:33 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[a]anthracene	0.165	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[a]pyrene	0.203	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[b]fluoranthene	0.214	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[e]pyrene	0.180	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[g,h,i]perylene	0.174	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[j]fluoranthene	0.106	0.0493	0.0985	0.0739	N	mg/Kg-dry	10	11/16/16 04:43 PM
Benzo[k]fluoranthene	0.117	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Chrysene	0.188	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Fluoranthene	0.264	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/16/16 04:43 PM
Indeno[1,2,3-cd]pyrene	0.176	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
Phenanthrene	0.0978	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/16/16 04:43 PM
Pyrene	0.240	0.0493	0.0985	0.0739		mg/Kg-dry	10	11/16/16 04:43 PM
IS: Acenaphthene-d10	109	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Chrysene-d12	103	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Naphthalene-d8	111	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/16/16 04:43 PM
IS: Phenanthrene-d10	108	0	50-200	0		%REC	10	11/16/16 04:43 PM
Surr: 2-Fluorobiphenyl	87.8	0	46-115	0		%REC	10	11/16/16 04:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-A
Project:	Laredo SGR	**Lab ID:**	1611071-33
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:24 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.9	0	58-133	0		%REC	10	11/16/16 04:43 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-B
Project:	Laredo SGR	**Lab ID:**	1611071-34
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:38 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	11.7	0.0909	0.273	0.136		mg/Kg-dry	5	11/18/16 05:03 PM
IS: Bismuth	87.8	0	30-120	0		%REC	5	11/18/16 05:03 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Acenaphthylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[a]anthracene	0.0539	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[a]pyrene	0.0714	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[b]fluoranthene	0.0768	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[e]pyrene	0.0596	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[g,h,i]perylene	0.0655	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[j]fluoranthene	0.0746	0.0498	0.0995	0.0746	NU	mg/Kg-dry	10	11/15/16 07:46 PM
Benzo[k]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Chrysene	0.0639	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Dibenz[a,h]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Fluoranthene	0.0911	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Fluorene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Indeno[1,2,3-cd]pyrene	0.0640	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
Phenanthrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/15/16 07:46 PM
Pyrene	0.0856	0.0498	0.0995	0.0746	J	mg/Kg-dry	10	11/15/16 07:46 PM
IS: Acenaphthene-d10	85.6	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Chrysene-d12	92.0	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Naphthalene-d8	92.7	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/15/16 07:46 PM
IS: Phenanthrene-d10	85.4	0	50-200	0		%REC	10	11/15/16 07:46 PM
Surr: 2-Fluorobiphenyl	110	0	46-115	0		%REC	10	11/15/16 07:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-B
Project:	Laredo SGR	**Lab ID:**	1611071-34
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:38 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/15/16 07:46 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-C
Project:	Laredo SGR	**Lab ID:**	1611071-35
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	12.5	0.0935	0.280	0.140		mg/Kg-dry	5	11/18/16 05:05 PM
IS: Bismuth	89.1	0	30-120	0		%REC	5	11/18/16 05:05 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Acenaphthylene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[a]anthracene	0.0703	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[a]pyrene	0.0923	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[b]fluoranthene	0.102	0.0466	0.0931	0.0698		mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[e]pyrene	0.0787	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[g,h,i]perylene	0.0831	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[j]fluoranthene	0.0490	0.0466	0.0931	0.0698	JN	mg/Kg-dry	10	11/15/16 08:15 PM
Benzo[k]fluoranthene	0.0525	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Chrysene	0.0882	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Dibenz[a,h]anthracene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Fluoranthene	0.143	0.0466	0.0931	0.0698		mg/Kg-dry	10	11/15/16 08:15 PM
Fluorene	0.0698	0.0466	0.0931	0.0698	U	mg/Kg-dry	10	11/15/16 08:15 PM
Indeno[1,2,3-cd]pyrene	0.0821	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Phenanthrene	0.0475	0.0466	0.0931	0.0698	J	mg/Kg-dry	10	11/15/16 08:15 PM
Pyrene	0.123	0.0466	0.0931	0.0698		mg/Kg-dry	10	11/15/16 08:15 PM
IS: Acenaphthene-d10	87.8	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Chrysene-d12	96.7	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Naphthalene-d8	93.9	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Perylene-d12	106	0	50-200	0		%REC	10	11/15/16 08:15 PM
IS: Phenanthrene-d10	87.2	0	50-200	0		%REC	10	11/15/16 08:15 PM
Surr: 2-Fluorobiphenyl	103	0	46-115	0		%REC	10	11/15/16 08:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172-C
Project:	Laredo SGR	**Lab ID:**	1611071-35
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 11:53 AM
Lab Order:	1611071	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	108	0	58-133	0		%REC	10	11/15/16 08:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *05-Dec-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBDU100(20161106)
Project:	Laredo SGR	**Lab ID:**	1611071-36
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 06:00 PM
Lab Order:	1611071	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.000900	0.000300	0.00100	0.000900	U	mg/L	1	11/16/16 03:00 PM
IS: Bismuth	81.1	0	30-120	0		%REC	1	11/16/16 03:00 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Acenaphthylene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Anthracene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[a]anthracene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[a]pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[b]fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[e]pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[g,h,i]perylene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Benzo[j]fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	NU	mg/L	1	11/11/16 10:00 AM
Benzo[k]fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Chrysene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Dibenz[a,h]anthracene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Fluoranthene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Fluorene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Indeno[1,2,3-cd]pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Phenanthrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
Pyrene	0.0000628	0.0000392	0.0000785	0.0000628	U	mg/L	1	11/11/16 10:00 AM
IS: Acenaphthene-d10	93.4	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Chrysene-d12	102	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Naphthalene-d8	95.6	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Perylene-d12	110	0	50-200	0		%REC	1	11/11/16 10:00 AM
IS: Phenanthrene-d10	94.2	0	50-200	0		%REC	1	11/11/16 10:00 AM
Surr: 2-Fluorobiphenyl	70.7	0	53-106	0		%REC	1	11/11/16 10:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EBDU100(20161106)
Project:	Laredo SGR	**Lab ID:**	1611071-36
Project No:	04285081.0000.00043	**Collection Date:**	11/06/16 06:00 PM
Lab Order:	1611071	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	87.8	0	58-132	0		%REC	1	11/11/16 10:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161114B

Sample ID **DCS1-77661** Batch ID: **77661** TestNo: **SW6020A** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS3_161114B** Analysis Date: **11/14/2016 3:31:00 PM** Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000473	0.00100	0.000500	0	94.6	80	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

The QC data in batch 77913 applies to the following samples: 1611071-36A

Sample ID	**MB-77913**	Batch ID:	**77913**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS3_161116A**	Analysis Date:	**11/16/2016 1:53:00 PM**	Prep Date:	**11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000900	0.00100								U
IS: Bismuth	0.200		0.200		79.8	30	120			

Sample ID	**LCS-77913**	Batch ID:	**77913**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS3_161116A**	Analysis Date:	**11/16/2016 1:59:00 PM**	Prep Date:	**11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.193	0.00100	0.200	0	96.3	88	115			
IS: Bismuth	0.200		0.200		78.2	30	120			

Sample ID	**LCSD-77913**	Batch ID:	**77913**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS3_161116A**	Analysis Date:	**11/16/2016 2:05:00 PM**	Prep Date:	**11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	95.8	88	115	0.468	20	
IS: Bismuth	0.200		0.200		78.6	30	120	0	0	

Sample ID	**1611028-26A SD**	Batch ID:	**77913**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS3_161116A**	Analysis Date:	**11/16/2016 2:24:00 PM**	Prep Date:	**11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00450	0.00500	0	0				0	10	U
IS: Bismuth	1.00		0.200		82.0	30	120	0	0	

Sample ID	**1611028-26A PDS**	Batch ID:	**77913**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS3_161116A**	Analysis Date:	**11/16/2016 3:06:00 PM**	Prep Date:	**11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.3	80	120			
IS: Bismuth	0.200		0.200		79.3	30	120			

Sample ID	**1611028-26A MS**	Batch ID:	**77913**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS3_161116A**	Analysis Date:	**11/16/2016 3:12:00 PM**	Prep Date:	**11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.193	0.00100	0.200	0	96.6	88	115			
IS: Bismuth	0.200		0.200		79.2	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

Sample ID **1611028-26A MSD**	Batch ID: **77913**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:18:00 PM**	Prep Date: **11/15/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	95.8	88	115	0.728	20	
IS: Bismuth	0.200		0.200		78.0	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

Sample ID **ICV1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 12:10:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0979	0.00100	0.100	0	97.9	90	110			
IS: Bismuth	0.200		0.200		98.4	30	120			

Sample ID **ILCVL-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 12:22:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	106	90	110			
IS: Bismuth	0.200		0.200		77.7	30	120			

Sample ID **LCVL1-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 1:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00107	0.00100	0.00100	0	107	80	120			
IS: Bismuth	0.200		0.200		79.3	30	120			

Sample ID **CCV2-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	106	90	110			
IS: Bismuth	0.200		0.200		78.2	30	120			

Sample ID **LCVL2-161116**	Batch ID: **R89004**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161116A**	Analysis Date: **11/16/2016 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00104	0.00100	0.00100	0	104	80	120			
IS: Bismuth	0.200		0.200		80.5	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160916A

Sample ID **DCS1-77170**	Batch ID: **77170**	TestNo: **SW6020A**	Units: **mg/Kg**		
SampType: **DCS**	Run ID: **ICP-MS4_160916A**	Analysis Date: **9/16/2016 12:15:00 PM**	Prep Date: **9/12/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.261	0.300	0.2500	0	104	80	120	0	0	
IS: Bismuth	50.0		200.0		104	70	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

The QC data in batch 77842 applies to the following samples: 1611071-01A, 1611071-04A, 1611071-08A, 1611071-11A, 1611071-16A, 1611071-21A

Sample ID **MB-77842**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:22:00 PM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		102	30	120			

Sample ID **LCS-77842**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **LCS**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:24:00 PM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.1	0.300	50.00	0	98.2	84	118			
IS: Bismuth	50.0		200.0		99.4	30	120			

Sample ID **LCSD-77842**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **LCSD**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:26:00 PM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.7	0.300	50.00	0	99.3	84	118	1.08	20	
IS: Bismuth	50.0		200.0		98.4	30	120	0	0	

Sample ID **1611053-16A SD**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:32:00 PM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	8.36	1.47	0	8.297				0.693	10	
IS: Bismuth	245		195.7		98.7	30	120	0	0	

Sample ID **1611053-16A PDS**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:52:00 PM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	55.7	0.294	48.92	8.297	96.9	80	120			
IS: Bismuth	48.9		978.4		95.2	30	120			

Sample ID **1611053-16A MS**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:54:00 PM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	56.1	0.299	49.82	8.297	95.9	84	118			
IS: Bismuth	49.8		199.3		94.6	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **1611053-16A MSD**	Batch ID: **77842**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:56:00 PM**	Prep Date: **11/9/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	56.5	0.296	49.37	8.297	97.7	84	118	0.776	20	
IS: Bismuth	49.4		197.5		91.5	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **ICV-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 10:18:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.101	0.00100	0.100	0	101	90	110			
IS: Bismuth	0.200		0.200		102	30	120			

Sample ID **LCVL-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 10:24:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00111	0.00100	0.00100	0	111	80	120			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **CCV4-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.7	90	110			
IS: Bismuth	0.200		0.200		96.9	30	120			

Sample ID **LCVL4-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000981	0.00100	0.00100	0	98.1	80	120			
IS: Bismuth	0.200		0.200		98.5	30	120			

Sample ID **CCV5-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.3	90	110			
IS: Bismuth	0.200		0.200		97.5	30	120			

Sample ID **LCVL5-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00103	0.00100	0.00100	0	103	80	120			
IS: Bismuth	0.200		0.200		97.0	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161111D

Sample ID **CCV6-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.7	90	110			
IS: Bismuth	0.200		0.200		99.0	30	120			

Sample ID **LCVL6-161111**	Batch ID: **R88958**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161111D**	Analysis Date: **11/11/2016 2:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00103	0.00100	0.00100	0	103	80	120			
IS: Bismuth	0.200		0.200		99.5	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

The QC data in batch 77967 applies to the following samples: 1611071-02A, 1611071-05A, 1611071-12A, 1611071-22A

Sample ID **MB-77967**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:17:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		95.7	30	120			

Sample ID **LCS-77967**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **LCS**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:19:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	50.7	0.300	50.00	0	101	84	118			
IS: Bismuth	50.0		200.0		92.4	30	120			

Sample ID **LCSD-77967**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **LCSD**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:21:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	50.9	0.300	50.00	0	102	84	118	0.514	20	
IS: Bismuth	50.0		200.0		93.4	30	120	0	0	

Sample ID **1611053-02A SD**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:27:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	11.7	1.62	0	11.78				0.720	10	
IS: Bismuth	269		215.5		95.5	30	120	0	0	

Sample ID **1611053-02A PDS**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:45:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	63.5	0.323	53.87	11.78	96.1	80	120			
IS: Bismuth	53.9		1077		92.0	30	120			

Sample ID **1611053-02A MS**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:47:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	66.1	0.326	54.40	11.78	99.8	84	118			
IS: Bismuth	54.4		217.6		91.7	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

Sample ID **1611053-02A MSD**	Batch ID: **77967**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:49:00 PM**	Prep Date: **11/17/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	66.5	0.323	53.87	11.78	102	84	118	0.623	20	
IS: Bismuth	53.9		215.5		89.8	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_161118B**

The QC data in batch 77968 applies to the following samples: 1611071-24A, 1611071-25A, 1611071-26A, 1611071-27A, 1611071-28A, 1611071-29A, 1611071-30A, 1611071-31A, 1611071-32A, 1611071-33A, 1611071-34A, 1611071-35A

Sample ID **MB-77968** Batch ID: **77968** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_161118B** Analysis Date: **11/18/2016 4:02:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.150	0.300								U
IS: Bismuth	50.0		200.0		94.3	30	120			

Sample ID **LCS-77968** Batch ID: **77968** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_161118B** Analysis Date: **11/18/2016 4:04:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.9	0.300	50.00	0	99.9	84	118			
IS: Bismuth	50.0		200.0		93.2	30	120			

Sample ID **LCSD-77968** Batch ID: **77968** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_161118B** Analysis Date: **11/18/2016 4:06:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	50.5	0.300	50.00	0	101	84	118	1.06	20	
IS: Bismuth	50.0		200.0		92.9	30	120	0	0	

Sample ID **1611071-27A SD** Batch ID: **77968** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_161118B** Analysis Date: **11/18/2016 4:16:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	22.5	1.43	0	22.53				0.350	10	
IS: Bismuth	238		190.5		91.3	30	120	0	0	

Sample ID **1611071-27A PDS** Batch ID: **77968** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_161118B** Analysis Date: **11/18/2016 4:35:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	69.1	0.286	47.62	22.53	97.9	80	120			
IS: Bismuth	47.6		952.4		89.8	30	120			

Sample ID **1611071-27A MS** Batch ID: **77968** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_161118B** Analysis Date: **11/18/2016 4:37:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	71.3	0.278	46.30	22.53	105	84	118			
IS: Bismuth	46.3		185.2		88.1	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

Sample ID **1611071-27A MSD**	Batch ID: **77968**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 4:39:00 PM**	Prep Date: **11/17/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	70.3	0.280	46.73	22.53	102	84	118	1.39	20	
IS: Bismuth	46.7		186.9		87.6	30	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

Sample ID **ICV-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 11:57:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0987	0.00100	0.100	0	98.7	90	110			
IS: Bismuth	0.200		0.200		93.5	30	120			

Sample ID **LCVL-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 12:06:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000980	0.00100	0.00100	0	98.0	80	120			
IS: Bismuth	0.200		0.200		98.9	30	120			

Sample ID **CCV5-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.198	0.00100	0.200	0	99.2	90	110			
IS: Bismuth	0.200		0.200		89.8	30	120			

Sample ID **LCVL5-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000886	0.00100	0.00100	0	88.6	80	120			
IS: Bismuth	0.200		0.200		92.7	30	120			

Sample ID **CCV6-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.6	90	110			
IS: Bismuth	0.200		0.200		93.3	30	120			

Sample ID **LCVL6-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000936	0.00100	0.00100	0	93.6	80	120			
IS: Bismuth	0.200		0.200		92.0	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161118B

Sample ID **CCV7-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 4:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.200	0.00100	0.200	0	99.9	90	110			
IS: Bismuth	0.200		0.200		90.1	30	120			

Sample ID **LCVL7-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 4:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000941	0.00100	0.00100	0	94.1	80	120			
IS: Bismuth	0.200		0.200		94.1	30	120			

Sample ID **CCV8-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 5:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0	99.3	90	110			
IS: Bismuth	0.200		0.200		94.4	30	120			

Sample ID **LCVL8-161118**	Batch ID: **R89084**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161118B**	Analysis Date: **11/18/2016 5:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000896	0.00100	0.00100	0	89.6	80	120			
IS: Bismuth	0.200		0.200		92.6	30	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161021A

Sample ID **DCS-77602**	Batch ID: **77602**	TestNo: **SW8270D-LL**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **GCMS6_161021A**	Analysis Date: **10/21/2016 5:02:00 PM**	Prep Date: **10/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00962	0.0100	0.01000	0	96.2	20	200	0	0	
Acenaphthylene	0.00967	0.0100	0.01000	0	96.7	20	200	0	0	
Anthracene	0.00913	0.0100	0.01000	0	91.3	20	200	0	0	
Benzo[a]anthracene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Benzo[a]pyrene	0.00921	0.0100	0.01000	0	92.1	20	200	0	0	
Benzo[b]fluoranthene	0.0100	0.0100	0.01000	0	100	20	200	0	0	
Benzo[e]pyrene	0.0105	0.0100	0.01000	0	105	20	200	0	0	
Benzo[g,h,i]perylene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Benzo[j]fluoranthene	0.0102	0.0100	0.01000	0	102	20	200	0	0	N
Benzo[k]fluoranthene	0.0100	0.0100	0.01000	0	100	20	200	0	0	
Chrysene	0.0103	0.0100	0.01000	0	103	20	200	0	0	
Dibenz[a,h]anthracene	0.0101	0.0100	0.01000	0	101	20	200	0	0	
Fluoranthene	0.0105	0.0100	0.01000	0	104	20	200	0	0	
Fluorene	0.0102	0.0100	0.01000	0	102	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0103	0.0100	0.01000	0	103	20	200	0	0	
Phenanthrene	0.0110	0.0100	0.01000	0	110	20	200	0	0	
Pyrene	0.0106	0.0100	0.01000	0	106	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161103A

Sample ID **DCS-77773**	Batch ID: **77773**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **DCS**	Run ID: **GCMS6_161103A**	Analysis Date: **11/3/2016 9:49:00 AM**	Prep Date: **11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.0000373	0.0000500	0.0000400	0	93.2	20	200	0	0	
Acenaphthylene	0.0000373	0.0000500	0.0000400	0	93.2	20	200	0	0	
Anthracene	0.0000395	0.0000500	0.0000400	0	98.8	20	200	0	0	
Benzo[a]anthracene	0.0000420	0.0000500	0.0000400	0	105	20	200	0	0	
Benzo[a]pyrene	0.0000374	0.0000500	0.0000400	0	93.5	20	200	0	0	
Benzo[b]fluoranthene	0.0000424	0.0000500	0.0000400	0	106	20	200	0	0	
Benzo[e]pyrene	0.0000397	0.0000500	0.0000400	0	99.2	20	200	0	0	
Benzo[g,h,i]perylene	0.0000390	0.0000500	0.0000400	0	97.6	20	200	0	0	
Benzo[j]fluoranthene	0.0000376	0.0000500	0.0000400	0	94.1	20	200	0	0	N
Benzo[k]fluoranthene	0.0000372	0.0000500	0.0000400	0	93.1	20	200	0	0	
Chrysene	0.0000422	0.0000500	0.0000400	0	106	20	200	0	0	
Dibenz[a,h]anthracene	0.0000392	0.0000500	0.0000400	0	98.1	20	200	0	0	
Fluoranthene	0.0000423	0.0000500	0.0000400	0	106	20	200	0	0	
Fluorene	0.0000399	0.0000500	0.0000400	0	99.8	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0000381	0.0000500	0.0000400	0	95.2	20	200	0	0	
Phenanthrene	0.0000417	0.0000500	0.0000400	0	104	20	200	0	0	
Pyrene	0.0000417	0.0000500	0.0000400	0	104	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111A

The QC data in batch 77851 applies to the following samples: 1611071-36B

Sample ID **LCS-77851** Batch ID: **77851** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS6_161111A** Analysis Date: **11/11/2016 9:04:00 AM** Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00274	0.0000500	0.00400	0	68.4	48	114			
Acenaphthylene	0.00288	0.0000500	0.00400	0	72.0	35	121			
Anthracene	0.00290	0.0000500	0.00400	0	72.6	53	119			
Benzo[a]anthracene	0.00342	0.0000500	0.00400	0	85.6	59	120			
Benzo[a]pyrene	0.00321	0.0000500	0.00400	0	80.2	53	120			
Benzo[b]fluoranthene	0.00307	0.0000500	0.00400	0	76.8	53	126			
Benzo[e]pyrene	0.00326	0.0000500	0.00400	0	81.4	40	140			
Benzo[g,h,i]perylene	0.00330	0.0000500	0.00400	0	82.5	44	128			
Benzo[j]fluoranthene	0.00290	0.0000500	0.00400	0	72.4	45	124			N
Benzo[k]fluoranthene	0.00337	0.0000500	0.00400	0	84.2	54	125			
Chrysene	0.00342	0.0000500	0.00400	0	85.6	57	120			
Dibenz[a,h]anthracene	0.00332	0.0000500	0.00400	0	82.9	44	131			
Fluoranthene	0.00339	0.0000500	0.00400	0	84.7	58	120			
Fluorene	0.00295	0.0000500	0.00400	0	73.7	50	118			
Indeno[1,2,3-cd]pyrene	0.00331	0.0000500	0.00400	0	82.7	48	130			
Phenanthrene	0.00301	0.0000500	0.00400	0	75.3	53	115			
Pyrene	0.00329	0.0000500	0.00400	0	82.4	53	121			
IS: Acenaphthene-d10	0.00800		0.00800		89.3	50	200			
IS: Chrysene-d12	0.00800		0.00800		94.9	50	200			
IS: Naphthalene-d8	0.00800		0.00800		93.1	50	200			
IS: Perylene-d12	0.00800		0.00800		104	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		90.5	50	200			
Surr: 2-Fluorobiphenyl	4.80		8.000		60.0	53	106			
Surr: 4-Terphenyl-d14	6.28		8.000		78.6	58	132			

Sample ID **MB-77851** Batch ID: **77851** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS6_161111A** Analysis Date: **11/11/2016 9:32:00 AM** Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.0000400	0.0000500								U
Acenaphthylene	0.0000400	0.0000500								U
Anthracene	0.0000400	0.0000500								U
Benzo[a]anthracene	0.0000400	0.0000500								U
Benzo[a]pyrene	0.0000400	0.0000500								U
Benzo[b]fluoranthene	0.0000400	0.0000500								U
Benzo[e]pyrene	0.0000400	0.0000500								U
Benzo[g,h,i]perylene	0.0000400	0.0000500								U
Benzo[j]fluoranthene	0.0000400	0.0000500								NU
Benzo[k]fluoranthene	0.0000400	0.0000500								U
Chrysene	0.0000400	0.0000500								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111A

Sample ID **MB-77851** Batch ID: **77851** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS6_161111A** Analysis Date: **11/11/2016 9:32:00 AM** Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.0000400	0.0000500								U
Fluoranthene	0.0000400	0.0000500								U
Fluorene	0.0000400	0.0000500								U
Indeno[1,2,3-cd]pyrene	0.0000400	0.0000500								U
Phenanthrene	0.0000400	0.0000500								U
Pyrene	0.0000400	0.0000500								U
IS: Acenaphthene-d10	0.00800		0.00800		94.7	50	200			
IS: Chrysene-d12	0.00800		0.00800		101	50	200			
IS: Naphthalene-d8	0.00800		0.00800		97.9	50	200			
IS: Perylene-d12	0.00800		0.00800		109	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		94.7	50	200			
Surr: 2-Fluorobiphenyl	4.95		8.000		61.8	53	106			
Surr: 4-Terphenyl-d14	6.14		8.000		76.7	58	132			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111A

Sample ID **ICV-161111** Batch ID: **R88948** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **ICV** Run ID: **GCMS6_161111A** Analysis Date: **11/11/2016 8:36:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.17	0.0000500	2.00	0	108	80	120			
Acenaphthylene	2.23	0.0000500	2.00	0	112	80	120			
Anthracene	2.12	0.0000500	2.00	0	106	80	120			
Benzo[a]anthracene	2.14	0.0000500	2.00	0	107	80	120			
Benzo[a]pyrene	1.99	0.0000500	2.00	0	99.4	80	120			
Benzo[b]fluoranthene	1.90	0.0000500	2.00	0	94.9	80	120			
Benzo[e]pyrene	2.03	0.0000500	2.00	0	101	80	120			
Benzo[g,h,i]perylene	2.06	0.0000500	2.00	0	103	80	120			
Benzo[j]fluoranthene	1.94	0.0000500	2.00	0	97.1	80	120			N
Benzo[k]fluoranthene	2.08	0.0000500	2.00	0	104	80	120			
Chrysene	2.14	0.0000500	2.00	0	107	80	120			
Dibenz[a,h]anthracene	2.05	0.0000500	2.00	0	103	80	120			
Fluoranthene	2.18	0.0000500	2.00	0	109	80	120			
Fluorene	2.19	0.0000500	2.00	0	109	80	120			
Indeno[1,2,3-cd]pyrene	2.06	0.0000500	2.00	0	103	80	120			
Phenanthrene	2.12	0.0000500	2.00	0	106	80	120			
Pyrene	2.12	0.0000500	2.00	0	106	80	120			
IS: Acenaphthene-d10	4.00		4.00		90.9	50	200			
IS: Chrysene-d12	4.00		4.00		96.7	50	200			
IS: Naphthalene-d8	4.00		4.00		96.7	50	200			
IS: Perylene-d12	4.00		4.00		108	50	200			
IS: Phenanthrene-d10	4.00		4.00		92.1	50	200			
Surr: 2-Fluorobiphenyl	2310		2000		115	65	120			
Surr: 4-Terphenyl-d14	2320		2000		116	65	120			

Sample ID **CCV1-161111** Batch ID: **R88948** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **CCV** Run ID: **GCMS6_161111A** Analysis Date: **11/11/2016 10:28:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.06	0.0000500	1.00	0	106	50	150			
Acenaphthylene	1.09	0.0000500	1.00	0	109	50	150			
Anthracene	1.05	0.0000500	1.00	0	105	50	150			
Benzo[a]anthracene	1.05	0.0000500	1.00	0	105	50	150			
Benzo[a]pyrene	0.985	0.0000500	1.00	0	98.5	50	150			
Benzo[b]fluoranthene	0.961	0.0000500	1.00	0	96.1	50	150			
Benzo[e]pyrene	0.991	0.0000500	1.00	0	99.1	50	150			
Benzo[g,h,i]perylene	1.01	0.0000500	1.00	0	101	50	150			
Benzo[j]fluoranthene	0.999	0.0000500	1.00	0	99.9	50	150			N
Benzo[k]fluoranthene	0.989	0.0000500	1.00	0	98.9	50	150			
Chrysene	1.06	0.0000500	1.00	0	106	50	150			
Dibenz[a,h]anthracene	1.01	0.0000500	1.00	0	101	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111A

Sample ID **CCV1-161111** Batch ID: **R88948** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **CCV** Run ID: **GCMS6_161111A** Analysis Date: **11/11/2016 10:28:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.09	0.0000500	1.00	0	109	50	150			
Fluorene	1.09	0.0000500	1.00	0	109	50	150			
Indeno[1,2,3-cd]pyrene	1.03	0.0000500	1.00	0	103	50	150			
Phenanthrene	1.05	0.0000500	1.00	0	105	50	150			
Pyrene	1.06	0.0000500	1.00	0	106	50	150			
IS: Acenaphthene-d10	4.00		4.00		97.9	50	200			
IS: Chrysene-d12	4.00		4.00		106	50	200			
IS: Naphthalene-d8	4.00		4.00		103	50	200			
IS: Perylene-d12	4.00		4.00		117	50	200			
IS: Phenanthrene-d10	4.00		4.00		98.8	50	200			
Surr: 2-Fluorobiphenyl	1120		2000		56.2	50	150			
Surr: 4-Terphenyl-d14	1160		2000		58.2	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

The QC data in batch 77875 applies to the following samples: 1611071-01A, 1611071-04A, 1611071-08A, 1611071-11A, 1611071-16A, 1611071-21A

Sample ID **LCS-77875** Batch ID: **77875** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161111C** Analysis Date: **11/11/2016 5:13:00 PM** Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.953	0.0100	1.000	0	95.3	44	111			
Acenaphthylene	0.976	0.0100	1.000	0	97.6	39	116			
Anthracene	0.916	0.0100	1.000	0	91.6	50	114			
Benzo[a]anthracene	0.980	0.0100	1.000	0	98.0	54	122			
Benzo[a]pyrene	0.891	0.0100	1.000	0	89.1	50	125			
Benzo[b]fluoranthene	0.935	0.0100	1.000	0	93.5	53	128			
Benzo[e]pyrene	0.951	0.0100	1.000	0	95.1	43	140			
Benzo[g,h,i]perylene	0.981	0.0100	1.000	0	98.1	49	127			
Benzo[j]fluoranthene	0.892	0.0100	1.000	0	89.2	45	125			N
Benzo[k]fluoranthene	0.922	0.0100	1.000	0	92.2	56	123			
Chrysene	1.01	0.0100	1.000	0	101	57	118			
Dibenz[a,h]anthracene	0.970	0.0100	1.000	0	97.0	50	129			
Fluoranthene	1.04	0.0100	1.000	0	104	55	119			
Fluorene	1.01	0.0100	1.000	0	101	47	114			
Indeno[1,2,3-cd]pyrene	0.987	0.0100	1.000	0	98.7	49	130			
Phenanthrene	0.991	0.0100	1.000	0	99.1	49	113			
Pyrene	1.02	0.0100	1.000	0	102	55	117			
IS: Acenaphthene-d10	4.00		4.000		91.4	50	200			
IS: Chrysene-d12	4.00		4.000		98.7	50	200			
IS: Naphthalene-d8	4.00		4.000		98.2	50	200			
IS: Perylene-d12	4.00		4.000		110	50	200			
IS: Phenanthrene-d10	4.00		4.000		92.3	50	200			
Surr: 2-Fluorobiphenyl	0.902		1.000		90.2	46	115			
Surr: 4-Terphenyl-d14	0.981		1.000		98.1	58	133			

Sample ID **MB-77875** Batch ID: **77875** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161111C** Analysis Date: **11/11/2016 5:41:00 PM** Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **MB-77875**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_161111C**	Analysis Date: **11/11/2016 5:41:00 PM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		85.8	50	200			
IS: Chrysene-d12	4.00		4.000		93.1	50	200			
IS: Naphthalene-d8	4.00		4.000		92.1	50	200			
IS: Perylene-d12	4.00		4.000		103	50	200			
IS: Phenanthrene-d10	4.00		4.000		86.6	50	200			
Surr: 2-Fluorobiphenyl	0.934		1.000		93.4	46	115			
Surr: 4-Terphenyl-d14	1.05		1.000		105	58	133			

Sample ID **1611071-16AMS**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:01:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.15	0.104	1.039	0	110	44	111			
Acenaphthylene	1.16	0.104	1.039	0	112	39	116			
Anthracene	1.16	0.104	1.039	0	112	50	114			
Benzo[a]anthracene	1.33	0.104	1.039	0.08309	120	54	122			
Benzo[a]pyrene	1.28	0.104	1.039	0.1136	112	50	125			
Benzo[b]fluoranthene	1.33	0.104	1.039	0.1160	117	53	128			
Benzo[e]pyrene	1.26	0.104	1.039	0.09519	112	43	140			
Benzo[g,h,i]perylene	1.27	0.104	1.039	0.09686	113	49	127			
Benzo[j]fluoranthene	1.12	0.104	1.039	0.05339	103	45	125			N
Benzo[k]fluoranthene	1.13	0.104	1.039	0.06146	103	56	123			
Chrysene	1.35	0.104	1.039	0.1026	120	57	118			S
Dibenz[a,h]anthracene	1.18	0.104	1.039	0	113	50	129			
Fluoranthene	1.64	0.104	1.039	0.1461	143	55	119			S
Fluorene	1.19	0.104	1.039	0	115	47	114			S
Indeno[1,2,3-cd]pyrene	1.29	0.104	1.039	0.09420	115	49	130			
Phenanthrene	1.35	0.104	1.039	0	130	49	113			S
Pyrene	1.56	0.104	1.039	0.1359	137	55	117			S
IS: Acenaphthene-d10	41.6		4.156		81.2	50	200			
IS: Chrysene-d12	41.6		4.156		88.1	50	200			
IS: Naphthalene-d8	41.6		4.156		88.2	50	200			
IS: Perylene-d12	41.6		4.156		97.5	50	200			
IS: Phenanthrene-d10	41.6		4.156		80.9	50	200			
Surr: 2-Fluorobiphenyl	1.05		1.039		101	46	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **1611071-16AMS**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:01:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	1.16		1.039		111	58	133			

Sample ID **1611071-16AMSD**	Batch ID: **77875**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:29:00 AM**	Prep Date: **11/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.09	0.0995	0.9945	0	109	44	111	5.35	20	
Acenaphthylene	1.10	0.0995	0.9945	0	111	39	116	5.54	20	
Anthracene	1.07	0.0995	0.9945	0	107	50	114	8.24	20	
Benzo[a]anthracene	1.17	0.0995	0.9945	0.08309	110	54	122	12.5	20	
Benzo[a]pyrene	1.16	0.0995	0.9945	0.1136	105	50	125	9.97	20	
Benzo[b]fluoranthene	1.25	0.0995	0.9945	0.1160	114	53	128	6.13	20	
Benzo[e]pyrene	1.16	0.0995	0.9945	0.09519	107	43	140	8.28	20	
Benzo[g,h,i]perylene	1.18	0.0995	0.9945	0.09686	109	49	127	7.55	20	
Benzo[j]fluoranthene	1.04	0.0995	0.9945	0.05339	98.9	45	125	7.75	20	N
Benzo[k]fluoranthene	1.03	0.0995	0.9945	0.06146	97.2	56	123	9.67	20	
Chrysene	1.19	0.0995	0.9945	0.1026	110	57	118	12.2	20	
Dibenz[a,h]anthracene	1.12	0.0995	0.9945	0	112	50	129	5.41	20	
Fluoranthene	1.33	0.0995	0.9945	0.1461	119	55	119	20.6	20	R
Fluorene	1.13	0.0995	0.9945	0	114	47	114	5.07	20	
Indeno[1,2,3-cd]pyrene	1.20	0.0995	0.9945	0.09420	112	49	130	7.12	20	
Phenanthrene	1.16	0.0995	0.9945	0	116	49	113	15.1	20	S
Pyrene	1.31	0.0995	0.9945	0.1359	118	55	117	17.4	20	S
IS: Acenaphthene-d10	39.8		3.978		82.3	50	200	0	0	
IS: Chrysene-d12	39.8		3.978		88.6	50	200	0	0	
IS: Naphthalene-d8	39.8		3.978		88.0	50	200	0	0	
IS: Perylene-d12	39.8		3.978		97.7	50	200	0	0	
IS: Phenanthrene-d10	39.8		3.978		81.3	50	200	0	0	
Surr: 2-Fluorobiphenyl	1.00		0.9945		101	46	115	0	0	
Surr: 4-Terphenyl-d14	1.11		0.9945		112	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **ICV-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/11/2016 3:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.17	0.0100	2.000	0	108	80	120			
Acenaphthylene	2.22	0.0100	2.000	0	111	80	120			
Anthracene	2.10	0.0100	2.000	0	105	80	120			
Benzo[a]anthracene	2.13	0.0100	2.000	0	106	80	120			
Benzo[a]pyrene	2.00	0.0100	2.000	0	100	80	120			
Benzo[b]fluoranthene	2.14	0.0100	2.000	0	107	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	101	80	120			
Benzo[g,h,i]perylene	2.08	0.0100	2.000	0	104	80	120			
Benzo[j]fluoranthene	1.97	0.0100	2.000	0	98.4	80	120			N
Benzo[k]fluoranthene	1.83	0.0100	2.000	0	91.7	80	120			
Chrysene	2.11	0.0100	2.000	0	106	80	120			
Dibenz[a,h]anthracene	2.09	0.0100	2.000	0	104	80	120			
Fluoranthene	2.19	0.0100	2.000	0	109	80	120			
Fluorene	2.22	0.0100	2.000	0	111	80	120			
Indeno[1,2,3-cd]pyrene	2.10	0.0100	2.000	0	105	80	120			
Phenanthrene	2.13	0.0100	2.000	0	107	80	120			
Pyrene	2.14	0.0100	2.000	0	107	80	120			
IS: Acenaphthene-d10	4.00		4.000		92.1	50	200			
IS: Chrysene-d12	4.00		4.000		100	50	200			
IS: Naphthalene-d8	4.00		4.000		94.6	50	200			
IS: Perylene-d12	4.00		4.000		111	50	200			
IS: Phenanthrene-d10	4.00		4.000		93.7	50	200			
Surr: 2-Fluorobiphenyl	2.30		2.000		115	65	120			
Surr: 4-Terphenyl-d14	2.33		2.000		117	65	120			

Sample ID **CCV1-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.05	0.0100	1.000	0	105	50	150			
Acenaphthylene	1.08	0.0100	1.000	0	108	50	150			
Anthracene	1.04	0.0100	1.000	0	104	50	150			
Benzo[a]anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]pyrene	0.979	0.0100	1.000	0	97.9	50	150			
Benzo[b]fluoranthene	1.04	0.0100	1.000	0	104	50	150			
Benzo[e]pyrene	0.991	0.0100	1.000	0	99.1	50	150			
Benzo[g,h,i]perylene	1.01	0.0100	1.000	0	101	50	150			
Benzo[j]fluoranthene	0.964	0.0100	1.000	0	96.4	50	150			N
Benzo[k]fluoranthene	0.915	0.0100	1.000	0	91.5	50	150			
Chrysene	1.04	0.0100	1.000	0	104	50	150			
Dibenz[a,h]anthracene	1.01	0.0100	1.000	0	101	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161111C

Sample ID **CCV1-161111**	Batch ID: **R88956**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161111C**	Analysis Date: **11/12/2016 3:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.08	0.0100	1.000	0	108	50	150			
Fluorene	1.08	0.0100	1.000	0	108	50	150			
Indeno[1,2,3-cd]pyrene	1.02	0.0100	1.000	0	102	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.06	0.0100	1.000	0	106	50	150			
IS: Acenaphthene-d10	4.00		4.000		92.0	50	200			
IS: Chrysene-d12	4.00		4.000		98.4	50	200			
IS: Naphthalene-d8	4.00		4.000		98.2	50	200			
IS: Perylene-d12	4.00		4.000		109	50	200			
IS: Phenanthrene-d10	4.00		4.000		91.5	50	200			
Surr: 2-Fluorobiphenyl	1.13		1.000		113	50	150			
Surr: 4-Terphenyl-d14	1.17		1.000		117	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161115A

The QC data in batch 77919 applies to the following samples: 1611071-24A, 1611071-25A, 1611071-26A, 1611071-27A, 1611071-28A, 1611071-29A, 1611071-30A, 1611071-31A, 1611071-32A, 1611071-33A, 1611071-34A, 1611071-35A

Sample ID **LCS-77919** Batch ID: **77919** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161115A** Analysis Date: **11/15/2016 3:33:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.00	0.0100	1.000	0	100	44	111			
Acenaphthylene	1.02	0.0100	1.000	0	102	39	116			
Anthracene	0.978	0.0100	1.000	0	97.8	50	114			
Benzo[a]anthracene	1.08	0.0100	1.000	0	108	54	122			
Benzo[a]pyrene	0.984	0.0100	1.000	0	98.4	50	125			
Benzo[b]fluoranthene	1.13	0.0100	1.000	0	113	53	128			
Benzo[e]pyrene	1.06	0.0100	1.000	0	106	43	140			
Benzo[g,h,i]perylene	1.07	0.0100	1.000	0	107	49	127			
Benzo[j]fluoranthene	0.955	0.0100	1.000	0	95.5	45	125			N
Benzo[k]fluoranthene	0.942	0.0100	1.000	0	94.2	56	123			
Chrysene	1.10	0.0100	1.000	0	110	57	118			
Dibenz[a,h]anthracene	1.06	0.0100	1.000	0	106	50	129			
Fluoranthene	1.10	0.0100	1.000	0	110	55	119			
Fluorene	1.05	0.0100	1.000	0	105	47	114			
Indeno[1,2,3-cd]pyrene	1.09	0.0100	1.000	0	109	49	130			
Phenanthrene	1.05	0.0100	1.000	0	105	49	113			
Pyrene	1.09	0.0100	1.000	0	109	55	117			
IS: Acenaphthene-d10	4.00		4.000		82.0	50	200			
IS: Chrysene-d12	4.00		4.000		86.0	50	200			
IS: Naphthalene-d8	4.00		4.000		89.6	50	200			
IS: Perylene-d12	4.00		4.000		94.7	50	200			
IS: Phenanthrene-d10	4.00		4.000		81.1	50	200			
Surr: 2-Fluorobiphenyl	0.908		1.000		90.8	46	115			
Surr: 4-Terphenyl-d14	0.996		1.000		99.6	58	133			

Sample ID **MB-77919** Batch ID: **77919** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161115A** Analysis Date: **11/15/2016 4:02:00 PM** Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161115A

Sample ID **MB-77919**	Batch ID: **77919**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 4:02:00 PM**	Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	0.00750	0.0100								U
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		79.8	50	200			
IS: Chrysene-d12	4.00		4.000		85.9	50	200			
IS: Naphthalene-d8	4.00		4.000		86.9	50	200			
IS: Perylene-d12	4.00		4.000		93.4	50	200			
IS: Phenanthrene-d10	4.00		4.000		80.2	50	200			
Surr: 2-Fluorobiphenyl	0.924		1.000		92.4	46	115			
Surr: 4-Terphenyl-d14	1.01		1.000		101	58	133			

Sample ID **1611071-27AMS**	Batch ID: **77919**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 10:07:00 P**	Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.954	0.0957	0.9569	0.1630	82.6	44	111			
Acenaphthylene	0.984	0.0957	0.9569	0	103	39	116			
Anthracene	1.00	0.0957	0.9569	0	105	50	114			
Benzo[a]anthracene	1.14	0.0957	0.9569	0.1527	104	54	122			
Benzo[a]pyrene	1.13	0.0957	0.9569	0.1928	97.9	50	125			
Benzo[b]fluoranthene	1.11	0.0957	0.9569	0.1999	94.8	53	128			
Benzo[e]pyrene	1.12	0.0957	0.9569	0.1645	100	43	140			
Benzo[g,h,i]perylene	1.11	0.0957	0.9569	0.1672	98.9	49	127			
Benzo[j]fluoranthene	0.979	0.0957	0.9569	0.09624	92.2	45	125			N
Benzo[k]fluoranthene	1.12	0.0957	0.9569	0.2169	94.9	56	123			
Chrysene	1.17	0.0957	0.9569	0.1760	104	57	118			
Dibenz[a,h]anthracene	1.01	0.0957	0.9569	0	105	50	129			
Fluoranthene	1.37	0.0957	0.9569	0.2690	115	55	119			
Fluorene	1.05	0.0957	0.9569	0	110	47	114			
Indeno[1,2,3-cd]pyrene	1.14	0.0957	0.9569	0.1652	102	49	130			
Phenanthrene	1.10	0.0957	0.9569	0.09971	105	49	113			
Pyrene	1.34	0.0957	0.9569	0.2456	114	55	117			
IS: Acenaphthene-d10	38.3		3.828		87.8	50	200			
IS: Chrysene-d12	38.3		3.828		101	50	200			
IS: Naphthalene-d8	38.3		3.828		94.6	50	200			
IS: Perylene-d12	38.3		3.828		106	50	200			
IS: Phenanthrene-d10	38.3		3.828		91.3	50	200			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161115A

Sample ID **1611071-27AMS**	Batch ID: **77919**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 10:07:00 P**	Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	0.930		0.9569		97.2	46	115			
Surr: 4-Terphenyl-d14	1.08		0.9569		113	58	133			

Sample ID **1611071-27AMSD**	Batch ID: **77919**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 10:35:00 P**	Prep Date: **11/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.979	0.0952	0.9524	0.1630	85.6	44	111	2.57	20	
Acenaphthylene	0.998	0.0952	0.9524	0	105	39	116	1.42	20	
Anthracene	1.01	0.0952	0.9524	0	106	50	114	0.898	20	
Benzo[a]anthracene	1.16	0.0952	0.9524	0.1527	106	54	122	1.37	20	
Benzo[a]pyrene	1.16	0.0952	0.9524	0.1928	101	50	125	2.22	20	
Benzo[b]fluoranthene	1.17	0.0952	0.9524	0.1999	102	53	128	5.96	20	
Benzo[e]pyrene	1.16	0.0952	0.9524	0.1645	104	43	140	3.13	20	
Benzo[g,h,i]perylene	1.15	0.0952	0.9524	0.1672	103	49	127	3.11	20	
Benzo[j]fluoranthene	1.06	0.0952	0.9524	0.09624	101	45	125	7.84	20	N
Benzo[k]fluoranthene	1.08	0.0952	0.9524	0.2169	90.6	56	123	4.09	20	
Chrysene	1.19	0.0952	0.9524	0.1760	106	57	118	1.54	20	
Dibenz[a,h]anthracene	1.05	0.0952	0.9524	0	110	50	129	4.00	20	
Fluoranthene	1.33	0.0952	0.9524	0.2690	112	55	119	2.67	20	
Fluorene	1.06	0.0952	0.9524	0	111	47	114	0.763	20	
Indeno[1,2,3-cd]pyrene	1.16	0.0952	0.9524	0.1652	104	49	130	1.69	20	
Phenanthrene	1.09	0.0952	0.9524	0.09971	104	49	113	0.790	20	
Pyrene	1.31	0.0952	0.9524	0.2456	112	55	117	1.91	20	
IS: Acenaphthene-d10	38.1		3.810		86.6	50	200	0	0	
IS: Chrysene-d12	38.1		3.810		96.9	50	200	0	0	
IS: Naphthalene-d8	38.1		3.810		93.4	50	200	0	0	
IS: Perylene-d12	38.1		3.810		101	50	200	0	0	
IS: Phenanthrene-d10	38.1		3.810		89.3	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.950		0.9524		99.7	46	115	0	0	
Surr: 4-Terphenyl-d14	1.14		0.9524		120	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161115A

Sample ID **ICV-161115**	Batch ID: **R88997**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.18	0.0100	2.000	0	109	80	120			
Acenaphthylene	2.25	0.0100	2.000	0	112	80	120			
Anthracene	2.11	0.0100	2.000	0	105	80	120			
Benzo[a]anthracene	2.15	0.0100	2.000	0	107	80	120			
Benzo[a]pyrene	2.02	0.0100	2.000	0	101	80	120			
Benzo[b]fluoranthene	2.11	0.0100	2.000	0	105	80	120			
Benzo[e]pyrene	2.04	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.09	0.0100	2.000	0	105	80	120			
Benzo[j]fluoranthene	2.00	0.0100	2.000	0	100	80	120			N
Benzo[k]fluoranthene	1.89	0.0100	2.000	0	94.3	80	120			
Chrysene	2.13	0.0100	2.000	0	107	80	120			
Dibenz[a,h]anthracene	2.08	0.0100	2.000	0	104	80	120			
Fluoranthene	2.19	0.0100	2.000	0	110	80	120			
Fluorene	2.21	0.0100	2.000	0	111	80	120			
Indeno[1,2,3-cd]pyrene	2.11	0.0100	2.000	0	105	80	120			
Phenanthrene	2.14	0.0100	2.000	0	107	80	120			
Pyrene	2.13	0.0100	2.000	0	107	80	120			
IS: Acenaphthene-d10	4.00		4.000		83.8	50	200			
IS: Chrysene-d12	4.00		4.000		88.9	50	200			
IS: Naphthalene-d8	4.00		4.000		92.0	50	200			
IS: Perylene-d12	4.00		4.000		99.1	50	200			
IS: Phenanthrene-d10	4.00		4.000		84.4	50	200			
Surr: 2-Fluorobiphenyl	2.32		2.000		116	65	120			
Surr: 4-Terphenyl-d14	2.28		2.000		114	65	120			

Sample ID **CCV1-161115**	Batch ID: **R88997**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 11:03:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.07	0.0100	1.000	0	107	50	150			
Acenaphthylene	1.10	0.0100	1.000	0	110	50	150			
Anthracene	1.04	0.0100	1.000	0	104	50	150			
Benzo[a]anthracene	1.05	0.0100	1.000	0	105	50	150			
Benzo[a]pyrene	0.986	0.0100	1.000	0	98.6	50	150			
Benzo[b]fluoranthene	0.956	0.0100	1.000	0	95.6	50	150			
Benzo[e]pyrene	0.995	0.0100	1.000	0	99.5	50	150			
Benzo[g,h,i]perylene	1.01	0.0100	1.000	0	101	50	150			
Benzo[j]fluoranthene	0.991	0.0100	1.000	0	99.1	50	150			N
Benzo[k]fluoranthene	0.980	0.0100	1.000	0	98.0	50	150			
Chrysene	1.05	0.0100	1.000	0	105	50	150			
Dibenz[a,h]anthracene	0.999	0.0100	1.000	0	99.9	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161115A

Sample ID **CCV1-161115**	Batch ID: **R88997**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161115A**	Analysis Date: **11/15/2016 11:03:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.08	0.0100	1.000	0	108	50	150			
Fluorene	1.10	0.0100	1.000	0	110	50	150			
Indeno[1,2,3-cd]pyrene	1.02	0.0100	1.000	0	102	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.07	0.0100	1.000	0	107	50	150			
IS: Acenaphthene-d10	4.00		4.000		96.7	50	200			
IS: Chrysene-d12	4.00		4.000		102	50	200			
IS: Naphthalene-d8	4.00		4.000		106	50	200			
IS: Perylene-d12	4.00		4.000		114	50	200			
IS: Phenanthrene-d10	4.00		4.000		96.4	50	200			
Surr: 2-Fluorobiphenyl	1.15		1.000		115	50	150			
Surr: 4-Terphenyl-d14	1.15		1.000		115	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161116A

The QC data in batch 77919 applies to the following samples: 1611071-24A, 1611071-25A, 1611071-26A, 1611071-27A, 1611071-28A, 1611071-29A, 1611071-30A, 1611071-31A, 1611071-32A, 1611071-33A, 1611071-34A, 1611071-35A

Sample ID **SB-161116** Batch ID: **77919** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **SBLK** Run ID: **GCMS6_161116A** Analysis Date: **11/16/2016 2:23:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100	0							U
Acenaphthylene	0.00750	0.0100	0							U
Anthracene	0.00750	0.0100	0							U
Benzo[a]anthracene	0.00750	0.0100	0							U
Benzo[a]pyrene	0.00750	0.0100	0							U
Benzo[b]fluoranthene	0.00750	0.0100	0							U
Benzo[e]pyrene	0.00750	0.0100	0							U
Benzo[g,h,i]perylene	0.00750	0.0100	0							U
Benzo[j]fluoranthene	0.00750	0.0100	0							NU
Benzo[k]fluoranthene	0.00750	0.0100	0							U
Chrysene	0.00750	0.0100	0							U
Dibenz[a,h]anthracene	0.00750	0.0100	0							U
Fluoranthene	0.00750	0.0100	0							U
Fluorene	0.00750	0.0100	0							U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100	0							U
Phenanthrene	0.00750	0.0100	0							U
Pyrene	0.00750	0.0100	0							U
IS: Acenaphthene-d10	4.00		0							
IS: Chrysene-d12	4.00		0							
IS: Naphthalene-d8	4.00		0							
IS: Perylene-d12	4.00		0							
IS: Phenanthrene-d10	4.00		0							

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161116A

Sample ID **ICV-161116**	Batch ID: **R89024**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161116A**	Analysis Date: **11/16/2016 1:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.00	0.0100	2.000	0	100	80	120			
Acenaphthylene	2.03	0.0100	2.000	0	102	80	120			
Anthracene	2.02	0.0100	2.000	0	101	80	120			
Benzo[a]anthracene	2.23	0.0100	2.000	0	111	80	120			
Benzo[a]pyrene	2.17	0.0100	2.000	0	108	80	120			
Benzo[b]fluoranthene	2.09	0.0100	2.000	0	104	80	120			
Benzo[e]pyrene	2.20	0.0100	2.000	0	110	80	120			
Benzo[g,h,i]perylene	2.13	0.0100	2.000	0	106	80	120			
Benzo[j]fluoranthene	2.15	0.0100	2.000	0	108	80	120			N
Benzo[k]fluoranthene	2.30	0.0100	2.000	0	115	80	120			
Chrysene	2.23	0.0100	2.000	0	112	80	120			
Dibenz[a,h]anthracene	2.08	0.0100	2.000	0	104	80	120			
Fluoranthene	2.07	0.0100	2.000	0	103	80	120			
Fluorene	2.05	0.0100	2.000	0	103	80	120			
Indeno[1,2,3-cd]pyrene	2.13	0.0100	2.000	0	106	80	120			
Phenanthrene	2.03	0.0100	2.000	0	102	80	120			
Pyrene	2.02	0.0100	2.000	0	101	80	120			
IS: Acenaphthene-d10	4.00		4.000		106	50	200			
IS: Chrysene-d12	4.00		4.000		97.5	50	200			
IS: Naphthalene-d8	4.00		4.000		107	50	200			
IS: Perylene-d12	4.00		4.000		98.4	50	200			
IS: Phenanthrene-d10	4.00		4.000		104	50	200			
Surr: 2-Fluorobiphenyl	2.09		2.000		105	65	120			
Surr: 4-Terphenyl-d14	1.97		2.000		98.3	65	120			

Sample ID **CCV1-161116**	Batch ID: **R89024**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161116A**	Analysis Date: **11/16/2016 5:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.03	0.0100	1.000	0	103	50	150			
Acenaphthylene	1.05	0.0100	1.000	0	105	50	150			
Anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]anthracene	1.14	0.0100	1.000	0	114	50	150			
Benzo[a]pyrene	1.12	0.0100	1.000	0	112	50	150			
Benzo[b]fluoranthene	1.22	0.0100	1.000	0	122	50	150			
Benzo[e]pyrene	1.14	0.0100	1.000	0	114	50	150			
Benzo[g,h,i]perylene	1.08	0.0100	1.000	0	108	50	150			
Benzo[j]fluoranthene	1.11	0.0100	1.000	0	111	50	150			N
Benzo[k]fluoranthene	1.03	0.0100	1.000	0	103	50	150			
Chrysene	1.15	0.0100	1.000	0	115	50	150			
Dibenz[a,h]anthracene	1.10	0.0100	1.000	0	110	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161116A

Sample ID **CCV1-161116**	Batch ID: **R89024**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161116A**	Analysis Date: **11/16/2016 5:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.06	0.0100	1.000	0	106	50	150			
Fluorene	1.07	0.0100	1.000	0	107	50	150			
Indeno[1,2,3-cd]pyrene	1.09	0.0100	1.000	0	109	50	150			
Phenanthrene	1.04	0.0100	1.000	0	104	50	150			
Pyrene	1.04	0.0100	1.000	0	104	50	150			
IS: Acenaphthene-d10	4.00		4.000		104	50	200			
IS: Chrysene-d12	4.00		4.000		96.9	50	200			
IS: Naphthalene-d8	4.00		4.000		110	50	200			
IS: Perylene-d12	4.00		4.000		97.8	50	200			
IS: Phenanthrene-d10	4.00		4.000		103	50	200			
Surr: 2-Fluorobiphenyl	1.09		1.000		109	50	150			
Surr: 4-Terphenyl-d14	1.03		1.000		103	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

The QC data in batch 78027 applies to the following samples: 1611071-02A, 1611071-05A, 1611071-12A, 1611071-22A

Sample ID **LCS-78027** Batch ID: **78027** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161130A** Analysis Date: **11/30/2016 4:12:00 PM** Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.860	0.0100	1.000	0	86.0	44	111			
Acenaphthylene	0.877	0.0100	1.000	0	87.7	39	116			
Anthracene	0.905	0.0100	1.000	0	90.5	50	114			
Benzo[a]anthracene	1.01	0.0100	1.000	0	101	54	122			
Benzo[a]pyrene	0.964	0.0100	1.000	0	96.4	50	125			
Benzo[b]fluoranthene	1.05	0.0100	1.000	0	105	53	128			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	43	140			
Benzo[g,h,i]perylene	0.960	0.0100	1.000	0	96.0	49	127			
Benzo[j]fluoranthene	1.01	0.0100	1.000	0	101	45	125			N
Benzo[k]fluoranthene	0.969	0.0100	1.000	0	96.9	56	123			
Chrysene	1.02	0.0100	1.000	0	102	57	118			
Dibenz[a,h]anthracene	0.958	0.0100	1.000	0	95.8	50	129			
Fluoranthene	0.964	0.0100	1.000	0	96.4	55	119			
Fluorene	0.912	0.0100	1.000	0	91.2	47	114			
Indeno[1,2,3-cd]pyrene	0.968	0.0100	1.000	0	96.8	49	130			
Phenanthrene	0.932	0.0100	1.000	0	93.2	49	113			
Pyrene	0.937	0.0100	1.000	0	93.7	55	117			
IS: Acenaphthene-d10	4.00		4.000		112	50	200			
IS: Chrysene-d12	4.00		4.000		98.4	50	200			
IS: Naphthalene-d8	4.00		4.000		118	50	200			
IS: Perylene-d12	4.00		4.000		94.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		107	50	200			
Surr: 2-Fluorobiphenyl	0.813		1.000		81.3	46	115			
Surr: 4-Terphenyl-d14	0.761		1.000		76.1	58	133			

Sample ID **MB-78027** Batch ID: **78027** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161130A** Analysis Date: **11/30/2016 4:40:00 PM** Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **MB-78027**	Batch ID: **78027**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 4:40:00 PM**	Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		113	50	200			
IS: Chrysene-d12	4.00		4.000		99.9	50	200			
IS: Naphthalene-d8	4.00		4.000		119	50	200			
IS: Perylene-d12	4.00		4.000		96.2	50	200			
IS: Phenanthrene-d10	4.00		4.000		109	50	200			
Surr: 2-Fluorobiphenyl	0.796		1.000		79.6	46	115			
Surr: 4-Terphenyl-d14	0.727		1.000		72.7	58	133			

Sample ID **1611053-02AMS**	Batch ID: **78027**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 9:21:00 PM**	Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.929	0.108	1.075	0	86.4	44	111			
Acenaphthylene	0.907	0.108	1.075	0	84.3	39	116			
Anthracene	0.965	0.108	1.075	0	89.7	50	114			
Benzo[a]anthracene	1.22	0.108	1.075	0.1918	95.5	54	122			
Benzo[a]pyrene	1.24	0.108	1.075	0.2230	95.0	50	125			
Benzo[b]fluoranthene	1.22	0.108	1.075	0.2103	93.9	53	128			
Benzo[e]pyrene	1.27	0.108	1.075	0.1690	102	43	140			
Benzo[g,h,i]perylene	1.14	0.108	1.075	0.1608	91.5	49	127			
Benzo[j]fluoranthene	1.16	0.108	1.075	0.1054	97.6	45	125			N
Benzo[k]fluoranthene	1.15	0.108	1.075	0.1122	96.9	56	123			
Chrysene	1.28	0.108	1.075	0.2095	99.5	57	118			
Dibenz[a,h]anthracene	0.986	0.108	1.075	0	91.7	50	129			
Fluoranthene	1.30	0.108	1.075	0.3362	89.6	55	119			
Fluorene	0.939	0.108	1.075	0	87.3	47	114			
Indeno[1,2,3-cd]pyrene	1.16	0.108	1.075	0.1606	93.3	49	130			
Phenanthrene	1.07	0.108	1.075	0.1538	84.9	49	113			
Pyrene	1.25	0.108	1.075	0.2882	89.5	55	117			
IS: Acenaphthene-d10	43.0		4.302		116	50	200			
IS: Chrysene-d12	43.0		4.302		104	50	200			
IS: Naphthalene-d8	43.0		4.302		122	50	200			
IS: Perylene-d12	43.0		4.302		103	50	200			
IS: Phenanthrene-d10	43.0		4.302		112	50	200			
Surr: 2-Fluorobiphenyl	0.862		1.075		80.2	46	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **1611053-02AMS**	Batch ID: **78027**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 9:21:00 PM**	Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.791		1.075		73.6	58	133			

Sample ID **1611053-02AMSD**	Batch ID: **78027**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 9:48:00 PM**	Prep Date: **11/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.891	0.105	1.046	0	85.2	44	111	4.13	20	
Acenaphthylene	0.887	0.105	1.046	0	84.8	39	116	2.24	20	
Anthracene	0.917	0.105	1.046	0	87.7	50	114	5.08	20	
Benzo[a]anthracene	1.08	0.105	1.046	0.1918	84.9	54	122	12.1	20	
Benzo[a]pyrene	1.12	0.105	1.046	0.2230	86.0	50	125	10.3	20	
Benzo[b]fluoranthene	1.11	0.105	1.046	0.2103	86.5	53	128	9.00	20	
Benzo[e]pyrene	1.18	0.105	1.046	0.1690	96.4	43	140	7.44	20	
Benzo[g,h,i]perylene	1.06	0.105	1.046	0.1608	86.0	49	127	7.63	20	
Benzo[j]fluoranthene	1.09	0.105	1.046	0.1054	94.2	45	125	5.75	20	N
Benzo[k]fluoranthene	1.07	0.105	1.046	0.1122	91.9	56	123	7.22	20	
Chrysene	1.11	0.105	1.046	0.2095	86.0	57	118	14.3	20	
Dibenz[a,h]anthracene	0.947	0.105	1.046	0	90.5	50	129	4.08	20	
Fluoranthene	1.14	0.105	1.046	0.3362	76.6	55	119	13.3	20	
Fluorene	0.924	0.105	1.046	0	88.3	47	114	1.63	20	
Indeno[1,2,3-cd]pyrene	1.07	0.105	1.046	0.1606	86.6	49	130	8.75	20	
Phenanthrene	0.986	0.105	1.046	0.1538	79.5	49	113	7.87	20	
Pyrene	1.12	0.105	1.046	0.2882	79.1	55	117	11.4	20	
IS: Acenaphthene-d10	41.8		4.184		113	50	200	0	0	
IS: Chrysene-d12	41.8		4.184		102	50	200	0	0	
IS: Naphthalene-d8	41.8		4.184		120	50	200	0	0	
IS: Perylene-d12	41.8		4.184		100	50	200	0	0	
IS: Phenanthrene-d10	41.8		4.184		110	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.875		1.046		83.6	46	115	0	0	
Surr: 4-Terphenyl-d14	0.797		1.046		76.2	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **ICV-161130**	Batch ID: **R89215**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 3:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.12	0.0100	2.000	0	106	80	120			
Acenaphthylene	2.15	0.0100	2.000	0	107	80	120			
Anthracene	2.11	0.0100	2.000	0	105	80	120			
Benzo[a]anthracene	2.36	0.0100	2.000	0	118	80	120			
Benzo[a]pyrene	2.33	0.0100	2.000	0	116	80	120			
Benzo[b]fluoranthene	2.29	0.0100	2.000	0	115	80	120			
Benzo[e]pyrene	2.36	0.0100	2.000	0	118	80	120			
Benzo[g,h,i]perylene	2.23	0.0100	2.000	0	112	80	120			
Benzo[j]fluoranthene	2.38	0.0100	2.000	0	119	80	120			N
Benzo[k]fluoranthene	2.38	0.0100	2.000	0	119	80	120			
Chrysene	2.34	0.0100	2.000	0	117	80	120			
Dibenz[a,h]anthracene	2.16	0.0100	2.000	0	108	80	120			
Fluoranthene	2.15	0.0100	2.000	0	108	80	120			
Fluorene	2.15	0.0100	2.000	0	107	80	120			
Indeno[1,2,3-cd]pyrene	2.22	0.0100	2.000	0	111	80	120			
Phenanthrene	2.12	0.0100	2.000	0	106	80	120			
Pyrene	2.09	0.0100	2.000	0	105	80	120			
IS: Acenaphthene-d10	4.00		4.000		110	50	200			
IS: Chrysene-d12	4.00		4.000		94.3	50	200			
IS: Naphthalene-d8	4.00		4.000		118	50	200			
IS: Perylene-d12	4.00		4.000		89.8	50	200			
IS: Phenanthrene-d10	4.00		4.000		106	50	200			
Surr: 2-Fluorobiphenyl	2.18		2.000		109	65	120			
Surr: 4-Terphenyl-d14	1.90		2.000		94.9	65	120			

Sample ID **CCV1-161130**	Batch ID: **R89215**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 10:17:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.03	0.0100	1.000	0	103	50	150			
Acenaphthylene	1.04	0.0100	1.000	0	104	50	150			
Anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]anthracene	1.15	0.0100	1.000	0	115	50	150			
Benzo[a]pyrene	1.12	0.0100	1.000	0	112	50	150			
Benzo[b]fluoranthene	1.16	0.0100	1.000	0	116	50	150			
Benzo[e]pyrene	1.15	0.0100	1.000	0	115	50	150			
Benzo[g,h,i]perylene	1.07	0.0100	1.000	0	107	50	150			
Benzo[j]fluoranthene	1.14	0.0100	1.000	0	114	50	150			N
Benzo[k]fluoranthene	1.09	0.0100	1.000	0	109	50	150			
Chrysene	1.16	0.0100	1.000	0	116	50	150			
Dibenz[a,h]anthracene	1.05	0.0100	1.000	0	105	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161130A

Sample ID **CCV1-161130**	Batch ID: **R89215**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161130A**	Analysis Date: **11/30/2016 10:17:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.06	0.0100	1.000	0	106	50	150			
Fluorene	1.05	0.0100	1.000	0	105	50	150			
Indeno[1,2,3-cd]pyrene	1.09	0.0100	1.000	0	109	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.04	0.0100	1.000	0	104	50	150			
IS: Acenaphthene-d10	4.00		4.000		113	50	200			
IS: Chrysene-d12	4.00		4.000		98.2	50	200			
IS: Naphthalene-d8	4.00		4.000		122	50	200			
IS: Perylene-d12	4.00		4.000		98.1	50	200			
IS: Phenanthrene-d10	4.00		4.000		109	50	200			
Surr: 2-Fluorobiphenyl	1.07		1.000		107	50	150			
Surr: 4-Terphenyl-d14	0.956		1.000		95.6	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_160913A

Sample ID **DCS-77144**	Batch ID: **77144**	TestNo: **SW8270D-LL**	Units: **mg/Kg**
SampType: **DCS**	Run ID: **GCMS8_160913A**	Analysis Date: **9/13/2016 1:33:00 PM**	Prep Date: **9/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00812	0.0500	0.01000	0	81.2	20	200	0	0	
Acenaphthylene	0.00849	0.0500	0.01000	0	84.9	20	200	0	0	
Anthracene	0.00762	0.0500	0.01000	0	76.2	20	200	0	0	
Benzo[a]anthracene	0.00870	0.0500	0.01000	0	87.0	20	200	0	0	
Benzo[a]pyrene	0.00842	0.0500	0.01000	0	84.2	20	200	0	0	
Benzo[b]fluoranthene	0.00905	0.0500	0.01000	0	90.5	20	200	0	0	
Benzo[e]pyrene	0.00928	0.0500	0.01000	0	92.8	20	200	0	0	
Benzo[g,h,i]perylene	0.00968	0.0500	0.01000	0	96.8	20	200	0	0	
Benzo[j]fluoranthene	0.00875	0.0500	0.01000	0	87.5	20	200	0	0	N
Benzo[k]fluoranthene	0.00934	0.0500	0.01000	0	93.4	20	200	0	0	
Chrysene	0.00889	0.0500	0.01000	0	88.9	20	200	0	0	
Dibenz[a,h]anthracene	0.0101	0.0500	0.01000	0	101	20	200	0	0	
Fluoranthene	0.00778	0.0500	0.01000	0	77.8	20	200	0	0	
Fluorene	0.00824	0.0500	0.01000	0	82.4	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.0101	0.0500	0.01000	0	101	20	200	0	0	
Phenanthrene	0.00995	0.0500	0.01000	0	99.5	20	200	0	0	
Pyrene	0.00780	0.0500	0.01000	0	78.0	20	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

The QC data in batch 77972 applies to the following samples: 1611071-03A, 1611071-06A, 1611071-13A

Sample ID **LCS-77972** Batch ID: **77972** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 12:27:00 P** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.01	0.0100	1.000	0	101	44	111			
Acenaphthylene	1.03	0.0100	1.000	0	103	39	116			
Anthracene	0.948	0.0100	1.000	0	94.8	50	114			
Benzo[a]anthracene	1.08	0.0100	1.000	0	108	54	122			
Benzo[a]pyrene	1.02	0.0100	1.000	0	102	50	125			
Benzo[b]fluoranthene	1.10	0.0100	1.000	0	110	53	128			
Benzo[e]pyrene	1.11	0.0100	1.000	0	111	43	140			
Benzo[g,h,i]perylene	1.02	0.0100	1.000	0	102	49	127			
Benzo[j]fluoranthene	1.06	0.0100	1.000	0	106	45	125			N
Benzo[k]fluoranthene	1.10	0.0100	1.000	0	110	56	123			
Chrysene	1.12	0.0100	1.000	0	112	57	118			
Dibenz[a,h]anthracene	1.03	0.0100	1.000	0	103	50	129			
Fluoranthene	0.994	0.0100	1.000	0	99.4	55	119			
Fluorene	1.01	0.0100	1.000	0	101	47	114			
Indeno[1,2,3-cd]pyrene	1.04	0.0100	1.000	0	104	49	130			
Phenanthrene	1.03	0.0100	1.000	0	103	49	113			
Pyrene	0.963	0.0100	1.000	0	96.3	55	117			
IS: Acenaphthene-d10	4.00		4.000		86.2	50	200			
IS: Chrysene-d12	4.00		4.000		76.0	50	200			
IS: Naphthalene-d8	4.00		4.000		156	50	200			
IS: Perylene-d12	4.00		4.000		72.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		82.9	50	200			
Surr: 2-Fluorobiphenyl	0.811		1.000		81.1	46	115			
Surr: 4-Terphenyl-d14	0.795		1.000		79.5	58	133			

Sample ID **MB-77972** Batch ID: **77972** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 1:24:00 PM** Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **MB-77972**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 1:24:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		89.2	50	200			
IS: Chrysene-d12	4.00		4.000		78.3	50	200			
IS: Naphthalene-d8	4.00		4.000		158	50	200			
IS: Perylene-d12	4.00		4.000		75.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		84.4	50	200			
Surr: 2-Fluorobiphenyl	0.813		1.000		81.3	46	115			
Surr: 4-Terphenyl-d14	0.793		1.000		79.3	58	133			

Sample ID **1611053-03AMS**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 6:40:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.22	0.113	1.133	0	108	44	111			
Acenaphthylene	1.25	0.113	1.133	0	111	39	116			
Anthracene	1.13	0.113	1.133	0	99.5	50	114			
Benzo[a]anthracene	1.22	0.113	1.133	0	108	54	122			
Benzo[a]pyrene	1.18	0.113	1.133	0	104	50	125			
Benzo[b]fluoranthene	1.25	0.113	1.133	0	110	53	128			
Benzo[e]pyrene	1.27	0.113	1.133	0	113	43	140			
Benzo[g,h,i]perylene	1.15	0.113	1.133	0	102	49	127			
Benzo[j]fluoranthene	1.25	0.113	1.133	0	110	45	125			N
Benzo[k]fluoranthene	1.25	0.113	1.133	0	111	56	123			
Chrysene	1.25	0.113	1.133	0	110	57	118			
Dibenz[a,h]anthracene	1.12	0.113	1.133	0	98.6	50	129			
Fluoranthene	1.21	0.113	1.133	0	106	55	119			
Fluorene	1.20	0.113	1.133	0	106	47	114			
Indeno[1,2,3-cd]pyrene	1.16	0.113	1.133	0	102	49	130			
Phenanthrene	1.23	0.113	1.133	0	108	49	113			
Pyrene	1.19	0.113	1.133	0	105	55	117			
IS: Acenaphthene-d10	45.3		4.532		84.6	50	200			
IS: Chrysene-d12	45.3		4.532		76.1	50	200			
IS: Naphthalene-d8	45.3		4.532		152	50	200			
IS: Perylene-d12	45.3		4.532		71.8	50	200			
IS: Phenanthrene-d10	45.3		4.532		81.1	50	200			
Surr: 2-Fluorobiphenyl	0.956		1.133		84.4	46	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **1611053-03AMS**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 6:40:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.920		1.133		81.2	58	133			

Sample ID **1611053-03AMSD**	Batch ID: **77972**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 7:09:00 PM**	Prep Date: **11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.09	0.112	1.122	0	97.2	44	111	11.1	20	
Acenaphthylene	1.13	0.112	1.122	0	101	39	116	10.5	20	
Anthracene	1.08	0.112	1.122	0	96.2	50	114	4.40	20	
Benzo[a]anthracene	1.23	0.112	1.122	0	110	54	122	0.596	20	
Benzo[a]pyrene	1.17	0.112	1.122	0	104	50	125	0.640	20	
Benzo[b]fluoranthene	1.26	0.112	1.122	0	112	53	128	0.721	20	
Benzo[e]pyrene	1.28	0.112	1.122	0	114	43	140	0.751	20	
Benzo[g,h,i]perylene	1.16	0.112	1.122	0	103	49	127	0.868	20	
Benzo[j]fluoranthene	1.26	0.112	1.122	0	112	45	125	0.537	20	N
Benzo[k]fluoranthene	1.26	0.112	1.122	0	112	56	123	0.308	20	
Chrysene	1.27	0.112	1.122	0	114	57	118	1.79	20	
Dibenz[a,h]anthracene	1.12	0.112	1.122	0	99.5	50	129	0.118	20	
Fluoranthene	1.19	0.112	1.122	0	106	55	119	1.47	20	
Fluorene	1.12	0.112	1.122	0	100	47	114	6.89	20	
Indeno[1,2,3-cd]pyrene	1.16	0.112	1.122	0	104	49	130	0.599	20	
Phenanthrene	1.18	0.112	1.122	0	105	49	113	3.67	20	
Pyrene	1.16	0.112	1.122	0	104	55	117	2.30	20	
IS: Acenaphthene-d10	44.9		4.488		84.4	50	200	0	0	
IS: Chrysene-d12	44.9		4.488		75.5	50	200	0	0	
IS: Naphthalene-d8	44.9		4.488		153	50	200	0	0	
IS: Perylene-d12	44.9		4.488		72.5	50	200	0	0	
IS: Phenanthrene-d10	44.9		4.488		82.1	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.850		1.122		75.7	46	115	0	0	
Surr: 4-Terphenyl-d14	0.903		1.122		80.5	58	133	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

The QC data in batch 77983 applies to the following samples: 1611071-23A

Sample ID **LCS-77983** Batch ID: **77983** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 12:56:00 P** Prep Date: **11/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.952	0.0100	1.000	0	95.2	44	111			
Acenaphthylene	0.982	0.0100	1.000	0	98.2	39	116			
Anthracene	0.907	0.0100	1.000	0	90.7	50	114			
Benzo[a]anthracene	0.960	0.0100	1.000	0	96.0	54	122			
Benzo[a]pyrene	0.927	0.0100	1.000	0	92.7	50	125			
Benzo[b]fluoranthene	0.996	0.0100	1.000	0	99.6	53	128			
Benzo[e]pyrene	1.03	0.0100	1.000	0	103	43	140			
Benzo[g,h,i]perylene	0.898	0.0100	1.000	0	89.8	49	127			
Benzo[j]fluoranthene	1.01	0.0100	1.000	0	101	45	125			N
Benzo[k]fluoranthene	0.931	0.0100	1.000	0	93.1	56	123			
Chrysene	0.991	0.0100	1.000	0	99.1	57	118			
Dibenz[a,h]anthracene	0.900	0.0100	1.000	0	90.0	50	129			
Fluoranthene	0.898	0.0100	1.000	0	89.8	55	119			
Fluorene	0.933	0.0100	1.000	0	93.3	47	114			
Indeno[1,2,3-cd]pyrene	0.922	0.0100	1.000	0	92.2	49	130			
Phenanthrene	0.937	0.0100	1.000	0	93.7	49	113			
Pyrene	0.868	0.0100	1.000	0	86.8	55	117			
IS: Acenaphthene-d10	4.00		4.000		82.0	50	200			
IS: Chrysene-d12	4.00		4.000		74.4	50	200			
IS: Naphthalene-d8	4.00		4.000		153	50	200			
IS: Perylene-d12	4.00		4.000		71.0	50	200			
IS: Phenanthrene-d10	4.00		4.000		80.5	50	200			
Surr: 2-Fluorobiphenyl	0.886		1.000		88.6	46	115			
Surr: 4-Terphenyl-d14	0.828		1.000		82.8	58	133			

Sample ID **MB-77983** Batch ID: **77983** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 1:53:00 PM** Prep Date: **11/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00750	0.0100								U
Acenaphthylene	0.00750	0.0100								U
Anthracene	0.00750	0.0100								U
Benzo[a]anthracene	0.00750	0.0100								U
Benzo[a]pyrene	0.00750	0.0100								U
Benzo[b]fluoranthene	0.00750	0.0100								U
Benzo[e]pyrene	0.00750	0.0100								U
Benzo[g,h,i]perylene	0.00750	0.0100								U
Benzo[j]fluoranthene	0.00750	0.0100								NU
Benzo[k]fluoranthene	0.00750	0.0100								U
Chrysene	0.00750	0.0100								U

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **MB-77983** Batch ID: **77983** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161123A** Analysis Date: **11/23/2016 1:53:00 PM** Prep Date: **11/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00750	0.0100								U
Fluoranthene	0.00750	0.0100								U
Fluorene	0.00750	0.0100								U
Indeno[1,2,3-cd]pyrene	0.00750	0.0100								U
Phenanthrene	0.00750	0.0100								U
Pyrene	0.00750	0.0100								U
IS: Acenaphthene-d10	4.00		4.000		86.4	50	200			
IS: Chrysene-d12	4.00		4.000		78.6	50	200			
IS: Naphthalene-d8	4.00		4.000		157	50	200			
IS: Perylene-d12	4.00		4.000		74.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		84.1	50	200			
Surr: 2-Fluorobiphenyl	0.847		1.000		84.7	46	115			
Surr: 4-Terphenyl-d14	0.810		1.000		81.0	58	133			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **ICV-161123**	Batch ID: **R89136**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 11:58:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.12	0.0100	2.000	0	106	80	120			
Acenaphthylene	2.14	0.0100	2.000	0	107	80	120			
Anthracene	1.97	0.0100	2.000	0	98.6	80	120			
Benzo[a]anthracene	2.11	0.0100	2.000	0	105	80	120			
Benzo[a]pyrene	2.03	0.0100	2.000	0	102	80	120			
Benzo[b]fluoranthene	1.97	0.0100	2.000	0	98.3	80	120			
Benzo[e]pyrene	2.08	0.0100	2.000	0	104	80	120			
Benzo[g,h,i]perylene	1.91	0.0100	2.000	0	95.7	80	120			
Benzo[j]fluoranthene	2.13	0.0100	2.000	0	106	80	120			N
Benzo[k]fluoranthene	2.14	0.0100	2.000	0	107	80	120			
Chrysene	2.13	0.0100	2.000	0	107	80	120			
Dibenz[a,h]anthracene	1.94	0.0100	2.000	0	97.2	80	120			
Fluoranthene	1.88	0.0100	2.000	0	93.8	80	120			
Fluorene	2.04	0.0100	2.000	0	102	80	120			
Indeno[1,2,3-cd]pyrene	1.94	0.0100	2.000	0	97.0	80	120			
Phenanthrene	1.99	0.0100	2.000	0	99.3	80	120			
Pyrene	1.80	0.0100	2.000	0	90.2	80	120			
IS: Acenaphthene-d10	4.00		4.000		81.3	50	200			
IS: Chrysene-d12	4.00		4.000		72.0	50	200			
IS: Naphthalene-d8	4.00		4.000		150	50	200			
IS: Perylene-d12	4.00		4.000		70.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		79.6	50	200			
Surr: 2-Fluorobiphenyl	2.14		2.000		107	65	120			
Surr: 4-Terphenyl-d14	1.92		2.000		95.9	65	120			

Sample ID **CCV1-161123**	Batch ID: **R89136**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 7:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.04	0.0100	1.000	0	104	50	150			
Acenaphthylene	1.07	0.0100	1.000	0	107	50	150			
Anthracene	0.973	0.0100	1.000	0	97.3	50	150			
Benzo[a]anthracene	1.03	0.0100	1.000	0	103	50	150			
Benzo[a]pyrene	1.00	0.0100	1.000	0	100	50	150			
Benzo[b]fluoranthene	1.02	0.0100	1.000	0	102	50	150			
Benzo[e]pyrene	1.03	0.0100	1.000	0	103	50	150			
Benzo[g,h,i]perylene	0.950	0.0100	1.000	0	95.0	50	150			
Benzo[j]fluoranthene	1.05	0.0100	1.000	0	105	50	150			N
Benzo[k]fluoranthene	1.01	0.0100	1.000	0	101	50	150			
Chrysene	1.05	0.0100	1.000	0	105	50	150			
Dibenz[a,h]anthracene	0.946	0.0100	1.000	0	94.6	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161123A

Sample ID **CCV1-161123**	Batch ID: **R89136**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS8_161123A**	Analysis Date: **11/23/2016 7:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	0.943	0.0100	1.000	0	94.3	50	150			
Fluorene	1.01	0.0100	1.000	0	101	50	150			
Indeno[1,2,3-cd]pyrene	0.964	0.0100	1.000	0	96.4	50	150			
Phenanthrene	0.991	0.0100	1.000	0	99.1	50	150			
Pyrene	0.912	0.0100	1.000	0	91.2	50	150			
IS: Acenaphthene-d10	4.00		4.000		81.9	50	200			
IS: Chrysene-d12	4.00		4.000		72.6	50	200			
IS: Naphthalene-d8	4.00		4.000		149	50	200			
IS: Perylene-d12	4.00		4.000		69.9	50	200			
IS: Phenanthrene-d10	4.00		4.000		79.9	50	200			
Surr: 2-Fluorobiphenyl	1.06		1.000		106	50	150			
Surr: 4-Terphenyl-d14	0.945		1.000		94.5	50	150			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161109A

The QC data in batch 77841 applies to the following samples: 1611071-01A, 1611071-04A, 1611071-08A, 1611071-11A, 1611071-16A, 1611071-21A

Sample ID **1611044-14A DUP**	Batch ID: **77841**	TestNo: **D2216**	Units: **WT%**
SampType: **DUP**	Run ID: **PMOIST_161109A**	Analysis Date: **11/10/2016 8:00:00 AM**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	22.0	0	0	22.26				1.08	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161116A

The QC data in batch 77953 applies to the following samples: 1611071-02A, 1611071-05A, 1611071-12A

Sample ID	**1611144-04A DUP**	Batch ID:	**77953**	TestNo:	**D2216**	Units:	**WT%**
SampType:	**DUP**	Run ID:	**PMOIST_161116A**	Analysis Date:	**11/17/2016 8:00:00 AM**	Prep Date:	**11/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	16.3	0	0	16.18				0.835	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161117A

The QC data in batch 77974 applies to the following samples: 1611071-22A

Sample ID	**1611071-22A DUP**	Batch ID:	**77974**	TestNo:	**D2216**	Units:	**WT%**
SampType:	**DUP**	Run ID:	**PMOIST_161117A**	Analysis Date:	**11/18/2016 8:00:00 AM**	Prep Date:	**11/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	9.88	0	0	9.829				0.475	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: PMOIST_161128A

The QC data in batch 78054 applies to the following samples: 1611071-03A, 1611071-06A, 1611071-13A, 1611071-23A

Sample ID	**1611053-33A DUP**	Batch ID:	**78054**	TestNo:	**D2216**	Units:	**WT%**
SampType:	**DUP**	Run ID:	**PMOIST_161128A**	Analysis Date:	**11/29/2016 8:10:00 AM**	Prep Date:	**11/28/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Percent Moisture	15.0	0	0	14.78				1.49	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_161021A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77602	-----	SW8270D-LL	77602	1	10/21/2016 5:02:00 PM	10/19/2016 8:45:21 AM	S

Run ID: GCMS6_161103A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77773	-----	SW8270D-LL	77773	1	11/3/2016 9:49:00 AM	11/2/2016 2:05:05 PM	A

Run ID: GCMS6_161111A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161111	-----	SW8270D-LL	R88948	1	11/11/2016 8:08:00 AM		A
ICV-161111	-----	SW8270D-LL	R88948	1	11/11/2016 8:36:00 AM		A
LCS-77851	-----	SW8270D-LL	77851	1	11/11/2016 9:04:00 AM	11/10/2016 9:00:00 AM	A
MB-77851	-----	SW8270D-LL	77851	1	11/11/2016 9:32:00 AM	11/10/2016 9:00:00 AM	A
1611071-36B	SGR-EBDU100(20161106)	SW8270D-LL	77851	1	11/11/2016 10:00:00 AM	11/10/2016 9:00:00 AM	E
CCV1-161111	-----	SW8270D-LL	R88948	1	11/11/2016 10:28:00 AM		A

Run ID: GCMS6_161111C

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161111	-----	SW8270D-LL	R88956	1	11/11/2016 3:22:00 PM		S
ICV-161111	-----	SW8270D-LL	R88956	1	11/11/2016 3:50:00 PM		S
LCS-77875	-----	SW8270D-LL	77875	1	11/11/2016 5:13:00 PM	11/11/2016 12:55:01 PM	S
MB-77875	-----	SW8270D-LL	77875	1	11/11/2016 5:41:00 PM	11/11/2016 12:55:01 PM	S
1611071-16A	SGR-ROW17(0-0.5)	SW8270D-LL	77875	10	11/11/2016 10:49:00 PM	11/11/2016 12:55:01 PM	S
1611071-21A	SGR-ROW18(0-0.5)	SW8270D-LL	77875	10	11/11/2016 11:17:00 PM	11/11/2016 12:55:01 PM	S
1611071-01A	SGR-ROW03(2-4)	SW8270D-LL	77875	10	11/12/2016 12:13:00 AM	11/11/2016 12:55:01 PM	S
1611071-04A	SGR-ROW04(0.5-2)	SW8270D-LL	77875	10	11/12/2016 12:41:00 AM	11/11/2016 12:55:01 PM	S
1611071-08A	SGR-ROW07(4-6)	SW8270D-LL	77875	10	11/12/2016 1:09:00 AM	11/11/2016 12:55:01 PM	S
1611071-11A	SGR-ROW12(0-0.5)	SW8270D-LL	77875	10	11/12/2016 1:37:00 AM	11/11/2016 12:55:01 PM	S
1611071-16AMS	SGR-ROW17(0-0.5)MS	SW8270D-LL	77875	10	11/12/2016 3:01:00 AM	11/11/2016 12:55:01 PM	S
1611071-16AMSD	SGR-ROW17(0-0.5)MSD	SW8270D-LL	77875	10	11/12/2016 3:29:00 AM	11/11/2016 12:55:01 PM	S
CCV1-161111	-----	SW8270D-LL	R88956	1	11/12/2016 3:57:00 AM		S

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_161115A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161115	-----	SW8270D-LL	R88997	1	11/15/2016 2:38:00 PM		S
ICV-161115	-----	SW8270D-LL	R88997	1	11/15/2016 3:06:00 PM		S
LCS-77919	-----	SW8270D-LL	77919	1	11/15/2016 3:33:00 PM	11/15/2016 11:15:00 AM	S
MB-77919	-----	SW8270D-LL	77919	1	11/15/2016 4:02:00 PM	11/15/2016 11:15:00 AM	S
1611071-30A	SGR-DU133-A	SW8270D-LL	77919	10	11/15/2016 4:30:00 PM	11/15/2016 11:15:00 AM	S
1611071-31A	SGR-DU133-B	SW8270D-LL	77919	10	11/15/2016 4:58:00 PM	11/15/2016 11:15:00 AM	S
1611071-32A	SGR-DU133-C	SW8270D-LL	77919	10	11/15/2016 5:26:00 PM	11/15/2016 11:15:00 AM	S
1611071-27A	SGR-DU103-A	SW8270D-LL	77919	10	11/15/2016 5:54:00 PM	11/15/2016 11:15:00 AM	S
1611071-28A	SGR-DU103-B	SW8270D-LL	77919	10	11/15/2016 6:22:00 PM	11/15/2016 11:15:00 AM	S
1611071-29A	SGR-DU103-C	SW8270D-LL	77919	10	11/15/2016 6:51:00 PM	11/15/2016 11:15:00 AM	S
1611071-33A	SGR-DU172-A	SW8270D-LL	77919	10	11/15/2016 7:18:00 PM	11/15/2016 11:15:00 AM	S
1611071-34A	SGR-DU172-B	SW8270D-LL	77919	10	11/15/2016 7:46:00 PM	11/15/2016 11:15:00 AM	S
1611071-35A	SGR-DU172-C	SW8270D-LL	77919	10	11/15/2016 8:15:00 PM	11/15/2016 11:15:00 AM	S
1611071-24A	SGR-DU100-A	SW8270D-LL	77919	10	11/15/2016 8:42:00 PM	11/15/2016 11:15:00 AM	S
1611071-25A	SGR-DU100-B	SW8270D-LL	77919	10	11/15/2016 9:11:00 PM	11/15/2016 11:15:00 AM	S
1611071-26A	SGR-DU100-C	SW8270D-LL	77919	10	11/15/2016 9:39:00 PM	11/15/2016 11:15:00 AM	S
1611071-27AMS	SGR-DU103-AMS	SW8270D-LL	77919	10	11/15/2016 10:07:00 PM	11/15/2016 11:15:00 AM	S
1611071-27AMSD	SGR-DU103-AMSD	SW8270D-LL	77919	10	11/15/2016 10:35:00 PM	11/15/2016 11:15:00 AM	S
CCV1-161115	-----	SW8270D-LL	R88997	1	11/15/2016 11:03:00 PM		S

Run ID: GCMS6_161116A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161116	-----	SW8270D-LL	R89024	1	11/16/2016 1:26:00 PM		S
ICV-161116	-----	SW8270D-LL	R89024	1	11/16/2016 1:55:00 PM		S
SB-161116	-----	SW8270D-LL	77919	1	11/16/2016 2:23:00 PM		S
1611071-30A	SGR-DU133-A	SW8270D-LL	77919	10	11/16/2016 2:51:00 PM	11/15/2016 11:15:00 AM	S
1611071-31A	SGR-DU133-B	SW8270D-LL	77919	10	11/16/2016 3:19:00 PM	11/15/2016 11:15:00 AM	S
1611071-32A	SGR-DU133-C	SW8270D-LL	77919	10	11/16/2016 3:47:00 PM	11/15/2016 11:15:00 AM	S
1611071-27A	SGR-DU103-A	SW8270D-LL	77919	10	11/16/2016 4:15:00 PM	11/15/2016 11:15:00 AM	S
1611071-33A	SGR-DU172-A	SW8270D-LL	77919	10	11/16/2016 4:43:00 PM	11/15/2016 11:15:00 AM	S
CCV1-161116	-----	SW8270D-LL	R89024	1	11/16/2016 5:11:00 PM		S

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_161130A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161130	-----	SW8270D-LL	R89215	1	11/30/2016 3:16:00 PM		S
ICV-161130	-----	SW8270D-LL	R89215	1	11/30/2016 3:44:00 PM		S
LCS-78027	-----	SW8270D-LL	78027	1	11/30/2016 4:12:00 PM	11/23/2016 9:23:08 AM	S
MB-78027	-----	SW8270D-LL	78027	1	11/30/2016 4:40:00 PM	11/23/2016 9:23:08 AM	S
1611071-02A	SGR-ROW03(4-6)	SW8270D-LL	78027	10	11/30/2016 5:08:00 PM	11/23/2016 9:23:08 AM	S
1611071-05A	SGR-ROW04(2-4)	SW8270D-LL	78027	10	11/30/2016 5:36:00 PM	11/23/2016 9:23:08 AM	S
1611071-22A	SGR-ROW18(0.5-2)	SW8270D-LL	78027	10	11/30/2016 7:28:00 PM	11/23/2016 9:23:08 AM	S
1611071-12A	SGR-ROW12(0.5-2)	SW8270D-LL	78027	10	11/30/2016 8:25:00 PM	11/23/2016 9:23:08 AM	S
1611053-02AMS	-----	SW8270D-LL	78027	10	11/30/2016 9:21:00 PM	11/23/2016 9:23:08 AM	S
1611053-02AMSD	-----	SW8270D-LL	78027	10	11/30/2016 9:48:00 PM	11/23/2016 9:23:08 AM	S
CCV1-161130	-----	SW8270D-LL	R89215	1	11/30/2016 10:17:00 PM		S

Run ID: GCMS8_160913A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS-77144	-----	SW8270D-LL	77144	1	9/13/2016 1:33:00 PM	9/9/2016 8:42:54 AM	S

Run ID: GCMS8_161123A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161123	-----	SW8270D-LL	R89136	1	11/23/2016 11:30:00 AM		S
ICV-161123	-----	SW8270D-LL	R89136	1	11/23/2016 11:58:00 AM		S
LCS-77972	-----	SW8270D-LL	77972	1	11/23/2016 12:27:00 PM	11/17/2016 1:19:38 PM	S
LCS-77983	-----	SW8270D-LL	77983	1	11/23/2016 12:56:00 PM	11/18/2016 8:52:15 AM	S
MB-77972	-----	SW8270D-LL	77972	1	11/23/2016 1:24:00 PM	11/17/2016 1:19:38 PM	S
MB-77983	-----	SW8270D-LL	77983	1	11/23/2016 1:53:00 PM	11/18/2016 8:52:15 AM	S
1611071-03A	SGR-ROW03(6-8)	SW8270D-LL	77972	10	11/23/2016 4:45:00 PM	11/17/2016 1:19:38 PM	S
1611071-06A	SGR-ROW04(4-6)	SW8270D-LL	77972	10	11/23/2016 5:14:00 PM	11/17/2016 1:19:38 PM	S
1611071-13A	SGR-ROW12(2-4)	SW8270D-LL	77972	10	11/23/2016 5:43:00 PM	11/17/2016 1:19:38 PM	S
1611071-23A	SGR-ROW18(2-4)	SW8270D-LL	77983	10	11/23/2016 6:11:00 PM	11/18/2016 8:52:15 AM	S
1611053-03AMS	-----	SW8270D-LL	77972	10	11/23/2016 6:40:00 PM	11/17/2016 1:19:38 PM	S
1611053-03AMSD	-----	SW8270D-LL	77972	10	11/23/2016 7:09:00 PM	11/17/2016 1:19:38 PM	S
CCV1-161123	-----	SW8270D-LL	R89136	1	11/23/2016 7:38:00 PM		S

Run ID: ICP-MS3_161114B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS1-77661	-----	SW6020A	77661	1	11/14/2016 3:31:00 PM	10/25/2016 8:22:11 AM	A

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS3_161116A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R89004	1	11/16/2016 10:40:00 AM		A
L2-161116	-----	SW6020A	R89004	1	11/16/2016 10:46:00 AM		A
L-161116	-----	SW6020A	R89004	1	11/16/2016 10:52:00 AM		A
10X-161116	-----	SW6020A	R89004	1	11/16/2016 10:58:00 AM		A
5X-161116	-----	SW6020A	R89004	1	11/16/2016 11:04:00 AM		A
2X-161116	-----	SW6020A	R89004	1	11/16/2016 11:10:00 AM		A
H-161116	-----	SW6020A	R89004	1	11/16/2016 11:16:00 AM		A
H2-161116	-----	SW6020A	R89004	1	11/16/2016 11:22:00 AM		A
ICSA-161116	-----	SW6020A	R89004	1	11/16/2016 11:46:00 AM		A
ICSAB-161116	-----	SW6020A	R89004	1	11/16/2016 11:52:00 AM		A
ICV1-161116	-----	SW6020A	R89004	1	11/16/2016 12:10:00 PM		A
ILCVL-161116	-----	SW6020A	R89004	1	11/16/2016 12:22:00 PM		A
ICB1-161116	-----	SW6020A	R89004	1	11/16/2016 12:28:00 PM		A
CCV1-161116	-----	SW6020A	R89004	1	11/16/2016 1:35:00 PM		A
CCB1-161116	-----	SW6020A	R89004	1	11/16/2016 1:41:00 PM		A
LCVL1-161116	-----	SW6020A	R89004	1	11/16/2016 1:47:00 PM		A
MB-77913	-----	SW6020A	77913	1	11/16/2016 1:53:00 PM	11/15/2016 9:08:38 AM	A
LCS-77913	-----	SW6020A	77913	1	11/16/2016 1:59:00 PM	11/15/2016 9:08:38 AM	A
LCSD-77913	-----	SW6020A	77913	1	11/16/2016 2:05:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A SD	-----	SW6020A	77913	5	11/16/2016 2:24:00 PM	11/15/2016 9:08:38 AM	A
1611071-36A	SGR-EBDU100(20161106)	SW6020A	77913	1	11/16/2016 3:00:00 PM	11/15/2016 9:08:38 AM	E
1611028-26A PDS	-----	SW6020A	77913	1	11/16/2016 3:06:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MS	-----	SW6020A	77913	1	11/16/2016 3:12:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MSD	-----	SW6020A	77913	1	11/16/2016 3:18:00 PM	11/15/2016 9:08:38 AM	A
CCV2-161116	-----	SW6020A	R89004	1	11/16/2016 3:24:00 PM		A
CCB2-161116	-----	SW6020A	R89004	1	11/16/2016 3:36:00 PM		A
LCVL2-161116	-----	SW6020A	R89004	1	11/16/2016 3:43:00 PM		A

Run ID: ICP-MS4_160916A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DCS1-77170	-----	SW6020A	77170	5	9/16/2016 12:15:00 PM	9/12/2016 10:01:07 AM	S

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161111D

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R88958	1	11/11/2016 9:49:00 AM		A
L2-161111	-----	SW6020A	R88958	1	11/11/2016 9:51:00 AM		A
L-161111	-----	SW6020A	R88958	1	11/11/2016 9:53:00 AM		A
10X-161111	-----	SW6020A	R88958	1	11/11/2016 9:55:00 AM		A
5X-161111	-----	SW6020A	R88958	1	11/11/2016 9:57:00 AM		A
2X-161111	-----	SW6020A	R88958	1	11/11/2016 9:59:00 AM		A
H-161111	-----	SW6020A	R88958	1	11/11/2016 10:01:00 AM		A
H2-161111	-----	SW6020A	R88958	1	11/11/2016 10:03:00 AM		A
ICSA-161111	-----	SW6020A	R88958	1	11/11/2016 10:09:00 AM		A
ICSAB-161111	-----	SW6020A	R88958	1	11/11/2016 10:11:00 AM		A
ICV-161111	-----	SW6020A	R88958	1	11/11/2016 10:18:00 AM		A
LCVL-161111	-----	SW6020A	R88958	1	11/11/2016 10:24:00 AM		A
ICB-161111	-----	SW6020A	R88958	1	11/11/2016 10:29:00 AM		A
CCV4-161111	-----	SW6020A	R88958	1	11/11/2016 1:11:00 PM		A
LCVL4-161111	-----	SW6020A	R88958	1	11/11/2016 1:15:00 PM		A
CCB4-161111	-----	SW6020A	R88958	1	11/11/2016 1:20:00 PM		A
MB-77842	-----	SW6020A	77842	5	11/11/2016 1:22:00 PM	11/9/2016 2:30:25 PM	S
LCS-77842	-----	SW6020A	77842	5	11/11/2016 1:24:00 PM	11/9/2016 2:30:25 PM	S
LCSD-77842	-----	SW6020A	77842	5	11/11/2016 1:26:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A SD	-----	SW6020A	77842	25	11/11/2016 1:32:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A PDS	-----	SW6020A	77842	5	11/11/2016 1:52:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A MS	-----	SW6020A	77842	5	11/11/2016 1:54:00 PM	11/9/2016 2:30:25 PM	S
1611053-16A MSD	-----	SW6020A	77842	5	11/11/2016 1:56:00 PM	11/9/2016 2:30:25 PM	S
CCV5-161111	-----	SW6020A	R88958	1	11/11/2016 1:58:00 PM		A
LCVL5-161111	-----	SW6020A	R88958	1	11/11/2016 2:02:00 PM		A
CCB5-161111	-----	SW6020A	R88958	1	11/11/2016 2:11:00 PM		A
1611071-01A	SGR-ROW03(2-4)	SW6020A	77842	5	11/11/2016 2:19:00 PM	11/9/2016 2:30:25 PM	S
1611071-04A	SGR-ROW04(0.5-2)	SW6020A	77842	5	11/11/2016 2:21:00 PM	11/9/2016 2:30:25 PM	S
1611071-08A	SGR-ROW07(4-6)	SW6020A	77842	5	11/11/2016 2:23:00 PM	11/9/2016 2:30:25 PM	S
1611071-11A	SGR-ROW12(0-0.5)	SW6020A	77842	5	11/11/2016 2:25:00 PM	11/9/2016 2:30:25 PM	S
1611071-16A	SGR-ROW17(0-0.5)	SW6020A	77842	5	11/11/2016 2:27:00 PM	11/9/2016 2:30:25 PM	S
1611071-21A	SGR-ROW18(0-0.5)	SW6020A	77842	5	11/11/2016 2:29:00 PM	11/9/2016 2:30:25 PM	S
CCV6-161111	-----	SW6020A	R88958	1	11/11/2016 2:31:00 PM		A
LCVL6-161111	-----	SW6020A	R88958	1	11/11/2016 2:35:00 PM		A
CCB6-161111	-----	SW6020A	R88958	1	11/11/2016 2:55:00 PM		A

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161118B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R89084	1	11/18/2016 10:49:00 AM		A
L2-161118	-----	SW6020A	R89084	1	11/18/2016 10:52:00 AM		A
L-161118	-----	SW6020A	R89084	1	11/18/2016 10:55:00 AM		A
10X-161118	-----	SW6020A	R89084	1	11/18/2016 10:58:00 AM		A
5X-161118	-----	SW6020A	R89084	1	11/18/2016 11:01:00 AM		A
2X-161118	-----	SW6020A	R89084	1	11/18/2016 11:04:00 AM		A
H-161118	-----	SW6020A	R89084	1	11/18/2016 11:07:00 AM		A
H2-161118	-----	SW6020A	R89084	1	11/18/2016 11:10:00 AM		A
ICSAB-161118	-----	SW6020A	R89084	1	11/18/2016 11:21:00 AM		A
ICSA-161118	-----	SW6020A	R89084	1	11/18/2016 11:36:00 AM		A
ICV-161118	-----	SW6020A	R89084	1	11/18/2016 11:57:00 AM		A
LCVL-161118	-----	SW6020A	R89084	1	11/18/2016 12:06:00 PM		A
ICB-161118	-----	SW6020A	R89084	1	11/18/2016 12:08:00 PM		A
CCV5-161118	-----	SW6020A	R89084	1	11/18/2016 3:09:00 PM		A
LCVL5-161118	-----	SW6020A	R89084	1	11/18/2016 3:13:00 PM		A
CCB5-161118	-----	SW6020A	R89084	1	11/18/2016 3:15:00 PM		A
MB-77967	-----	SW6020A	77967	5	11/18/2016 3:17:00 PM	11/17/2016 11:01:42 AM	S
LCS-77967	-----	SW6020A	77967	5	11/18/2016 3:19:00 PM	11/17/2016 11:01:42 AM	S
LCSD-77967	-----	SW6020A	77967	5	11/18/2016 3:21:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A SD	-----	SW6020A	77967	25	11/18/2016 3:27:00 PM	11/17/2016 11:01:42 AM	S
1611071-02A	SGR-ROW03(4-6)	SW6020A	77967	5	11/18/2016 3:37:00 PM	11/17/2016 11:01:42 AM	S
1611071-05A	SGR-ROW04(2-4)	SW6020A	77967	5	11/18/2016 3:39:00 PM	11/17/2016 11:01:42 AM	S
1611071-12A	SGR-ROW12(0.5-2)	SW6020A	77967	5	11/18/2016 3:41:00 PM	11/17/2016 11:01:42 AM	S
1611071-22A	SGR-ROW18(0.5-2)	SW6020A	77967	5	11/18/2016 3:43:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A PDS	-----	SW6020A	77967	5	11/18/2016 3:45:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A MS	-----	SW6020A	77967	5	11/18/2016 3:47:00 PM	11/17/2016 11:01:42 AM	S
1611053-02A MSD	-----	SW6020A	77967	5	11/18/2016 3:49:00 PM	11/17/2016 11:01:42 AM	S
CCV6-161118	-----	SW6020A	R89084	1	11/18/2016 3:51:00 PM		A
LCVL6-161118	-----	SW6020A	R89084	1	11/18/2016 3:56:00 PM		A
CCB6-161118	-----	SW6020A	R89084	1	11/18/2016 4:00:00 PM		A
MB-77968	-----	SW6020A	77968	5	11/18/2016 4:02:00 PM	11/17/2016 11:04:10 AM	S
LCS-77968	-----	SW6020A	77968	5	11/18/2016 4:04:00 PM	11/17/2016 11:04:10 AM	S
LCSD-77968	-----	SW6020A	77968	5	11/18/2016 4:06:00 PM	11/17/2016 11:04:10 AM	S
1611071-27A	SGR-DU103-A	SW6020A	77968	5	11/18/2016 4:10:00 PM	11/17/2016 11:04:10 AM	S
1611071-24A	SGR-DU100-A	SW6020A	77968	5	11/18/2016 4:14:00 PM	11/17/2016 11:04:10 AM	S
1611071-27A SD	SGR-DU103-A	SW6020A	77968	25	11/18/2016 4:16:00 PM	11/17/2016 11:04:10 AM	S
1611071-25A	SGR-DU100-B	SW6020A	77968	5	11/18/2016 4:18:00 PM	11/17/2016 11:04:10 AM	S
1611071-26A	SGR-DU100-C	SW6020A	77968	5	11/18/2016 4:20:00 PM	11/17/2016 11:04:10 AM	S

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

1611071-28A	SGR-DU103-B	SW6020A	77968	5	11/18/2016 4:22:00 PM	11/17/2016 11:04:10 AM	S
1611071-29A	SGR-DU103-C	SW6020A	77968	5	11/18/2016 4:24:00 PM	11/17/2016 11:04:10 AM	S
1611071-30A	SGR-DU133-A	SW6020A	77968	5	11/18/2016 4:26:00 PM	11/17/2016 11:04:10 AM	S
1611071-31A	SGR-DU133-B	SW6020A	77968	5	11/18/2016 4:28:00 PM	11/17/2016 11:04:10 AM	S
1611071-32A	SGR-DU133-C	SW6020A	77968	5	11/18/2016 4:31:00 PM	11/17/2016 11:04:10 AM	S
1611071-33A	SGR-DU172-A	SW6020A	77968	5	11/18/2016 4:33:00 PM	11/17/2016 11:04:10 AM	S
1611071-27A PDS	SGR-DU103-A	SW6020A	77968	5	11/18/2016 4:35:00 PM	11/17/2016 11:04:10 AM	S
1611071-27A MS	SGR-DU103-AMS	SW6020A	77968	5	11/18/2016 4:37:00 PM	11/17/2016 11:04:10 AM	S
1611071-27A MSD	SGR-DU103-AMSD	SW6020A	77968	5	11/18/2016 4:39:00 PM	11/17/2016 11:04:10 AM	S
CCV7-161118	-----	SW6020A	R89084	1	11/18/2016 4:41:00 PM		A
LCVL7-161118	-----	SW6020A	R89084	1	11/18/2016 4:45:00 PM		A
CCB7-161118	-----	SW6020A	R89084	1	11/18/2016 4:47:00 PM		A
1611071-34A	SGR-DU172-B	SW6020A	77968	5	11/18/2016 5:03:00 PM	11/17/2016 11:04:10 AM	S
1611071-35A	SGR-DU172-C	SW6020A	77968	5	11/18/2016 5:05:00 PM	11/17/2016 11:04:10 AM	S
CCV8-161118	-----	SW6020A	R89084	1	11/18/2016 5:17:00 PM		A
LCVL8-161118	-----	SW6020A	R89084	1	11/18/2016 5:21:00 PM		A
CCB8-161118	-----	SW6020A	R89084	1	11/18/2016 5:23:00 PM		A

Run ID: PMOIST_161109A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611071-01A	SGR-ROW03(2-4)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611071-04A	SGR-ROW04(0.5-2)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611071-08A	SGR-ROW07(4-6)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611071-11A	SGR-ROW12(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611071-16A	SGR-ROW17(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611071-21A	SGR-ROW18(0-0.5)	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S
1611044-14A DUP	-----	D2216	77841	1	11/10/2016 8:00:00 AM	11/9/2016 2:18:41 PM	S

Run ID: PMOIST_161116A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611071-02A	SGR-ROW03(4-6)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611071-05A	SGR-ROW04(2-4)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611071-12A	SGR-ROW12(0.5-2)	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S
1611144-04A DUP	-----	D2216	77953	1	11/17/2016 8:00:00 AM	11/16/2016 2:17:59 PM	S

Run ID: PMOIST_161117A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611071-22A	SGR-ROW18(0.5-2)	D2216	77974	1	11/18/2016 8:00:00 AM	11/17/2016 1:52:40 PM	S
1611071-22A DUP	SGR-ROW18(0.5-2)PD9	D2216	77974	1	11/18/2016 8:00:00 AM	11/17/2016 1:52:40 PM	S

Lab Order: 1611071
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: PMOIST_161128A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
1611071-03A	SGR-ROW03(6-8)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611071-06A	SGR-ROW04(4-6)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611071-13A	SGR-ROW12(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611071-23A	SGR-ROW18(2-4)	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S
1611053-33A DUP	-----	D2216	78054	1	11/29/2016 8:10:00 AM	11/28/2016 1:56:11 PM	S

CLIENT: Arcadis
Work Order: 1611071
Project: Laredo SGR

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Lead	0.100	0.300

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Lead	0.000300	0.00100

TestNo: SW8270D-LL	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Acenaphthene	0.00500	0.0100
Acenaphthylene	0.00500	0.0100
Anthracene	0.00500	0.0100
Benzo[a]anthracene	0.00500	0.0100
Benzo[a]pyrene	0.00500	0.0100
Benzo[b]fluoranthene	0.00500	0.0100
Benzo[e]pyrene	0.00500	0.0100
Benzo[g,h,i]perylene	0.00500	0.0100
Benzo[j]fluoranthene	0.00500	0.0100
Benzo[k]fluoranthene	0.00500	0.0100
Chrysene	0.00500	0.0100
Dibenz[a,h]anthracene	0.00500	0.0100
Fluoranthene	0.00500	0.0100
Fluorene	0.00500	0.0100
Indeno[1,2,3-cd]pyrene	0.00500	0.0100
Phenanthrene	0.00500	0.0100
Pyrene	0.00500	0.0100

TestNo: SW8270D-LL	MDL	MQL
Analyte	**mg/L**	**mg/L**
Acenaphthene	0.0000250	0.0000500
Acenaphthylene	0.0000250	0.0000500
Anthracene	0.0000250	0.0000500
Benzo[a]anthracene	0.0000250	0.0000500
Benzo[a]pyrene	0.0000250	0.0000500
Benzo[b]fluoranthene	0.0000250	0.0000500
Benzo[e]pyrene	0.0000250	0.0000500
Benzo[g,h,i]perylene	0.0000250	0.0000500
Benzo[j]fluoranthene	0.0000250	0.0000500
Benzo[k]fluoranthene	0.0000250	0.0000500
Chrysene	0.0000250	0.0000500
Dibenz[a,h]anthracene	0.0000250	0.0000500
Fluoranthene	0.0000250	0.0000500
Fluorene	0.0000250	0.0000500
Indeno[1,2,3-cd]pyrene	0.0000250	0.0000500
Phenanthrene	0.0000250	0.0000500
Pyrene	0.0000250	0.0000500

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

GCMS6
For

DHL Work Order
1611071

GCMS6_161111A
For

DHL Work Order
1611071

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161111A
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report	X		x
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			x
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS			X	
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS			X	
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)			X	

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis 1. Are all sample hold times met?	7 days (Aq) - extraction	X			x
	14 days (Soil) - extraction			X	
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only			X	
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			x
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE 1. Are all non-conformances included and noted?	All deviations from the method and SOP that affect data quality			X	x
2. Are all corrective actions included?				X	
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?				X	

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS __LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
___ Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

Analyst: Don Winston Date: 11/11/2016

Second-Level Review: Janice Whitt Date: 11/14/2016

REVIEWED BY
By Janice Whitt at 10:16:15 AM, 11/14/2016

DHL Analytical, Inc.

Run ID: GCMS6_161111A **Run No.:** 88948

Analytical Run Date: 11/11/2016 **InstrumentID:** GCMS6

Analyst: Don Winston **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161111	1	PAH_LL_WDOD1	TUNE	R88948	11/11/2016 8:08:00 AM		No LCSD/MS/MSD required - Equipment Blanks only in Batch
ICV-161111	1	PAH_LL_WDOD1	ICV	R88948	11/11/2016 8:36:00 AM		
LCS-77851	1	PAH_LL_WDOD1	LCS	77851	11/11/2016 9:04:00 AM		
MB-77851	1	PAH_LL_WDOD1	MBLK	77851	11/11/2016 9:32:00 AM		
1611071-36B	1	PAH_LL_WDOD1	SAMP	77851	11/11/2016 10:00:00 AM		
CCV1-161111	1	PAH_LL_WDOD1	CCV	R88948	11/11/2016 10:28:00 AM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHICV161020	2 PPM PAH ICV	ICV	01/18/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C
11	Sample	1	16111111	DFTPPPAH	DFTPP-161111
12	Sample	2	16111112	PP161020	ICV-161111
13	Sample	3	16111113	PP161020	LCS-77875
14	Sample	4	16111114	PP161020	MB-77875
15	Sample	3	16111115	PP161020	LCS-77875
16	Sample	4	16111116	PP161020	MB-77875
17	Sample	5	16111117	PP161020	1611044-14A
18	Sample	6	16111118	PP161020	1611044-15A
19	Sample	7	16111119	PP161020	1611044-18A
20	Sample	8	16111120	PP161020	1611044-21A
21	Sample	9	16111121	PP161020	1611053-01A
22	Sample	10	16111122	PP161020	1611053-06A
23	Sample	11	16111123	PP161020	1611053-11A
24	Sample	12	16111124	PP161020	1611053-16A
25	Sample	13	16111125	PP161020	1611053-21A
26	Sample	14	16111126	PP161020	1611053-26A
27	Sample	15	16111127	PP161020	1611071-16A
28	Sample	16	16111128	PP161020	1611071-21A
29	Sample	17	16111129	PP161020	1611053-41A
30	Sample	18	16111130	PP161020	1611071-01A
31	Sample	19	16111131	PP161020	1611071-04A
32	Sample	20	16111132	PP161020	1611071-08A
33	Sample	21	16111133	PP161020	1611071-11A
34	Sample	22	16111134	PP161020	1611053-31A
35	Sample	23	16111135	PP161020	1611053-36A
36	Sample	24	16111136	PP161020	1611071-16AMS
37	Sample	25	16111137	PP161020	1611071-16AMSD
38	Sample	26	16111138	PP161020	CCV1-161111

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/10/2016 9:00:00 AM**
Digestion:
Prep End Date: 11/10/2016 11:09AM

Prep Batch **77851** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List
Balance # 25
Turbo-Vap # 1
Balance #29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-36B	Equip Blank	6	500	1	0.002	1 of 1	531.9 - 213.4 = 318.5
LCS-77851	Aqueous		500	1	0.002	of	
	No LCS/MS/MSD required as per JD.						
MB-77851	Aqueous		500	1	0.002	of	

Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	paper	08/23/2026
10637	Methylene Chloride	140	ml	08/09/2026
10696	Purified Sodium Sulfate	1	filter	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS	0.01	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.1	01/29/2017

REVIEWED BY
By Janice Whitt at 9:40:56 AM, 11/14/2016

11/10/16

11/10/16

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/10/2016 9:00:00 AM**
Digestion:
Prep End Date: **11/10/2016 11:09:00 AM**

Prep Batch **77851** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List

Balance # 25
Turbo-Vap # 1
Balance #29

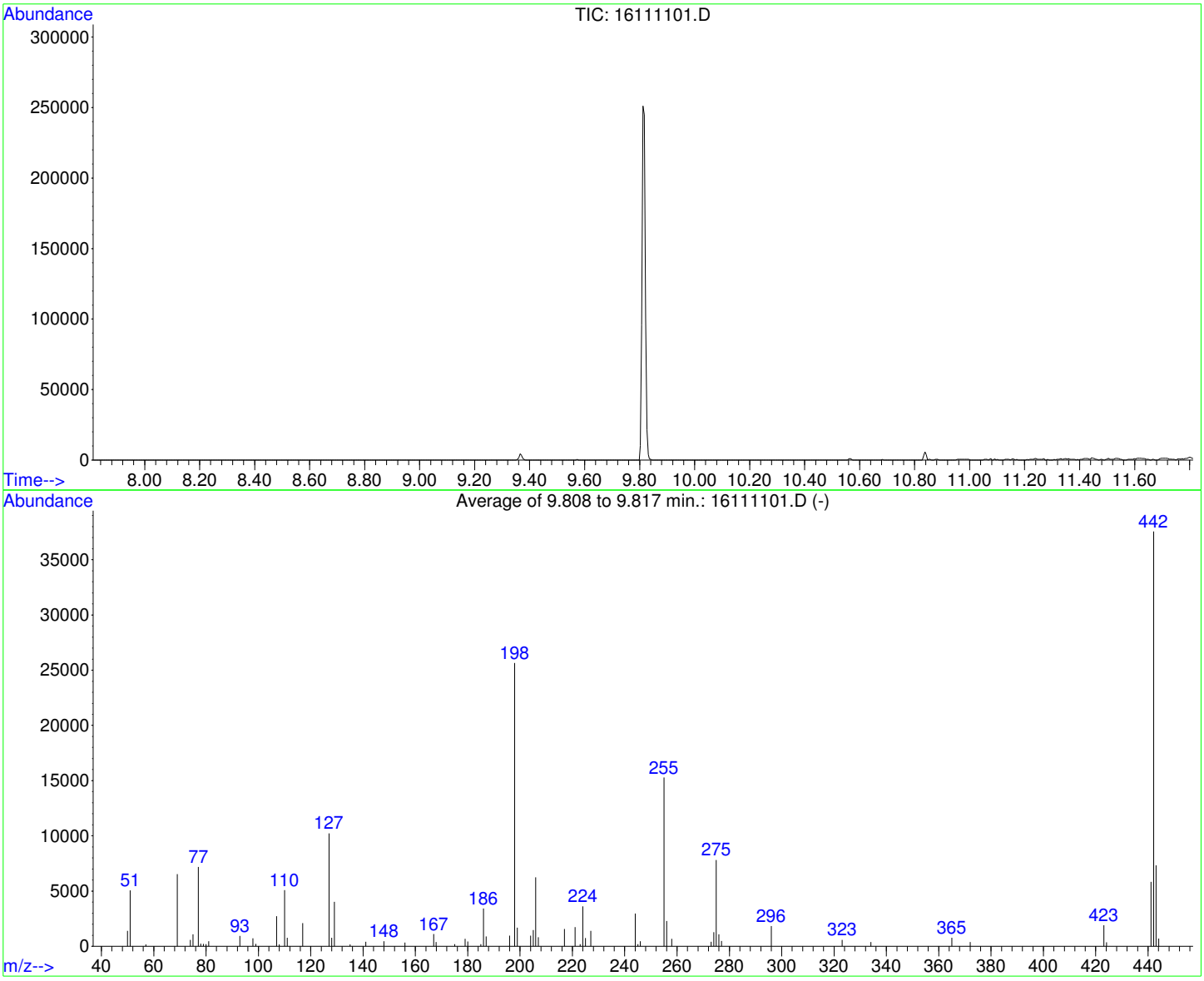
Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-36B	Equip Blank	6	318.5	1	0.003	1 of 1	
LCS-77851	Aqueous	6	500	1	0.002	of	
	No LCS/MS/MSD required as per JD.						
MB-77851	Aqueous	6	500	1	0.002	of	

Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	paper	08/23/2026
10637	Methylene Chloride	140	ml	08/09/2026
10696	Purified Sodium Sulfate	1	filter	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS	0.01	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.1	01/29/2017



Data File : C:\HPCHEM\1\DATA\161111\16111101.D Vial: 1
Acq On : 11 Nov 2016 8:08 am Operator:
Sample : DFTPP-161111 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 791, 792, 793; Background Corrected with Scan 787

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	19.8	5067	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	25.5	6543	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	39.9	10234	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	25650	PASS
199	198	5	9	6.6	1700	PASS
275	198	10	60	30.5	7817	PASS
365	198	1	200	3.0	766	PASS
441	442	0.01	24	15.6	5847	PASS
442	198	50	400	146.4	37564	PASS
443	442	15	24	19.5	7325	PASS

REVIEWED BY
By Janice Whitt at 9:41:04 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111102.D Vial: 2
Acq On : 11 Nov 2016 8:36 am Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

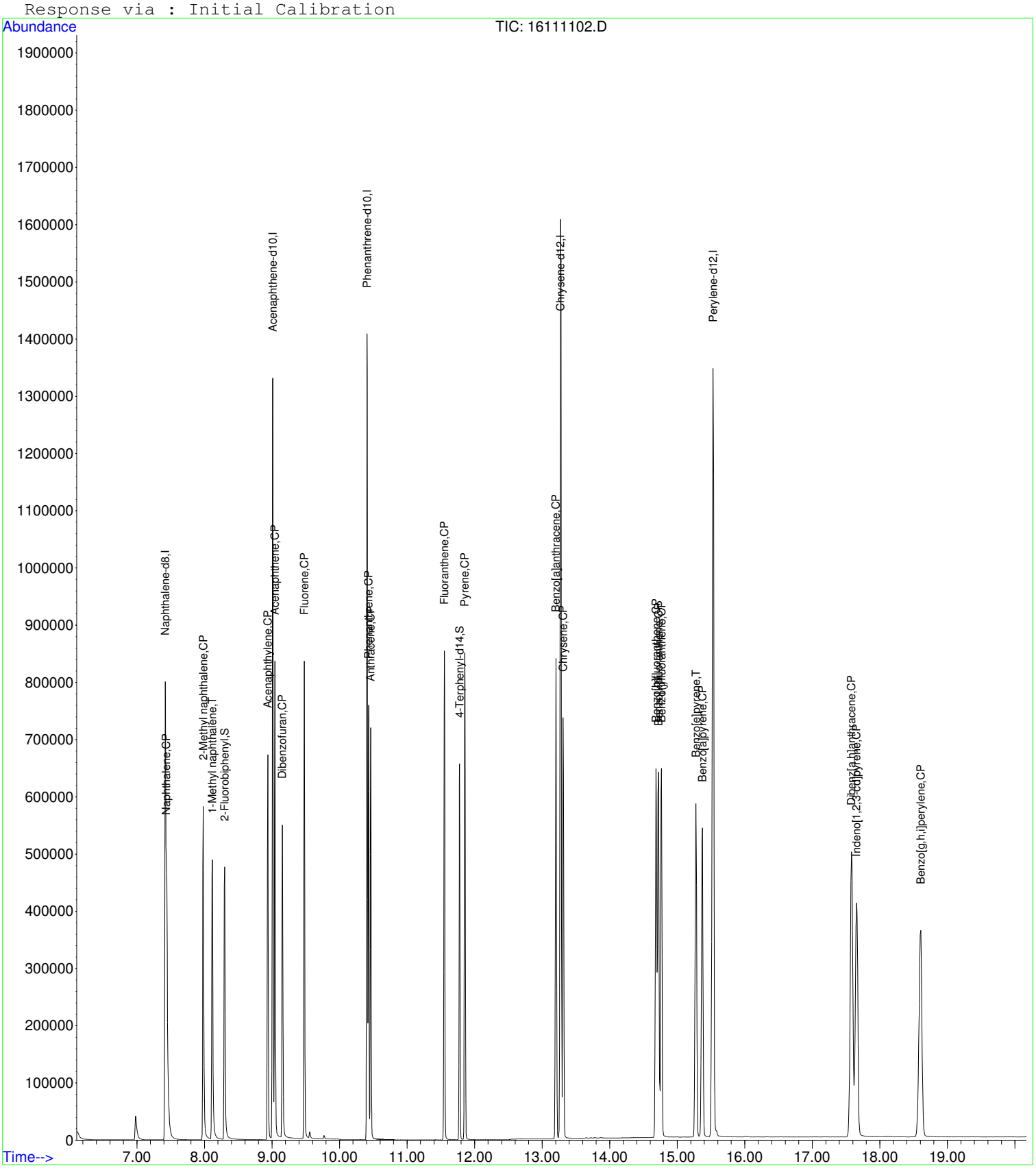
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1055525	4000.00	ug/kg	97
5) Acenaphthene-d10	9.01	164	576068	4000.00	ug/kg	91
11) Phenanthrene-d10	10.41	188	1105605	4000.00	ug/kg	92
17) Chrysene-d12	13.27	240	1490327	4000.00	ug/kg	97
20) Perylene-d12	15.53	264	1645955	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	388491	2309.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	57.73%		
16) 4-Terphenyl-d14	11.78	244	514526	2317.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	57.93%		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	404532	2128.83	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	301046	2128.81	ug/kg	98
4) 1-Methyl naphthalene	8.12	142	271982	2058.72	ug/kg	91
6) Dibenzofuran	9.15	168	410201	2238.07	ug/kg	98
8) Acenaphthylene	8.94	152	454098	2231.30	ug/kg	99
9) Acenaphthene	9.04	154	264040	2167.91	ug/kg	98
10) Fluorene	9.48	166	326232	2188.50	ug/kg	99
12) Phenanthrene	10.43	178	456168	2118.98	ug/kg	100
13) Anthracene	10.46	178	468838	2115.88	ug/kg	100
14) Fluoranthene	11.55	202	553333	2176.17	ug/kg	99
15) Pyrene	11.85	202	559546	2119.01	ug/kg	100
18) Benzo[a]anthracene	13.20	228	623491	2139.93	ug/kg	99
19) Chrysene	13.31	228	578751	2144.09	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	693426	1897.08	ug/kg	99
22) Benzo[k]fluoranthene	14.72	252	699755	2076.98	ug/kg	98
23) Benzo(j)fluoranthene	14.77	252	633066	1942.87	ug/kg	98
24) Benzo[e]pyrene	15.28	252	662589	2029.67	ug/kg	96
25) Benzo[a]pyrene	15.37	252	662261	1987.11	ug/kg	98
26) Dibenz[a,h]anthracene	17.58	278	717988	2050.89	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.66	276	697494	2062.34	ug/kg	99
28) Benzo[g,h,i]perylene	18.61	276	737183	2062.80	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111102.D Vial: 2
Acq On : 11 Nov 2016 8:36 am Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: PP161020.RES

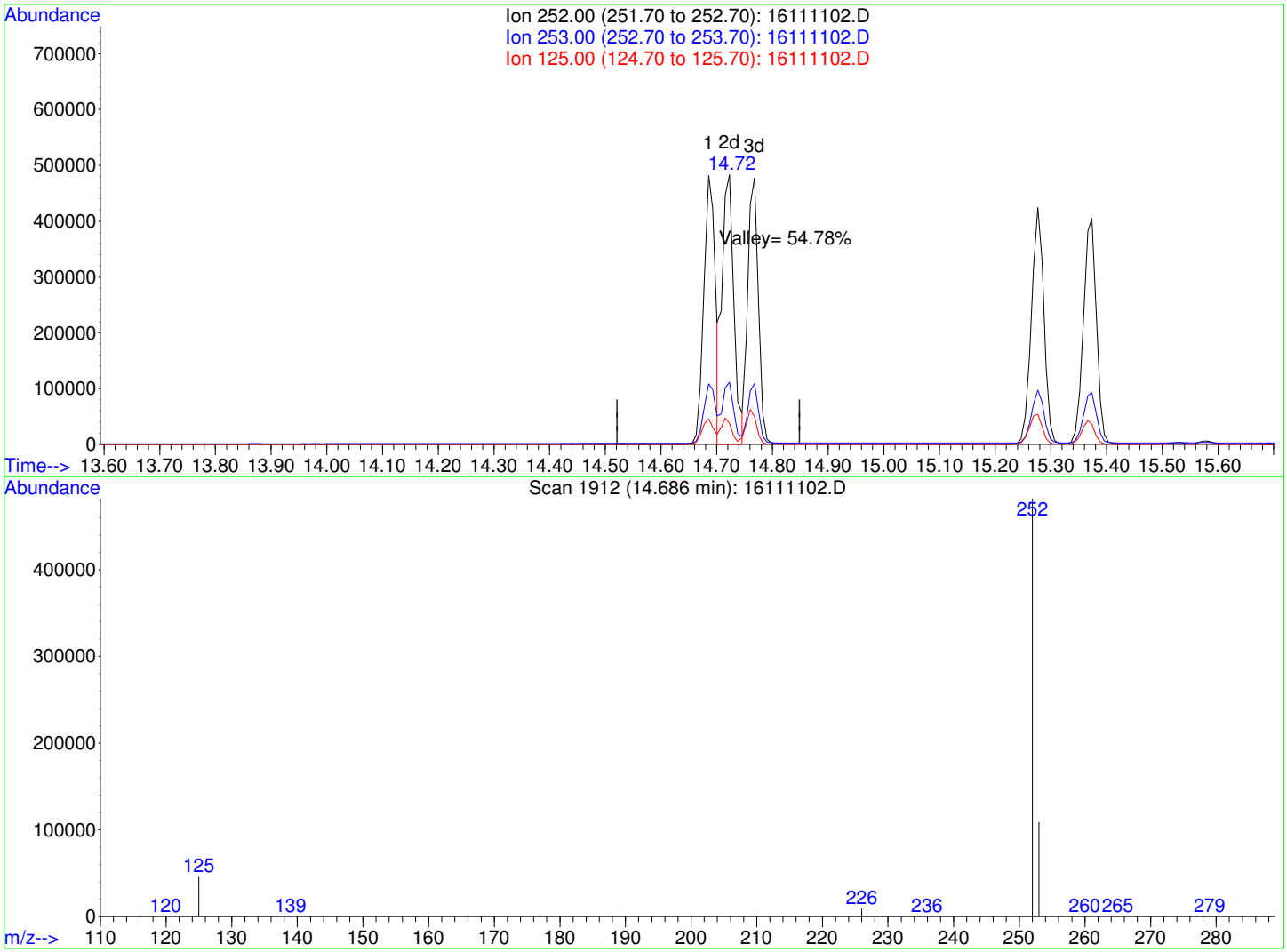
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111102.D Vial: 2
Acq On : 11 Nov 2016 8:36 am Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration



TIC: 16111102.D

(21) Benzo[b]fluoranthene (CP)

14.69min 1897.08ug/kg

response 693426

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.16
125.00	10.50	9.51
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111103.D Vial: 3
Acq On : 11 Nov 2016 9:04 am Operator:
Sample : LCS-77851 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

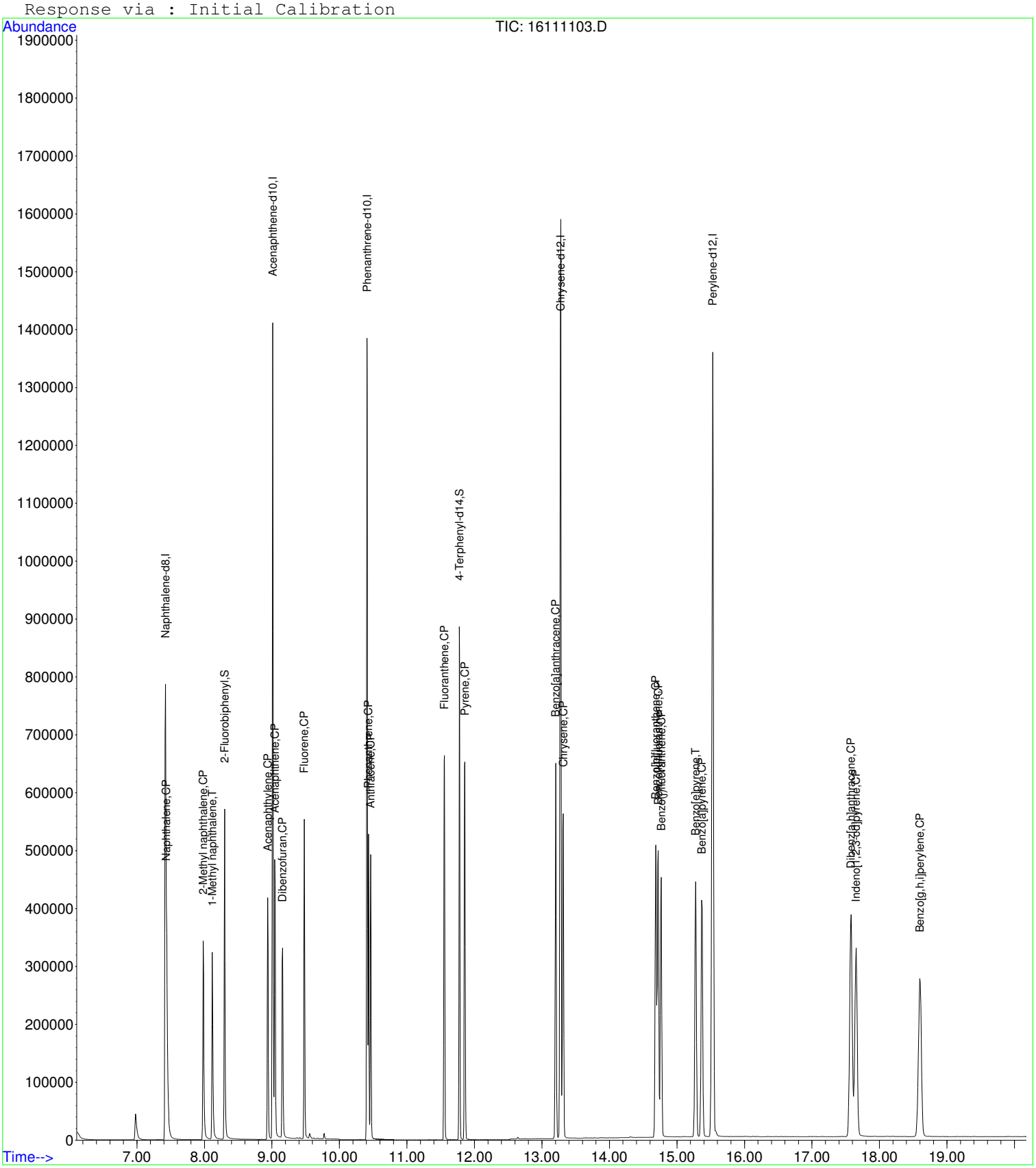
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1015974	4000.00	ug/kg	93
5) Acenaphthene-d10	9.01	164	566002	4000.00	ug/kg	89
11) Phenanthrene-d10	10.41	188	1086399	4000.00	ug/kg	91
17) Chrysene-d12	13.28	240	1463649	4000.00	ug/kg	95
20) Perylene-d12	15.53	264	1576975	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	396425	2398.17	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 59.95%			
16) 4-Terphenyl-d14	11.78	244	685670	3142.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 78.56%			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	238647	1304.76	ug/kg	100
3) 2-Methyl naphthalene	7.98	142	179442	1318.30	ug/kg	90
4) 1-Methyl naphthalene	8.12	142	163003	1281.85	ug/kg	96
6) Dibenzofuran	9.16	168	257093	1427.66	ug/kg	99
8) Acenaphthylene	8.94	152	287815	1439.38	ug/kg	100
9) Acenaphthene	9.04	154	163796	1368.77	ug/kg	98
10) Fluorene	9.48	166	215985	1474.69	ug/kg	99
12) Phenanthrene	10.43	178	318693	1506.56	ug/kg	100
13) Anthracene	10.46	178	316148	1452.01	ug/kg	99
14) Fluoranthene	11.55	202	423148	1693.59	ug/kg	99
15) Pyrene	11.86	202	427473	1647.47	ug/kg	99
18) Benzo[a]anthracene	13.20	228	489875	1711.98	ug/kg	100
19) Chrysene	13.32	228	453787	1711.78	ug/kg	98
21) Benzo[b]fluoranthene	14.69	252	537613	1535.14	ug/kg	99
22) Benzo[k]fluoranthene	14.72	252	543275	1683.05	ug/kg	98
23) Benzo(j)fluoranthene	14.77	252	452267	1448.71	ug/kg	98
24) Benzo[e]pyrene	15.28	252	509103	1627.72	ug/kg	97
25) Benzo[a]pyrene	15.37	252	512435	1604.81	ug/kg	100
26) Dibenz[a,h]anthracene	17.58	278	556205	1658.26	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.65	276	535693	1653.21	ug/kg	97
28) Benzo[g,h,i]perylene	18.60	276	564889	1649.83	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111103.D Vial: 3
Acq On : 11 Nov 2016 9:04 am Operator:
Sample : LCS-77851 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111104.D Vial: 4
Acq On : 11 Nov 2016 9:32 am Operator:
Sample : MB-77851 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

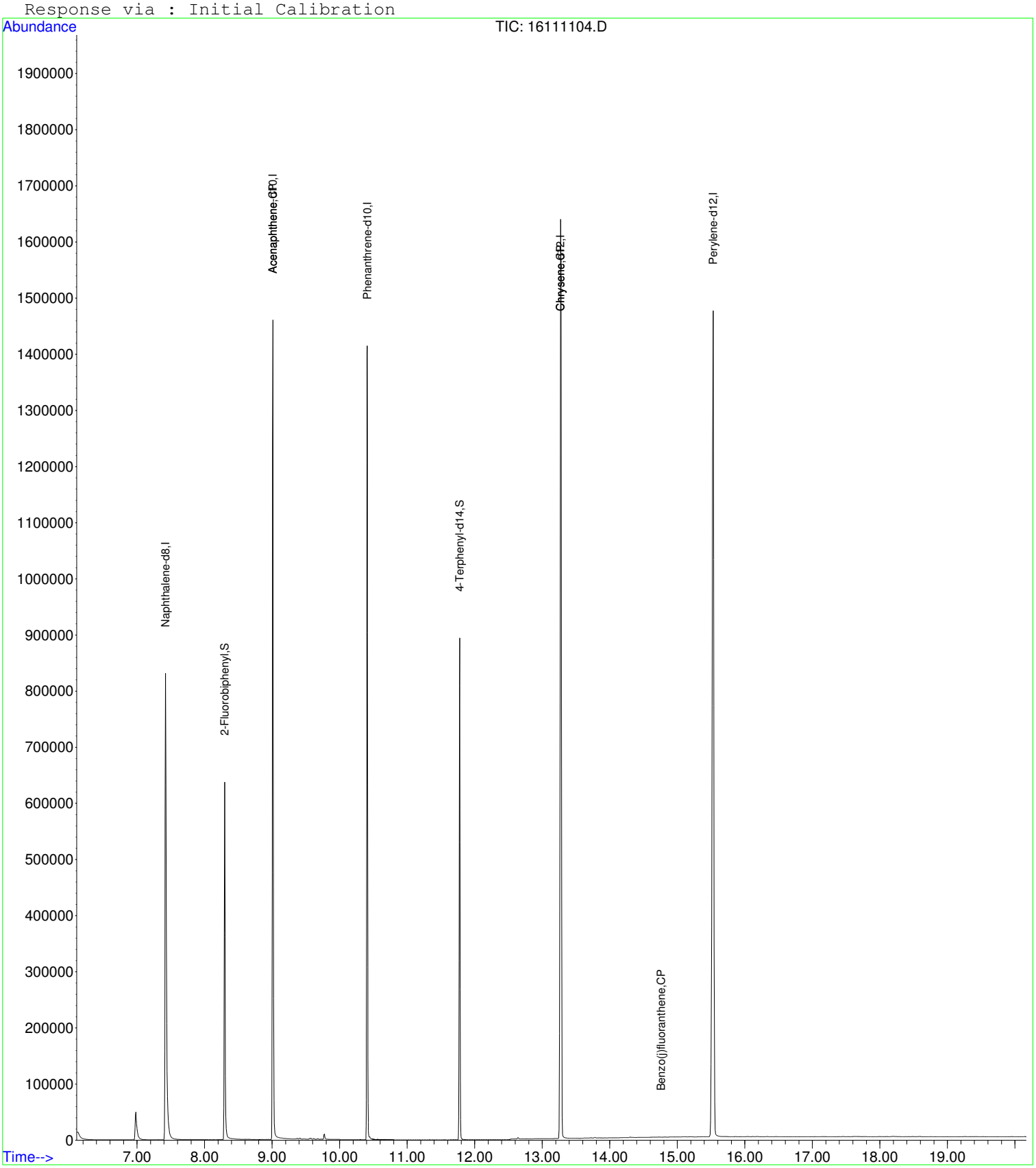
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1068697	4000.00	ug/kg	98
5) Acenaphthene-d10	9.01	164	600550	4000.00	ug/kg	95
11) Phenanthrene-d10	10.41	188	1137084	4000.00	ug/kg	95
17) Chrysene-d12	13.27	240	1559612	4000.00	ug/kg	101
20) Perylene-d12	15.53	264	1656989	4000.00	ug/kg	109
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	433662	2472.52	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	61.81%		
16) 4-Terphenyl-d14	11.78	244	700743	3068.35	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	76.71%		
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	2208	~~17.39~~	~~ug/kg#~~	~~12~~
19) Chrysene	13.27	228	3498	~~12.38~~	~~ug/kg~~	~~71~~
23) Benzo(j)fluoranthene	14.76	252	87	0.27	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111104.D Vial: 4
Acq On : 11 Nov 2016 9:32 am Operator:
Sample : MB-77851 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:42 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111105.D Vial: 5
Acq On : 11 Nov 2016 10:00 am Operator:
Sample : 1611071-36B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 14:11 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

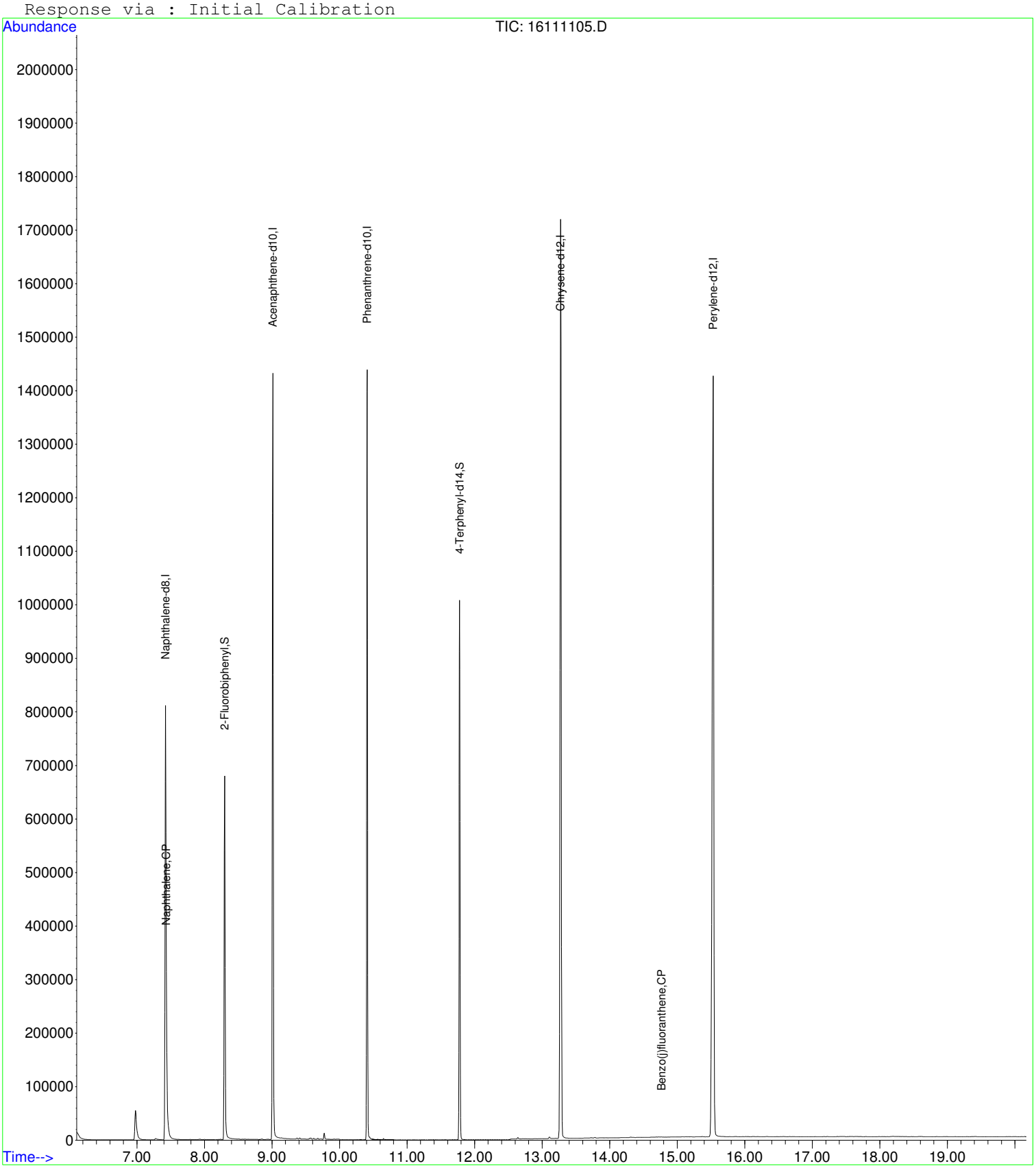
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1042913	4000.00	ug/kg	96
5) Acenaphthene-d10	9.01	164	593178	4000.00	ug/kg	94
11) Phenanthrene-d10	10.41	188	1130264	4000.00	ug/kg	94
17) Chrysene-d12	13.27	240	1566786	4000.00	ug/kg	102
20) Perylene-d12	15.53	264	1664560	4000.00	ug/kg	110
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	489686	2826.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 70.67%			
16) 4-Terphenyl-d14	11.78	244	797230	3511.91	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 87.80%			
Target Compounds						Qvalue
2) Naphthalene	7.44	128	990	5.27	ug/kg#	1
23) Benzo(j)fluoranthene	14.77	252	367	1.11	ug/kg	91

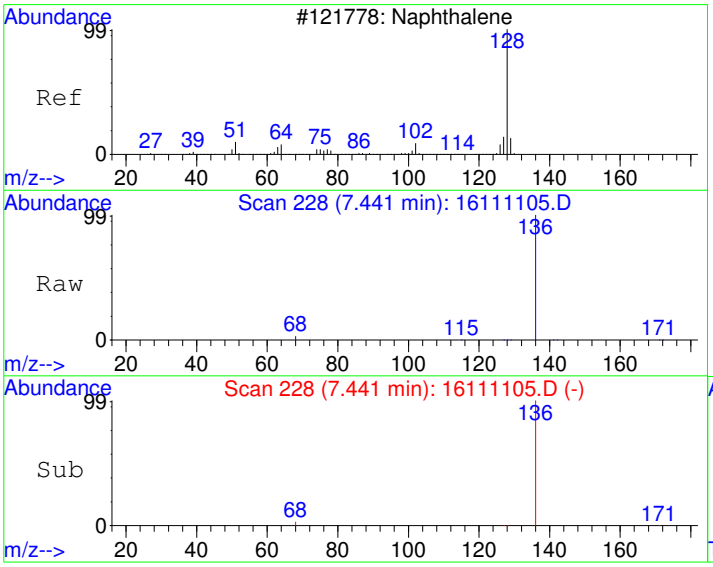
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111105.D Vial: 5
Acq On : 11 Nov 2016 10:00 am Operator:
Sample : 1611071-36B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 14:11 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

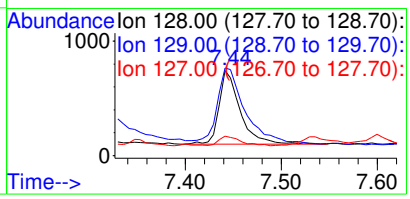


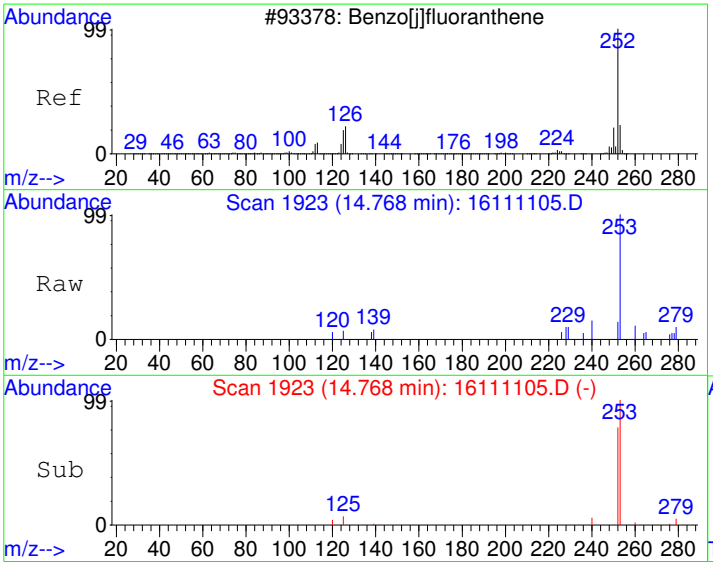


#2
Naphthalene
Concen: 5.27 ug/kg
RT: 7.44 min Scan# 228
Delta R.T. -0.00 min
Lab File: 16111105.D
Acq: 11 Nov 2016 10:00 am

Tgt Ion:128 Resp: 990

Ion	Ratio	Lower	Upper
128	100		
129	102.3	0.0	41.1#
127	10.4	0.0	42.7

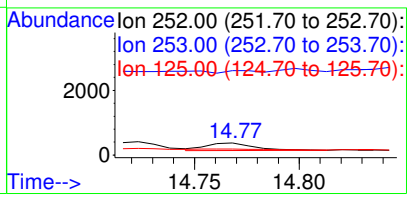




#23
Benzo(j)fluoranthene
Concen: 1.11 ug/kg
RT: 14.77 min Scan# 1923
Delta R.T. 0.00 min
Lab File: 16111105.D
Acq: 11 Nov 2016 10:00 am

Tgt Ion:252 Resp: 367

Ion	Ratio	Lower	Upper
252	100		
253	15.9	2.3	42.3
125	12.3	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111106.D Vial: 6
Acq On : 11 Nov 2016 10:28 am Operator:
Sample : CCV1-161111 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:43 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

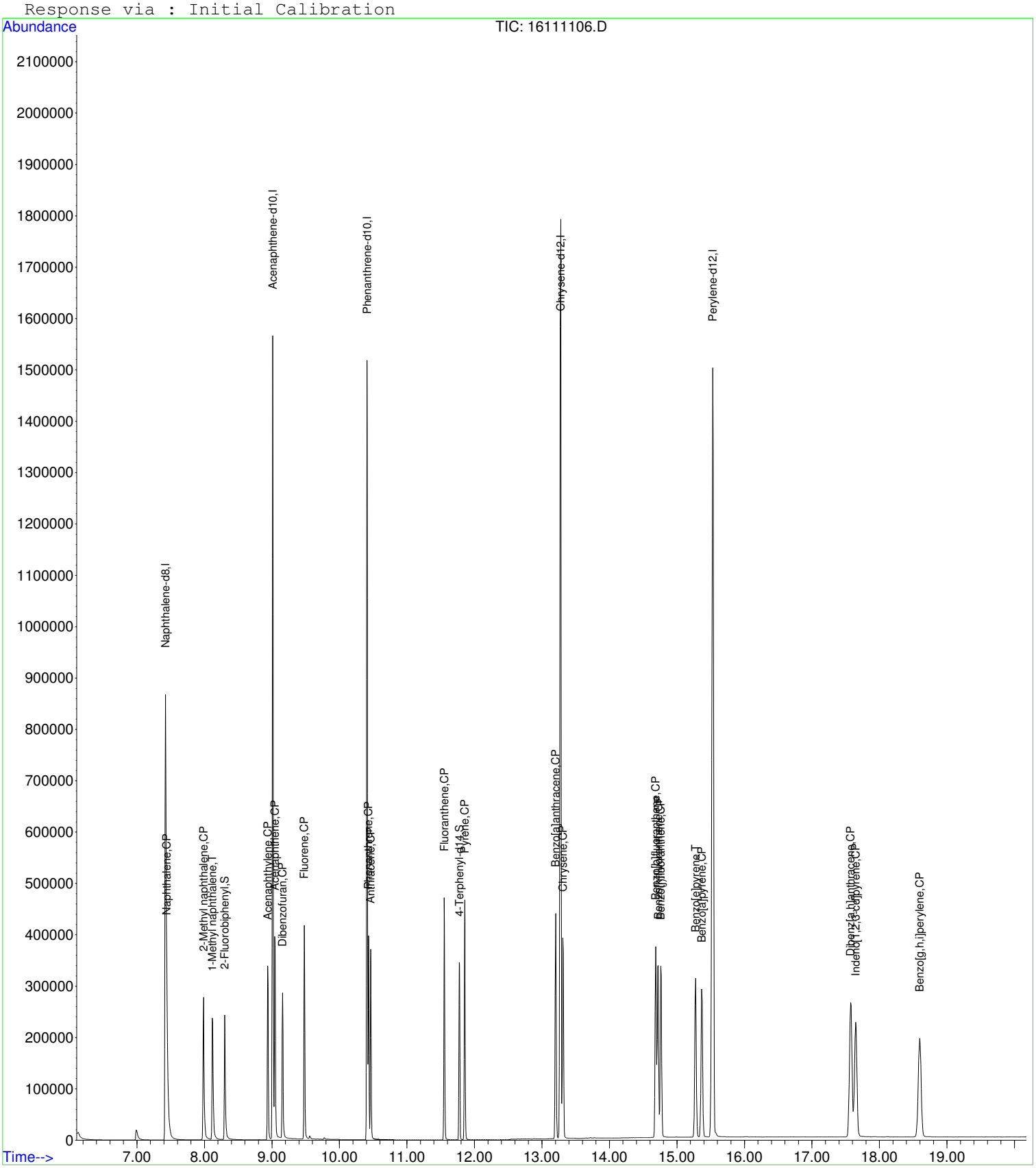
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1119932	4000.00	ug/kg	103
5) Acenaphthene-d10	9.01	164	620394	4000.00	ug/kg	98
11) Phenanthrene-d10	10.41	188	1186201	4000.00	ug/kg	99
17) Chrysene-d12	13.28	240	1628613	4000.00	ug/kg	106
20) Perylene-d12	15.53	264	1775417	4000.00	ug/kg	117
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	203624	1123.82	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	28.10%#		
16) 4-Terphenyl-d14	11.78	244	277427	1164.47	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	29.11%#		
Target Compounds						Qvalue
2) Naphthalene	7.45	128	210084	1041.98	ug/kg	99
3) 2-Methyl naphthalene	7.99	142	155857	1038.74	ug/kg	96
4) 1-Methyl naphthalene	8.12	142	141235	1007.57	ug/kg	91
6) Dibenzofuran	9.16	168	217882	1103.84	ug/kg	99
8) Acenaphthylene	8.94	152	239817	1094.19	ug/kg	100
9) Acenaphthene	9.05	154	138727	1057.64	ug/kg	96
10) Fluorene	9.48	166	174765	1088.63	ug/kg	98
12) Phenanthrene	10.43	178	243587	1054.63	ug/kg	99
13) Anthracene	10.46	178	248545	1045.48	ug/kg	99
14) Fluoranthene	11.55	202	296934	1088.45	ug/kg	99
15) Pyrene	11.86	202	300582	1060.97	ug/kg	99
18) Benzo[a]anthracene	13.20	228	333274	1046.73	ug/kg	99
19) Chrysene	13.31	228	313075	1061.36	ug/kg	99
21) Benzo[b]fluoranthene	14.68	252	378912	961.04	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	359310	988.72	ug/kg	99
23) Benzo(j)fluoranthene	14.76	252	351242	999.35	ug/kg	99
24) Benzo[e]pyrene	15.28	252	348834	990.65	ug/kg	96
25) Benzo[a]pyrene	15.37	252	354098	984.99	ug/kg	99
26) Dibenz[a,h]anthracene	17.58	278	380981	1008.90	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.65	276	374530	1026.65	ug/kg	98
28) Benzo[g,h,i]perylene	18.60	276	389316	1009.96	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111106.D Vial: 6
Acq On : 11 Nov 2016 10:28 am Operator:
Sample : CCV1-161111 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 13:43 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



GCMS6_161111C
For

DHL Work Order
1611071

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES	Run ID: GCMS6_161111C
Batch Number(s): See Run Log. Matrix: See Run Log.	SOP: ORGANICS-PAH-01

Review Item	Yes	No	N/A	2nd Level Review
Data Folder Contents 1. Is the Prep Batch Report included? Check and record the following: ***Prep Start/End Dates, Sample Amounts, Bottle #s***	X			x
2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date? ***All standard/QC sample preparations shall be documented in LIMS***	X			
3. Is the Run Log and instrument sequence included? ***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time***	X			
4. Is the System Verification - Tune Report included? ***Date/Tme of Tune starts 12-hour analysis window***	X			
5. Is the Evaluate Continuing Calibration Report included?	X			

Daily Demonstration of Performance

QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.

Review Item	Frequency	Limits	Pass	Fail (List Batch/Sample) **See Run Log**	2nd Level Review
Tune	Before ICAL Every 12 hours	See Tune Eval Report		X	x
Resolution Check - Benzo(b) and Benzo(k)phenanthrene	Before ICAL Every 12 hours	Benzo(b) and Benzo(k) Valley > 50%	X		
Initial Calibration Curve (ICAL) (minimum: 5 Standards)	Prior to samples and when ICV fails	Avg. RF - %RSD ≤ 15% Curve (COD) - R^2 ≥ 0.990	X		
SSCV - (Second Source)	After calibration (ICAL)	80-120%	X		
ICV - (Daily Initial Cal Verification)	Every 12 hours	ISTDs Area% (50-200%) Surrogates %R (See LIMS) Analytes %R (80-120%)	X		

Review Item	Frequency	Limits	Pass	Fail	N/A	Review
Method Blank (MB) System Blank (SYS Blank)	Every Batch (MB) Daily (SYS BL)	< MDL / <½ RL (DoD) or <1/10 the sample/reg limit	X			x
Lab Control Sample (LCS)	Every Batch	See LIMS	X			
Lab Control Sample Dup (LCSD)	Insufficient sample Sample Matrix	See LIMS			X	
LCSD - RPD	Every LCS/LCSD	≤ 30 (Aq/Soil/DoD)			X	
Field Samples	Up to 20 per prep batch	ISTDs Area% (50-200%) Surrogates %R (See LIMS) RRT ± 0.06 RRT Standard Q value > 70 - check for #	X			
Matrix Spike (MS)	Every Batch/20 samples	See LIMS		X		
Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625)	Every Prep Batch except Method 625	See LIMS		X		
MSD - RPD (MSD is N/A for Method 625)	Every MS/MSD except Method 625	≤ 30 (Aq/Soil/DoD)		X		

Lab Data Review Check List
EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

Review Item	Criteria	Yes	No	N/A	2nd Level Review
Sample Analysis	7 days (Aq) - extraction			X	
1. Are all sample hold times met?	14 days (Soil) - extraction	X			
	40 days analysis	X			
2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work***	Before & After - signed Comment Section in LIMS MI Form - DoD only	X			x
3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed?	> highest standard			X	
Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder					
4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL?	Q value <70 - All hits	X			x
5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?		X	**Return to analyst if NO**		
VARIANCE REPORT					
QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.					
NON-CONFORMANCES / VARIANCE	All deviations from the method and SOP that affect data quality	X			x
1. Are all non-conformances included and noted?					
2. Are all corrective actions included?		X			
3. Does the variance require approval by the Technical Director/General Manager/QA Manager?		X			

Approved by: ***QA APPROVED*** *By John DuPont at 12:00:41 PM, 11/14/2016* Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

VARIANCE ITEM	REASON	CORRECTIVE ACTION
___ Hold Time exceeded (7D/14D-Ext/40D-Analysis)	___ Sample Received out of HT	___ Reanalyze QC to confirm
___ ICV out of control (±20%)	___ Carryover from previous run	___ Recalibrate
___ MB/SYS BL out of control (> MDL / >½ RL)	___ Cross contamination	___ Reprep/Reanalyze sample
___ LCS ___LCSD out of control (See LIMS)	___ Lab Artifact	___ Reprep/Reanalyze Batch
___ RPD out of control for LCS/LCSD (>30)	___ Prep Spike error (describe)	___ Reanalyze Batch/Sample/QC
___ MS ___ MSD out of control (See LIMS)	___ High Levels of target analytes	___ Verify H2O/reagents are clean
___ RPD out of control for MS/MSD (>30)	___ High Levels of non-targets	___ Reanalyze sample to confirm
___ Internal Standard(s) out of control	___ Insufficient sample for QC	___ Sample results ND w/ dilution
___ Multiple Surrogates out of control	___ Prep Error	___ Client notified and approved
___ No MS/MSD prepared - LCS/LCSD used instead	___ Analytical Error	___ Flag data / Case narrative
___ Missing QC (other than MS/MSD)	___ Client Request	___ Instrument Maintenance
___ QC sample(s) was mis-spiked	___ Other (describe below)	___ Accept data
X Other (describe below)		___ Cannot reanalyze (HT out/Lack of Sample)

General Comments and Impact on Data: **See Run Log.**

MSD and ending CCV ran outside the 12 hour tune.

Analyst: Don Winston Date: 11/14/2016

Second-Level Review: Janice Whitt Date: 11/14/2016 ***REVIEWED BY*** *By Janice Whitt at 11:38:09 AM, 11/14/2016*

DHL Analytical, Inc.

Run ID: GCMS6_161111C **Run No.:** 88956

Analytical Run Date: 11/11/2016 **InstrumentID:** GCMS6

Analyst: Don Winston **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 704 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161020.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161111	1	PAH_LL_SDOD1	TUNE	R88956	11/11/2016 3:22:00 PM		All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers.
ICV-161111	1	PAH_LL_SDOD1	ICV	R88956	11/11/2016 3:50:00 PM		
LCS-77875	1	PAH_LL_SDOD1	LCS	77875	11/11/2016 4:18:00 PM		DNR-Internal standards not spiked. See rerun.
MB-77875	1	PAH_LL_SDOD1	MBLK	77875	11/11/2016 4:46:00 PM		DNR-Internal standards not spiked. See rerun.
LCS-77875	1	PAH_LL_SDOD1	LCS	77875	11/11/2016 5:13:00 PM		
MB-77875	1	PAH_LL_SDOD1	MBLK	77875	11/11/2016 5:41:00 PM		
1611044-14A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 6:09:00 PM		
1611044-15A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 6:37:00 PM		
1611044-18A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 7:05:00 PM		
1611044-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 7:33:00 PM		
1611053-01A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:01:00 PM		
1611053-06A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:29:00 PM		
1611053-11A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 8:57:00 PM		
1611053-16A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 9:25:00 PM		
1611053-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 9:53:00 PM		
1611053-26A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 10:21:00 PM		
1611071-16A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 10:49:00 PM		
1611071-21A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 11:17:00 PM		
1611053-41A	10	PAH_LL_SDOD1	SAMP	77875	11/11/2016 11:45:00 PM		
1611071-01A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 12:13:00 AM		
1611071-04A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 12:41:00 AM		
1611071-08A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 1:09:00 AM		
1611071-11A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 1:37:00 AM		
1611053-31A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 2:05:00 AM		
1611053-36A	10	PAH_LL_SDOD1	SAMP	77875	11/12/2016 2:33:00 AM		
1611071-16AMS	10	PAH_LL_SDOD1	MS	77875	11/12/2016 3:01:00 AM		High recovery for Chrysene, Fluoranthene, Fluorene, Phenanthrene and Pyrene .

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

DHL Analytical, Inc.

Run ID: GCMS6_161111C **Run No.:** 88956

1611071-16AMSD	10	PAH_LL_SDOD1	MSD	77875	11/12/2016 3:29:00 AM		High recovery for Phenanthrene and Pyrene. %RPD outside limits for Fluoranthene. MSD ran 7 minutes outside 12 hour tune.
CCV1-161111	1	PAH_LL_SDOD1	CCV	R88956	11/12/2016 3:57:00 AM		CCV ran 35 minutes outside 12 hour tune.

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161111	1 PPM PAH CCV STANDARD	CCV	02/09/2017
PAHICV161111	2 PPM PAH ICV	ICV	02/09/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C

Sequence Name: C:\HPCHEM\1\SEQUENCE\161111.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\161111\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

Line	Type	Vial	DataFile	Method	Sample Name
1	Sample	1	16111101	DFTPPPAH	DFTPP-161111
2	Sample	2	16111102	PP161020	ICV-161111
3	Sample	3	16111103	PP161020	LCS-77851
4	Sample	4	16111104	PP161020	MB-77851
5	Sample	5	16111105	PP161020	1611071-36B
6	Sample	6	16111106	PP161020	CCV1-161111
7	Sample	7	16111107	PP161020	LCS-77845
8	Sample	8	16111108	PP161020	LCSD-77845
9	Sample	9	16111109	PP161020	MB-77845
10	Sample	10	16111110	PP161020	1611033-01C
11	Sample	1	16111111	DFTPPPAH	DFTPP-161111
12	Sample	2	16111112	PP161020	ICV-161111
13	Sample	3	16111113	PP161020	LCS-77875
14	Sample	4	16111114	PP161020	MB-77875
15	Sample	3	16111115	PP161020	LCS-77875
16	Sample	4	16111116	PP161020	MB-77875
17	Sample	5	16111117	PP161020	1611044-14A
18	Sample	6	16111118	PP161020	1611044-15A
19	Sample	7	16111119	PP161020	1611044-18A
20	Sample	8	16111120	PP161020	1611044-21A
21	Sample	9	16111121	PP161020	1611053-01A
22	Sample	10	16111122	PP161020	1611053-06A
23	Sample	11	16111123	PP161020	1611053-11A
24	Sample	12	16111124	PP161020	1611053-16A
25	Sample	13	16111125	PP161020	1611053-21A
26	Sample	14	16111126	PP161020	1611053-26A
27	Sample	15	16111127	PP161020	1611071-16A
28	Sample	16	16111128	PP161020	1611071-21A
29	Sample	17	16111129	PP161020	1611053-41A
30	Sample	18	16111130	PP161020	1611071-01A
31	Sample	19	16111131	PP161020	1611071-04A
32	Sample	20	16111132	PP161020	1611071-08A
33	Sample	21	16111133	PP161020	1611071-11A
34	Sample	22	16111134	PP161020	1611053-31A
35	Sample	23	16111135	PP161020	1611053-36A
36	Sample	24	16111136	PP161020	1611071-16AMS
37	Sample	25	16111137	PP161020	1611071-16AMSD
38	Sample	26	16111138	PP161020	CCV1-161111

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: **11/11/2016 2:59:00 PM**

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10.64	10	0.940	1 of 1	
	Clay-like. This is a reprep of 77829.						
1611044-15A	Soil		10.12	10	0.988	1 of 1	
	Clay-like.						
1611044-18A	Soil		10.4	10	0.962	1 of 1	
	Clay-like.						
1611044-21A	Soil		10	10	1.000	1 of 1	
	Clay-like.						
1611053-01A	Soil		10.1	10	0.990	1 of 1	
1611053-06A	Soil		10.3	10	0.971	1 of 1	
	Contains grass, pebbles, shells						
1611053-11A	Soil		10.2	10	0.980	1 of 1	
1611053-16A	Soil		10.25	10	0.976	1 of 1	
1611053-21A	Soil		10.07	10	0.993	1 of 1	
1611053-26A	Soil		10.35	10	0.966	1 of 1	
	Contains grass, leaves						
1611053-31A	Soil		10.7	10	0.935	1 of 1	
	Contains grass, leaves						
1611053-36A	Soil		10.45	10	0.957	1 of 1	
	Contains grass, leaves						
1611053-41A	Soil		10.53	10	0.950	1 of 1	
	Contains grass, leaves, roots						
1611071-01A	Soil		10.48	10	0.954	1 of 1	
1611071-04A	Soil		10.95	10	0.913	1 of 1	
1611071-08A	Soil		10.53	10	0.950	1 of 1	
	Clay.						
1611071-11A	Soil		10.61	10	0.943	1 of 1	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:05 AM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: **11/11/2016 2:59:00 PM**

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/g**

Equipment List

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611071-16A	Soil		10.64	10	0.940	1 of 1	
1611071-16AMS	Soil		10.07	10	0.993	of	
1611071-16AMSD	Soil		10.52	10	0.951	of	
1611071-21A	Soil		10.33	10	0.968	1 of 1	
LCS-77875	Soil		10	10	1.000	of	
MB-77875	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:07 AM, 11/14/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/11/2016 12:55:01 PM**
Digestion:
Prep End Date: 11/11/2016 2:59 PM

Prep Batch **77875** Prep Code: **3550_PAHDOD** Technician: **Lauren Garcia** Prep Factor Units: **mL/g**

Equipment List
Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611044-14A	Soil		10.64	10	1.000	1 of 1	clay-like This is a reprep of 77829
1611044-15A	Soil		10.12	10	1.000	1 of 1	
1611044-18A	Soil		10.40	10	1.000	1 of 1	
1611044-21A	Soil		10.00	10	1.000	1 of 1	
1611053-01A	Soil		10.10	10	1.000	1 of 1	
1611053-06A	Soil		10.30	10	1.000	1 of 1	contains grass, pebbles, shells
1611053-11A	Soil		10.20	10	1.000	1 of 1	
1611053-16A	Soil		10.25	10	1.000	1 of 1	
1611053-21A	Soil		10.07	10	1.000	1 of 1	
1611053-26A	Soil		10.35	10	1.000	1 of 1	Contains grass, leaves
1611053-31A	Soil		10.70	10	1.000	1 of 1	" " "
1611053-36A	Soil		10.45	10	1.000	1 of 1	" "
1611053-41A	Soil		10.53	10	1.000	1 of 1	" " " , roots
1611071-01A	Soil		10.48	10	1.000	1 of 1	
1611071-04A	Soil		10.95	10	1.000	1 of 1	
1611071-08A	Soil		10.53	10	1.000	1 of 1	clay
1611071-11A	Soil		10.61	10	1.000	1 of 1	
1611071-16A	Soil		10.64	10	1.000	1 of 1	
1611071-16AMS	Soil		10.07	10	1.000	of	
1611071-16AMSD	Soil		10.52	10	1.000	of	
1611071-21A	Soil		10.33	10	1.000	1 of 1	
LCS-77875	Soil		10	10	1.000	of	
MB-77875	Soil		10	10	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	8	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026
10828	1:1 MeCl2/Acetone	120	ml	10/26/2026

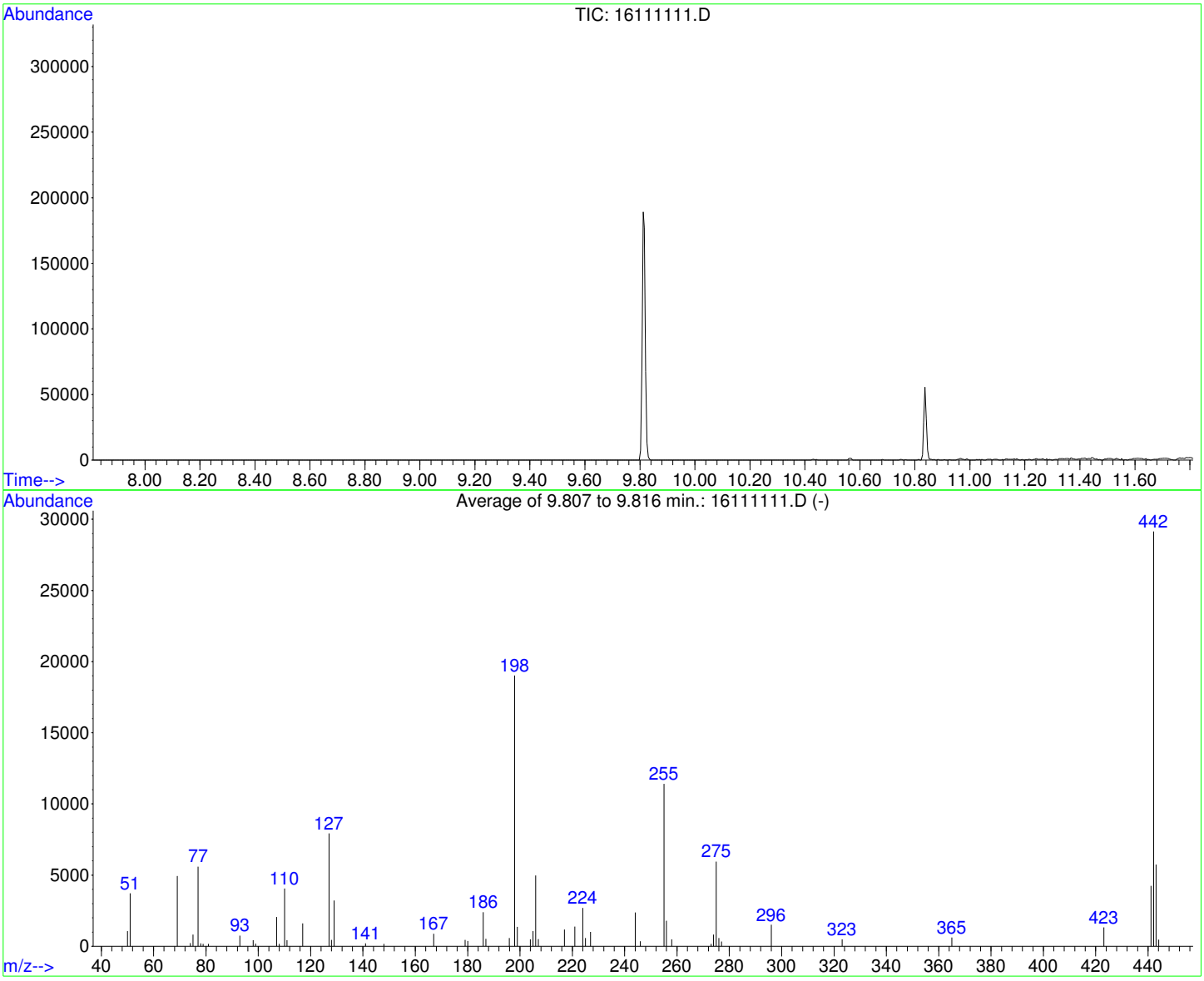
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP161019	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	01/17/2017
SVPREP161031	40 PPM Surrogate Standard	ALL	0.25	01/29/2017

REVIEWED BY
By Janice Whitt at 10:54:00 AM, 11/14/2016

11/11/16

11/11/16

Data File : C:\HPCHEM\1\DATA\161111\16111111.D Vial: 1
Acq On : 11 Nov 2016 3:22 pm Operator:
Sample : DFTPP-161111 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 791, 792, 793; Background Corrected with Scan 787

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	19.6	3721	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	26.0	4943	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	41.7	7923	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	19016	PASS
199	198	5	9	7.2	1362	PASS
275	198	10	60	31.3	5956	PASS
365	198	1	200	3.3	620	PASS
441	442	0.01	24	14.6	4248	PASS
442	198	50	400	153.3	29146	PASS
443	442	15	24	19.7	5743	PASS

REVIEWED BY
By Janice Whitt at 10:54:02 AM, 11/14/2016

Manual Integrations Tracking Form - DoD QSM 5.0 Requirement

Instrument ID: GCMS #6 **Data Folder: GCMS6_161111C**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611044-18A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-01A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-06A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611053-11A	Benzo[k]fluoranthene– Integrated wrong peak			
1611053-26A	Benzo[k]fluoranthene– Integrated wrong peak			
1611053-31A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-01A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-04A	Benzo[k]fluoranthene– Integrated wrong peak			
1611071-16A	Benzo[k]fluoranthene– Integrated wrong peak			

***Manually Integrated = MI**

Don Winston

11-11-2016

Analyst **Date**

2nd Level Review **Date**

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

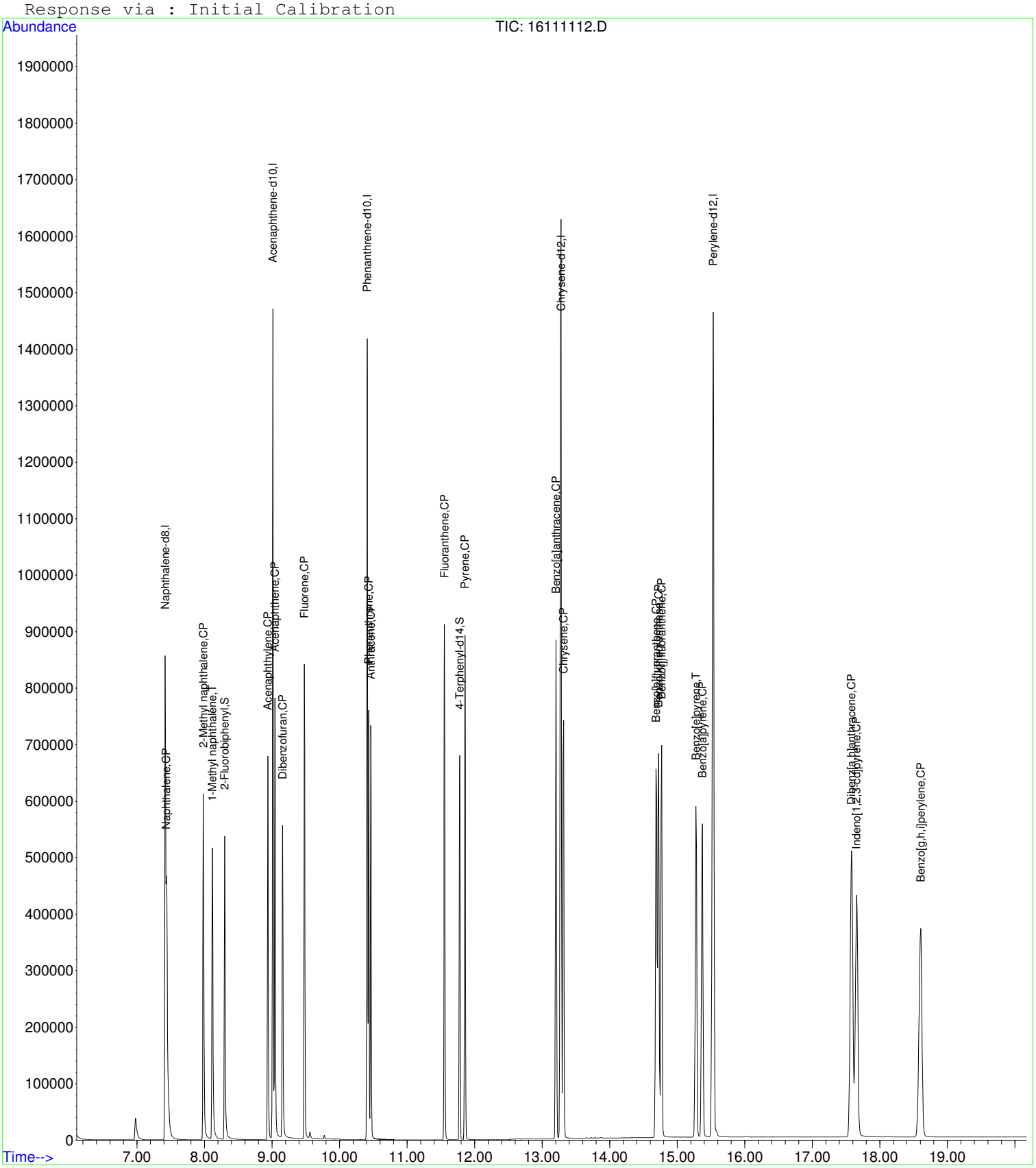
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1032489	4000.00	ug/kg	95
5) Acenaphthene-d10	9.01	164	583652	4000.00	ug/kg	92
11) Phenanthrene-d10	10.41	188	1124326	4000.00	ug/kg	94
17) Chrysene-d12	13.28	240	1548523	4000.00	ug/kg	100
20) Perylene-d12	15.53	264	1687021	4000.00	ug/kg	111
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	392693	2303.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	57.59%		
16) 4-Terphenyl-d14	11.78	244	526763	2332.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.32%		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	395881	2129.78	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	301328	2178.35	ug/kg	92
4) 1-Methyl naphthalene	8.12	142	271193	2098.54	ug/kg	95
6) Dibenzofuran	9.16	168	418688	2254.69	ug/kg	98
8) Acenaphthylene	8.94	152	456810	2215.46	ug/kg	100
9) Acenaphthene	9.04	154	267447	2167.35	ug/kg	99
10) Fluorene	9.48	166	335369	2220.56	ug/kg	98
12) Phenanthrene	10.43	178	466758	2132.07	ug/kg	100
13) Anthracene	10.46	178	473783	2102.59	ug/kg	100
14) Fluoranthene	11.55	202	565079	2185.36	ug/kg	99
15) Pyrene	11.86	202	574300	2138.67	ug/kg	100
18) Benzo[a]anthracene	13.20	228	643750	2126.42	ug/kg	100
19) Chrysene	13.32	228	593119	2114.74	ug/kg	98
21) Benzo[b]fluoranthene	14.69	252	803287	2144.14	ug/kg	99
22) Benzo[k]fluoranthene	14.72	252	632979	1833.04	ug/kg	99
23) Benzo(j)fluoranthene	14.77	252	656983	1967.19	ug/kg	98
24) Benzo[e]pyrene	15.28	252	679007	2029.34	ug/kg	97
25) Benzo[a]pyrene	15.37	252	684518	2003.90	ug/kg	98
26) Dibenz[a,h]anthracene	17.58	278	749501	2088.79	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.66	276	726395	2095.51	ug/kg	98
28) Benzo[g,h,i]perylene	18.61	276	761602	2079.26	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

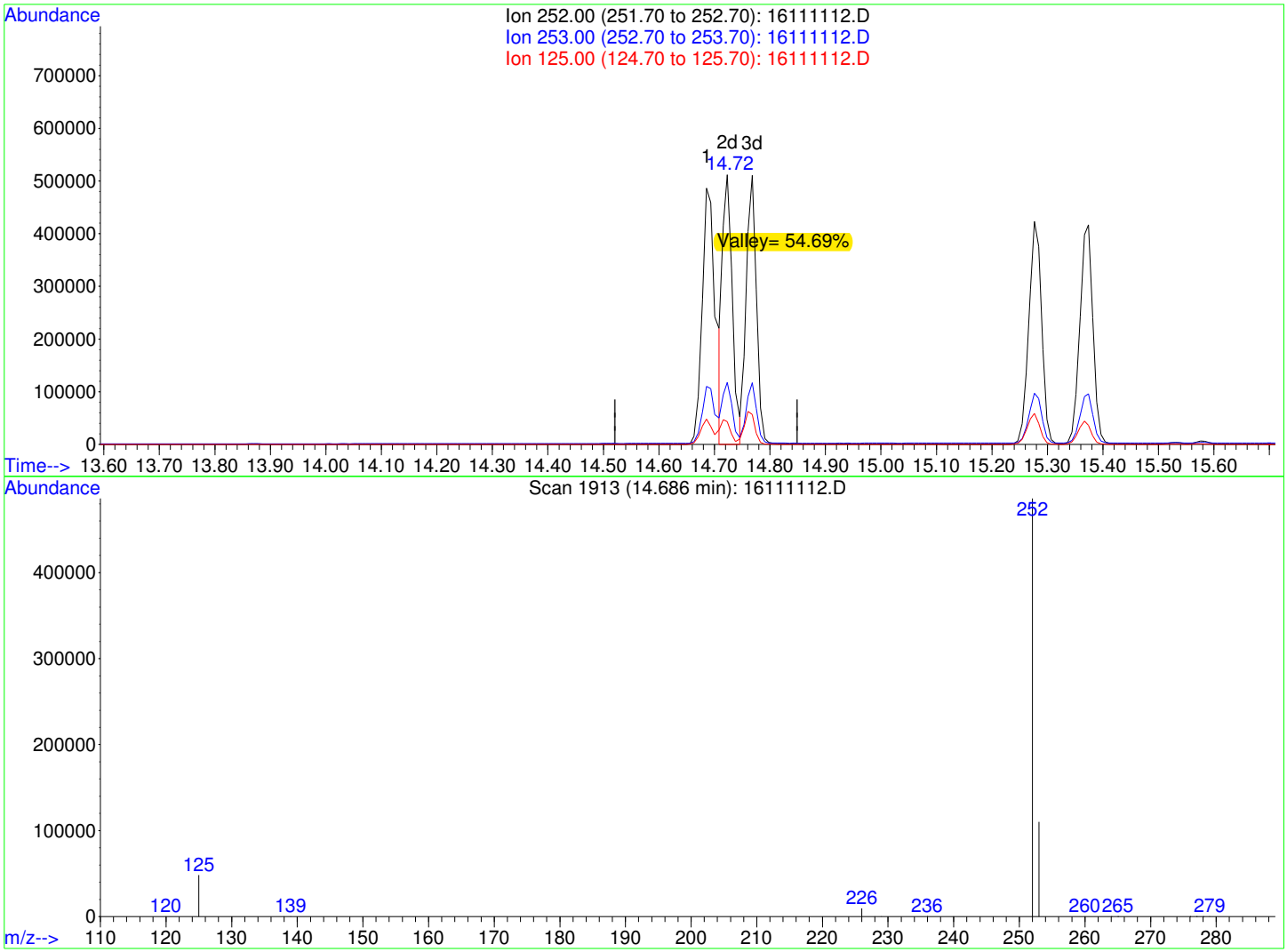
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111112.D Vial: 2
Acq On : 11 Nov 2016 3:50 pm Operator:
Sample : ICV-161111 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration



TIC: 16111112.D

(21) Benzo[b]fluoranthene (CP)

14.69min 2144.14ug/kg

response 803287

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	22.22
125.00	10.50	9.91
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111113.D Vial: 3
Acq On : 11 Nov 2016 4:18 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

DNR-Internal standards not spiked.

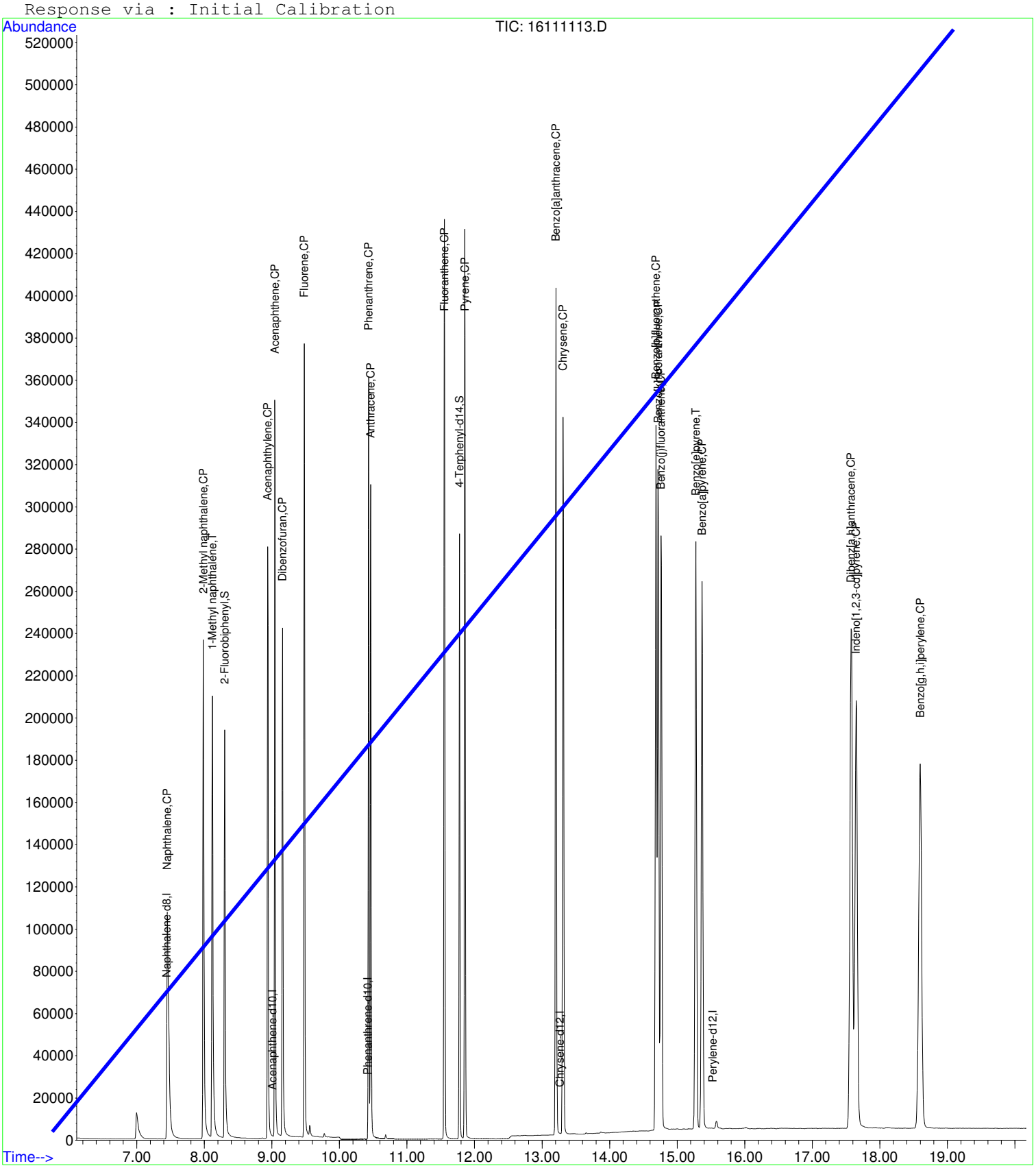
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.44	136	126	4000.00	ug/kg	0
5) Acenaphthene-d10	9.01	164	33	4000.00	ug/kg	0
11) Phenanthrene-d10	10.41	188	99	4000.00	ug/kg	0
17) Chrysene-d12	13.27	240	179	4000.00	ug/kg	0
20) Perylene-d12	15.53	264	135	4000.00	ug/kg	0
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	156280	16215363.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 405384.10%#		
16) 4-Terphenyl-d14	11.78	244	222852	11207803.16	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 280195.08%#		
Target Compounds						Qvalue
2) Naphthalene	7.46	128	183761	8101006.95	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	129393	7665025.21	ug/kg	91
4) 1-Methyl naphthalene	8.12	142	117416	7445294.43	ug/kg	94
6) Dibenzofuran	9.16	168	186594	17771944.61	ug/kg	99
8) Acenaphthylene	8.94	152	202584	17376912.86	ug/kg	100
9) Acenaphthene	9.04	154	123712	17731412.16	ug/kg	99
10) Fluorene	9.48	166	154772	18124782.92	ug/kg	98
12) Phenanthrene	10.43	178	221291	11479720.66	ug/kg	99
13) Anthracene	10.46	178	203883	10527755.98	ug/kg	99
14) Fluoranthene	11.55	202	268357	11786481.96	ug/kg	99
15) Pyrene	11.86	202	273146	11552015.66	ug/kg	99
18) Benzo[a]anthracene	13.20	228	298299	8524112.13	ug/kg	99
19) Chrysene	13.31	228	282667	8718762.14	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	343939	11472300.09	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	339683	12292590.88	ug/kg	100
23) Benzo(j)fluoranthene	14.76	252	285828	10695048.84	ug/kg	98
24) Benzo[e]pyrene	15.28	252	321395	12003432.31	ug/kg	96
25) Benzo[a]pyrene	15.37	252	304803	11150546.78	ug/kg	99
26) Dibenz[a,h]anthracene	17.58	278	349419	12169044.78	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.66	276	344457	12417614.79	ug/kg	95
28) Benzo[g,h,i]perylene	18.60	276	359536	12266179.54	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111113.D Vial: 3
Acq On : 11 Nov 2016 4:18 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111114.D Vial: 4
Acq On : 11 Nov 2016 4:46 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

DNR-Internal standards not spiked.

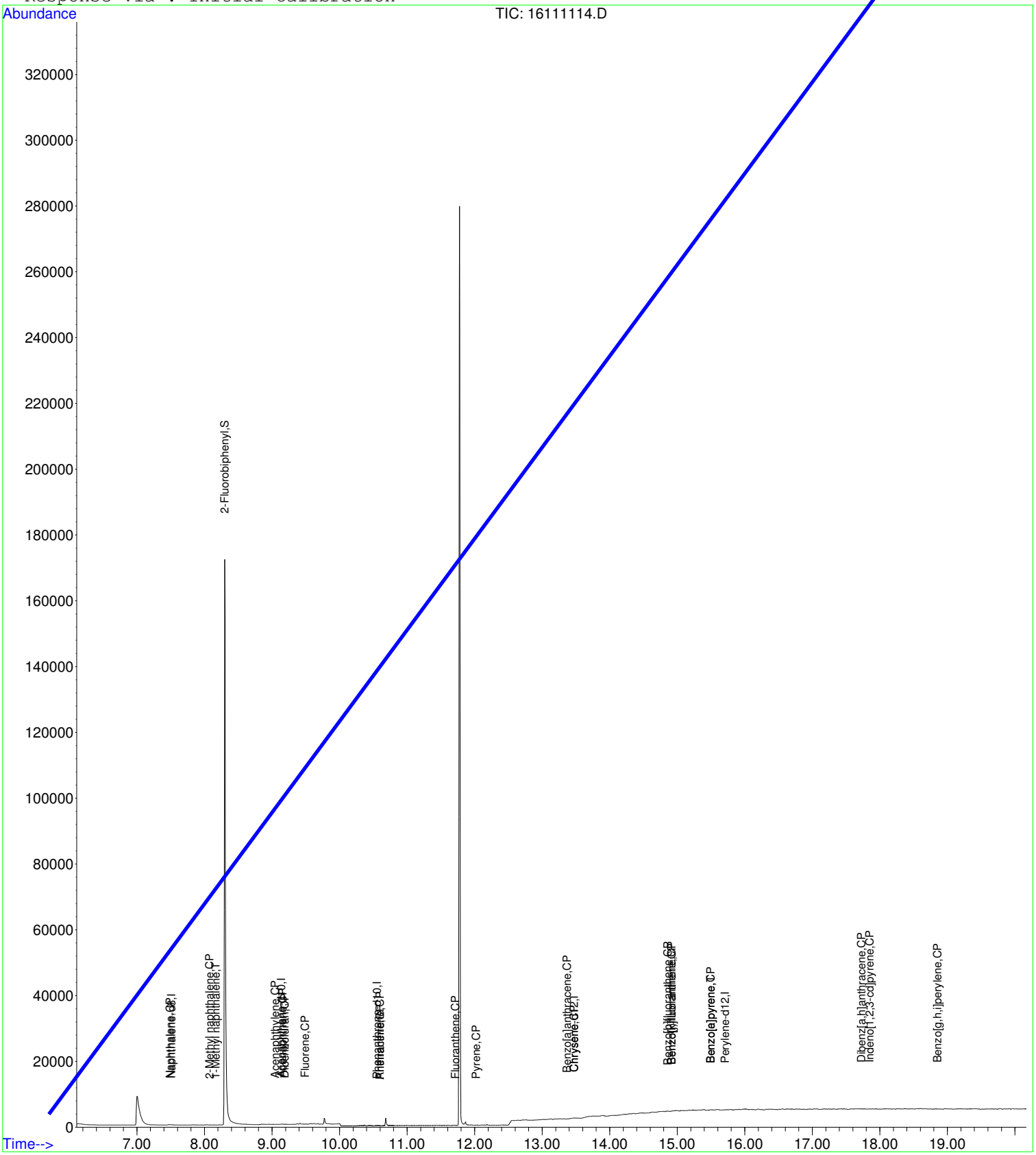
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.52	136	92	4000.00	ug/kg	0
5) Acenaphthene-d10	9.14	164	14	4000.00	ug/kg	0
11) Phenanthrene-d10	10.55	188	31	4000.00	ug/kg	0
17) Chrysene-d12	13.47	240	162	4000.00	ug/kg	0
20) Perylene-d12	15.71	264	18	4000.00	ug/kg	0
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	153433	37525628.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 938140.72%#		
16) 4-Terphenyl-d14	0.00	244	0	0.00	ug/kg	
Spiked Amount 4000.000	Range 40 - 140		Recovery	= 0.00%#		
Target Compounds						Qvalue
2) Naphthalene	7.49	128	181	10928.10	ug/kg#	1
3) 2-Methyl naphthalene	8.07	142	7	567.92	ug/kg#	25
4) 1-Methyl naphthalene	8.17	142	9	781.59	ug/kg	82
6) Dibenzofuran	9.19	168	54	12123.19	ug/kg#	44
8) Acenaphthylene	9.05	152	16	3234.99	ug/kg	62
9) Acenaphthene	9.16	154	87	29392.51	ug/kg#	11
10) Fluorene	9.49	166	31	8557.13	ug/kg	96
12) Phenanthrene	10.60	178	8	1325.35	ug/kg	73
13) Anthracene	10.60	178	8	1287.65	ug/kg	74
14) Fluoranthene	11.71	202	19	2665.01	ug/kg	64
15) Pyrene	12.02	202	11	1485.69	ug/kg	66
18) Benzo[a]anthracene	13.36	228	11	347.32	ug/kg	52
19) Chrysene	13.47	228	34	1158.77	ug/kg	80
21) Benzo[b]fluoranthene	14.86	252	35	8755.85	ug/kg#	1
22) Benzo[k]fluoranthene	14.91	252	52	14113.48	ug/kg#	1
23) Benzo(j)fluoranthene	14.91	252	52	14592.93	ug/kg#	1
24) Benzo[e]pyrene	15.49	252	51	14285.58	ug/kg	80
25) Benzo[a]pyrene	15.49	252	51	13992.92	ug/kg	80
26) Dibenz[a,h]anthracene	17.73	278	31	8097.16	ug/kg	62
27) Indeno[1,2,3-cd]pyrene	17.85	276	8	2162.99	ug/kg	68
28) Benzo[g,h,i]perylene	18.86	276	13	3326.38	ug/kg	77

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111114.D Vial: 4
Acq On : 11 Nov 2016 4:46 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111115.D Vial: 3
Acq On : 11 Nov 2016 5:13 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

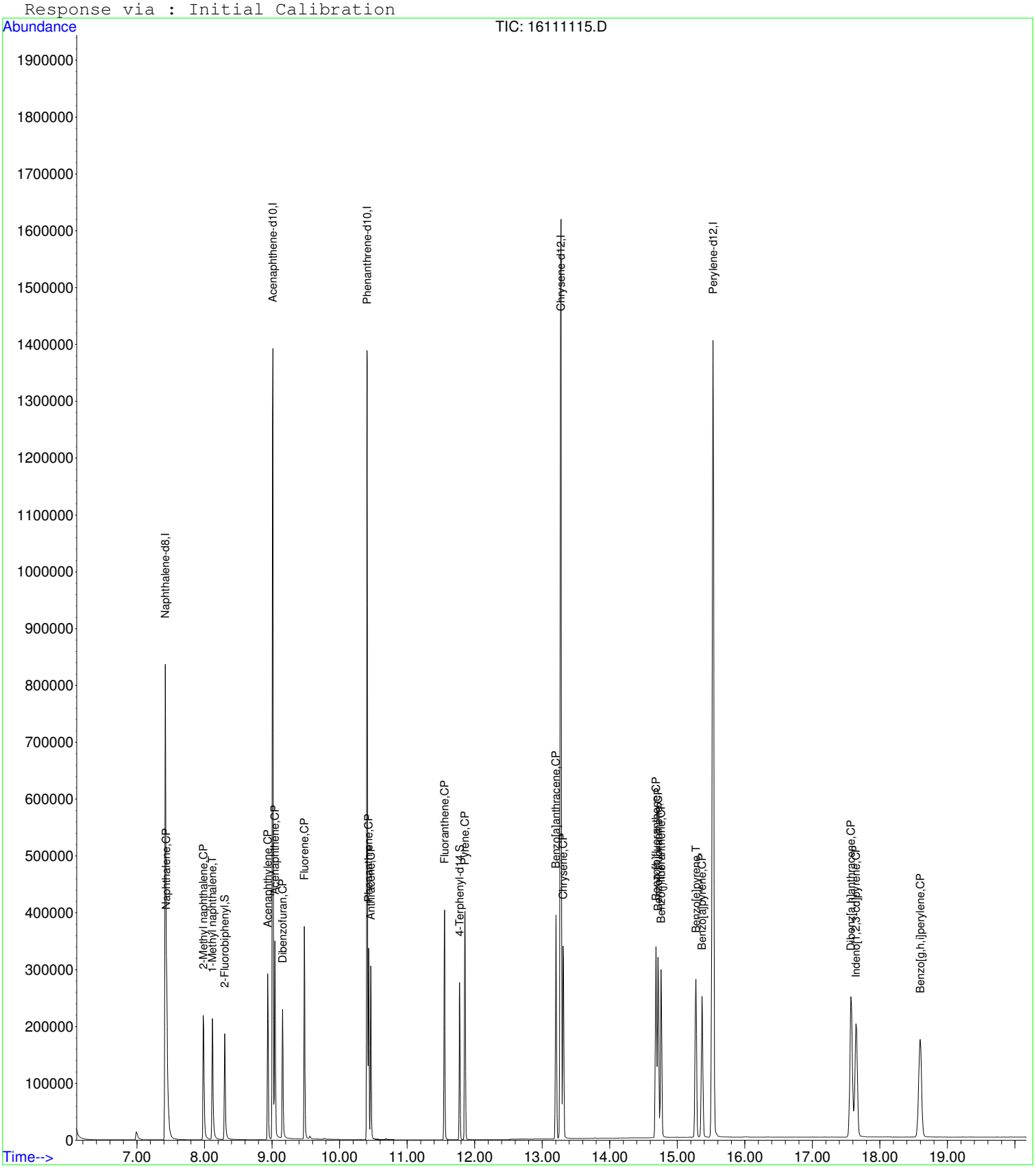
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1072292	4000.00	ug/kg	98
5) Acenaphthene-d10	9.01	164	579546	4000.00	ug/kg	91
11) Phenanthrene-d10	10.41	188	1108329	4000.00	ug/kg	92
17) Chrysene-d12	13.28	240	1521870	4000.00	ug/kg	99
20) Perylene-d12	15.53	264	1666829	4000.00	ug/kg	110
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	152691	902.12	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	22.55%#		
16) 4-Terphenyl-d14	11.78	244	218369	980.98	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	24.52%#		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	174376	903.30	ug/kg	99
3) 2-Methyl naphthalene	7.98	142	128247	892.70	ug/kg	89
4) 1-Methyl naphthalene	8.12	142	117084	872.39	ug/kg	97
6) Dibenzofuran	9.16	168	182543	989.98	ug/kg	99
8) Acenaphthylene	8.94	152	199814	975.93	ug/kg	99
9) Acenaphthene	9.04	154	116807	953.29	ug/kg	100
10) Fluorene	9.48	166	150940	1006.49	ug/kg	100
12) Phenanthrene	10.43	178	213890	991.12	ug/kg	99
13) Anthracene	10.46	178	203443	915.89	ug/kg	99
14) Fluoranthene	11.55	202	264742	1038.63	ug/kg	98
15) Pyrene	11.86	202	268835	1015.58	ug/kg	99
18) Benzo[a]anthracene	13.20	228	291608	980.10	ug/kg	99
19) Chrysene	13.31	228	277931	1008.31	ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	345936	934.56	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	314560	921.97	ug/kg	98
23) Benzo(j)fluoranthene	14.76	252	294480	892.43	ug/kg	99
24) Benzo[e]pyrene	15.28	252	314323	950.79	ug/kg	96
25) Benzo[a]pyrene	15.37	252	300755	891.11	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	343914	970.07	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.65	276	338128	987.25	ug/kg	98
28) Benzo[g,h,i]perylene	18.60	276	354925	980.72	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111115.D Vial: 3
Acq On : 11 Nov 2016 5:13 pm Operator:
Sample : LCS-77875 Inst : GC/MS #6
Misc : LCS Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111116.D Vial: 4
Acq On : 11 Nov 2016 5:41 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

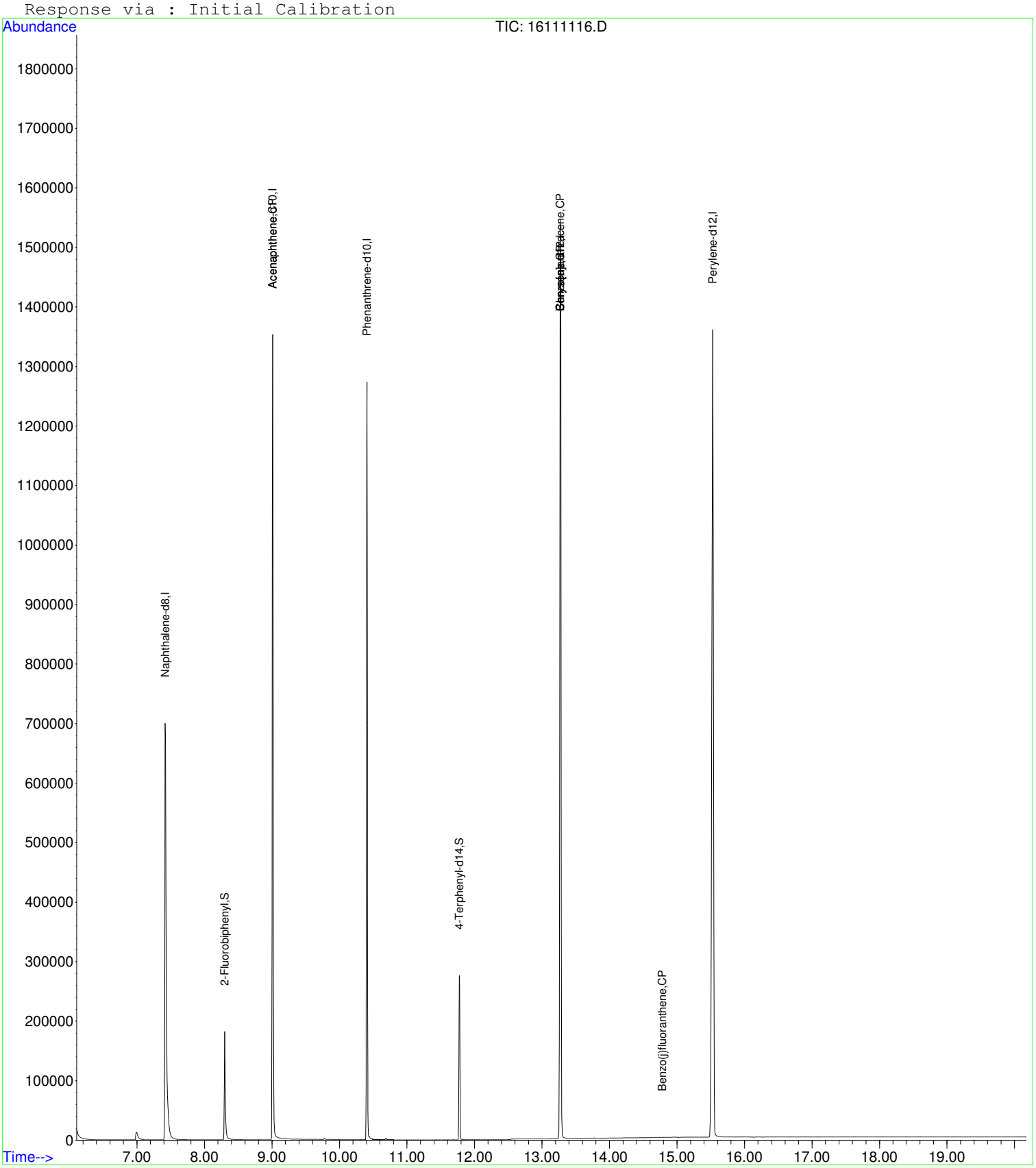
Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1005466	4000.00	ug/kg	92
5) Acenaphthene-d10	9.01	164	544025	4000.00	ug/kg	86
11) Phenanthrene-d10	10.41	188	1039292	4000.00	ug/kg	87
17) Chrysene-d12	13.27	240	1435158	4000.00	ug/kg	93
20) Perylene-d12	15.53	264	1562116	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.30	172	148387	933.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 23.35%#			
16) 4-Terphenyl-d14	11.78	244	219034	1049.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 26.23%#			
Target Compounds						Qvalue
9) Acenaphthene	9.01	154	2001	~~17.40 ug/kg#~~		~~11~~
18) Benzo[a]anthracene	13.27	228	3372	~~12.02 ug/kg~~		~~73~~
19) Chrysene	13.27	228	3372	~~12.97 ug/kg~~		~~69~~
23) Benzo(j)fluoranthene	14.77	252	58	0.19 ug/kg#		47

(#) = qualifier out of range (m) = manual integration

Data File : C:\HPCHEM\1\DATA\161111\16111116.D Vial: 4
Acq On : 11 Nov 2016 5:41 pm Operator:
Sample : MB-77875 Inst : GC/MS #6
Misc : MBLK Multiplr: ~~10.00~~ 1X
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:40 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111127.D Vial: 15
Acq On : 11 Nov 2016 10:49 pm Operator:
Sample : 1611071-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Naphthalene-d8	7.42	136	903719	4000.00 ug/kg	83
5) Acenaphthene-d10	9.01	164	504817	4000.00 ug/kg	80
11) Phenanthrene-d10	10.40	188	954745	4000.00 ug/kg	80
17) Chrysene-d12	13.27	240	1307448	4000.00 ug/kg	85
20) Perylene-d12	15.52	264	1433775	4000.00 ug/kg	95
System Monitoring Compounds					
7) 2-Fluorobiphenyl	8.31	172	15106	102.46 ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.56%#	
16) 4-Terphenyl-d14	11.78	244	21440	111.81 ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.80%#	
Target Compounds					Qvalue
9) Acenaphthene	9.01	154	1773	~~16.61 ug/kg#~~	~~10~~
14) Fluoranthene	11.55	202	3263	14.86 ug/kg	98
15) Pyrene	11.86	202	3151	13.82 ug/kg	97
18) Benzo[a]anthracene	13.20	228	2161	8.45 ug/kg	97
19) Chrysene	13.31	228	2470	10.43 ug/kg	99
21) Benzo[b]fluoranthene	14.69	252	3758	11.80 ug/kg	96
22) Benzo[k]fluoranthene	14.69	252	3758	~~12.80 ug/kg~~	~~96~~
23) Benzo(j)fluoranthene	14.76	252	1542	5.43 ug/kg	94
24) Benzo[e]pyrene	15.28	252	2754	9.68 ug/kg	91
25) Benzo[a]pyrene	15.37	252	3352	11.55 ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.65	276	2822	9.58 ug/kg	95
28) Benzo[g,h,i]perylene	18.60	276	3065	9.85 ug/kg	96

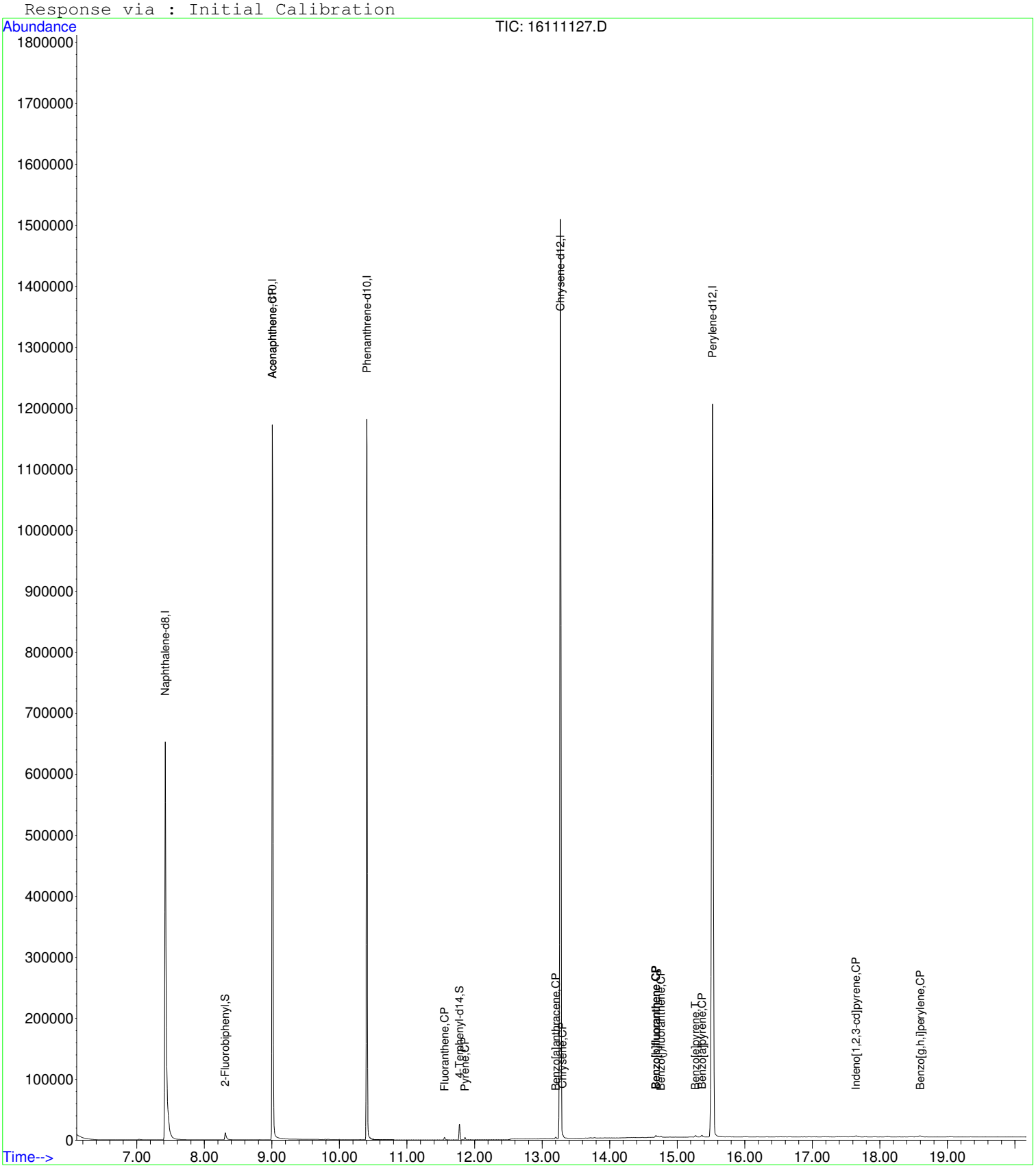
Wrong RT See MI

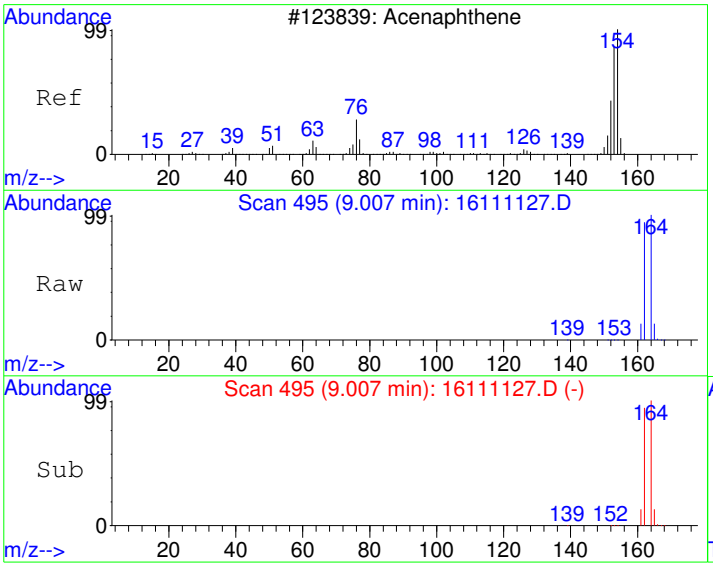
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111127.D Vial: 15
Acq On : 11 Nov 2016 10:49 pm Operator:
Sample : 1611071-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

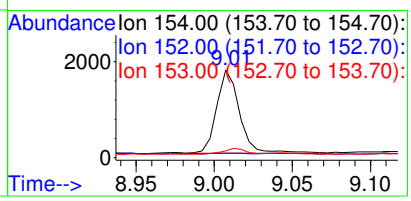


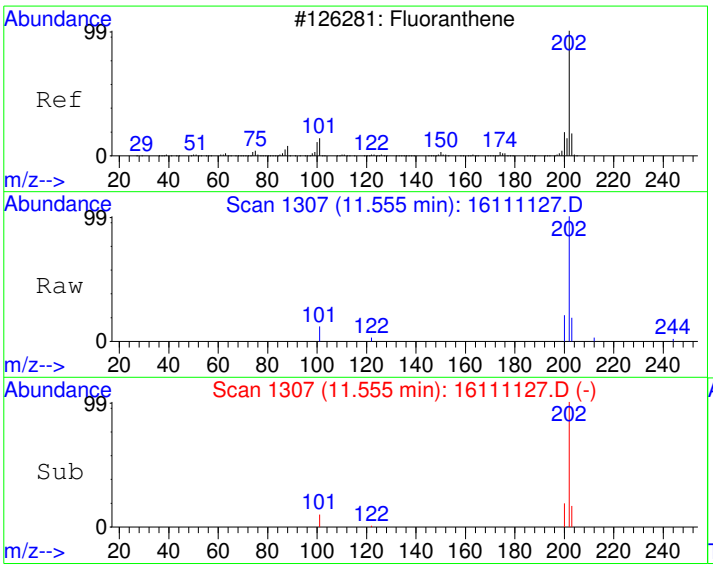


#9
Acenaphthene
Concen: 16.61 ug/kg
RT: 9.01 min Scan# 495
Delta R.T. -0.04 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:154 Resp: 1773

Ion	Ratio	Lower	Upper
154	100		
152	0.6	19.8	79.8#
153	4.0	77.1	137.1#

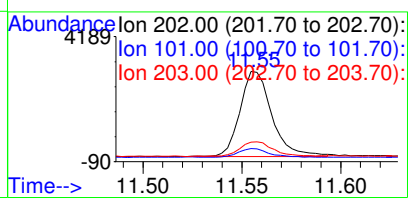


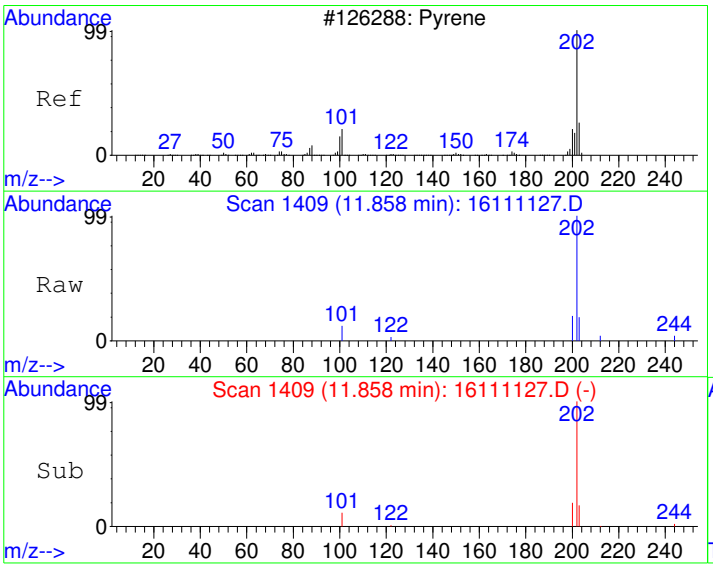


#14
Fluoranthene
Concen: 14.86 ug/kg
RT: 11.55 min Scan# 1307
Delta R.T. 0.00 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:202 Resp: 3263

Ion	Ratio	Lower	Upper
202	100		
101	9.9	0.0	40.6
203	17.0	0.0	48.0

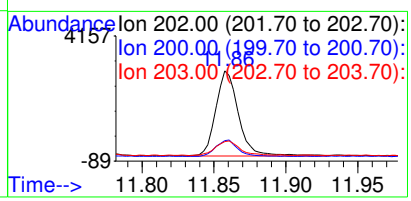


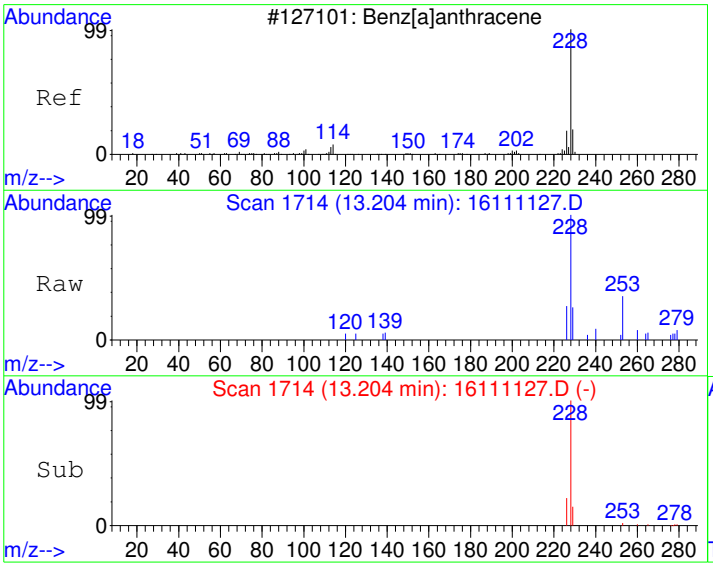


#15
Pyrene
Concen: 13.82 ug/kg
RT: 11.86 min Scan# 1409
Delta R.T. 0.00 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:202 Resp: 3151

Ion	Ratio	Lower	Upper
202	100		
200	18.5	0.0	50.1
203	16.3	0.0	47.8

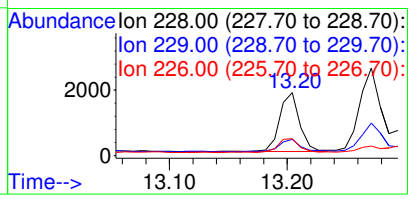


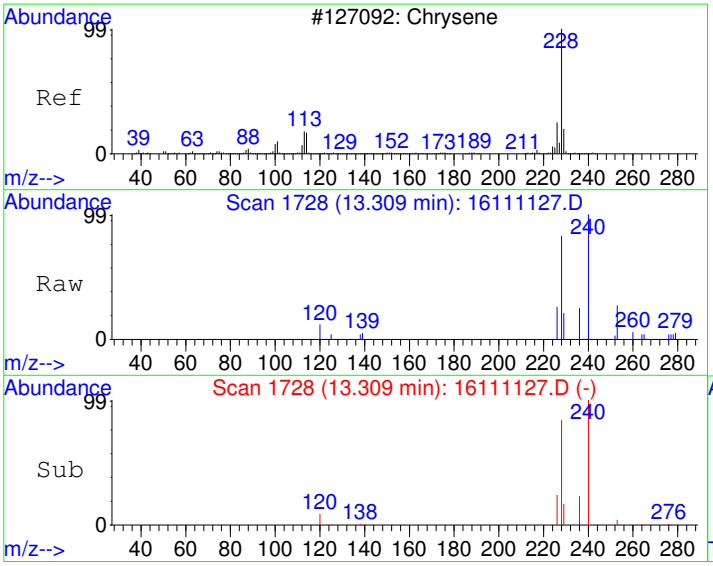


#18
Benzo[a]anthracene
Concen: 8.45 ug/kg
RT: 13.20 min Scan# 1714
Delta R.T. -0.00 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:228 Resp: 2161

Ion	Ratio	Lower	Upper
228	100		
229	20.1	0.0	50.4
226	23.4	0.0	55.6

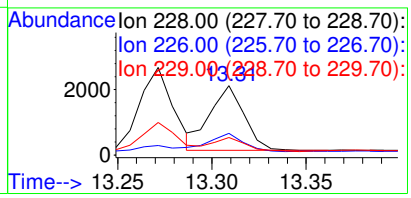


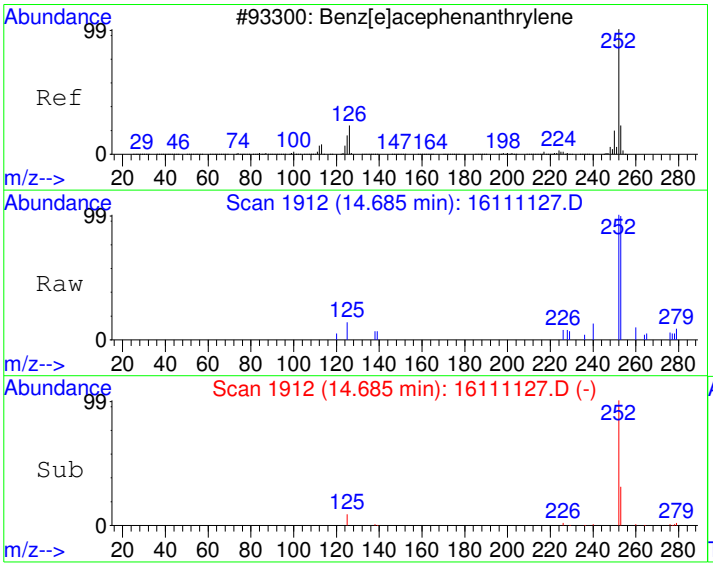


#19
Chrysene
Concen: 10.43 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. -0.00 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:228 Resp: 2470

Ion	Ratio	Lower	Upper
228	100		
226	27.9	0.0	58.8
229	20.0	0.0	50.2

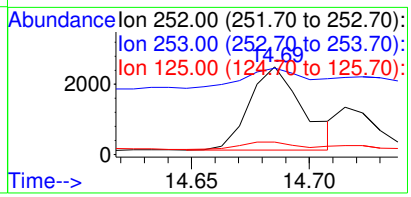


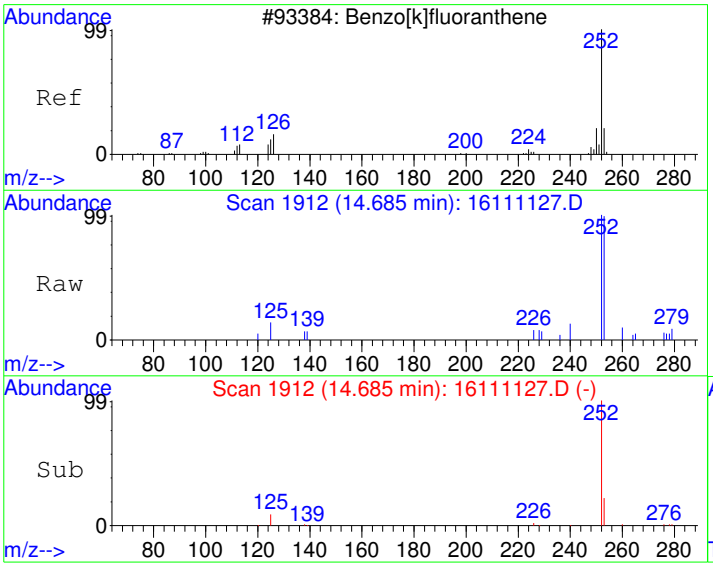


#21
Benzo[b]fluoranthene
Concen: 11.80 ug/kg
RT: 14.69 min Scan# 1912
Delta R.T. -0.00 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:252 Resp: 3758

Ion	Ratio	Lower	Upper
252	100		
253	24.2	0.0	52.1
125	9.2	0.0	40.5

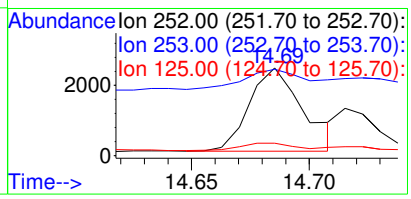




#22
Benzo[k]fluoranthene
Concen: 12.80 ug/kg
RT: 14.69 min Scan# 1912
Delta R.T. -0.04 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:252 Resp: 3758

Ion	Ratio	Lower	Upper
252	100		
253	24.2	2.4	42.4
125	9.2	0.0	28.2

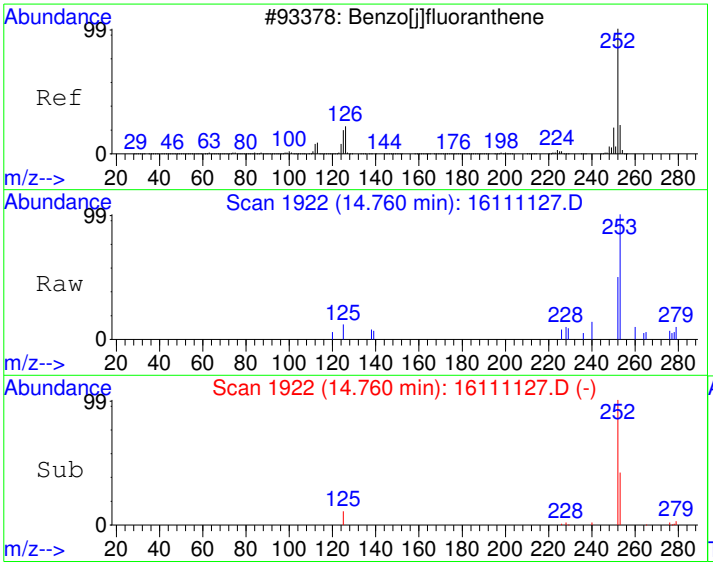


BEFORE MANUAL INTEGRATION

By Don Winston at 9:23:13 AM, 11/14/2016

BEFORE MANUAL INTEGRATION

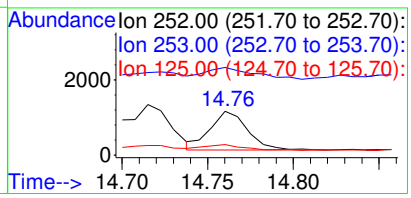
By Janice Whitt at 11:19:08 AM, 11/14/2016

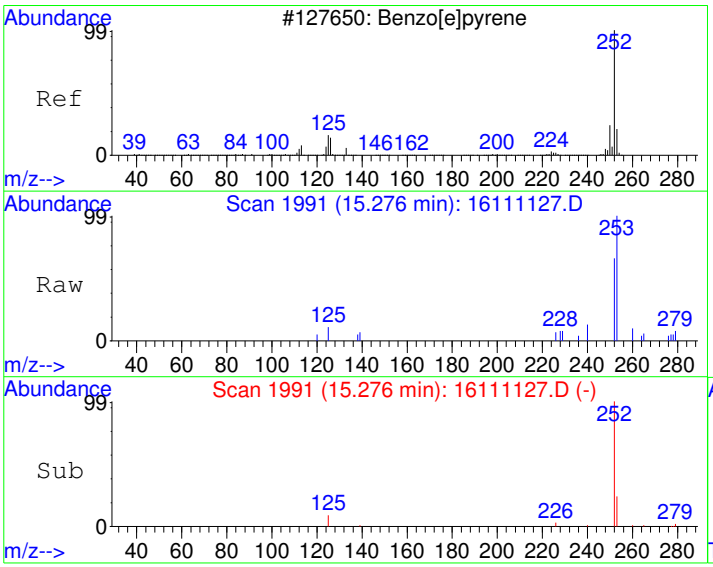


#23
Benzo(j)fluoranthene
Concen: 5.43 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:252 Resp: 1542

Ion	Ratio	Lower	Upper
252	100		
253	25.7	2.3	42.3
125	14.1	0.0	32.6

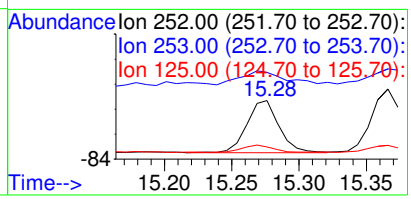


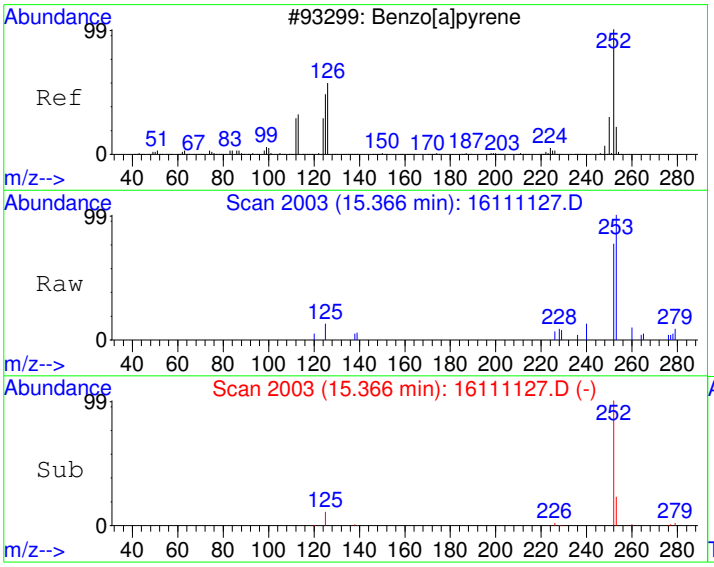


#24
Benzo[e]pyrene
Concen: 9.68 ug/kg
RT: 15.28 min Scan# 1991
Delta R.T. -0.00 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:252 Resp: 2754

Ion	Ratio	Lower	Upper
252	100		
253	19.5	1.8	41.8
125	9.9	0.0	35.7

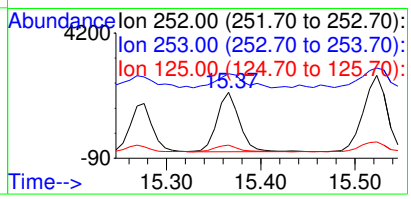


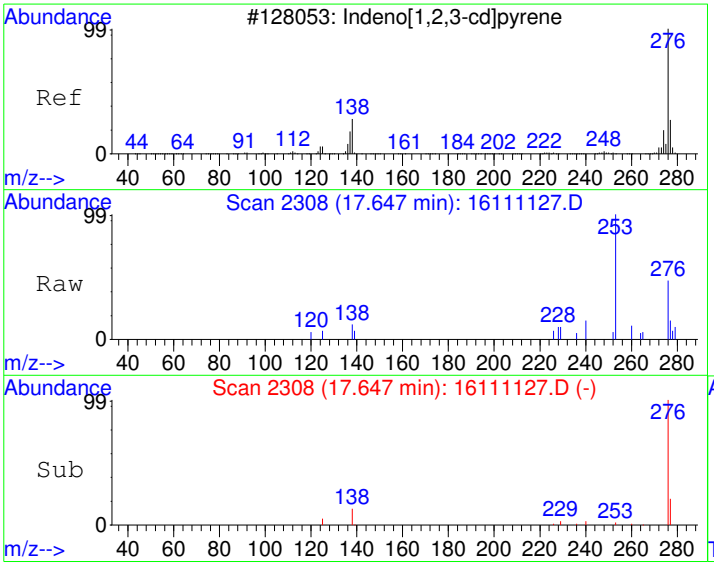


#25
Benzo[a]pyrene
Concen: 11.55 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:252 Resp: 3352

Ion	Ratio	Lower	Upper
252	100		
253	21.1	2.2	42.2
125	11.0	0.0	30.8

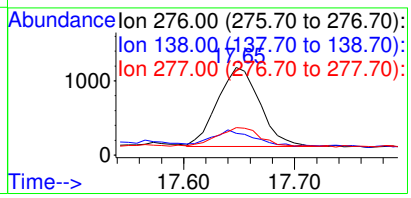


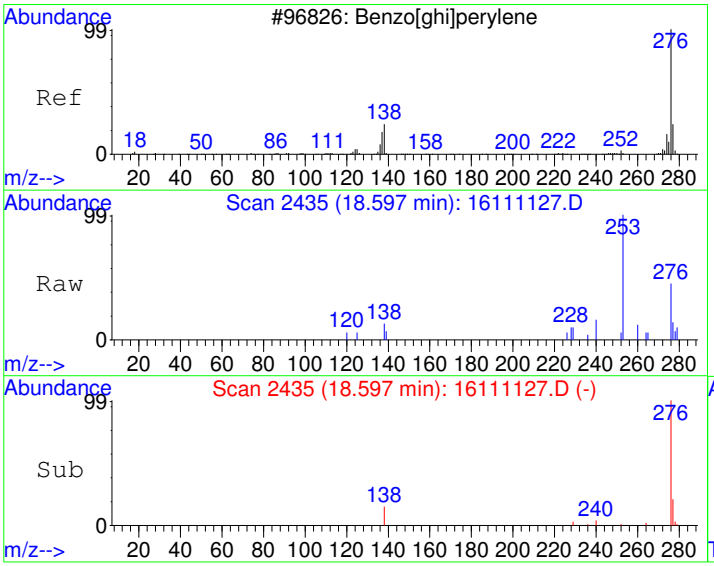


#27
Indeno[1,2,3-cd]pyrene
Concen: 9.58 ug/kg
RT: 17.65 min Scan# 2308
Delta R.T. -0.01 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:276 Resp: 2822

Ion	Ratio	Lower	Upper
276	100		
138	15.4	0.0	39.3
277	23.3	4.0	44.0

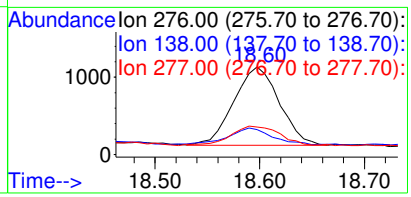




#28
Benzo[g,h,i]perylene
Concen: 9.85 ug/kg
RT: 18.60 min Scan# 2435
Delta R.T. -0.01 min
Lab File: 16111127.D
Acq: 11 Nov 2016 10:49 pm

Tgt Ion:276 Resp: 3065

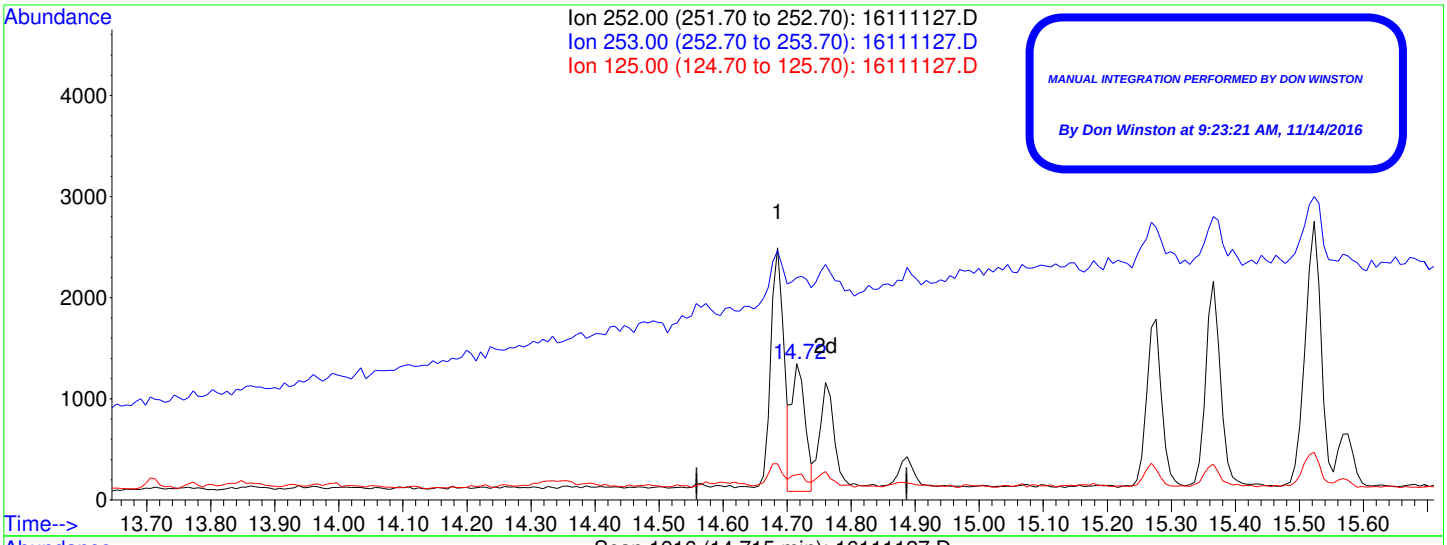
Ion	Ratio	Lower	Upper
276	100		
138	19.0	0.8	40.8
277	22.2	4.0	44.0

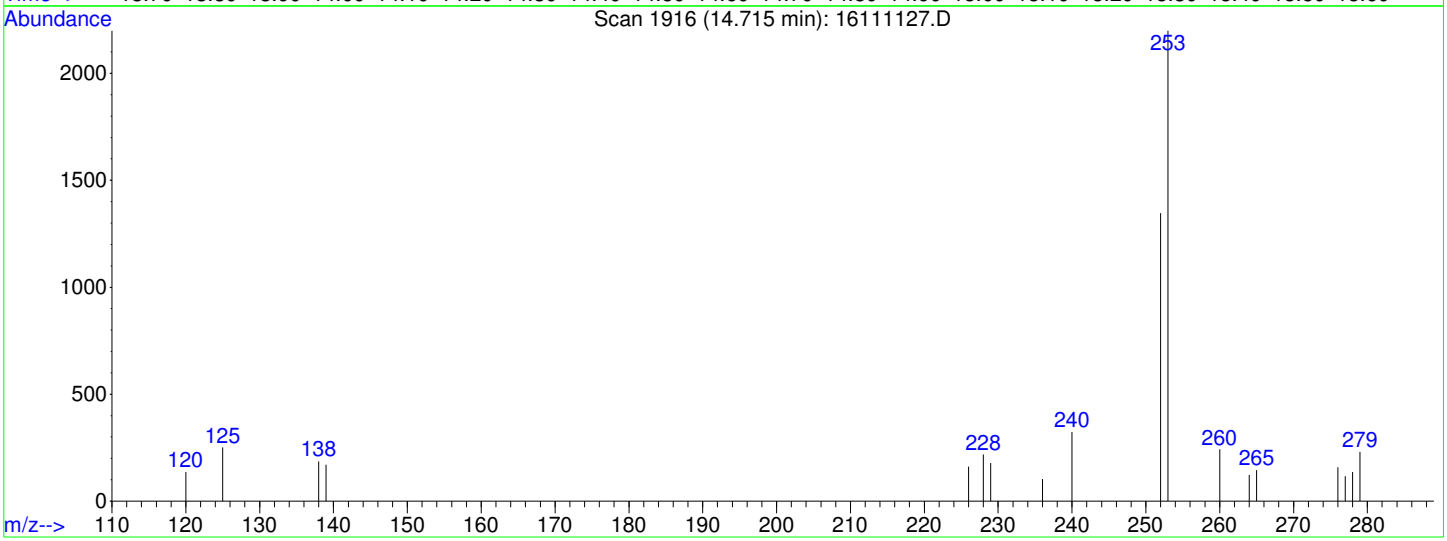


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161111\16111127.D Vial: 15
Acq On : 11 Nov 2016 10:49 pm Operator:
Sample : 1611071-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 9:20 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Multiple Level Calibration





TIC: 16111127.D

(22) Benzo[k]fluoranthene (CP)

14.72min 6.25ug/kg m

response 1833

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	163.25#
125.00	8.20	18.63
0.00	0.00	0.00

AFTER MANUAL INTEGRATION
By Janice Whitt at 11:19:13 AM, 11/14/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111128.D Vial: 16
Acq On : 11 Nov 2016 11:17 pm Operator:
Sample : 1611071-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

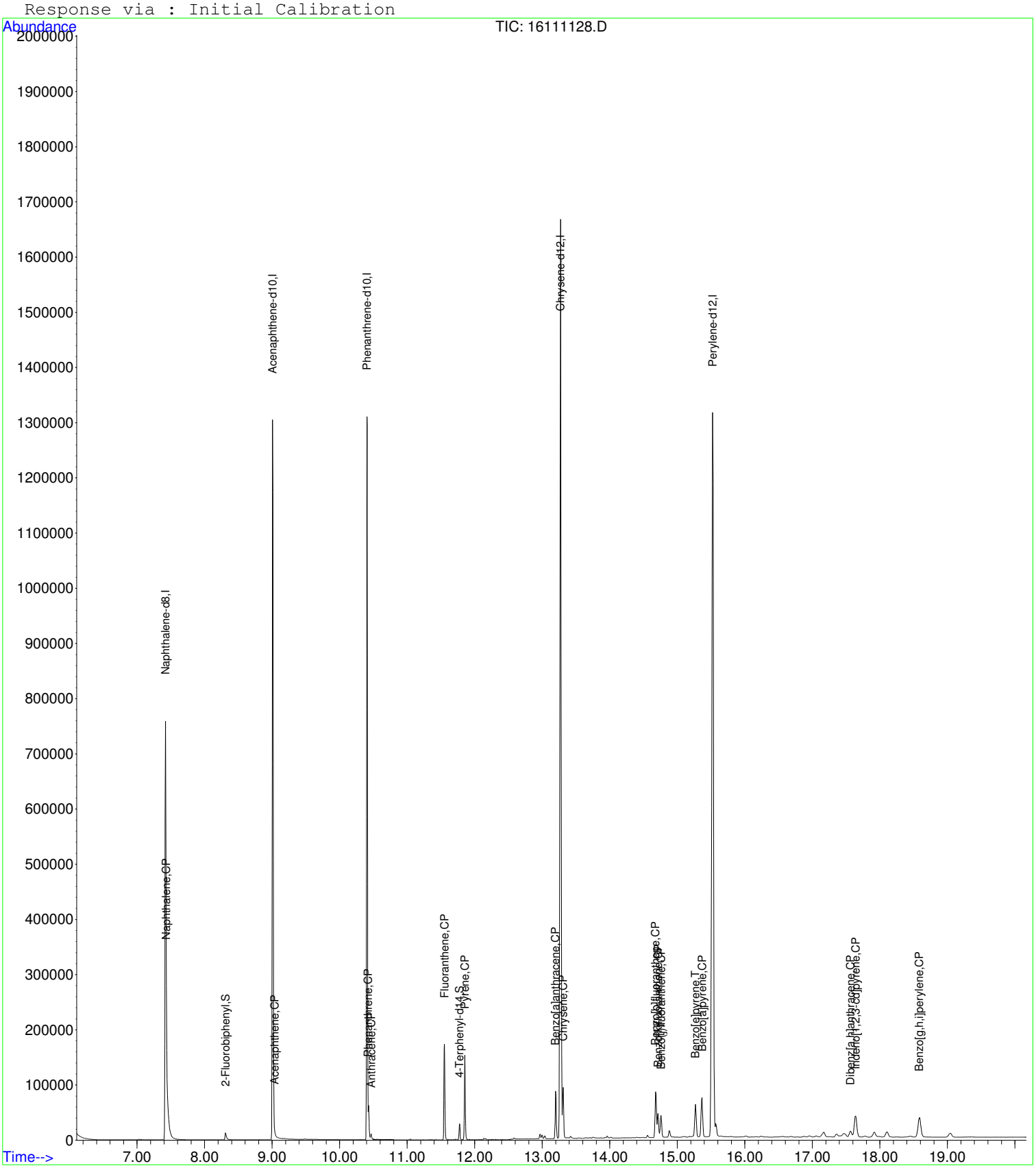
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	1002467	4000.00	ug/kg	92
5) Acenaphthene-d10	9.01	164	548745	4000.00	ug/kg	87
11) Phenanthrene-d10	10.40	188	1027219	4000.00	ug/kg	86
17) Chrysene-d12	13.27	240	1435623	4000.00	ug/kg	93
20) Perylene-d12	15.52	264	1569514	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15566	97.13	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.43%#		
16) 4-Terphenyl-d14	11.78	244	21983	106.55	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.66%#		
Target Compounds						Qvalue
2) Naphthalene	7.44	128	989	5.48	ug/kg	95
9) Acenaphthene	9.04	154	941	8.11	ug/kg	98
12) Phenanthrene	10.43	178	38101	190.49	ug/kg	99
13) Anthracene	10.47	178	7516	36.51	ug/kg	97
14) Fluoranthene	11.55	202	113607	480.89	ug/kg	98
15) Pyrene	11.85	202	101044	411.86	ug/kg	98
18) Benzo[a]anthracene	13.20	228	70239	250.26	ug/kg	99
19) Chrysene	13.31	228	83216	320.04	ug/kg	99
21) Benzo[b]fluoranthene	14.68	252	94749	271.84	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	42277	131.60	ug/kg	90
23) Benzo(j)fluoranthene	14.76	252	39992	128.71	ug/kg	94
24) Benzo[e]pyrene	15.27	252	65871	211.61	ug/kg	97
25) Benzo[a]pyrene	15.37	252	89483	281.57	ug/kg	98
26) Dibenz[a,h]anthracene	17.57	278	14546	43.57	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.64	276	69590	215.78	ug/kg	98
28) Benzo[g,h,i]perylene	18.59	276	71741	210.52	ug/kg	96

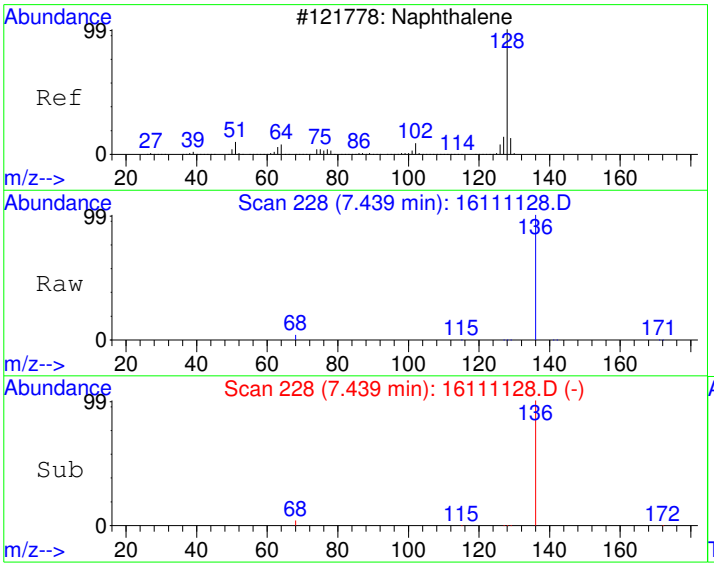
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111128.D Vial: 16
Acq On : 11 Nov 2016 11:17 pm Operator:
Sample : 1611071-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

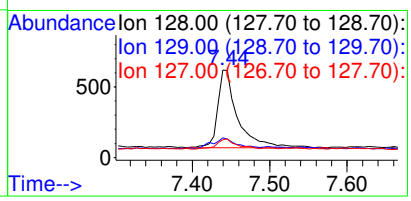


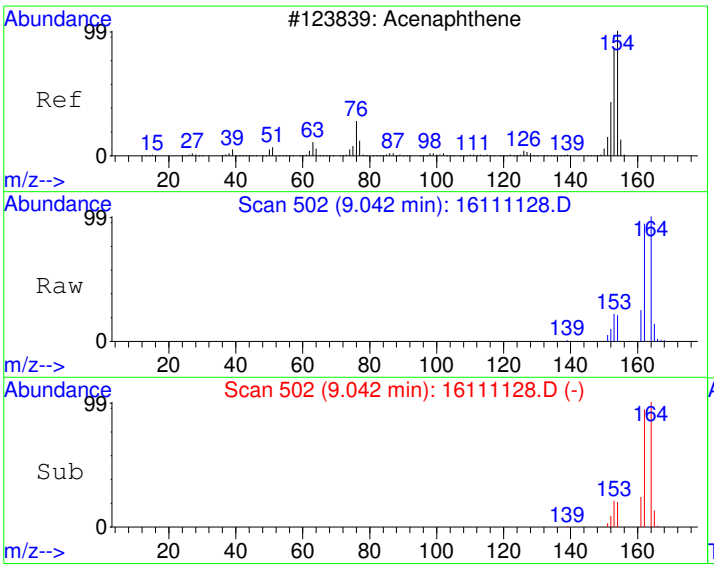


#2
Naphthalene
Concen: 5.48 ug/kg
RT: 7.44 min Scan# 228
Delta R.T. -0.00 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:128 Resp: 989

Ion	Ratio	Lower	Upper
128	100		
129	14.0	0.0	41.1
127	11.8	0.0	42.7

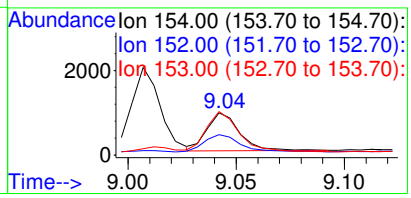


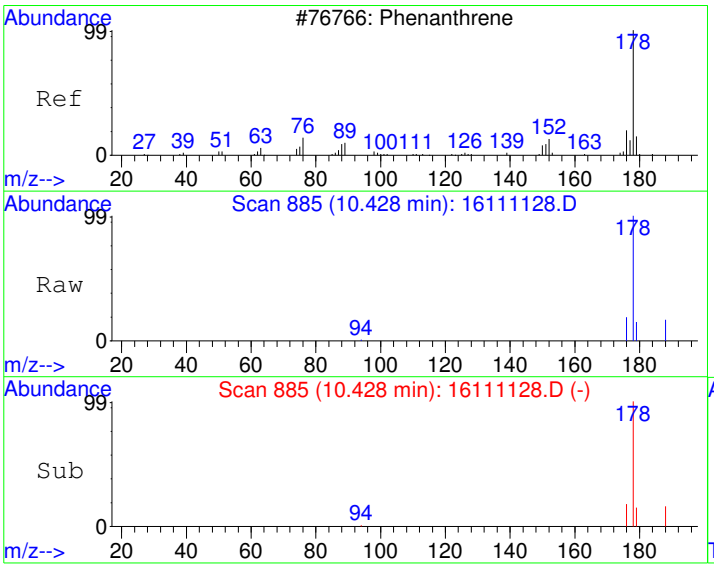


#9
Acenaphthene
Concen: 8.11 ug/kg
RT: 9.04 min Scan# 502
Delta R.T. -0.00 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:154 Resp: 941

Ion	Ratio	Lower	Upper
154	100		
152	46.2	19.8	79.8
153	106.6	77.1	137.1

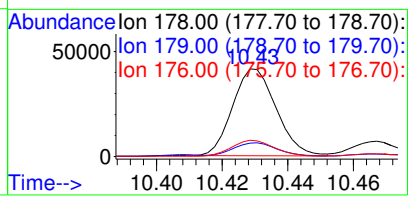


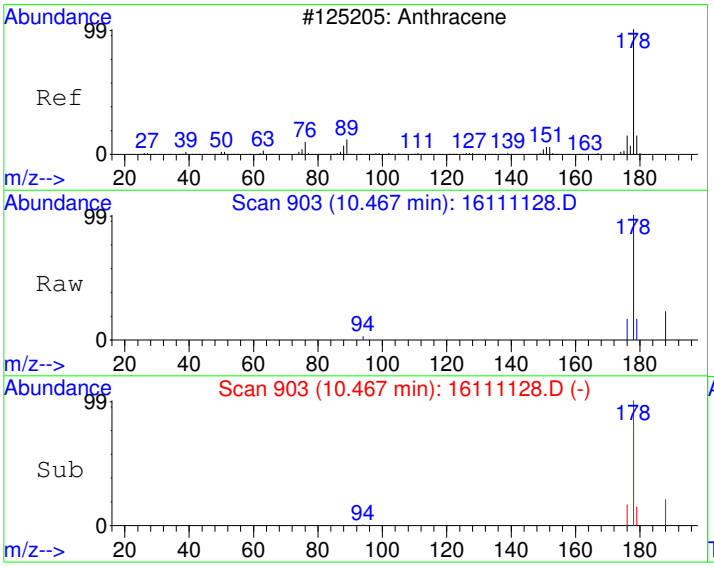


#12
Phenanthrene
Concen: 190.49 ug/kg
RT: 10.43 min Scan# 885
Delta R.T. -0.00 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:178 Resp: 38101

Ion	Ratio	Lower	Upper
178	100		
179	14.8	0.0	45.8
176	18.5	0.0	48.3

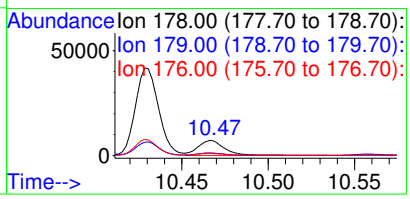


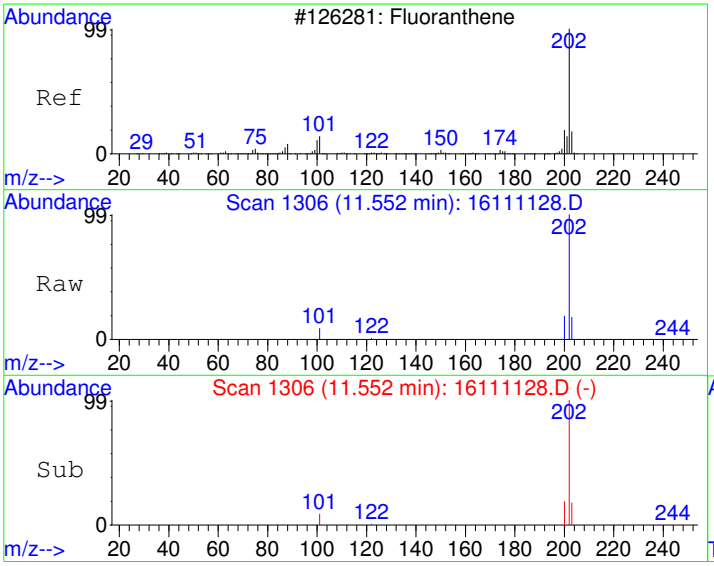


#13
Anthracene
Concen: 36.51 ug/kg
RT: 10.47 min Scan# 903
Delta R.T. 0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:178 Resp: 7516

Ion	Ratio	Lower	Upper
178	100		
179	15.0	0.0	45.7
176	16.6	0.0	48.1

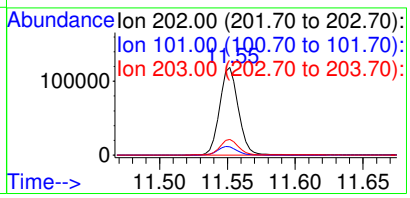


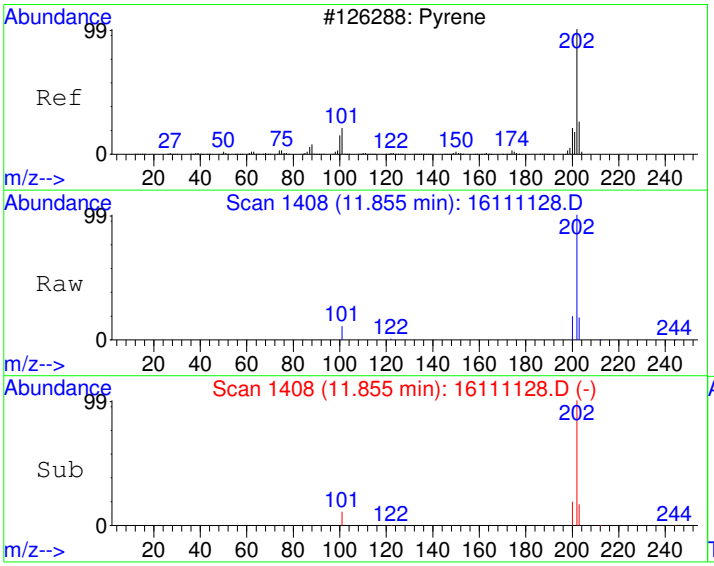


#14
Fluoranthene
Concen: 480.89 ug/kg
RT: 11.55 min Scan# 1306
Delta R.T. 0.00 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:202 Resp: 113607

Ion	Ratio	Lower	Upper
202	100		
101	9.4	0.0	40.6
203	17.7	0.0	48.0

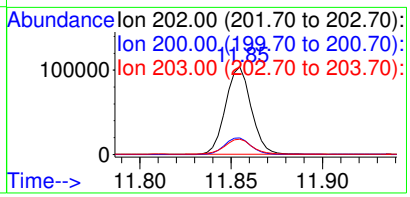


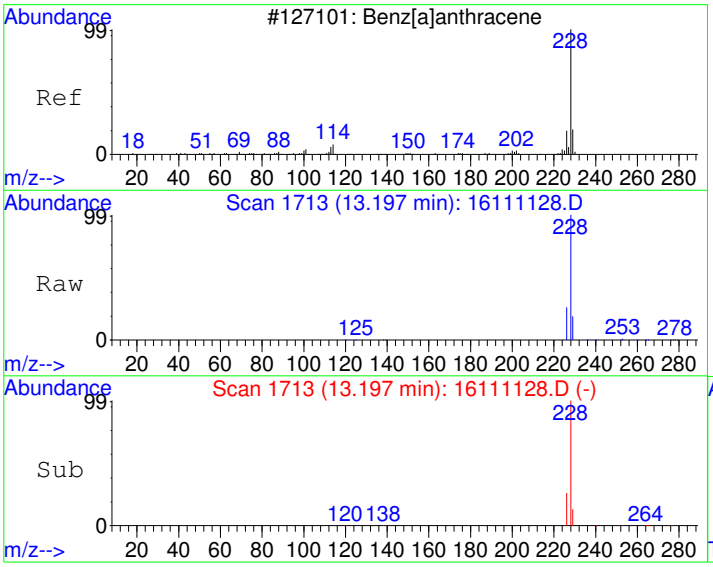


#15
Pyrene
Concen: 411.86 ug/kg
RT: 11.85 min Scan# 1408
Delta R.T. 0.00 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:202 Resp: 101044

Ion	Ratio	Lower	Upper
202	100		
200	18.9	0.0	50.1
203	17.5	0.0	47.8

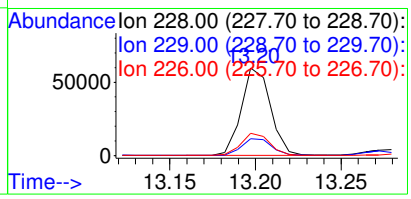


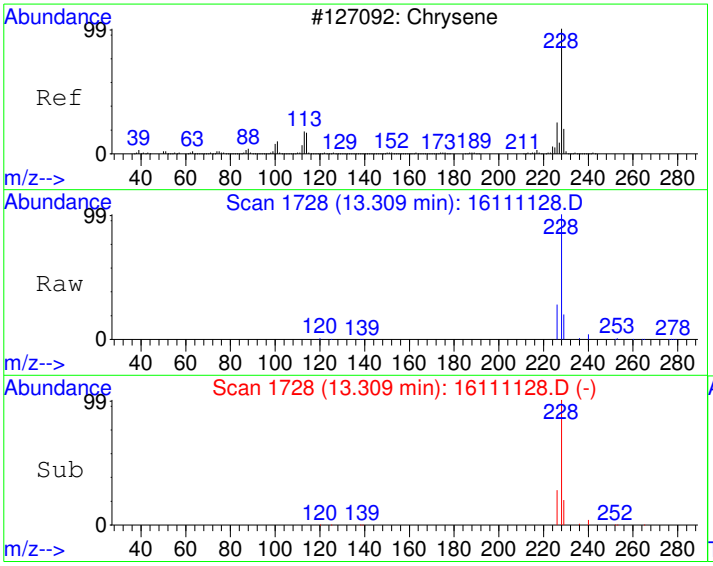


#18
Benzo[a]anthracene
Concen: 250.26 ug/kg
RT: 13.20 min Scan# 1713
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:228 Resp: 70239

Ion	Ratio	Lower	Upper
228	100		
229	19.0	0.0	50.4
226	25.5	0.0	55.6

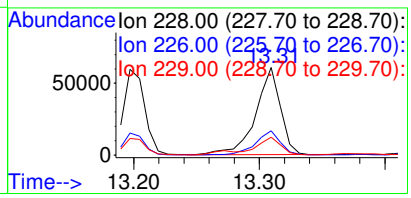


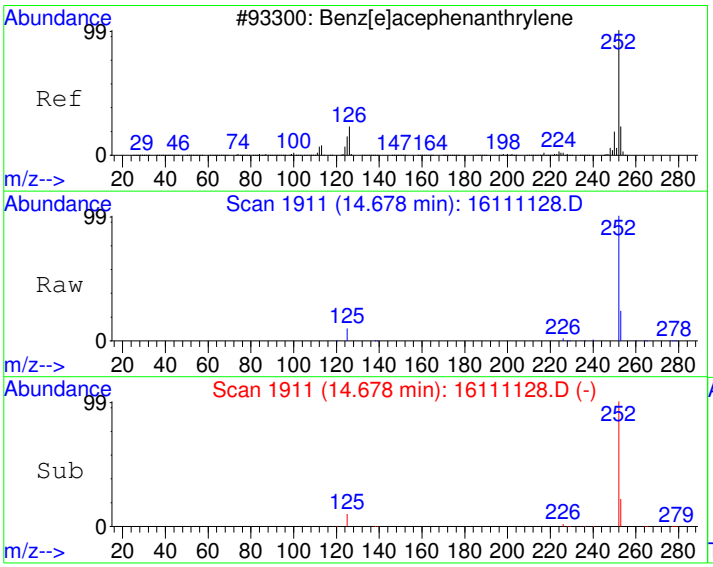


#19
Chrysene
Concen: 320.04 ug/kg
RT: 13.31 min Scan# 1728
Delta R.T. 0.00 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:228 Resp: 83216

Ion	Ratio	Lower	Upper
228	100		
226	27.6	0.0	58.8
229	20.2	0.0	50.2

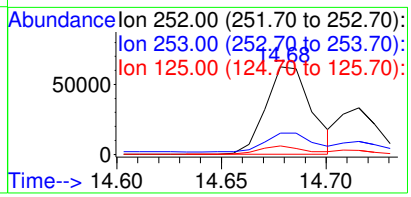


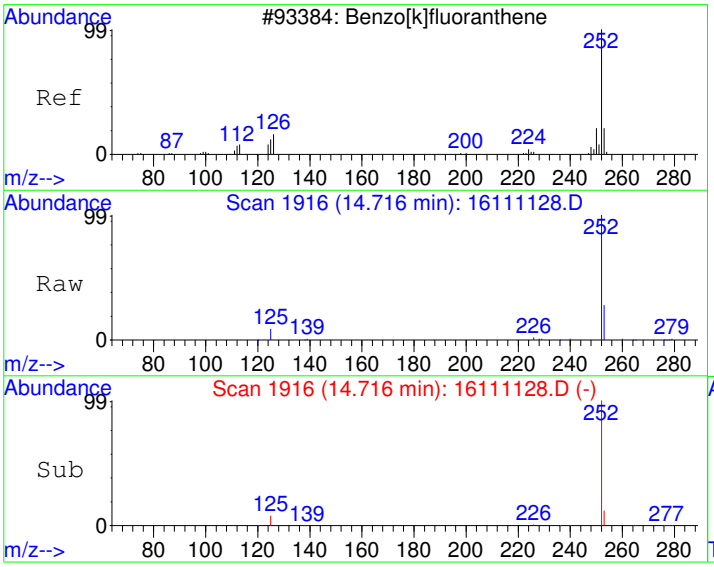


#21
Benzo[b]fluoranthene
Concen: 271.84 ug/kg
RT: 14.68 min Scan# 1911
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:252 Resp: 94749

Ion	Ratio	Lower	Upper
252	100		
253	21.4	0.0	52.1
125	9.8	0.0	40.5

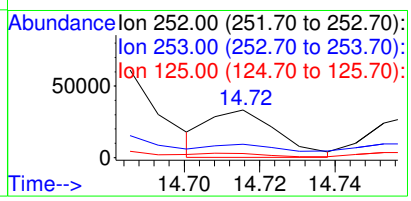


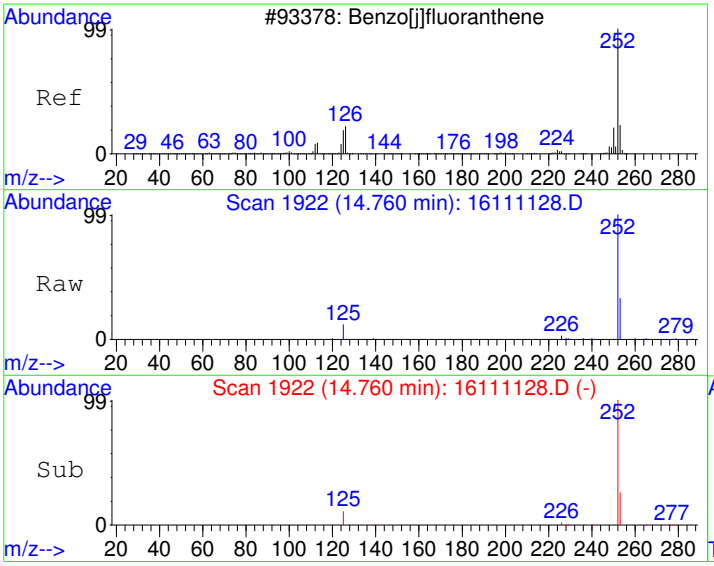


#22
Benzo[k]fluoranthene
Concen: 131.60 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:252 Resp: 42277

Ion	Ratio	Lower	Upper
252	100		
253	16.3	2.4	42.4
125	7.2	0.0	28.2

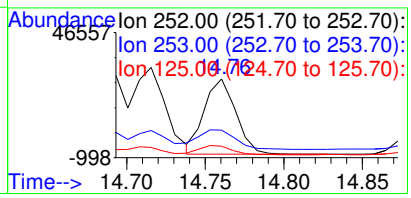


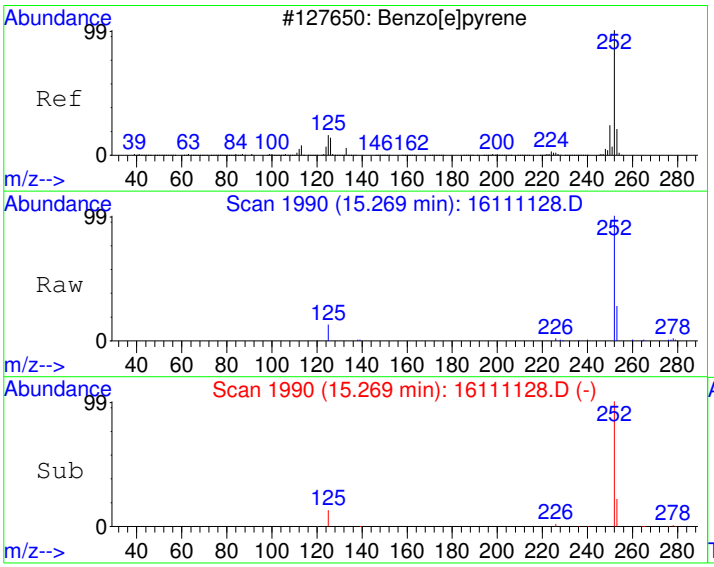


#23
Benzo(j)fluoranthene
Concen: 128.71 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:252 Resp: 39992

Ion	Ratio	Lower	Upper
252	100		
253	25.4	2.3	42.3
125	11.0	0.0	32.6

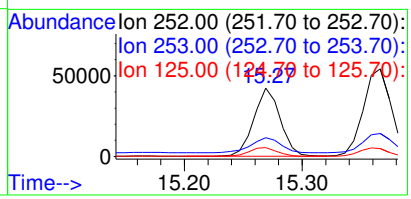


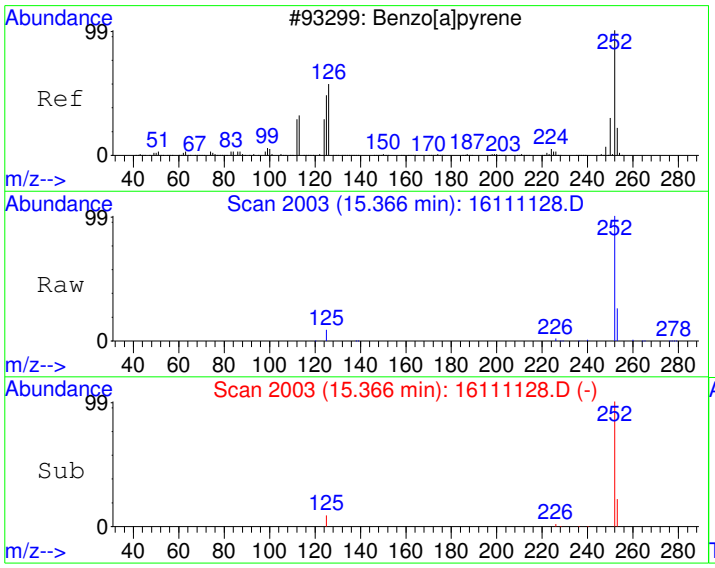


#24
Benzo[e]pyrene
Concen: 211.61 ug/kg
RT: 15.27 min Scan# 1990
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:252 Resp: 65871

Ion	Ratio	Lower	Upper
252	100		
253	22.2	1.8	41.8
125	12.9	0.0	35.7

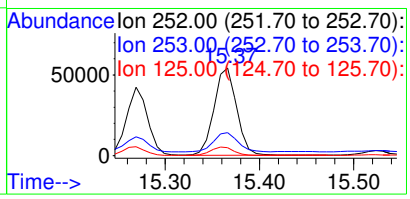


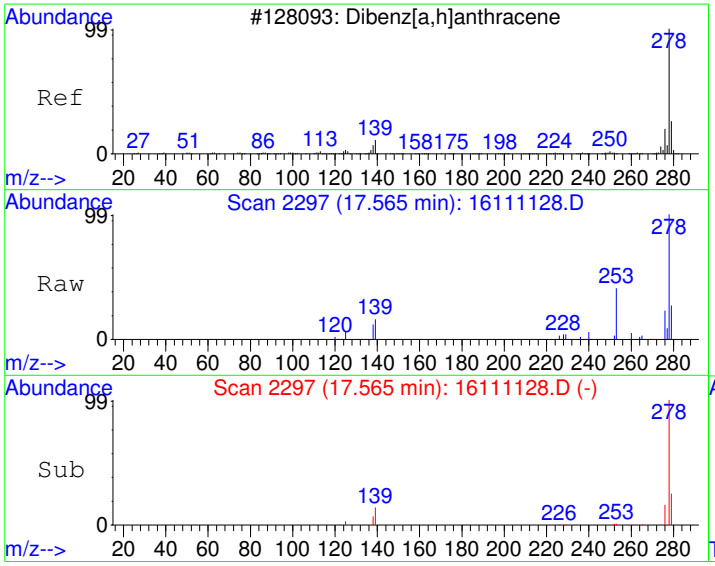


#25
Benzo[a]pyrene
Concen: 281.57 ug/kg
RT: 15.37 min Scan# 2003
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:252 Resp: 89483

Ion	Ratio	Lower	Upper
252	100		
253	22.1	2.2	42.2
125	8.7	0.0	30.8

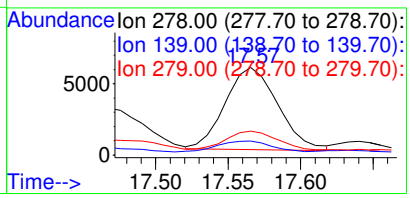


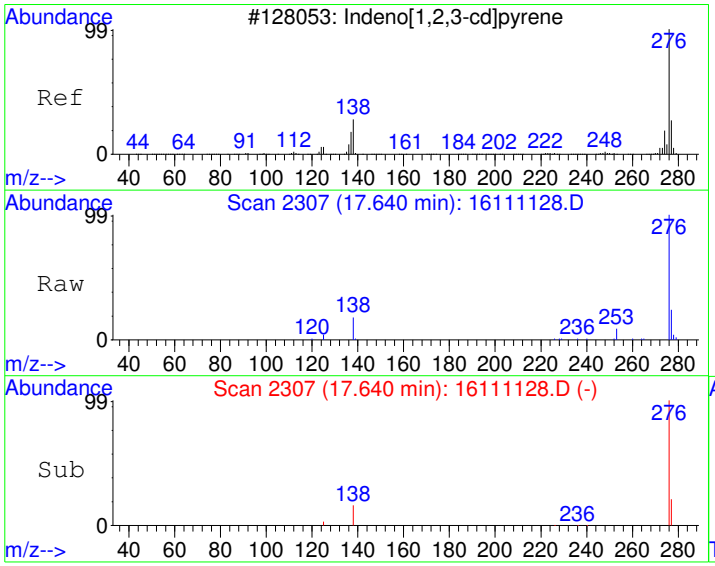


#26
Dibenz[a,h]anthracene
Concen: 43.57 ug/kg
RT: 17.57 min Scan# 2297
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:278 Resp: 14546

Ion	Ratio	Lower	Upper
278	100		
139	13.2	0.0	35.8
279	23.3	4.2	44.2

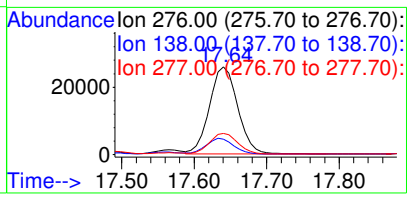


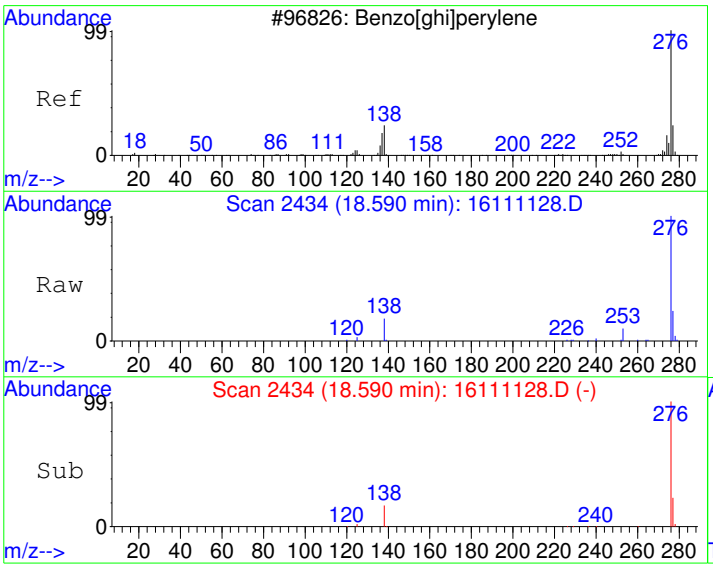


#27
Indeno[1,2,3-cd]pyrene
Concen: 215.78 ug/kg
RT: 17.64 min Scan# 2307
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:276 Resp: 69590

Ion	Ratio	Lower	Upper
276	100		
138	17.1	0.0	39.3
277	23.7	4.0	44.0

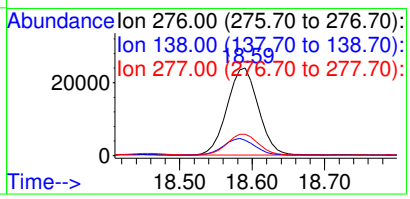




#28
Benzo[g,h,i]perylene
Concen: 210.52 ug/kg
RT: 18.59 min Scan# 2434
Delta R.T. -0.01 min
Lab File: 16111128.D
Acq: 11 Nov 2016 11:17 pm

Tgt Ion:276 Resp: 71741

Ion	Ratio	Lower	Upper
276	100		
138	17.1	0.8	40.8
277	23.9	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161111\16111130.D Vial: 18
Acq On : 12 Nov 2016 12:13 am Operator:
Sample : 1611071-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration
DataAcq Meth : PP161020

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.42	136	952865	4000.00	ug/kg	87
5) Acenaphthene-d10	9.01	164	521385	4000.00	ug/kg	82
11) Phenanthrene-d10	10.41	188	987963	4000.00	ug/kg	82
17) Chrysene-d12	13.27	240	1371125	4000.00	ug/kg	89
20) Perylene-d12	15.52	264	1480486	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	15113	99.25	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.48%#		
16) 4-Terphenyl-d14	11.78	244	21822	109.97	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.75%#		
Target Compounds						Qvalue
12) Phenanthrene	10.43	178	9575	49.77	ug/kg	100
13) Anthracene	10.47	178	1763	8.90	ug/kg	98
14) Fluoranthene	11.55	202	28894	127.17	ug/kg	98
15) Pyrene	11.86	202	25972	110.07	ug/kg	99
18) Benzo[a]anthracene	13.20	228	17923	66.86	ug/kg	99
19) Chrysene	13.31	228	24274	97.75	ug/kg	98
21) Benzo[b]fluoranthene	14.68	252	27616	84.00	ug/kg	98
22) Benzo[k]fluoranthene	14.68	252	27616	~~91.13 ug/kg~~		~~99~~
23) Benzo(j)fluoranthene	14.76	252	11193	38.19	ug/kg	94
24) Benzo[e]pyrene	15.28	252	18370	62.56	ug/kg	95
25) Benzo[a]pyrene	15.37	252	24335	81.18	ug/kg	99
26) Dibenz[a,h]anthracene	17.57	278	4026	12.79	ug/kg	92
27) Indeno[1,2,3-cd]pyrene	17.65	276	19486	64.06	ug/kg	98
28) Benzo[g,h,i]perylene	18.59	276	20591	64.06	ug/kg	97

Wrong RT See MI

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161111\16111130.D Vial: 18
Acq On : 12 Nov 2016 12:13 am Operator:
Sample : 1611071-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 14 8:46 2016 Quant Results File: PP161020.RES

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 13:41:52 2016
Response via : Initial Calibration

