DT QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\056DT1.D\056DT1.D#

Date Acquired:	Aug 10 2016 04:31 pm	Sample Name:	**1607314-03A SD**
Acq. Method:	DHL_3Fe.M	Misc Info:	SD ICPMS_TSDOD1
Operator:	KL	Bench Diln:	25.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	25.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)	Rec(%)	Flag
7	Li	2	45	16.10	ppb	1.41	-2940.88	90 - 110	-2.7	
9	Be	2	45	0.63	ppb	9.47	2.87	90 - 110	110.3	
11	B	2	45	19.73	ppb	1.07	81.55	90 - 110	121.0	
23	Na	1	45	332.40	ppb	0.97	1626.00	90 - 110	102.2	GOOD
24	Mg	1	45	3020.00	ppb	3.59	14950.00	90 - 110	101.0	GOOD
27	Al	1	45	15730.00	ppb	3.48	77560.00	90 - 110	101.4	GOOD
39	K	1	45	3176.00	ppb	1.46	15950.00	90 - 110	99.6	GOOD
44	Ca	2	45	25240.00	ppb	1.71	122000.00	90 - 110	103.4	GOOD
47	Ti	1	45	46.32	ppb	7.35	242.40	90 - 110	95.5	GOOD
51	V	1	45	21.50	ppb	4.08	105.90	90 - 110	101.5	GOOD
52	Cr	1	45	13.47	ppb	3.22	64.67	90 - 110	104.1	GOOD
55	Mn	1	45	127.40	ppb	2.65	611.00	90 - 110	104.3	GOOD
56	Fe	1	72	14400.00	ppb	3.80	70570.00	90 - 110	102.0	GOOD
59	Co	1	72	5.33	ppb	2.75	26.20	90 - 110	101.6	GOOD
60	Ni	1	72	8.72	ppb	2.97	40.77	90 - 110	107.0	GOOD
63	Cu	1	72	5.92	ppb	2.30	27.76	90 - 110	106.7	GOOD
66	Zn	1	72	56.83	ppb	3.21	250.20	90 - 110	113.6	
75	As	1	72	5.31	ppb	4.29	25.20	90 - 110	105.3	GOOD
78	Se	1	72	2.99	ppb	5.44	13.90	90 - 110	107.6	GOOD
88	Sr	2	115	84.20	ppb	3.52	422.70	90 - 110	99.6	GOOD
95	Mo	2	115	0.70	ppb	2.68	3.38	90 - 110	103.2	GOOD
107	Ag	2	115	0.07	ppb	15.17	0.24	90 - 110	139.9	
111	Cd	2	115	0.28	ppb	16.62	1.25	90 - 110	112.6	
118	Sn	2	115	1.18	ppb	2.18	5.74	90 - 110	102.6	GOOD
121	Sb	2	115	0.40	ppb	4.70	1.88	90 - 110	106.6	GOOD
137	Ba	2	115	167.30	ppb	1.53	883.40	90 - 110	94.7	GOOD
205	Tl	2	209	0.23	ppb	7.77	0.84	90 - 110	137.7	
208	Pb	2	209	17.50	ppb	1.12	88.41	90 - 110	99.0	GOOD

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHig	-2940.88	9.28	36.77	-7998.1	70 -	120	ISFail
45	Sc	1		169045.33	0.81	157844.06	107.1	70 -	120	
45	Sc	2		6002183.50	1.10	5827273.50	103.0	70 -	120	
72	Ge	1		90463.91	1.02	86621.49	104.4	70 -	120	
115	In	2		6110808.50	1.03	6276207.00	97.4	70 -	120	
209	Bi	2		4164325.30	1.41	4446753.50	93.6	70 -	120	

PDS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\067_PDS.D\067_PDS.D#

Date Acquired:	Aug 10 2016 05:55 pm	Sample Name:	**1607314-03A PDS**
Acq. Method:	DHL_3Fe.M	Misc Info:	PDS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	332.70	ppb	2.69	-58463.21	200	75-125	######	Fail
9	Be	2	45	213.70	ppb	2.61	2.87	200	75-125	105.4	
11	B	2	45	281.20	ppb	2.97	81.55	200	75-125	99.8	
23	Na	1	45	7346.00	ppb	1.71	1626.00	5000	75-125	114.4	
24	Mg	1	45	21120.00	ppb	2.68	14950.00	5000	75-125	123.4	
27	Al	1	45	83780.00	ppb	3.29	77560.00	5000	75-125	124.4	
39	K	1	45	21520.00	ppb	1.15	15950.00	5000	75-125	111.4	
44	Ca	2	45	133300.00	ppb	3.00	122000.00	5000	75-125	226.0	Fail
47	Ti	1	45	448.50	ppb	3.98	242.40	200	75-125	103.1	
51	V	1	45	318.00	ppb	2.59	105.90	200	75-125	106.1	
52	Cr	1	45	277.50	ppb	2.66	64.67	200	75-125	106.4	
55	Mn	1	45	829.60	ppb	1.97	611.00	200	75-125	109.3	
56	Fe	1	72	78780.00	ppb	3.01	70570.00	5000	75-125	164.2	Fail
59	Co	1	72	233.10	ppb	1.86	26.20	200	75-125	103.4	
60	Ni	1	72	239.60	ppb	1.23	40.77	200	75-125	99.4	
63	Cu	1	72	226.50	ppb	1.66	27.76	200	75-125	99.4	
66	Zn	1	72	442.50	ppb	2.22	250.20	200	75-125	96.2	
75	As	1	72	218.90	ppb	2.27	25.20	200	75-125	96.8	
78	Se	1	72	189.80	ppb	3.02	13.90	200	75-125	88.0	
88	Sr	2	115	677.70	ppb	1.87	422.70	200	75-125	127.5	Fail
95	Mo	2	115	211.20	ppb	2.35	3.38	200	75-125	103.9	
107	Ag	2	115	190.80	ppb	1.79	0.24	200	75-125	95.3	
111	Cd	2	115	188.30	ppb	1.30	1.25	200	75-125	93.5	
118	Sn	2	115	204.80	ppb	1.54	5.74	200	75-125	99.5	
121	Sb	2	115	193.20	ppb	1.74	1.88	200	75-125	95.7	
137	Ba	2	115	1119.00	ppb	1.49	883.40	200	75-125	117.8	
205	Tl	2	209	208.90	ppb	1.31	0.84	200	75-125	104.0	
208	Pb	2	209	295.40	ppb	0.92	88.41	200	75-125	103.5	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-58463.21	2.99	36.77	-158998.8	70 - 120	ISFail
45	Sc	1	155074.30	0.41	157844.06	98.2	70 - 120	
45	Sc	2	6351654.50	2.66	5827273.50	109.0	70 - 120	
72	Ge	1	81892.20	0.16	86621.49	94.5	70 - 120	
115	In	2	5728518.00	1.19	6276207.00	91.3	70 - 120	
209	Bi	2	3743962.00	0.35	4446753.50	84.2	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\068_MS.D\068_MS.D#

Date Acquired:	Aug 10 2016 06:00 pm	Sample Name:	**1607314-03A MS**
Acq. Method:	DHL_3Fe.M	Misc Info:	MS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	334.70	ppb	1.83	########	200	80-120	######	Fail
9	Be	2	45	221.60	ppb	1.89	2.87	200	80-120	109.4	
11	B	2	45	286.70	ppb	1.43	81.55	200	80-120	102.6	
23	Na	1	45	7352.00	ppb	1.97	1626.00	5000	80-120	114.5	
24	Mg	1	45	20220.00	ppb	2.73	14950.00	5000	80-120	105.4	
27	Al	1	45	79020.00	ppb	3.42	77560.00	1000	80-120	146.0	Fail
39	K	1	45	20960.00	ppb	2.78	15950.00	5000	80-120	100.2	
44	Ca	2	45	117400.00	ppb	2.54	########	5000	80-120	-92.0	Fail
47	Ti	1	45	473.40	ppb	1.40	242.40	200	80-120	115.5	
51	V	1	45	319.50	ppb	3.20	105.90	200	80-120	106.8	
52	Cr	1	45	272.00	ppb	3.51	64.67	200	80-120	103.7	
55	Mn	1	45	756.30	ppb	2.83	611.00	200	80-120	72.7	Fail
56	Fe	1	72	68180.00	ppb	2.72	70570.00	1000	80-120	-239.0	Fail
59	Co	1	72	240.00	ppb	2.61	26.20	200	80-120	106.9	
60	Ni	1	72	244.50	ppb	2.38	40.77	200	80-120	101.9	
63	Cu	1	72	229.60	ppb	2.34	27.76	200	80-120	100.9	
66	Zn	1	72	424.50	ppb	3.30	250.20	200	80-120	87.2	
75	As	1	72	224.80	ppb	3.03	25.20	200	80-120	99.8	
78	Se	1	72	201.80	ppb	1.40	13.90	200	80-120	94.0	
88	Sr	2	115	638.80	ppb	2.32	422.70	200	80-120	108.0	
95	Mo	2	115	209.30	ppb	1.89	3.38	200	80-120	103.0	
107	Ag	2	115	198.60	ppb	1.81	0.24	200	80-120	99.2	
111	Cd	2	115	202.80	ppb	1.55	1.25	200	80-120	100.8	
118	Sn	2	115	215.40	ppb	1.49	5.74	200	80-120	104.8	
121	Sb	2	115	62.33	ppb	1.63	1.88	200	80-120	30.2	Fail
137	Ba	2	115	971.40	ppb	1.75	883.40	200	80-120	44.0	Fail
205	Tl	2	209	228.30	ppb	0.69	0.84	200	80-120	113.7	
208	Pb	2	209	298.10	ppb	0.95	88.41	200	80-120	104.8	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-96826.02	1.86	36.77	########	70 - 120	ISFail
45	Sc	1	152598.89	0.79	157844.06	96.7	70 - 120	
45	Sc	2	6171120.00	2.11	5827273.50	105.9	70 - 120	
72	Ge	1	80772.27	0.44	86621.49	93.2	70 - 120	
115	In	2	5568273.50	1.39	6276207.00	88.7	70 - 120	
209	Bi	2	3694395.30	0.96	4446753.50	83.1	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\069_MS.D\069_MS.D#

Date Acquired:	Aug 10 2016 06:06 pm	Sample Name:	**1607314-03A MSD**
Acq. Method:	DHL_3Fe.M	Misc Info:	MSD ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	333.70	ppb	1.03	########	200	80-120	######	Fail
9	Be	2	45	219.70	ppb	1.07	2.87	200	80-120	108.4	
11	B	2	45	286.40	ppb	1.57	81.55	200	80-120	102.4	
23	Na	1	45	7302.00	ppb	1.83	1626.00	5000	80-120	113.5	
24	Mg	1	45	20900.00	ppb	3.48	14950.00	5000	80-120	119.0	
27	Al	1	45	82070.00	ppb	4.53	77560.00	1000	80-120	451.0	Fail
39	K	1	45	21230.00	ppb	1.98	15950.00	5000	80-120	105.6	
44	Ca	2	45	127700.00	ppb	1.38	########	5000	80-120	114.0	
47	Ti	1	45	486.40	ppb	4.47	242.40	200	80-120	122.0	Fail
51	V	1	45	323.60	ppb	3.24	105.90	200	80-120	108.9	
52	Cr	1	45	276.20	ppb	4.03	64.67	200	80-120	105.8	
55	Mn	1	45	840.60	ppb	3.42	611.00	200	80-120	114.8	
56	Fe	1	72	71050.00	ppb	3.82	70570.00	1000	80-120	48.0	Fail
59	Co	1	72	240.30	ppb	3.35	26.20	200	80-120	107.0	
60	Ni	1	72	246.60	ppb	3.44	40.77	200	80-120	102.9	
63	Cu	1	72	232.80	ppb	2.98	27.76	200	80-120	102.5	
66	Zn	1	72	434.60	ppb	3.55	250.20	200	80-120	92.2	
75	As	1	72	226.80	ppb	2.43	25.20	200	80-120	100.8	
78	Se	1	72	200.40	ppb	2.41	13.90	200	80-120	93.3	
88	Sr	2	115	676.80	ppb	1.52	422.70	200	80-120	127.0	Fail
95	Mo	2	115	212.20	ppb	1.83	3.38	200	80-120	104.4	
107	Ag	2	115	200.20	ppb	1.56	0.24	200	80-120	100.0	
111	Cd	2	115	202.70	ppb	1.79	1.25	200	80-120	100.7	
118	Sn	2	115	217.90	ppb	1.50	5.74	200	80-120	106.1	
121	Sb	2	115	63.82	ppb	1.20	1.88	200	80-120	31.0	Fail
137	Ba	2	115	1006.00	ppb	1.73	883.40	200	80-120	61.3	Fail
205	Tl	2	209	227.90	ppb	1.21	0.84	200	80-120	113.5	
208	Pb	2	209	313.30	ppb	1.06	88.41	200	80-120	112.4	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-94850.23	0.37	36.77	########	70	-	120	ISFail
45	Sc	1	152052.97	0.81	157844.06	96.3	70	-	120	
45	Sc	2	6049218.50	1.92	5827273.50	103.8	70	-	120	
72	Ge	1	79875.96	0.85	86621.49	92.2	70	-	120	
115	In	2	5438859.50	1.06	6276207.00	86.7	70	-	120	
209	Bi	2	3646787.50	1.68	4446753.50	82.0	70	-	120	

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\070CCV1.D\070CCV1.D#

Date Acquired:	Aug 10 2016 06:12 pm	Sample Name:	**CCV2-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	256.20	ppb	0.73	200.00	90 -	110	128.1	Fail
9	Be	2	45	233.50	ppb	1.05	200.00	90 -	110	116.8	Fail
11	B	2	45	222.50	ppb	0.95	200.00	90 -	110	111.3	Fail
23	Na	1	45	6002.00	ppb	2.01	5000.00	90 -	110	120.0	Fail
24	Mg	1	45	5605.00	ppb	2.64	5000.00	90 -	110	112.1	Fail
27	Al	1	45	5430.00	ppb	4.39	5000.00	90 -	110	108.6	
39	K	1	45	5422.00	ppb	2.27	5000.00	90 -	110	108.4	
44	Ca	2	45	5742.00	ppb	2.02	5000.00	90 -	110	114.8	Fail
47	Ti	1	45	213.30	ppb	3.87	200.00	90 -	110	106.7	
51	V	1	45	214.50	ppb	4.12	200.00	90 -	110	107.3	
52	Cr	1	45	217.40	ppb	3.56	200.00	90 -	110	108.7	
55	Mn	1	45	214.90	ppb	3.45	200.00	90 -	110	107.5	
56	Fe	1	72	5449.00	ppb	4.38	5000.00	90 -	110	109.0	
59	Co	1	72	219.60	ppb	3.07	200.00	90 -	110	109.8	
60	Ni	1	72	216.30	ppb	2.43	200.00	90 -	110	108.2	
63	Cu	1	72	220.60	ppb	3.01	200.00	90 -	110	110.3	Fail
66	Zn	1	72	218.70	ppb	2.70	200.00	90 -	110	109.4	
75	As	1	72	215.50	ppb	2.39	200.00	90 -	110	107.8	
78	Se	1	72	213.40	ppb	3.67	200.00	90 -	110	106.7	
88	Sr	2	115	237.80	ppb	1.72	200.00	90 -	110	118.9	Fail
95	Mo	2	115	226.90	ppb	1.52	200.00	90 -	110	113.5	Fail
107	Ag	2	115	215.90	ppb	1.70	200.00	90 -	110	108.0	
111	Cd	2	115	214.10	ppb	1.78	200.00	90 -	110	107.1	
118	Sn	2	115	209.90	ppb	1.04	200.00	90 -	110	105.0	
121	Sb	2	115	205.60	ppb	1.23	200.00	90 -	110	102.8	
137	Ba	2	115	206.00	ppb	0.81	200.00	90 -	110	103.0	
205	Tl	2	209	220.30	ppb	0.62	200.00	90 -	110	110.2	Fail
208	Pb	2	209	208.10	ppb	0.69	200.00	90 -	110	104.1	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-83207.28	1.06	36.77	-226293.7	70 -	120		ISFail
45	Sc	1	149053.86	0.63	157844.06	94.4	70 -	120		
45	Sc	2	5934816.50	1.02	5827273.50	101.8	70 -	120		
72	Ge	1	80521.56	0.83	86621.49	93.0	70 -	120		
115	In	2	5231951.00	1.48	6276207.00	83.4	70 -	120		
209	Bi	2	3706362.00	0.81	4446753.50	83.3	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\072LCVL.D\072LCVL.D#

Date Acquired:	Aug 10 2016 06:24 pm	Sample Name:	**LCVL2-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	13.08	ppb	0.91	10.00	70 -	130	130.8	Fail
9	Be	2	45	1.22	ppb	2.65	1.00	70 -	130	121.8	
11	B	2	45	24.68	ppb	1.52	20.00	70 -	130	123.4	
23	Na	1	45	114.80	ppb	1.38	100.00	70 -	130	114.8	
24	Mg	1	45	116.10	ppb	3.78	100.00	70 -	130	116.1	
27	Al	1	45	120.20	ppb	0.24	100.00	70 -	130	120.2	
39	K	1	45	110.90	ppb	4.98	100.00	70 -	130	110.9	
44	Ca	2	45	118.60	ppb	7.04	100.00	70 -	130	118.6	
47	Ti	1	45	4.68	ppb	11.30	5.00	70 -	130	93.6	
51	V	1	45	1.10	ppb	3.57	1.00	70 -	130	110.4	
52	Cr	1	45	5.64	ppb	2.74	5.00	70 -	130	112.8	
55	Mn	1	45	5.38	ppb	3.84	5.00	70 -	130	107.5	
56	Fe	1	72	121.30	ppb	2.35	100.00	70 -	130	121.3	
59	Co	1	72	5.48	ppb	2.86	5.00	70 -	130	109.6	
60	Ni	1	72	5.61	ppb	4.67	5.00	70 -	130	112.2	
63	Cu	1	72	5.55	ppb	1.17	5.00	70 -	130	111.0	
66	Zn	1	72	5.43	ppb	7.30	5.00	70 -	130	108.6	
75	As	1	72	5.40	ppb	3.59	5.00	70 -	130	108.0	
78	Se	1	72	5.86	ppb	9.38	5.00	70 -	130	117.3	
88	Sr	2	115	5.84	ppb	2.20	5.00	70 -	130	116.8	
95	Mo	2	115	5.75	ppb	4.26	5.00	70 -	130	115.0	
107	Ag	2	115	2.24	ppb	1.73	2.00	70 -	130	112.0	
111	Cd	2	115	1.11	ppb	9.36	1.00	70 -	130	110.7	
118	Sn	2	115	5.35	ppb	2.63	5.00	70 -	130	106.9	
121	Sb	2	115	2.16	ppb	0.66	2.00	70 -	130	108.0	
137	Ba	2	115	5.21	ppb	2.78	5.00	70 -	130	104.2	
205	Tl	2	209	1.20	ppb	1.47	1.00	70 -	130	119.8	
208	Pb	2	209	1.16	ppb	1.50	1.00	70 -	130	116.1	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHigl	-2574.01	5.30	36.77	-7000.4	70 -	120	ISFail
45	Sc	1		147271.14	0.49	157844.06	93.3	70 -	120	
45	Sc	2		5772612.00	2.91	5827273.50	99.1	70 -	120	
72	Ge	1		81263.09	0.63	86621.49	93.8	70 -	120	
115	In	2		5218325.50	1.75	6276207.00	83.1	70 -	120	
209	Bi	2		3771712.50	1.42	4446753.50	84.8	70 -	120	

CCB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\073_CCB.D\073_CCB.D#

Date Acquired:	Aug 10 2016 06:30 pm	Sample Name:	**CCB2-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.201	ppb	0.44	2.00	2.00	
9	Be	2	45	0.047	ppb	6.20	0.40	0.30	
11	B	2	45	3.098	ppb	3.39	10.00	10.00	
23	Na	1	45	7.005	ppb	1.29	50.00	#####	
24	Mg	1	45	2.226	ppb	10.59	50.00	#####	
27	Al	1	45	11.450	ppb	11.39	50.00	10.00	FailAq
39	K	1	45	7.467	ppb	2.98	50.00	#####	
44	Ca	2	45	35.240	ppb	7.52	50.00	#####	
47	Ti	1	45	0.028	ppb	21.65	4.00	3.00	
51	V	1	45	0.014	ppb	7.95	4.00	3.00	
52	Cr	1	45	0.048	ppb	12.28	2.00	2.00	
55	Mn	1	45	0.134	ppb	11.84	2.00	3.00	
56	Fe	1	72	3.963	ppb	20.65	50.00	30.00	
59	Co	1	72	0.039	ppb	28.81	2.00	3.00	
60	Ni	1	72	0.135	ppb	4.45	2.00	3.00	
63	Cu	1	72	0.095	ppb	17.19	2.00	2.00	
66	Zn	1	72	1.372	ppb	13.87	4.00	2.00	
75	As	1	72	-0.071	ppb	3.17	2.00	2.00	
78	Se	1	72	0.149	ppb	13.73	0.60	2.00	
88	Sr	2	115	0.194	ppb	6.54	4.00	3.00	
95	Mo	2	115	0.086	ppb	9.86	2.00	2.00	
107	Ag	2	115	0.040	ppb	17.61	0.40	1.00	
111	Cd	2	115	0.036	ppb	32.41	0.40	0.30	
118	Sn	2	115	0.122	ppb	6.57	20.00	3.00	
121	Sb	2	115	0.063	ppb	6.69	2.00	0.80	
137	Ba	2	115	0.153	ppb	7.23	2.00	3.00	
205	Tl	2	209	0.138	ppb	12.42	2.00	0.50	
208	Pb	2	209	0.082	ppb	3.81	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-55.23	74.93	36.77	-150.2	70 - 120	ISFail
45	Sc	1		148403.08	1.55	157844.06	94.0	70 - 120	
45	Sc	2		5709613.50	1.58	5827273.50	98.0	70 - 120	
72	Ge	1		81008.06	1.19	86621.49	93.5	70 - 120	
115	In	2		5213931.00	1.47	6276207.00	83.1	70 - 120	
209	Bi	2		3796520.80	0.85	4446753.50	85.4	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\085CCV1.D\085CCV1.D#

Date Acquired:	Aug 10 2016 07:41 pm	Sample Name:	**CCV3-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	228.60	ppb	1.06	200.00	90 -	110	114.3	Fail
9	Be	2	45	211.80	ppb	1.56	200.00	90 -	110	105.9	
11	B	2	45	199.00	ppb	1.48	200.00	90 -	110	99.5	
23	Na	1	45	5728.00	ppb	1.72	5000.00	90 -	110	114.6	Fail
24	Mg	1	45	5369.00	ppb	2.39	5000.00	90 -	110	107.4	
27	Al	1	45	5328.00	ppb	3.48	5000.00	90 -	110	106.6	
39	K	1	45	5341.00	ppb	1.02	5000.00	90 -	110	106.8	
44	Ca	2	45	5699.00	ppb	1.79	5000.00	90 -	110	114.0	Fail
47	Ti	1	45	207.80	ppb	3.24	200.00	90 -	110	103.9	
51	V	1	45	209.20	ppb	2.80	200.00	90 -	110	104.6	
52	Cr	1	45	210.40	ppb	2.98	200.00	90 -	110	105.2	
55	Mn	1	45	209.80	ppb	2.91	200.00	90 -	110	104.9	
56	Fe	1	72	5269.00	ppb	3.17	5000.00	90 -	110	105.4	
59	Co	1	72	211.90	ppb	3.11	200.00	90 -	110	106.0	
60	Ni	1	72	207.80	ppb	2.47	200.00	90 -	110	103.9	
63	Cu	1	72	212.60	ppb	2.52	200.00	90 -	110	106.3	
66	Zn	1	72	212.90	ppb	2.26	200.00	90 -	110	106.5	
75	As	1	72	209.60	ppb	1.97	200.00	90 -	110	104.8	
78	Se	1	72	211.30	ppb	3.35	200.00	90 -	110	105.7	
88	Sr	2	115	233.30	ppb	2.19	200.00	90 -	110	116.7	Fail
95	Mo	2	115	220.90	ppb	1.92	200.00	90 -	110	110.5	Fail
107	Ag	2	115	209.90	ppb	1.58	200.00	90 -	110	105.0	
111	Cd	2	115	208.90	ppb	0.81	200.00	90 -	110	104.5	
118	Sn	2	115	206.40	ppb	1.27	200.00	90 -	110	103.2	
121	Sb	2	115	203.80	ppb	0.88	200.00	90 -	110	101.9	
137	Ba	2	115	203.00	ppb	1.36	200.00	90 -	110	101.5	
205	Tl	2	209	214.20	ppb	0.52	200.00	90 -	110	107.1	
208	Pb	2	209	203.20	ppb	0.96	200.00	90 -	110	101.6	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-67866.80	0.86	36.77	-184573.1	70 -	120		ISFail
45	Sc	1	139865.91	0.42	157844.06	88.6	70 -	120		
45	Sc	2	5305360.50	2.19	5827273.50	91.0	70 -	120		
72	Ge	1	76163.90	0.19	86621.49	87.9	70 -	120		
115	In	2	4746292.00	1.15	6276207.00	75.6	70 -	120		
209	Bi	2	3442046.50	1.24	4446753.50	77.4	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\087LCVL.D\087LCVL.D#

Date Acquired:	Aug 10 2016 07:53 pm	Sample Name:	**LCVL3-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	11.33	ppb	1.90	10.00	70 -	130	113.3	
9	Be	2	45	1.08	ppb	4.80	1.00	70 -	130	107.6	
11	B	2	45	20.91	ppb	2.17	20.00	70 -	130	104.6	
23	Na	1	45	104.00	ppb	2.07	100.00	70 -	130	104.0	
24	Mg	1	45	110.10	ppb	2.35	100.00	70 -	130	110.1	
27	Al	1	45	113.30	ppb	6.13	100.00	70 -	130	113.3	
39	K	1	45	106.40	ppb	0.94	100.00	70 -	130	106.4	
44	Ca	2	45	112.50	ppb	5.01	100.00	70 -	130	112.5	
47	Ti	1	45	5.27	ppb	6.72	5.00	70 -	130	105.5	
51	V	1	45	1.00	ppb	6.08	1.00	70 -	130	99.9	
52	Cr	1	45	5.27	ppb	3.44	5.00	70 -	130	105.4	
55	Mn	1	45	5.30	ppb	5.85	5.00	70 -	130	106.0	
56	Fe	1	72	112.40	ppb	4.44	100.00	70 -	130	112.4	
59	Co	1	72	5.25	ppb	3.35	5.00	70 -	130	105.1	
60	Ni	1	72	5.20	ppb	5.25	5.00	70 -	130	103.9	
63	Cu	1	72	5.30	ppb	4.88	5.00	70 -	130	106.1	
66	Zn	1	72	5.10	ppb	1.14	5.00	70 -	130	101.9	
75	As	1	72	5.23	ppb	1.26	5.00	70 -	130	104.7	
78	Se	1	72	5.41	ppb	5.35	5.00	70 -	130	108.3	
88	Sr	2	115	5.58	ppb	1.02	5.00	70 -	130	111.5	
95	Mo	2	115	5.34	ppb	1.92	5.00	70 -	130	106.9	
107	Ag	2	115	2.15	ppb	1.50	2.00	70 -	130	107.6	
111	Cd	2	115	1.10	ppb	2.16	1.00	70 -	130	110.1	
118	Sn	2	115	5.13	ppb	2.14	5.00	70 -	130	102.6	
121	Sb	2	115	2.06	ppb	2.42	2.00	70 -	130	103.1	
137	Ba	2	115	5.03	ppb	1.56	5.00	70 -	130	100.7	
205	Tl	2	209	1.10	ppb	3.05	1.00	70 -	130	110.2	
208	Pb	2	209	1.09	ppb	3.59	1.00	70 -	130	109.0	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-2118.22	3.54	36.77	-5760.8	70 -	120	ISFail
45	Sc	1	138201.03	0.58	157844.06	87.6	70 -	120	
45	Sc	2	5241182.50	1.47	5827273.50	89.9	70 -	120	
72	Ge	1	75282.13	0.93	86621.49	86.9	70 -	120	
115	In	2	4910939.00	0.99	6276207.00	78.2	70 -	120	
209	Bi	2	3588281.30	0.80	4446753.50	80.7	70 -	120	

CCB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\088_CCB.D\088_CCB.D#

Date Acquired:	Aug 10 2016 07:59 pm	Sample Name:	**CCB3-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.130	ppb	7.80	2.00	2.00	
9	Be	2	45	0.024	ppb	29.23	0.40	0.30	
11	B	2	45	2.166	ppb	3.07	10.00	10.00	
23	Na	1	45	3.339	ppb	1.60	50.00	#####	
24	Mg	1	45	1.692	ppb	11.72	50.00	#####	
27	Al	1	45	9.499	ppb	5.31	50.00	10.00	
39	K	1	45	8.680	ppb	0.61	50.00	#####	
44	Ca	2	45	26.130	ppb	8.44	50.00	#####	
47	Ti	1	45	0.060	ppb	33.32	4.00	3.00	
51	V	1	45	-0.005	ppb	10.77	4.00	3.00	
52	Cr	1	45	0.018	ppb	10.46	2.00	2.00	
55	Mn	1	45	0.075	ppb	22.03	2.00	3.00	
56	Fe	1	72	1.209	ppb	16.37	50.00	30.00	
59	Co	1	72	0.029	ppb	18.16	2.00	3.00	
60	Ni	1	72	0.106	ppb	15.38	2.00	3.00	
63	Cu	1	72	0.069	ppb	2.22	2.00	2.00	
66	Zn	1	72	1.071	ppb	3.78	4.00	2.00	
75	As	1	72	-0.024	ppb	3.00	2.00	2.00	
78	Se	1	72	0.088	ppb	17.83	0.60	2.00	
88	Sr	2	115	0.138	ppb	7.93	4.00	3.00	
95	Mo	2	115	0.069	ppb	10.42	2.00	2.00	
107	Ag	2	115	0.020	ppb	3.07	0.40	1.00	
111	Cd	2	115	0.045	ppb	11.57	0.40	0.30	
118	Sn	2	115	0.089	ppb	12.02	20.00	3.00	
121	Sb	2	115	0.051	ppb	12.07	2.00	0.80	
137	Ba	2	115	0.104	ppb	13.47	2.00	3.00	
205	Tl	2	209	0.096	ppb	8.22	2.00	0.50	
208	Pb	2	209	0.047	ppb	12.03	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-24.61	36.89	36.77	-66.9	70 - 120	ISFail
45	Sc	1		139436.95	1.35	157844.06	88.3	70 - 120	
45	Sc	2		5229415.00	1.76	5827273.50	89.7	70 - 120	
72	Ge	1		76538.14	1.47	86621.49	88.4	70 - 120	
115	In	2		4959201.00	1.52	6276207.00	79.0	70 - 120	
209	Bi	2		3613380.80	1.28	4446753.50	81.3	70 - 120	

PB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\089__PB.D\089__PB.D#

Date Acquired:	Aug 10 2016 08:05 pm	Sample Name:	**MB-76716**
Acq. Method:	DHL_3Fe.M	Misc Info:	MBLKICPMS_TSDOD
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	5.00

QC Elements

Element				Conc.	RSD(%)	MDL	RL	Flag
7	Li	2	45	0.077 ppb	1.57	2.0	8.00	
9	Be	2	45	-0.003 ppb	7.14	0.4	1.20	
11	B	2	45	1.216 ppb	3.20	10.0	30.00	
23	Na	1	45	-1.529 ppb	3.25	50.0	#####	
24	Mg	1	45	5.869 ppb	1.40	50.0	#####	
27	Al	1	45	5.205 ppb	8.11	50.0	#####	
39	K	1	45	11.790 ppb	1.69	50.0	#####	
44	Ca	2	45	28.190 ppb	5.67	50.0	#####	
47	Ti	1	45	0.136 ppb	53.29	4.0	10.00	
51	V	1	45	-0.010 ppb	20.51	4.0	10.00	
52	Cr	1	45	0.144 ppb	15.99	2.0	8.00	
55	Mn	1	45	0.134 ppb	18.07	2.0	8.00	
56	Fe	1	72	3.122 ppb	11.58	50.0	#####	
59	Co	1	72	0.004 ppb	39.75	2.0	8.00	
60	Ni	1	72	0.111 ppb	12.45	2.0	8.00	
63	Cu	1	72	0.193 ppb	4.76	2.0	8.00	
66	Zn	1	72	3.543 ppb	2.00	4.0	10.00	
75	As	1	72	-0.113 ppb	5.48	2.0	4.00	
78	Se	1	72	0.087 ppb	4.09	0.6	2.00	
88	Sr	2	115	0.103 ppb	5.99	4.0	10.00	
95	Mo	2	115	0.034 ppb	29.41	2.0	8.00	
107	Ag	2	115	0.013 ppb	12.25	0.4	0.80	
111	Cd	2	115	0.000 ppb	167.88	0.4	1.20	
118	Sn	2	115	4.334 ppb	1.54	20.0	40.00	
121	Sb	2	115	0.013 ppb	9.80	2.0	4.00	
137	Ba	2	115	0.088 ppb	13.59	2.0	8.00	
205	Tl	2	209	0.051 ppb	7.82	2.0	4.00	
208	Pb	2	209	0.071 ppb	4.23	0.4	1.20	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHig	-26.82	66.18	36.77	-72.9	70 - 120	ISFail
45	Sc	1		143243.34	0.69	157844.06	90.7	70 - 120	
45	Sc	2		5257679.50	2.16	5827273.50	90.2	70 - 120	
72	Ge	1		76715.16	0.82	86621.49	88.6	70 - 120	
115	In	2		4787413.00	1.49	6276207.00	76.3	70 - 120	
209	Bi	2		3534476.30	1.03	4446753.50	79.5	70 - 120	

LCS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\090_LCS.D\090_LCS.D#

Date Acquired:	Aug 10 2016 08:11 pm	Sample Name:	**LCS-76716**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	214.70	ppb	0.95	200.00	80 -	120	107.4	
9	Be	2	45	195.20	ppb	0.87	200.00	80 -	120	97.6	
11	B	2	45	191.00	ppb	1.04	200.00	80 -	120	95.5	
23	Na	1	45	5597.00	ppb	3.42	5000.00	80 -	120	111.9	
24	Mg	1	45	5268.00	ppb	2.41	5000.00	80 -	120	105.4	
27	Al	1	45	1064.00	ppb	2.84	1000.00	80 -	120	106.4	
39	K	1	45	5219.00	ppb	1.76	5000.00	80 -	120	104.4	
44	Ca	2	45	5499.00	ppb	0.88	5000.00	80 -	120	110.0	
47	Ti	1	45	206.90	ppb	3.58	200.00	80 -	120	103.5	
51	V	1	45	204.30	ppb	3.18	200.00	80 -	120	102.2	
52	Cr	1	45	205.70	ppb	3.16	200.00	80 -	120	102.9	
55	Mn	1	45	208.70	ppb	2.65	200.00	80 -	120	104.4	
56	Fe	1	72	1047.00	ppb	3.27	1000.00	80 -	120	104.7	
59	Co	1	72	211.20	ppb	2.65	200.00	80 -	120	105.6	
60	Ni	1	72	206.30	ppb	3.11	200.00	80 -	120	103.2	
63	Cu	1	72	209.80	ppb	2.12	200.00	80 -	120	104.9	
66	Zn	1	72	207.90	ppb	2.19	200.00	80 -	120	104.0	
75	As	1	72	201.60	ppb	2.34	200.00	80 -	120	100.8	
78	Se	1	72	195.50	ppb	3.48	200.00	80 -	120	97.8	
88	Sr	2	115	232.20	ppb	1.53	200.00	80 -	120	116.1	
95	Mo	2	115	217.60	ppb	1.54	200.00	80 -	120	108.8	
107	Ag	2	115	205.70	ppb	0.98	200.00	80 -	120	102.9	
111	Cd	2	115	200.60	ppb	1.30	200.00	80 -	120	100.3	
118	Sn	2	115	210.10	ppb	0.60	200.00	80 -	120	105.1	
121	Sb	2	115	195.30	ppb	0.72	200.00	80 -	120	97.7	
137	Ba	2	115	203.60	ppb	1.05	200.00	80 -	120	101.8	
205	Tl	2	209	214.90	ppb	0.43	200.00	80 -	120	107.5	
208	Pb	2	209	203.00	ppb	0.56	200.00	80 -	120	101.5	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-62863.27	1.70	36.77	-170965.3	70 -	120	ISFail
45	Sc	1	138957.77	0.32	157844.06	88.0	70 -	120	
45	Sc	2	5063692.00	0.78	5827273.50	86.9	70 -	120	
72	Ge	1	73428.23	0.59	86621.49	84.8	70 -	120	
115	In	2	4544809.00	0.13	6276207.00	72.4	70 -	120	
209	Bi	2	3348332.50	0.47	4446753.50	75.3	70 -	120	

LCS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\091_LCS.D\091_LCS.D#

Date Acquired:	Aug 10 2016 08:17 pm	Sample Name:	**LCSD-76716**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCSDICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	209.10	ppb	0.92	200.00	80 -	120	104.6	
9	Be	2	45	192.60	ppb	1.01	200.00	80 -	120	96.3	
11	B	2	45	186.30	ppb	0.73	200.00	80 -	120	93.2	
23	Na	1	45	5508.00	ppb	2.51	5000.00	80 -	120	110.2	
24	Mg	1	45	5191.00	ppb	2.76	5000.00	80 -	120	103.8	
27	Al	1	45	1047.00	ppb	2.17	1000.00	80 -	120	104.7	
39	K	1	45	5152.00	ppb	2.01	5000.00	80 -	120	103.0	
44	Ca	2	45	5381.00	ppb	1.35	5000.00	80 -	120	107.6	
47	Ti	1	45	206.90	ppb	6.19	200.00	80 -	120	103.5	
51	V	1	45	201.20	ppb	3.01	200.00	80 -	120	100.6	
52	Cr	1	45	202.60	ppb	3.59	200.00	80 -	120	101.3	
55	Mn	1	45	204.50	ppb	2.58	200.00	80 -	120	102.3	
56	Fe	1	72	1018.00	ppb	3.27	1000.00	80 -	120	101.8	
59	Co	1	72	205.80	ppb	2.93	200.00	80 -	120	102.9	
60	Ni	1	72	201.60	ppb	2.40	200.00	80 -	120	100.8	
63	Cu	1	72	205.00	ppb	2.53	200.00	80 -	120	102.5	
66	Zn	1	72	204.70	ppb	3.02	200.00	80 -	120	102.4	
75	As	1	72	199.60	ppb	2.26	200.00	80 -	120	99.8	
78	Se	1	72	195.60	ppb	1.40	200.00	80 -	120	97.8	
88	Sr	2	115	225.50	ppb	1.05	200.00	80 -	120	112.8	
95	Mo	2	115	213.30	ppb	1.30	200.00	80 -	120	106.7	
107	Ag	2	115	202.40	ppb	1.06	200.00	80 -	120	101.2	
111	Cd	2	115	197.70	ppb	1.10	200.00	80 -	120	98.9	
118	Sn	2	115	206.70	ppb	0.43	200.00	80 -	120	103.4	
121	Sb	2	115	195.40	ppb	0.03	200.00	80 -	120	97.7	
137	Ba	2	115	199.70	ppb	0.54	200.00	80 -	120	99.9	
205	Tl	2	209	209.50	ppb	0.32	200.00	80 -	120	104.8	
208	Pb	2	209	198.60	ppb	0.71	200.00	80 -	120	99.3	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-59964.26	1.58	36.77	-163081.1	70 -	120	ISFail
45	Sc	1	135174.03	1.00	157844.06	85.6	70 -	120	
45	Sc	2	4950650.50	0.74	5827273.50	85.0	70 -	120	
72	Ge	1	72003.48	0.47	86621.49	83.1	70 -	120	
115	In	2	4576596.00	0.70	6276207.00	72.9	70 -	120	
209	Bi	2	3395703.00	0.43	4446753.50	76.4	70 -	120	

DT QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\094DT1.D\094DT1.D#

Date Acquired:	Aug 10 2016 08:35 pm	Sample Name:	**1607317-09A SD**
Acq. Method:	DHL_3Fe.M	Misc Info:	SD ICPMS_TSDOD1
Operator:	KL	Bench Diln:	25.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	25.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)	Rec(%)	Flag
7	Li	2	45	9.84	ppb	0.22	-1495.64	90 - 110	-3.3	
9	Be	2	45	0.49	ppb	9.17	2.33	90 - 110	105.5	GOOD
11	B	2	45	11.94	ppb	1.84	52.50	90 - 110	113.7	
23	Na	1	45	646.80	ppb	1.94	3282.00	90 - 110	98.5	GOOD
24	Mg	1	45	2460.00	ppb	2.96	12820.00	90 - 110	95.9	GOOD
27	Al	1	45	13310.00	ppb	3.58	70500.00	90 - 110	94.4	GOOD
39	K	1	45	2885.00	ppb	0.96	14640.00	90 - 110	98.5	GOOD
44	Ca	2	45	10890.00	ppb	1.39	53410.00	90 - 110	101.9	GOOD
47	Ti	1	45	44.10	ppb	7.19	205.30	90 - 110	107.4	GOOD
51	V	1	45	17.48	ppb	4.39	87.36	90 - 110	100.0	GOOD
52	Cr	1	45	10.40	ppb	3.98	51.47	90 - 110	101.0	GOOD
55	Mn	1	45	150.60	ppb	3.82	749.90	90 - 110	100.4	GOOD
56	Fe	1	72	11470.00	ppb	3.58	57960.00	90 - 110	98.9	GOOD
59	Co	1	72	4.55	ppb	4.91	22.61	90 - 110	100.6	GOOD
60	Ni	1	72	7.02	ppb	5.54	34.39	90 - 110	102.0	GOOD
63	Cu	1	72	5.87	ppb	2.36	28.30	90 - 110	103.6	GOOD
66	Zn	1	72	55.00	ppb	3.43	253.50	90 - 110	108.5	GOOD
75	As	1	72	7.17	ppb	3.14	35.35	90 - 110	101.5	GOOD
78	Se	1	72	2.98	ppb	12.97	11.78	90 - 110	126.4	
88	Sr	2	115	56.57	ppb	1.18	299.20	90 - 110	94.5	GOOD
95	Mo	2	115	0.35	ppb	11.23	1.73	90 - 110	102.0	GOOD
107	Ag	2	115	0.06	ppb	9.46	0.32	90 - 110	94.2	GOOD
111	Cd	2	115	0.30	ppb	10.71	1.31	90 - 110	114.8	
118	Sn	2	115	1.12	ppb	1.82	5.73	90 - 110	97.3	GOOD
121	Sb	2	115	0.75	ppb	2.12	3.39	90 - 110	110.2	
137	Ba	2	115	86.52	ppb	0.65	440.60	90 - 110	98.2	GOOD
205	Tl	2	209	0.18	ppb	9.31	0.68	90 - 110	131.5	
208	Pb	2	209	25.49	ppb	0.46	130.90	90 - 110	97.4	GOOD

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHig	-1495.64	9.29	36.77	-4067.6	70 -	120	ISFail
45	Sc	1		133766.89	0.63	157844.06	84.7	70 -	120	
45	Sc	2		4632488.50	1.11	5827273.50	79.5	70 -	120	
72	Ge	1		71798.76	0.46	86621.49	82.9	70 -	120	
115	In	2		4408075.00	0.38	6276207.00	70.2	70 -	120	
209	Bi	2		3359444.30	0.27	4446753.50	75.5	70 -	120	

PDS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\105_PDS.D\105_PDS.D#

Date Acquired:	Aug 10 2016 09:41 pm	Sample Name:	**1607317-09A PDS**
Acq. Method:	DHL_3Fe.M	Misc Info:	PDS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	233.40	ppb	2.05	-39481.89	200	75-125	######	Fail
9	Be	2	45	177.00	ppb	1.78	2.33	200	75-125	87.3	
11	B	2	45	209.20	ppb	1.29	52.50	200	75-125	78.4	
23	Na	1	45	8573.00	ppb	1.49	3282.00	5000	75-125	105.8	
24	Mg	1	45	17830.00	ppb	2.78	12820.00	5000	75-125	100.2	
27	Al	1	45	75230.00	ppb	3.43	70500.00	5000	75-125	94.6	
39	K	1	45	20400.00	ppb	1.39	14640.00	5000	75-125	115.2	
44	Ca	2	45	59120.00	ppb	2.50	53410.00	5000	75-125	114.2	
47	Ti	1	45	409.70	ppb	3.19	205.30	200	75-125	102.2	
51	V	1	45	290.10	ppb	2.80	87.36	200	75-125	101.4	
52	Cr	1	45	253.20	ppb	2.86	51.47	200	75-125	100.9	
55	Mn	1	45	966.00	ppb	2.23	749.90	200	75-125	108.0	
56	Fe	1	72	63660.00	ppb	2.46	57960.00	5000	75-125	114.0	
59	Co	1	72	219.20	ppb	2.41	22.61	200	75-125	98.3	
60	Ni	1	72	221.30	ppb	2.34	34.39	200	75-125	93.5	
63	Cu	1	72	213.30	ppb	2.16	28.30	200	75-125	92.5	
66	Zn	1	72	445.60	ppb	2.86	253.50	200	75-125	96.1	
75	As	1	72	229.30	ppb	2.29	35.35	200	75-125	97.0	
78	Se	1	72	197.00	ppb	1.49	11.78	200	75-125	92.6	
88	Sr	2	115	508.70	ppb	2.01	299.20	200	75-125	104.7	
95	Mo	2	115	200.90	ppb	1.65	1.73	200	75-125	99.6	
107	Ag	2	115	186.70	ppb	1.32	0.32	200	75-125	93.2	
111	Cd	2	115	185.30	ppb	1.08	1.31	200	75-125	92.0	
118	Sn	2	115	204.90	ppb	1.02	5.73	200	75-125	99.6	
121	Sb	2	115	201.70	ppb	0.55	3.39	200	75-125	99.2	
137	Ba	2	115	643.30	ppb	0.67	440.60	200	75-125	101.3	
205	Tl	2	209	203.90	ppb	0.62	0.68	200	75-125	101.6	
208	Pb	2	209	334.80	ppb	0.99	130.90	200	75-125	102.0	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-39481.89	2.97	36.77	-107376.4	70 - 120	ISFail
45	Sc	1	131038.41	0.14	157844.06	83.0	70 - 120	
45	Sc	2	4702444.50	2.42	5827273.50	80.7	70 - 120	
72	Ge	1	70037.72	0.06	86621.49	80.9	70 - 120	
115	In	2	4599213.50	0.50	6276207.00	73.3	70 - 120	
209	Bi	2	3272732.80	1.01	4446753.50	73.6	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\106_MS.D\106_MS.D#

Date Acquired:	Aug 10 2016 09:46 pm	Sample Name:	**1607317-09A MS**
Acq. Method:	DHL_3Fe.M	Misc Info:	MS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	243.90	ppb	1.50	########	200	80-120	######	Fail
9	Be	2	45	176.80	ppb	1.27	2.33	200	80-120	87.2	
11	B	2	45	218.30	ppb	0.93	52.50	200	80-120	82.9	
23	Na	1	45	8843.00	ppb	2.11	3282.00	5000	80-120	111.2	
24	Mg	1	45	19800.00	ppb	3.29	12820.00	5000	80-120	139.6	Fail
27	Al	1	45	88960.00	ppb	3.71	70500.00	1000	80-120	1846.0	Fail
39	K	1	45	23550.00	ppb	0.69	14640.00	5000	80-120	178.2	Fail
44	Ca	2	45	64700.00	ppb	1.61	53410.00	5000	80-120	225.8	Fail
47	Ti	1	45	459.90	ppb	3.38	205.30	200	80-120	127.3	Fail
51	V	1	45	320.50	ppb	3.08	87.36	200	80-120	116.6	
52	Cr	1	45	255.50	ppb	3.40	51.47	200	80-120	102.0	
55	Mn	1	45	1282.00	ppb	2.99	749.90	200	80-120	266.0	Fail
56	Fe	1	72	70950.00	ppb	2.74	57960.00	1000	80-120	1299.0	Fail
59	Co	1	72	226.60	ppb	2.43	22.61	200	80-120	102.0	
60	Ni	1	72	224.10	ppb	2.87	34.39	200	80-120	94.9	
63	Cu	1	72	216.00	ppb	2.82	28.30	200	80-120	93.9	
66	Zn	1	72	477.90	ppb	2.26	253.50	200	80-120	112.2	
75	As	1	72	236.40	ppb	2.28	35.35	200	80-120	100.5	
78	Se	1	72	197.50	ppb	3.06	11.78	200	80-120	92.9	
88	Sr	2	115	560.60	ppb	2.16	299.20	200	80-120	130.7	Fail
95	Mo	2	115	193.70	ppb	1.99	1.73	200	80-120	96.0	
107	Ag	2	115	186.80	ppb	1.84	0.32	200	80-120	93.2	
111	Cd	2	115	189.70	ppb	1.48	1.31	200	80-120	94.2	
118	Sn	2	115	208.10	ppb	1.02	5.73	200	80-120	101.2	
121	Sb	2	115	73.76	ppb	0.56	3.39	200	80-120	35.2	Fail
137	Ba	2	115	817.50	ppb	0.91	440.60	200	80-120	188.4	Fail
205	Tl	2	209	211.20	ppb	1.43	0.68	200	80-120	105.3	
208	Pb	2	209	387.50	ppb	0.68	130.90	200	80-120	128.3	Fail

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-58590.41	1.13	36.77	########	70 - 120	ISFail
45	Sc	1	132937.44	0.58	157844.06	84.2	70 - 120	
45	Sc	2	4618868.50	2.37	5827273.50	79.3	70 - 120	
72	Ge	1	70291.84	0.45	86621.49	81.1	70 - 120	
115	In	2	4452912.50	0.67	6276207.00	70.9	70 - 120	
209	Bi	2	3186888.30	1.02	4446753.50	71.7	70 - 120	

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\107_MS.D\107_MS.D#

Date Acquired:	Aug 10 2016 09:52 pm	Sample Name:	**1607317-09A MSD**
Acq. Method:	DHL_3Fe.M	Misc Info:	MSD ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	242.60	ppb	1.41	########	200	80-120	######	Fail
9	Be	2	45	177.60	ppb	0.63	2.33	200	80-120	87.6	
11	B	2	45	222.30	ppb	0.37	52.50	200	80-120	84.9	
23	Na	1	45	8820.00	ppb	2.32	3282.00	5000	80-120	110.8	
24	Mg	1	45	19640.00	ppb	3.81	12820.00	5000	80-120	136.4	Fail
27	Al	1	45	85510.00	ppb	3.58	70500.00	1000	80-120	1501.0	Fail
39	K	1	45	23220.00	ppb	2.64	14640.00	5000	80-120	171.6	Fail
44	Ca	2	45	60660.00	ppb	1.38	53410.00	5000	80-120	145.0	Fail
47	Ti	1	45	467.30	ppb	3.36	205.30	200	80-120	131.0	Fail
51	V	1	45	303.90	ppb	3.05	87.36	200	80-120	108.3	
52	Cr	1	45	260.70	ppb	3.06	51.47	200	80-120	104.6	
55	Mn	1	45	974.30	ppb	2.50	749.90	200	80-120	112.2	
56	Fe	1	72	68320.00	ppb	3.26	57960.00	1000	80-120	1036.0	Fail
59	Co	1	72	233.30	ppb	3.22	22.61	200	80-120	105.3	
60	Ni	1	72	231.60	ppb	2.75	34.39	200	80-120	98.6	
63	Cu	1	72	222.00	ppb	2.03	28.30	200	80-120	96.9	
66	Zn	1	72	479.90	ppb	2.19	253.50	200	80-120	113.2	
75	As	1	72	232.70	ppb	1.57	35.35	200	80-120	98.7	
78	Se	1	72	199.00	ppb	2.03	11.78	200	80-120	93.6	
88	Sr	2	115	560.10	ppb	1.24	299.20	200	80-120	130.4	Fail
95	Mo	2	115	199.00	ppb	1.15	1.73	200	80-120	98.6	
107	Ag	2	115	191.00	ppb	1.08	0.32	200	80-120	95.3	
111	Cd	2	115	193.70	ppb	1.29	1.31	200	80-120	96.2	
118	Sn	2	115	213.10	ppb	0.59	5.73	200	80-120	103.7	
121	Sb	2	115	71.86	ppb	0.49	3.39	200	80-120	34.2	Fail
137	Ba	2	115	721.00	ppb	0.42	440.60	200	80-120	140.2	Fail
205	Tl	2	209	215.30	ppb	1.47	0.68	200	80-120	107.3	
208	Pb	2	209	376.60	ppb	0.66	130.90	200	80-120	122.9	Fail

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-57818.87	1.86	36.77	########	70	-	120	ISFail
45	Sc	1	131948.41	0.29	157844.06	83.6	70	-	120	
45	Sc	2	4587145.50	0.91	5827273.50	78.7	70	-	120	
72	Ge	1	69201.56	0.18	86621.49	79.9	70	-	120	
115	In	2	4275379.50	0.64	6276207.00	68.1	70	-	120	ISFail
209	Bi	2	3090457.80	0.08	4446753.50	69.5	70	-	120	ISFail

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\108CCV1.D\108CCV1.D#

Date Acquired:	Aug 10 2016 09:58 pm	Sample Name:	**CCV4-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	200.10	ppb	1.14	200.00	90 -	110	100.1	
9	Be	2	45	191.10	ppb	0.56	200.00	90 -	110	95.6	
11	B	2	45	177.00	ppb	0.87	200.00	90 -	110	88.5	Fail
23	Na	1	45	5516.00	ppb	2.24	5000.00	90 -	110	110.3	Fail
24	Mg	1	45	5244.00	ppb	3.70	5000.00	90 -	110	104.9	
27	Al	1	45	5306.00	ppb	4.58	5000.00	90 -	110	106.1	
39	K	1	45	5330.00	ppb	1.65	5000.00	90 -	110	106.6	
44	Ca	2	45	5572.00	ppb	1.78	5000.00	90 -	110	111.4	Fail
47	Ti	1	45	197.40	ppb	6.24	200.00	90 -	110	98.7	
51	V	1	45	204.40	ppb	3.87	200.00	90 -	110	102.2	
52	Cr	1	45	205.00	ppb	3.69	200.00	90 -	110	102.5	
55	Mn	1	45	209.90	ppb	3.57	200.00	90 -	110	105.0	
56	Fe	1	72	5272.00	ppb	4.55	5000.00	90 -	110	105.4	
59	Co	1	72	207.00	ppb	3.41	200.00	90 -	110	103.5	
60	Ni	1	72	203.00	ppb	3.35	200.00	90 -	110	101.5	
63	Cu	1	72	206.80	ppb	3.26	200.00	90 -	110	103.4	
66	Zn	1	72	219.50	ppb	6.56	200.00	90 -	110	109.8	
75	As	1	72	209.40	ppb	2.92	200.00	90 -	110	104.7	
78	Se	1	72	209.90	ppb	3.49	200.00	90 -	110	105.0	
88	Sr	2	115	229.40	ppb	0.84	200.00	90 -	110	114.7	Fail
95	Mo	2	115	216.80	ppb	1.28	200.00	90 -	110	108.4	
107	Ag	2	115	204.40	ppb	1.08	200.00	90 -	110	102.2	
111	Cd	2	115	203.90	ppb	1.45	200.00	90 -	110	102.0	
118	Sn	2	115	204.10	ppb	0.64	200.00	90 -	110	102.1	
121	Sb	2	115	204.50	ppb	0.34	200.00	90 -	110	102.3	
137	Ba	2	115	203.60	ppb	0.32	200.00	90 -	110	101.8	
205	Tl	2	209	211.30	ppb	0.58	200.00	90 -	110	105.7	
208	Pb	2	209	199.20	ppb	0.48	200.00	90 -	110	99.6	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-56569.73	2.13	36.77	-153849.2	70 -	120		ISFail
45	Sc	1	131748.33	0.66	157844.06	83.5	70 -	120		
45	Sc	2	4851440.50	1.46	5827273.50	83.3	70 -	120		
72	Ge	1	70997.86	0.64	86621.49	82.0	70 -	120		
115	In	2	4482388.00	0.80	6276207.00	71.4	70 -	120		
209	Bi	2	3345980.50	0.34	4446753.50	75.2	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\110LCVL.D\110LCVL.D#

Date Acquired:	Aug 10 2016 10:10 pm	Sample Name:	**LCVL4-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	10.10	ppb	0.73	10.00	70 -	130	101.0	
9	Be	2	45	0.99	ppb	8.05	1.00	70 -	130	99.0	
11	B	2	45	19.25	ppb	1.68	20.00	70 -	130	96.3	
23	Na	1	45	95.50	ppb	0.92	100.00	70 -	130	95.5	
24	Mg	1	45	108.50	ppb	2.32	100.00	70 -	130	108.5	
27	Al	1	45	119.60	ppb	2.45	100.00	70 -	130	119.6	
39	K	1	45	111.90	ppb	2.64	100.00	70 -	130	111.9	
44	Ca	2	45	114.20	ppb	8.57	100.00	70 -	130	114.2	
47	Ti	1	45	5.12	ppb	6.10	5.00	70 -	130	102.4	
51	V	1	45	1.09	ppb	3.34	1.00	70 -	130	109.2	
52	Cr	1	45	5.21	ppb	4.31	5.00	70 -	130	104.2	
55	Mn	1	45	5.32	ppb	2.24	5.00	70 -	130	106.4	
56	Fe	1	72	117.50	ppb	2.56	100.00	70 -	130	117.5	
59	Co	1	72	5.14	ppb	1.56	5.00	70 -	130	102.8	
60	Ni	1	72	5.15	ppb	2.82	5.00	70 -	130	103.0	
63	Cu	1	72	5.13	ppb	1.13	5.00	70 -	130	102.6	
66	Zn	1	72	5.59	ppb	6.43	5.00	70 -	130	111.8	
75	As	1	72	5.17	ppb	1.71	5.00	70 -	130	103.3	
78	Se	1	72	5.64	ppb	3.90	5.00	70 -	130	112.7	
88	Sr	2	115	5.64	ppb	1.80	5.00	70 -	130	112.7	
95	Mo	2	115	5.35	ppb	3.92	5.00	70 -	130	107.0	
107	Ag	2	115	2.21	ppb	2.44	2.00	70 -	130	110.7	
111	Cd	2	115	1.01	ppb	5.24	1.00	70 -	130	100.6	
118	Sn	2	115	5.23	ppb	0.62	5.00	70 -	130	104.5	
121	Sb	2	115	2.16	ppb	6.21	2.00	70 -	130	108.2	
137	Ba	2	115	5.15	ppb	2.39	5.00	70 -	130	103.1	
205	Tl	2	209	1.16	ppb	4.06	1.00	70 -	130	116.0	
208	Pb	2	209	1.13	ppb	3.97	1.00	70 -	130	112.8	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-1665.19	1.92	36.77	-4528.7	70 -	120	ISFail
45	Sc	1	137764.58	0.23	157844.06	87.3	70 -	120	
45	Sc	2	4780224.00	2.24	5827273.50	82.0	70 -	120	
72	Ge	1	75130.02	0.59	86621.49	86.7	70 -	120	
115	In	2	4390816.00	1.02	6276207.00	70.0	70 -	120	ISFail
209	Bi	2	3321052.50	0.99	4446753.50	74.7	70 -	120	

CCB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\111_CCB.D\111_CCB.D#

Date Acquired:	Aug 10 2016 10:17 pm	Sample Name:	**CCB4-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.164	ppb	8.69	2.00	2.00	
9	Be	2	45	0.037	ppb	3.24	0.40	0.30	
11	B	2	45	2.157	ppb	3.64	10.00	10.00	
23	Na	1	45	-1.930	ppb	3.28	50.00	#####	
24	Mg	1	45	4.110	ppb	10.98	50.00	#####	
27	Al	1	45	14.430	ppb	3.29	50.00	10.00	FailAq
39	K	1	45	5.803	ppb	1.18	50.00	#####	
44	Ca	2	45	35.540	ppb	10.10	50.00	#####	
47	Ti	1	45	0.026	ppb	49.50	4.00	3.00	
51	V	1	45	0.037	ppb	3.23	4.00	3.00	
52	Cr	1	45	0.045	ppb	7.13	2.00	2.00	
55	Mn	1	45	0.194	ppb	8.10	2.00	3.00	
56	Fe	1	72	6.910	ppb	16.03	50.00	30.00	
59	Co	1	72	0.054	ppb	8.15	2.00	3.00	
60	Ni	1	72	0.140	ppb	21.11	2.00	3.00	
63	Cu	1	72	0.110	ppb	5.52	2.00	2.00	
66	Zn	1	72	1.683	ppb	7.16	4.00	2.00	
75	As	1	72	-0.095	ppb	1.27	2.00	2.00	
78	Se	1	72	0.194	ppb	30.31	0.60	2.00	
88	Sr	2	115	0.195	ppb	8.97	4.00	3.00	
95	Mo	2	115	0.089	ppb	19.47	2.00	2.00	
107	Ag	2	115	0.047	ppb	16.46	0.40	1.00	
111	Cd	2	115	0.039	ppb	51.20	0.40	0.30	
118	Sn	2	115	0.123	ppb	8.38	20.00	3.00	
121	Sb	2	115	0.078	ppb	16.37	2.00	0.80	
137	Ba	2	115	0.145	ppb	19.18	2.00	3.00	
205	Tl	2	209	0.152	ppb	5.16	2.00	0.50	
208	Pb	2	209	0.090	ppb	16.51	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-25.45	25.01	36.77	-69.2	70 - 120	ISFail
45	Sc	1		131554.20	1.30	157844.06	83.3	70 - 120	
45	Sc	2		4746576.00	1.40	5827273.50	81.5	70 - 120	
72	Ge	1		72017.73	1.52	86621.49	83.1	70 - 120	
115	In	2		4499025.50	0.66	6276207.00	71.7	70 - 120	
209	Bi	2		3373030.30	0.33	4446753.50	75.9	70 - 120	

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\123CCV1.D\123CCV1.D#

Date Acquired:	Aug 10 2016 11:28 pm	Sample Name:	**CCV5-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	210.60	ppb	0.35	200.00	90 -	110	105.3	
9	Be	2	45	196.10	ppb	1.31	200.00	90 -	110	98.1	
11	B	2	45	174.50	ppb	1.75	200.00	90 -	110	87.3	Fail
23	Na	1	45	5658.00	ppb	2.86	5000.00	90 -	110	113.2	Fail
24	Mg	1	45	5324.00	ppb	3.40	5000.00	90 -	110	106.5	
27	Al	1	45	5362.00	ppb	3.68	5000.00	90 -	110	107.2	
39	K	1	45	5447.00	ppb	2.52	5000.00	90 -	110	108.9	
44	Ca	2	45	5831.00	ppb	4.15	5000.00	90 -	110	116.6	Fail
47	Ti	1	45	206.10	ppb	3.61	200.00	90 -	110	103.1	
51	V	1	45	211.60	ppb	3.52	200.00	90 -	110	105.8	
52	Cr	1	45	211.50	ppb	4.22	200.00	90 -	110	105.8	
55	Mn	1	45	211.10	ppb	3.28	200.00	90 -	110	105.6	
56	Fe	1	72	5255.00	ppb	3.21	5000.00	90 -	110	105.1	
59	Co	1	72	207.90	ppb	3.00	200.00	90 -	110	104.0	
60	Ni	1	72	202.80	ppb	3.17	200.00	90 -	110	101.4	
63	Cu	1	72	205.70	ppb	3.01	200.00	90 -	110	102.9	
66	Zn	1	72	210.90	ppb	3.41	200.00	90 -	110	105.5	
75	As	1	72	213.40	ppb	2.48	200.00	90 -	110	106.7	
78	Se	1	72	208.50	ppb	1.71	200.00	90 -	110	104.3	
88	Sr	2	115	234.60	ppb	1.39	200.00	90 -	110	117.3	Fail
95	Mo	2	115	217.80	ppb	1.43	200.00	90 -	110	108.9	
107	Ag	2	115	204.30	ppb	1.25	200.00	90 -	110	102.2	
111	Cd	2	115	207.30	ppb	0.91	200.00	90 -	110	103.7	
118	Sn	2	115	206.30	ppb	1.06	200.00	90 -	110	103.2	
121	Sb	2	115	207.70	ppb	0.87	200.00	90 -	110	103.9	
137	Ba	2	115	203.20	ppb	1.11	200.00	90 -	110	101.6	
205	Tl	2	209	213.80	ppb	0.83	200.00	90 -	110	106.9	
208	Pb	2	209	202.00	ppb	1.05	200.00	90 -	110	101.0	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-61362.46	1.49	36.77	-166883.7	70 -	120		ISFail
45	Sc	1	131068.99	1.04	157844.06	83.0	70 -	120		
45	Sc	2	5058765.00	2.37	5827273.50	86.8	70 -	120		
72	Ge	1	72377.49	0.37	86621.49	83.6	70 -	120		
115	In	2	4754028.50	1.42	6276207.00	75.7	70 -	120		
209	Bi	2	3357645.50	1.01	4446753.50	75.5	70 -	120		

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\125LCVL.D\125LCVL.D#

Date Acquired:	Aug 10 2016 11:40 pm	Sample Name:	**LCVL5-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	10.23	ppb	1.06	10.00	70 -	130	102.3	
9	Be	2	45	0.96	ppb	2.65	1.00	70 -	130	96.0	
11	B	2	45	18.18	ppb	1.92	20.00	70 -	130	90.9	
23	Na	1	45	97.71	ppb	1.46	100.00	70 -	130	97.7	
24	Mg	1	45	107.00	ppb	2.43	100.00	70 -	130	107.0	
27	Al	1	45	111.50	ppb	4.90	100.00	70 -	130	111.5	
39	K	1	45	119.80	ppb	0.54	100.00	70 -	130	119.8	
44	Ca	2	45	111.50	ppb	1.46	100.00	70 -	130	111.5	
47	Ti	1	45	5.29	ppb	6.64	5.00	70 -	130	105.8	
51	V	1	45	1.06	ppb	4.61	1.00	70 -	130	106.4	
52	Cr	1	45	5.21	ppb	2.52	5.00	70 -	130	104.2	
55	Mn	1	45	5.25	ppb	0.68	5.00	70 -	130	105.1	
56	Fe	1	72	111.40	ppb	0.75	100.00	70 -	130	111.4	
59	Co	1	72	5.00	ppb	2.93	5.00	70 -	130	100.0	
60	Ni	1	72	4.89	ppb	3.54	5.00	70 -	130	97.8	
63	Cu	1	72	5.04	ppb	3.21	5.00	70 -	130	100.8	
66	Zn	1	72	6.33	ppb	9.56	5.00	70 -	130	126.6	
75	As	1	72	5.23	ppb	2.97	5.00	70 -	130	104.6	
78	Se	1	72	5.53	ppb	4.34	5.00	70 -	130	110.5	
88	Sr	2	115	5.63	ppb	1.85	5.00	70 -	130	112.6	
95	Mo	2	115	5.34	ppb	1.07	5.00	70 -	130	106.8	
107	Ag	2	115	2.03	ppb	1.25	2.00	70 -	130	101.7	
111	Cd	2	115	1.03	ppb	11.14	1.00	70 -	130	102.5	
118	Sn	2	115	5.19	ppb	1.53	5.00	70 -	130	103.7	
121	Sb	2	115	2.11	ppb	1.72	2.00	70 -	130	105.5	
137	Ba	2	115	5.01	ppb	2.70	5.00	70 -	130	100.1	
205	Tl	2	209	1.09	ppb	1.79	1.00	70 -	130	109.3	
208	Pb	2	209	1.01	ppb	2.28	1.00	70 -	130	101.4	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-1542.50	1.52	36.77	-4195.0	70 -	120	ISFail
45	Sc	1	121017.99	1.30	157844.06	76.7	70 -	120	
45	Sc	2	4481616.50	1.79	5827273.50	76.9	70 -	120	
72	Ge	1	67685.16	1.41	86621.49	78.1	70 -	120	
115	In	2	4247796.50	1.14	6276207.00	67.7	70 -	120	ISFail
209	Bi	2	3125507.50	0.51	4446753.50	70.3	70 -	120	

CCB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\126_CCB.D\126_CCB.D#

Date Acquired:	Aug 10 2016 11:46 pm	Sample Name:	**CCB5-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.148	ppb	8.38	2.00	2.00	
9	Be	2	45	0.025	ppb	18.65	0.40	0.30	
11	B	2	45	1.565	ppb	4.50	10.00	10.00	
23	Na	1	45	1.739	ppb	4.45	50.00	#####	
24	Mg	1	45	2.696	ppb	8.82	50.00	#####	
27	Al	1	45	11.430	ppb	10.51	50.00	10.00	FailAq
39	K	1	45	14.090	ppb	0.96	50.00	#####	
44	Ca	2	45	29.550	ppb	5.75	50.00	#####	
47	Ti	1	45	0.071	ppb	21.65	4.00	3.00	
51	V	1	45	0.030	ppb	7.02	4.00	3.00	
52	Cr	1	45	0.044	ppb	17.18	2.00	2.00	
55	Mn	1	45	0.141	ppb	16.35	2.00	3.00	
56	Fe	1	72	2.865	ppb	27.61	50.00	30.00	
59	Co	1	72	0.042	ppb	13.43	2.00	3.00	
60	Ni	1	72	0.097	ppb	23.89	2.00	3.00	
63	Cu	1	72	0.060	ppb	10.37	2.00	2.00	
66	Zn	1	72	1.934	ppb	20.68	4.00	2.00	
75	As	1	72	-0.028	ppb	7.33	2.00	2.00	
78	Se	1	72	0.072	ppb	17.07	0.60	2.00	
88	Sr	2	115	0.161	ppb	9.19	4.00	3.00	
95	Mo	2	115	0.053	ppb	18.43	2.00	2.00	
107	Ag	2	115	0.047	ppb	18.20	0.40	1.00	
111	Cd	2	115	0.053	ppb	29.77	0.40	0.30	
118	Sn	2	115	0.100	ppb	8.92	20.00	3.00	
121	Sb	2	115	0.053	ppb	5.75	2.00	0.80	
137	Ba	2	115	0.133	ppb	8.81	2.00	3.00	
205	Tl	2	209	0.080	ppb	15.91	2.00	0.50	
208	Pb	2	209	0.055	ppb	9.48	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-31.54	38.80	36.77	-85.8	70 - 120	ISFail
45	Sc	1		116900.03	1.10	157844.06	74.1	70 - 120	
45	Sc	2		4228102.00	2.48	5827273.50	72.6	70 - 120	
72	Ge	1		65115.57	1.51	86621.49	75.2	70 - 120	
115	In	2		3843549.00	1.56	6276207.00	61.2	70 - 120	ISFail
209	Bi	2		2891584.80	0.73	4446753.50	65.0	70 - 120	ISFail

PB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\127__PB.D\127__PB.D#

Date Acquired:	Aug 10 2016 11:52 pm	Sample Name:	**MB-76717**
Acq. Method:	DHL_3Fe.M	Misc Info:	MBLKICPMS_TSDOD
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	5.00

QC Elements

Element				Conc.		RSD(%)	MDL	RL	Flag
7	Li	2	45	0.120	ppb	3.31	2.0	8.00	
9	Be	2	45	-0.005	ppb	52.92	0.4	1.20	
11	B	2	45	1.318	ppb	1.30	10.0	30.00	
23	Na	1	45	-3.849	ppb	2.35	50.0	#####	
24	Mg	1	45	5.857	ppb	15.41	50.0	#####	
27	Al	1	45	5.807	ppb	10.44	50.0	#####	
39	K	1	45	12.500	ppb	1.61	50.0	#####	
44	Ca	2	45	33.740	ppb	12.05	50.0	#####	
47	Ti	1	45	0.270	ppb	39.04	4.0	10.00	
51	V	1	45	-0.010	ppb	3.16	4.0	10.00	
52	Cr	1	45	0.090	ppb	5.51	2.0	8.00	
55	Mn	1	45	0.148	ppb	14.50	2.0	8.00	
56	Fe	1	72	3.974	ppb	12.27	50.0	#####	
59	Co	1	72	0.008	ppb	42.05	2.0	8.00	
60	Ni	1	72	0.112	ppb	14.17	2.0	8.00	
63	Cu	1	72	0.080	ppb	5.10	2.0	8.00	
66	Zn	1	72	2.845	ppb	4.76	4.0	10.00	
75	As	1	72	-0.132	ppb	4.15	2.0	4.00	
78	Se	1	72	0.081	ppb	4.98	0.6	2.00	
88	Sr	2	115	0.136	ppb	18.45	4.0	10.00	
95	Mo	2	115	0.034	ppb	26.06	2.0	8.00	
107	Ag	2	115	0.017	ppb	25.85	0.4	0.80	
111	Cd	2	115	0.000	ppb	102.56	0.4	1.20	
118	Sn	2	115	4.250	ppb	2.18	20.0	40.00	
121	Sb	2	115	0.017	ppb	8.80	2.0	4.00	
137	Ba	2	115	0.055	ppb	5.25	2.0	8.00	
205	Tl	2	209	0.046	ppb	14.02	2.0	4.00	
208	Pb	2	209	0.057	ppb	17.70	0.4	1.20	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHig	-35.89	32.18	36.77	-97.6	70 - 120	ISFail
45	Sc	1		117485.54	1.06	157844.06	74.4	70 - 120	
45	Sc	2		4266841.50	1.11	5827273.50	73.2	70 - 120	
72	Ge	1		63498.12	0.61	86621.49	73.3	70 - 120	
115	In	2		3844484.00	1.16	6276207.00	61.3	70 - 120	ISFail
209	Bi	2		2890698.30	0.39	4446753.50	65.0	70 - 120	ISFail

LCS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\128_LCS.D\128_LCS.D#

Date Acquired:	Aug 10 2016 11:58 pm	Sample Name:	**LCS-76717**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	195.40	ppb	1.48	200.00	80 -	120	97.7	
9	Be	2	45	182.20	ppb	1.24	200.00	80 -	120	91.1	
11	B	2	45	163.70	ppb	1.14	200.00	80 -	120	81.9	
23	Na	1	45	5531.00	ppb	1.71	5000.00	80 -	120	110.6	
24	Mg	1	45	5236.00	ppb	2.31	5000.00	80 -	120	104.7	
27	Al	1	45	1073.00	ppb	2.29	1000.00	80 -	120	107.3	
39	K	1	45	5304.00	ppb	1.25	5000.00	80 -	120	106.1	
44	Ca	2	45	5410.00	ppb	2.20	5000.00	80 -	120	108.2	
47	Ti	1	45	208.50	ppb	1.93	200.00	80 -	120	104.3	
51	V	1	45	207.80	ppb	2.47	200.00	80 -	120	103.9	
52	Cr	1	45	209.00	ppb	2.79	200.00	80 -	120	104.5	
55	Mn	1	45	211.80	ppb	2.96	200.00	80 -	120	105.9	
56	Fe	1	72	1045.00	ppb	3.14	1000.00	80 -	120	104.5	
59	Co	1	72	208.40	ppb	2.27	200.00	80 -	120	104.2	
60	Ni	1	72	201.60	ppb	2.43	200.00	80 -	120	100.8	
63	Cu	1	72	205.90	ppb	2.13	200.00	80 -	120	103.0	
66	Zn	1	72	209.10	ppb	1.50	200.00	80 -	120	104.6	
75	As	1	72	206.90	ppb	1.83	200.00	80 -	120	103.5	
78	Se	1	72	194.40	ppb	1.22	200.00	80 -	120	97.2	
88	Sr	2	115	234.90	ppb	1.25	200.00	80 -	120	117.5	
95	Mo	2	115	218.10	ppb	1.47	200.00	80 -	120	109.1	
107	Ag	2	115	200.70	ppb	0.48	200.00	80 -	120	100.4	
111	Cd	2	115	199.60	ppb	0.51	200.00	80 -	120	99.8	
118	Sn	2	115	208.30	ppb	0.37	200.00	80 -	120	104.2	
121	Sb	2	115	203.40	ppb	0.36	200.00	80 -	120	101.7	
137	Ba	2	115	206.40	ppb	1.10	200.00	80 -	120	103.2	
205	Tl	2	209	197.60	ppb	0.56	200.00	80 -	120	98.8	
208	Pb	2	209	198.90	ppb	0.79	200.00	80 -	120	99.5	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-48089.16	1.84	36.77	-130785.1	70 -	120	ISFail
45	Sc	1	116598.05	0.61	157844.06	73.9	70 -	120	
45	Sc	2	4236061.50	1.61	5827273.50	72.7	70 -	120	
72	Ge	1	62824.13	0.29	86621.49	72.5	70 -	120	
115	In	2	3863850.00	0.44	6276207.00	61.6	70 -	120	ISFail
209	Bi	2	2872098.30	0.71	4446753.50	64.6	70 -	120	ISFail

LCS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\129_LCS.D\129_LCS.D#

Date Acquired:	Aug 11 2016 12:04 am	Sample Name:	**LCSD-76717**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCSDICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Dil:	Undiluted
Instrument:	ICPMS3	Total Dil:	5.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	196.50	ppb	0.44	200.00	80 -	120	98.3	
9	Be	2	45	183.70	ppb	1.17	200.00	80 -	120	91.9	
11	B	2	45	168.90	ppb	1.49	200.00	80 -	120	84.5	
23	Na	1	45	5467.00	ppb	2.51	5000.00	80 -	120	109.3	
24	Mg	1	45	5191.00	ppb	3.63	5000.00	80 -	120	103.8	
27	Al	1	45	1085.00	ppb	4.60	1000.00	80 -	120	108.5	
39	K	1	45	5367.00	ppb	1.63	5000.00	80 -	120	107.3	
44	Ca	2	45	5462.00	ppb	1.27	5000.00	80 -	120	109.2	
47	Ti	1	45	212.40	ppb	3.25	200.00	80 -	120	106.2	
51	V	1	45	205.10	ppb	3.06	200.00	80 -	120	102.6	
52	Cr	1	45	204.60	ppb	3.46	200.00	80 -	120	102.3	
55	Mn	1	45	209.60	ppb	2.68	200.00	80 -	120	104.8	
56	Fe	1	72	1027.00	ppb	2.73	1000.00	80 -	120	102.7	
59	Co	1	72	202.60	ppb	2.48	200.00	80 -	120	101.3	
60	Ni	1	72	197.70	ppb	2.03	200.00	80 -	120	98.9	
63	Cu	1	72	199.80	ppb	2.63	200.00	80 -	120	99.9	
66	Zn	1	72	205.00	ppb	3.14	200.00	80 -	120	102.5	
75	As	1	72	204.90	ppb	1.77	200.00	80 -	120	102.5	
78	Se	1	72	195.60	ppb	2.41	200.00	80 -	120	97.8	
88	Sr	2	115	236.90	ppb	1.01	200.00	80 -	120	118.5	
95	Mo	2	115	220.20	ppb	1.14	200.00	80 -	120	110.1	
107	Ag	2	115	202.90	ppb	1.12	200.00	80 -	120	101.5	
111	Cd	2	115	200.50	ppb	0.39	200.00	80 -	120	100.3	
118	Sn	2	115	210.80	ppb	0.56	200.00	80 -	120	105.4	
121	Sb	2	115	204.30	ppb	0.82	200.00	80 -	120	102.2	
137	Ba	2	115	208.20	ppb	1.21	200.00	80 -	120	104.1	
205	Tl	2	209	199.70	ppb	0.30	200.00	80 -	120	99.9	
208	Pb	2	209	201.30	ppb	0.36	200.00	80 -	120	100.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-47244.52	0.58	36.77	-128488.0	70 -	120	ISFail
45	Sc	1	117346.59	0.88	157844.06	74.3	70 -	120	
45	Sc	2	4104465.00	1.66	5827273.50	70.4	70 -	120	
72	Ge	1	63277.79	0.46	86621.49	73.1	70 -	120	
115	In	2	3694957.50	0.65	6276207.00	58.9	70 -	120	ISFail
209	Bi	2	2771013.50	0.04	4446753.50	62.3	70 -	120	ISFail

DT QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\132DT1.D\132DT1.D#

Date Acquired:	Aug 11 2016 12:23 am	Sample Name:	**1607317-27A SD**
Acq. Method:	DHL_3Fe.M	Misc Info:	SD ICPMS_TSDOD1
Operator:	KL	Bench Diln:	25.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	25.00

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)	Rec(%)	Flag
7	Li	2	45	0.09	ppb	26.26	-8.87	90 - 110	-4.9	
9	Be	2	45	0.00	ppb	48.24	2.32	90 - 110	0.7	
11	B	2	45	1.78	ppb	2.10	56.74	90 - 110	15.7	
23	Na	1	45	-0.86	ppb	0.58	2146.00	90 - 110	-0.2	
24	Mg	1	45	7.61	ppb	13.12	13730.00	90 - 110	0.3	
27	Al	1	45	41.06	ppb	19.73	75820.00	90 - 110	0.3	
39	K	1	45	23.29	ppb	2.89	15520.00	90 - 110	0.8	
44	Ca	2	45	32.30	ppb	33.47	52160.00	90 - 110	0.3	
47	Ti	1	45	0.31	ppb	28.86	202.90	90 - 110	0.8	
51	V	1	45	-0.03	ppb	11.81	96.82	90 - 110	-0.2	
52	Cr	1	45	0.05	ppb	1.83	59.33	90 - 110	0.4	
55	Mn	1	45	0.48	ppb	11.22	572.40	90 - 110	0.4	
56	Fe	1	72	40.96	ppb	20.49	66040.00	90 - 110	0.3	
59	Co	1	72	0.02	ppb	30.81	23.38	90 - 110	0.5	
60	Ni	1	72	0.08	ppb	6.65	37.95	90 - 110	1.1	
63	Cu	1	72	0.58	ppb	5.42	22.50	90 - 110	12.9	
66	Zn	1	72	3.74	ppb	13.18	207.40	90 - 110	9.0	
75	As	1	72	-0.03	ppb	1.02	23.43	90 - 110	-0.6	
78	Se	1	72	0.27	ppb	22.93	13.08	90 - 110	10.1	
88	Sr	2	115	0.26	ppb	32.83	344.30	90 - 110	0.4	
95	Mo	2	115	0.05	ppb	53.69	1.79	90 - 110	15.1	
107	Ag	2	115	0.01	ppb	56.06	0.28	90 - 110	25.6	
111	Cd	2	115	0.02	ppb	48.31	1.13	90 - 110	9.5	
118	Sn	2	115	0.03	ppb	1.94	5.58	90 - 110	3.1	
121	Sb	2	115	0.06	ppb	34.44	4.91	90 - 110	5.6	
137	Ba	2	115	0.28	ppb	32.69	334.90	90 - 110	0.4	
205	Tl	2	209	0.11	ppb	5.04	0.78	90 - 110	67.8	
208	Pb	2	209	0.18	ppb	40.16	188.00	90 - 110	0.5	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	RHig	-8.87	220.34	36.77	-24.1	70 -	120	ISFail
45	Sc	1		118966.98	1.35	157844.06	75.4	70 -	120	
45	Sc	2		3778620.30	2.77	5827273.50	64.8	70 -	120	ISFail
72	Ge	1		65575.34	0.94	86621.49	75.7	70 -	120	
115	In	2		3757943.30	1.69	6276207.00	59.9	70 -	120	ISFail
209	Bi	2		2916052.00	1.20	4446753.50	65.6	70 -	120	ISFail

ICSA QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\134ICSA.D\134ICSA.D#

Date Acquired:	Aug 11 2016 12:35 am	Sample Name:	**ICSA-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSAICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	RL S	RL Aq	Flag
7	Li	2	45	0.148	ppb	5.27	8.00	5.00	
9	Be	2	45	0.012	ppb	17.29	0.32	0.80	
11	B	2	45	2.787	ppb	3.51	30.00	30.00	
23	Na	1	45	100200.000	ppb	2.75	#######	#######	
24	Mg	1	45	89250.000	ppb	3.62	#######	#######	
27	Al	1	45	102200.000	ppb	4.62	#######	#######	
39	K	1	45	98040.000	ppb	3.21	#######	#######	
44	Ca	2	45	94350.000	ppb	1.94	#######	#######	
47	Ti	1	45	1940.000	ppb	5.51	10.00	10.00	
51	V	1	45	0.074	ppb	17.42	10.00	10.00	
52	Cr	1	45	0.857	ppb	1.26	8.00	5.00	
55	Mn	1	45	1.183	ppb	8.90	8.00	10.00	
56	Fe	1	72	91530.000	ppb	4.75	#######	#######	
59	Co	1	72	1.239	ppb	1.88	8.00	10.00	
60	Ni	1	72	0.424	ppb	12.69	8.00	10.00	
63	Cu	1	72	1.983	ppb	2.45	8.00	10.00	
66	Zn	1	72	3.395	ppb	3.97	10.00	5.00	
75	As	1	72	0.410	ppb	7.87	4.00	5.00	
78	Se	1	72	0.388	ppb	8.64	2.00	5.00	
88	Sr	2	115	1.323	ppb	5.72	10.00	10.00	
95	Mo	2	115	2059.000	ppb	0.60	8.00	5.00	
107	Ag	2	115	0.098	ppb	10.88	0.80	2.00	
111	Cd	2	115	0.207	ppb	51.36	1.20	1.00	
118	Sn	2	115	0.139	ppb	4.75	10.00	10.00	
121	Sb	2	115	0.150	ppb	11.65	4.00	2.50	
137	Ba	2	115	0.673	ppb	13.18	8.00	10.00	
205	Tl	2	209	0.074	ppb	0.78	4.00	1.50	
208	Pb	2	209	0.368	ppb	6.04	1.20	1.00	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-17.77	29.61	36.77	-48.3	70 -	120	ISFail
45	Sc	1	110337.30	1.98	157844.06	69.9	70 -	120	ISFail
45	Sc	2	3956714.00	1.83	5827273.50	67.9	70 -	120	ISFail
72	Ge	1	60022.06	2.41	86621.49	69.3	70 -	120	ISFail
115	In	2	3977300.80	0.48	6276207.00	63.4	70 -	120	ISFail
209	Bi	2	2720411.50	0.56	4446753.50	61.2	70 -	120	ISFail

ICS-AB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\135ICSB.D\135ICSB.D#

Date Acquired:	Aug 11 2016 12:41 am	Sample Name:	**ICSAB-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	ICSBICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)			Flag
7	Li	2	45	0.13	ppb	8.72	---	80 -	120		
9	Be	2	45	0.00	ppb	27.94	---	80 -	120		
11	B	2	45	2.40	ppb	0.91	---	80 -	120		
23	Na	1	45	94680.00	ppb	2.48	100000.00	80 -	120		
24	Mg	1	45	89700.00	ppb	3.60	100000.00	80 -	120		
27	Al	1	45	100500.00	ppb	3.98	100000.00	80 -	120		
39	K	1	45	97910.00	ppb	1.39	100000.00	80 -	120		
44	Ca	2	45	94370.00	ppb	2.09	100000.00	80 -	120		
47	Ti	1	45	1944.00	ppb	3.44	---	80 -	120		
51	V	1	45	39.30	ppb	4.47	40.00	80 -	120		
52	Cr	1	45	20.00	ppb	4.12	20.00	80 -	120		
55	Mn	1	45	19.65	ppb	2.74	20.00	80 -	120		
56	Fe	1	72	89870.00	ppb	3.51	100000.00	80 -	120		
59	Co	1	72	37.04	ppb	2.88	40.00	80 -	120		
60	Ni	1	72	33.35	ppb	3.10	40.00	80 -	120		
63	Cu	1	72	18.34	ppb	2.29	20.00	80 -	120		
66	Zn	1	72	18.88	ppb	8.37	20.00	80 -	120		
75	As	1	72	19.81	ppb	3.17	20.00	80 -	120		
78	Se	1	72	18.11	ppb	5.90	20.00	80 -	120		
88	Sr	2	115	1.11	ppb	2.71	---	80 -	120		
95	Mo	2	115	2060.00	ppb	0.90	---	80 -	120		
107	Ag	2	115	17.56	ppb	1.58	20.00	80 -	120		
111	Cd	2	115	9.05	ppb	3.08	10.00	80 -	120		
118	Sn	2	115	0.31	ppb	13.19	---	80 -	120		
121	Sb	2	115	0.06	ppb	8.30	---	80 -	120		
137	Ba	2	115	0.43	ppb	4.42	---	80 -	120		
205	Tl	2	209	0.07	ppb	19.28	---	80 -	120		
208	Pb	2	209	0.21	ppb	3.67	---	80 -	120		

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-28.35	61.91	36.77	-77.1	70 -	120		ISFail
45	Sc	1	108485.65	0.93	157844.06	68.7	70 -	120		ISFail
45	Sc	2	4039613.00	2.23	5827273.50	69.3	70 -	120		ISFail
72	Ge	1	59653.77	0.92	86621.49	68.9	70 -	120		ISFail
115	In	2	4029364.00	0.57	6276207.00	64.2	70 -	120		ISFail
209	Bi	2	2705154.30	1.27	4446753.50	60.8	70 -	120		ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\146SMPL.D\146SMPL.D#

Date Acquired:	Aug 11 2016 01:46 am	Sample Name:	**1607337-01A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	66.300	ppb	#REF!	1.75	2000.00	>RL
9	Be	2	45	2.586	ppb	#REF!	1.51	2000.00	>RL
11	B	2	45	62.210	ppb	#REF!	3.25	2000.00	>RL
23	Na	1	45	1312.000	ppb	#REF!	1.37	25000.00	>RL
24	Mg	1	45	14890.000	ppb	#REF!	2.66	25000.00	>RL
27	Al	1	45	70490.000	ppb	#REF!	2.84	10000.00	OUTCAL
39	K	1	45	15010.000	ppb	#REF!	2.14	25000.00	>RL
44	Ca	2	45	152800.000	ppb	#REF!	2.12	25000.00	OUTCAL
47	Ti	1	45	180.200	ppb	#REF!	6.50	2000.00	>RL
51	V	1	45	103.600	ppb	#REF!	2.72	2000.00	>RL
52	Cr	1	45	62.210	ppb	#REF!	3.35	2000.00	>RL
55	Mn	1	45	870.000	ppb	#REF!	3.74	2000.00	>RL
56	Fe	1	72	71250.000	ppb	#REF!	3.29	10000.00	OUTCAL
59	Co	1	72	26.030	ppb	#REF!	2.55	2000.00	>RL
60	Ni	1	72	40.530	ppb	#REF!	2.97	2000.00	>RL
63	Cu	1	72	20.240	ppb	#REF!	1.91	2000.00	>RL
66	Zn	1	72	198.200	ppb	#REF!	3.56	2000.00	>RL
75	As	1	72	23.730	ppb	#REF!	1.82	2000.00	>RL
78	Se	1	72	14.190	ppb	#REF!	6.55	2000.00	>RL
88	Sr	2	115	467.800	ppb	#REF!	1.29	2000.00	>RL
95	Mo	2	115	2.681	ppb	#REF!	7.27	2000.00	J
107	Ag	2	115	0.202	ppb	#REF!	4.13	500.00	ND
111	Cd	2	115	1.130	ppb	#REF!	7.86	2000.00	J
118	Sn	2	115	6.237	ppb	#REF!	1.36	2000.00	ND
121	Sb	2	115	2.647	ppb	#REF!	0.70	500.00	J
137	Ba	2	115	419.800	ppb	#REF!	2.20	2000.00	>RL
205	Tl	2	209	0.569	ppb	#REF!	3.44	2000.00	ND
208	Pb	2	209	212.400	ppb	#REF!	0.97	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-8922.60	4.35	36.77	-24266.2	70 - 120	ISFail
45	Sc	1	123788.10	0.57	157844.06	78.4	70 - 120	
45	Sc	2	4818791.50	2.02	5827273.50	82.7	70 - 120	
72	Ge	1	66367.59	0.43	86621.49	76.6	70 - 120	
115	In	2	4279917.00	1.24	6276207.00	68.2	70 - 120	ISFail
209	Bi	2	2889430.30	0.69	4446753.50	65.0	70 - 120	ISFail

PDS QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\147_PDS.D\147_PDS.D#

Date Acquired:	Aug 11 2016 01:52 am	Sample Name:	**1607317-27A PDS**
Acq. Method:	DHL_3Fe.M	Misc Info:	PDS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	267.00	ppb	1.65	-41710.06	200	75-125	######	Fail
9	Be	2	45	173.50	ppb	1.91	2.32	200	75-125	85.6	
11	B	2	45	217.60	ppb	2.05	56.74	200	75-125	80.4	
23	Na	1	45	7659.00	ppb	1.77	2146.00	5000	75-125	110.3	
24	Mg	1	45	19900.00	ppb	3.73	13730.00	5000	75-125	123.4	
27	Al	1	45	84980.00	ppb	4.87	75820.00	5000	75-125	183.2	Fail
39	K	1	45	22650.00	ppb	2.81	15520.00	5000	75-125	142.6	Fail
44	Ca	2	45	61490.00	ppb	1.99	52160.00	5000	75-125	186.6	Fail
47	Ti	1	45	409.70	ppb	2.36	202.90	200	75-125	103.4	
51	V	1	45	302.60	ppb	2.84	96.82	200	75-125	102.9	
52	Cr	1	45	263.40	ppb	3.44	59.33	200	75-125	102.0	
55	Mn	1	45	806.20	ppb	3.10	572.40	200	75-125	116.9	
56	Fe	1	72	77190.00	ppb	3.17	66040.00	5000	75-125	223.0	Fail
59	Co	1	72	220.70	ppb	2.58	23.38	200	75-125	98.7	
60	Ni	1	72	228.70	ppb	2.45	37.95	200	75-125	95.4	
63	Cu	1	72	208.50	ppb	2.61	22.50	200	75-125	93.0	
66	Zn	1	72	402.20	ppb	2.24	207.40	200	75-125	97.4	
75	As	1	72	214.10	ppb	2.82	23.43	200	75-125	95.3	
78	Se	1	72	189.90	ppb	1.85	13.08	200	75-125	88.4	
88	Sr	2	115	626.30	ppb	1.07	344.30	200	75-125	141.0	Fail
95	Mo	2	115	212.40	ppb	1.42	1.79	200	75-125	105.3	
107	Ag	2	115	188.60	ppb	1.47	0.28	200	75-125	94.2	
111	Cd	2	115	185.10	ppb	1.14	1.13	200	75-125	92.0	
118	Sn	2	115	202.80	ppb	1.31	5.58	200	75-125	98.6	
121	Sb	2	115	196.10	ppb	1.14	4.91	200	75-125	95.6	
137	Ba	2	115	542.20	ppb	0.72	334.90	200	75-125	103.7	
205	Tl	2	209	192.70	ppb	0.60	0.78	200	75-125	96.0	
208	Pb	2	209	410.40	ppb	0.71	188.00	200	75-125	111.2	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-41710.06	0.74	36.77	-113436.3	70	-	120	ISFail
45	Sc	1	121423.96	1.02	157844.06	76.9	70	-	120	
45	Sc	2	4688560.50	2.06	5827273.50	80.5	70	-	120	
72	Ge	1	64344.19	0.92	86621.49	74.3	70	-	120	
115	In	2	4008963.80	1.37	6276207.00	63.9	70	-	120	ISFail
209	Bi	2	2737126.00	0.61	4446753.50	61.6	70	-	120	ISFail

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\148_MS.D\148_MS.D#

Date Acquired:	Aug 11 2016 01:58 am	Sample Name:	**1607317-27A MS**
Acq. Method:	DHL_3Fe.M	Misc Info:	MS ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	273.90	ppb	1.85	########	200	80-120	######	Fail
9	Be	2	45	177.00	ppb	1.77	2.32	200	80-120	87.3	
11	B	2	45	224.00	ppb	2.02	56.74	200	80-120	83.6	
23	Na	1	45	7854.00	ppb	1.69	2146.00	5000	80-120	114.2	
24	Mg	1	45	20730.00	ppb	2.31	13730.00	5000	80-120	140.0	Fail
27	Al	1	45	87760.00	ppb	2.78	75820.00	1000	80-120	1194.0	Fail
39	K	1	45	23740.00	ppb	0.55	15520.00	5000	80-120	164.4	Fail
44	Ca	2	45	59630.00	ppb	2.58	52160.00	5000	80-120	149.4	Fail
47	Ti	1	45	482.50	ppb	2.15	202.90	200	80-120	139.8	Fail
51	V	1	45	316.30	ppb	2.93	96.82	200	80-120	109.7	
52	Cr	1	45	269.00	ppb	3.22	59.33	200	80-120	104.8	
55	Mn	1	45	806.50	ppb	2.54	572.40	200	80-120	117.0	
56	Fe	1	72	76600.00	ppb	2.98	66040.00	1000	80-120	1056.0	Fail
59	Co	1	72	228.60	ppb	2.46	23.38	200	80-120	102.6	
60	Ni	1	72	235.80	ppb	2.30	37.95	200	80-120	98.9	
63	Cu	1	72	219.20	ppb	1.88	22.50	200	80-120	98.4	
66	Zn	1	72	419.00	ppb	2.18	207.40	200	80-120	105.8	
75	As	1	72	222.90	ppb	2.00	23.43	200	80-120	99.7	
78	Se	1	72	196.20	ppb	0.96	13.08	200	80-120	91.6	
88	Sr	2	115	755.60	ppb	0.85	344.30	200	80-120	205.7	Fail
95	Mo	2	115	208.00	ppb	1.46	1.79	200	80-120	103.1	
107	Ag	2	115	194.20	ppb	1.58	0.28	200	80-120	97.0	
111	Cd	2	115	194.00	ppb	1.19	1.13	200	80-120	96.4	
118	Sn	2	115	209.20	ppb	1.17	5.58	200	80-120	101.8	
121	Sb	2	115	74.89	ppb	1.17	4.91	200	80-120	35.0	Fail
137	Ba	2	115	554.70	ppb	0.90	334.90	200	80-120	109.9	
205	Tl	2	209	201.10	ppb	1.22	0.78	200	80-120	100.2	
208	Pb	2	209	719.70	ppb	1.35	188.00	200	80-120	265.9	Fail

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-61257.54	1.34	36.77	########	70 - 120	ISFail
45	Sc	1	118607.66	0.19	157844.06	75.1	70 - 120	
45	Sc	2	4539775.00	1.83	5827273.50	77.9	70 - 120	
72	Ge	1	62980.31	0.66	86621.49	72.7	70 - 120	
115	In	2	3899716.50	1.12	6276207.00	62.1	70 - 120	ISFail
209	Bi	2	2707252.50	0.85	4446753.50	60.9	70 - 120	ISFail

MS/MSD QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\149_MS.D\149_MS.D#

Date Acquired:	Aug 11 2016 02:04 am	Sample Name:	**1607317-27A MSD**
Acq. Method:	DHL_3Fe.M	Misc Info:	MSD ICPMS_TSDOD1
Operator:	KL	Bench Diln:	5.00
Last Cal. Update:	Aug 10 2016 01:05 pm	Auto Diln:	Undiluted
Instrument:	ICPMS3	Total Diln:	5.00

QC Elements

Element				Conc.		RSD(%)	Ref Conc	Spike	Range	Rec(%)	Flag
7	Li	2	45	254.50	ppb	1.19	########	200	80-120	######	Fail
9	Be	2	45	169.60	ppb	1.49	2.32	200	80-120	83.6	
11	B	2	45	208.50	ppb	1.98	56.74	200	80-120	75.9	Fail
23	Na	1	45	7422.00	ppb	2.19	2146.00	5000	80-120	105.5	
24	Mg	1	45	18870.00	ppb	2.25	13730.00	5000	80-120	102.8	
27	Al	1	45	78910.00	ppb	3.13	75820.00	1000	80-120	309.0	Fail
39	K	1	45	21960.00	ppb	2.38	15520.00	5000	80-120	128.8	Fail
44	Ca	2	45	51140.00	ppb	2.46	52160.00	5000	80-120	-20.4	Fail
47	Ti	1	45	453.70	ppb	2.47	202.90	200	80-120	125.4	Fail
51	V	1	45	298.40	ppb	1.60	96.82	200	80-120	100.8	
52	Cr	1	45	256.60	ppb	2.26	59.33	200	80-120	98.6	
55	Mn	1	45	743.70	ppb	1.87	572.40	200	80-120	85.6	
56	Fe	1	72	66890.00	ppb	2.49	66040.00	1000	80-120	85.0	
59	Co	1	72	219.90	ppb	1.79	23.38	200	80-120	98.3	
60	Ni	1	72	226.70	ppb	1.66	37.95	200	80-120	94.4	
63	Cu	1	72	210.50	ppb	1.19	22.50	200	80-120	94.0	
66	Zn	1	72	394.50	ppb	1.57	207.40	200	80-120	93.6	
75	As	1	72	218.40	ppb	1.62	23.43	200	80-120	97.5	
78	Se	1	72	193.50	ppb	2.07	13.08	200	80-120	90.2	
88	Sr	2	115	607.10	ppb	1.45	344.30	200	80-120	131.4	Fail
95	Mo	2	115	202.50	ppb	1.64	1.79	200	80-120	100.4	
107	Ag	2	115	188.80	ppb	1.79	0.28	200	80-120	94.3	
111	Cd	2	115	189.20	ppb	1.88	1.13	200	80-120	94.0	
118	Sn	2	115	203.60	ppb	1.80	5.58	200	80-120	99.0	
121	Sb	2	115	74.01	ppb	1.41	4.91	200	80-120	34.6	Fail
137	Ba	2	115	536.50	ppb	1.02	334.90	200	80-120	100.8	
205	Tl	2	209	196.70	ppb	1.10	0.78	200	80-120	98.0	
208	Pb	2	209	625.80	ppb	0.93	188.00	200	80-120	218.9	Fail

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-56722.36	0.54	36.77	########	70 - 120	ISFail
45	Sc	1	118827.66	0.62	157844.06	75.3	70 - 120	
45	Sc	2	4419396.50	2.53	5827273.50	75.8	70 - 120	
72	Ge	1	63089.75	0.46	86621.49	72.8	70 - 120	
115	In	2	3814919.50	0.92	6276207.00	60.8	70 - 120	ISFail
209	Bi	2	2663219.50	0.85	4446753.50	59.9	70 - 120	ISFail

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\150CCV1.D\150CCV1.D#

Date Acquired:	Aug 11 2016 02:10 am	Sample Name:	**CCV6-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	205.40	ppb	1.33	200.00	90 -	110	102.7	
9	Be	2	45	189.30	ppb	0.57	200.00	90 -	110	94.7	
11	B	2	45	171.10	ppb	0.44	200.00	90 -	110	85.6	Fail
23	Na	1	45	5643.00	ppb	3.00	5000.00	90 -	110	112.9	Fail
24	Mg	1	45	5337.00	ppb	3.67	5000.00	90 -	110	106.7	
27	Al	1	45	5385.00	ppb	3.61	5000.00	90 -	110	107.7	
39	K	1	45	5506.00	ppb	0.64	5000.00	90 -	110	110.1	Fail
44	Ca	2	45	5760.00	ppb	0.87	5000.00	90 -	110	115.2	Fail
47	Ti	1	45	206.80	ppb	5.45	200.00	90 -	110	103.4	
51	V	1	45	207.60	ppb	3.53	200.00	90 -	110	103.8	
52	Cr	1	45	208.20	ppb	3.58	200.00	90 -	110	104.1	
55	Mn	1	45	211.90	ppb	3.31	200.00	90 -	110	106.0	
56	Fe	1	72	5265.00	ppb	3.99	5000.00	90 -	110	105.3	
59	Co	1	72	204.20	ppb	3.04	200.00	90 -	110	102.1	
60	Ni	1	72	198.50	ppb	3.57	200.00	90 -	110	99.3	
63	Cu	1	72	203.40	ppb	2.98	200.00	90 -	110	101.7	
66	Zn	1	72	210.50	ppb	3.03	200.00	90 -	110	105.3	
75	As	1	72	210.20	ppb	2.77	200.00	90 -	110	105.1	
78	Se	1	72	208.40	ppb	1.66	200.00	90 -	110	104.2	
88	Sr	2	115	252.30	ppb	0.55	200.00	90 -	110	126.2	Fail
95	Mo	2	115	231.70	ppb	1.02	200.00	90 -	110	115.9	Fail
107	Ag	2	115	212.50	ppb	0.97	200.00	90 -	110	106.3	
111	Cd	2	115	207.00	ppb	0.25	200.00	90 -	110	103.5	
118	Sn	2	115	206.10	ppb	0.54	200.00	90 -	110	103.1	
121	Sb	2	115	204.70	ppb	0.94	200.00	90 -	110	102.4	
137	Ba	2	115	205.20	ppb	0.10	200.00	90 -	110	102.6	
205	Tl	2	209	200.90	ppb	0.12	200.00	90 -	110	100.5	
208	Pb	2	209	202.10	ppb	0.09	200.00	90 -	110	101.1	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-50194.16	1.59	36.77	-136509.9	70 -	120		ISFail
45	Sc	1	116261.23	0.18	157844.06	73.7	70 -	120		
45	Sc	2	4258000.50	1.15	5827273.50	73.1	70 -	120		
72	Ge	1	63651.25	0.27	86621.49	73.5	70 -	120		
115	In	2	3531460.00	0.23	6276207.00	56.3	70 -	120		ISFail
209	Bi	2	2622581.80	0.69	4446753.50	59.0	70 -	120		ISFail

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\152LCVL.D\152LCVL.D#

Date Acquired:	Aug 11 2016 02:22 am	Sample Name:	**LCVL-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.97	ppb	1.83	10.00	70 -	130	99.7	
9	Be	2	45	0.96	ppb	3.06	1.00	70 -	130	96.2	
11	B	2	45	18.29	ppb	1.87	20.00	70 -	130	91.5	
23	Na	1	45	100.00	ppb	2.02	100.00	70 -	130	100.0	
24	Mg	1	45	112.30	ppb	2.09	100.00	70 -	130	112.3	
27	Al	1	45	125.70	ppb	4.22	100.00	70 -	130	125.7	
39	K	1	45	120.50	ppb	3.05	100.00	70 -	130	120.5	
44	Ca	2	45	111.90	ppb	9.17	100.00	70 -	130	111.9	
47	Ti	1	45	5.38	ppb	16.48	5.00	70 -	130	107.7	
51	V	1	45	1.18	ppb	3.27	1.00	70 -	130	118.4	
52	Cr	1	45	5.54	ppb	4.23	5.00	70 -	130	110.8	
55	Mn	1	45	5.50	ppb	4.33	5.00	70 -	130	109.9	
56	Fe	1	72	123.40	ppb	3.50	100.00	70 -	130	123.4	
59	Co	1	72	5.28	ppb	3.16	5.00	70 -	130	105.5	
60	Ni	1	72	5.10	ppb	2.38	5.00	70 -	130	102.0	
63	Cu	1	72	5.26	ppb	4.66	5.00	70 -	130	105.2	
66	Zn	1	72	5.84	ppb	8.62	5.00	70 -	130	116.7	
75	As	1	72	5.33	ppb	3.62	5.00	70 -	130	106.6	
78	Se	1	72	5.72	ppb	1.59	5.00	70 -	130	114.5	
88	Sr	2	115	6.05	ppb	2.70	5.00	70 -	130	120.9	
95	Mo	2	115	5.55	ppb	1.83	5.00	70 -	130	110.9	
107	Ag	2	115	2.20	ppb	3.25	2.00	70 -	130	109.9	
111	Cd	2	115	1.08	ppb	5.25	1.00	70 -	130	108.0	
118	Sn	2	115	5.23	ppb	1.32	5.00	70 -	130	104.7	
121	Sb	2	115	2.13	ppb	3.23	2.00	70 -	130	106.5	
137	Ba	2	115	5.21	ppb	1.93	5.00	70 -	130	104.2	
205	Tl	2	209	1.23	ppb	4.01	1.00	70 -	130	122.6	
208	Pb	2	209	1.12	ppb	5.44	1.00	70 -	130	111.6	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-1538.31	4.09	36.77	-4183.7	70 -	120		ISFail
45	Sc	1	112526.34	1.11	157844.06	71.3	70 -	120		
45	Sc	2	4205417.50	4.05	5827273.50	72.2	70 -	120		
72	Ge	1	62249.54	1.83	86621.49	71.9	70 -	120		
115	In	2	3610795.80	3.69	6276207.00	57.5	70 -	120		ISFail
209	Bi	2	2723052.00	3.22	4446753.50	61.2	70 -	120		ISFail

CCB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\153_CCB.D\153_CCB.D#

Date Acquired:	Aug 11 2016 02:28 am	Sample Name:	**CCB6-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.152	ppb	8.84	2.00	2.00	
9	Be	2	45	0.052	ppb	13.57	0.40	0.30	
11	B	2	45	1.840	ppb	2.23	10.00	10.00	
23	Na	1	45	-6.216	ppb	3.71	50.00	#####	
24	Mg	1	45	3.115	ppb	6.08	50.00	#####	
27	Al	1	45	14.400	ppb	4.61	50.00	10.00	FailAq
39	K	1	45	10.100	ppb	3.52	50.00	#####	
44	Ca	2	45	28.190	ppb	10.12	50.00	#####	
47	Ti	1	45	-0.007	ppb	34.64	4.00	3.00	
51	V	1	45	0.051	ppb	3.74	4.00	3.00	
52	Cr	1	45	0.033	ppb	3.46	2.00	2.00	
55	Mn	1	45	0.165	ppb	10.60	2.00	3.00	
56	Fe	1	72	5.592	ppb	5.66	50.00	30.00	
59	Co	1	72	0.056	ppb	7.94	2.00	3.00	
60	Ni	1	72	0.137	ppb	10.04	2.00	3.00	
63	Cu	1	72	0.099	ppb	8.51	2.00	2.00	
66	Zn	1	72	1.595	ppb	15.95	4.00	2.00	
75	As	1	72	-0.052	ppb	5.78	2.00	2.00	
78	Se	1	72	0.121	ppb	12.49	0.60	2.00	
88	Sr	2	115	0.208	ppb	8.92	4.00	3.00	
95	Mo	2	115	0.100	ppb	12.65	2.00	2.00	
107	Ag	2	115	0.057	ppb	16.66	0.40	1.00	
111	Cd	2	115	0.018	ppb	68.71	0.40	0.30	
118	Sn	2	115	0.104	ppb	7.21	20.00	3.00	
121	Sb	2	115	0.062	ppb	13.66	2.00	0.80	
137	Ba	2	115	0.166	ppb	6.44	2.00	3.00	
205	Tl	2	209	0.153	ppb	5.46	2.00	0.50	
208	Pb	2	209	0.102	ppb	12.44	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-27.08	62.99	36.77	-73.7	70 - 120	ISFail
45	Sc	1		118991.57	1.04	157844.06	75.4	70 - 120	
45	Sc	2		4196573.50	2.04	5827273.50	72.0	70 - 120	
72	Ge	1		65588.79	0.94	86621.49	75.7	70 - 120	
115	In	2		3586732.50	0.96	6276207.00	57.1	70 - 120	ISFail
209	Bi	2		2712654.30	0.77	4446753.50	61.0	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\154SMPL.D\154SMPL.D#

Date Acquired:	Aug 11 2016 02:34 am	Sample Name:	**1607337-02A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	55.320	ppb	#REF!	1.14	2000.00	>RL
9	Be	2	45	2.174	ppb	#REF!	3.45	2000.00	>RL
11	B	2	45	57.560	ppb	#REF!	1.65	2000.00	>RL
23	Na	1	45	1725.000	ppb	#REF!	2.84	25000.00	>RL
24	Mg	1	45	14040.000	ppb	#REF!	3.79	25000.00	>RL
27	Al	1	45	60840.000	ppb	#REF!	3.79	10000.00	OUTCAL
39	K	1	45	13270.000	ppb	#REF!	2.34	25000.00	>RL
44	Ca	2	45	259100.000	ppb	#REF!	1.90	25000.00	OUTCAL
47	Ti	1	45	159.400	ppb	#REF!	5.78	2000.00	>RL
51	V	1	45	99.460	ppb	#REF!	4.23	2000.00	>RL
52	Cr	1	45	58.230	ppb	#REF!	4.57	2000.00	>RL
55	Mn	1	45	1105.000	ppb	#REF!	4.07	2000.00	>RL
56	Fe	1	72	66620.000	ppb	#REF!	4.29	10000.00	OUTCAL
59	Co	1	72	23.100	ppb	#REF!	3.57	2000.00	>RL
60	Ni	1	72	34.010	ppb	#REF!	3.77	2000.00	>RL
63	Cu	1	72	11.160	ppb	#REF!	4.27	2000.00	>RL
66	Zn	1	72	143.800	ppb	#REF!	3.52	2000.00	>RL
75	As	1	72	20.730	ppb	#REF!	2.88	2000.00	>RL
78	Se	1	72	14.040	ppb	#REF!	5.71	2000.00	>RL
88	Sr	2	115	562.400	ppb	#REF!	1.57	2000.00	>RL
95	Mo	2	115	1.941	ppb	#REF!	5.53	2000.00	ND
107	Ag	2	115	0.119	ppb	#REF!	8.74	500.00	ND
111	Cd	2	115	1.102	ppb	#REF!	3.86	2000.00	J
118	Sn	2	115	4.994	ppb	#REF!	0.86	2000.00	ND
121	Sb	2	115	0.339	ppb	#REF!	7.83	500.00	ND
137	Ba	2	115	643.400	ppb	#REF!	0.07	2000.00	>RL
205	Tl	2	209	0.496	ppb	#REF!	6.71	2000.00	ND
208	Pb	2	209	28.070	ppb	#REF!	1.12	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-7027.17	2.28	36.77	-19111.4	70 - 120	ISFail
45	Sc	1	114486.73	1.10	157844.06	72.5	70 - 120	
45	Sc	2	4303161.00	1.77	5827273.50	73.8	70 - 120	
72	Ge	1	60249.08	0.82	86621.49	69.6	70 - 120	ISFail
115	In	2	3759798.30	0.16	6276207.00	59.9	70 - 120	ISFail
209	Bi	2	2574033.80	0.27	4446753.50	57.9	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\155SMPL.D\155SMPL.D#

Date Acquired:	Aug 11 2016 02:40 am	Sample Name:	**1607337-03A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	65.050	ppb	#REF!	1.84	2000.00	>RL
9	Be	2	45	2.285	ppb	#REF!	1.54	2000.00	>RL
11	B	2	45	69.730	ppb	#REF!	1.33	2000.00	>RL
23	Na	1	45	871.300	ppb	#REF!	1.16	25000.00	>RL
24	Mg	1	45	12490.000	ppb	#REF!	2.76	25000.00	>RL
27	Al	1	45	48230.000	ppb	#REF!	2.48	10000.00	OUTCAL
39	K	1	45	14310.000	ppb	#REF!	1.70	25000.00	>RL
44	Ca	2	45	83840.000	ppb	#REF!	1.88	25000.00	OUTCAL
47	Ti	1	45	85.800	ppb	#REF!	7.17	2000.00	>RL
51	V	1	45	82.270	ppb	#REF!	3.78	2000.00	>RL
52	Cr	1	45	62.550	ppb	#REF!	3.17	2000.00	>RL
55	Mn	1	45	341.200	ppb	#REF!	3.22	2000.00	>RL
56	Fe	1	72	70580.000	ppb	#REF!	2.98	10000.00	OUTCAL
59	Co	1	72	24.380	ppb	#REF!	2.82	2000.00	>RL
60	Ni	1	72	34.050	ppb	#REF!	2.48	2000.00	>RL
63	Cu	1	72	6.315	ppb	#REF!	2.09	2000.00	J
66	Zn	1	72	133.300	ppb	#REF!	2.57	2000.00	>RL
75	As	1	72	19.390	ppb	#REF!	2.70	2000.00	>RL
78	Se	1	72	15.630	ppb	#REF!	0.65	2000.00	>RL
88	Sr	2	115	275.200	ppb	#REF!	0.88	2000.00	>RL
95	Mo	2	115	2.681	ppb	#REF!	2.21	2000.00	J
107	Ag	2	115	0.106	ppb	#REF!	12.22	500.00	ND
111	Cd	2	115	0.788	ppb	#REF!	11.91	2000.00	J
118	Sn	2	115	5.291	ppb	#REF!	1.10	2000.00	ND
121	Sb	2	115	0.136	ppb	#REF!	12.29	500.00	ND
137	Ba	2	115	418.000	ppb	#REF!	0.49	2000.00	>RL
205	Tl	2	209	0.340	ppb	#REF!	1.38	2000.00	ND
208	Pb	2	209	22.510	ppb	#REF!	0.76	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-8435.62	1.43	36.77	-22941.8	70 - 120	ISFail
45	Sc	1	120861.77	0.22	157844.06	76.6	70 - 120	
45	Sc	2	4496203.50	1.75	5827273.50	77.2	70 - 120	
72	Ge	1	64133.51	0.30	86621.49	74.0	70 - 120	
115	In	2	3912137.00	0.74	6276207.00	62.3	70 - 120	ISFail
209	Bi	2	2738602.00	0.27	4446753.50	61.6	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\156SMPL.D\156SMPL.D#

Date Acquired:	Aug 11 2016 02:46 am	Sample Name:	**1607337-04A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	82.990	ppb	#REF!	0.93	2000.00	>RL
9	Be	2	45	2.953	ppb	#REF!	0.25	2000.00	>RL
11	B	2	45	84.910	ppb	#REF!	1.23	2000.00	>RL
23	Na	1	45	503.300	ppb	#REF!	3.16	25000.00	>RL
24	Mg	1	45	11560.000	ppb	#REF!	3.34	25000.00	>RL
27	Al	1	45	50760.000	ppb	#REF!	4.20	10000.00	OUTCAL
39	K	1	45	14740.000	ppb	#REF!	1.98	25000.00	>RL
44	Ca	2	45	147700.000	ppb	#REF!	1.69	25000.00	OUTCAL
47	Ti	1	45	106.000	ppb	#REF!	6.14	2000.00	>RL
51	V	1	45	77.320	ppb	#REF!	3.25	2000.00	>RL
52	Cr	1	45	62.810	ppb	#REF!	3.93	2000.00	>RL
55	Mn	1	45	889.500	ppb	#REF!	3.74	2000.00	>RL
56	Fe	1	72	79410.000	ppb	#REF!	4.63	10000.00	OUTCAL
59	Co	1	72	76.060	ppb	#REF!	3.65	2000.00	>RL
60	Ni	1	72	58.320	ppb	#REF!	3.28	2000.00	>RL
63	Cu	1	72	5.452	ppb	#REF!	3.05	2000.00	J
66	Zn	1	72	215.200	ppb	#REF!	3.42	2000.00	>RL
75	As	1	72	19.810	ppb	#REF!	3.49	2000.00	>RL
78	Se	1	72	21.130	ppb	#REF!	7.51	2000.00	>RL
88	Sr	2	115	453.600	ppb	#REF!	0.90	2000.00	>RL
95	Mo	2	115	3.958	ppb	#REF!	4.14	2000.00	J
107	Ag	2	115	0.113	ppb	#REF!	12.27	500.00	ND
111	Cd	2	115	0.982	ppb	#REF!	11.04	2000.00	J
118	Sn	2	115	5.398	ppb	#REF!	0.17	2000.00	ND
121	Sb	2	115	0.106	ppb	#REF!	22.55	500.00	ND
137	Ba	2	115	73.560	ppb	#REF!	1.06	2000.00	>RL
205	Tl	2	209	0.504	ppb	#REF!	5.51	2000.00	ND
208	Pb	2	209	24.290	ppb	#REF!	0.67	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-10700.76	4.37	36.77	-29102.2	70 - 120	ISFail
45	Sc	1	119349.65	1.58	157844.06	75.6	70 - 120	
45	Sc	2	4451826.50	0.94	5827273.50	76.4	70 - 120	
72	Ge	1	63687.70	1.50	86621.49	73.5	70 - 120	
115	In	2	3986341.30	0.56	6276207.00	63.5	70 - 120	ISFail
209	Bi	2	2728239.50	0.10	4446753.50	61.4	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\157SMPL.D\157SMPL.D#

Date Acquired:	Aug 11 2016 02:52 am	Sample Name:	**1607337-05A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	54.520	ppb	#REF!	1.72	2000.00	>RL
9	Be	2	45	2.226	ppb	#REF!	6.82	2000.00	>RL
11	B	2	45	57.780	ppb	#REF!	1.31	2000.00	>RL
23	Na	1	45	1273.000	ppb	#REF!	1.47	25000.00	>RL
24	Mg	1	45	14180.000	ppb	#REF!	2.33	25000.00	>RL
27	Al	1	45	66100.000	ppb	#REF!	3.00	10000.00	OUTCAL
39	K	1	45	14180.000	ppb	#REF!	1.22	25000.00	>RL
44	Ca	2	45	161700.000	ppb	#REF!	2.75	25000.00	OUTCAL
47	Ti	1	45	172.000	ppb	#REF!	3.50	2000.00	>RL
51	V	1	45	94.940	ppb	#REF!	2.58	2000.00	>RL
52	Cr	1	45	57.120	ppb	#REF!	2.57	2000.00	>RL
55	Mn	1	45	905.600	ppb	#REF!	2.84	2000.00	>RL
56	Fe	1	72	64910.000	ppb	#REF!	3.53	10000.00	OUTCAL
59	Co	1	72	24.070	ppb	#REF!	2.84	2000.00	>RL
60	Ni	1	72	36.140	ppb	#REF!	2.85	2000.00	>RL
63	Cu	1	72	17.210	ppb	#REF!	1.11	2000.00	>RL
66	Zn	1	72	173.900	ppb	#REF!	2.81	2000.00	>RL
75	As	1	72	21.990	ppb	#REF!	2.48	2000.00	>RL
78	Se	1	72	14.020	ppb	#REF!	5.44	2000.00	>RL
88	Sr	2	115	464.800	ppb	#REF!	2.16	2000.00	>RL
95	Mo	2	115	2.314	ppb	#REF!	2.63	2000.00	J
107	Ag	2	115	0.185	ppb	#REF!	6.41	500.00	ND
111	Cd	2	115	1.113	ppb	#REF!	21.04	2000.00	J
118	Sn	2	115	5.168	ppb	#REF!	0.83	2000.00	ND
121	Sb	2	115	1.192	ppb	#REF!	1.05	500.00	ND
137	Ba	2	115	424.400	ppb	#REF!	1.06	2000.00	>RL
205	Tl	2	209	0.601	ppb	#REF!	1.31	2000.00	ND
208	Pb	2	209	48.730	ppb	#REF!	1.27	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-6565.88	4.18	36.77	-17856.8	70 - 120	ISFail
45	Sc	1	112315.31	0.57	157844.06	71.2	70 - 120	
45	Sc	2	4228397.50	2.80	5827273.50	72.6	70 - 120	
72	Ge	1	59739.82	0.10	86621.49	69.0	70 - 120	ISFail
115	In	2	3662056.30	0.79	6276207.00	58.3	70 - 120	ISFail
209	Bi	2	2502830.80	0.73	4446753.50	56.3	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\158SMPL.D\158SMPL.D#

Date Acquired:	Aug 11 2016 02:58 am	Sample Name:	**1607337-06A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	57.430	ppb	#REF!	1.54	2000.00	>RL
9	Be	2	45	2.184	ppb	#REF!	4.95	2000.00	>RL
11	B	2	45	58.720	ppb	#REF!	1.86	2000.00	>RL
23	Na	1	45	1894.000	ppb	#REF!	2.18	25000.00	>RL
24	Mg	1	45	14300.000	ppb	#REF!	3.25	25000.00	>RL
27	Al	1	45	60460.000	ppb	#REF!	3.40	10000.00	OUTCAL
39	K	1	45	13200.000	ppb	#REF!	1.23	25000.00	>RL
44	Ca	2	45	256200.000	ppb	#REF!	2.11	25000.00	OUTCAL
47	Ti	1	45	140.400	ppb	#REF!	2.69	2000.00	>RL
51	V	1	45	100.900	ppb	#REF!	2.97	2000.00	>RL
52	Cr	1	45	59.100	ppb	#REF!	3.76	2000.00	>RL
55	Mn	1	45	969.600	ppb	#REF!	3.29	2000.00	>RL
56	Fe	1	72	65190.000	ppb	#REF!	3.15	10000.00	OUTCAL
59	Co	1	72	23.140	ppb	#REF!	2.55	2000.00	>RL
60	Ni	1	72	34.540	ppb	#REF!	2.49	2000.00	>RL
63	Cu	1	72	10.620	ppb	#REF!	3.06	2000.00	>RL
66	Zn	1	72	140.100	ppb	#REF!	3.15	2000.00	>RL
75	As	1	72	20.120	ppb	#REF!	2.15	2000.00	>RL
78	Se	1	72	14.110	ppb	#REF!	4.81	2000.00	>RL
88	Sr	2	115	534.500	ppb	#REF!	1.26	2000.00	>RL
95	Mo	2	115	1.607	ppb	#REF!	4.27	2000.00	ND
107	Ag	2	115	0.115	ppb	#REF!	17.00	500.00	ND
111	Cd	2	115	0.998	ppb	#REF!	5.72	2000.00	J
118	Sn	2	115	4.803	ppb	#REF!	2.33	2000.00	ND
121	Sb	2	115	0.293	ppb	#REF!	11.19	500.00	ND
137	Ba	2	115	538.700	ppb	#REF!	1.16	2000.00	>RL
205	Tl	2	209	0.450	ppb	#REF!	1.38	2000.00	ND
208	Pb	2	209	25.220	ppb	#REF!	0.58	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-7008.74	2.40	36.77	-19061.2	70 - 120	ISFail
45	Sc	1	104446.54	1.11	157844.06	66.2	70 - 120	ISFail
45	Sc	2	3990637.30	2.28	5827273.50	68.5	70 - 120	ISFail
72	Ge	1	55584.19	0.77	86621.49	64.2	70 - 120	ISFail
115	In	2	3639247.50	0.80	6276207.00	58.0	70 - 120	ISFail
209	Bi	2	2467239.00	0.38	4446753.50	55.5	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\160SMPL.D\160SMPL.D#

Date Acquired:	Aug 11 2016 03:10 am	Sample Name:	**1607337-07A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	65.580	ppb	#REF!	1.26	2000.00	>RL
9	Be	2	45	2.137	ppb	#REF!	6.51	2000.00	>RL
11	B	2	45	69.200	ppb	#REF!	1.91	2000.00	>RL
23	Na	1	45	886.900	ppb	#REF!	1.80	25000.00	>RL
24	Mg	1	45	12890.000	ppb	#REF!	2.77	25000.00	>RL
27	Al	1	45	49040.000	ppb	#REF!	5.23	10000.00	OUTCAL
39	K	1	45	14380.000	ppb	#REF!	1.75	25000.00	>RL
44	Ca	2	45	121400.000	ppb	#REF!	2.40	25000.00	OUTCAL
47	Ti	1	45	90.030	ppb	#REF!	0.72	2000.00	>RL
51	V	1	45	82.040	ppb	#REF!	2.88	2000.00	>RL
52	Cr	1	45	64.520	ppb	#REF!	4.02	2000.00	>RL
55	Mn	1	45	527.600	ppb	#REF!	3.56	2000.00	>RL
56	Fe	1	72	67540.000	ppb	#REF!	3.59	10000.00	OUTCAL
59	Co	1	72	20.560	ppb	#REF!	3.04	2000.00	>RL
60	Ni	1	72	29.500	ppb	#REF!	4.02	2000.00	>RL
63	Cu	1	72	6.065	ppb	#REF!	1.60	2000.00	J
66	Zn	1	72	124.400	ppb	#REF!	3.03	2000.00	>RL
75	As	1	72	18.040	ppb	#REF!	2.39	2000.00	>RL
78	Se	1	72	15.820	ppb	#REF!	7.40	2000.00	>RL
88	Sr	2	115	328.400	ppb	#REF!	1.27	2000.00	>RL
95	Mo	2	115	3.060	ppb	#REF!	1.14	2000.00	J
107	Ag	2	115	0.094	ppb	#REF!	10.19	500.00	ND
111	Cd	2	115	0.839	ppb	#REF!	13.75	2000.00	J
118	Sn	2	115	5.378	ppb	#REF!	1.23	2000.00	ND
121	Sb	2	115	0.106	ppb	#REF!	6.60	500.00	ND
137	Ba	2	115	274.800	ppb	#REF!	0.28	2000.00	>RL
205	Tl	2	209	0.296	ppb	#REF!	5.56	2000.00	ND
208	Pb	2	209	20.580	ppb	#REF!	1.46	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-7285.64	1.95	36.77	-19814.3	70 - 120	ISFail
45	Sc	1	103174.47	1.11	157844.06	65.4	70 - 120	ISFail
45	Sc	2	3793107.80	2.62	5827273.50	65.1	70 - 120	ISFail
72	Ge	1	55298.43	0.63	86621.49	63.8	70 - 120	ISFail
115	In	2	3225504.50	0.85	6276207.00	51.4	70 - 120	ISFail
209	Bi	2	2277729.30	0.99	4446753.50	51.2	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\161SMPL.D\161SMPL.D#

Date Acquired:	Aug 11 2016 03:16 am	Sample Name:	**1607337-08A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	81.650	ppb	#REF!	1.32	2000.00	>RL
9	Be	2	45	2.778	ppb	#REF!	1.37	2000.00	>RL
11	B	2	45	84.820	ppb	#REF!	1.55	2000.00	>RL
23	Na	1	45	661.700	ppb	#REF!	2.36	25000.00	>RL
24	Mg	1	45	13550.000	ppb	#REF!	3.36	25000.00	>RL
27	Al	1	45	55620.000	ppb	#REF!	4.03	10000.00	OUTCAL
39	K	1	45	16090.000	ppb	#REF!	2.14	25000.00	>RL
44	Ca	2	45	76070.000	ppb	#REF!	1.75	25000.00	OUTCAL
47	Ti	1	45	95.170	ppb	#REF!	5.25	2000.00	>RL
51	V	1	45	85.160	ppb	#REF!	3.59	2000.00	>RL
52	Cr	1	45	68.870	ppb	#REF!	3.77	2000.00	>RL
55	Mn	1	45	934.400	ppb	#REF!	3.31	2000.00	>RL
56	Fe	1	72	82550.000	ppb	#REF!	3.65	10000.00	OUTCAL
59	Co	1	72	64.180	ppb	#REF!	4.32	2000.00	>RL
60	Ni	1	72	59.980	ppb	#REF!	4.25	2000.00	>RL
63	Cu	1	72	5.484	ppb	#REF!	3.70	2000.00	J
66	Zn	1	72	208.000	ppb	#REF!	2.78	2000.00	>RL
75	As	1	72	20.970	ppb	#REF!	3.23	2000.00	>RL
78	Se	1	72	23.080	ppb	#REF!	6.07	2000.00	>RL
88	Sr	2	115	312.300	ppb	#REF!	1.01	2000.00	>RL
95	Mo	2	115	2.878	ppb	#REF!	5.61	2000.00	J
107	Ag	2	115	0.102	ppb	#REF!	13.78	500.00	ND
111	Cd	2	115	1.050	ppb	#REF!	12.02	2000.00	J
118	Sn	2	115	5.440	ppb	#REF!	2.90	2000.00	ND
121	Sb	2	115	0.096	ppb	#REF!	5.72	500.00	ND
137	Ba	2	115	110.300	ppb	#REF!	1.10	2000.00	>RL
205	Tl	2	209	0.531	ppb	#REF!	6.75	2000.00	ND
208	Pb	2	209	33.830	ppb	#REF!	0.41	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-9318.39	1.67	36.77	-25342.6	70 - 120	ISFail
45	Sc	1	101742.73	1.19	157844.06	64.5	70 - 120	ISFail
45	Sc	2	3789385.00	1.77	5827273.50	65.0	70 - 120	ISFail
72	Ge	1	55029.00	1.23	86621.49	63.5	70 - 120	ISFail
115	In	2	3320210.30	0.41	6276207.00	52.9	70 - 120	ISFail
209	Bi	2	2338079.80	0.66	4446753.50	52.6	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\162SMPL.D\162SMPL.D#

Date Acquired:	Aug 11 2016 03:22 am	Sample Name:	**1607337-09A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	55.990	ppb	#REF!	1.55	2000.00	>RL
9	Be	2	45	2.270	ppb	#REF!	4.15	2000.00	>RL
11	B	2	45	57.130	ppb	#REF!	1.74	2000.00	>RL
23	Na	1	45	1286.000	ppb	#REF!	2.04	25000.00	>RL
24	Mg	1	45	15380.000	ppb	#REF!	2.42	25000.00	>RL
27	Al	1	45	73190.000	ppb	#REF!	3.52	10000.00	OUTCAL
39	K	1	45	15520.000	ppb	#REF!	1.92	25000.00	>RL
44	Ca	2	45	199200.000	ppb	#REF!	2.21	25000.00	OUTCAL
47	Ti	1	45	190.000	ppb	#REF!	3.41	2000.00	>RL
51	V	1	45	106.200	ppb	#REF!	3.84	2000.00	>RL
52	Cr	1	45	63.580	ppb	#REF!	3.59	2000.00	>RL
55	Mn	1	45	1310.000	ppb	#REF!	2.81	2000.00	>RL
56	Fe	1	72	72290.000	ppb	#REF!	3.50	10000.00	OUTCAL
59	Co	1	72	25.340	ppb	#REF!	2.98	2000.00	>RL
60	Ni	1	72	39.360	ppb	#REF!	2.55	2000.00	>RL
63	Cu	1	72	20.150	ppb	#REF!	1.72	2000.00	>RL
66	Zn	1	72	202.000	ppb	#REF!	1.72	2000.00	>RL
75	As	1	72	23.490	ppb	#REF!	2.20	2000.00	>RL
78	Se	1	72	14.400	ppb	#REF!	7.66	2000.00	>RL
88	Sr	2	115	506.300	ppb	#REF!	0.88	2000.00	>RL
95	Mo	2	115	2.644	ppb	#REF!	4.98	2000.00	J
107	Ag	2	115	0.243	ppb	#REF!	4.48	500.00	ND
111	Cd	2	115	1.158	ppb	#REF!	17.67	2000.00	J
118	Sn	2	115	5.467	ppb	#REF!	2.68	2000.00	ND
121	Sb	2	115	2.265	ppb	#REF!	1.11	500.00	J
137	Ba	2	115	464.500	ppb	#REF!	0.47	2000.00	>RL
205	Tl	2	209	0.604	ppb	#REF!	1.33	2000.00	ND
208	Pb	2	209	74.130	ppb	#REF!	0.59	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-6759.17	3.42	36.77	-18382.5	70 - 120	ISFail
45	Sc	1	103507.80	1.09	157844.06	65.6	70 - 120	ISFail
45	Sc	2	3843957.30	1.34	5827273.50	66.0	70 - 120	ISFail
72	Ge	1	55449.36	0.46	86621.49	64.0	70 - 120	ISFail
115	In	2	3432306.50	0.74	6276207.00	54.7	70 - 120	ISFail
209	Bi	2	2371523.80	0.45	4446753.50	53.3	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\163SMPL.D\163SMPL.D#

Date Acquired:	Aug 11 2016 03:28 am	Sample Name:	**1607337-11A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	63.890	ppb	#REF!	1.75	2000.00	>RL
9	Be	2	45	2.163	ppb	#REF!	3.89	2000.00	>RL
11	B	2	45	72.370	ppb	#REF!	0.41	2000.00	>RL
23	Na	1	45	713.900	ppb	#REF!	1.61	25000.00	>RL
24	Mg	1	45	12320.000	ppb	#REF!	3.18	25000.00	>RL
27	Al	1	45	47360.000	ppb	#REF!	5.55	10000.00	OUTCAL
39	K	1	45	14510.000	ppb	#REF!	1.61	25000.00	>RL
44	Ca	2	45	95200.000	ppb	#REF!	2.25	25000.00	OUTCAL
47	Ti	1	45	91.910	ppb	#REF!	0.50	2000.00	>RL
51	V	1	45	79.260	ppb	#REF!	2.33	2000.00	>RL
52	Cr	1	45	59.910	ppb	#REF!	3.31	2000.00	>RL
55	Mn	1	45	453.400	ppb	#REF!	2.93	2000.00	>RL
56	Fe	1	72	70720.000	ppb	#REF!	3.38	10000.00	OUTCAL
59	Co	1	72	23.780	ppb	#REF!	3.04	2000.00	>RL
60	Ni	1	72	32.210	ppb	#REF!	3.41	2000.00	>RL
63	Cu	1	72	5.330	ppb	#REF!	2.98	2000.00	J
66	Zn	1	72	132.700	ppb	#REF!	2.95	2000.00	>RL
75	As	1	72	18.630	ppb	#REF!	2.33	2000.00	>RL
78	Se	1	72	16.090	ppb	#REF!	7.97	2000.00	>RL
88	Sr	2	115	299.400	ppb	#REF!	1.30	2000.00	>RL
95	Mo	2	115	2.072	ppb	#REF!	4.08	2000.00	J
107	Ag	2	115	0.100	ppb	#REF!	8.29	500.00	ND
111	Cd	2	115	0.875	ppb	#REF!	25.51	2000.00	J
118	Sn	2	115	5.407	ppb	#REF!	1.32	2000.00	ND
121	Sb	2	115	0.127	ppb	#REF!	10.04	500.00	ND
137	Ba	2	115	156.300	ppb	#REF!	0.59	2000.00	>RL
205	Tl	2	209	0.294	ppb	#REF!	4.06	2000.00	ND
208	Pb	2	209	22.230	ppb	#REF!	0.73	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-7140.07	1.56	36.77	-19418.4	70 - 120	ISFail
45	Sc	1	106646.16	0.76	157844.06	67.6	70 - 120	ISFail
45	Sc	2	3791161.30	1.71	5827273.50	65.1	70 - 120	ISFail
72	Ge	1	57106.58	0.85	86621.49	65.9	70 - 120	ISFail
115	In	2	3242778.80	0.80	6276207.00	51.7	70 - 120	ISFail
209	Bi	2	2309220.00	0.96	4446753.50	51.9	70 - 120	ISFail

Sample QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\164SMPL.D\164SMPL.D#

Date Acquired:	Aug 11 2016 03:34 am	Sample Name:	**1607337-12A**
Acq. Method:	DHL_3Fe.M	Misc Info:	SAMPICPMS_TSDOD1
Operator:	KL	Bench Diln:	5
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		Corr. Con	RSD(%)	High Limit	Flag
7	Li	2	45	77.430	ppb	#REF!	1.72	2000.00	>RL
9	Be	2	45	2.789	ppb	#REF!	1.80	2000.00	>RL
11	B	2	45	83.380	ppb	#REF!	1.09	2000.00	>RL
23	Na	1	45	585.900	ppb	#REF!	2.18	25000.00	>RL
24	Mg	1	45	12980.000	ppb	#REF!	2.67	25000.00	>RL
27	Al	1	45	55540.000	ppb	#REF!	3.50	10000.00	OUTCAL
39	K	1	45	16200.000	ppb	#REF!	1.64	25000.00	>RL
44	Ca	2	45	77230.000	ppb	#REF!	1.29	25000.00	OUTCAL
47	Ti	1	45	89.670	ppb	#REF!	5.14	2000.00	>RL
51	V	1	45	83.840	ppb	#REF!	3.48	2000.00	>RL
52	Cr	1	45	67.420	ppb	#REF!	3.40	2000.00	>RL
55	Mn	1	45	504.500	ppb	#REF!	2.82	2000.00	>RL
56	Fe	1	72	79340.000	ppb	#REF!	2.40	10000.00	OUTCAL
59	Co	1	72	34.980	ppb	#REF!	3.34	2000.00	>RL
60	Ni	1	72	55.010	ppb	#REF!	3.21	2000.00	>RL
63	Cu	1	72	5.777	ppb	#REF!	2.81	2000.00	J
66	Zn	1	72	218.400	ppb	#REF!	2.51	2000.00	>RL
75	As	1	72	21.100	ppb	#REF!	2.76	2000.00	>RL
78	Se	1	72	26.130	ppb	#REF!	5.86	2000.00	>RL
88	Sr	2	115	304.400	ppb	#REF!	0.80	2000.00	>RL
95	Mo	2	115	2.904	ppb	#REF!	3.52	2000.00	J
107	Ag	2	115	0.112	ppb	#REF!	17.84	500.00	ND
111	Cd	2	115	1.189	ppb	#REF!	4.66	2000.00	J
118	Sn	2	115	5.484	ppb	#REF!	0.50	2000.00	ND
121	Sb	2	115	0.111	ppb	#REF!	8.44	500.00	ND
137	Ba	2	115	76.840	ppb	#REF!	1.11	2000.00	>RL
205	Tl	2	209	0.386	ppb	#REF!	7.93	2000.00	ND
208	Pb	2	209	26.820	ppb	#REF!	0.30	2000.00	>RL

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-8781.06	3.90	36.77	-23881.3	70 - 120	ISFail
45	Sc	1	104282.19	0.63	157844.06	66.1	70 - 120	ISFail
45	Sc	2	3711093.00	1.62	5827273.50	63.7	70 - 120	ISFail
72	Ge	1	56636.85	0.31	86621.49	65.4	70 - 120	ISFail
115	In	2	3167920.30	0.19	6276207.00	50.5	70 - 120	ISFail
209	Bi	2	2301538.00	0.13	4446753.50	51.8	70 - 120	ISFail

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\165CCV1.D\165CCV1.D#

Date Acquired:	Aug 11 2016 03:40 am	Sample Name:	**CCV7-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCV ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	189.40	ppb	1.03	200.00	90 -	110	94.7	
9	Be	2	45	175.00	ppb	0.53	200.00	90 -	110	87.5	Fail
11	B	2	45	150.60	ppb	0.35	200.00	90 -	110	75.3	Fail
23	Na	1	45	5452.00	ppb	3.11	5000.00	90 -	110	109.0	
24	Mg	1	45	5136.00	ppb	3.97	5000.00	90 -	110	102.7	
27	Al	1	45	5166.00	ppb	4.28	5000.00	90 -	110	103.3	
39	K	1	45	5421.00	ppb	2.08	5000.00	90 -	110	108.4	
44	Ca	2	45	5668.00	ppb	1.11	5000.00	90 -	110	113.4	Fail
47	Ti	1	45	199.90	ppb	5.44	200.00	90 -	110	100.0	
51	V	1	45	206.00	ppb	3.79	200.00	90 -	110	103.0	
52	Cr	1	45	204.90	ppb	3.91	200.00	90 -	110	102.5	
55	Mn	1	45	208.20	ppb	4.27	200.00	90 -	110	104.1	
56	Fe	1	72	5130.00	ppb	3.87	5000.00	90 -	110	102.6	
59	Co	1	72	200.20	ppb	3.47	200.00	90 -	110	100.1	
60	Ni	1	72	195.20	ppb	2.77	200.00	90 -	110	97.6	
63	Cu	1	72	199.40	ppb	2.95	200.00	90 -	110	99.7	
66	Zn	1	72	210.60	ppb	4.45	200.00	90 -	110	105.3	
75	As	1	72	211.60	ppb	2.91	200.00	90 -	110	105.8	
78	Se	1	72	205.60	ppb	3.09	200.00	90 -	110	102.8	
88	Sr	2	115	245.00	ppb	0.78	200.00	90 -	110	122.5	Fail
95	Mo	2	115	226.10	ppb	0.52	200.00	90 -	110	113.1	Fail
107	Ag	2	115	204.60	ppb	0.59	200.00	90 -	110	102.3	
111	Cd	2	115	202.50	ppb	0.36	200.00	90 -	110	101.3	
118	Sn	2	115	201.50	ppb	0.74	200.00	90 -	110	100.8	
121	Sb	2	115	203.10	ppb	0.30	200.00	90 -	110	101.6	
137	Ba	2	115	200.90	ppb	0.82	200.00	90 -	110	100.5	
205	Tl	2	209	196.60	ppb	0.44	200.00	90 -	110	98.3	
208	Pb	2	209	197.40	ppb	0.64	200.00	90 -	110	98.7	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)			Flag
6	Li	2	-39824.36	2.91	36.77	-108307.8	70 -	120		ISFail
45	Sc	1	95158.43	0.62	157844.06	60.3	70 -	120		ISFail
45	Sc	2	3598345.00	0.95	5827273.50	61.8	70 -	120		ISFail
72	Ge	1	52385.56	0.64	86621.49	60.5	70 -	120		ISFail
115	In	2	3080674.30	0.32	6276207.00	49.1	70 -	120		ISFail
209	Bi	2	2287627.30	0.52	4446753.50	51.4	70 -	120		ISFail

CCV QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\167LCVL.D\167LCVL.D#

Date Acquired:	Aug 11 2016 03:52 am	Sample Name:	**LCVL7-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	LCVLICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	Expected	QC Range(%)		Rec(%)	Flag
7	Li	2	45	9.42	ppb	0.85	10.00	70 -	130	94.2	
9	Be	2	45	0.89	ppb	3.28	1.00	70 -	130	88.7	
11	B	2	45	16.57	ppb	1.76	20.00	70 -	130	82.9	
23	Na	1	45	90.96	ppb	1.51	100.00	70 -	130	91.0	
24	Mg	1	45	106.80	ppb	4.63	100.00	70 -	130	106.8	
27	Al	1	45	115.10	ppb	6.15	100.00	70 -	130	115.1	
39	K	1	45	121.30	ppb	2.12	100.00	70 -	130	121.3	
44	Ca	2	45	115.60	ppb	3.18	100.00	70 -	130	115.6	
47	Ti	1	45	4.26	ppb	11.53	5.00	70 -	130	85.2	
51	V	1	45	1.00	ppb	1.63	1.00	70 -	130	100.0	
52	Cr	1	45	5.25	ppb	6.12	5.00	70 -	130	105.1	
55	Mn	1	45	5.45	ppb	3.71	5.00	70 -	130	109.1	
56	Fe	1	72	117.20	ppb	6.40	100.00	70 -	130	117.2	
59	Co	1	72	4.97	ppb	2.46	5.00	70 -	130	99.4	
60	Ni	1	72	5.09	ppb	3.07	5.00	70 -	130	101.9	
63	Cu	1	72	4.97	ppb	1.95	5.00	70 -	130	99.4	
66	Zn	1	72	5.27	ppb	9.03	5.00	70 -	130	105.5	
75	As	1	72	5.17	ppb	1.96	5.00	70 -	130	103.4	
78	Se	1	72	5.71	ppb	1.80	5.00	70 -	130	114.2	
88	Sr	2	115	6.11	ppb	1.48	5.00	70 -	130	122.2	
95	Mo	2	115	5.79	ppb	3.13	5.00	70 -	130	115.9	
107	Ag	2	115	2.17	ppb	5.38	2.00	70 -	130	108.6	
111	Cd	2	115	0.99	ppb	6.72	1.00	70 -	130	99.2	
118	Sn	2	115	5.17	ppb	0.92	5.00	70 -	130	103.5	
121	Sb	2	115	2.09	ppb	1.94	2.00	70 -	130	104.6	
137	Ba	2	115	5.04	ppb	3.36	5.00	70 -	130	100.7	
205	Tl	2	209	1.06	ppb	3.25	1.00	70 -	130	106.1	
208	Pb	2	209	1.09	ppb	2.39	1.00	70 -	130	109.1	

ISTD Elements

Element			CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)		Flag
6	Li	2	-1094.09	4.54	36.77	-2975.5	70 -	120	ISFail
45	Sc	1	99179.54	0.99	157844.06	62.8	70 -	120	ISFail
45	Sc	2	3406155.80	1.46	5827273.50	58.5	70 -	120	ISFail
72	Ge	1	55142.63	0.79	86621.49	63.7	70 -	120	ISFail
115	In	2	2814354.00	0.76	6276207.00	44.8	70 -	120	ISFail
209	Bi	2	2211154.00	0.67	4446753.50	49.7	70 -	120	ISFail

CCB QC Report

C:\ICPCHEM\1\DATA\16H10k01.B\168_CCB.D\168_CCB.D#

Date Acquired:	Aug 11 2016 03:58 am	Sample Name:	**CCB7-160810**
Acq. Method:	DHL_3Fe.M	Misc Info:	CCB ICPMS_TW
Operator:	KL	Diln Factor:	1.00
Last Cal. Update:	Aug 10 2016 01:05 pm		
Instrument:	ICPMS3		

QC Elements

Element				Conc.		RSD(%)	MDL S	MDL Aq	Flag
7	Li	2	45	0.147	ppb	2.21	2.00	2.00	
9	Be	2	45	0.022	ppb	16.36	0.40	0.30	
11	B	2	45	1.560	ppb	3.46	10.00	10.00	
23	Na	1	45	-4.759	ppb	1.61	50.00	#####	
24	Mg	1	45	3.644	ppb	15.70	50.00	#####	
27	Al	1	45	12.450	ppb	15.84	50.00	10.00	FailAq
39	K	1	45	13.340	ppb	3.48	50.00	#####	
44	Ca	2	45	31.800	ppb	6.58	50.00	#####	
47	Ti	1	45	0.054	ppb	49.99	4.00	3.00	
51	V	1	45	-0.001	ppb	5.72	4.00	3.00	
52	Cr	1	45	0.054	ppb	10.14	2.00	2.00	
55	Mn	1	45	0.182	ppb	15.80	2.00	3.00	
56	Fe	1	72	6.676	ppb	15.79	50.00	30.00	
59	Co	1	72	0.052	ppb	14.06	2.00	3.00	
60	Ni	1	72	0.129	ppb	12.29	2.00	3.00	
63	Cu	1	72	0.068	ppb	11.49	2.00	2.00	
66	Zn	1	72	1.303	ppb	5.76	4.00	2.00	
75	As	1	72	-0.046	ppb	1.17	2.00	2.00	
78	Se	1	72	0.190	ppb	25.13	0.60	2.00	
88	Sr	2	115	0.199	ppb	7.55	4.00	3.00	
95	Mo	2	115	0.072	ppb	36.20	2.00	2.00	
107	Ag	2	115	0.058	ppb	6.93	0.40	1.00	
111	Cd	2	115	0.018	ppb	110.53	0.40	0.30	
118	Sn	2	115	0.085	ppb	26.56	20.00	3.00	
121	Sb	2	115	0.062	ppb	9.33	2.00	0.80	
137	Ba	2	115	0.114	ppb	6.00	2.00	3.00	
205	Tl	2	209	0.113	ppb	14.29	2.00	0.50	
208	Pb	2	209	0.072	ppb	6.03	0.40	0.30	

ISTD Elements

Element				CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	RHigh	-16.38	103.31	36.77	-44.5	70 - 120	ISFail
45	Sc	1		95675.22	1.47	157844.06	60.6	70 - 120	ISFail
45	Sc	2		3322419.80	1.76	5827273.50	57.0	70 - 120	ISFail
72	Ge	1		53121.97	0.89	86621.49	61.3	70 - 120	ISFail
115	In	2		2816927.80	0.80	6276207.00	44.9	70 - 120	ISFail
209	Bi	2		2198136.80	0.60	4446753.50	49.4	70 - 120	ISFail

ICP-MS4
For

DHL Work Order
1607337

ICP-MS4_160811D
For

DHL Work Order
1607337

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_160811D 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			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: ***QA APPROVED*** *By John DuPont at 10:46:11 AM, 8/18/2016*

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:

1607317-27A MS/MSD S -flag Pb- High; Verified thru rerun; Client approved as per JD.

Analyst: _____ Date of Completion: 08/12/2016

Second-Level Review: Janice Whitt Date Stamp: 8/18/2016

REVIEWED BY *By Janice Whitt at 10:29:19 AM, 8/18/2016*

DHL Analytical, Inc.

Run ID: **ICP-MS4_160811D** **Run No.:** 87573

Analytical Run Date: 8/11/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:52:00 PM		
L2-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:54:00 PM		
L-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:56:00 PM		
10X-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:58:00 PM		
5X-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:00:00 PM		
2X-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:02:00 PM		
H-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:04:00 PM		
H2-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:06:00 PM		
ICSA-160811	1	ICPMS_TWDOD	ICSA	R87573	8/11/2016 2:12:00 PM		
ICSAB-160811	1	ICPMS_TWDOD	ICSB	R87573	8/11/2016 2:14:00 PM		
ICV-160811	1	ICPMS_TWDOD	ICV	R87573	8/11/2016 2:20:00 PM		
LCVL-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 2:25:00 PM		
ICB-160811	1	ICPMS_TWDOD	ICB	R87573	8/11/2016 2:29:00 PM		
CCV2-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 3:57:00 PM		
LCVL2-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 4:08:00 PM		
CCB2-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 4:22:00 PM		
1607317-27A	5	ICPMS_TSDOD1	SAMP	76717	8/11/2016 4:24:00 PM		
1607317-27A SD	25	ICPMS_TSDOD1	SD	76717	8/11/2016 4:26:00 PM		
1607317-27A PDS	5	ICPMS_TSDOD1	PDS	76717	8/11/2016 4:28:00 PM		
1607317-27A MS	5	ICPMS_TSDOD1	MS	76717	8/11/2016 4:30:00 PM		S -flag Pb- High; Client approved as per JD
1607317-27A MSD	5	ICPMS_TSDOD1	MSD	76717	8/11/2016 4:32:00 PM		S -flag Pb- High; Client approved as per JD
CCV3-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 4:34:00 PM		
LCVL3-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 4:44:00 PM		
CCB3-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 4:46:00 PM		
CCV4-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 4:52:00 PM		
LCVL4-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 4:58:00 PM		
CCB4-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 5:00:00 PM		
MB-76748	5	ICPMS_TSDOD1	MBLK	76748	8/11/2016 5:02:00 PM		
LCS-76748	5	ICPMS_TSDOD1	LCS	76748	8/11/2016 5:04:00 PM		
LCSD-76748	5	ICPMS_TSDOD1	LCSD	76748	8/11/2016 5:06:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160804	ICPMS CCV 200/5000 PPB		02/02/2017
MET-H2CAL-1608	ICPMS High Cal2 2000ppb std 8		02/02/2017
MET-HCAL-16080	ICPMS High Cal 500ppb/10ppm s		02/02/2017
MET-ICV-160804	ICPMS ICV 100 ppb		02/02/2017
MET-IS-160630	INTERNAL STANDARD 1 PPM		12/28/2016
MET-L2CAL-16080	ICPMS Low Cal2 1/20ppb std 2		02/02/2017
MET-LCAL-160804	ICPMS Low Cal 10/200ppb std 3		02/02/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		02/02/2017
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		02/02/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		11/07/2016
MET-MCAL-16080	ICPMS Mid Cal 250/5000ppb std		02/02/2017
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
MET-PDS-160701-	10 PPM Ag+Sb PDS		01/01/2017
MET-PDS-160701-	10 PPM CUSTOM PDS SOLUTI		01/01/2017
MET-PDS-160701-	250 PPM Naturals+Al+Fe PDS		07/01/2017

Run ID: ICP-MS4_160811D **Run No.:** 87573

1607337-10A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:10:00 PM		
1607337-10A SD	25	ICPMS_TSDOD1	SD	76748	8/11/2016 5:12:00 PM		
1607337-14A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:14:00 PM		
1607337-15A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:16:00 PM		
1607337-16A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:18:00 PM		
1607337-17A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:20:00 PM		
1607337-18A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:22:00 PM		
1607337-19A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:24:00 PM		
1607337-20A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:26:00 PM		
1607337-21A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:28:00 PM		
1607337-22A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:30:00 PM		
1607337-10A PDS	5	ICPMS_TSDOD1	PDS	76748	8/11/2016 5:32:00 PM		
1607337-10A MS	5	ICPMS_TSDOD1	MS	76748	8/11/2016 5:34:00 PM		
1607337-10A MSD	5	ICPMS_TSDOD1	MSD	76748	8/11/2016 5:36:00 PM		
CCV5-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 5:38:00 PM		
LCVL5-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 5:42:00 PM		
CCB5-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 5:44:00 PM		
1607337-23A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:46:00 PM		
1607337-24A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:48:00 PM		
1607337-25A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:50:00 PM		
1608019-01A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:52:00 PM		
1608019-02A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:54:00 PM		
1608019-03A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:56:00 PM		
1608019-04A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:58:00 PM		
1608019-05A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 6:00:00 PM		
1608019-06A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 6:02:00 PM		
CCV6-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 6:04:00 PM		
LCVL6-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 6:08:00 PM		
CCB6-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 6:10:00 PM		
MB-76774	1	ICPMS_TWDOD	MBLK	76774	8/11/2016 6:12:00 PM		
LCS-76774	1	ICPMS_TWDOD	LCS	76774	8/11/2016 6:14:00 PM		
LCSD-76774	1	ICPMS_TWDOD	LCSD	76774	8/11/2016 6:16:00 PM		
1607317-39A	1	ICPMS_TWDOD	SAMP	76774	8/11/2016 6:20:00 PM		
1607317-39A SD	5	ICPMS_TWDOD	SD	76774	8/11/2016 6:22:00 PM		
1607317-39A PDS	1	ICPMS_TWDOD	PDS	76774	8/11/2016 6:24:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160804	ICPMS CCV 200/5000 PPB		02/02/2017
MET-H2CAL-1608	ICPMS High Cal2 2000ppb std 8		02/02/2017
MET-HCAL-16080	ICPMS High Cal 500ppb/10ppm s		02/02/2017
MET-ICV-160804	ICPMS ICV 100 ppb		02/02/2017
MET-IS-160630	INTERNAL STANDARD 1 PPM		12/28/2016
MET-L2CAL-16080	ICPMS Low Cal2 1/20ppb std 2		02/02/2017
MET-LCAL-160804	ICPMS Low Cal 10/200ppb std 3		02/02/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		02/02/2017
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		02/02/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		11/07/2016
MET-MCAL-16080	ICPMS Mid Cal 250/5000ppb std		02/02/2017
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
MET-PDS-160701-	10 PPM Ag+Sb PDS		01/01/2017
MET-PDS-160701-	10 PPM CUSTOM PDS SOLUTI		01/01/2017
MET-PDS-160701-	250 PPM Naturals+Al+Fe PDS		07/01/2017

DHL Analytical, Inc.

Run ID: ICP-MS4_160811D **Run No.:** 87573

CCV7-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 6:26:00 PM		
LCVL7-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 6:30:00 PM		
CCB7-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 6:47:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160804	ICPMS CCV 200/5000 PPB		02/02/2017
MET-H2CAL-1608	ICPMS High Cal2 2000ppb std 8		02/02/2017
MET-HCAL-16080	ICPMS High Cal 500ppb/10ppm s		02/02/2017
MET-ICV-160804	ICPMS ICV 100 ppb		02/02/2017
MET-IS-160630	INTERNAL STANDARD 1 PPM		12/28/2016
MET-L2CAL-16080	ICPMS Low Cal2 1/20ppb std 2		02/02/2017
MET-LCAL-160804	ICPMS Low Cal 10/200ppb std 3		02/02/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		02/02/2017
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		02/02/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		11/07/2016
MET-MCAL-16080	ICPMS Mid Cal 250/5000ppb std		02/02/2017
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
MET-PDS-160701-	10 PPM Ag+Sb PDS		01/01/2017
MET-PDS-160701-	10 PPM CUSTOM PDS SOLUTI		01/01/2017
MET-PDS-160701-	250 PPM Naturals+Al+Fe PDS		07/01/2017

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160811.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	L2-160811	CAL ICPMS_TW	2	2102	
14	CalStd	L-160811	CAL ICPMS_TW	3	2103	
15	CalStd	10X-160811	CAL ICPMS_TW	4	2104	
16	CalStd	5X-160811	CAL ICPMS_TW	5	2105	
17	CalStd	2X-160811	CAL ICPMS_TW	6	2106	
18	CalStd	H-160811	CAL ICPMS_TW	7	2107	
19	CalStd	H2-160811	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-160811	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-160811	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-160811	ICV ICPMS_TW		2111	
27	ICB	ICB-160811	ICB ICPMS_TW		1101	
28	LLICV	LCVL-160811	LCVLICPMS_TW		2112	
29	ICB	ICB-160811	ICB ICPMS_TW		1102	
30	ICB	ICB-160811	ICB ICPMS_TW		1103	
31	PB_W	MB-76749	MBLK200.8		2201	1
32	LCS_200	LCS-76749	LCS 200.8		2202	1
33	LCS_200	LCSD-76749	LCSD200.8		2203	1
34	CCB	RINSE	CCB ICPMS_TW		1101	
35	AllRef	1608076-01A	SAMP200.8		2204	1
36	SD	1608076-01A SD	SD 200.8		2205	5
37	SAMP_W	1608085-01A	SAMP200.8		2206	1
38	SAMP_W	1608084-01A	SAMP200.8		2207	1
39	SAMP_W	1608077-01A	SAMP200.8		2208	1
40	SAMP_W	1608078-01A	SAMP200.8		2209	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	SAMP_W	1608078-02A	SAMP200.8		2210	1
42	SAMP_W	1608089-01A	SAMP200.8		2211	1
43	SAMP_W	1608089-02A	SAMP200.8		2212	1
44	PDS	1608076-01A PDS	PDS 200.8		2301	1
45	CCB	RINSE	CCB ICPMS_TW		1103	
46	CCB	RINSE	CCB ICPMS_TW		1103	
47	SAMP_W	1608089-01A	SAMP200.8		2211	1

Sample List

48	SAMP_W	1608089-02A	SAMP200.8		2212	1
49	PDS	1608076-01A PDS	PDS 200.8		2301	1
50	MS_W	1608076-01A MS	MS 200.8		2302	1
51	MS_W	1608076-01A MSD	MSD 200.8		2303	1
52	CCV	CCV1-160811	CCV ICPMS_TW		1207	
53	CCB	CCB1-160811	CCB ICPMS_TW		1102	
54	LLCCV	LCVL1-160811	LCVLICPMS_TW		2112	
55	CCB	CCB1-160811	CCB ICPMS_TW		1103	
56	PB_W	MB-76758	MBLKTCLP_MET		2401	1
57	PB_W	MB-76738-SPLP	MBLKSPLP_MET		2402	1
58	LCS_S	LCS-76758	LCS TCLP_MET		2403	1
59	LCS_S	LCSD-76758	LCSDTCLP_MET		2404	1
60	CCB	RINSE	CCB ICPMS_TW		1101	

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56	Skip
57	Skip
58	Skip
59	Skip
60	Skip

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	AllRef	1608040-01A	SAMPTCLP_MET		2405	1
62	SD	1608040-01A SD	SD TCLP		2406	5
63	SAMP_W	1608075-02A	SAMPSPLP_MET		2407	1
64	SAMP_W	1608075-04A	SAMPSPLP_MET		2408	1
65	SAMP_W	1608075-05A	SAMPSPLP_MET		2409	1
66	SAMP_W	1608075-07A	SAMPSPLP_MET		2410	1
67	PDS	1608040-01A PDS	PDS TCLP_MET		2411	1
68	MS_W	1608040-01A MS	MS TCLP_MET		2412	1
69	MS_W	1608040-01A MSD	MSD TCLP_MET		2501	1
70	CCV	CCV2-160811	CCV ICPMS_TW		1207	
71	CCB	CCB2-160811	CCB ICPMS_TW		1102	
72	LLCCV	LCVL2-160811	LCVLICPMS_TW		2112	
73	CCB	CCB2-160811	CCB ICPMS_TW		1103	
74	PB	MB-62591	MBLKICPMS_TSDOD		3101	5
75	Sample	PAINT CHIPS AW-13	SAMPICPMS_TSDOD		3102	50
76	LCS_S	LCS-62591	LCS ICPMS_TSDOD		3103	5

Sample List

77	LCS_S	LCSD-62591	LCSDICPMS_TSDOD		3104	5
78	CCB	RINSE	CCB ICPMS_TW		1101	
79	AllRef	1403262-06A	SAMPICPMS_TSDOD		3105	5
80	SD	1403262-06A SD	SD ICPMS_TSDOD		3106	25

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	Sample	1403262-02A	SAMPICPMS_TSDOD		3107	5
82	Sample	1403262-03A	SAMPICPMS_TSDOD		3108	5
83	Sample	1403262-04A	SAMPICPMS_TSDOD		3109	5
84	Sample	1403262-05A	SAMPICPMS_TSDOD		3110	5
85	Sample	1403262-07A	SAMPICPMS_TSDOD		3111	5
86	Sample	1403262-08A	SAMPICPMS_TSDOD		3112	5
87	Sample	1403262-09A	SAMPICPMS_TSDOD		3201	5
88	Sample	1403262-10A	SAMPICPMS_TSDOD		3202	5
89	Sample	1403262-11A	SAMPICPMS_TSDOD		3203	5
90	PDS	1403262-06A PDS	PDS ICPMS_TSDOD		3204	5
91	MS_S	1403262-06A MS	MS ICPMS_TSDOD		3205	5
92	MS_S	1403262-06A MSD	MSD ICPMS_TSDOD		3206	5
93	CCV	CCV3-140402	CCV ICPMS_TW		1207	
94	CCB	CCB3-140402	CCB ICPMS_TW		1102	
95	LLCCV	LCVL3-140402	LCVLICPMS_TW		2512	
96	CCB	CCB3-140402	CCB ICPMS_TW		1103	
97	Sample	1403262-12A	SAMPICPMS_TSDOD		3207	5
98	Sample	1403262-13A	SAMPICPMS_TSDOD		3208	5
99	Sample	1403262-14A	SAMPICPMS_TSDOD		3209	5
100	Sample	1403263-01A	SAMPICPMS_TSDOD		3210	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	Sample	1403263-02A	SAMPICPMS_TSDOD		3211	5
102	Sample	1403263-03A	SAMPICPMS_TSDOD		3212	5
103	Sample	1403263-04A	SAMPICPMS_TSDOD		3301	5
104	Sample	1403263-05A	SAMPICPMS_TSDOD		3302	5
105	Sample	1403263-06A	SAMPICPMS_TSDOD		3303	5
106	Sample	1403263-07A	SAMPICPMS_TSDOD		3304	5
107	CCV	CCV4-140402	CCV ICPMS_TW		1207	
108	CCB	CCB4-140402	CCB ICPMS_TW		1102	
109	LLCCV	LCVL4-140402	LCVLICPMS_TW		2512	
110	CCB	CCB4-140402	CCB ICPMS_TW		1103	
111	PB	MB-62609	MBLKICPMS_TSDOD		3401	5
112	Sample	PAINT CHIPS AW-13	SAMPICPMS_TSDOD		3402	50
113	LCS_S	LCS-62609	LCS ICPMS_TSDOD		3403	5
114	LCS_S	LCSD-62609	LCSDICPMS_TSDOD		3404	5
115	CCB	RINSE	CCB ICPMS_TW		1101	
116	AllRef	1403264-10A	SAMPICPMS_TSDOD		3405	5
117	SD	1403264-10A SD	SD ICPMS_TSDOD		3406	25
118	Sample	1403263-08A	SAMPICPMS_TSDOD		3407	5
119	Sample	1403263-09A	SAMPICPMS_TSDOD		3408	5
120	Sample	1403264-01A	SAMPICPMS_TSDOD		3409	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1403264-02A	SAMPICPMS_TSDOD		3410	5
122	Sample	1403264-03A	SAMPICPMS_TSDOD		3411	5
123	Sample	1403264-04A	SAMPICPMS_TSDOD		3412	5
124	Sample	1403264-05A	SAMPICPMS_TSDOD		3501	5
125	Sample	1403264-06A	SAMPICPMS_TSDOD		3502	5
126	Sample	1403264-07A	SAMPICPMS_TSDOD		3503	5
127	PDS	1403264-10A PDS	PDS ICPMS_TSDOD		3504	5
128	MS_S	1403264-10A MS	MS ICPMS_TSDOD		3505	5
129	MS_S	1403264-10A MSD	MSD ICPMS_TSDOD		3506	5
130	CCV	CCV5-140402	CCV ICPMS_TW		1207	
131	CCB	CCB5-140402	CCB ICPMS_TW		1102	
132	LLCCV	LCVL5-140402	LCVLICPMS_TW		2511	
133	CCB	CCB5-140402	CCB ICPMS_TW		1103	
134	Sample	1403264-08A	SAMPICPMS_TSDOD		3507	5
135	Sample	1403264-09A	SAMPICPMS_TSDOD		3508	5
136	Sample	1403264-11A	SAMPICPMS_TSDOD		3509	5
137	Sample	1403264-12A	SAMPICPMS_TSDOD		3510	5
138	Sample	1403264-13A	SAMPICPMS_TSDOD		3511	5
139	Sample	1403264-14A	SAMPICPMS_TSDOD		3512	5
140	Sample	1403264-15A	SAMPICPMS_TSDOD		3310	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	Sample	1403264-16A	SAMPICPMS_TSDOD		3311	5
142	Sample	1403264-17A	SAMPICPMS_TSDOD		3312	5
143	Sample	1403264-12A	SAMPICPMS_TSDOD		3510	5
144	CCV	CCV6-140402	CCV ICPMS_TW		1207	
145	CCB	CCB6-140402	CCB ICPMS_TW		1102	
146	LLCCV	LCVL6-140402	LCVLICPMS_TW		2511	
147	CCB	CCB6-140402	CCB ICPMS_TW		1103	
148	CCB	CCB6-140402	CCB ICPMS_TW		1102	
149	CCB	CCB6-140402	CCB ICPMS_TW		1102	

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Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160811.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	L2-160811	CAL ICPMS_TW	2	2102	
14	CalStd	L-160811	CAL ICPMS_TW	3	2103	
15	CalStd	10X-160811	CAL ICPMS_TW	4	2104	
16	CalStd	5X-160811	CAL ICPMS_TW	5	2105	
17	CalStd	2X-160811	CAL ICPMS_TW	6	2106	
18	CalStd	H-160811	CAL ICPMS_TW	7	2107	
19	CalStd	H2-160811	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-160811	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-160811	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-160811	ICV ICPMS_TW		2111	
27	ICB	ICB-160811	ICB ICPMS_TW		1101	
28	LLICV	LCVL-160811	LCVLICPMS_TW		2112	
29	ICB	ICB-160811	ICB ICPMS_TW		1102	
30	ICB	ICB-160811	ICB ICPMS_TW		1103	
31	PB_W	MB-76749	MBLK200.8		2201	1
32	LCS_200	LCS-76749	LCS 200.8		2202	1
33	LCS_200	LCSD-76749	LCSD200.8		2203	1
34	CCB	RINSE	CCB ICPMS_TW		1101	
35	AllRef	1608076-01A	SAMP200.8		2204	1
36	SD	1608076-01A SD	SD 200.8		2205	5
37	SAMP_W	1608085-01A	SAMP200.8		2206	1
38	SAMP_W	1608084-01A	SAMP200.8		2207	1
39	SAMP_W	1608077-01A	SAMP200.8		2208	1
40	SAMP_W	1608078-01A	SAMP200.8		2209	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	SAMP_W	1608078-02A	SAMP200.8		2210	1
42	SAMP_W	1608089-01A	SAMP200.8		2211	1
43	SAMP_W	1608089-02A	SAMP200.8		2212	1
44	PDS	1608076-01A PDS	PDS 200.8		2301	1
45	CCB	RINSE	CCB ICPMS_TW		1103	
46	CCB	RINSE	CCB ICPMS_TW		1103	
47	SAMP_W	1608089-01A	SAMP200.8		2211	1

Sample List

48	SAMP_W	1608089-02A	SAMP200.8		2212	1
49	PDS	1608076-01A PDS	PDS 200.8		2301	1
50	MS_W	1608076-01A MS	MS 200.8		2302	1
51	MS_W	1608076-01A MSD	MSD 200.8		2303	1
52	CCV	CCV1-160811	CCV ICPMS_TW		1207	
53	CCB	CCB1-160811	CCB ICPMS_TW		1102	
54	LLCCV	LCVL1-160811	LCVLICPMS_TW		2112	
55	CCB	CCB1-160811	CCB ICPMS_TW		1103	
56	PB_W	MB-76758	MBLKTCLP_MET		2401	1
57	PB_W	MB-76738-SPLP	MBLKSPLP_MET		2402	1
58	LCS_S	LCS-76758	LCS TCLP_MET		2403	1
59	LCS_S	LCSD-76758	LCSDTCLP_MET		2404	1
60	CCB	RINSE	CCB ICPMS_TW		1101	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	AllRef	1608040-01A	SAMPTCLP_MET		2405	1
62	SD	1608040-01A SD	SD TCLP		2406	5
63	SAMP_W	1608075-02A	SAMPSPLP_MET		2407	1
64	SAMP_W	1608075-04A	SAMPSPLP_MET		2408	1
65	SAMP_W	1608075-05A	SAMPSPLP_MET		2409	1
66	SAMP_W	1608075-07A	SAMPSPLP_MET		2410	1
67	PDS	1608040-01A PDS	PDS TCLP_MET		2411	1
68	MS_W	1608040-01A MS	MS TCLP_MET		2412	1
69	MS_W	1608040-01A MSD	MSD TCLP_MET		2501	1
70	CCV	CCV2-160811	CCV ICPMS_TW		1207	
71	CCB	CCB2-160811	CCB ICPMS_TW		1102	
72	LLCCV	LCVL2-160811	LCVLICPMS_TW		2112	
73	CCB	CCB2-160811	CCB ICPMS_TW		1103	
74	AllRef	1607317-27A	SAMPICPMS_TSDOD1		3101	5
75	SD	1607317-27A SD	SD ICPMS_TSDOD1		3102	25
76	PDS	1607317-27A PDS	PDS ICPMS_TSDOD1		3103	5

Sample List

77	MS_S	1607317-27A MS	MS ICPMS_TSDOD1		3104	5
78	MS_S	1607317-27A MSD	MSD ICPMS_TSDOD1		3105	5
79	CCV	CCV3-160811	CCV ICPMS_TW		1207	
80	CCB	CCB3-160811	CCB ICPMS_TW		1102	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	LLCCV	LCVL3-160811	LCVLICPMS_TW		2512	
82	CCB	CCB3-160811	CCB ICPMS_TW		1103	
83	SAMP_W	1608059-01A	SAMP200.8		3206	1
84	SAMP_W	1608063-01A	SAMP200.8		3207	1
85	CCV	CCV4-160811	CCV ICPMS_TW		1207	
86	CCB	CCB4-160811	CCB ICPMS_TW		1102	
87	LLCCV	LCVL4-160811	LCVLICPMS_TW		2512	
88	CCB	CCB4-160811	CCB ICPMS_TW		1103	
89	PB	MB-76748	MBLKICPMS_TSDOD1		4101	5
90	LCS_S	LCS-76748	LCS ICPMS_TSDOD1		4102	5
91	LCS_S	LCSD-76748	LCSDICPMS_TSDOD1		4103	5
92	CCB	RINSE	CCB ICPMS_TW		1101	
93	AllRef	1607337-10A	SAMPICPMS_TSDOD1		4104	5
94	SD	1607337-10A SD	SD ICPMS_TSDOD1		4105	25
95	Sample	1607337-14A	SAMPICPMS_TSDOD1		4106	5
96	Sample	1607337-15A	SAMPICPMS_TSDOD1		4107	5
97	Sample	1607337-16A	SAMPICPMS_TSDOD1		4108	5
98	Sample	1607337-17A	SAMPICPMS_TSDOD1		4109	5
99	Sample	1607337-18A	SAMPICPMS_TSDOD1		4110	5
100	Sample	1607337-19A	SAMPICPMS_TSDOD1		4111	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	Sample	1607337-20A	SAMPICPMS_TSDOD1		4112	5
102	Sample	1607337-21A	SAMPICPMS_TSDOD1		4201	5
103	Sample	1607337-22A	SAMPICPMS_TSDOD1		4202	5
104	PDS	1607337-10A PDS	PDS ICPMS_TSDOD1		4203	5
105	MS_S	1607337-10A MS	MS ICPMS_TSDOD1		4204	5
106	MS_S	1607337-10A MSD	MSD ICPMS_TSDOD1		4205	5
107	CCV	CCV5-160811	CCV ICPMS_TW		1207	
108	CCB	CCB5-160811	CCB ICPMS_TW		1102	
109	LLCCV	LCVL5-160811	LCVLICPMS_TW		2511	
110	CCB	CCB5-160811	CCB ICPMS_TW		1103	
111	Sample	1607337-23A	SAMPICPMS_TSDOD1		4206	5
112	Sample	1607337-24A	SAMPICPMS_TSDOD1		4207	5
113	Sample	1607337-25A	SAMPICPMS_TSDOD1		4208	5
114	Sample	1608019-01A	SAMPICPMS_TSDOD1		4209	5
115	Sample	1608019-02A	SAMPICPMS_TSDOD1		4210	5
116	Sample	1608019-03A	SAMPICPMS_TSDOD1		4211	5
117	Sample	1608019-04A	SAMPICPMS_TSDOD1		4212	5
118	Sample	1608019-05A	SAMPICPMS_TSDOD1		4301	5
119	Sample	1608019-06A	SAMPICPMS_TSDOD1		4302	5
120	CCV	CCV6-160811	CCV ICPMS_TW		1207	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	CCB	CCB6-160811	CCB ICPMS_TW		1102	
122	LLCCV	LCVL6-160811	LCVLICPMS_TW		2511	
123	CCB	CCB6-160811	CCB ICPMS_TW		1102	
124	PB_W	MB-76774	MBLKICPMS_TWDOD		3301	1
125	LCS_W	LCS-76774	LCS ICPMS_TWDOD		3302	1
126	LCS_W	LCSD-76774	LCSDICPMS_TWDOD		3303	1
127	CCB	RINSE	CCB ICPMS_TW		1101	
128	AllRef	1607317-39A	SAMPICPMS_TWDOD		3304	1
129	SD	1607317-39A SD	SD ICPMS_TWDOD		3305	5
130	PDS	1607317-39A PDS	PDS ICPMS_TWDOD		3306	1
131	CCV	CCV7-160811	CCV ICPMS_TW		1207	
132	CCB	CCB7-160811	CCB ICPMS_TW		1102	
133	LLCCV	LCVL7-160811	LCVLICPMS_TW		2511	
134	CCB	CCB7-160811	CCB ICPMS_TW		1102	
135	CCB	CCB7-160811	CCB ICPMS_TW		1102	
136	CCB	CCB7-160811	CCB ICPMS_TW		1102	
137	CCB	CCB7-160811	CCB ICPMS_TW		1102	
138	CCB	CCB7-160811	CCB ICPMS_TW		1103	
139	CCB	CCB7-160811	CCB ICPMS_TW		1103	
140	CCB	CCB7-160811	CCB ICPMS_TW		1103	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	CCB	CCB7-160811	CCB ICPMS_TW		1103	

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141	

Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/8/2016 2:31:10 PM**
Digestion:
Prep End Date:

Prep Batch **76717** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

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

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607317-27A	Soil		1.05	50	50.000	2 of 3	
1607317-27AMS	Soil		1.10	50	50.000	2 of 3	
1607317-27AMSD	Soil		1.06	50	50.000	2 of 3	
1607317-31A	Soil		1.06	50	50.000	1 of 1	
1607317-32A	Soil		1.14	50	50.000	1 of 1	
1607317-33A	Soil		1.01	50	50.000	1 of 1	
1607317-34A	Soil		1.16	50	50.000	1 of 1	
1607317-35A	Soil		1.01	50	50.000	1 of 1	
1607317-36A	Soil		1.03	50	50.000	1 of 1	
1607317-37A	Soil		1.04	50	50.000	1 of 1	
1607317-38A	Soil		1.04	50	50.000	1 of 1	
1607337-01A	Soil		1.05	50	50.000	1 of 1	
1607337-02A	Soil		1.02	50	50.000	1 of 1	
1607337-03A	Soil		1.08	50	50.000	1 of 1	
1607337-04A	Soil		1.02	50	50.000	1 of 1	
1607337-05A	Soil		1.04	50	50.000	1 of 1	
1607337-06A	Soil		1.04	50	50.000	1 of 1	
1607337-07A	Soil		1.05	50	50.000	1 of 1	
1607337-08A	Soil		1.03	50	50.000	1 of 1	
1607337-09A	Soil		1.14	50	50.000	1 of 1	
1607337-11A	Soil		1.06	50	50.000	1 of 1	
1607337-12A	Soil		1.08	50	50.000	1 of 1	
LCS-76717	Soil		1	50	50.000	of	
LCSD-76717	Soil		1	50	50.000	of	
MB-76717	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10527	Hydrogen Peroxide, 30%	3	ml	07/09/2017
10543	Nitric Acid (Trace Metals)	10	ml	01/10/2017
10544	Hydrochloric Acid (trace metal grade)	5	ml	01/10/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-150914-10	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-150914-9	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-SPIKE-160701-3	2500 PPM NATURALS SPIKE	LCS/MS/MSD	0.5	09/29/2016
MET-SPIKE-160715-4B	50 PPM Sb+Ag CAL	LCS/MS/MSD	1	10/13/2016
MET-SPIKE-160715-5B	50 PPM Custom+Sn,Ti,B,Mo,Sr CAL	LCS/MS/MSD	1	10/13/2016

7:21 - 7:31
7:32 - 9:32
9:53 - 11:53
12:10 - 12:25

8/9/16

REVIEWED BY
By Janice Whitt at 10:44:02 AM, 8/15/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/28/2016 4:31:01 PM**
Digestion: **Start: 7/28/2016 4:45:00 PM / Stop: 8/1/2016 10:00:00 AM**
Prep End Date: **8/2/2016 10:00:00 AM**

Prep Batch **76551** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607317-01A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-02A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-03A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-04A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-05A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-06A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-07A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-08A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-09A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1607317-10A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-11A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-12A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-14A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 10:44:15 AM, 8/15/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/28/2016 4:31:01 PM**
Digestion: **Start: 7/28/2016 4:45:00 PM / Stop: 8/1/2016 10:00:00 AM**
Prep End Date: **8/2/2016 10:00:00 AM**

Prep Batch **76551** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker** Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607317-15A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-16A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-17A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-18A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-19A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-20A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-21A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-22A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-23A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-24A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-25A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-27A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1607317-28A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 10:44:18 AM, 8/15/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/28/2016 4:31:01 PM**
Digestion: **Start: 7/28/2016 4:45:00 PM / Stop: 8/1/2016 10:00:00 AM**
Prep End Date: **8/2/2016 10:00:00 AM**

Prep Batch **76551** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker** Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607317-29A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-30A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-31A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-32A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-33A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-34A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							
1607317-35A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-36A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-37A	Soil		0	0	#Num!	1 of 1	
SS							
1607317-38A	Soil		0	0	#Num!	1 of 1	
Sieve only hard clay							

REVIEWED BY
By Janice Whitt at 10:44:22 AM, 8/15/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/29/2016 3:00:00 PM**
Digestion: **Start: 7/29/2016 3:20:00 PM / Stop: 8/2/2016 10:15:00 AM**
Prep End Date: **8/2/2016 4:00:00 PM**

Prep Batch **76570** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-01A SS	Soil		0	0	#Num!	1 of 1	
1607337-02A SS	Soil		0	0	#Num!	1 of 1	
1607337-03A SS	Soil		0	0	#Num!	1 of 1	
1607337-04A SS	Soil		0	0	#Num!	1 of 1	
1607337-05A SS	Soil		0	0	#Num!	1 of 1	
1607337-06A SS	Soil		0	0	#Num!	1 of 1	
1607337-07A SS	Soil		0	0	#Num!	1 of 1	
1607337-08A SS	Soil		0	0	#Num!	1 of 1	
1607337-09A SS	Soil		0	0	#Num!	1 of 1	
1607337-10A SS MS/MSD	Soil		0	0	#Num!	of 3	
1607337-11A SS	Soil		0	0	#Num!	1 of 1	
1607337-12A SS	Soil		0	0	#Num!	1 of 1	
1607337-14A SS	Soil		0	0	#Num!	1 of 1	

REVIEWED BY
By Janice Whitt at 10:44:31 AM, 8/15/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/29/2016 3:00:00 PM**
Digestion: **Start: 7/29/2016 3:20:00 PM / Stop: 8/2/2016 10:15:00 AM**
Prep End Date: **8/2/2016 4:00:00 PM**

Prep Batch **76570** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-15A SS	Soil		0	0	#Num!	1 of 1	
1607337-16A SS	Soil		0	0	#Num!	1 of 1	
1607337-17A SS	Soil		0	0	#Num!	1 of 1	
1607337-18A SS	Soil		0	0	#Num!	1 of 1	
1607337-19A SS	Soil		0	0	#Num!	1 of 1	
1607337-20A SS	Soil		0	0	#Num!	1 of 1	
1607337-21A SS	Soil		0	0	#Num!	1 of 1	
1607337-22A SS	Soil		0	0	#Num!	1 of 1	
1607337-23A SS	Soil		0	0	#Num!	1 of 1	
1607337-24A SS	Soil		0	0	#Num!	1 of 1	
1607337-25A SS	Soil		0	0	#Num!	1 of 1	

REVIEWED BY
By Janice Whitt at 10:44:33 AM, 8/15/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	08/09/2016	**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	4.9471	4.9570	99.14	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		4.9669	4.9769	99.54		
3		4.9539	4.9638	99.28		
AVERAGE (MEAN)		**4.956**	**4.966**	**99.32**		**0.203**
						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	0.2026	0.2030	101.50	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.2018	0.2022	101.10		
3		0.2018	0.2022	101.10		
AVERAGE (MEAN)		**0.202**	**0.202**	**101.24**		**0.229**
						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)						

8/9/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:44:10 AM, 8/15/2016
Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/8/2016 2:31:10 PM**
Digestion: **Start: 8/9/2016 7:21:00 AM / Stop: 8/9/2016 12:25:00 PM**
Prep End Date: **8/9/2016 4:12:53 PM**

Prep Batch **76717** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

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

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #		
1607317-27A	Soil		1.05	50	47.619		of	3
1607317-27A MS	Soil		1.1	50	45.455		of	
1607317-27A MSD	Soil		1.06	50	47.170		of	
1607317-27A PDS	Soil		1.05	50	47.619		of	
1607317-27A SD	Soil		1.05	50	47.619		of	
1607317-31A	Soil		1.06	50	47.170	1	of	1
1607317-32A	Soil		1.14	50	43.860	1	of	1
1607317-33A	Soil		1.01	50	49.505	1	of	1
1607317-34A	Soil		1.16	50	43.103	1	of	1
1607317-35A	Soil		1.01	50	49.505	1	of	1
1607317-36A	Soil		1.03	50	48.544	1	of	1
1607317-37A	Soil		1.04	50	48.077	1	of	1
1607317-38A	Soil		1.04	50	48.077	1	of	1
1607337-01A	Soil		1.05	50	47.619	1	of	1
1607337-02A	Soil		1.02	50	49.020	1	of	1
1607337-03A	Soil		1.08	50	46.296	1	of	1
1607337-04A	Soil		1.02	50	49.020	1	of	1
1607337-05A	Soil		1.04	50	48.077	1	of	1
1607337-06A	Soil		1.04	50	48.077	1	of	1
1607337-07A	Soil		1.05	50	47.619	1	of	1
1607337-08A	Soil		1.03	50	48.544	1	of	1
1607337-09A	Soil		1.14	50	43.860	1	of	1
1607337-11A	Soil		1.06	50	47.170	1	of	1
1607337-12A	Soil		1.08	50	46.296	1	of	1
LCS-76717	Soil		1	50	50.000		of	
LCSD-76717	Soil		1	50	50.000		of	
MB-76717	Soil		1	50	50.000		of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10527	Hydrogen Peroxide, 30%	3	ml	07/09/2017
10543	Nitric Acid (Trace Metals)	10	ml	01/10/2017
10544	Hydrochloric Acid (trace metal grade)	5	ml	01/10/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-150914-10	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-150914-9	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-SPIKE-160701-3	2500 PPM NATURALS SPIKE	LCS/MS/MSD	0.5	09/29/2016
MET-SPIKE-160715-4B	50 PPM Sb+Ag CAL	LCS/MS/MSD	1	10/13/2016
MET-SPIKE-160715-5B	50 PPM Custom+Sn,Ti,B,Mo,Sr CAL	LCS/MS/MSD	1	10/13/2016

REVIEWED BY
By Janice Whitt at 10:44:07 AM, 8/15/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	08/10/2016	**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**	4.0017	3.9937	99.84	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		4.0056	3.9976	99.94		
3		4.0028	3.9948	99.87		
AVERAGE (MEAN)		**4.003**	**3.995**	**99.88**		**0.050**
						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**	1.0036	1.0016	100.16	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		1.0024	1.0004	100.04		
3		1.0013	0.9993	99.93		
AVERAGE (MEAN)		**1.002**	**1.000**	**100.04**		**0.115**
						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**	0.5049	0.5039	100.78	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.5051	0.5041	100.82		
3		0.5038	0.5028	100.56		
AVERAGE (MEAN)		**0.505**	**0.504**	**100.72**		**0.139**
						PASS

CVB 8/10/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:44:40 AM, 8/15/2016
Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/10/2016 8:16:22 AM**
Digestion:
Prep End Date:

Prep Batch **76748** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

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

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-10A	Soil		1.07	50	50.000	1 of 3	
1607337-10AMS	Soil		1.06	50	50.000	1 of 3	
1607337-10AMSD	Soil		1.07	50	50.000	1 of 3	
1607337-14A	Soil		1.10	50	50.000	1 of 1	
1607337-15A	Soil		1.04	50	50.000	1 of 1	
1607337-16A	Soil		1.01	50	50.000	1 of 1	
1607337-17A	Soil		1.04	50	50.000	1 of 1	
1607337-18A	Soil		1.03	50	50.000	1 of 1	
1607337-19A	Soil		1.03	50	50.000	1 of 1	
1607337-20A	Soil		1.07	50	50.000	1 of 1	
1607337-21A	Soil		1.03	50	50.000	1 of 1	
1607337-22A	Soil		1.03	50	50.000	1 of 1	
1607337-23A	Soil		1.12	50	50.000	1 of 1	
1607337-24A	Soil		1.02	50	50.000	1 of 1	
1607337-25A	Soil		1.02	50	50.000	1 of 1	
1608019-01A	Soil		1.09	50	50.000	1 of 1	
1608019-02A	Soil		1.06	50	50.000	1 of 1	
1608019-03A	Soil		1.14	50	50.000	1 of 1	
1608019-04A	Soil		1.02	50	50.000	1 of 1	
1608019-05A	Soil		1.07	50	50.000	1 of 1	
1608019-06A	Soil		1.07	50	50.000	1 of 1	
LCS-76748	Soil		1	50	50.000	of	
LCSD-76748	Soil		1	50	50.000	of	
MB-76748	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10527	Hydrogen Peroxide, 30%	3	ml	07/09/2017
10543	Nitric Acid (Trace Metals)	10	ml	01/10/2017
10544	Hydrochloric Acid (trace metal grade)	5	ml	01/10/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-150914-10	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-150914-9	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-SPIKE-160701-3	2500 PPM NATURALS SPIKE	LCS/MS/MSD	0.5	09/29/2016
MET-SPIKE-160715-4B	50 PPM Sb+Ag CAL	LCS/MS/MSD	1	10/13/2016
MET-SPIKE-160715-5B	50 PPM Custom+Sn,Ti,B,Mo,Sr CAL	LCS/MS/MSD	1	10/13/2016

10:25 - 10:35
10:36 - 12:36
12:56 - 14:56
15:10 - 15:25

8/10/16

REVIEWED BY
By Janice Whitt at 10:15:30 AM, 8/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/2/2016 3:09:13 PM**
Digestion: **Start: 8/2/2016 3:00:00 PM / Stop: 8/3/2016 9:45:00 AM**
Prep End Date: **8/3/2016 10:30:00 AM**

Prep Batch **76619** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1608019-01A SS	Soil		0	0	#Num!	1 of 1	
1608019-02A SS	Soil		0	0	#Num!	1 of 1	
1608019-03A SS	Soil		0	0	#Num!	1 of 1	
1608019-04A SS	Soil		0	0	#Num!	1 of 1	
1608019-05A SS	Soil		0	0	#Num!	1 of 1	
1608019-06A SS	Soil		0	0	#Num!	1 of 1	

REVIEWED BY
By Janice Whitt at 10:15:42 AM, 8/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/29/2016 3:00:00 PM**
Digestion: **Start: 7/29/2016 3:20:00 PM / Stop: 8/2/2016 10:15:00 AM**
Prep End Date: **8/2/2016 4:00:00 PM**

Prep Batch **76570** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-01A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-02A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-03A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-04A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-05A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-06A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-07A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-08A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-09A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-10A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1607337-11A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-12A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-14A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 10:15:51 AM, 8/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/29/2016 3:00:00 PM**
Digestion: **Start: 7/29/2016 3:20:00 PM / Stop: 8/2/2016 10:15:00 AM**
Prep End Date: **8/2/2016 4:00:00 PM**

Prep Batch **76570** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-15A SS	Soil		0	0	#Num!	1 of 1	
1607337-16A SS	Soil		0	0	#Num!	1 of 1	
1607337-17A SS	Soil		0	0	#Num!	1 of 1	
1607337-18A SS	Soil		0	0	#Num!	1 of 1	
1607337-19A SS	Soil		0	0	#Num!	1 of 1	
1607337-20A SS	Soil		0	0	#Num!	1 of 1	
1607337-21A SS	Soil		0	0	#Num!	1 of 1	
1607337-22A SS	Soil		0	0	#Num!	1 of 1	
1607337-23A SS	Soil		0	0	#Num!	1 of 1	
1607337-24A SS	Soil		0	0	#Num!	1 of 1	
1607337-25A SS	Soil		0	0	#Num!	1 of 1	

REVIEWED BY
By Janice Whitt at 10:15:53 AM, 8/18/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	08/10/2016	**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**	4.9226	4.9325	**98.65**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		4.9870	4.9970	**99.94**		
3		4.9589	4.9688	**99.38**		
AVERAGE (MEAN)		**4.956**	**4.966**	**99.32**		**0.651**
						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**	0.2019	0.2023	**101.15**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.2020	0.2024	**101.20**		
3		0.2015	0.2019	**100.95**		
AVERAGE (MEAN)		**0.202**	**0.202**	**101.10**		**0.131**
						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)						

8/10/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:15:56 AM, 8/18/2016
Review and Approved / Date

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	RO	**BALANCE #:**	30	
TEST DATE:	08/11/2016	**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	4.0033	3.9953	99.88	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		3.9819	3.9739	99.35		
3		3.9890	3.9810	99.53		
AVERAGE (MEAN)		**3.991**	**3.983**	**99.59**		0.273
						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	0.9947	0.9927	99.27	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.9959	0.9939	99.39		
3		0.9963	0.9943	99.43		
AVERAGE (MEAN)		**0.996**	**0.994**	**99.36**		0.084
						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	0.4996	0.4986	99.72	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.5015	0.5005	100.10		
3		0.5003	0.4993	99.86		
AVERAGE (MEAN)		**0.500**	**0.499**	**99.89**		0.192
						PASS

8/11/16

Analyst / Date

REVIEWED BY
By Janice Whitt at 10:16:02 AM, 8/18/2016

Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/10/2016 8:16:22 AM**
Digestion: **Start: 8/10/2016 10:25:00 AM / Stop: 8/10/2016 3:25:00 PM**
Prep End Date: **8/10/2016 4:27:10 PM**

Prep Batch **76748** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

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

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #			Cleanup
1607337-10A	Soil		1.07	50	46.729		of	3	
1607337-10A MS	Soil		1.06	50	47.170		of		
1607337-10A MSD	Soil		1.07	50	46.729		of		
1607337-10A PDS	Soil		1.07	50	46.729		of		
1607337-10A SD	Soil		1.07	50	46.729		of		
1607337-14A	Soil		1.1	50	45.455	1	of	1	
1607337-15A	Soil		1.04	50	48.077	1	of	1	
1607337-16A	Soil		1.01	50	49.505	1	of	1	
1607337-17A	Soil		1.04	50	48.077	1	of	1	
1607337-18A	Soil		1.03	50	48.544	1	of	1	
1607337-19A	Soil		1.03	50	48.544	1	of	1	
1607337-20A	Soil		1.07	50	46.729	1	of	1	
1607337-21A	Soil		1.03	50	48.544	1	of	1	
1607337-22A	Soil		1.03	50	48.544	1	of	1	
1607337-23A	Soil		1.12	50	44.643	1	of	1	
1607337-24A	Soil		1.02	50	49.020	1	of	1	
1607337-25A	Soil		1.02	50	49.020	1	of	1	
1608019-01A	Soil		1.09	50	45.872	1	of	1	
1608019-02A	Soil		1.06	50	47.170	1	of	1	
1608019-03A	Soil		1.14	50	43.860	1	of	1	
1608019-04A	Soil		1.02	50	49.020	1	of	1	
1608019-05A	Soil		1.07	50	46.729	1	of	1	
1608019-06A	Soil		1.07	50	46.729	1	of	1	
LCS-76748	Soil		1	50	50.000		of		
LCSD-76748	Soil		1	50	50.000		of		
MB-76748	Soil		1	50	50.000		of		

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10527	Hydrogen Peroxide, 30%	3	ml	07/09/2017
10543	Nitric Acid (Trace Metals)	10	ml	01/10/2017
10544	Hydrochloric Acid (trace metal grade)	5	ml	01/10/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-150914-10	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-150914-9	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-SPIKE-160701-3	2500 PPM NATURALS SPIKE	LCS/MS/MSD	0.5	09/29/2016
MET-SPIKE-160715-4B	50 PPM Sb+Ag CAL	LCS/MS/MSD	1	10/13/2016
MET-SPIKE-160715-5B	50 PPM Custom+Sn,Ti,B,Mo,Sr CAL	LCS/MS/MSD	1	10/13/2016

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By Janice Whitt at 10:16:06 AM, 8/18/2016

Calibration Summary Report

Date Acquired 8/11/2016 13:52
Data Batch 160811.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 + 1.8281E-004
Be	1.0000	y = 3.3084E-005 * x + 3.4014E-007
B	1.0000	y = 1.5198E-005 * x + 8.6859E-005
Na	1.0000	y = 7.9101E-004 * x + 0.0410
Mg	1.0000	y = 3.9777E-004 * x + 0.0013
Al	1.0000	y = 1.4926E-004 * x + 0.0021
K	1.0000	y = 3.7521E-004 * x + 0.0410
Ca	0.9999	y = 2.1848E-005 * x + 7.3205E-004
Ti	0.9999	y = 1.4894E-004 * x + 1.1173E-006
V	1.0000	y = 0.0047 * x + 0.0023
Cr	1.0000	y = 0.0056 * x + 0.0011
Mn	1.0000	y = 0.0033 * x + 0.0035
Fe	0.9999	y = 0.0049 * x + 0.0076
Co	0.9999	y = 0.0124 * x + 1.8909E-004
Ni	1.0000	y = 0.0034 * x + 0.0039
Cu	1.0000	y = 0.0095 * x + 0.0121
Zn	1.0000	y = 0.0015 * x + 0.0033
Se	1.0000	y = 7.4875E-005 * x + 9.0534E-005
Sr	0.9999	y = 6.2572E-004 * x + 1.1026E-004
Mo	1.0000	y = 5.4917E-004 * x + 8.3448E-006
Ag	1.0000	y = 0.0016 * x + 8.0266E-006
Cd	1.0000	y = 2.4560E-004 * x + 3.5317E-006
Sn	1.0000	y = 5.5037E-004 * x + 4.8260E-004
Sb	1.0000	y = 7.7911E-004 * x + 3.5581E-005
Tl	1.0000	y = 0.0016 * x + 2.6152E-005
Ba	1.0000	y = 2.7016E-004 * x + 1.0956E-005
Pb	1.0000	y = 0.0022 * x + 1.5135E-004
Li	0.9999	y = 2.3096E-005 * x + 6.7819E-006

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By Janice Whitt at 3:43:34 PM, 8/11/2016

Calibration Summary Report

Level 7 Cal

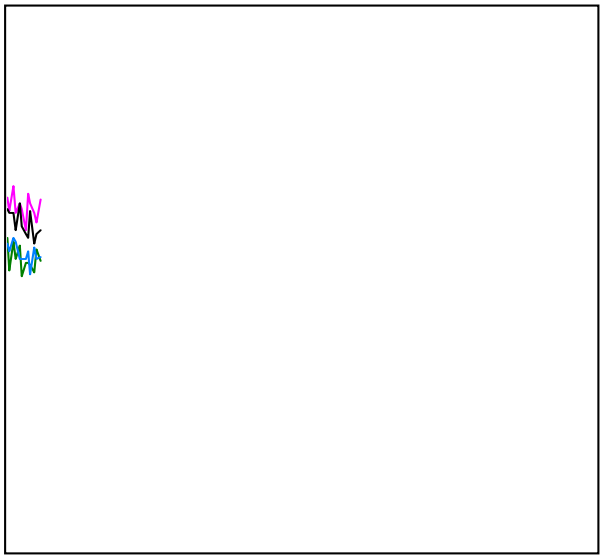
Ele	Conc	Calc	%Rec
As	500	497.46	99
Be	500	498.74	100
B	500	500.84	100
Na	10000	10016.41	100
Mg	10000	10028.31	100
Al	10000	9995.51	100
K	10000	10091.12	101
Ca	10000	9704.82	97
Ti	500	476.47	95
V	500	499.36	100
Cr	500	511.05	102
Mn	500	497.10	99
Fe	10000	10023.80	100
Co	500	516.89	103
Ni	500	502.12	100
Cu	500	503.72	101
Zn	500	499.93	100
Se	500	494.78	99
Sr	500	481.53	96
Mo	500	488.88	98
Ag	500	498.67	100
Cd	500	499.14	100
Sn	500	497.99	100
Sb	500	499.96	100
Tl	500	502.56	101
Ba	500	498.46	100
Pb	500	499.62	100

Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1999.87	100
Be	2000	2000.28	100
B	2000	2000.48	100
Na	25000	24981.91	100
Mg	25000	24967.89	100
K	25000	24946.39	100
Ca	25000	25136.28	99
Ti	2000	2007.06	100
V	2000	2000.00	100
Cr	2000	1996.07	100
Mn	2000	2000.16	100
Co	2000	1993.35	100
Ni	2000	1997.94	100
Cu	2000	1997.74	100
Zn	2000	1999.16	100
Se	2000	2000.40	100
Sr	2000	2005.81	100
Mo	2000	2003.73	100
Cd	2000	1999.94	100
Sn	2000	2000.49	100
Tl	2000	1998.16	100
Ba	2000	2000.58	100
Pb	2000	1999.19	100
Li	2000	2006.06	100

REVIEWED BY
By Janice Whitt at 3:43:37 PM, 8/11/2016

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
51	200	104	100.2	8.44
59	2000	1064	1075.4	4.23
89	2000	1084	1095.0	3.32
140	5000	3239	3166.3	3.52
205	5000	2942	3009.2	3.98
156/140	1	0.278 %	0.293 %	29.32
75	20	4	5.1	63.58
78	20	12	6.3	56.31
56	2000	1045	1008.7	4.58
Integration Time [sec]		0.10		

Plasma Parameters

RF Power	1550	Carrier Gas	0.55
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	8.1
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	1.2		

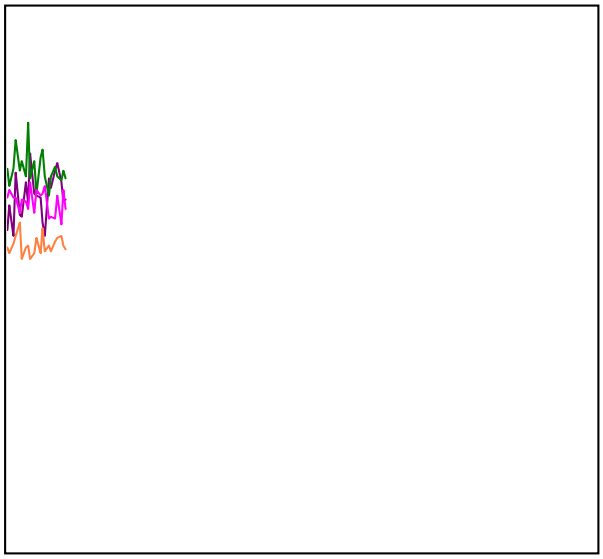
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	190
Energy Discrimination	3.0		

Meters

IF/BK Press	2.43E+2	Pa	Carrier Gas(BP)	1.05E+2	kPa
Analyzer Press	2.11E-4	Pa	Reflected Power	6	W
Forward Power	1550	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
7	1000	645	650.5	6.63
59	2000	1368	1403.5	4.48
89	5000	2766	2813.4	3.02
140	5000	3136	3212.9	3.47
205	5000	2368	2340.8	3.10
156/140	2	0.925 %	0.937 %	20.27
95	20	2	3.7	62.39
78	2000	1762	1645.9	2.98
63	200	169	162.4	8.66
75	5000	2742	2836.7	2.35
Integration Time [sec]		0.10		

Plasma Parameters

RF Power	1550	Carrier Gas	0.55
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	8.1
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	190
Energy Discrimination	3.0		

Meters

IF/BK Press	2.42E+2	Pa	Carrier Gas(BP)	1.05E+2	kPa
Analyzer Press	1.25E-4	Pa	Reflected Power	6	W
Forward Power	1551	W			

US EPA Tune Check Sample Report

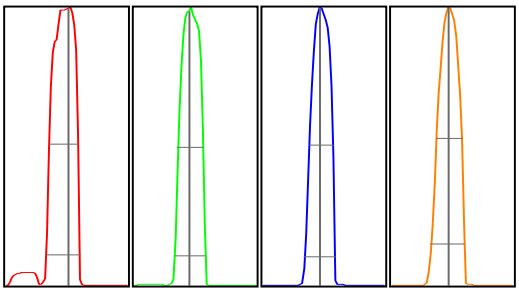
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	1149856	0.54	5.00	
59	2211072	0.89	5.00	
115	3907791	1.26	5.00	
205	3687028	0.63	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	1153422	1147861	1139820	1155206	1152973
59	2219241	2190562	2189182	2228583	2227790
115	3936867	3891511	3828408	3942105	3940061
205	3718397	3691854	3653723	3679735	3691429

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	171704	7.05	6.9 - 7.1		0.815	0.850	
59	386412	58.90	58.9 - 59.1		0.747	0.850	
115	725659	114.95	114.9 - 115.1		0.724	0.850	
205	638803	204.95	204.9 - 205.1		0.801	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	0.55	L/min	Makeup/Dilution Gas	0.50	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	8.1	V	Plate Bias	-60	V

REVIEWED BY
By Janice Whitt at 3:43:46 PM, 8/11/2016

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	190	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: 08/11/2016 13:52:06

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1745 V
PulseHV: 1384 V

Acquired: 08/11/2016 13:21:16

Mass[u]	Element	P/A Factor
6	Li	0.100619
9	Be	0.113142
23	Na	0.120227
24	Mg	0.125043
27	Al	0.128519
39	K	0.130813
45	Sc	0.131680
48		0.132911
51	V	0.133073
52	Cr	0.136832
55	Mn	0.138251
59	Co	0.141755
60	Ni	0.141770
63	Cu	0.145147
66	Zn	0.144887
72		0.143963
74	Ge	0.143920
75	As	0.143867
88	Sr	0.145073
89		0.143183
95		0.144204
97	Mo	0.143957
98	Mo	0.144465
99	[Mo]	0.145871
101		0.146409
105		0.148620
111	Cd	0.149899
114	Cd	0.149755
115	In	0.150549
118	Sn	0.149251
121		0.149907
123	Sb	0.150308
135	Ba	0.149537
138		0.150779
175		0.154181
193		0.155321
205	Tl	0.155621
206	[Pb]	0.156019
207	[Pb]	0.156868
208	Pb	0.157372
209	Bi	0.157439
232		0.157128
238	U	0.156691
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 3:43:48 PM, 8/11/2016

Calibration Blank Report

Date Acquired	8/11/2016 13:52	Sample Name	BLANK STD 1
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	7	48.22
9	Be	45	0	173.21
11	B	45	86	5.95
23	Na	45	40403	2.09
24	Mg	45	1233	6.30
27	Al	45	2109	11.60
39	K	45	40372	0.97
44	Ca	45	721	6.36
47	Ti	45	1	173.21
51	V	45	2307	3.36
52	Cr	45	1081	6.86
55	Mn	45	3423	5.26
56	Fe	45	7536	3.09
59	Co	72	131	5.29
60	Ni	72	2670	2.58
63	Cu	72	8422	2.10
66	Zn	72	2288	3.89
75	As	72	127	5.70
78	Se	72	63	9.51
88	Sr	115	800	15.12
95	Mo	115	60	38.49
107	Ag	115	58	23.32
111	Cd	115	26	27.15
118	Sn	115	3496	6.51
121	Sb	115	258	7.90
137	Ba	115	79	21.68
205	Tl	209	448	9.72
208	Pb	209	2590	3.41

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	985323	0.73
72	Ge	693391	0.90
115	In	7239973	3.32
209	Bi	17115037	0.97

Calibration Standard Report

Date Acquired	8/11/2016 13:54	Sample Name	L2-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	25	43.48
9	Be	45	34	16.04
11	B	45	93	27.90
23	Na	45	58417	0.93
24	Mg	45	9467	2.69
27	Al	45	5109	3.45
39	K	45	48606	1.38
44	Ca	45	1074	2.63
47	Ti	45	150	26.94
51	V	45	6949	2.48
52	Cr	45	6974	2.21
55	Mn	45	6943	0.82
56	Fe	45	105978	0.64
59	Co	72	9433	0.14
60	Ni	72	5240	2.32
63	Cu	72	15215	1.94
66	Zn	72	3474	2.66
75	As	72	931	4.41
78	Se	72	108	7.04
88	Sr	115	5362	2.80
95	Mo	115	3959	1.12
107	Ag	115	12404	1.66
111	Cd	115	1770	7.24
118	Sn	115	7484	3.17
121	Sb	115	5763	1.43
137	Ba	115	1963	5.44
205	Tl	209	29535	1.06
208	Pb	209	41555	1.75

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	977208	0.93	985323	99.18	70	120	
72	Ge	692474	0.37	693391	99.87	70	120	
115	In	7137209	1.27	7239973	98.58	70	120	
209	Bi	17155225	1.65	17115037	100.23	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 13:56	Sample Name	L-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	233	12.42
9	Be	45	346	4.99
11	B	45	202	22.38
23	Na	45	203024	0.69
24	Mg	45	82340	1.18
27	Al	45	32684	0.58
39	K	45	117686	2.07
44	Ca	45	5021	1.33
47	Ti	45	1475	5.18
51	V	45	49514	1.76
52	Cr	45	58862	1.51
55	Mn	45	36893	0.27
56	Fe	45	975397	0.95
59	Co	72	92214	1.18
60	Ni	72	27566	2.10
63	Cu	72	77348	1.54
66	Zn	72	13499	1.72
75	As	72	7914	0.12
78	Se	72	622	2.07
88	Sr	115	44413	0.31
95	Mo	115	37864	1.03
107	Ag	115	118848	0.88
111	Cd	115	17735	2.72
118	Sn	115	42944	2.12
121	Sb	115	56124	1.16
137	Ba	115	19400	0.60
205	Tl	209	285207	1.72
208	Pb	209	389114	1.65

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	992161	0.85	985323	100.69	70	120	
72	Ge	692387	0.73	693391	99.86	70	120	
115	In	7084158	0.96	7239973	97.85	70	120	
209	Bi	17361879	0.42	17115037	101.44	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 13:58	Sample Name	10X-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	1097	5.10
9	Be	45	1617	2.45
11	B	45	872	3.92
23	Na	45	840424	0.63
24	Mg	45	407750	0.25
27	Al	45	151765	0.79
39	K	45	422192	0.17
44	Ca	45	22107	0.53
47	Ti	45	7239	0.75
51	V	45	234455	0.37
52	Cr	45	286682	0.97
55	Mn	45	167648	0.39
56	Fe	45	4915590	0.81
59	Co	72	457589	0.28
60	Ni	72	126244	0.21
63	Cu	72	350493	1.03
66	Zn	72	56819	1.30
75	As	72	39591	0.68
78	Se	72	2738	2.33
88	Sr	115	217260	0.35
95	Mo	115	189797	0.69
107	Ag	115	594154	0.38
111	Cd	115	89654	0.75
118	Sn	115	198199	0.59
121	Sb	115	278379	0.89
137	Ba	115	94997	1.16
205	Tl	209	1442737	0.59
208	Pb	209	1946142	0.21

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	981259	0.52	985323	99.59	70	120	
72	Ge	686926	0.52	693391	99.07	70	120	
115	In	7098936	1.04	7239973	98.05	70	120	
209	Bi	17371179	0.71	17115037	101.50	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:00	Sample Name	5X-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2179	4.85
9	Be	45	3212	3.76
11	B	45	1545	7.39
23	Na	45	1603457	0.83
24	Mg	45	799474	0.26
27	Al	45	298222	0.23
39	K	45	793691	0.45
44	Ca	45	42726	0.83
47	Ti	45	14251	1.44
51	V	45	463630	0.70
52	Cr	45	568619	0.72
55	Mn	45	333863	0.22
56	Fe	45	9721549	1.14
59	Co	72	911594	0.23
60	Ni	72	248034	0.64
63	Cu	72	686160	1.10
66	Zn	72	110791	1.21
75	As	72	78855	0.56
78	Se	72	5351	1.94
88	Sr	115	430009	1.16
95	Mo	115	377434	1.56
107	Ag	115	1182188	0.43
111	Cd	115	175446	0.57
118	Sn	115	399247	0.46
121	Sb	115	559336	0.85
137	Ba	115	190756	0.41
205	Tl	209	2880780	0.70
208	Pb	209	3880567	0.33

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	970261	0.38	985323	98.47	70	120	
72	Ge	682369	0.17	693391	98.41	70	120	
115	In	7085865	1.46	7239973	97.87	70	120	
209	Bi	17256878	1.26	17115037	100.83	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:02	Sample Name	2X-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	5402	1.69
9	Be	45	8012	1.35
11	B	45	3677	0.55
23	Na	45	3893510	0.44
24	Mg	45	1951410	0.25
27	Al	45	722057	0.06
39	K	45	1872554	0.23
44	Ca	45	104628	0.59
47	Ti	45	34762	0.62
51	V	45	1134761	0.54
52	Cr	45	1391926	0.59
55	Mn	45	812707	1.56
56	Fe	45	23153027	1.47
59	Co	72	2230236	0.22
60	Ni	72	601400	0.48
63	Cu	72	1657141	0.20
66	Zn	72	264038	0.34
75	As	72	192890	0.59
78	Se	72	12979	0.48
88	Sr	115	1064984	0.50
95	Mo	115	941328	0.53
107	Ag	115	2914403	0.68
111	Cd	115	434339	0.76
118	Sn	115	968709	0.37
121	Sb	115	1366429	0.96
137	Ba	115	472271	0.66
205	Tl	209	7134215	1.90
208	Pb	209	9651897	0.44

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	967407	0.19	985323	98.18	70	120	
72	Ge	675540	0.43	693391	97.43	70	120	
115	In	7028496	0.72	7239973	97.08	70	120	
209	Bi	17110409	0.15	17115037	99.97	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:04	Sample Name	H-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	10593	1.40
9	Be	45	15731	1.25
11	B	45	7339	0.62
23	Na	45	7593101	1.30
24	Mg	45	3804193	0.08
27	Al	45	1424387	0.33
39	K	45	3649038	0.82
44	Ca	45	202858	1.30
47	Ti	45	67662	1.12
51	V	45	2227202	0.36
52	Cr	45	2725708	0.68
55	Mn	45	1569458	0.41
56	Fe	45	46455745	0.77
59	Co	72	4348529	0.22
60	Ni	72	1163618	0.21
63	Cu	72	3234064	0.68
66	Zn	72	517458	0.40
75	As	72	377518	0.16
78	Se	72	25144	1.70
88	Sr	115	2088197	1.05
95	Mo	115	1860151	1.03
107	Ag	115	5686596	0.83
111	Cd	115	849338	0.27
118	Sn	115	1902199	0.67
121	Sb	115	2698892	0.29
137	Ba	115	933041	0.56
205	Tl	209	14035025	0.93
208	Pb	209	19002877	1.87

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	953439	0.85	985323	96.76	70	120	
72	Ge	677078	0.34	693391	97.65	70	120	
115	In	6928235	0.55	7239973	95.69	70	120	
209	Bi	17284220	1.15	17115037	100.99	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:06	Sample Name	H2-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	43229	0.27
9	Be	45	61739	0.75
11	B	45	28445	0.68
23	Na	45	18474614	1.67
24	Mg	45	9266983	2.12
27	Al	45	12334	1.87
39	K	45	8770680	0.94
44	Ca	45	513041	0.96
47	Ti	45	278884	1.22
51	V	45	8721954	1.32
52	Cr	45	10414881	1.87
55	Mn	45	6169912	1.52
56	Fe	45	46473	25.71
59	Co	72	16386110	2.09
60	Ni	72	4516222	0.79
63	Cu	72	12507243	1.32
66	Zn	72	2015196	0.40
75	As	72	1482473	0.60
78	Se	72	99149	1.30
88	Sr	115	8439033	2.04
95	Mo	115	7397242	0.79
107	Ag	115	2867	38.03
111	Cd	115	3302117	0.58
118	Sn	115	7404484	0.36
121	Sb	115	4335	2.11
137	Ba	115	3633512	0.31
205	Tl	209	54600342	1.02
208	Pb	209	74412898	1.04

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	932931	0.57	985323	94.68	70	120	
72	Ge	661555	1.00	693391	95.41	70	120	
115	In	6723156	1.26	7239973	92.86	70	120	
209	Bi	16915636	1.98	17115037	98.83	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	8/11/2016 14:12	Sample Name	ICSA-160811
Data Batch	160811.b	Comment	ICSAICPMS_TW
Data File Name	022ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.158	5	88.6	1.2	0.8	
11	B	16.038	314	10.0	30	30	
51	V	-0.116	1715	7.1	10	10	
52	Cr	0.872	5683	4.3	8	5	
55	Mn	0.435	4674	6.6	8	10	
59	Co	1.386	11529	0.9	8	10	
60	Ni	0.138	2863	7.8	8	10	
63	Cu	2.020	20700	1.3	8	10	
66	Zn	1.420	3617	3.9	10	5	
75	As	0.448	454	7.1	4	5	
78	Se	0.201	70	14.0	2	5	
88	Sr	1.147	5525	3.3	10	10	
107	Ag	0.103	1190	8.5	0.8	2	
111	Cd	0.598	1003	7.3	1.2	1	
118	Sn	0.785	6105	8.2	10	10	
121	Sb	0.127	897	13.0	4	2.5	
137	Ba	0.622	1195	7.9	8	10	
205	Tl	0.107	3191	4.6	4	1.5	
208	Pb	0.359	15135	1.2	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	951564	1.03	985323	96.57	70	120	
72	Ge	662253	0.57	693391	95.51	70	120	
115	In	6675881	0.63	7239973	92.21	70	120	
209	Bi	16084004	1.21	17115037	93.98	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	8/11/2016 14:14	Sample Name	ICSAB-160811
Data Batch	160811.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	39.980	180890	1.04	40	100.0	80	120	
52	Cr	45	21.309	114984	0.52	20	106.5	80	120	
55	Mn	45	19.816	65932	1.33	20	99.1	80	120	
59	Co	72	41.600	342158	0.97	40	104.0	80	120	
60	Ni	72	38.528	89612	0.59	40	96.3	80	120	
63	Cu	72	21.353	141682	0.90	20	106.8	80	120	
66	Zn	72	21.131	23466	1.12	20	105.7	80	120	
75	As	72	20.328	15194	1.67	20	101.6	80	120	
78	Se	72	19.709	1036	2.11	20	98.5	80	120	
107	Ag	115	19.476	214956	1.54	20	97.4	80	120	
111	Cd	115	10.029	16537	1.54	10	100.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	956179	1.05	985323	97.04	70	120	
72	Ge	661721	0.81	693391	95.43	70	120	
115	In	6703882	0.56	7239973	92.60	70	120	
209	Bi	15962545	0.64	17115037	93.27	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	8/11/2016 14:20	Sample Name	ICV-160811
Data Batch	160811.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	97.458	2184	3.36	100	97.5	90	110	
9	Be	45	102.902	3294	1.95	100	102.9	90	110	
11	B	45	106.658	1652	5.15	100	106.7	90	110	
23	Na	45	2627.569	2050548	0.65	2500	105.1	90	110	
24	Mg	45	2622.616	1010517	0.89	2500	104.9	90	110	
27	Al	45	2493.627	362142	0.81	2500	99.7	90	110	
39	K	45	2601.800	984115	0.10	2500	104.1	90	110	
44	Ca	45	2394.756	51331	1.44	2500	95.8	90	110	
47	Ti	45	98.614	14210	1.41	100	98.6	90	110	
51	V	45	102.679	466511	0.61	100	102.7	90	110	
52	Cr	45	107.180	580924	0.66	100	107.2	90	110	
55	Mn	45	100.479	324621	0.87	100	100.5	90	110	
56	Fe	45	2601.934	12243097	1.35	2500	104.1	90	110	
59	Co	72	106.226	908433	0.55	100	106.2	90	110	
60	Ni	72	101.990	242328	0.67	100	102.0	90	110	
63	Cu	72	101.103	666448	0.76	100	101.1	90	110	
66	Zn	72	100.093	107120	0.80	100	100.1	90	110	
75	As	72	99.828	77104	1.04	100	99.8	90	110	
78	Se	72	100.814	5257	0.73	100	100.8	90	110	
88	Sr	115	97.208	435078	0.77	100	97.2	90	110	
95	Mo	115	96.305	377677	0.70	100	96.3	90	110	
107	Ag	115	100.118	1176692	0.67	100	100.1	90	110	
111	Cd	115	99.198	173980	0.78	100	99.2	90	110	
118	Sn	115	99.947	396214	0.71	100	99.9	90	110	
121	Sb	115	99.909	556037	0.52	100	99.9	90	110	
137	Ba	115	98.472	190031	1.17	100	98.5	90	110	
205	Tl	209	103.820	2875222	0.91	100	103.8	90	110	
208	Pb	209	102.845	3881006	0.35	100	102.8	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	967513	0.75	985323	98.19	70	120	
72	Ge	688193	0.77	693391	99.25	70	120	
115	In	7140231	0.55	7239973	98.62	70	120	
209	Bi	17137771	0.98	17115037	100.13	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 14:25	Sample Name	LCVL-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	028LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	11.300	260	5.03	10	113.0	70	130	
9	Be	45	1.091	35	31.56	1	109.1	70	130	
11	B	45	24.261	442	11.31	20	121.3	70	130	
23	Na	45	117.530	130099	0.78	100	117.5	70	130	
24	Mg	45	109.017	43323	1.27	100	109.0	70	130	
27	Al	45	107.223	17619	1.32	100	107.2	70	130	
39	K	45	113.828	81265	0.79	100	113.8	70	130	
44	Ca	45	109.515	3035	4.19	100	109.5	70	130	
47	Ti	45	5.423	786	3.94	5	108.5	70	130	
51	V	45	1.059	7078	3.61	1	105.9	70	130	
52	Cr	45	5.601	31480	1.95	5	112.0	70	130	
55	Mn	45	5.334	20491	1.24	5	106.7	70	130	
56	Fe	45	115.134	550842	0.11	100	115.1	70	130	
59	Co	72	5.562	47966	2.00	5	111.2	70	130	
60	Ni	72	5.473	15600	1.69	5	109.5	70	130	
63	Cu	72	5.477	44261	0.93	5	109.5	70	130	
66	Zn	72	5.499	8079	3.43	5	110.0	70	130	
75	As	72	5.294	4232	1.49	5	105.9	70	130	
78	Se	72	5.628	354	9.36	5	112.6	70	130	
88	Sr	115	5.280	24283	1.01	5	105.6	70	130	
95	Mo	115	5.356	20981	1.48	5	107.1	70	130	
107	Ag	115	2.157	25311	2.62	2	107.9	70	130	
111	Cd	115	1.062	1880	11.26	1	106.2	70	130	
118	Sn	115	5.538	25112	0.80	5	110.8	70	130	
121	Sb	115	2.113	11961	2.78	2	105.6	70	130	
137	Ba	115	5.394	10443	2.05	5	107.9	70	130	
205	Tl	209	1.090	31275	0.82	1	109.0	70	130	
208	Pb	209	1.103	45113	1.07	1	110.3	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	971094	0.51	985323	98.56	70	120	
72	Ge	692120	0.57	693391	99.82	70	120	
115	In	7112495	0.68	7239973	98.24	70	120	
209	Bi	17492239	1.67	17115037	102.20	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	8/11/2016 14:29	Sample Name	ICB-160811
Data Batch	160811.b	Comment	ICB ICPMS_TW
Data File Name	030_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.176	3	57.3	2	5	
9	Be	45	0.010	1	86.6	0.4	0.3	
11	B	45	2.769	127	24.1	10	10	
23	Na	45	-5.715	35871	0.9	50	100	
24	Mg	45	-1.423	674	9.3	50	100	
27	Al	45	-2.194	1782	4.6	50	10	
39	K	45	-7.101	37662	1.0	50	100	
44	Ca	45	-7.928	549	4.9	50	100	
47	Ti	45	0.084	13	43.3	4	3	
51	V	45	-0.033	2151	4.8	4	3	
52	Cr	45	-0.009	1030	3.1	2	2	
55	Mn	45	-1.004	153	28.5	2	3	
56	Fe	45	0.790	11296	3.1	50	50	
59	Co	72	-0.007	76	35.7	2	3	
60	Ni	72	-1.024	248	8.2	2	3	
63	Cu	72	-1.082	1346	2.7	2	2	
66	Zn	72	-1.820	372	6.8	4	2	
75	As	72	0.009	135	21.5	2	2	
78	Se	72	-0.197	53	7.4	1	2	
88	Sr	115	-0.012	728	9.7	4	3	
95	Mo	115	0.168	712	6.8	2	2	
107	Ag	115	0.005	117	15.1	0.4	1	
111	Cd	115	-0.002	22	48.2	0.4	0.3	
118	Sn	115	-0.513	1416	4.8	4	3	
121	Sb	115	-0.001	247	6.2	2	0.8	
137	Ba	115	0.082	233	16.5	2	3	
205	Tl	209	0.000	452	4.9	2	0.5	
208	Pb	209	0.019	3387	4.1	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	983056	0.54	985323	99.77	70	120	
72	Ge	702505	0.60	693391	101.31	70	120	
115	In	7068515	0.53	7239973	97.63	70	120	
209	Bi	17456049	0.12	17115037	101.99	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 15:57	Sample Name	CCV2-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	070_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	198.434	4587	0.29	200	99.2	90	110	
9	Be	45	205.648	6799	0.48	200	102.8	90	110	
11	B	45	407.646	6278	3.62	200	203.8	90	110	Fail
23	Na	45	5479.146	4372082	0.50	5000	109.6	90	110	
24	Mg	45	5291.181	2104485	0.63	5000	105.8	90	110	
27	Al	45	5033.565	752921	0.28	5000	100.7	90	110	
39	K	45	5347.486	2046012	0.30	5000	106.9	90	110	
44	Ca	45	4969.623	109235	0.56	5000	99.4	90	110	
47	Ti	45	200.435	29834	2.24	200	100.2	90	110	
51	V	45	209.602	981240	0.53	200	104.8	90	110	
52	Cr	45	212.913	1190933	0.64	200	106.5	90	110	
55	Mn	45	206.461	685284	0.91	200	103.2	90	110	
56	Fe	45	5223.530	25378275	1.68	5000	104.5	90	110	
59	Co	72	216.078	1906763	0.25	200	108.0	90	110	
60	Ni	72	210.008	512065	0.40	200	105.0	90	110	
63	Cu	72	211.010	1426107	0.91	200	105.5	90	110	
66	Zn	72	207.015	226139	1.25	200	103.5	90	110	
75	As	72	206.292	164282	0.11	200	103.1	90	110	
78	Se	72	206.034	11019	1.81	200	103.0	90	110	
88	Sr	115	199.112	911186	0.79	200	99.6	90	110	
95	Mo	115	204.048	818820	0.52	200	102.0	90	110	
107	Ag	115	210.403	2530508	0.86	200	105.2	90	110	
111	Cd	115	207.339	372082	0.84	200	103.7	90	110	
118	Sn	115	205.611	830392	0.75	200	102.8	90	110	
121	Sb	115	204.627	1165004	0.36	200	102.3	90	110	
137	Ba	115	204.304	403374	0.59	200	102.2	90	110	
205	Tl	209	209.813	6116832	0.31	200	104.9	90	110	
208	Pb	209	207.181	8228459	0.23	200	103.6	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	999321	0.20	985323	101.42	70	120	
72	Ge	710232	1.18	693391	102.43	70	120	
115	In	7309115	2.45	7239973	100.96	70	120	
209	Bi	18044722	1.62	17115037	105.43	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 16:08	Sample Name	LCVL2-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	072LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.160	244	7.39	10	101.6	70	130	
9	Be	45	1.077	36	8.41	1	107.7	70	130	
11	B	45	198.119	3130	5.70	20	990.6	70	130	Fail
23	Na	45	186.894	190780	0.67	100	186.9	70	130	Fail
24	Mg	45	109.647	45325	0.48	100	109.6	70	130	
27	Al	45	108.229	18482	1.29	100	108.2	70	130	
39	K	45	121.651	87506	0.26	100	121.7	70	130	
44	Ca	45	108.612	3137	0.28	100	108.6	70	130	
47	Ti	45	5.224	787	12.80	5	104.5	70	130	
51	V	45	1.255	8292	1.36	1	125.5	70	130	
52	Cr	45	5.550	32459	1.30	5	111.0	70	130	
55	Mn	45	5.427	21626	0.82	5	108.5	70	130	
56	Fe	45	113.235	563711	0.94	100	113.2	70	130	
59	Co	72	5.526	49648	1.08	5	110.5	70	130	
60	Ni	72	5.532	16401	0.59	5	110.6	70	130	
63	Cu	72	5.363	45341	0.22	5	107.3	70	130	
66	Zn	72	5.507	8425	1.18	5	110.1	70	130	
75	As	72	5.331	4439	1.24	5	106.6	70	130	
78	Se	72	5.648	370	2.61	5	113.0	70	130	
88	Sr	115	5.387	25117	2.12	5	107.7	70	130	
95	Mo	115	5.201	20673	2.08	5	104.0	70	130	
107	Ag	115	2.131	25361	1.13	2	106.5	70	130	
111	Cd	115	1.048	1883	3.54	1	104.8	70	130	
118	Sn	115	5.476	25232	2.05	5	109.5	70	130	
121	Sb	115	2.144	12308	1.16	2	107.2	70	130	
137	Ba	115	5.304	10418	2.13	5	106.1	70	130	
205	Tl	209	1.089	31584	0.61	1	108.9	70	130	
208	Pb	209	1.085	44891	1.18	1	108.5	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1010266	0.75	985323	102.53	70	120	
72	Ge	721144	0.40	693391	104.00	70	120	
115	In	7216766	1.43	7239973	99.68	70	120	
209	Bi	17681721	0.65	17115037	103.31	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 16:22	Sample Name	CCB2-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	073_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.119	10	21.5	2	5	
9	Be	45	0.010	1	173.2	0.4	0.3	
11	B	45	133.856	2150	3.5	10	10	FailAq FailSoil
23	Na	45	42.102	75334	0.4	50	100	
24	Mg	45	-2.206	380	14.1	50	100	
27	Al	45	-2.707	1760	2.2	50	10	
39	K	45	0.861	41868	1.4	50	100	
44	Ca	45	-8.911	545	10.0	50	100	
47	Ti	45	0.015	3	173.2	4	3	
51	V	45	0.223	3433	5.9	4	3	
52	Cr	45	-0.033	922	17.3	2	2	
55	Mn	45	-1.018	111	17.3	2	3	
56	Fe	45	0.420	9823	2.5	50	50	
59	Co	72	-0.009	60	9.6	2	3	
60	Ni	72	-1.027	249	13.5	2	3	
63	Cu	72	-1.133	1041	6.0	2	2	
66	Zn	72	-1.760	451	10.1	4	2	
75	As	72	0.052	175	8.1	2	2	
78	Se	72	-0.061	62	10.5	1	2	
88	Sr	115	-0.003	776	8.4	4	3	
95	Mo	115	0.031	184	17.7	2	2	
107	Ag	115	0.004	108	14.3	0.4	1	
111	Cd	115	-0.011	7	86.6	0.4	0.3	
118	Sn	115	-0.683	767	1.9	4	3	
121	Sb	115	0.023	386	16.8	2	0.8	
137	Ba	115	0.107	286	13.5	2	3	
205	Tl	209	-0.006	278	1.4	2	0.5	
208	Pb	209	-0.027	1643	8.3	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1013771	0.60	985323	102.89	70	120	
72	Ge	726016	1.11	693391	104.71	70	120	
115	In	7187459	2.60	7239973	99.27	70	120	
209	Bi	17694453	1.95	17115037	103.39	70	120	

Dilution Sample (Dil) Report

Date Acquired	8/11/2016 16:26	Sample Name	1607317-27A SD
Data Batch	160811.b	Comment	SD ICPMS_TSDOD1
Data File Name	075_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	15.116	363	7.82	65.5	115.4	110	90	
9	Be	45	0.642	22	31.82	2.7	118.4	110	90	
11	B	45	140.718	2268	6.39	205.9	341.7	110	90	
23	Na	45	504.580	448509	0.45	2236.1	112.8	110	90	
24	Mg	45	2943.112	1194210	0.70	13617.1	108.1	110	90	Good
27	Al	45	15310.263	2330795	0.57	71559.1	107.0	110	90	Good
39	K	45	3415.353	1347601	0.81	16119.1	105.9	110	90	Good
44	Ca	45	10504.409	234615	0.41	49095.2	107.0	110	90	Good
47	Ti	45	54.166	8222	2.82	253.7	106.8	110	90	Good
51	V	45	21.549	105007	0.75	101.4	106.3	110	90	Good
52	Cr	45	13.473	77895	0.41	63.4	106.3	110	90	Good
55	Mn	45	125.457	426016	0.28	586.4	107.0	110	90	Good
56	Fe	45	14400.882	71332744	2.19	67814.1	106.2	110	90	Good
59	Co	72	5.433	48717	1.21	26.0	104.4	110	90	Good
60	Ni	72	7.906	22204	2.45	41.4	95.6	110	90	Good
63	Cu	72	4.185	37228	0.71	23.6	88.7	110	90	
66	Zn	72	46.814	53655	1.81	216.9	107.9	110	90	Good
75	As	72	4.722	3939	3.06	22.8	103.4	110	90	Good
78	Se	72	0.987	118	5.64	5.4	90.6	110	90	Good
88	Sr	115	65.302	306623	0.87	323.4	101.0	110	90	Good
95	Mo	115	0.336	1446	4.15	1.7	98.4	110	90	Good
107	Ag	115	0.039	547	7.39	0.2	111.5	110	90	
111	Cd	115	0.100	211	10.27	0.4	114.0	110	90	
118	Sn	115	0.482	5597	2.25	5.0	48.0	110	90	
121	Sb	115	0.875	5371	3.17	4.3	101.6	110	90	Good
137	Ba	115	69.420	140444	1.30	339.9	102.1	110	90	Good
205	Tl	209	0.124	4032	0.72	0.6	102.0	110	90	Good
208	Pb	209	41.281	1621324	0.63	199.1	103.7	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1019024	0.18	985323	103.42	70	120	
72	Ge	719658	0.47	693391	103.79	70	120	
115	In	7485166	1.26	7239973	103.39	70	120	
209	Bi	17821254	1.79	17115037	104.13	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	8/11/2016 16:28	Sample Name	1607317-27A PDS
Data Batch	160811.b	Comment	PDS ICPMS_TSDOD1
Data File Name	076_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	248.952	5970	3.67	65.5	200	91.7	75	125	
9	Be	45	191.468	6570	1.59	2.7	200	94.4	75	125	
11	B	45	389.890	6236	1.60	205.9	200	92.0	75	125	
23	Na	45	7162.433	5918510	1.52	2236.1	5000	98.5	75	125	
24	Mg	45	18993.234	7836356	1.62	13617.1	5000	107.5	75	125	
27	Al	45	78514.398	12156006	1.24	71559.1	5000	139.1	75	125	Fail
39	K	45	21204.448	8293640	1.69	16119.1	5000	101.7	75	125	
44	Ca	45	54722.382	1240749	0.63	49095.2	5000	112.5	75	125	
47	Ti	45	448.289	69247	1.11	253.7	200	97.3	75	125	
51	V	45	303.139	1471739	0.69	101.4	200	100.9	75	125	
52	Cr	45	268.641	1559193	0.59	63.4	200	102.6	75	125	
55	Mn	45	791.095	2714919	0.29	586.4	200	102.4	75	125	
56	Fe	45	74013.025	373090021	0.59	67814.1	5000	124.0	75	125	
59	Co	72	229.189	2065205	0.27	26.0	200	101.6	75	125	
60	Ni	72	235.532	586082	0.57	41.4	200	97.1	75	125	
63	Cu	72	216.399	1493117	0.69	23.6	200	96.4	75	125	
66	Zn	72	414.156	459549	0.82	216.9	200	98.6	75	125	
75	As	72	218.282	177496	0.26	22.8	200	97.7	75	125	
78	Se	72	197.372	10782	1.08	5.4	200	96.0	75	125	
88	Sr	115	528.679	2413497	0.74	323.4	200	102.6	75	125	
95	Mo	115	192.989	772955	0.66	1.7	200	95.6	75	125	
107	Ag	115	194.985	2340672	0.47	0.2	200	97.4	75	125	
111	Cd	115	193.233	346175	0.15	0.4	200	96.4	75	125	
118	Sn	115	207.398	835960	0.49	5.0	200	101.2	75	125	
121	Sb	115	200.034	1136784	0.67	4.3	200	97.9	75	125	
137	Ba	115	541.586	1067196	0.83	339.9	200	100.8	75	125	
205	Tl	209	200.187	5702353	0.63	0.6	200	99.8	75	125	
208	Pb	209	402.544	15617543	0.65	199.1	200	101.7	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1037134	0.41	985323	105.26	70	120	
72	Ge	725183	0.20	693391	104.59	70	120	
115	In	7298754	3.23	7239973	100.81	70	120	
209	Bi	17628559	1.19	17115037	103.00	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 16:30	Sample Name	1607317-27A MS
Data Batch	160811.b	Comment	MS ICPMS_TSDOD1
Data File Name	077_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	256.941	6128	0.75	65.5	200	95.7	80	120	
9	Be	45	197.700	6748	1.35	2.7	200	97.5	80	120	
11	B	45	399.688	6355	4.35	205.9	200	96.9	80	120	
23	Na	45	7284.938	5986642	0.64	2236.1	1000	504.9	80	120	Fail
24	Mg	45	19870.801	8154249	0.92	13617.1	1000	625.4	80	120	Fail
27	Al	45	83490.779	12857216	0.62	71559.1	1000	1193.2	80	120	Fail
39	K	45	23373.946	9089594	1.31	16119.1	1000	725.5	80	120	Fail
44	Ca	45	54617.464	1231770	1.29	49095.2	1000	552.2	80	120	Fail
47	Ti	45	538.730	82766	1.31	253.7	200	142.5	80	120	Fail
51	V	45	319.393	1542194	0.33	101.4	200	109.0	80	120	
52	Cr	45	275.377	1589656	0.32	63.4	200	106.0	80	120	
55	Mn	45	803.397	2742330	0.55	586.4	200	108.5	80	120	
56	Fe	45	75169.538	376905852	1.62	67814.1	1000	735.5	80	120	Fail
59	Co	72	238.268	2120412	0.25	26.0	200	106.1	80	120	
60	Ni	72	248.766	611192	0.36	41.4	200	103.7	80	120	
63	Cu	72	226.453	1542706	0.46	23.6	200	101.4	80	120	
66	Zn	72	438.775	480695	0.17	216.9	200	110.9	80	120	
75	As	72	228.621	183596	0.35	22.8	200	102.9	80	120	
78	Se	72	204.778	11046	0.64	5.4	200	99.7	80	120	
88	Sr	115	656.625	2963153	1.46	323.4	200	166.6	80	120	Fail
95	Mo	115	188.678	747143	1.07	1.7	200	93.5	80	120	
107	Ag	115	201.448	2390656	0.76	0.2	200	100.6	80	120	
111	Cd	115	204.116	361473	1.35	0.4	200	101.8	80	120	
118	Sn	115	215.524	858652	0.07	5.0	200	105.2	80	120	
121	Sb	115	72.129	405422	0.90	4.3	200	33.9	80	120	Fail
137	Ba	115	569.388	1109132	0.56	339.9	200	114.7	80	120	
205	Tl	209	213.493	6010675	1.22	0.6	200	106.4	80	120	
208	Pb	209	712.553	27322213	0.85	199.1	200	256.7	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1031581	0.69	985323	104.69	70	120	
72	Ge	716205	0.45	693391	103.29	70	120	
115	In	7210069	1.08	7239973	99.59	70	120	
209	Bi	17422955	0.78	17115037	101.80	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 16:32	Sample Name	1607317-27A MSD
Data Batch	160811.b	Comment	MSD ICPMS_TSDOD1
Data File Name	078_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	252.343	5964	2.76	65.5	200	93.4	80	120	
9	Be	45	203.576	6885	1.82	2.7	200	100.4	80	120	
11	B	45	383.194	6041	4.38	205.9	200	88.6	80	120	
23	Na	45	7127.767	5806095	2.33	2236.1	1000	489.2	80	120	Fail
24	Mg	45	18781.861	7639129	1.25	13617.1	1000	516.5	80	120	Fail
27	Al	45	77166.749	11777303	0.74	71559.1	1000	560.8	80	120	Fail
39	K	45	21528.793	8300372	2.08	16119.1	1000	541.0	80	120	Fail
44	Ca	45	48199.280	1077299	0.64	49095.2	1000	-89.6	80	120	Fail
47	Ti	45	510.121	77672	0.14	253.7	200	128.2	80	120	Fail
51	V	45	307.205	1470071	0.92	101.4	200	102.9	80	120	
52	Cr	45	271.714	1554478	0.45	63.4	200	104.2	80	120	
55	Mn	45	763.028	2581239	0.68	586.4	200	88.3	80	120	
56	Fe	45	67525.040	335524920	0.27	67814.1	1000	-28.9	80	120	Fail
59	Co	72	234.191	2096320	1.16	26.0	200	104.1	80	120	
60	Ni	72	242.560	599505	1.35	41.4	200	100.6	80	120	
63	Cu	72	225.568	1545610	0.58	23.6	200	101.0	80	120	
66	Zn	72	413.667	455960	0.74	216.9	200	98.4	80	120	
75	As	72	223.270	180339	0.75	22.8	200	100.2	80	120	
78	Se	72	201.215	10918	1.04	5.4	200	97.9	80	120	
88	Sr	115	543.174	2424684	0.61	323.4	200	109.9	80	120	
95	Mo	115	190.902	747742	0.13	1.7	200	94.6	80	120	
107	Ag	115	202.455	2376604	0.25	0.2	200	101.1	80	120	
111	Cd	115	204.252	357782	0.56	0.4	200	101.9	80	120	
118	Sn	115	216.195	852025	1.06	5.0	200	105.6	80	120	
121	Sb	115	72.260	401764	0.80	4.3	200	34.0	80	120	Fail
137	Ba	115	562.237	1083360	0.64	339.9	200	111.1	80	120	
205	Tl	209	213.314	5960264	0.32	0.6	200	106.4	80	120	
208	Pb	209	644.770	24536182	0.75	199.1	200	222.8	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1022364	0.86	985323	103.76	70	120	
72	Ge	720373	0.77	693391	103.89	70	120	
115	In	7131813	0.22	7239973	98.51	70	120	
209	Bi	17291284	0.57	17115037	101.03	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 16:34	Sample Name	CCV3-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	079_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	200.484	4585	0.92	200	100.2	90	110	
9	Be	45	209.278	6847	2.16	200	104.6	90	110	
11	B	45	315.076	4820	4.99	200	157.5	90	110	Fail
23	Na	45	5313.754	4197367	1.34	5000	106.3	90	110	
24	Mg	45	5302.952	2087242	1.09	5000	106.1	90	110	
27	Al	45	5101.468	755098	0.55	5000	102.0	90	110	
39	K	45	5416.274	2050167	0.25	5000	108.3	90	110	
44	Ca	45	4984.391	108410	0.40	5000	99.7	90	110	
47	Ti	45	199.704	29414	0.38	200	99.9	90	110	
51	V	45	210.971	977300	0.25	200	105.5	90	110	
52	Cr	45	215.587	1193240	0.68	200	107.8	90	110	
55	Mn	45	209.120	686819	0.40	200	104.6	90	110	
56	Fe	45	5250.925	25245371	2.23	5000	105.0	90	110	
59	Co	72	215.505	1900668	0.30	200	107.8	90	110	
60	Ni	72	209.120	509627	0.22	200	104.6	90	110	
63	Cu	72	210.194	1419833	0.63	200	105.1	90	110	
66	Zn	72	206.207	225128	0.75	200	103.1	90	110	
75	As	72	207.622	165250	0.20	200	103.8	90	110	
78	Se	72	204.754	10946	1.54	200	102.4	90	110	
88	Sr	115	200.410	906480	1.51	200	100.2	90	110	
95	Mo	115	204.021	809141	0.38	200	102.0	90	110	
107	Ag	115	210.993	2507627	0.48	200	105.5	90	110	
111	Cd	115	209.457	371551	1.43	200	104.7	90	110	
118	Sn	115	206.299	823350	0.50	200	103.1	90	110	
121	Sb	115	205.359	1155619	0.95	200	102.7	90	110	
137	Ba	115	206.350	402654	1.07	200	103.2	90	110	
205	Tl	209	212.581	6081683	0.70	200	106.3	90	110	
208	Pb	209	208.180	8113568	0.25	200	104.1	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	988930	0.91	985323	100.37	70	120	
72	Ge	709834	0.94	693391	102.37	70	120	
115	In	7222799	1.98	7239973	99.76	70	120	
209	Bi	17704592	0.63	17115037	103.44	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 16:44	Sample Name	LCVL3-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	081LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.029	244	9.95	10	100.3	70	130	
9	Be	45	0.886	30	15.58	1	88.6	70	130	
11	B	45	122.139	1989	3.69	20	610.7	70	130	Fail
23	Na	45	151.172	164334	0.62	100	151.2	70	130	Fail
24	Mg	45	107.686	45122	1.88	100	107.7	70	130	
27	Al	45	109.046	18843	2.90	100	109.0	70	130	
39	K	45	123.274	89271	0.37	100	123.3	70	130	
44	Ca	45	105.494	3108	2.87	100	105.5	70	130	
47	Ti	45	5.226	798	3.19	5	104.5	70	130	
51	V	45	1.169	7987	2.68	1	116.9	70	130	
52	Cr	45	5.589	33112	1.85	5	111.8	70	130	
55	Mn	45	5.272	21385	1.19	5	105.4	70	130	
56	Fe	45	114.034	575066	0.80	100	114.0	70	130	
59	Co	72	5.507	49992	1.97	5	110.1	70	130	
60	Ni	72	5.567	16659	1.18	5	111.3	70	130	
63	Cu	72	5.434	46301	0.33	5	108.7	70	130	
66	Zn	72	5.657	8679	2.90	5	113.1	70	130	
75	As	72	5.408	4549	2.35	5	108.2	70	130	
78	Se	72	5.600	372	4.75	5	112.0	70	130	
88	Sr	115	5.258	25152	1.09	5	105.2	70	130	
95	Mo	115	5.226	21287	1.54	5	104.5	70	130	
107	Ag	115	2.153	26275	2.47	2	107.7	70	130	
111	Cd	115	1.003	1848	6.78	1	100.3	70	130	
118	Sn	115	5.222	24830	2.54	5	104.4	70	130	
121	Sb	115	2.110	12423	1.09	2	105.5	70	130	
137	Ba	115	5.255	10582	3.38	5	105.1	70	130	
205	Tl	209	1.063	30946	1.80	1	106.3	70	130	
208	Pb	209	1.108	45908	1.39	1	110.8	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023460	1.12	985323	103.87	70	120	
72	Ge	728650	0.57	693391	105.08	70	120	
115	In	7397508	1.16	7239973	102.18	70	120	
209	Bi	17742398	2.24	17115037	103.67	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 16:46	Sample Name	CCB3-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	082_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.054	6	27.0	2	5	
9	Be	45	0.059	2	49.5	0.4	0.3	
11	B	45	98.898	1627	4.9	10	10	FailAq FailSoil
23	Na	45	25.299	62443	0.5	50	100	
24	Mg	45	-1.901	508	18.7	50	100	
27	Al	45	-2.255	1846	4.9	50	10	
39	K	45	0.205	42009	0.9	50	100	
44	Ca	45	-11.604	490	10.2	50	100	
47	Ti	45	0.138	22	67.6	4	3	
51	V	45	0.124	2990	2.7	4	3	
52	Cr	45	-0.037	910	3.1	2	2	
55	Mn	45	-1.001	169	18.7	2	3	
56	Fe	45	1.060	13098	2.9	50	50	
59	Co	72	-0.006	87	33.3	2	3	
60	Ni	72	-1.016	281	9.9	2	3	
63	Cu	72	-1.140	1007	10.1	2	2	
66	Zn	72	-1.570	671	53.9	4	2	
75	As	72	0.063	187	3.1	2	2	
78	Se	72	0.126	74	10.7	1	2	
88	Sr	115	0.011	851	4.7	4	3	
95	Mo	115	0.050	257	41.9	2	2	
107	Ag	115	0.006	133	15.6	0.4	1	
111	Cd	115	-0.003	20	0.0	0.4	0.3	
118	Sn	115	-0.635	968	4.0	4	3	
121	Sb	115	0.025	400	13.9	2	0.8	
137	Ba	115	0.090	257	7.9	2	3	
205	Tl	209	0.004	593	12.6	2	0.5	
208	Pb	209	0.007	2977	3.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023294	0.52	985323	103.85	70	120	
72	Ge	735646	0.26	693391	106.09	70	120	
115	In	7257227	2.33	7239973	100.24	70	120	
209	Bi	17820634	1.96	17115037	104.12	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 16:52	Sample Name	CCV4-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	085_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	194.011	4578	2.64	200	97.0	90	110	
9	Be	45	196.845	6644	0.99	200	98.4	90	110	
11	B	45	285.236	4511	6.28	200	142.6	90	110	Fail
23	Na	45	5508.358	4486412	2.39	5000	110.2	90	110	Fail
24	Mg	45	5214.346	2117097	0.10	5000	104.3	90	110	
27	Al	45	5064.198	773253	0.34	5000	101.3	90	110	
39	K	45	5424.443	2117959	1.79	5000	108.5	90	110	
44	Ca	45	5007.636	112354	0.88	5000	100.2	90	110	
47	Ti	45	200.712	30496	0.18	200	100.4	90	110	
51	V	45	208.413	995981	0.62	200	104.2	90	110	
52	Cr	45	211.609	1208298	0.70	200	105.8	90	110	
55	Mn	45	206.908	701058	0.40	200	103.5	90	110	
56	Fe	45	5105.348	25320619	0.91	5000	102.1	90	110	
59	Co	72	215.799	1941336	0.65	200	107.9	90	110	
60	Ni	72	208.063	517197	0.55	200	104.0	90	110	
63	Cu	72	208.272	1435002	0.91	200	104.1	90	110	
66	Zn	72	207.829	231418	0.94	200	103.9	90	110	
75	As	72	209.602	170162	0.40	200	104.8	90	110	
78	Se	72	209.565	11426	1.28	200	104.8	90	110	
88	Sr	115	200.570	933355	0.68	200	100.3	90	110	
95	Mo	115	200.706	818989	0.38	200	100.4	90	110	
107	Ag	115	205.894	2518179	0.83	200	102.9	90	110	
111	Cd	115	206.196	376321	0.74	200	103.1	90	110	
118	Sn	115	205.078	842183	0.29	200	102.5	90	110	
121	Sb	115	205.212	1188216	0.42	200	102.6	90	110	
137	Ba	115	204.213	410026	0.47	200	102.1	90	110	
205	Tl	209	213.173	6079831	0.81	200	106.6	90	110	
208	Pb	209	209.856	8153702	0.68	200	104.9	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1020127	0.36	985323	103.53	70	120	
72	Ge	723982	0.13	693391	104.41	70	120	
115	In	7431381	1.63	7239973	102.64	70	120	
209	Bi	17657287	2.87	17115037	103.17	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 16:58	Sample Name	LCVL4-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	087LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.871	241	10.59	10	98.7	70	130	
9	Be	45	0.825	28	34.82	1	82.5	70	130	
11	B	45	106.748	1755	7.17	20	533.7	70	130	Fail
23	Na	45	173.437	182930	1.10	100	173.4	70	130	Fail
24	Mg	45	107.937	45361	2.15	100	107.9	70	130	
27	Al	45	110.719	19161	2.41	100	110.7	70	130	
39	K	45	129.605	91982	0.64	100	129.6	70	130	
44	Ca	45	107.987	3173	6.76	100	108.0	70	130	
47	Ti	45	5.305	812	15.60	5	106.1	70	130	
51	V	45	1.309	8686	1.41	1	130.9	70	130	Fail
52	Cr	45	5.569	33098	0.19	5	111.4	70	130	
55	Mn	45	5.512	22266	0.73	5	110.2	70	130	
56	Fe	45	114.221	577719	0.95	100	114.2	70	130	
59	Co	72	5.540	50825	1.59	5	110.8	70	130	
60	Ni	72	5.358	16310	1.75	5	107.2	70	130	
63	Cu	72	5.236	45418	2.27	5	104.7	70	130	
66	Zn	72	5.683	8800	3.05	5	113.7	70	130	
75	As	72	5.332	4534	1.42	5	106.6	70	130	
78	Se	72	5.079	347	4.51	5	101.6	70	130	
88	Sr	115	5.374	25493	1.40	5	107.5	70	130	
95	Mo	115	5.102	20632	1.10	5	102.0	70	130	
107	Ag	115	2.136	25863	0.65	2	106.8	70	130	
111	Cd	115	1.020	1866	6.30	1	102.0	70	130	
118	Sn	115	5.381	25285	3.11	5	107.6	70	130	
121	Sb	115	2.135	12470	1.42	2	106.7	70	130	
137	Ba	115	5.336	10664	0.51	5	106.7	70	130	
205	Tl	209	1.089	31713	0.98	1	108.9	70	130	
208	Pb	209	1.094	45441	0.91	1	109.4	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1026541	0.62	985323	104.18	70	120	
72	Ge	736399	0.15	693391	106.20	70	120	
115	In	7341122	0.43	7239973	101.40	70	120	
209	Bi	17755224	1.89	17115037	103.74	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 17:00	Sample Name	CCB4-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	088_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.172	11	41.7	2	5	
9	Be	45	0.029	1	43.3	0.4	0.3	
11	B	45	86.559	1438	10.7	10	10	FailAq FailSoil
23	Na	45	43.369	77243	1.1	50	100	
24	Mg	45	-1.993	471	6.7	50	100	
27	Al	45	-2.152	1866	6.1	50	10	
39	K	45	6.905	44680	0.2	50	100	
44	Ca	45	-9.156	545	4.9	50	100	
47	Ti	45	0.022	4	43.4	4	3	
51	V	45	0.199	3357	1.1	4	3	
52	Cr	45	-0.004	1103	4.7	2	2	
55	Mn	45	-0.999	179	22.4	2	3	
56	Fe	45	0.856	12114	3.1	50	50	
59	Co	72	-0.005	97	36.5	2	3	
60	Ni	72	-1.028	249	17.5	2	3	
63	Cu	72	-1.147	950	2.0	2	2	
66	Zn	72	-1.774	440	13.3	4	2	
75	As	72	0.068	190	4.0	2	2	
78	Se	72	0.147	75	10.8	1	2	
88	Sr	115	-0.002	810	2.3	4	3	
95	Mo	115	0.063	317	3.6	2	2	
107	Ag	115	0.009	171	25.4	0.4	1	
111	Cd	115	-0.003	20	60.1	0.4	0.3	
118	Sn	115	-0.633	998	3.7	4	3	
121	Sb	115	0.025	411	20.1	2	0.8	
137	Ba	115	0.082	247	5.9	2	3	
205	Tl	209	0.001	504	8.5	2	0.5	
208	Pb	209	-0.007	2435	0.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1025578	0.74	985323	104.09	70	120	
72	Ge	733437	0.47	693391	105.78	70	120	
115	In	7420782	0.49	7239973	102.50	70	120	
209	Bi	17883652	0.59	17115037	104.49	70	120	

Method Blank Report

Date Acquired	8/11/16 5:02 PM	Sample Name	MB-76748
Data Batch	160811.b	Comment	MBLKICPMS_TSDOD1
Data File Name	089_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.018	7	17.32		
9	Be	45	0.009	1	173.21		
11	B	45	80.686	1373	10.92		FAIL
23	Na	45	50.591	84740	2.19		FAIL
24	Mg	45	3.121	2608	1.41		
27	Al	45	-1.557	1996	1.85		
39	K	45	15.065	48766	1.39		
44	Ca	45	10.737	1011	4.46		
47	Ti	45	0.593	93	117.60		
51	V	45	0.211	3480	3.57		
52	Cr	45	0.122	1862	7.25		
55	Mn	45	0.327	4765	1.67		
56	Fe	45	10.672	62245	1.20		
59	Co	72	0.001	148	30.46		
60	Ni	72	-0.922	524	15.88		
63	Cu	72	-1.074	1491	4.88		
66	Zn	72	-0.389	2026	0.25		
75	As	72	0.042	172	8.10		
78	Se	72	-0.212	56	14.99		
88	Sr	115	0.029	978	4.70		
95	Mo	115	0.060	314	6.21		
107	Ag	115	0.009	171	13.82		
111	Cd	115	0.002	31	26.97		
118	Sn	115	4.088	20822	0.59		J
121	Sb	115	-0.001	264	18.28		
137	Ba	115	0.041	169	9.33		
205	Tl	209	0.007	679	7.95		
208	Pb	209	0.054	4934	1.30		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1045871	0.34	985323	106.14	70	120	
72	Ge	747931	0.60	693391	107.87	70	120	
115	In	7620689	1.15	7239973	105.26	70	120	
209	Bi	18305545	0.13	17115037	106.96	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 17:04	Sample Name	LCS-76748
Data Batch	160811.b	Comment	LCS ICPMS_TSDOD1
Data File Name	090_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	192.880	4651	0.96	200	96.4	80	120	
9	Be	45	199.735	6889	0.97	200	99.9	80	120	
11	B	45	257.063	4164	4.41	200	128.5	80	120	
23	Na	45	5136.368	4278203	0.65	1000	513.6	80	120	Fail
24	Mg	45	5106.332	2118707	0.71	1000	510.6	80	120	Fail
27	Al	45	987.081	155815	0.36	1000	98.7	80	120	
39	K	45	5229.136	2088074	0.81	1000	522.9	80	120	Fail
44	Ca	45	4802.106	110135	0.74	1000	480.2	80	120	Fail
47	Ti	45	199.024	30904	2.73	200	99.5	80	120	
51	V	45	206.439	1008187	0.81	200	103.2	80	120	
52	Cr	45	208.995	1219530	1.12	200	104.5	80	120	
55	Mn	45	203.934	706166	0.49	200	102.0	80	120	
56	Fe	45	1017.089	5161314	0.42	1000	101.7	80	120	
59	Co	72	210.746	1931306	0.95	200	105.4	80	120	
60	Ni	72	207.715	525983	0.98	200	103.9	80	120	
63	Cu	72	206.224	1447495	0.25	200	103.1	80	120	
66	Zn	72	202.178	229398	0.75	200	101.1	80	120	
75	As	72	203.288	168124	1.01	200	101.6	80	120	
78	Se	72	197.460	10970	2.99	200	98.7	80	120	
88	Sr	115	201.776	937059	1.03	200	100.9	80	120	
95	Mo	115	202.630	825282	0.48	200	101.3	80	120	
107	Ag	115	205.667	2510377	1.01	200	102.8	80	120	
111	Cd	115	205.439	374215	0.56	200	102.7	80	120	
118	Sn	115	212.174	869527	0.43	200	106.1	80	120	
121	Sb	115	200.895	1160871	1.50	200	100.4	80	120	
137	Ba	115	203.015	406803	1.63	200	101.5	80	120	
205	Tl	209	209.648	6115456	1.66	200	104.8	80	120	
208	Pb	209	205.238	8156181	0.15	200	102.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1042473	0.64	985323	105.80	70	120	
72	Ge	737510	0.48	693391	106.36	70	120	
115	In	7416619	1.24	7239973	102.44	70	120	
209	Bi	18052898	0.64	17115037	105.48	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 17:06	Sample Name	LCSD-76748
Data Batch	160811.b	Comment	LCSDICPMS_TSDOD1
Data File Name	091_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	194.819	4657	3.09	200	97.4	80	120	
9	Be	45	193.572	6619	1.29	200	96.8	80	120	
11	B	45	262.551	4213	5.32	200	131.3	80	120	
23	Na	45	5084.894	4199237	0.54	1000	508.5	80	120	Fail
24	Mg	45	5034.123	2070721	0.46	1000	503.4	80	120	Fail
27	Al	45	970.640	151937	0.70	1000	97.1	80	120	
39	K	45	5124.506	2029476	0.29	1000	512.5	80	120	Fail
44	Ca	45	4810.383	109375	0.16	1000	481.0	80	120	Fail
47	Ti	45	197.529	30407	1.53	200	98.8	80	120	
51	V	45	204.296	989168	0.63	200	102.1	80	120	
52	Cr	45	207.299	1199215	0.20	200	103.6	80	120	
55	Mn	45	201.756	692663	0.98	200	100.9	80	120	
56	Fe	45	1004.982	5055996	0.48	1000	100.5	80	120	
59	Co	72	210.697	1910574	0.55	200	105.3	80	120	
60	Ni	72	205.850	515851	0.73	200	102.9	80	120	
63	Cu	72	203.462	1413394	1.16	200	101.7	80	120	
66	Zn	72	200.969	225655	0.32	200	100.5	80	120	
75	As	72	201.857	165188	0.50	200	100.9	80	120	
78	Se	72	198.887	10935	1.20	200	99.4	80	120	
88	Sr	115	199.224	914628	0.24	200	99.6	80	120	
95	Mo	115	202.366	814728	0.26	200	101.2	80	120	
107	Ag	115	205.050	2474084	0.31	200	102.5	80	120	
111	Cd	115	201.609	362963	1.00	200	100.8	80	120	
118	Sn	115	210.205	851592	0.10	200	105.1	80	120	
121	Sb	115	197.183	1126497	0.89	200	98.6	80	120	
137	Ba	115	198.724	393643	0.72	200	99.4	80	120	
205	Tl	209	207.659	5984205	0.68	200	103.8	80	120	
208	Pb	209	204.912	8044159	0.50	200	102.5	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1033502	0.52	985323	104.89	70	120	
72	Ge	729822	0.95	693391	105.25	70	120	
115	In	7331202	1.24	7239973	101.26	70	120	
209	Bi	17837617	1.83	17115037	104.22	70	120	

Sample Report

Date Acquired	8/11/16 5:10 PM	Sample Name	1607337-10A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	093_ARF.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	57.748	1361	2.12	2000	>RL
9	Be	45	2.550	86	4.19	2000	>RL
11	B	45	139.021	2233	4.66	2000	>RL
23	Na	45	1856.703	1532785	1.39	25000	>RL
24	Mg	45	13912.318	5619656	1.52	25000	>RL
27	Al	45	58061.457	8800642	0.87	10000	OUTCAL
39	K	45	13820.947	5307190	3.19	25000	>RL
44	Ca	45	235359.598	5221468	4.09	25000	OUTCAL
47	Ti	45	190.130	28753	1.29	2000	>RL
51	V	45	104.286	497220	0.76	2000	>RL
52	Cr	45	61.403	349753	0.59	2000	>RL
55	Mn	45	1300.517	4367121	1.08	2000	>RL
56	Fe	45	65373.811	322609756	0.15	10000	OUTCAL
59	Co	72	38.922	339129	0.76	2000	>RL
60	Ni	72	38.547	94980	1.82	2000	>RL
63	Cu	72	10.067	75265	1.15	2000	>RL
66	Zn	72	144.134	156095	0.44	2000	>RL
75	As	72	19.271	15264	0.95	2000	>RL
78	Se	72	5.595	357	3.09	2000	>RL
88	Sr	115	499.203	2207541	0.60	2000	>RL
95	Mo	115	2.118	8278	2.42	2000	>RL
107	Ag	115	0.071	879	5.81	500	
111	Cd	115	0.361	650	9.12	2000	
118	Sn	115	5.049	23047	0.81	2000	>RL
121	Sb	115	0.386	2375	1.70	500	
137	Ba	115	459.277	876709	0.34	2000	>RL
205	Tl	209	0.514	14554	2.13	2000	
208	Pb	209	28.855	1081043	0.61	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1015310	0.48	985323	103.04	70	120	
72	Ge	700999	0.97	693391	101.10	70	120	
115	In	7066969	1.99	7239973	97.61	70	120	
209	Bi	16983880	0.35	17115037	99.23	70	120	

Dilution Sample (Dil) Report

Date Acquired	8/11/2016 17:12	Sample Name	1607337-10A SD
Data Batch	160811.b	Comment	SD ICPMS_TSDOD1
Data File Name	094_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	11.952	286	3.67	57.7	103.5	110	90	Good
9	Be	45	0.577	20	12.80	2.6	113.1	110	90	
11	B	45	78.495	1296	2.78	139.0	282.3	110	90	
23	Na	45	411.204	370804	0.50	1856.7	110.7	110	90	
24	Mg	45	2997.210	1208183	0.05	13912.3	107.7	110	90	Good
27	Al	45	12104.663	1831182	0.02	58061.5	104.2	110	90	Good
39	K	45	2845.618	1122375	0.21	13820.9	102.9	110	90	Good
44	Ca	45	49825.319	1102789	0.32	235359.6	105.8	110	90	Good
47	Ti	45	37.955	5724	7.05	190.1	99.8	110	90	Good
51	V	45	21.645	104776	0.86	104.3	103.8	110	90	Good
52	Cr	45	12.937	74353	0.48	61.4	105.3	110	90	Good
55	Mn	45	272.778	916083	0.29	1300.5	104.9	110	90	Good
56	Fe	45	13912.510	68464006	0.74	65373.8	106.4	110	90	Good
59	Co	72	8.144	73091	0.89	38.9	104.6	110	90	Good
60	Ni	72	7.181	20458	1.65	38.5	93.1	110	90	Good
63	Cu	72	1.227	17127	0.20	10.1	60.9	110	90	
66	Zn	72	29.441	34689	0.68	144.1	102.1	110	90	Good
75	As	72	3.902	3284	0.91	19.3	101.3	110	90	Good
78	Se	72	0.989	119	14.88	5.6	88.4	110	90	
88	Sr	115	101.038	457886	0.96	499.2	101.2	110	90	Good
95	Mo	115	0.487	1992	4.36	2.1	114.8	110	90	
107	Ag	115	0.025	352	4.27	0.1	174.6	110	90	
111	Cd	115	0.077	162	16.48	0.4	106.6	110	90	Good
118	Sn	115	0.448	5270	1.86	5.0	44.3	110	90	
121	Sb	115	0.090	767	8.05	0.4	117.2	110	90	
137	Ba	115	94.579	184821	0.57	459.3	103.0	110	90	Good
205	Tl	209	0.106	3582	2.25	0.5	103.4	110	90	Good
208	Pb	209	5.674	228665	0.66	28.9	98.3	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1012355	0.24	985323	102.74	70	120	
72	Ge	720988	0.24	693391	103.98	70	120	
115	In	7230855	0.97	7239973	99.87	70	120	
209	Bi	18094336	1.19	17115037	105.72	70	120	

Sample Report

Date Acquired	8/11/16 5:14 PM	Sample Name	1607337-14A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	095SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	74.157	1778	1.27	2000	>RL
9	Be	45	2.679	92	11.35	2000	>RL
11	B	45	152.325	2484	8.78	2000	>RL
23	Na	45	1918.228	1611254	0.44	25000	>RL
24	Mg	45	16866.892	6938172	0.94	25000	>RL
27	Al	45	84017.522	12967460	1.29	10000	OUTCAL
39	K	45	18014.320	7030653	1.32	25000	>RL
44	Ca	45	80398.326	1816979	0.78	25000	OUTCAL
47	Ti	45	268.061	41282	1.91	2000	>RL
51	V	45	120.881	586520	0.40	2000	>RL
52	Cr	45	73.150	424103	1.08	2000	>RL
55	Mn	45	667.595	2284608	0.34	2000	>RL
56	Fe	45	75060.816	377207007	0.77	10000	OUTCAL
59	Co	72	26.037	233362	0.53	2000	>RL
60	Ni	72	44.427	112155	0.63	2000	>RL
63	Cu	72	90.964	629042	0.39	2000	>RL
66	Zn	72	312.185	344986	0.94	2000	>RL
75	As	72	23.266	18927	0.45	2000	>RL
78	Se	72	5.455	360	3.56	2000	>RL
88	Sr	115	449.659	2036374	0.46	2000	>RL
95	Mo	115	2.535	10128	3.49	2000	>RL
107	Ag	115	0.171	2097	3.74	500	
111	Cd	115	0.682	1237	4.74	2000	>RL
118	Sn	115	6.566	29638	1.05	2000	>RL
121	Sb	115	2.867	16419	0.62	500	>RL
137	Ba	115	639.059	1249088	0.39	2000	>RL
205	Tl	209	0.713	20578	2.70	2000	
208	Pb	209	182.436	7012872	0.31	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1033957	0.52	985323	104.94	70	120	
72	Ge	720986	0.82	693391	103.98	70	120	
115	In	7235774	1.59	7239973	99.94	70	120	
209	Bi	17464057	1.73	17115037	102.04	70	120	

Sample Report

Date Acquired	8/11/16 5:16 PM	Sample Name	1607337-15A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	096SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	68.802	1606	2.72	2000	>RL
9	Be	45	1.892	63	7.46	2000	>RL
11	B	45	194.796	3067	4.15	2000	>RL
23	Na	45	7239.277	5805079	0.93	25000	>RL
24	Mg	45	14558.669	5830157	1.73	25000	>RL
27	Al	45	66428.661	9981134	1.76	10000	OUTCAL
39	K	45	13070.399	4977545	0.51	25000	>RL
44	Ca	45	276068.786	6071918	0.70	25000	OUTCAL
47	Ti	45	197.224	29566	0.75	2000	>RL
51	V	45	110.388	521618	0.51	2000	>RL
52	Cr	45	60.933	344092	0.80	2000	>RL
55	Mn	45	282.192	942139	0.46	2000	>RL
56	Fe	45	54894.625	268569740	0.87	10000	OUTCAL
59	Co	72	14.001	122212	0.42	2000	>RL
60	Ni	72	27.247	68000	1.19	2000	>RL
63	Cu	72	14.738	106354	1.32	2000	>RL
66	Zn	72	122.515	133179	0.45	2000	>RL
75	As	72	19.181	15210	0.83	2000	>RL
78	Se	72	4.072	277	4.01	2000	>RL
88	Sr	115	1102.907	4915420	0.19	2000	>RL
95	Mo	115	1.376	5442	3.42	2000	
107	Ag	115	0.065	820	6.79	500	
111	Cd	115	0.246	457	23.05	2000	
118	Sn	115	5.715	25840	2.01	2000	>RL
121	Sb	115	0.796	4672	5.22	500	
137	Ba	115	798.669	1536784	0.26	2000	>RL
205	Tl	209	0.456	12893	2.76	2000	
208	Pb	209	87.797	3266250	1.14	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1006593	0.77	985323	102.16	70	120	
72	Ge	701755	0.59	693391	101.21	70	120	
115	In	7123407	1.90	7239973	98.39	70	120	
209	Bi	16893710	1.20	17115037	98.71	70	120	

Sample Report

Date Acquired	8/11/16 5:18 PM	Sample Name	1607337-16A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	097SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	64.065	1508	2.02	2000	>RL
9	Be	45	1.678	57	16.01	2000	>RL
11	B	45	170.452	2716	4.61	2000	>RL
23	Na	45	6893.703	5572984	3.29	25000	>RL
24	Mg	45	9308.889	3757248	0.64	25000	>RL
27	Al	45	38758.689	5870305	0.47	10000	OUTCAL
39	K	45	11103.107	4267469	0.45	25000	>RL
44	Ca	45	195002.152	4322523	0.66	25000	OUTCAL
47	Ti	45	118.714	17937	1.40	2000	>RL
51	V	45	65.633	313517	0.34	2000	>RL
52	Cr	45	42.289	241002	0.27	2000	>RL
55	Mn	45	82.814	281133	0.98	2000	>RL
56	Fe	45	53235.464	262479270	1.40	10000	OUTCAL
59	Co	72	5.693	49942	0.86	2000	>RL
60	Ni	72	11.222	29696	0.78	2000	>RL
63	Cu	72	5.952	48196	0.73	2000	>RL
66	Zn	72	76.030	83815	1.24	2000	>RL
75	As	72	14.554	11611	0.80	2000	>RL
78	Se	72	3.602	254	13.75	2000	>RL
88	Sr	115	1292.602	5747802	0.88	2000	>RL
95	Mo	115	1.820	7164	2.11	2000	
107	Ag	115	0.031	423	12.67	500	
111	Cd	115	0.035	86	11.90	2000	
118	Sn	115	5.266	24025	0.54	2000	>RL
121	Sb	115	0.125	943	5.51	500	
137	Ba	115	96.216	184780	0.48	2000	>RL
205	Tl	209	0.191	5838	2.23	2000	
208	Pb	209	25.511	982587	1.06	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1014388	0.29	985323	102.95	70	120	
72	Ge	704157	0.47	693391	101.55	70	120	
115	In	7106923	1.78	7239973	98.16	70	120	
209	Bi	17456248	1.62	17115037	101.99	70	120	

Sample Report

Date Acquired	8/11/16 5:20 PM	Sample Name	1607337-17A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	098SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	48.402	1137	3.18	2000	>RL
9	Be	45	1.763	59	15.66	2000	>RL
11	B	45	164.711	2619	4.56	2000	>RL
23	Na	45	5420.501	4378514	0.28	25000	>RL
24	Mg	45	9057.410	3645471	0.41	25000	>RL
27	Al	45	38636.303	5835310	0.30	10000	OUTCAL
39	K	45	10913.362	4183403	0.21	25000	>RL
44	Ca	45	119473.052	2641240	0.64	25000	OUTCAL
47	Ti	45	132.558	19974	1.61	2000	>RL
51	V	45	70.825	337188	0.61	2000	>RL
52	Cr	45	46.058	261651	0.31	2000	>RL
55	Mn	45	86.301	292027	1.59	2000	>RL
56	Fe	45	71549.819	351784590	1.22	10000	OUTCAL
59	Co	72	8.707	76613	0.73	2000	>RL
60	Ni	72	12.475	32841	0.15	2000	>RL
63	Cu	72	5.548	45684	0.04	2000	>RL
66	Zn	72	107.134	117618	0.46	2000	>RL
75	As	72	17.313	13844	0.37	2000	>RL
78	Se	72	4.418	298	3.67	2000	>RL
88	Sr	115	881.605	3952884	0.74	2000	>RL
95	Mo	115	2.750	10881	1.05	2000	>RL
107	Ag	115	0.027	376	4.89	500	
111	Cd	115	0.025	69	16.99	2000	
118	Sn	115	5.161	23807	0.86	2000	>RL
121	Sb	115	0.096	790	5.53	500	
137	Ba	115	97.746	189276	0.65	2000	>RL
205	Tl	209	0.176	5340	3.70	2000	
208	Pb	209	27.217	1032941	0.56	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1011607	1.06	985323	102.67	70	120	
72	Ge	706972	0.47	693391	101.96	70	120	
115	In	7165396	1.42	7239973	98.97	70	120	
209	Bi	17209017	2.31	17115037	100.55	70	120	

Sample Report

Date Acquired	8/11/16 5:22 PM	Sample Name	1607337-18A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	099SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	64.862	1541	2.69	2000	>RL
9	Be	45	2.695	92	4.41	2000	>RL
11	B	45	139.293	2257	3.59	2000	>RL
23	Na	45	1650.724	1379013	0.22	25000	>RL
24	Mg	45	14634.409	5961829	0.82	25000	>RL
27	Al	45	76074.016	11629986	2.06	10000	OUTCAL
39	K	45	17067.537	6599355	0.63	25000	>RL
44	Ca	45	62831.632	1406427	0.41	25000	OUTCAL
47	Ti	45	260.397	39714	0.64	2000	>RL
51	V	45	110.679	532025	0.70	2000	>RL
52	Cr	45	69.407	398550	0.62	2000	>RL
55	Mn	45	604.653	2049667	1.39	2000	>RL
56	Fe	45	71741.935	357063515	0.52	10000	OUTCAL
59	Co	72	23.758	211038	1.10	2000	>RL
60	Ni	72	39.778	99809	0.87	2000	>RL
63	Cu	72	40.193	280305	0.21	2000	>RL
66	Zn	72	270.567	296617	0.34	2000	>RL
75	As	72	24.856	20028	1.62	2000	>RL
78	Se	72	5.147	340	8.07	2000	>RL
88	Sr	115	393.840	1745184	0.43	2000	>RL
95	Mo	115	2.251	8811	2.57	2000	>RL
107	Ag	115	0.183	2187	1.59	500	
111	Cd	115	0.600	1067	10.36	2000	>RL
118	Sn	115	6.385	28292	1.00	2000	>RL
121	Sb	115	4.041	22540	3.08	500	>RL
137	Ba	115	622.745	1190995	0.47	2000	>RL
205	Tl	209	0.640	18421	1.08	2000	
208	Pb	209	303.425	11600675	0.52	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023998	0.78	985323	103.93	70	120	
72	Ge	714526	0.90	693391	103.05	70	120	
115	In	7079078	0.85	7239973	97.78	70	120	
209	Bi	17370339	0.88	17115037	101.49	70	120	

Sample Report

Date Acquired	8/11/16 5:24 PM	Sample Name	1607337-19A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	100SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	70.227	1663	2.85	2000	>RL
9	Be	45	1.973	67	1.49	2000	>RL
11	B	45	170.905	2741	3.76	2000	>RL
23	Na	45	6289.431	5123065	1.73	25000	>RL
24	Mg	45	15563.577	6324279	2.29	25000	>RL
27	Al	45	69032.062	10525533	1.20	10000	OUTCAL
39	K	45	13185.711	5094863	1.29	25000	>RL
44	Ca	45	267814.390	5977035	1.51	25000	OUTCAL
47	Ti	45	245.633	37365	1.46	2000	>RL
51	V	45	124.918	598647	0.38	2000	>RL
52	Cr	45	64.025	366796	1.30	2000	>RL
55	Mn	45	365.791	1238145	0.81	2000	>RL
56	Fe	45	60635.374	301011855	0.60	10000	OUTCAL
59	Co	72	17.634	155304	1.05	2000	>RL
60	Ni	72	31.863	79790	1.08	2000	>RL
63	Cu	72	19.253	137573	0.81	2000	>RL
66	Zn	72	148.150	162042	0.96	2000	>RL
75	As	72	20.201	16160	1.04	2000	>RL
78	Se	72	4.747	316	4.56	2000	>RL
88	Sr	115	1085.971	4855725	0.33	2000	>RL
95	Mo	115	1.488	5897	3.24	2000	
107	Ag	115	0.072	909	5.85	500	
111	Cd	115	0.372	678	10.60	2000	
118	Sn	115	5.738	26012	1.15	2000	>RL
121	Sb	115	0.380	2370	2.60	500	
137	Ba	115	1514.374	2923187	0.40	2000	>RL
205	Tl	209	0.515	14530	0.75	2000	
208	Pb	209	36.452	1361025	0.19	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1021345	0.22	985323	103.66	70	120	
72	Ge	708205	0.48	693391	102.14	70	120	
115	In	7144998	0.76	7239973	98.69	70	120	
209	Bi	16935735	0.96	17115037	98.95	70	120	

Sample Report

Date Acquired	8/11/16 5:26 PM	Sample Name	1607337-20A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	101SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	64.360	1526	4.22	2000	>RL
9	Be	45	1.854	63	30.66	2000	>RL
11	B	45	173.610	2786	2.34	2000	>RL
23	Na	45	8107.485	6597141	1.78	25000	>RL
24	Mg	45	10529.909	4282423	0.88	25000	>RL
27	Al	45	43698.678	6668556	1.47	10000	OUTCAL
39	K	45	12725.129	4922036	0.36	25000	>RL
44	Ca	45	214316.305	4786770	0.77	25000	OUTCAL
47	Ti	45	135.049	20559	2.16	2000	>RL
51	V	45	80.216	385554	0.70	2000	>RL
52	Cr	45	49.742	285423	1.21	2000	>RL
55	Mn	45	110.248	375930	0.53	2000	>RL
56	Fe	45	80716.424	400973940	2.42	10000	OUTCAL
59	Co	72	7.197	63389	1.32	2000	>RL
60	Ni	72	13.326	34916	0.68	2000	>RL
63	Cu	72	8.209	63523	0.87	2000	>RL
66	Zn	72	96.694	106451	0.95	2000	>RL
75	As	72	23.157	18484	1.73	2000	>RL
78	Se	72	5.124	335	11.24	2000	>RL
88	Sr	115	1379.391	6090789	1.32	2000	>RL
95	Mo	115	3.262	12701	0.64	2000	>RL
107	Ag	115	0.022	314	11.68	500	
111	Cd	115	0.039	92	13.69	2000	
118	Sn	115	5.499	24761	1.29	2000	>RL
121	Sb	115	0.192	1308	5.20	500	
137	Ba	115	132.367	252408	0.37	2000	>RL
205	Tl	209	0.253	7544	1.16	2000	
208	Pb	209	27.994	1070353	0.56	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1022162	1.03	985323	103.74	70	120	
72	Ge	707392	0.51	693391	102.02	70	120	
115	In	7056097	0.30	7239973	97.46	70	120	
209	Bi	17332502	1.06	17115037	101.27	70	120	

Sample Report

Date Acquired	8/11/16 5:28 PM	Sample Name	1607337-21A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	102SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	61.922	1463	2.32	2000	>RL
9	Be	45	1.623	55	12.60	2000	>RL
11	B	45	168.473	2697	5.28	2000	>RL
23	Na	45	5567.025	4526643	0.24	25000	>RL
24	Mg	45	9603.564	3891797	0.29	25000	>RL
27	Al	45	40206.057	6114805	2.28	10000	OUTCAL
39	K	45	11579.574	4466822	0.62	25000	>RL
44	Ca	45	135459.944	3015051	0.64	25000	OUTCAL
47	Ti	45	137.102	20797	0.43	2000	>RL
51	V	45	76.160	364907	0.95	2000	>RL
52	Cr	45	48.639	278148	0.72	2000	>RL
55	Mn	45	113.642	386033	1.44	2000	>RL
56	Fe	45	71806.339	355492937	1.95	10000	OUTCAL
59	Co	72	10.709	95737	1.36	2000	>RL
60	Ni	72	14.582	38546	1.00	2000	>RL
63	Cu	72	6.047	49824	1.21	2000	>RL
66	Zn	72	115.945	129175	0.71	2000	>RL
75	As	72	17.575	14280	0.70	2000	>RL
78	Se	72	4.313	297	2.38	2000	>RL
88	Sr	115	1402.119	6357103	1.20	2000	>RL
95	Mo	115	3.023	12089	1.05	2000	>RL
107	Ag	115	0.023	337	7.86	500	
111	Cd	115	0.021	62	12.38	2000	
118	Sn	115	5.108	23860	2.40	2000	>RL
121	Sb	115	0.084	731	11.76	500	
137	Ba	115	128.192	251054	0.61	2000	>RL
205	Tl	209	0.195	5925	4.96	2000	
208	Pb	209	25.924	992906	0.54	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1018531	1.09	985323	103.37	70	120	
72	Ge	718496	0.09	693391	103.62	70	120	
115	In	7248308	2.13	7239973	100.12	70	120	
209	Bi	17361858	1.58	17115037	101.44	70	120	

Sample Report

Date Acquired	8/11/16 5:30 PM	Sample Name	1607337-22A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	103SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	64.562	1550	2.04	2000	>RL
9	Be	45	2.705	93	13.04	2000	>RL
11	B	45	128.911	2118	7.01	2000	>RL
23	Na	45	1804.811	1520220	0.53	25000	>RL
24	Mg	45	14811.766	6099872	2.77	25000	>RL
27	Al	45	72649.138	11226572	0.79	10000	OUTCAL
39	K	45	16163.410	6319777	1.70	25000	>RL
44	Ca	45	74120.317	1677057	1.01	25000	OUTCAL
47	Ti	45	293.945	45319	1.67	2000	>RL
51	V	45	110.747	538169	0.08	2000	>RL
52	Cr	45	66.427	385657	0.65	2000	>RL
55	Mn	45	582.231	1995249	0.93	2000	>RL
56	Fe	45	67303.570	338624698	0.83	10000	OUTCAL
59	Co	72	23.059	206969	0.80	2000	>RL
60	Ni	72	38.515	97734	0.95	2000	>RL
63	Cu	72	38.237	269861	0.94	2000	>RL
66	Zn	72	256.447	284190	1.26	2000	>RL
75	As	72	22.090	18000	0.54	2000	>RL
78	Se	72	5.120	342	4.13	2000	>RL
88	Sr	115	407.679	1815481	0.51	2000	>RL
95	Mo	115	2.333	9177	2.11	2000	>RL
107	Ag	115	0.144	1740	5.29	500	
111	Cd	115	0.565	1012	4.61	2000	>RL
118	Sn	115	6.199	27699	2.66	2000	>RL
121	Sb	115	3.164	17793	1.85	500	>RL
137	Ba	115	411.889	791778	0.49	2000	>RL
205	Tl	209	0.611	17785	0.71	2000	
208	Pb	209	267.217	10316410	0.74	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1035127	0.40	985323	105.05	70	120	
72	Ge	721943	1.26	693391	104.12	70	120	
115	In	7116050	1.89	7239973	98.29	70	120	
209	Bi	17538809	0.56	17115037	102.48	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	8/11/2016 17:32	Sample Name	1607337-10A PDS
Data Batch	160811.b	Comment	PDS ICPMS_TSDOD1
Data File Name	104_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	239.731	5696	2.78	57.7	200	91.0	75	125	
9	Be	45	193.973	6595	1.89	2.6	200	95.7	75	125	
11	B	45	286.723	4568	2.47	139.0	200	73.9	75	125	Fail
23	Na	45	6837.605	5601465	1.53	1856.7	5000	99.6	75	125	
24	Mg	45	18842.931	7704365	1.62	13912.3	5000	98.6	75	125	
27	Al	45	63278.972	9709385	0.83	58061.5	5000	104.4	75	125	
39	K	45	18794.291	7290683	2.19	13820.9	5000	99.5	75	125	
44	Ca	45	########	5466551	2.22	235359.6	5000	160.2	75	125	Fail
47	Ti	45	381.651	58412	0.80	190.1	200	95.8	75	125	
51	V	45	305.877	1471601	0.80	104.3	200	100.8	75	125	
52	Cr	45	266.759	1534179	0.67	61.4	200	102.7	75	125	
55	Mn	45	1501.117	5101754	0.74	1300.5	200	100.3	75	125	
56	Fe	45	71486.435	357065275	1.78	65373.8	5000	122.3	75	125	
59	Co	72	244.536	2160182	0.58	38.9	200	102.8	75	125	
60	Ni	72	234.078	571050	0.35	38.5	200	97.8	75	125	
63	Cu	72	199.679	1351361	0.36	10.1	200	94.8	75	125	
66	Zn	72	335.812	365740	0.34	144.1	200	95.8	75	125	
75	As	72	216.513	172603	0.30	19.3	200	98.6	75	125	
78	Se	72	196.655	10533	1.21	5.6	200	95.5	75	125	
88	Sr	115	709.576	3160321	1.34	499.2	200	105.2	75	125	
95	Mo	115	199.824	780780	0.86	2.1	200	98.9	75	125	
107	Ag	115	195.127	2285399	0.80	0.1	200	97.5	75	125	
111	Cd	115	191.298	334343	1.47	0.4	200	95.5	75	125	
118	Sn	115	206.077	810517	1.15	5.0	200	100.5	75	125	
121	Sb	115	199.489	1106048	0.26	0.4	200	99.6	75	125	
137	Ba	115	671.329	1290482	0.14	459.3	200	106.0	75	125	
205	Tl	209	201.861	5616891	0.53	0.5	200	100.7	75	125	
208	Pb	209	227.167	8610368	0.57	28.9	200	99.2	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1027895	1.75	985323	104.32	70	120	
72	Ge	710948	0.45	693391	102.53	70	120	
115	In	7118544	2.89	7239973	98.32	70	120	
209	Bi	17219838	0.86	17115037	100.61	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 17:34	Sample Name	1607337-10A MS
Data Batch	160811.b	Comment	MS ICPMS_TSDOD1
Data File Name	105_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	240.479	5763	1.63	57.7	200	91.4	80	120	
9	Be	45	190.777	6541	0.59	2.6	200	94.1	80	120	
11	B	45	305.042	4894	5.90	139.0	200	83.0	80	120	
23	Na	45	6560.847	5420595	2.24	1856.7	1000	470.4	80	120	Fail
24	Mg	45	18349.723	7565345	0.56	13912.3	1000	443.7	80	120	Fail
27	Al	45	59029.369	9132290	3.11	58061.5	1000	96.8	80	120	
39	K	45	19065.776	7455911	0.91	13820.9	1000	524.5	80	120	Fail
44	Ca	45	########	5135401	1.31	235359.6	1000	-858.1	80	120	Fail
47	Ti	45	398.590	61524	0.85	190.1	200	104.2	80	120	
51	V	45	310.278	1505207	0.82	104.3	200	103.0	80	120	
52	Cr	45	264.492	1533997	0.87	61.4	200	101.5	80	120	
55	Mn	45	1300.517	4457508	0.35	1300.5	200	0.0	80	120	Fail
56	Fe	45	71202.257	358660946	0.80	65373.8	1000	582.8	80	120	Fail
59	Co	72	232.253	2058835	0.20	38.9	200	96.7	80	120	
60	Ni	72	235.139	575588	0.99	38.5	200	98.3	80	120	
63	Cu	72	206.759	1403790	0.77	10.1	200	98.3	80	120	
66	Zn	72	335.476	366644	0.36	144.1	200	95.7	80	120	
75	As	72	220.066	176039	0.58	19.3	200	100.4	80	120	
78	Se	72	202.586	10886	1.31	5.6	200	98.5	80	120	
88	Sr	115	699.842	3062437	0.86	499.2	200	100.3	80	120	
95	Mo	115	199.566	766331	1.09	2.1	200	98.7	80	120	
107	Ag	115	202.117	2326049	0.84	0.1	200	101.0	80	120	
111	Cd	115	201.164	345459	0.62	0.4	200	100.4	80	120	
118	Sn	115	212.797	822296	0.87	5.0	200	103.9	80	120	
121	Sb	115	76.992	419670	0.29	0.4	200	38.3	80	120	Fail
137	Ba	115	901.003	1702185	0.72	459.3	200	220.9	80	120	Fail
205	Tl	209	212.732	5802597	0.71	0.5	200	106.1	80	120	
208	Pb	209	234.417	8710384	0.71	28.9	200	102.8	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1036345	0.33	985323	105.18	70	120	
72	Ge	713429	0.71	693391	102.89	70	120	
115	In	6992817	1.22	7239973	96.59	70	120	
209	Bi	16882227	1.75	17115037	98.64	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 17:36	Sample Name	1607337-10A MSD
Data Batch	160811.b	Comment	MSD ICPMS_TSDOD1
Data File Name	106_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	239.744	5785	2.05	57.7	200	91.0	80	120	
9	Be	45	196.757	6793	0.70	2.6	200	97.1	80	120	
11	B	45	301.623	4874	1.96	139.0	200	81.3	80	120	
23	Na	45	6589.830	5482255	0.75	1856.7	1000	473.3	80	120	Fail
24	Mg	45	18472.478	7668757	0.40	13912.3	1000	456.0	80	120	Fail
27	Al	45	59619.088	9287953	0.11	58061.5	1000	155.8	80	120	Fail
39	K	45	19008.343	7485046	2.08	13820.9	1000	518.7	80	120	Fail
44	Ca	45	########	5169120	0.63	235359.6	1000	-866.8	80	120	Fail
47	Ti	45	394.951	61383	0.59	190.1	200	102.4	80	120	
51	V	45	308.258	1505764	0.47	104.3	200	102.0	80	120	
52	Cr	45	268.032	1565257	0.45	61.4	200	103.3	80	120	
55	Mn	45	1342.274	4632346	0.21	1300.5	200	20.9	80	120	Fail
56	Fe	45	66341.023	336480049	0.91	65373.8	1000	96.7	80	120	
59	Co	72	234.571	2102669	1.05	38.9	200	97.8	80	120	
60	Ni	72	235.057	581844	0.16	38.5	200	98.3	80	120	
63	Cu	72	209.175	1436024	0.67	10.1	200	99.6	80	120	
66	Zn	72	335.196	370444	0.61	144.1	200	95.5	80	120	
75	As	72	219.650	177675	0.79	19.3	200	100.2	80	120	
78	Se	72	201.125	10929	1.04	5.6	200	97.8	80	120	
88	Sr	115	669.401	2997611	0.23	499.2	200	85.1	80	120	
95	Mo	115	196.857	773518	0.85	2.1	200	97.4	80	120	
107	Ag	115	201.111	2368190	0.83	0.1	200	100.5	80	120	
111	Cd	115	201.003	353212	0.30	0.4	200	100.3	80	120	
118	Sn	115	210.889	833853	0.53	5.0	200	102.9	80	120	
121	Sb	115	75.441	420774	0.35	0.4	200	37.5	80	120	Fail
137	Ba	115	723.182	1397863	1.49	459.3	200	132.0	80	120	Fail
205	Tl	209	215.410	5906616	0.63	0.5	200	107.4	80	120	
208	Pb	209	236.077	8818161	0.31	28.9	200	103.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1043514	0.14	985323	105.91	70	120	
72	Ge	721386	0.28	693391	104.04	70	120	
115	In	7155799	1.55	7239973	98.84	70	120	
209	Bi	16969165	0.70	17115037	99.15	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 17:38	Sample Name	CCV5-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	107_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	189.845	4577	1.79	200	94.9	90	110	
9	Be	45	200.332	6908	0.79	200	100.2	90	110	
11	B	45	230.791	3747	3.38	200	115.4	90	110	Fail
23	Na	45	5215.872	4342905	1.13	5000	104.3	90	110	
24	Mg	45	5170.700	2144938	0.97	5000	103.4	90	110	
27	Al	45	4934.669	769874	1.12	5000	98.7	90	110	
39	K	45	5327.892	2126339	0.72	5000	106.6	90	110	
44	Ca	45	5001.396	114652	1.88	5000	100.0	90	110	
47	Ti	45	195.434	30341	1.40	200	97.7	90	110	
51	V	45	206.083	1006280	0.47	200	103.0	90	110	
52	Cr	45	209.641	1223023	0.84	200	104.8	90	110	
55	Mn	45	202.324	700508	0.23	200	101.2	90	110	
56	Fe	45	5075.507	25720801	0.36	5000	101.5	90	110	
59	Co	72	215.113	1952536	0.31	200	107.6	90	110	
60	Ni	72	209.319	524977	0.78	200	104.7	90	110	
63	Cu	72	209.657	1457458	0.99	200	104.8	90	110	
66	Zn	72	204.876	230210	0.21	200	102.4	90	110	
75	As	72	206.689	169305	0.44	200	103.3	90	110	
78	Se	72	204.945	11276	0.72	200	102.5	90	110	
88	Sr	115	200.103	921924	0.53	200	100.1	90	110	
95	Mo	115	204.751	827237	0.79	200	102.4	90	110	
107	Ag	115	211.189	2557244	0.65	200	105.6	90	110	
111	Cd	115	206.805	373683	0.02	200	103.4	90	110	
118	Sn	115	205.197	834383	0.24	200	102.6	90	110	
121	Sb	115	204.174	1170500	0.71	200	102.1	90	110	
137	Ba	115	203.333	404223	0.43	200	101.7	90	110	
205	Tl	209	213.907	6081706	0.96	200	107.0	90	110	
208	Pb	209	209.733	8123187	0.14	200	104.9	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1042417	1.23	985323	105.79	70	120	
72	Ge	730478	0.18	693391	105.35	70	120	
115	In	7357387	1.15	7239973	101.62	70	120	
209	Bi	17594699	0.74	17115037	102.80	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 17:42	Sample Name	LCVL5-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	109LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.275	257	4.38	10	102.8	70	130	
9	Be	45	0.996	35	4.95	1	99.6	70	130	
11	B	45	62.579	1091	2.47	20	312.9	70	130	Fail
23	Na	45	146.444	164911	0.55	100	146.4	70	130	Fail
24	Mg	45	108.533	46704	2.90	100	108.5	70	130	
27	Al	45	107.351	19097	0.46	100	107.4	70	130	
39	K	45	122.443	91385	0.71	100	122.4	70	130	
44	Ca	45	104.300	3165	1.06	100	104.3	70	130	
47	Ti	45	5.493	861	8.83	5	109.9	70	130	
51	V	45	0.976	7257	2.09	1	97.6	70	130	
52	Cr	45	5.484	33395	1.50	5	109.7	70	130	
55	Mn	45	5.379	22338	2.44	5	107.6	70	130	
56	Fe	45	115.079	596108	0.14	100	115.1	70	130	
59	Co	72	5.500	50893	1.42	5	110.0	70	130	
60	Ni	72	5.541	16915	0.71	5	110.8	70	130	
63	Cu	72	5.404	46987	1.66	5	108.1	70	130	
66	Zn	72	5.483	8650	1.62	5	109.7	70	130	
75	As	72	5.517	4728	3.95	5	110.3	70	130	
78	Se	72	5.875	394	7.23	5	117.5	70	130	
88	Sr	115	5.472	25941	1.34	5	109.4	70	130	
95	Mo	115	5.337	21575	0.43	5	106.7	70	130	
107	Ag	115	2.155	26104	1.20	2	107.8	70	130	
111	Cd	115	1.050	1918	2.92	1	105.0	70	130	
118	Sn	115	5.372	25243	0.93	5	107.4	70	130	
121	Sb	115	2.139	12492	1.91	2	106.9	70	130	
137	Ba	115	5.396	10783	1.69	5	107.9	70	130	
205	Tl	209	1.094	32255	1.55	1	109.4	70	130	
208	Pb	209	1.119	46985	0.80	1	111.9	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1051407	0.57	985323	106.71	70	120	
72	Ge	742725	0.83	693391	107.11	70	120	
115	In	7341289	1.32	7239973	101.40	70	120	
209	Bi	17980078	0.74	17115037	105.05	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 17:44	Sample Name	CCB5-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	110_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.047	6	66.7	2	5	
9	Be	45	0.038	2	69.3	0.4	0.3	
11	B	45	41.231	750	8.0	10	10	FailAq FailSoil
23	Na	45	24.105	63167	1.3	50	100	
24	Mg	45	-1.455	708	11.4	50	100	
27	Al	45	-1.843	1961	2.5	50	10	
39	K	45	2.605	44111	0.6	50	100	
44	Ca	45	-3.597	687	6.3	50	100	
47	Ti	45	0.049	9	43.3	4	3	
51	V	45	-0.065	2142	3.0	4	3	
52	Cr	45	-0.027	994	3.3	2	2	
55	Mn	45	-0.969	284	10.6	2	3	
56	Fe	45	2.585	21251	5.0	50	50	
59	Co	72	0.000	147	32.8	2	3	
60	Ni	72	-1.033	244	18.4	2	3	
63	Cu	72	-1.119	1183	6.3	2	2	
66	Zn	72	-1.812	410	4.3	4	2	
75	As	72	0.032	165	8.7	2	2	
78	Se	72	0.040	71	4.8	1	2	
88	Sr	115	0.014	886	1.2	4	3	
95	Mo	115	0.096	456	9.7	2	2	
107	Ag	115	0.020	309	12.1	0.4	1	
111	Cd	115	-0.003	21	24.1	0.4	0.3	
118	Sn	115	-0.630	1011	12.9	4	3	
121	Sb	115	0.027	421	10.0	2	0.8	
137	Ba	115	0.121	324	9.8	2	3	
205	Tl	209	0.020	1053	9.7	2	0.5	
208	Pb	209	0.033	3978	3.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1051406	0.38	985323	106.71	70	120	
72	Ge	754765	0.96	693391	108.85	70	120	
115	In	7431039	0.61	7239973	102.64	70	120	
209	Bi	17821632	1.18	17115037	104.13	70	120	

Sample Report

Date Acquired	8/11/16 5:46 PM	Sample Name	1607337-23A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	111SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	76.635	1854	3.32	2000	>RL
9	Be	45	2.654	92	5.75	2000	>RL
11	B	45	159.135	2615	1.31	2000	>RL
23	Na	45	5104.988	4257443	0.45	25000	>RL
24	Mg	45	18274.435	7587824	1.66	25000	>RL
27	Al	45	81112.860	12635897	2.58	10000	OUTCAL
39	K	45	17644.317	6952614	0.85	25000	>RL
44	Ca	45	213953.961	4879649	0.21	25000	OUTCAL
47	Ti	45	278.612	43317	2.88	2000	>RL
51	V	45	146.318	716153	0.39	2000	>RL
52	Cr	45	74.506	436006	0.54	2000	>RL
55	Mn	45	506.309	1749892	0.69	2000	>RL
56	Fe	45	82784.089	419953006	0.27	10000	OUTCAL
59	Co	72	23.235	208540	1.00	2000	>RL
60	Ni	72	42.024	106380	2.12	2000	>RL
63	Cu	72	24.457	175760	0.98	2000	>RL
66	Zn	72	186.340	207132	0.23	2000	>RL
75	As	72	29.547	24031	0.38	2000	>RL
78	Se	72	5.448	360	5.47	2000	>RL
88	Sr	115	869.847	3912233	0.06	2000	>RL
95	Mo	115	2.495	9905	3.78	2000	>RL
107	Ag	115	0.088	1096	4.14	500	
111	Cd	115	0.540	979	11.44	2000	>RL
118	Sn	115	5.955	27023	1.41	2000	>RL
121	Sb	115	0.995	5826	3.48	500	
137	Ba	115	864.554	1678658	0.86	2000	>RL
205	Tl	209	0.641	18205	1.40	2000	
208	Pb	209	60.394	2282112	0.94	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1043772	0.99	985323	105.93	70	120	
72	Ge	721879	0.26	693391	104.11	70	120	
115	In	7187142	1.16	7239973	99.27	70	120	
209	Bi	17152528	1.49	17115037	100.22	70	120	

Sample Report

Date Acquired	8/11/16 5:48 PM	Sample Name	1607337-24A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	112SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	63.897	1527	3.50	2000	>RL
9	Be	45	1.662	57	7.65	2000	>RL
11	B	45	156.941	2546	2.86	2000	>RL
23	Na	45	7789.058	6387897	1.38	25000	>RL
24	Mg	45	9893.432	4054222	0.34	25000	>RL
27	Al	45	40554.366	6236106	1.67	10000	OUTCAL
39	K	45	10876.440	4245116	0.56	25000	>RL
44	Ca	45	204732.286	4607568	0.12	25000	OUTCAL
47	Ti	45	129.035	19794	2.47	2000	>RL
51	V	45	70.050	339574	0.52	2000	>RL
52	Cr	45	43.781	253291	1.15	2000	>RL
55	Mn	45	69.026	238506	1.14	2000	>RL
56	Fe	45	61019.235	305450992	0.91	10000	OUTCAL
59	Co	72	5.740	51562	1.30	2000	>RL
60	Ni	72	11.728	31655	1.05	2000	>RL
63	Cu	72	5.714	47731	1.19	2000	>RL
66	Zn	72	77.175	87084	1.20	2000	>RL
75	As	72	15.243	12447	1.64	2000	>RL
78	Se	72	4.221	293	4.06	2000	>RL
88	Sr	115	1186.640	5368256	0.86	2000	>RL
95	Mo	115	1.922	7689	2.24	2000	
107	Ag	115	0.025	352	22.36	500	
111	Cd	115	0.036	90	6.41	2000	
118	Sn	115	5.254	24393	0.90	2000	>RL
121	Sb	115	0.113	891	12.09	500	
137	Ba	115	97.636	190761	1.07	2000	>RL
205	Tl	209	0.234	6950	4.77	2000	
208	Pb	209	26.487	1003115	0.78	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1029913	0.37	985323	104.53	70	120	
72	Ge	721052	0.63	693391	103.99	70	120	
115	In	7229429	0.77	7239973	99.85	70	120	
209	Bi	17171148	2.12	17115037	100.33	70	120	

Sample Report

Date Acquired	8/11/16 5:50 PM	Sample Name	1607337-25A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	113SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	56.960	1352	3.05	2000	>RL
9	Be	45	1.980	67	8.70	2000	>RL
11	B	45	153.115	2468	5.65	2000	>RL
23	Na	45	6325.234	5157650	3.16	25000	>RL
24	Mg	45	9833.503	4000746	0.46	25000	>RL
27	Al	45	41182.750	6287415	0.93	10000	OUTCAL
39	K	45	10722.179	4155517	0.46	25000	>RL
44	Ca	45	148548.700	3319328	0.79	25000	OUTCAL
47	Ti	45	143.087	21792	0.30	2000	>RL
51	V	45	77.248	371537	0.35	2000	>RL
52	Cr	45	48.742	279834	0.46	2000	>RL
55	Mn	45	81.918	280354	0.38	2000	>RL
56	Fe	45	73395.300	364776003	1.14	10000	OUTCAL
59	Co	72	10.143	90585	1.24	2000	>RL
60	Ni	72	15.746	41360	1.83	2000	>RL
63	Cu	72	6.192	50751	0.36	2000	>RL
66	Zn	72	118.396	131710	0.62	2000	>RL
75	As	72	17.689	14357	0.75	2000	>RL
78	Se	72	4.421	303	9.40	2000	>RL
88	Sr	115	1168.746	5293897	0.16	2000	>RL
95	Mo	115	2.755	11007	2.55	2000	>RL
107	Ag	115	0.033	448	13.53	500	
111	Cd	115	0.018	58	28.46	2000	
118	Sn	115	5.258	24439	2.47	2000	>RL
121	Sb	115	0.101	827	6.21	500	
137	Ba	115	99.892	195419	0.45	2000	>RL
205	Tl	209	0.224	6708	2.72	2000	
208	Pb	209	21.775	831033	0.48	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1022515	0.27	985323	103.77	70	120	
72	Ge	717715	0.41	693391	103.51	70	120	
115	In	7239272	1.69	7239973	99.99	70	120	
209	Bi	17288587	0.66	17115037	101.01	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 18:04	Sample Name	CCV6-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	120_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	195.221	4614	0.93	200	97.6	90	110	
9	Be	45	202.937	6860	2.14	200	101.5	90	110	
11	B	45	213.066	3397	3.79	200	106.5	90	110	
23	Na	45	5223.480	4263946	0.68	5000	104.5	90	110	
24	Mg	45	5208.615	2118318	1.27	5000	104.2	90	110	
27	Al	45	4990.258	763303	0.12	5000	99.8	90	110	
39	K	45	5365.237	2098822	0.97	5000	107.3	90	110	
44	Ca	45	5056.542	113660	2.44	5000	101.1	90	110	
47	Ti	45	199.396	30350	1.30	200	99.7	90	110	
51	V	45	207.357	992632	1.11	200	103.7	90	110	
52	Cr	45	211.807	1211490	0.61	200	105.9	90	110	
55	Mn	45	203.540	690920	0.78	200	101.8	90	110	
56	Fe	45	5203.526	25853460	0.78	5000	104.1	90	110	
59	Co	72	216.236	1938684	0.21	200	108.1	90	110	
60	Ni	72	210.913	522474	0.62	200	105.5	90	110	
63	Cu	72	209.382	1437709	0.15	200	104.7	90	110	
66	Zn	72	203.482	225859	0.19	200	101.7	90	110	
75	As	72	206.967	167456	0.53	200	103.5	90	110	
78	Se	72	203.981	11085	0.26	200	102.0	90	110	
88	Sr	115	204.484	906993	0.37	200	102.2	90	110	
95	Mo	115	209.600	815299	0.41	200	104.8	90	110	
107	Ag	115	213.788	2492349	0.52	200	106.9	90	110	
111	Cd	115	209.109	363771	0.67	200	104.6	90	110	
118	Sn	115	210.017	822078	0.45	200	105.0	90	110	
121	Sb	115	209.520	1156367	0.08	200	104.8	90	110	
137	Ba	115	210.280	402411	0.47	200	105.1	90	110	
205	Tl	209	214.686	5946806	0.86	200	107.3	90	110	
208	Pb	209	210.709	7950864	0.11	200	105.4	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1021966	1.22	985323	103.72	70	120	
72	Ge	721529	0.15	693391	104.06	70	120	
115	In	7083372	1.49	7239973	97.84	70	120	
209	Bi	17141812	0.77	17115037	100.16	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 18:08	Sample Name	LCVL6-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	122LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.505	261	0.89	10	105.0	70	130	
9	Be	45	0.944	33	13.21	1	94.4	70	130	
11	B	45	46.401	828	4.44	20	232.0	70	130	Fail
23	Na	45	141.922	160188	0.47	100	141.9	70	130	Fail
24	Mg	45	106.692	45661	0.87	100	106.7	70	130	
27	Al	45	104.739	18577	1.41	100	104.7	70	130	
39	K	45	122.346	90807	0.87	100	122.3	70	130	
44	Ca	45	114.859	3388	2.25	100	114.9	70	130	
47	Ti	45	5.713	890	8.27	5	114.3	70	130	
51	V	45	1.032	7487	2.36	1	103.2	70	130	
52	Cr	45	5.583	33777	0.50	5	111.7	70	130	
55	Mn	45	5.265	21816	1.17	5	105.3	70	130	
56	Fe	45	115.207	593273	1.39	100	115.2	70	130	
59	Co	72	5.512	50731	1.02	5	110.2	70	130	
60	Ni	72	5.465	16631	2.32	5	109.3	70	130	
63	Cu	72	5.335	46251	0.65	5	106.7	70	130	
66	Zn	72	5.298	8395	3.70	5	106.0	70	130	
75	As	72	5.302	4523	0.16	5	106.0	70	130	
78	Se	72	5.534	373	7.01	5	110.7	70	130	
88	Sr	115	5.377	25560	2.45	5	107.5	70	130	
95	Mo	115	5.165	20922	2.38	5	103.3	70	130	
107	Ag	115	2.115	25663	1.29	2	105.8	70	130	
111	Cd	115	1.075	1968	2.18	1	107.5	70	130	
118	Sn	115	5.273	24896	3.72	5	105.5	70	130	
121	Sb	115	2.088	12224	1.10	2	104.4	70	130	
137	Ba	115	5.347	10703	1.33	5	106.9	70	130	
205	Tl	209	1.103	31428	0.56	1	110.3	70	130	
208	Pb	209	1.109	45054	0.94	1	110.9	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1045210	0.90	985323	106.08	70	120	
72	Ge	738668	0.50	693391	106.53	70	120	
115	In	7354915	1.26	7239973	101.59	70	120	
209	Bi	17383165	1.70	17115037	101.57	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 18:10	Sample Name	CCB6-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	123_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.050	8	56.7	2	5	
9	Be	45	-0.001	0	173.2	0.4	0.3	
11	B	45	26.621	514	10.7	10	10	FailAq FailSoil
23	Na	45	21.566	60811	0.3	50	100	
24	Mg	45	-1.596	647	8.0	50	100	
27	Al	45	-2.049	1921	1.0	50	10	
39	K	45	0.396	43066	0.7	50	100	
44	Ca	45	-0.682	751	15.4	50	100	
47	Ti	45	0.064	11	75.5	4	3	
51	V	45	-0.079	2068	1.9	4	3	
52	Cr	45	-0.023	1012	9.8	2	2	
55	Mn	45	-0.990	212	15.8	2	3	
56	Fe	45	2.215	19290	4.8	50	50	
59	Co	72	-0.005	91	28.4	2	3	
60	Ni	72	-1.016	280	2.1	2	3	
63	Cu	72	-1.129	1080	8.8	2	2	
66	Zn	72	-1.821	389	16.4	4	2	
75	As	72	0.030	159	2.2	2	2	
78	Se	72	0.113	73	19.3	1	2	
88	Sr	115	0.022	910	2.5	4	3	
95	Mo	115	0.059	300	5.6	2	2	
107	Ag	115	0.012	200	8.7	0.4	1	
111	Cd	115	-0.006	16	12.4	0.4	0.3	
118	Sn	115	-0.688	764	13.8	4	3	
121	Sb	115	0.009	316	13.0	2	0.8	
137	Ba	115	0.021	122	22.0	2	3	
205	Tl	209	0.007	664	12.6	2	0.5	
208	Pb	209	0.016	3248	3.5	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1047240	0.55	985323	106.28	70	120	
72	Ge	735642	1.07	693391	106.09	70	120	
115	In	7351490	2.24	7239973	101.54	70	120	
209	Bi	17423175	1.52	17115037	101.80	70	120	

Method Blank Report

Date Acquired	8/11/16 6:12 PM	Sample Name	MB-76774
Data Batch	160811.b	Comment	MBLKICPMS_TWDOD
Data File Name	124_LRB.d	Dilution	1

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	0.101	10	56.97		
9	Be	45	0.018	1	0.00		
11	B	45	27.579	537	3.29		J
23	Na	45	25.966	65284	1.04		
24	Mg	45	0.755	1647	3.78		
27	Al	45	-3.075	1783	2.33		
39	K	45	4.020	45062	0.96		
44	Ca	45	-6.269	631	9.02		
47	Ti	45	0.063	11	34.61		
51	V	45	-0.082	2079	3.94		
52	Cr	45	-0.003	1144	6.55		
55	Mn	45	0.910	6876	3.03		
56	Fe	45	32.714	176765	0.88		
59	Co	72	0.006	196	2.60		
60	Ni	72	-0.863	676	11.85		
63	Cu	72	0.114	9874	2.45		
66	Zn	72	-0.906	1435	2.69		
75	As	72	0.000	136	15.07		
78	Se	72	0.149	76	27.32		
88	Sr	115	-0.034	667	11.82		
95	Mo	115	0.038	220	4.55		
107	Ag	115	0.010	188	22.05		
111	Cd	115	-0.005	17	52.93		
118	Sn	115	-0.644	961	8.60		
121	Sb	115	0.011	334	8.30		
137	Ba	115	0.006	93	30.52		
205	Tl	209	0.000	461	3.01		
208	Pb	209	0.007	2979	4.78		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1060668	0.77	985323	107.65	70	120	
72	Ge	746475	0.91	693391	107.66	70	120	
115	In	7510837	0.94	7239973	103.74	70	120	
209	Bi	17815649	1.24	17115037	104.09	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 18:14	Sample Name	LCS-76774
Data Batch	160811.b	Comment	LCS ICPMS_TWDOD
Data File Name	125_LFB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	191.607	4634	2.13	200	95.8	80	120	
9	Be	45	196.538	6799	1.64	200	98.3	80	120	
11	B	45	211.477	3452	3.43	200	105.7	80	120	
23	Na	45	5138.523	4292866	0.49	5000	102.8	80	120	
24	Mg	45	5077.651	2113148	0.69	5000	101.6	80	120	
27	Al	45	4831.914	756310	0.43	5000	96.6	80	120	
39	K	45	5293.525	2119589	0.66	5000	105.9	80	120	
44	Ca	45	4900.850	112721	0.72	5000	98.0	80	120	
47	Ti	45	196.512	30604	0.60	200	98.3	80	120	
51	V	45	202.554	992213	1.49	200	101.3	80	120	
52	Cr	45	205.437	1202374	0.23	200	102.7	80	120	
55	Mn	45	197.426	685801	0.11	200	98.7	80	120	
56	Fe	45	4978.594	25309256	1.97	5000	99.6	80	120	
59	Co	72	209.030	1916993	0.33	200	104.5	80	120	
60	Ni	72	204.628	518589	0.66	200	102.3	80	120	
63	Cu	72	203.952	1432738	0.59	200	102.0	80	120	
66	Zn	72	199.021	226022	0.55	200	99.5	80	120	
75	As	72	200.816	166202	0.85	200	100.4	80	120	
78	Se	72	200.979	11173	0.31	200	100.5	80	120	
88	Sr	115	206.690	924488	1.02	200	103.3	80	120	
95	Mo	115	205.440	805856	0.44	200	102.7	80	120	
107	Ag	115	208.831	2455070	0.78	200	104.4	80	120	
111	Cd	115	206.207	361747	0.76	200	103.1	80	120	
118	Sn	115	203.453	803181	0.68	200	101.7	80	120	
121	Sb	115	201.507	1121530	0.96	200	100.8	80	120	
137	Ba	115	204.793	395215	1.02	200	102.4	80	120	
205	Tl	209	204.573	5780927	1.19	200	102.3	80	120	
208	Pb	209	201.194	7745202	0.56	200	100.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1045608	0.36	985323	106.12	70	120	
72	Ge	738060	0.32	693391	106.44	70	120	
115	In	7143283	1.74	7239973	98.66	70	120	
209	Bi	17487453	0.37	17115037	102.18	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 18:16	Sample Name	LCSD-76774
Data Batch	160811.b	Comment	LCSDICPMS_TWDOD
Data File Name	126_LFB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	192.442	4629	1.22	200	96.2	80	120	
9	Be	45	196.088	6747	1.26	200	98.0	80	120	
11	B	45	219.859	3565	2.35	200	109.9	80	120	
23	Na	45	5129.674	4262097	0.68	5000	102.6	80	120	
24	Mg	45	5058.265	2093543	0.50	5000	101.2	80	120	
27	Al	45	4846.036	754370	1.21	5000	96.9	80	120	
39	K	45	5248.444	2090594	1.54	5000	105.0	80	120	
44	Ca	45	4821.606	110314	0.88	5000	96.4	80	120	
47	Ti	45	201.355	31189	1.70	200	100.7	80	120	
51	V	45	204.435	995973	1.05	200	102.2	80	120	
52	Cr	45	207.052	1205242	1.19	200	103.5	80	120	
55	Mn	45	202.552	699715	0.58	200	101.3	80	120	
56	Fe	45	4862.899	24587146	0.98	5000	97.3	80	120	
59	Co	72	210.878	1931134	0.91	200	105.4	80	120	
60	Ni	72	204.463	517453	1.04	200	102.2	80	120	
63	Cu	72	206.656	1449576	0.40	200	103.3	80	120	
66	Zn	72	199.877	226669	0.40	200	99.9	80	120	
75	As	72	202.194	167114	0.35	200	101.1	80	120	
78	Se	72	198.193	11004	1.79	200	99.1	80	120	
88	Sr	115	200.378	923440	0.57	200	100.2	80	120	
95	Mo	115	198.735	803272	1.13	200	99.4	80	120	
107	Ag	115	202.542	2453444	0.35	200	101.3	80	120	
111	Cd	115	201.302	363858	0.09	200	100.7	80	120	
118	Sn	115	199.949	813381	0.15	200	100.0	80	120	
121	Sb	115	197.030	1129930	0.47	200	98.5	80	120	
137	Ba	115	197.245	392260	0.65	200	98.6	80	120	
205	Tl	209	205.832	5780728	1.17	200	102.9	80	120	
208	Pb	209	204.856	7837979	1.04	200	102.4	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1040036	1.29	985323	105.55	70	120	
72	Ge	737109	1.29	693391	106.30	70	120	
115	In	7360332	1.59	7239973	101.66	70	120	
209	Bi	17384047	2.06	17115037	101.57	70	120	

Dilution Sample (Dil) Report

Date Acquired	8/11/2016 18:22	Sample Name	1607317-39A SD
Data Batch	160811.b	Comment	SD ICPMS_TWDOD
Data File Name	129_SD.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	-0.034	6	50.76	0.0	-379.4	110	90	
9	Be	45	-0.010	0	#DIV/0!	0.1	-54.8	110	90	
11	B	45	29.664	568	8.14	46.4	319.7	110	90	
23	Na	45	49.213	84439	0.27	113.8	216.2	110	90	
24	Mg	45	1.430	1923	10.96	7.5	95.8	110	90	Good
27	Al	45	1.301	2466	4.40	4.2	155.8	110	90	
39	K	45	8.973	46842	1.08	5.3	844.1	110	90	
44	Ca	45	5.921	910	2.63	23.3	127.3	110	90	
47	Ti	45	0.063	11	45.82	0.1	349.2	110	90	
51	V	45	-0.064	2156	4.62	-0.1	482.4	110	90	
52	Cr	45	-0.017	1057	4.45	0.0	-328.4	110	90	
55	Mn	45	-0.161	3108	2.45	-0.9	89.5	110	90	
56	Fe	45	1.099	13720	2.54	2.8	194.5	110	90	
59	Co	72	-0.001	133	7.50	0.0	-45.8	110	90	
60	Ni	72	-0.178	2408	9.20	-1.0	89.7	110	90	
63	Cu	72	-0.256	7223	3.42	-1.0	122.3	110	90	
66	Zn	72	-0.192	2235	4.37	-0.9	101.4	110	90	Good
75	As	72	0.043	171	8.76	0.0	503.4	110	90	
78	Se	72	0.202	78	5.00	0.4	277.7	110	90	
88	Sr	115	0.106	1300	3.15	0.4	122.6	110	90	
95	Mo	115	0.081	388	12.20	0.1	271.4	110	90	
107	Ag	115	0.016	248	21.75	0.0	301.1	110	90	
111	Cd	115	0.000	26	41.94	0.0	-19.5	110	90	
118	Sn	115	-0.124	3048	2.82	-0.4	148.7	110	90	
121	Sb	115	0.027	419	9.22	0.1	211.6	110	90	
137	Ba	115	0.033	146	13.02	0.0	377.3	110	90	
205	Tl	209	0.015	871	3.83	0.0	203.6	110	90	
208	Pb	209	0.022	3494	4.08	0.0	405.7	110	90	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1056326	0.53	985323	107.21	70	120	
72	Ge	742525	0.64	693391	107.09	70	120	
115	In	7356466	2.20	7239973	101.61	70	120	
209	Bi	17489552	1.48	17115037	102.19	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	8/11/2016 18:24	Sample Name	1607317-39A PDS
Data Batch	160811.b	Comment	PDS ICPMS_TWDOD
Data File Name	130_PDS.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	184.872	4500	2.65	0.0	200	92.4	75	125	
9	Be	45	193.033	6720	1.09	0.1	200	96.5	75	125	
11	B	45	219.186	3597	3.11	46.4	200	86.4	75	125	
23	Na	45	5155.617	4334141	0.23	113.8	5000	100.8	75	125	
24	Mg	45	5003.403	2095384	0.57	7.5	5000	99.9	75	125	
27	Al	45	4873.912	767682	0.29	4.2	5000	97.4	75	125	
39	K	45	5164.291	2081911	0.59	5.3	5000	103.2	75	125	
44	Ca	45	4631.900	107244	1.32	23.3	5000	92.2	75	125	
47	Ti	45	191.769	30056	2.61	0.1	200	95.8	75	125	
51	V	45	200.917	990454	0.93	-0.1	200	100.5	75	125	
52	Cr	45	208.413	1227483	0.11	0.0	200	104.2	75	125	
55	Mn	45	193.479	676386	0.93	-0.9	200	97.2	75	125	
56	Fe	45	4884.717	24987328	1.23	2.8	5000	97.6	75	125	
59	Co	72	205.327	1891897	0.42	0.0	200	102.7	75	125	
60	Ni	72	197.854	503875	0.30	-1.0	200	99.4	75	125	
63	Cu	72	196.271	1385598	0.62	-1.0	200	98.7	75	125	
66	Zn	72	192.484	219697	0.12	-0.9	200	96.7	75	125	
75	As	72	196.268	163203	0.70	0.0	200	98.1	75	125	
78	Se	72	191.132	10679	1.02	0.4	200	95.4	75	125	
88	Sr	115	194.329	910923	0.91	0.4	200	96.9	75	125	
95	Mo	115	186.432	766410	0.93	0.1	200	93.1	75	125	
107	Ag	115	194.399	2395108	0.90	0.0	200	97.2	75	125	
111	Cd	115	191.791	352598	0.12	0.0	200	95.9	75	125	
118	Sn	115	195.631	809508	0.64	-0.4	200	98.0	75	125	
121	Sb	115	175.238	1022126	0.95	0.1	200	87.6	75	125	
137	Ba	115	192.687	389736	0.51	0.0	200	96.3	75	125	
205	Tl	209	197.184	5632489	0.62	0.0	200	98.6	75	125	
208	Pb	209	195.821	7620161	0.28	0.0	200	97.9	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1052266	0.92	985323	106.79	70	120	
72	Ge	741548	0.93	693391	106.95	70	120	
115	In	7486824	1.87	7239973	103.41	70	120	
209	Bi	17677984	0.90	17115037	103.29	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 18:26	Sample Name	CCV7-160811
Data Batch	160811.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	195.977	4736	4.24	200	98.0	90	110	
9	Be	45	202.513	7000	2.36	200	101.3	90	110	
11	B	45	202.935	3313	2.43	200	101.5	90	110	
23	Na	45	5310.351	4431270	0.78	5000	106.2	90	110	
24	Mg	45	5221.516	2171165	0.51	5000	104.4	90	110	
27	Al	45	4972.159	777570	0.29	5000	99.4	90	110	
39	K	45	5399.650	2159475	0.75	5000	108.0	90	110	
44	Ca	45	4989.547	114657	0.94	5000	99.8	90	110	
47	Ti	45	198.571	30899	0.55	200	99.3	90	110	
51	V	45	207.146	1013824	0.53	200	103.6	90	110	
52	Cr	45	210.526	1231106	0.68	200	105.3	90	110	
55	Mn	45	205.372	712658	0.54	200	102.7	90	110	
56	Fe	45	5052.101	25662071	1.20	5000	101.0	90	110	
59	Co	72	214.862	1959538	0.85	200	107.4	90	110	
60	Ni	72	210.438	530277	0.25	200	105.2	90	110	
63	Cu	72	209.313	1461987	0.81	200	104.7	90	110	
66	Zn	72	203.443	229704	0.66	200	101.7	90	110	
75	As	72	205.339	168999	0.26	200	102.7	90	110	
78	Se	72	204.286	11293	1.47	200	102.1	90	110	
88	Sr	115	207.834	920868	0.48	200	103.9	90	110	
95	Mo	115	212.788	826861	0.32	200	106.4	90	110	
107	Ag	115	217.564	2533465	0.75	200	108.8	90	110	
111	Cd	115	209.887	364714	0.21	200	104.9	90	110	
118	Sn	115	210.325	822268	0.71	200	105.2	90	110	
121	Sb	115	213.660	1178027	0.77	200	106.8	90	110	
137	Ba	115	207.327	396419	0.79	200	103.7	90	110	
205	Tl	209	210.272	5890780	0.30	200	105.1	90	110	
208	Pb	209	207.477	7918001	0.51	200	103.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1044759	0.53	985323	106.03	70	120	
72	Ge	733952	0.05	693391	105.85	70	120	
115	In	7081197	3.63	7239973	97.81	70	120	
209	Bi	17337529	0.91	17115037	101.30	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 18:30	Sample Name	LCVL7-160811
Data Batch	160811.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	10.231	257	6.26	10	102.3	70	130	
9	Be	45	1.020	36	19.25	1	102.0	70	130	
11	B	45	41.923	766	4.14	20	209.6	70	130	Fail
23	Na	45	139.476	159989	0.30	100	139.5	70	130	Fail
24	Mg	45	108.593	46982	1.71	100	108.6	70	130	
27	Al	45	106.906	19130	0.88	100	106.9	70	130	
39	K	45	122.534	91926	0.56	100	122.5	70	130	
44	Ca	45	107.926	3266	5.47	100	107.9	70	130	
47	Ti	45	4.804	758	7.50	5	96.1	70	130	
51	V	45	1.068	7750	2.39	1	106.8	70	130	
52	Cr	45	5.468	33486	1.25	5	109.4	70	130	
55	Mn	45	5.223	21919	1.31	5	104.5	70	130	
56	Fe	45	112.129	584188	1.13	100	112.1	70	130	
59	Co	72	5.537	51385	0.80	5	110.7	70	130	
60	Ni	72	5.474	16793	2.01	5	109.5	70	130	
63	Cu	72	5.320	46534	0.42	5	106.4	70	130	
66	Zn	72	5.218	8376	2.43	5	104.4	70	130	
75	As	72	5.351	4602	1.02	5	107.0	70	130	
78	Se	72	5.792	391	8.81	5	115.8	70	130	
88	Sr	115	5.306	25387	2.38	5	106.1	70	130	
95	Mo	115	5.295	21582	1.13	5	105.9	70	130	
107	Ag	115	2.146	26204	0.85	2	107.3	70	130	
111	Cd	115	1.106	2036	4.51	1	110.6	70	130	
118	Sn	115	5.407	25596	0.64	5	108.1	70	130	
121	Sb	115	2.467	14485	2.73	2	123.3	70	130	
137	Ba	115	5.325	10728	1.21	5	106.5	70	130	
205	Tl	209	1.117	31941	1.11	1	111.7	70	130	
208	Pb	209	1.108	45181	1.71	1	110.8	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1057241	1.02	985323	107.30	70	120	
72	Ge	744913	0.70	693391	107.43	70	120	
115	In	7400536	0.21	7239973	102.22	70	120	
209	Bi	17449604	1.92	17115037	101.95	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 18:47	Sample Name	CCB7-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	141_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.076	5	10.8	2	5	
9	Be	45	-0.001	0	173.2	0.4	0.3	
11	B	45	18.908	397	5.5	10	10	FailAq FailSoil
23	Na	45	14.330	55487	0.7	50	100	
24	Mg	45	-2.009	480	9.8	50	100	
27	Al	45	-2.535	1868	2.7	50	10	
39	K	45	2.137	44285	1.1	50	100	
44	Ca	45	-7.575	601	5.0	50	100	
47	Ti	45	0.035	7	50.0	4	3	
51	V	45	-0.052	2227	8.3	4	3	
52	Cr	45	-0.040	926	4.2	2	2	
55	Mn	45	-1.010	146	17.2	2	3	
56	Fe	45	1.015	13336	1.6	50	50	
59	Co	72	-0.007	80	19.1	2	3	
60	Ni	72	-1.031	244	18.0	2	3	
63	Cu	72	-1.159	881	6.9	2	2	
66	Zn	72	-1.803	412	6.6	4	2	
75	As	72	-0.006	131	11.7	2	2	
78	Se	72	-0.136	59	19.0	1	2	
88	Sr	115	0.017	879	12.8	4	3	
95	Mo	115	0.016	127	10.5	2	2	
107	Ag	115	0.008	157	10.6	0.4	1	
111	Cd	115	-0.011	6	124.9	0.4	0.3	
118	Sn	115	-0.713	654	5.5	4	3	
121	Sb	115	0.036	461	12.1	2	0.8	
137	Ba	115	0.121	319	21.5	2	3	
205	Tl	209	-0.005	302	14.0	2	0.5	
208	Pb	209	-0.012	2167	4.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1060016	0.06	985323	107.58	70	120	
72	Ge	741387	1.14	693391	106.92	70	120	
115	In	7274680	1.15	7239973	100.48	70	120	
209	Bi	17389358	1.38	17115037	101.60	70	120	

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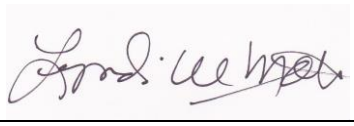

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DHL ANALYTICAL

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Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72224

CHAIN-OF-CUSTODY

CLIENT: ARCADIS
ADDRESS: 8725 Rosehill Suite 350 Lenexa, KS 66215
PHONE: 913-492-0900 FAX/E-MAIL: Alex.Walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO:

DATE: 7-26-16 PAGE 1 OF 2
PO #: 04285081.0000.00044 DHL WORK ORDER #: 1607314
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00044 COLLECTOR: Jordan Boem

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 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ 1 Pack ☐ 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	FIELD NOTES
SGR-DU129(0-2)-A		7-26-16	1112	S	Bag	1				X						X					X							Cooler lost by Fed ex
SGR-DU129(2-4)-A		7-26-16	1114	S	Bag	1				X						X					X							
SGR-DU129(4-6)-A		7-26-16	1116	S	Bag	1				X						X					X							
SGR-DU129(6-8)-A		7-26-16	1118	S	Bag	1				X						X					X							
SGR-DU129(0-2)-B		7-26-16	1122	S	Bag	1				X						X					X							
SGR-DU129(2-4)-B		7-26-16	1124	S	Bag	1				X						X					X							
SGR-DU129(4-6)-B	01	7-26-16	1126	S	Bag	1				X						X					X							
SGR-DU129(6-8)-B	02	7-26-16	1126	S	Bag	1				X						X					X							
SGR-DU129(0-2)-C	03	7-26-16	1132	S	Bag	1				X						X					X							
SGR-DU129(2-4)-C	04	7-26-16	1134	S	Bag	1				X						X					X							
SGR-DU129(4-6)-C	05	7-26-16	1136	S	Bag	1				X						X					X							
SGR-DU129(6-8)-C	06	7-26-16	1138	S	Bag	1				X						X					X							
FB01(2016072E)	07	7-26-16	1145	W	Poly/Glass	2		X		X						X					X							

RELINQUISHED BY: (Signature) Jordan Boem DATE/TIME 7-26-16/1700 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 7/27/16 943 RECEIVED BY: (Signature) [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: 1.1 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: 7/27/2016

Work Order Number 1607314 | Received by JB

Checklist completed by: _____ 7/28/2016 (Signature / Date) | Reviewed by _____ 7/28/2016 (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 ☐	1.1 °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? WS		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 Arcadis Date contacted: 7/27/16 Person contacted Alex Walter

Contacted by: JBarker Regarding: Cooler 1 of 2

Comments: Fed ex lost cooler 1 and the samples SGR-DW129(0.2)-A thru SGR-DW129(2.4)-B were never delivered. Client to aware of the cooler being lost.

Corrective Action _____

DHL Analytical, Inc.

Date: *17-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1607314-01
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:26 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	6.55	0.0990	0.297	0.149		mg/Kg-dry	5	08/10/16 05:43 PM
IS: Bismuth	80.6	0	30-120	0		%REC	5	08/10/16 05:43 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	NU	mg/Kg-dry	10	08/08/16 07:38 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/08/16 07:38 PM
IS: Acenaphthene-d10	136	0	50-200	0		%REC	10	08/08/16 07:38 PM
IS: Chrysene-d12	114	0	50-200	0		%REC	10	08/08/16 07:38 PM
IS: Naphthalene-d8	106	0	50-200	0		%REC	10	08/08/16 07:38 PM
IS: Perylene-d12	116	0	50-200	0		%REC	10	08/08/16 07:38 PM
IS: Phenanthrene-d10	97.6	0	50-200	0		%REC	10	08/08/16 07:38 PM
Surr: 2-Fluorobiphenyl	76.1	0	46-115	0		%REC	10	08/08/16 07:38 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-DU129(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1607314-01
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:26 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	85.4	0	58-133	0		%REC	10	08/08/16 07:38 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		

DHL Analytical, Inc.

Date: *17-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1607314-02
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:26 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	6.45	0.0885	0.265	0.133		mg/Kg-dry	5	08/10/16 05:49 PM
IS: Bismuth	83.4	0	30-120	0		%REC	5	08/10/16 05:49 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Acenaphthylene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Anthracene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[a]anthracene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[a]pyrene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[b]fluoranthene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[e]pyrene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[g,h,i]perylene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[j]fluoranthene	0.0729	0.0486	0.0972	0.0729	NU	mg/Kg-dry	10	08/08/16 08:18 PM
Benzo[k]fluoranthene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Chrysene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Dibenz[a,h]anthracene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Fluoranthene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Fluorene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Indeno[1,2,3-cd]pyrene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Phenanthrene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
Pyrene	0.0729	0.0486	0.0972	0.0729	U	mg/Kg-dry	10	08/08/16 08:18 PM
IS: Acenaphthene-d10	138	0	50-200	0		%REC	10	08/08/16 08:18 PM
IS: Chrysene-d12	116	0	50-200	0		%REC	10	08/08/16 08:18 PM
IS: Naphthalene-d8	110	0	50-200	0		%REC	10	08/08/16 08:18 PM
IS: Perylene-d12	118	0	50-200	0		%REC	10	08/08/16 08:18 PM
IS: Phenanthrene-d10	98.9	0	50-200	0		%REC	10	08/08/16 08:18 PM
Surr: 2-Fluorobiphenyl	75.1	0	46-115	0		%REC	10	08/08/16 08:18 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-DU129(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1607314-02
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:26 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	84.8	0	58-133	0		%REC	10	08/08/16 08:18 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: *17-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1607314-03
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:32 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	18.9	0.0855	0.256	0.128		mg/Kg-dry	5	08/10/16 04:26 PM
IS: Bismuth	88.6	0	30-120	0		%REC	5	08/10/16 04:26 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Acenaphthylene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[a]anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[a]pyrene	0.0530	0.0497	0.0994	0.0746	J	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[b]fluoranthene	0.0507	0.0497	0.0994	0.0746	J	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[e]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[g,h,i]perylene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[j]fluoranthene	0.0746	0.0497	0.0994	0.0746	NU	mg/Kg-dry	10	08/08/16 08:58 PM
Benzo[k]fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Chrysene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Dibenz[a,h]anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Fluoranthene	0.0617	0.0497	0.0994	0.0746	J	mg/Kg-dry	10	08/08/16 08:58 PM
Fluorene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Phenanthrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	08/08/16 08:58 PM
Pyrene	0.0584	0.0497	0.0994	0.0746	J	mg/Kg-dry	10	08/08/16 08:58 PM
IS: Acenaphthene-d10	133	0	50-200	0		%REC	10	08/08/16 08:58 PM
IS: Chrysene-d12	115	0	50-200	0		%REC	10	08/08/16 08:58 PM
IS: Naphthalene-d8	108	0	50-200	0		%REC	10	08/08/16 08:58 PM
IS: Perylene-d12	117	0	50-200	0		%REC	10	08/08/16 08:58 PM
IS: Phenanthrene-d10	99.8	0	50-200	0		%REC	10	08/08/16 08:58 PM
Surr: 2-Fluorobiphenyl	74.9	0	46-115	0		%REC	10	08/08/16 08:58 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-DU129(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1607314-03
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:32 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	82.6	0	58-133	0		%REC	10	08/08/16 08:58 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: *17-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1607314-04
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:34 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	8.09	0.0952	0.286	0.143		mg/Kg-dry	5	08/10/16 06:36 PM
IS: Bismuth	80.4	0	30-120	0		%REC	5	08/10/16 06:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	NU	mg/Kg-dry	10	08/09/16 12:21 AM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Chrysene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
Pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	08/09/16 12:21 AM
IS: Acenaphthene-d10	139	0	50-200	0		%REC	10	08/09/16 12:21 AM
IS: Chrysene-d12	116	0	50-200	0		%REC	10	08/09/16 12:21 AM
IS: Naphthalene-d8	109	0	50-200	0		%REC	10	08/09/16 12:21 AM
IS: Perylene-d12	119	0	50-200	0		%REC	10	08/09/16 12:21 AM
IS: Phenanthrene-d10	100	0	50-200	0		%REC	10	08/09/16 12:21 AM
Surr: 2-Fluorobiphenyl	72.2	0	46-115	0		%REC	10	08/09/16 12:21 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-DU129(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1607314-04
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:34 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	81.0	0	58-133	0		%REC	10	08/09/16 12:21 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: *17-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1607314-05
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:36 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	15.1	0.100	0.300	0.150		mg/Kg-dry	5	08/10/16 06:42 PM
IS: Bismuth	80.6	0	30-120	0		%REC	5	08/10/16 06:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Acenaphthylene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Anthracene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[a]anthracene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[a]pyrene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[b]fluoranthene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[e]pyrene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[g,h,i]perylene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[j]fluoranthene	0.0743	0.0496	0.0991	0.0743	NU	mg/Kg-dry	10	08/09/16 01:02 AM
Benzo[k]fluoranthene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Chrysene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Dibenz[a,h]anthracene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Fluoranthene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Fluorene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Indeno[1,2,3-cd]pyrene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Phenanthrene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
Pyrene	0.0743	0.0496	0.0991	0.0743	U	mg/Kg-dry	10	08/09/16 01:02 AM
IS: Acenaphthene-d10	135	0	50-200	0		%REC	10	08/09/16 01:02 AM
IS: Chrysene-d12	112	0	50-200	0		%REC	10	08/09/16 01:02 AM
IS: Naphthalene-d8	106	0	50-200	0		%REC	10	08/09/16 01:02 AM
IS: Perylene-d12	114	0	50-200	0		%REC	10	08/09/16 01:02 AM
IS: Phenanthrene-d10	96.5	0	50-200	0		%REC	10	08/09/16 01:02 AM
Surr: 2-Fluorobiphenyl	77.9	0	46-115	0		%REC	10	08/09/16 01:02 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-DU129(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1607314-05
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:36 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	86.1	0	58-133	0		%REC	10	08/09/16 01:02 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: *17-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1607314-06
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:38 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **CVD**
Lead	7.35	0.0917	0.275	0.138		mg/Kg-dry	5	08/10/16 06:48 PM
IS: Bismuth	79.9	0	30-120	0		%REC	5	08/10/16 06:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[b]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	08/09/16 01:43 AM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	08/09/16 01:43 AM
IS: Acenaphthene-d10	138	0	50-200	0		%REC	10	08/09/16 01:43 AM
IS: Chrysene-d12	116	0	50-200	0		%REC	10	08/09/16 01:43 AM
IS: Naphthalene-d8	109	0	50-200	0		%REC	10	08/09/16 01:43 AM
IS: Perylene-d12	118	0	50-200	0		%REC	10	08/09/16 01:43 AM
IS: Phenanthrene-d10	101	0	50-200	0		%REC	10	08/09/16 01:43 AM
Surr: 2-Fluorobiphenyl	72.7	0	46-115	0		%REC	10	08/09/16 01:43 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-DU129(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1607314-06
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:38 AM
Lab Order:	1607314	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	81.4	0	58-133	0		%REC	10	08/09/16 01:43 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:**	EB01(20160726)
Project:	Laredo SGR	**Lab ID:**	1607314-07
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:45 AM
Lab Order:	1607314	**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	08/10/16 02:10 AM
IS: Bismuth	89.1	0	30-120	0		%REC	1	08/10/16 02:10 AM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Acenaphthylene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Anthracene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Benzo[a]anthracene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Benzo[a]pyrene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Benzo[b]fluoranthene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Benzo[e]pyrene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Benzo[g,h,i]perylene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Benzo[j]fluoranthene	0.0000789	0.0000493	0.0000987	0.0000789	NU	mg/L	1	08/03/16 06:27 PM
Benzo[k]fluoranthene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Chrysene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Dibenz[a,h]anthracene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Fluoranthene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Fluorene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Indeno[1,2,3-cd]pyrene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Phenanthrene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
Pyrene	0.0000789	0.0000493	0.0000987	0.0000789	U	mg/L	1	08/03/16 06:27 PM
IS: Acenaphthene-d10	113	0	50-200	0		%REC	1	08/03/16 06:27 PM
IS: Chrysene-d12	96.8	0	50-200	0		%REC	1	08/03/16 06:27 PM
IS: Naphthalene-d8	98.0	0	50-200	0		%REC	1	08/03/16 06:27 PM
IS: Perylene-d12	98.1	0	50-200	0		%REC	1	08/03/16 06:27 PM
IS: Phenanthrene-d10	114	0	50-200	0		%REC	1	08/03/16 06:27 PM
Surr: 2-Fluorobiphenyl	74.8	0	53-106	0		%REC	1	08/03/16 06:27 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:**	EB01(20160726)
Project:	Laredo SGR	**Lab ID:**	1607314-07
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:45 AM
Lab Order:	1607314	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	61.2	0	58-132	0		%REC	1	08/03/16 06:27 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		

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№ 72224

CHAIN-OF-CUSTODY

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DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO:

DATE: 7-26-16 PAGE 1 OF 2
PO #: 04285081.0000.00044 DHL WORK ORDER #: 1608019
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00044 COLLECTOR: Jordan Baem

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 ☐	FIELD NOTES
SGR-DU129(0-2)-A	01	7-26-16	1112	S	Bag	1				X					X					X								
SGR-DU129(2-4)-A	02	7-26-16	1114	S	Bag	1				X					X					X								
SGR-DU129(4-6)-A	03	7-26-16	1116	S	Bag	1				X					X					X								
SGR-DU129(6-8)-A	04	7-26-16	1118	S	Bag	1				X					X					X								
SGR-DU129(0-2)-B	05	7-26-16	1122	S	Bag	1				X					X					X								
SGR-DU129(2-4)-B	06	7-26-16	1124	S	Bag	1				X					X					X								
SGR-DU129(4-6)-B		7-26-16	1126	S	Bag	1				X					X					X								
SGR-DU129(6-8)-B		7-26-16	1126	S	Bag	1				X					X					X								
SGR-DU129(0-2)-C		7-26-16	1132	S	Bag	1				X					X					X								
SGR-DU129(2-4)-C		7-26-16	1134	S	Bag	1				X					X					X								
SGR-DU129(4-6)-C		7-26-16	1136	S	Bag	1				X					X					X								
SGR-DU129(6-8)-C		7-26-16	1138	S	Bag	1				X					X					X								
EB01(20160726)		7-26-16	1145	W	Bly/Glass	2		X		X					X					X								

RELINQUISHED BY: (Signature) Jordan Baem DATE/TIME 7-26-16/1700 RECEIVED BY: (Signature) Fed ex
RELINQUISHED BY: (Signature) Fed ex DATE/TIME 8/2/16 9:45 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return 3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 28.5 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: 8/2/2016

Work Order Number 1608019 | Received by JB

Checklist completed by: [signature] 8/2/2016 (Signature / Date) | Reviewed by [initials] 8/2/2016 (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 ☑	28.5 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		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 Arcadis Date contacted: 8/2/16 Person contacted Alex Walter

Contacted by: [signature] Regarding: Temperature

Comments: Per Alex proceed with analysis, is aware of temperature. This cooler was suppose to be delivered on 7/27/16 by fed ex but was misdelivered to another business. Cooler was delivered on 8/2/16. The Corrective Action custody seal was broken so the cooler could be opened by the person who it was delivered to. They found DHL number on COC and called, cooler was picked up by fed ex on 8/1/16 and delivered to DHL the next day.

Page 1 of 1

DHL Analytical, Inc.

Date: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1608019-01
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:12 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	22.9		0.0917	0.275	0.138		mg/Kg-dry	5	08/11/16 05:52 PM
IS: Bismuth	102		0	30-120	0		%REC	5	08/11/16 05:52 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0744	UJL	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Acenaphthylene	0.0744		0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Anthracene	0.0744		0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[a]anthracene	0.143	JL	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[a]pyrene	0.164		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[b]fluoranthene	0.164		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[e]pyrene	0.124		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[g,h,i]perylene	0.150		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[j]fluoranthene	0.0839		0.0496	0.0992	0.0744	JCN	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[k]fluoranthene	0.0850		0.0496	0.0992	0.0744	JC	mg/Kg-dry	10	08/03/16 09:50 PM
Chrysene	0.175		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Dibenz[a,h]anthracene	0.0744	UJL	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Fluoranthene	0.292	JL	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Fluorene	0.0744	UJL	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Indeno[1,2,3-cd]pyrene	0.128	JL	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Phenanthrene	0.147		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Pyrene	0.244		0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
IS: Acenaphthene-d10	114		0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Chrysene-d12	99.2		0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Naphthalene-d8	102		0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Perylene-d12	96.2		0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Phenanthrene-d10	94.5		0	50-200	0		%REC	10	08/03/16 09:50 PM
Surr: 2-Fluorobiphenyl	86.8		0	46-115	0		%REC	10	08/03/16 09:50 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-DU129(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1608019-01
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:12 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	89.4	0	58-133	0		%REC	10	08/03/16 09:50 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1608019-02
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:14 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.59	0.0943	0.283	0.142		mg/Kg-dry	5	08/11/16 05:54 PM
IS: Bismuth	99.2	0	30-120	0		%REC	5	08/11/16 05:54 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0701 UJL	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Acenaphthylene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Anthracene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[a]anthracene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[a]pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[b]fluoranthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[e]pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[g,h,i]perylene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[j]fluoranthene	0.0701	0.0467	0.0935	0.0701	CNU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[k]fluoranthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Chrysene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Dibenz[a,h]anthracene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Fluoranthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Fluorene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Indeno[1,2,3-cd]pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Phenanthrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
IS: Acenaphthene-d10	122	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Chrysene-d12	100	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Naphthalene-d8	106	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Perylene-d12	98.4	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Phenanthrene-d10	94.7	0	50-200	0		%REC	10	08/03/16 10:31 PM
Surr: 2-Fluorobiphenyl	83.2	0	46-115	0		%REC	10	08/03/16 10:31 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-DU129(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1608019-02
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:14 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	84.3	0	58-133	0		%REC	10	08/03/16 10:31 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1608019-03
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:16 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	11.5		0.0877	0.263	0.132		mg/Kg-dry	5	08/11/16 05:56 PM
IS: Bismuth	99.7		0	30-120	0		%REC	5	08/11/16 05:56 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0739	UJL	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Acenaphthylene	0.0739		0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Anthracene	0.0739		0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[a]anthracene	0.0515	JL	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[a]pyrene	0.0739	UJL	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[b]fluoranthene	0.0496	JL	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[e]pyrene	0.0739	UJL	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[g,h,i]perylene	0.0739		0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[j]fluoranthene	0.0739		0.0493	0.0985	0.0739	CNU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[k]fluoranthene	0.0739		0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Chrysene	0.0575	JL	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Dibenz[a,h]anthracene	0.0739	UJL	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Fluoranthene	0.110	JL	0.0493	0.0985	0.0739	C	mg/Kg-dry	10	08/03/16 11:11 PM
Fluorene	0.0739	UJL	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Indeno[1,2,3-cd]pyrene	0.0739	UJL	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Phenanthrene	0.0691	JL	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Pyrene	0.0886	JL	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
IS: Acenaphthene-d10	122		0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Chrysene-d12	104		0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Naphthalene-d8	108		0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Perylene-d12	99.0		0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Phenanthrene-d10	99.5		0	50-200	0		%REC	10	08/03/16 11:11 PM
Surr: 2-Fluorobiphenyl	79.2		0	46-115	0		%REC	10	08/03/16 11:11 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-DU129(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1608019-03
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:16 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	82.0	0	58-133	0		%REC	10	08/03/16 11:11 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1608019-04
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:18 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.11	0.0980	0.294	0.147		mg/Kg-dry	5	08/11/16 05:58 PM
IS: Bismuth	102	0	30-120	0		%REC	5	08/11/16 05:58 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0744 UJL	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	CNU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
IS: Acenaphthene-d10	117	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Chrysene-d12	97.2	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Naphthalene-d8	103	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Perylene-d12	92.3	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Phenanthrene-d10	94.2	0	50-200	0		%REC	10	08/03/16 11:51 PM
Surr: 2-Fluorobiphenyl	85.9	0	46-115	0		%REC	10	08/03/16 11:51 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-DU129(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1608019-04
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:18 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	86.9	0	58-133	0		%REC	10	08/03/16 11:51 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1608019-05
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:22 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result		DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID				**SW6020A**					Analyst: **RO**
Lead	25.8		0.0935	0.280	0.140		mg/Kg-dry	5	08/11/16 06:00 PM
IS: Bismuth	99.5		0	30-120	0		%REC	5	08/11/16 06:00 PM
PAHS: GC/MS				**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0746	UJL	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Acenaphthylene	0.0746		0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Anthracene	0.0746		0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[a]anthracene	0.112	JL	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[a]pyrene	0.133		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[b]fluoranthene	0.128		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[e]pyrene	0.0994		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[g,h,i]perylene	0.119		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[j]fluoranthene	0.0677		0.0497	0.0994	0.0746	JCN	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[k]fluoranthene	0.0693		0.0497	0.0994	0.0746	JC	mg/Kg-dry	10	08/04/16 12:31 AM
Chrysene	0.142		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Dibenz[a,h]anthracene	0.0746	UJL	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Fluoranthene	0.213	JL	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Fluorene	0.0746	UJL	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Indeno[1,2,3-cd]pyrene	0.102	JL	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Phenanthrene	0.102		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Pyrene	0.185		0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
IS: Acenaphthene-d10	117		0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Chrysene-d12	99.6		0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Naphthalene-d8	105		0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Perylene-d12	96.0		0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Phenanthrene-d10	95.4		0	50-200	0		%REC	10	08/04/16 12:31 AM
Surr: 2-Fluorobiphenyl	81.6		0	46-115	0		%REC	10	08/04/16 12:31 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-DU129(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1608019-05
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:22 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	83.6	0	58-133	0		%REC	10	08/04/16 12:31 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1608019-06
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:24 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.44	0.0935	0.280	0.140		mg/Kg-dry	5	08/11/16 06:02 PM
IS: Bismuth	98.6	0	30-120	0		%REC	5	08/11/16 06:02 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0740	0.0493	0.0986	0.0740	UJL CU	mg/Kg-dry	10	08/04/16 01:12 AM
Acenaphthylene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Anthracene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[a]anthracene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[a]pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[b]fluoranthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[e]pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[g,h,i]perylene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[j]fluoranthene	0.0740	0.0493	0.0986	0.0740	CNU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[k]fluoranthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Chrysene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Dibenz[a,h]anthracene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Fluoranthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Fluorene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Indeno[1,2,3-cd]pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Phenanthrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
IS: Acenaphthene-d10	122	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Chrysene-d12	100	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Naphthalene-d8	108	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Perylene-d12	96.9	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Phenanthrene-d10	97.6	0	50-200	0		%REC	10	08/04/16 01:12 AM
Surr: 2-Fluorobiphenyl	78.3	0	46-115	0		%REC	10	08/04/16 01:12 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-DU129(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1608019-06
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:24 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	79.6	0	58-133	0		%REC	10	08/04/16 01:12 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		

August 23, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1608019

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 6 sample(s) on 8/2/2016 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: T104704211-16-16 & DoD-ELAP #L15-426

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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

№ 72224

CHAIN-OF-CUSTODY

CLIENT: ARCADIS
ADDRESS: 8725 Rosehill Suite 350 Lenexa, KS 66215
PHONE: 913-492-0900 FAX/E-MAIL: Alex.Walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO:

DATE: 7-26-16 PAGE 1 OF 2
PO #: 04285081.0000.00044 DHL WORK ORDER #: 1608019
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00044 COLLECTOR: Jordan Baem

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 ☐	FIELD NOTES
SGR-DU129(0-2)-A	01	7-26-16	1112	S	Bag	1				X					X					X								
SGR-DU129(2-4)-A	02	7-26-16	1114	S	Bag	1				X					X					X								
SGR-DU129(4-6)-A	03	7-26-16	1116	S	Bag	1				X					X					X								
SGR-DU129(6-8)-A	04	7-26-16	1118	S	Bag	1				X					X					X								
SGR-DU129(0-2)-B	05	7-26-16	1122	S	Bag	1				X					X					X								
SGR-DU129(2-4)-B	06	7-26-16	1124	S	Bag	1				X					X					X								
SGR-DU129(4-6)-B		7-26-16	1126	S	Bag	1				X					X					X								
SGR-DU129(6-8)-B		7-26-16	1126	S	Bag	1				X					X					X								
SGR-DU129(0-2)-C		7-26-16	1132	S	Bag	1				X					X					X								
SGR-DU129(2-4)-C		7-26-16	1134	S	Bag	1				X					X					X								
SGR-DU129(4-6)-C		7-26-16	1136	S	Bag	1				X					X					X								
SGR-DU129(6-8)-C		7-26-16	1138	S	Bag	1				X					X					X								
EB01(20160726)		7-26-16	1145	W	Bly/Glass	2		X		X					X					X								

RELINQUISHED BY: (Signature) Jordan Baem DATE/TIME 7-26-16/1700 RECEIVED BY: (Signature) Fed ex
RELINQUISHED BY: (Signature) Fed ex DATE/TIME 8/2/16 9:45 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return 3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 28.5 THERM #: 78
CUSTODY SEALS: ☒ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

FedEx.
TRK# 0201 7836 7342 3216

TUE - 02 AUG 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US
AUS

FID 932427 01AUG16 MMRA 539C1/1370/B9D2



DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 8/2/2016

Work Order Number 1608019 | Received by JB

Checklist completed by: [signature] 8/2/2016 (Signature / Date) | Reviewed by [initials] 8/2/2016 (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 ☑	28.5 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		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 Arcadis Date contacted: 8/2/16 Person contacted Alex Walter

Contacted by: [signature] Regarding: Temperature

Comments: Per Alex proceed with analysis, is aware of temperature. This cooler was suppose to be delivered on 7/27/16 by fed ex but was misdelivered to another business. Cooler was delivered on 8/2/16. The Corrective Action custody seal was broken so the cooler could be opened by the person who it was delivered to. They found DHL number on COC and called, cooler was picked up by fed ex on 8/1/16 and delivered to DHL the next day.

Page 1 of 1

DHL Analytical, Inc.
Laboratory Review Checklist: Reportable Data

Project Name: Laredo SGR	**Date:** 8/23/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1608019
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**				
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
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:** 8/23/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1608019

#[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**				
		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

08/23/16

Date

DHL Analytical, Inc.

Date: *23-Aug-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1608019

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 8/2/2016. A total of 6 samples were received and analyzed. This icechest was inadvertently delayed one week by FedEx. The samples arrived outside of the method specified temperature for Semivolatiles Analysis and the custody seal had been broken. The client was notified and authorized the analysis to proceed as requested. These results have been "C" flagged in the Analytical Data Report.

Exception Report R10-01

For PAH Analysis, the soil samples were diluted due to observed color of extract; dilution meets project specifications.

For all of the samples in this project, DHL Analytical performed an Incremental Sampling Method (ISM) according to an internal SOP, as approved by the client and included in the project QAPP. All of the soil samples in this workorder consist of the following sample types: subsurface soil samples processed to pass a #10 sieve (2mm).

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 bottle kit was requested from Alex Walter of Arcadis sent via email to John DuPont on 7/5/2016. The following DHL Bottle Orders:
#7161 sent on 7/14/2016 via Lonestar Overnight Ground to arrive by 7/15/2016.

#7162 sent on 7/18/2016 via Lonestar Overnight Ground to arrive by 7/19/2016.
#7163 sent on 7/20/2016 via Lonestar Overnight Ground to arrive by 7/21/2016.
#7164 sent on 7/22/2016 via Lonestar Overnight Ground to arrive by 7/25/2016.
#7196 sent on 7/22/2016 via Lonestar Overnight Ground to arrive by 7/25/2016.

This sample delivery group arrives at DHL Analytical on and the Sample Summary was sent on 8/2/2016. 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 8/5/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding misdirected cooler by FedEx, surrogate(s) below control limits for some samples and QC samples and compounds outside of the control limits for ICV(s). The client accepted the corrective action for the quality variances on 8/8/2016.
email communications 8/10/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding request mis-prepared Serial Dilution for Batch 76687 and surrogate(s) below control limits for some samples and QC samples. The client accepted the corrective action for the quality variances on 8/10/2016.
email communications 8/12/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding PAH and Lead analysis outside of the method control limits for the MS/MSD(s). The client accepted the corrective action for the quality variances on 8/12/2016.

DHL Analytical, Inc.

Date: *23-Aug-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1608019

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1608019-01	SGR-DU129(0-2)-A		07/26/16 11:12 AM	8/2/2016
1608019-02	SGR-DU129(2-4)-A		07/26/16 11:14 AM	8/2/2016
1608019-03	SGR-DU129(4-6)-A		07/26/16 11:16 AM	8/2/2016
1608019-04	SGR-DU129(6-8)-A		07/26/16 11:18 AM	8/2/2016
1608019-05	SGR-DU129(0-2)-B		07/26/16 11:22 AM	8/2/2016
1608019-06	SGR-DU129(2-4)-B		07/26/16 11:24 AM	8/2/2016

Lab Order: 1608019
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608019-01A	SGR-DU129(0-2)-A	07/26/16 11:12 AM	Soil	SW3550C	Soil Prep Sonication: PAH	08/03/16 10:36 AM	76642
	SGR-DU129(0-2)-A	07/26/16 11:12 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	08/10/16 08:16 AM	76748
1608019-02A	SGR-DU129(2-4)-A	07/26/16 11:14 AM	Soil	SW3550C	Soil Prep Sonication: PAH	08/03/16 10:36 AM	76642
	SGR-DU129(2-4)-A	07/26/16 11:14 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	08/10/16 08:16 AM	76748
1608019-03A	SGR-DU129(4-6)-A	07/26/16 11:16 AM	Soil	SW3550C	Soil Prep Sonication: PAH	08/03/16 10:36 AM	76642
	SGR-DU129(4-6)-A	07/26/16 11:16 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	08/10/16 08:16 AM	76748
1608019-04A	SGR-DU129(6-8)-A	07/26/16 11:18 AM	Soil	SW3550C	Soil Prep Sonication: PAH	08/03/16 10:36 AM	76642
	SGR-DU129(6-8)-A	07/26/16 11:18 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	08/10/16 08:16 AM	76748
1608019-05A	SGR-DU129(0-2)-B	07/26/16 11:22 AM	Soil	SW3550C	Soil Prep Sonication: PAH	08/03/16 10:36 AM	76642
	SGR-DU129(0-2)-B	07/26/16 11:22 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	08/10/16 08:16 AM	76748
1608019-06A	SGR-DU129(2-4)-B	07/26/16 11:24 AM	Soil	SW3550C	Soil Prep Sonication: PAH	08/03/16 10:36 AM	76642
	SGR-DU129(2-4)-B	07/26/16 11:24 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	08/10/16 08:16 AM	76748

Lab Order: 1608019
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
1608019-01A	SGR-DU129(0-2)-A	7/26/2016 11:12:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	8/2/2016 3:09:13 PM	76619
1608019-02A	SGR-DU129(2-4)-A	7/26/2016 11:14:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	8/2/2016 3:09:13 PM	76619
1608019-03A	SGR-DU129(4-6)-A	7/26/2016 11:16:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	8/2/2016 3:09:13 PM	76619
1608019-04A	SGR-DU129(6-8)-A	7/26/2016 11:18:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	8/2/2016 3:09:13 PM	76619
1608019-05A	SGR-DU129(0-2)-B	7/26/2016 11:22:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	8/2/2016 3:09:13 PM	76619
1608019-06A	SGR-DU129(2-4)-B	7/26/2016 11:24:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	8/2/2016 3:09:13 PM	76619

Lab Order: 1608019
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
1608019-01A	SGR-DU129(0-2)-A	Soil	SW8270D-LL	PAHs: GC/MS	76642	10	08/03/16 09:50 PM	GCMS6_160803C
	SGR-DU129(0-2)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	76748	5	08/11/16 05:52 PM	ICP-MS4_160811D
1608019-02A	SGR-DU129(2-4)-A	Soil	SW8270D-LL	PAHs: GC/MS	76642	10	08/03/16 10:31 PM	GCMS6_160803C
	SGR-DU129(2-4)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	76748	5	08/11/16 05:54 PM	ICP-MS4_160811D
1608019-03A	SGR-DU129(4-6)-A	Soil	SW8270D-LL	PAHs: GC/MS	76642	10	08/03/16 11:11 PM	GCMS6_160803C
	SGR-DU129(4-6)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	76748	5	08/11/16 05:56 PM	ICP-MS4_160811D
1608019-04A	SGR-DU129(6-8)-A	Soil	SW8270D-LL	PAHs: GC/MS	76642	10	08/03/16 11:51 PM	GCMS6_160803C
	SGR-DU129(6-8)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	76748	5	08/11/16 05:58 PM	ICP-MS4_160811D
1608019-05A	SGR-DU129(0-2)-B	Soil	SW8270D-LL	PAHs: GC/MS	76642	10	08/04/16 12:31 AM	GCMS6_160803C
	SGR-DU129(0-2)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	76748	5	08/11/16 06:00 PM	ICP-MS4_160811D
1608019-06A	SGR-DU129(2-4)-B	Soil	SW8270D-LL	PAHs: GC/MS	76642	10	08/04/16 01:12 AM	GCMS6_160803C
	SGR-DU129(2-4)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	76748	5	08/11/16 06:02 PM	ICP-MS4_160811D

DHL Analytical, Inc.

Date: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1608019-01
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:12 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	22.9	0.0917	0.275	0.138		mg/Kg-dry	5	08/11/16 05:52 PM
IS: Bismuth	102	0	30-120	0		%REC	5	08/11/16 05:52 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[a]anthracene	0.143	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[a]pyrene	0.164	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[b]fluoranthene	0.164	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[e]pyrene	0.124	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[g,h,i]perylene	0.150	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[j]fluoranthene	0.0839	0.0496	0.0992	0.0744	JCN	mg/Kg-dry	10	08/03/16 09:50 PM
Benzo[k]fluoranthene	0.0850	0.0496	0.0992	0.0744	JC	mg/Kg-dry	10	08/03/16 09:50 PM
Chrysene	0.175	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Fluoranthene	0.292	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 09:50 PM
Indeno[1,2,3-cd]pyrene	0.128	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Phenanthrene	0.147	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
Pyrene	0.244	0.0496	0.0992	0.0744	C	mg/Kg-dry	10	08/03/16 09:50 PM
IS: Acenaphthene-d10	114	0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Chrysene-d12	99.2	0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Naphthalene-d8	102	0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Perylene-d12	96.2	0	50-200	0		%REC	10	08/03/16 09:50 PM
IS: Phenanthrene-d10	94.5	0	50-200	0		%REC	10	08/03/16 09:50 PM
Surr: 2-Fluorobiphenyl	86.8	0	46-115	0		%REC	10	08/03/16 09:50 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-DU129(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1608019-01
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:12 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	89.4	0	58-133	0		%REC	10	08/03/16 09:50 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1608019-02
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:14 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.59	0.0943	0.283	0.142		mg/Kg-dry	5	08/11/16 05:54 PM
IS: Bismuth	99.2	0	30-120	0		%REC	5	08/11/16 05:54 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Acenaphthylene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Anthracene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[a]anthracene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[a]pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[b]fluoranthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[e]pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[g,h,i]perylene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[j]fluoranthene	0.0701	0.0467	0.0935	0.0701	CNU	mg/Kg-dry	10	08/03/16 10:31 PM
Benzo[k]fluoranthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Chrysene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Dibenz[a,h]anthracene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Fluoranthene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Fluorene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Indeno[1,2,3-cd]pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Phenanthrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
Pyrene	0.0701	0.0467	0.0935	0.0701	CU	mg/Kg-dry	10	08/03/16 10:31 PM
IS: Acenaphthene-d10	122	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Chrysene-d12	100	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Naphthalene-d8	106	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Perylene-d12	98.4	0	50-200	0		%REC	10	08/03/16 10:31 PM
IS: Phenanthrene-d10	94.7	0	50-200	0		%REC	10	08/03/16 10:31 PM
Surr: 2-Fluorobiphenyl	83.2	0	46-115	0		%REC	10	08/03/16 10:31 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-DU129(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1608019-02
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:14 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	84.3	0	58-133	0		%REC	10	08/03/16 10:31 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1608019-03
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:16 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.5	0.0877	0.263	0.132		mg/Kg-dry	5	08/11/16 05:56 PM
IS: Bismuth	99.7	0	30-120	0		%REC	5	08/11/16 05:56 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[a]anthracene	0.0515	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[a]pyrene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[b]fluoranthene	0.0496	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	CNU	mg/Kg-dry	10	08/03/16 11:11 PM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Chrysene	0.0575	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Fluoranthene	0.110	0.0493	0.0985	0.0739	C	mg/Kg-dry	10	08/03/16 11:11 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Indeno[1,2,3-cd]pyrene	0.0739	0.0493	0.0985	0.0739	CU	mg/Kg-dry	10	08/03/16 11:11 PM
Phenanthrene	0.0691	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
Pyrene	0.0886	0.0493	0.0985	0.0739	JC	mg/Kg-dry	10	08/03/16 11:11 PM
IS: Acenaphthene-d10	122	0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Chrysene-d12	104	0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Naphthalene-d8	108	0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Perylene-d12	99.0	0	50-200	0		%REC	10	08/03/16 11:11 PM
IS: Phenanthrene-d10	99.5	0	50-200	0		%REC	10	08/03/16 11:11 PM
Surr: 2-Fluorobiphenyl	79.2	0	46-115	0		%REC	10	08/03/16 11:11 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-DU129(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1608019-03
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:16 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	82.0	0	58-133	0		%REC	10	08/03/16 11:11 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1608019-04
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:18 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.11	0.0980	0.294	0.147		mg/Kg-dry	5	08/11/16 05:58 PM
IS: Bismuth	102	0	30-120	0		%REC	5	08/11/16 05:58 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	CNU	mg/Kg-dry	10	08/03/16 11:51 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	CU	mg/Kg-dry	10	08/03/16 11:51 PM
IS: Acenaphthene-d10	117	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Chrysene-d12	97.2	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Naphthalene-d8	103	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Perylene-d12	92.3	0	50-200	0		%REC	10	08/03/16 11:51 PM
IS: Phenanthrene-d10	94.2	0	50-200	0		%REC	10	08/03/16 11:51 PM
Surr: 2-Fluorobiphenyl	85.9	0	46-115	0		%REC	10	08/03/16 11:51 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-DU129(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1608019-04
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:18 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	86.9	0	58-133	0		%REC	10	08/03/16 11:51 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1608019-05
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:22 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	25.8	0.0935	0.280	0.140		mg/Kg-dry	5	08/11/16 06:00 PM
IS: Bismuth	99.5	0	30-120	0		%REC	5	08/11/16 06:00 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0746	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Acenaphthylene	0.0746	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Anthracene	0.0746	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[a]anthracene	0.112	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[a]pyrene	0.133	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[b]fluoranthene	0.128	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[e]pyrene	0.0994	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[g,h,i]perylene	0.119	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[j]fluoranthene	0.0677	0.0497	0.0994	0.0746	JCN	mg/Kg-dry	10	08/04/16 12:31 AM
Benzo[k]fluoranthene	0.0693	0.0497	0.0994	0.0746	JC	mg/Kg-dry	10	08/04/16 12:31 AM
Chrysene	0.142	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Dibenz[a,h]anthracene	0.0746	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Fluoranthene	0.213	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Fluorene	0.0746	0.0497	0.0994	0.0746	CU	mg/Kg-dry	10	08/04/16 12:31 AM
Indeno[1,2,3-cd]pyrene	0.102	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Phenanthrene	0.102	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
Pyrene	0.185	0.0497	0.0994	0.0746	C	mg/Kg-dry	10	08/04/16 12:31 AM
IS: Acenaphthene-d10	117	0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Chrysene-d12	99.6	0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Naphthalene-d8	105	0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Perylene-d12	96.0	0	50-200	0		%REC	10	08/04/16 12:31 AM
IS: Phenanthrene-d10	95.4	0	50-200	0		%REC	10	08/04/16 12:31 AM
Surr: 2-Fluorobiphenyl	81.6	0	46-115	0		%REC	10	08/04/16 12:31 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-DU129(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1608019-05
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:22 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	83.6	0	58-133	0		%REC	10	08/04/16 12:31 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: *23-Aug-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU129(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1608019-06
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:24 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.44	0.0935	0.280	0.140		mg/Kg-dry	5	08/11/16 06:02 PM
IS: Bismuth	98.6	0	30-120	0		%REC	5	08/11/16 06:02 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Acenaphthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Acenaphthylene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Anthracene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[a]anthracene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[a]pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[b]fluoranthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[e]pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[g,h,i]perylene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[j]fluoranthene	0.0740	0.0493	0.0986	0.0740	CNU	mg/Kg-dry	10	08/04/16 01:12 AM
Benzo[k]fluoranthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Chrysene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Dibenz[a,h]anthracene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Fluoranthene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Fluorene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Indeno[1,2,3-cd]pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Phenanthrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
Pyrene	0.0740	0.0493	0.0986	0.0740	CU	mg/Kg-dry	10	08/04/16 01:12 AM
IS: Acenaphthene-d10	122	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Chrysene-d12	100	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Naphthalene-d8	108	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Perylene-d12	96.9	0	50-200	0		%REC	10	08/04/16 01:12 AM
IS: Phenanthrene-d10	97.6	0	50-200	0		%REC	10	08/04/16 01:12 AM
Surr: 2-Fluorobiphenyl	78.3	0	46-115	0		%REC	10	08/04/16 01:12 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-DU129(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1608019-06
Project No:	04285081.0000.00044	**Collection Date:**	07/26/16 11:24 AM
Lab Order:	1608019	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **KL**
Surr: 4-Terphenyl-d14	79.6	0	58-133	0		%REC	10	08/04/16 01:12 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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160725C

Sample ID **DCS1-76312** Batch ID: **76312** TestNo: **SW6020A** Units: **mg/Kg**
SampType: **DCS** Run ID: **ICP-MS4_160725C** Analysis Date: **7/25/2016 4:17:00 PM** Prep Date: **7/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.236	0.300	0.2500	0	94.4	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160811D

The QC data in batch 76748 applies to the following samples: 1608019-01A, 1608019-02A, 1608019-03A, 1608019-04A, 1608019-05A, 1608019-06A

Sample ID **MB-76748**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:02:00 PM**	Prep Date: **8/10/2016**

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		107	30	120			

Sample ID **LCS-76748**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **LCS**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:04:00 PM**	Prep Date: **8/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	51.3	0.300	50.00	0	103	84	118			
IS: Bismuth	50.0		200.0		105	30	120			

Sample ID **LCSD-76748**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **LCSD**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:06:00 PM**	Prep Date: **8/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	51.2	0.300	50.00	0	102	84	118	0.159	20	
IS: Bismuth	50.0		200.0		104	30	120	0	0	

Sample ID **1607337-10A SD**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **SD**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:12:00 PM**	Prep Date: **8/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	6.63	1.40	0	6.742				1.70	10	
IS: Bismuth	234		186.9		106	30	120	0	0	

Sample ID **1607337-10A PDS**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **PDS**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:32:00 PM**	Prep Date: **8/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	53.1	0.280	46.73	6.742	99.2	80	120			
IS: Bismuth	46.7		934.6		101	30	120			

Sample ID **1607337-10A MS**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:34:00 PM**	Prep Date: **8/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	55.3	0.283	47.17	6.742	103	84	118			
IS: Bismuth	47.2		188.7		98.6	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160811D

Sample ID **1607337-10A MSD**	Batch ID: **76748**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:36:00 PM**	Prep Date: **8/10/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	55.2	0.280	46.73	6.742	104	84	118	0.233	20	
IS: Bismuth	46.7		186.9		99.1	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160811D

Sample ID **ICV-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 2:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.103	0.00100	0.100	0	103	90	110			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **LCVL-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 2:25:00 PM**	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		102	30	120			

Sample ID **CCV4-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 4:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.210	0.00100	0.200	0	105	90	110			
IS: Bismuth	0.200		0.200		103	30	120			

Sample ID **LCVL4-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 4:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00109	0.00100	0.00100	0	109	80	120			
IS: Bismuth	0.200		0.200		104	30	120			

Sample ID **CCV5-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.210	0.00100	0.200	0	105	90	110			
IS: Bismuth	0.200		0.200		103	30	120			

Sample ID **LCVL5-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 5:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.00112	0.00100	0.00100	0	112	80	120			
IS: Bismuth	0.200		0.200		105	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160811D

Sample ID **CCV6-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 6:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.211	0.00100	0.200	0	105	90	110			
IS: Bismuth	0.200		0.200		100	30	120			

Sample ID **LCVL6-160811**	Batch ID: **R87573**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160811D**	Analysis Date: **8/11/2016 6:08:00 PM**	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		102	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160802A

Sample ID **DCS-76288**	Batch ID: **76288**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **DCS**	Run ID: **GCMS6_160802A**	Analysis Date: **8/3/2016 9:01:00 AM**	Prep Date: **7/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00764	0.0100	0.01000	0	76.4	20	200	0	0	
Acenaphthylene	0.00762	0.0100	0.01000	0	76.2	20	200	0	0	
Anthracene	0.00800	0.0100	0.01000	0	80.0	20	200	0	0	
Benzo[a]anthracene	0.00849	0.0100	0.01000	0	84.9	20	200	0	0	
Benzo[a]pyrene	0.00833	0.0100	0.01000	0	83.3	20	200	0	0	
Benzo[b]fluoranthene	0.00835	0.0100	0.01000	0	83.5	20	200	0	0	
Benzo[e]pyrene	0.00941	0.0100	0.01000	0	94.1	20	200	0	0	
Benzo[g,h,i]perylene	0.00998	0.0100	0.01000	0	99.8	20	200	0	0	
Benzo[j]fluoranthene	0.00886	0.0100	0.01000	0	88.6	20	200	0	0	N
Benzo[k]fluoranthene	0.00876	0.0100	0.01000	0	87.6	20	200	0	0	
Chrysene	0.00879	0.0100	0.01000	0	87.9	20	200	0	0	
Dibenz[a,h]anthracene	0.00939	0.0100	0.01000	0	93.9	20	200	0	0	
Fluoranthene	0.00799	0.0100	0.01000	0	79.9	20	200	0	0	
Fluorene	0.00780	0.0100	0.01000	0	78.0	20	200	0	0	
Indeno[1,2,3-cd]pyrene	0.00980	0.0100	0.01000	0	98.0	20	200	0	0	
Phenanthrene	0.00897	0.0100	0.01000	0	89.7	20	200	0	0	
Pyrene	0.00754	0.0100	0.01000	0	75.4	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160803C

The QC data in batch 76642 applies to the following samples: 1608019-01A, 1608019-02A, 1608019-03A, 1608019-04A, 1608019-05A, 1608019-06A

Sample ID **LCS-76642** Batch ID: **76642** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_160803C** Analysis Date: **8/3/2016 8:29:00 PM** Prep Date: **8/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.829	0.0100	1.000	0	82.9	44	111			
Acenaphthylene	0.804	0.0100	1.000	0	80.4	39	116			
Anthracene	0.759	0.0100	1.000	0	75.9	50	114			
Benzo[a]anthracene	0.820	0.0100	1.000	0	82.0	54	122			
Benzo[a]pyrene	0.777	0.0100	1.000	0	77.7	50	125			
Benzo[b]fluoranthene	0.841	0.0100	1.000	0	84.1	53	128			
Benzo[e]pyrene	0.840	0.0100	1.000	0	84.0	43	140			
Benzo[g,h,i]perylene	0.907	0.0100	1.000	0	90.7	49	127			
Benzo[j]fluoranthene	0.839	0.0100	1.000	0	83.9	45	125			N
Benzo[k]fluoranthene	0.860	0.0100	1.000	0	86.0	56	123			
Chrysene	0.803	0.0100	1.000	0	80.3	57	118			
Dibenz[a,h]anthracene	0.913	0.0100	1.000	0	91.3	50	129			
Fluoranthene	0.749	0.0100	1.000	0	74.9	55	119			
Fluorene	0.807	0.0100	1.000	0	80.7	47	114			
Indeno[1,2,3-cd]pyrene	0.923	0.0100	1.000	0	92.3	49	130			
Phenanthrene	0.838	0.0100	1.000	0	83.8	49	113			
Pyrene	0.741	0.0100	1.000	0	74.1	55	117			
IS: Acenaphthene-d10	4.00		4.000		138	50	200			
IS: Chrysene-d12	4.00		4.000		102	50	200			
IS: Naphthalene-d8	4.00		4.000		118	50	200			
IS: Perylene-d12	4.00		4.000		101	50	200			
IS: Phenanthrene-d10	4.00		4.000		98.0	50	200			
Surr: 2-Fluorobiphenyl	0.811		1.000		81.1	46	115			
Surr: 4-Terphenyl-d14	0.796		1.000		79.6	58	133			

Sample ID **MB-76642** Batch ID: **76642** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_160803C** Analysis Date: **8/3/2016 9:10:00 PM** Prep Date: **8/3/2016**

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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160803C

Sample ID **MB-76642**	Batch ID: **76642**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_160803C**	Analysis Date: **8/3/2016 9:10:00 PM**	Prep Date: **8/3/2016**

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		144	50	200			
IS: Chrysene-d12	4.00		4.000		104	50	200			
IS: Naphthalene-d8	4.00		4.000		121	50	200			
IS: Perylene-d12	4.00		4.000		103	50	200			
IS: Phenanthrene-d10	4.00		4.000		102	50	200			
Surr: 2-Fluorobiphenyl	0.775		1.000		77.5	46	115			
Surr: 4-Terphenyl-d14	0.762		1.000		76.2	58	133			

Sample ID **1608019-03AMS**	Batch ID: **76642**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_160803C**	Analysis Date: **8/4/2016 5:13:00 AM**	Prep Date: **8/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.771	0.0997	0.9970	0	77.3	44	111			
Acenaphthylene	0.806	0.0997	0.9970	0	80.8	39	116			
Anthracene	0.771	0.0997	0.9970	0	77.4	50	114			
Benzo[a]anthracene	0.820	0.0997	0.9970	0.05153	77.1	54	122			
Benzo[a]pyrene	0.828	0.0997	0.9970	0	83.0	50	125			
Benzo[b]fluoranthene	0.855	0.0997	0.9970	0.04956	80.8	53	128			
Benzo[e]pyrene	0.874	0.0997	0.9970	0	87.6	43	140			
Benzo[g,h,i]perylene	0.849	0.0997	0.9970	0	85.2	49	127			
Benzo[j]fluoranthene	0.876	0.0997	0.9970	0	87.9	45	125			N
Benzo[k]fluoranthene	0.900	0.0997	0.9970	0	90.2	56	123			
Chrysene	0.796	0.0997	0.9970	0.05754	74.1	57	118			
Dibenz[a,h]anthracene	0.833	0.0997	0.9970	0	83.6	50	129			
Fluoranthene	0.777	0.0997	0.9970	0.1104	66.9	55	119			
Fluorene	0.828	0.0997	0.9970	0	83.0	47	114			
Indeno[1,2,3-cd]pyrene	0.856	0.0997	0.9970	0	85.9	49	130			
Phenanthrene	0.811	0.0997	0.9970	0.06906	74.4	49	113			
Pyrene	0.783	0.0997	0.9970	0.08857	69.7	55	117			
IS: Acenaphthene-d10	39.9		3.988		143	50	200			
IS: Chrysene-d12	39.9		3.988		106	50	200			
IS: Naphthalene-d8	39.9		3.988		109	50	200			
IS: Perylene-d12	39.9		3.988		104	50	200			
IS: Phenanthrene-d10	39.9		3.988		101	50	200			
Surr: 2-Fluorobiphenyl	0.776		0.9970		77.8	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160803C

Sample ID **1608019-03AMS**	Batch ID: **76642**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_160803C**	Analysis Date: **8/4/2016 5:13:00 AM**	Prep Date: **8/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.849		0.9970		85.1	58	133			

Sample ID **1608019-03AMSD**	Batch ID: **76642**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_160803C**	Analysis Date: **8/4/2016 5:53:00 AM**	Prep Date: **8/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.740	0.0976	0.9756	0	75.9	44	111	4.01	20	
Acenaphthylene	0.746	0.0976	0.9756	0	76.5	39	116	7.71	20	
Anthracene	0.723	0.0976	0.9756	0	74.1	50	114	6.54	20	
Benzo[a]anthracene	0.761	0.0976	0.9756	0.05153	72.8	54	122	7.43	20	
Benzo[a]pyrene	0.750	0.0976	0.9756	0	76.9	50	125	9.86	20	
Benzo[b]fluoranthene	0.784	0.0976	0.9756	0.04956	75.3	53	128	8.72	20	
Benzo[e]pyrene	0.806	0.0976	0.9756	0	82.6	43	140	8.06	20	
Benzo[g,h,i]perylene	0.803	0.0976	0.9756	0	82.4	49	127	5.52	20	
Benzo[j]fluoranthene	0.785	0.0976	0.9756	0	80.4	45	125	11.0	20	N
Benzo[k]fluoranthene	0.805	0.0976	0.9756	0	82.6	56	123	11.1	20	
Chrysene	0.750	0.0976	0.9756	0.05754	71.0	57	118	5.98	20	
Dibenz[a,h]anthracene	0.804	0.0976	0.9756	0	82.5	50	129	3.54	20	
Fluoranthene	0.727	0.0976	0.9756	0.1104	63.2	55	119	6.60	20	
Fluorene	0.778	0.0976	0.9756	0	79.8	47	114	6.21	20	
Indeno[1,2,3-cd]pyrene	0.813	0.0976	0.9756	0	83.4	49	130	5.17	20	
Phenanthrene	0.767	0.0976	0.9756	0.06906	71.5	49	113	5.62	20	
Pyrene	0.731	0.0976	0.9756	0.08857	65.9	55	117	6.83	20	
IS: Acenaphthene-d10	39.0		3.902		145	50	200	0	0	
IS: Chrysene-d12	39.0		3.902		105	50	200	0	0	
IS: Naphthalene-d8	39.0		3.902		107	50	200	0	0	
IS: Perylene-d12	39.0		3.902		107	50	200	0	0	
IS: Phenanthrene-d10	39.0		3.902		101	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.739		0.9756		75.8	46	115	0	0	
Surr: 4-Terphenyl-d14	0.790		0.9756		81.0	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160803C

Sample ID **ICV-160803**	Batch ID: **R87412**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_160803C**	Analysis Date: **8/3/2016 7:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.03	0.0100	2.000	0	101	80	120			
Acenaphthylene	2.00	0.0100	2.000	0	99.8	80	120			
Anthracene	1.91	0.0100	2.000	0	95.5	80	120			
Benzo[a]anthracene	2.04	0.0100	2.000	0	102	80	120			
Benzo[a]pyrene	2.02	0.0100	2.000	0	101	80	120			
Benzo[b]fluoranthene	2.08	0.0100	2.000	0	104	80	120			
Benzo[e]pyrene	2.04	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.33	0.0100	2.000	0	116	80	120			
Benzo[j]fluoranthene	2.02	0.0100	2.000	0	101	80	120			N
Benzo[k]fluoranthene	1.96	0.0100	2.000	0	97.9	80	120			
Chrysene	2.00	0.0100	2.000	0	100	80	120			
Dibenz[a,h]anthracene	2.33	0.0100	2.000	0	116	80	120			
Fluoranthene	1.92	0.0100	2.000	0	96.2	80	120			
Fluorene	2.11	0.0100	2.000	0	106	80	120			
Indeno[1,2,3-cd]pyrene	2.32	0.0100	2.000	0	116	80	120			
Phenanthrene	1.94	0.0100	2.000	0	96.8	80	120			
Pyrene	1.90	0.0100	2.000	0	95.2	80	120			
IS: Acenaphthene-d10	4.00		4.000		100	50	200			
IS: Chrysene-d12	4.00		4.000		96.6	50	200			
IS: Naphthalene-d8	4.00		4.000		96.7	50	200			
IS: Perylene-d12	4.00		4.000		99.2	50	200			
IS: Phenanthrene-d10	4.00		4.000		91.0	50	200			
Surr: 2-Fluorobiphenyl	1.94		2.000		97.2	65	120			
Surr: 4-Terphenyl-d14	1.96		2.000		98.0	65	120			

Sample ID **CCV1-160803**	Batch ID: **R87412**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_160803C**	Analysis Date: **8/4/2016 6:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.992	0.0100	1.000	0	99.2	50	150			
Acenaphthylene	0.966	0.0100	1.000	0	96.6	50	150			
Anthracene	0.889	0.0100	1.000	0	88.9	50	150			
Benzo[a]anthracene	0.929	0.0100	1.000	0	92.9	50	150			
Benzo[a]pyrene	0.931	0.0100	1.000	0	93.1	50	150			
Benzo[b]fluoranthene	0.942	0.0100	1.000	0	94.2	50	150			
Benzo[e]pyrene	0.929	0.0100	1.000	0	92.9	50	150			
Benzo[g,h,i]perylene	0.954	0.0100	1.000	0	95.4	50	150			
Benzo[j]fluoranthene	0.911	0.0100	1.000	0	91.1	50	150			N
Benzo[k]fluoranthene	0.936	0.0100	1.000	0	93.6	50	150			
Chrysene	0.892	0.0100	1.000	0	89.2	50	150			
Dibenz[a,h]anthracene	0.956	0.0100	1.000	0	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: 1608019
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_160803C

Sample ID **CCV1-160803**	Batch ID: **R87412**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_160803C**	Analysis Date: **8/4/2016 6:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	0.833	0.0100	1.000	0	83.3	50	150			
Fluorene	1.04	0.0100	1.000	0	104	50	150			
Indeno[1,2,3-cd]pyrene	0.969	0.0100	1.000	0	96.9	50	150			
Phenanthrene	0.936	0.0100	1.000	0	93.6	50	150			
Pyrene	0.820	0.0100	1.000	0	82.0	50	150			
IS: Acenaphthene-d10	4.00		4.000		135	50	200			
IS: Chrysene-d12	4.00		4.000		105	50	200			
IS: Naphthalene-d8	4.00		4.000		102	50	200			
IS: Perylene-d12	4.00		4.000		109	50	200			
IS: Phenanthrene-d10	4.00		4.000		103	50	200			
Surr: 2-Fluorobiphenyl	0.964		1.000		96.4	50	150			
Surr: 4-Terphenyl-d14	0.973		1.000		97.3	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

DHL Analytical, Inc.

Date: *23-Aug-16*

CLIENT: Arcadis
Work Order: 1608019
Project: Laredo SGR

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/Kg-dry**	**mg/Kg-dry**
Lead	0.100	0.300

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

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

GCMS6
For

DHL Work Order
1608019

GCMS6_160803B
For

DHL Work Order
1608019

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_160803B
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 Karyn Lane Date: 8/4/2016

Second-Level Review: Date: REVIEWED/APPROVED By Sherri Herschmann at 10:26:04 AM, 8/5/2016 08/05/2016

DHL Analytical, Inc.

Run ID: GCMS6_160803B **Run No.:** 87411

Analytical Run Date: 8/3/2016 **InstrumentID:** GCMS6

Analyst: Karyn Lane **Column:** Agilent (J&W) DB-EUPAH (20m x 0.18mmI

Calibration ID: 680 **Column ID:** 0.18mm

Column Length: 20m

Cal Comments: PP160801.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-160803	1	PAH_S_LL	TUNE	R87411	8/3/2016 7:10:00 PM		
ICV-160803	1	PAH_S_LL	ICV	R87411	8/3/2016 7:50:00 PM		
LCS-76628	1	PAH_S_LL	LCS	76628	8/3/2016 8:29:00 PM		
MB-76628	1	PAH_S_LL	MBLK	76628	8/3/2016 9:10:00 PM		QC reference.
1608019-03A	10	PAH_S_LL	SAMP	76628	8/3/2016 11:11:00 PM		DNR - for ~~confirmation~~ only.
1607254-05C	1	PAH_S_LL	SAMP	76628	8/4/2016 1:52:00 AM	~~H~~	Hold time met.
1607260-01C	1	PAH_S_LL	SAMP	76628	8/4/2016 2:32:00 AM		
1607260-04C	1	PAH_S_LL	SAMP	76628	8/4/2016 3:12:00 AM		
1607254-02C	1	PAH_S_LL	SAMP	76628	8/4/2016 3:52:00 AM		
1607260-11C	1	PAH_S_LL	SAMP	76628	8/4/2016 4:32:00 AM		
1608019-03AMS	10	PAH_S_LL	MS	76628	8/4/2016 5:13:00 AM		
1608019-03AMSD	10	PAH_S_LL	MSD	76628	8/4/2016 5:53:00 AM		

REVIEWED/APPROVED

By Sherri Herschmann at 10:26:08 AM, 8/5/2016

Sequence Name: C:\HPCHEM\1\SEQUENCE\160803.S
Comment:
Operator: DEW
Data Path: C:\HPCHEM\1\DATA\160803\
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	16080301	DFTPPPAH	DFTPP-160803
2	Sample	2	16080302	PP160801	ICV-160803
3	Sample	3	16080303	PP160801	SB-160803
4	Sample	4	16080304	PP160801	SB-160803
5	Sample	5	16080305	PP160801	1607256-33A
6	Sample	6	16080306	PP160801	1607256-35A
7	Sample	7	16080307	PP160801	1607219-18A
8	Sample	8	16080308	PP160801	1607219-22A
9	Sample	9	16080309	PP160801	1607239-01A
10	Sample	10	16080310	PP160801	1607239-05A
11	Sample	11	16080311	PP160801	1607239-11A
12	Sample	12	16080312	PP160801	1607239-17A
13	Sample	13	16080313	PP160801	CCV1-160803
14	Sample	14	16080314	DFTPPPAH	DFTPP-160803
15	Sample	15	16080315	PP160801	ICV-160803
16	Sample	16	16080316	PP160801	LCS-76642
17	Sample	17	16080317	PP160801	MB-76642
18	Sample	18	16080318	PP160801	1608019-01A
19	Sample	19	16080319	PP160801	1608019-02A
20	Sample	20	16080320	PP160801	1608019-03A
21	Sample	21	16080321	PP160801	1608019-04A
22	Sample	22	16080322	PP160801	1608019-05A
23	Sample	23	16080323	PP160801	1608019-06A
24	Sample	24	16080324	PP160801	1607254-05C
25	Sample	25	16080325	PP160801	1607260-01C
26	Sample	26	16080326	PP160801	1607260-04C
27	Sample	27	16080327	PP160801	1607254-02C
28	Sample	28	16080328	PP160801	1607260-11C
29	Sample	29	16080329	PP160801	1608019-03AMS
30	Sample	30	16080330	PP160801	1608019-03AMSD
31	Sample	31	16080331	PP160801	CCV1-160803

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/3/2016 8:43:47 AM**
Digestion:
Prep End Date: **8/3/2016 2:45:00 PM**

Prep Batch **76628** Prep Code: **3550_PAH** Technician: **Alex Robbins**

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
1607254-02C	Soil		10.6	10	0.943	1 of 1	
1607254-05C	Soil		10.78	10	0.928	1 of 1	
	~~0.364,~~ Hydrocarbon Odor						
1607260-01C	Soil		10.17	10	0.983	1 of 1	
1607260-04C	Soil		10.57	10	0.946	1 of 1	
1607260-11C	Soil		10.46	10	0.956	1 of 1	
1608019-03A	Soil		10.15	10	0.985	1 of 1	
1608019-03AMS	Soil		10.03	10	0.997	1 of	
	Associated w/76642						
1608019-03AMSD	Soil		10.25	10	0.976	1 of	
	Associated w/76642						
LCS-76628	Soil		10	10	1.000	of	
	Associated w/76642						
MB-76628	Soil		10	10	1.000	of	
	Associated w/76642						

REVIEWED/APPROVED
By Sherri Herschmann at 10:26:38 AM, 8/5/2016

Number	Reagent Name	Amt	Units	Exp. Da
10394	Purified Sodium Sulfate	10	g	05/23/2026
10419	Methylene Chloride	8	ml	05/31/2026
10536	Whatman 41 Filter	1	filter	07/11/2026
10591	1:1 MeCl2/Acetone	120	ml	07/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160727	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	10/25/2016
SVPREP160802	40 PPM Surrogate Standard	ALL	0.25	10/31/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/3/2016 8:43:47 AM**
Digestion:
Prep End Date: 8/3/2016 2:45 PM

Prep Batch **76628** Prep Code: **3550_PAH** Technician: **Alex Robbins**

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
1607254-02C	Soil		10 .60	10	1.000	1 of 1	
1607254-05C	Soil		10 .78	10	1.000	1 of 1	Hydrocarbon ODOR
0.364							
1607260-01C	Soil		10 .17	10	1.000	1 of 1	
1607260-04C	Soil		10 .57	10	1.000	1 of 1	
1607260-11C	Soil		10 .46	10	1.000	1 of 1	
1608019-03A	Soil		10 .15	10	1.000	1 of 1	
1608019-03AMS	Soil		10 .03	10	1.000	1 of 1	
Associated w/76642							
1608019-03AMSD	Soil		10 .25	10	1.000	1 of 1	
Associated w/76642							
LCS-76628	Soil		10	10	1.000	of	
Associated w/76642							
MB-76628	Soil		10	10	1.000	of	
Associated w/76642							

Number	Reagent Name	Amt	Units	Exp. Da
10394	Purified Sodium Sulfate	10	g	05/23/2026
10419	Methylene Chloride	8	ml	05/31/2026
10536	Whatman 41 Filter	1	filter	07/11/2026
10591	1:1 MeCl2/Acetone	120	ml	07/26/2026

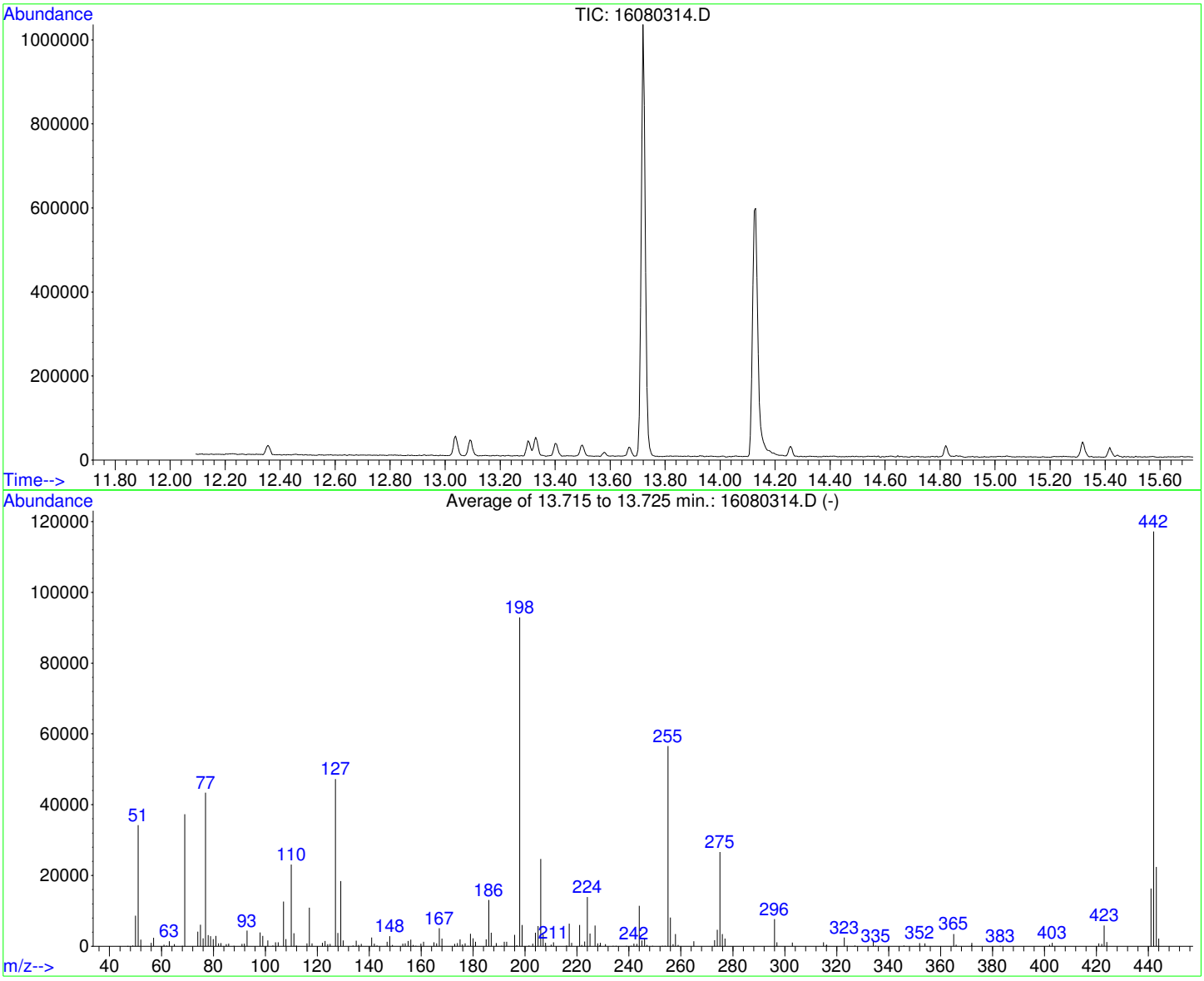
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160727	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	10/25/2016
SVPREP160802	40 PPM Surrogate Standard	ALL	0.25	10/31/2016

TK 8/3/16

JG 8/3/16

REVIEWED/APPROVED
By Sherri Herschmann at 10:29:20 AM, 8/5/2016

Data File : C:\HPCHEM\1\DATA\160803\16080314.D Vial: 14
Acq On : 3 Aug 2016 7:10 pm Operator: DEW
Sample : DFTPP-160803 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 346, 347, 348; Background Corrected with Scan 340

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	36.9	34261	PASS
68	69	0.00	2	0.5	170	PASS
69	198	0.00	100	40.1	37296	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	50.9	47253	PASS
197	198	0.00	2	0.3	277	PASS
198	198	100	100	100.0	92904	PASS
199	198	5	9	6.5	6043	PASS
275	198	10	60	28.7	26627	PASS
365	198	1	200	3.7	3466	PASS
441	442	0.01	24	13.9	16343	PASS
442	198	50	400	126.2	117213	PASS
443	442	15	24	19.1	22415	PASS

REVIEWED/APPROVED
By Sherri Herschmann at 10:29:29 AM, 8/5/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080315.D Vial: 15
Acq On : 3 Aug 2016 7:50 pm Operator: DEW
Sample : ICV-160803 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

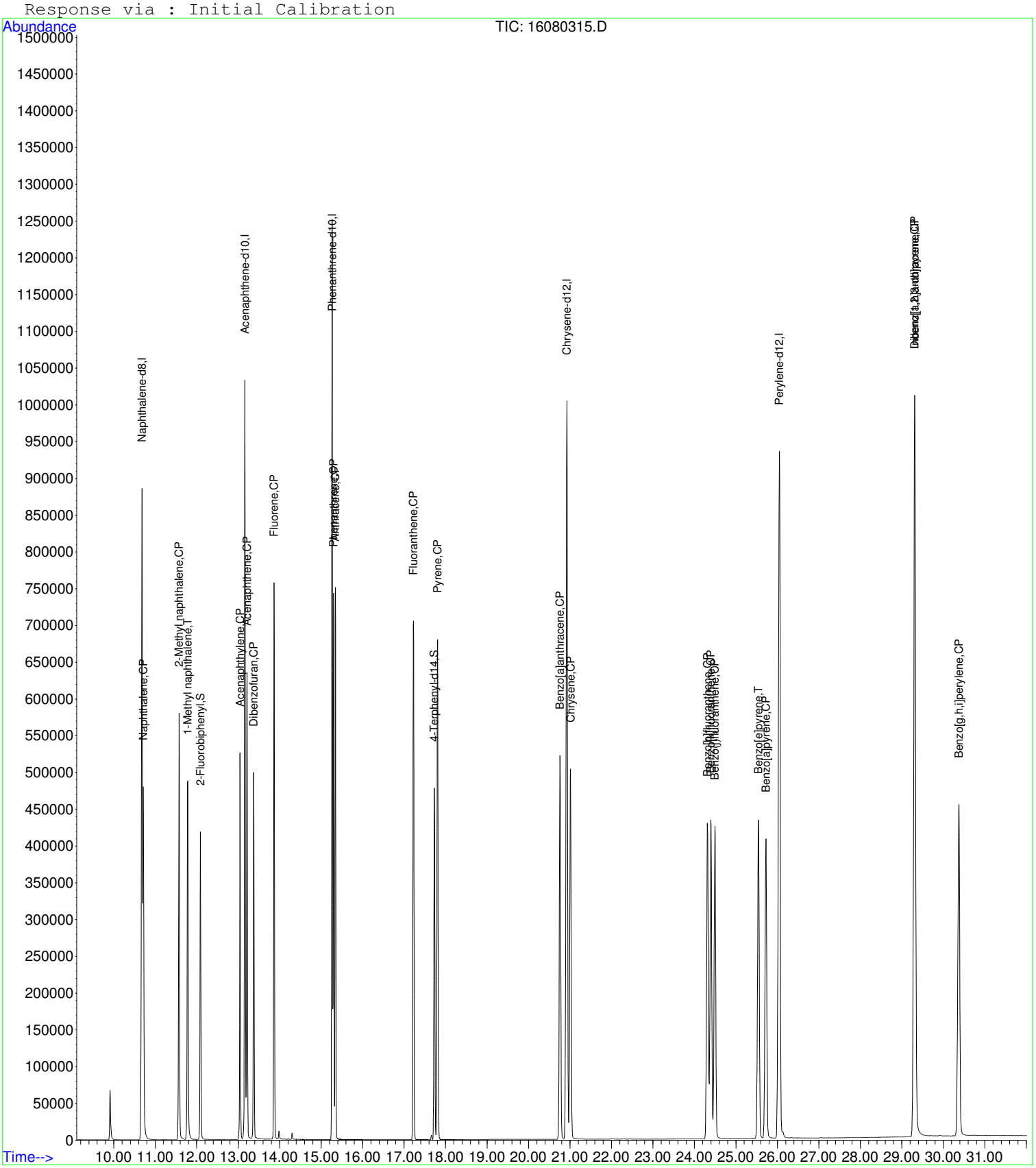
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1357377	4000.00	ug/kg	97
5) Acenaphthene-d10	13.16	164	599194	4000.00	ug/kg	100
11) Phenanthrene-d10	15.27	188	1447843	4000.00	ug/kg	91
17) Chrysene-d12	20.92	240	1772108	4000.00	ug/kg	97
20) Perylene-d12	26.05	264	1912975	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	406311	1944.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 48.60%			
16) 4-Terphenyl-d14	17.73	244	669574	1959.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 48.99%			
Target Compounds						Qvalue
2) Naphthalene	10.71	128	592417	1918.22	ug/kg	99
3) 2-Methyl naphthalene	11.57	142	386023	1928.08	ug/kg	95
4) 1-Methyl naphthalene	11.79	142	344672	1943.55	ug/kg	99
6) Dibenzofuran	13.38	168	476409	1964.69	ug/kg	100
8) Acenaphthylene	13.05	152	529451	1995.32	ug/kg	100
9) Acenaphthene	13.21	154	311648	2027.94	ug/kg	99
10) Fluorene	13.86	166	408489	2114.59	ug/kg	99
12) Phenanthrene	15.30	178	664579	1936.09	ug/kg	100
13) Anthracene	15.34	178	689996	1910.34	ug/kg	100
14) Fluoranthene	17.23	202	782796	1924.32	ug/kg	100
15) Pyrene	17.81	202	785618	1904.63	ug/kg	100
18) Benzo[a]anthracene	20.76	228	813518	2036.73	ug/kg	99
19) Chrysene	21.01	228	768363	1999.60	ug/kg	100
21) Benzo[b]fluoranthene	24.31	252	918477	2079.79	ug/kg	100
22) Benzo[k]fluoranthene	24.39	252	793613	1958.85	ug/kg	100
23) Benzo(j)fluoranthene	24.49	252	787998	2023.90	ug/kg	99
24) Benzo[e]pyrene	25.55	252	872141	2035.03	ug/kg	99
25) Benzo[a]pyrene	25.73	252	862003	2020.16	ug/kg	100
26) Dibenz[a,h]anthracene	29.31	278	961861	2329.42	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.32	276	1135020	2316.36	ug/kg	99
28) Benzo[g,h,i]perylene	30.38	276	954400	2325.52	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080315.D Vial: 15
Acq On : 3 Aug 2016 7:50 pm Operator: DEW
Sample : ICV-160803 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

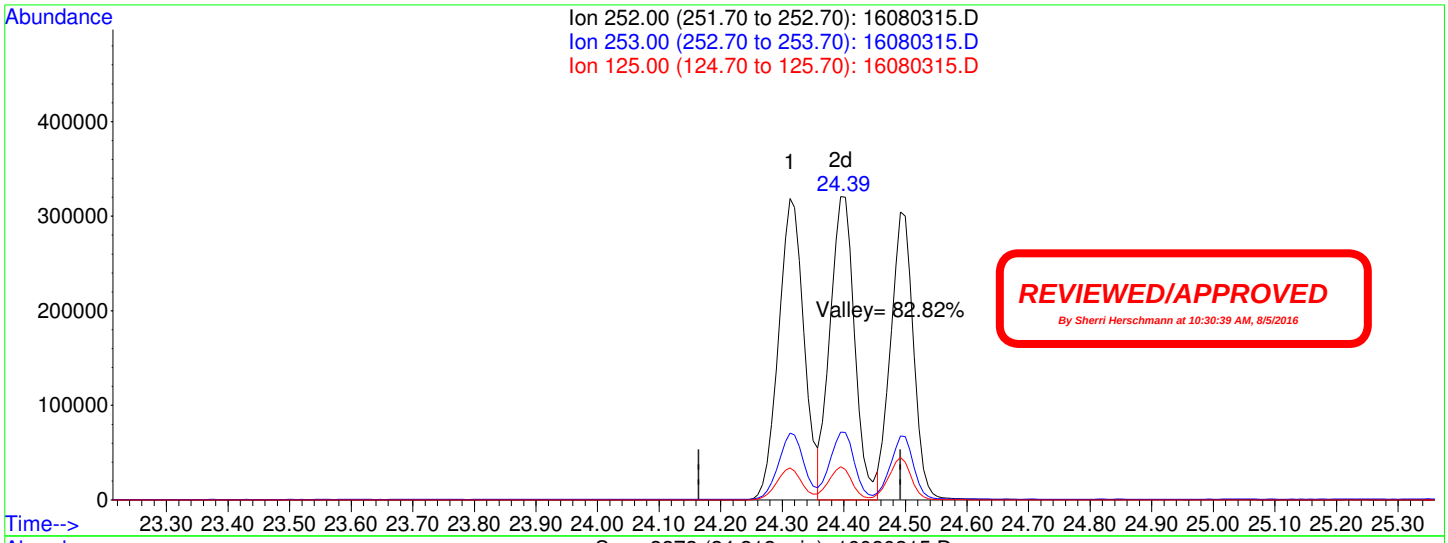
Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

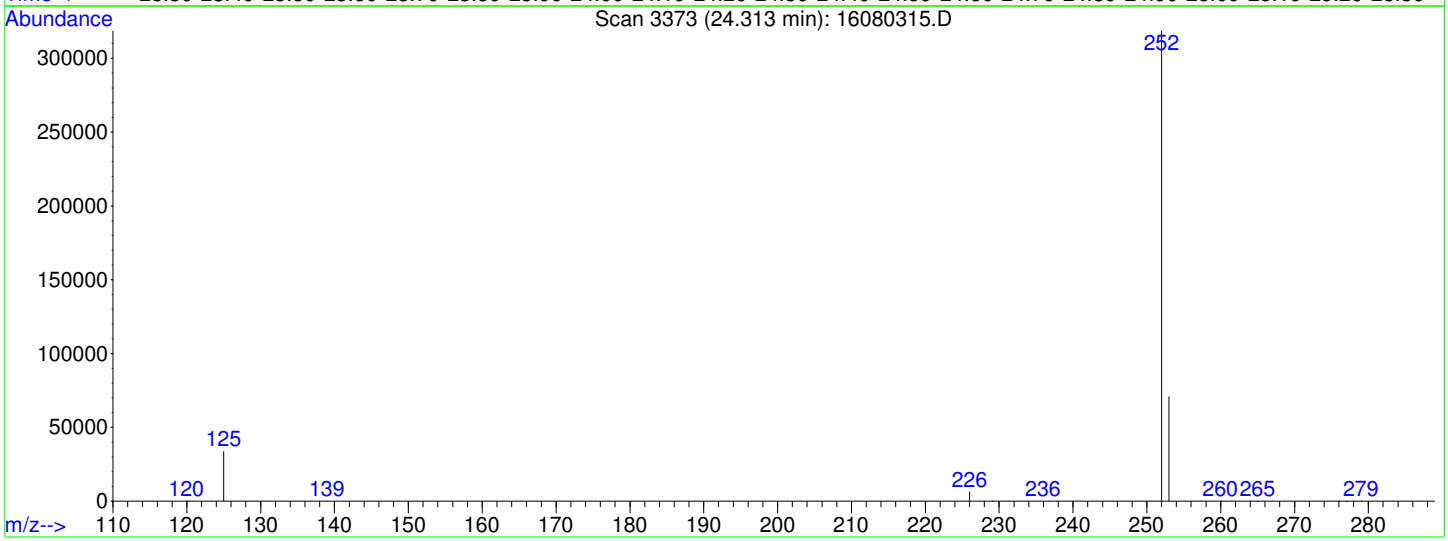


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\160803\16080315.D Vial: 15
Acq On : 3 Aug 2016 7:50 pm Operator: DEW
Sample : ICV-160803 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 3 20:22 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Multiple Level Calibration





TIC: 16080315.D

(21) Benzo[b]fluoranthene (CP)

24.31min 2079.79ug/kg

response 918477

Ion	Exp%	Act%
252.00	100	100
253.00	22.00	22.02
125.00	10.60	10.57
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080316.D Vial: 16
Acq On : 3 Aug 2016 8:29 pm Operator: DEW
Sample : LCS-76628 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 9:07 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

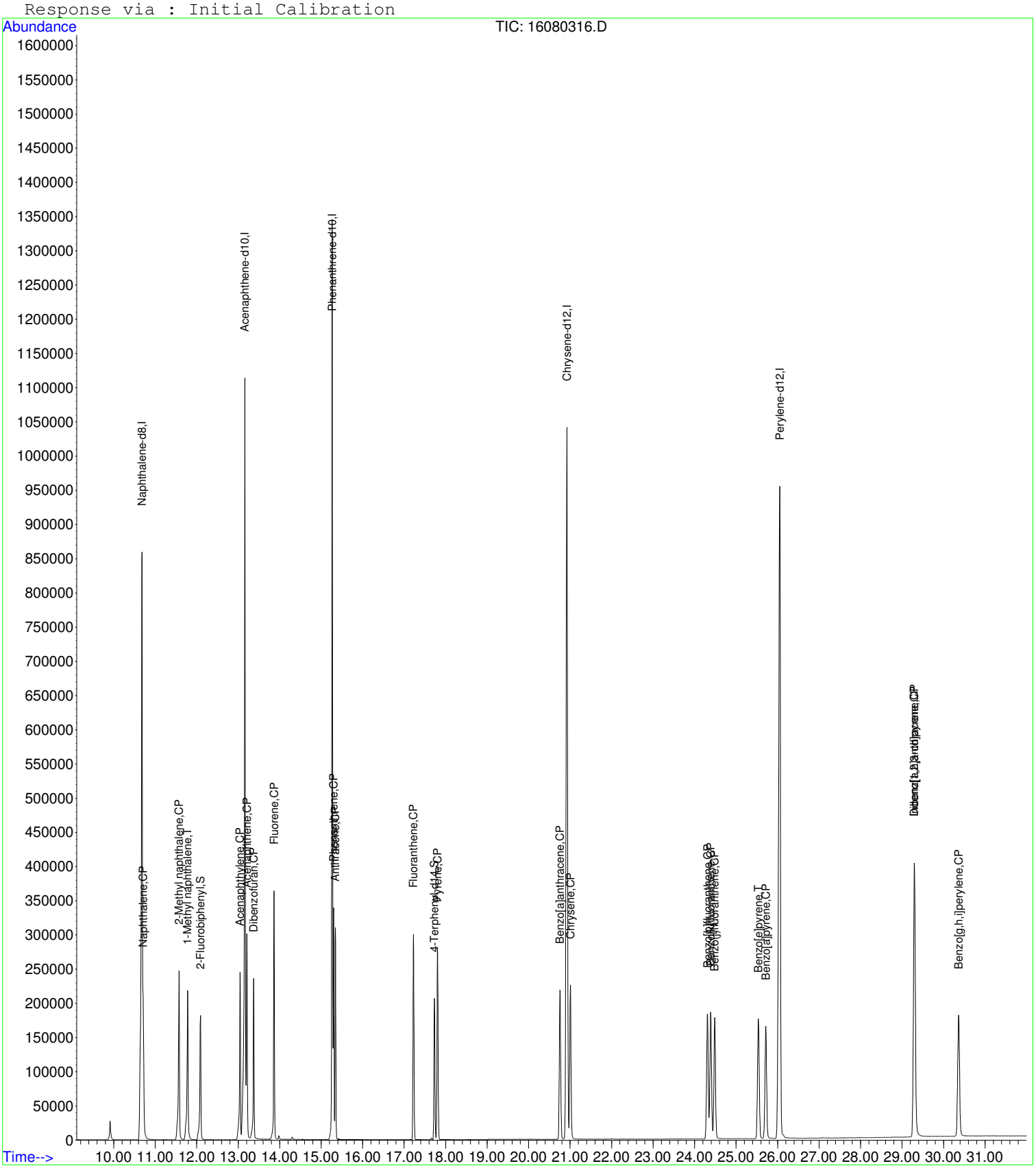
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1662476	4000.00	ug/kg	118
5) Acenaphthene-d10	13.16	164	828477	4000.00	ug/kg	138
11) Phenanthrene-d10	15.27	188	1559622	4000.00	ug/kg	98
17) Chrysene-d12	20.92	240	1862417	4000.00	ug/kg	102
20) Perylene-d12	26.06	264	1947688	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	234353	810.96	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.27%#			
16) 4-Terphenyl-d14	17.73	244	292983	796.03	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.90%#			
Target Compounds						Qvalue
2) Naphthalene	10.71	128	285983	756.06	ug/kg	100
3) 2-Methyl naphthalene	11.57	142	202818	827.11	ug/kg	97
4) 1-Methyl naphthalene	11.78	142	182332	839.46	ug/kg	96
6) Dibenzofuran	13.37	168	262449	782.79	ug/kg	100
8) Acenaphthylene	13.04	152	295106	804.36	ug/kg	99
9) Acenaphthene	13.21	154	176103	828.79	ug/kg	99
10) Fluorene	13.87	166	215659	807.42	ug/kg	99
12) Phenanthrene	15.30	178	309896	838.10	ug/kg	100
13) Anthracene	15.34	178	295127	758.53	ug/kg	100
14) Fluoranthene	17.22	202	328310	749.23	ug/kg	99
15) Pyrene	17.80	202	329032	740.53	ug/kg	100
18) Benzo[a]anthracene	20.75	228	344227	820.02	ug/kg	100
19) Chrysene	21.01	228	324103	802.55	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	378067	840.83	ug/kg	99
22) Benzo[k]fluoranthene	24.39	252	354775	860.07	ug/kg	99
23) Benzo(j)fluoranthene	24.48	252	332481	838.73	ug/kg	99
24) Benzo[e]pyrene	25.54	252	366358	839.61	ug/kg	99
25) Benzo[a]pyrene	25.72	252	337763	777.46	ug/kg	99
26) Dibenz[a,h]anthracene	29.29	278	383812	912.94	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.30	276	460717	923.48	ug/kg	99
28) Benzo[g,h,i]perylene	30.36	276	379032	907.10	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080316.D Vial: 16
Acq On : 3 Aug 2016 8:29 pm Operator: DEW
Sample : LCS-76628 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 9:07 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080317.D Vial: 17
Acq On : 3 Aug 2016 9:10 pm Operator: DEW
Sample : MB-76628 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 9:07 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

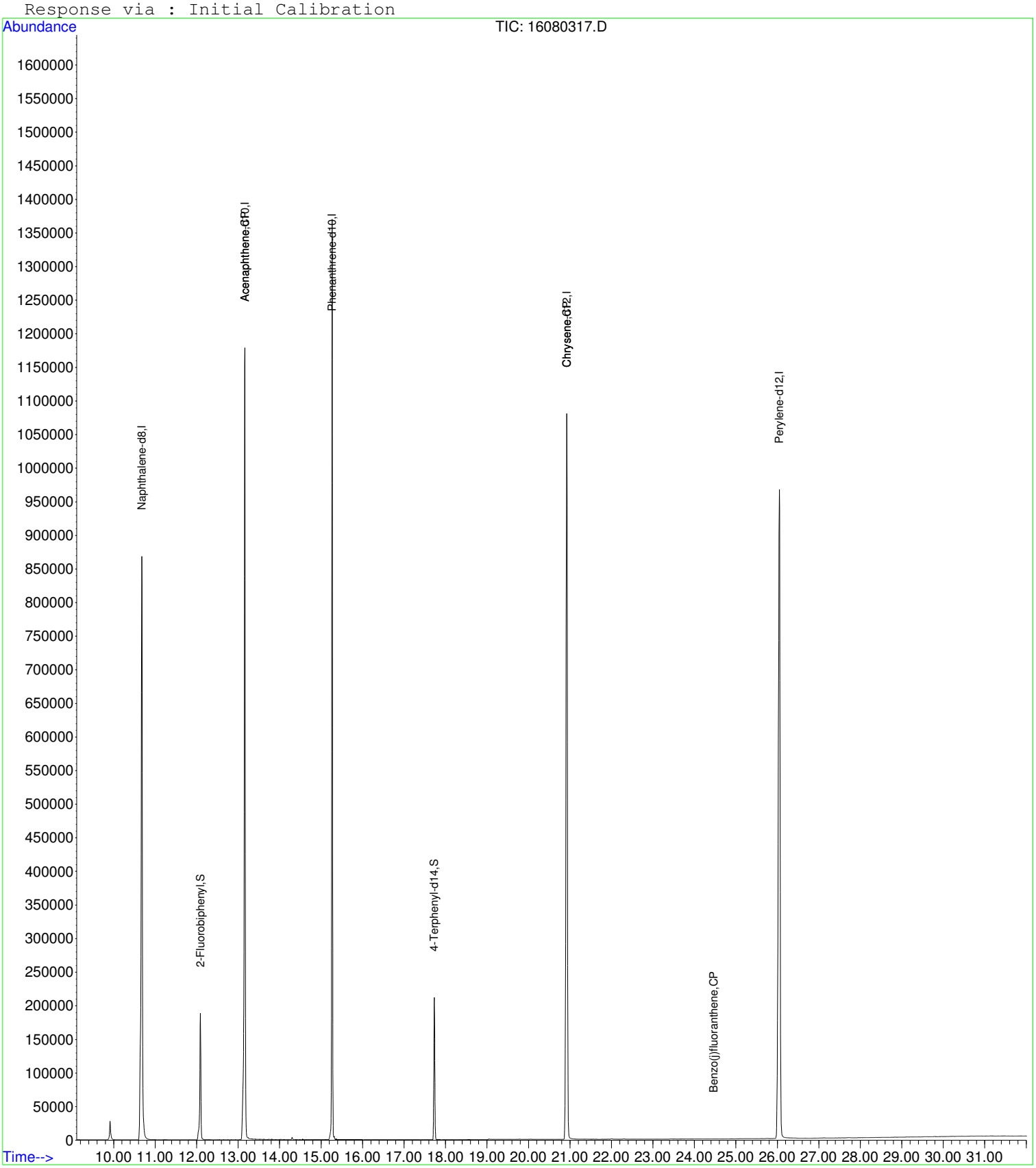
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1693893	4000.00	ug/kg	121
5) Acenaphthene-d10	13.16	164	860313	4000.00	ug/kg	144
11) Phenanthrene-d10	15.26	188	1619012	4000.00	ug/kg	102
17) Chrysene-d12	20.92	240	1901823	4000.00	ug/kg	104
20) Perylene-d12	26.05	264	1982107	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	232572	775.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.38%#			
16) 4-Terphenyl-d14	17.73	244	290945	761.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.04%#			
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2928	13.27	ug/kg#	11
19) Chrysene	20.92	228	4150	10.06	ug/kg	70
23) Benzo(j)fluoranthene	24.47	252	8	0.02	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080317.D Vial: 17
Acq On : 3 Aug 2016 9:10 pm Operator: DEW
Sample : MB-76628 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 9:07 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080320.D Vial: 20
Acq On : 3 Aug 2016 11:11 pm Operator: DEW
Sample : 1608019-03A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

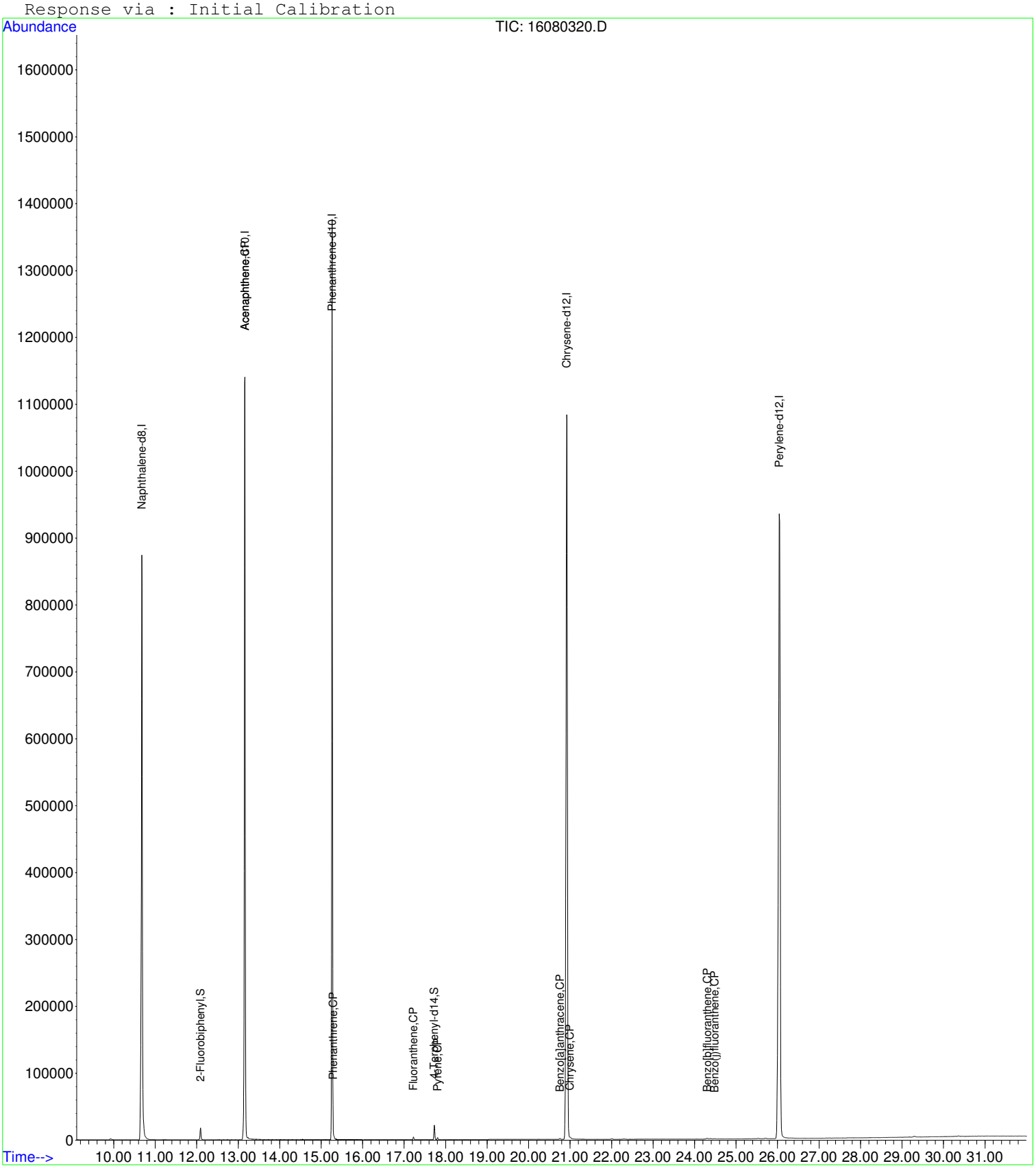
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1512448	4000.00	ug/kg	108
5) Acenaphthene-d10	13.16	164	734121	4000.00	ug/kg	122
11) Phenanthrene-d10	15.27	188	1583293	4000.00	ug/kg	100
17) Chrysene-d12	20.93	240	1902841	4000.00	ug/kg	104
20) Perylene-d12	26.04	264	1909838	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	20289	79.23	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.98%#		
16) 4-Terphenyl-d14	17.73	244	30658	82.05	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.05%#		
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2631	13.97	ug/kg#	10
12) Phenanthrene	15.30	178	2633	7.01	ug/kg	94
14) Fluoranthene	17.22	202	4988	11.21	ug/kg	97
15) Pyrene	17.80	202	4057	8.99	ug/kg	98
18) Benzo[a]anthracene	20.75	228	2243	5.23	ug/kg	95
19) Chrysene	21.00	228	2408	5.84	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	2216	5.03	ug/kg	95
23) Benzo(j)fluoranthene	24.49	252	844	2.17	ug/kg	97

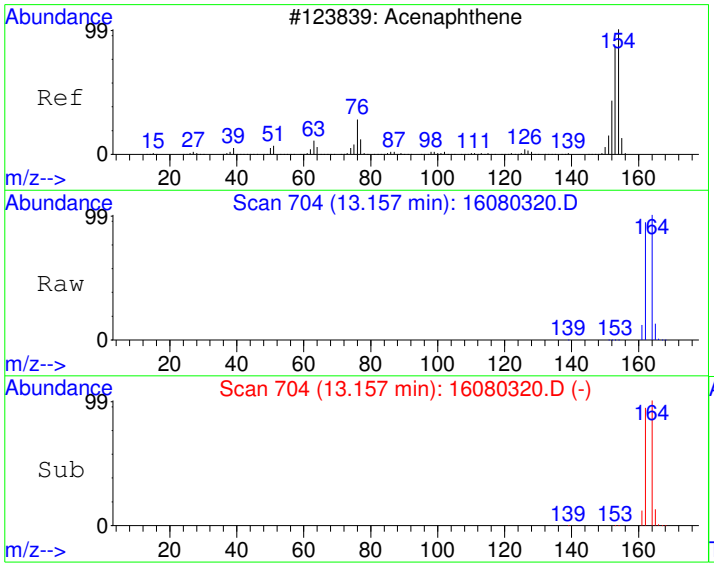
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080320.D Vial: 20
Acq On : 3 Aug 2016 11:11 pm Operator: DEW
Sample : 1608019-03A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

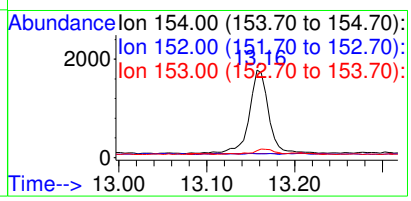


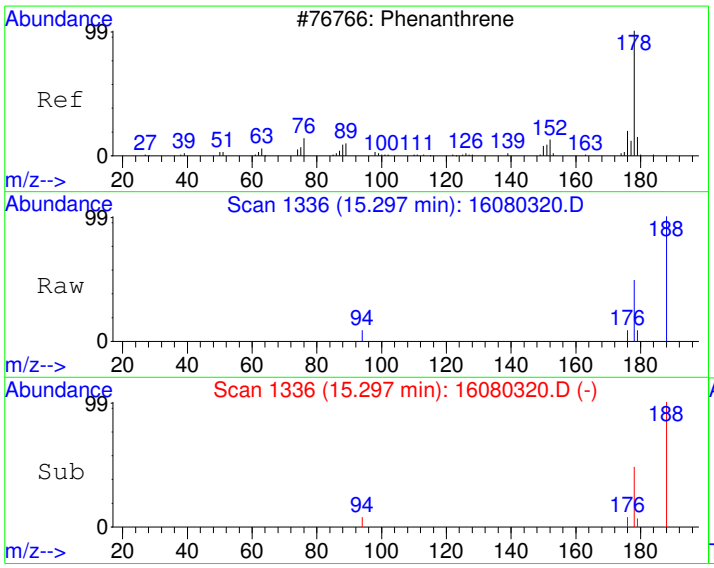


#9
Acenaphthene
Concen: 13.97 ug/kg
RT: 13.16 min Scan# 704
Delta R.T. -0.06 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:154 Resp: 2631

Ion	Ratio	Lower	Upper
154	100		
152	0.6	19.1	79.1#
153	4.4	76.2	136.2#

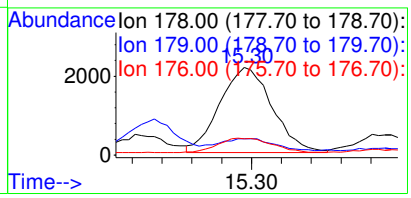


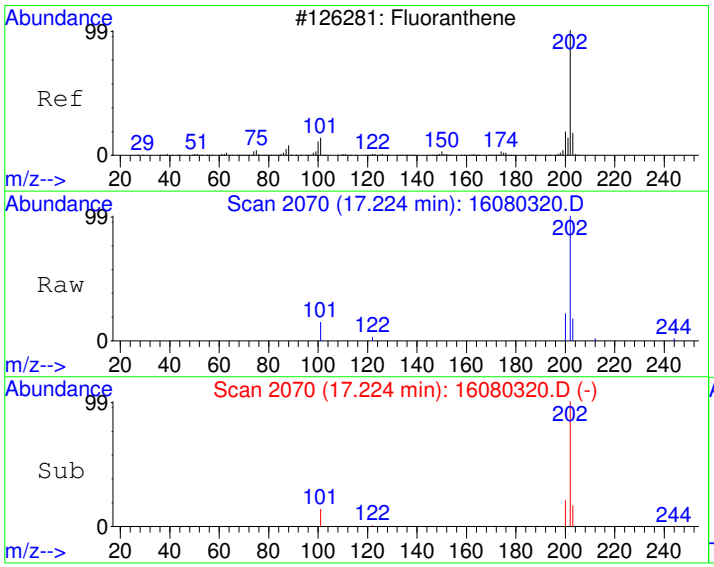


#12
Phenanthrene
Concen: 7.01 ug/kg
RT: 15.30 min Scan# 1336
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:178 Resp: 2633

Ion	Ratio	Lower	Upper
178	100		
179	13.2	0.0	45.7
176	16.1	0.0	48.7

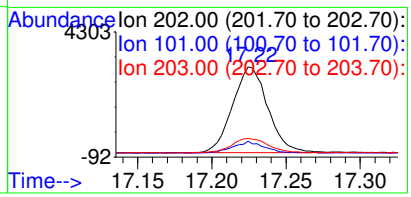


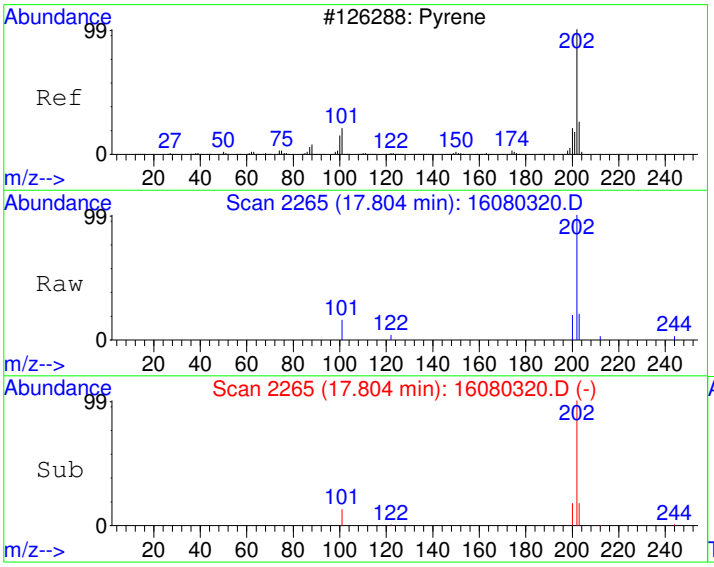


#14
Fluoranthene
Concen: 11.21 ug/kg
RT: 17.22 min Scan# 2070
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:202 Resp: 4988

Ion	Ratio	Lower	Upper
202	100		
101	13.7	0.0	42.1
203	16.8	0.0	47.9

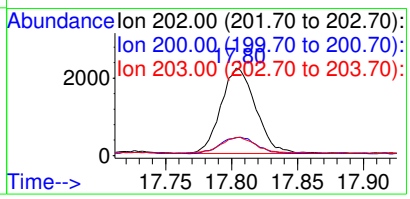


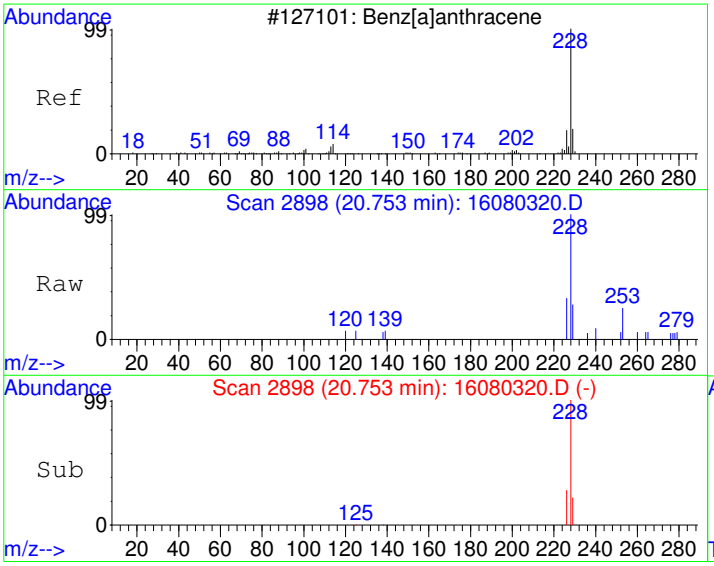


#15
Pyrene
Concen: 8.99 ug/kg
RT: 17.80 min Scan# 2265
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:202 Resp: 4057

Ion	Ratio	Lower	Upper
202	100		
200	18.4	0.0	49.7
203	18.2	0.0	47.8

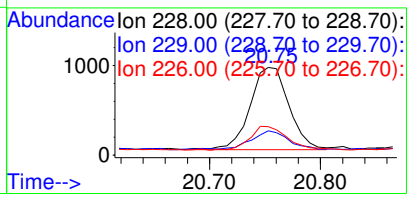


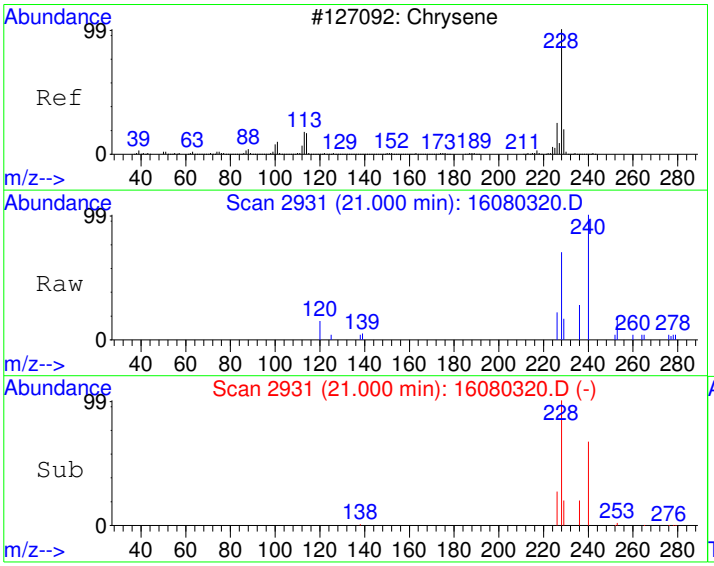


#18
Benzo[a]anthracene
Concen: 5.23 ug/kg
RT: 20.75 min Scan# 2898
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:228 Resp: 2243

Ion	Ratio	Lower	Upper
228	100		
229	22.1	0.0	49.8
226	28.6	0.0	55.8

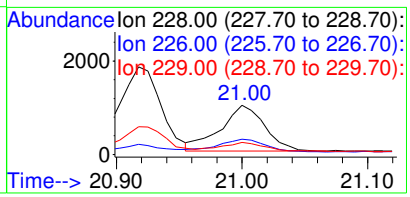


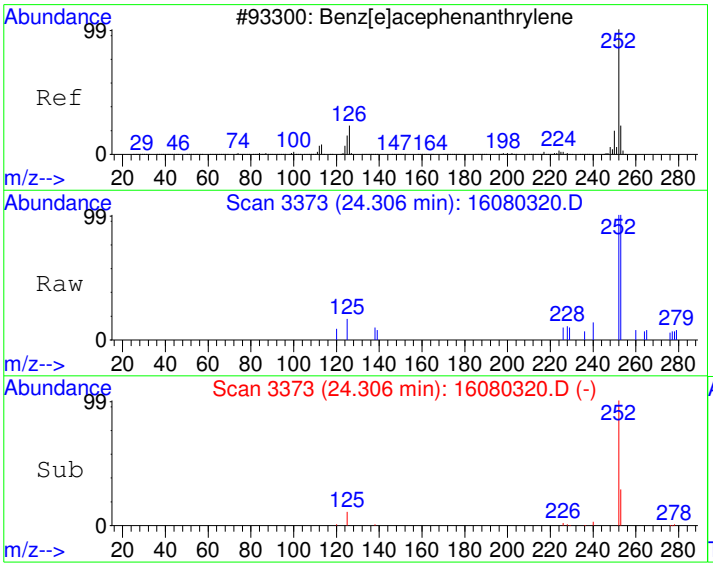


#19
Chrysene
Concen: 5.84 ug/kg
RT: 21.00 min Scan# 2931
Delta R.T. -0.02 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:228 Resp: 2408

Ion	Ratio	Lower	Upper
228	100		
226	27.5	0.0	58.1
229	19.4	0.0	50.0

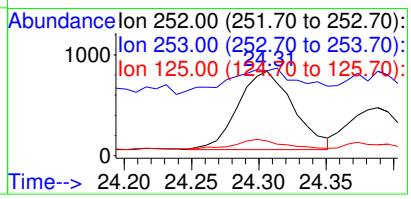


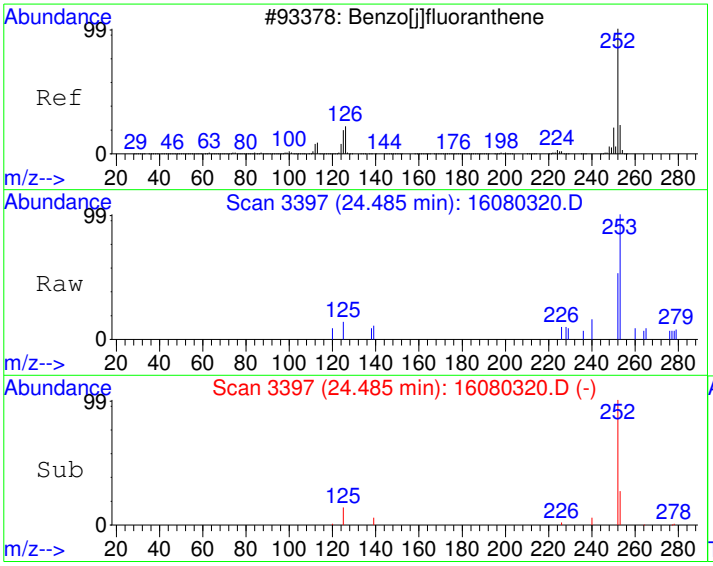


#21
Benzo[b]fluoranthene
Concen: 5.03 ug/kg
RT: 24.31 min Scan# 3373
Delta R.T. -0.02 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:252 Resp: 2216

Ion	Ratio	Lower	Upper
252	100		
253	25.4	0.0	52.0
125	10.1	0.0	40.6

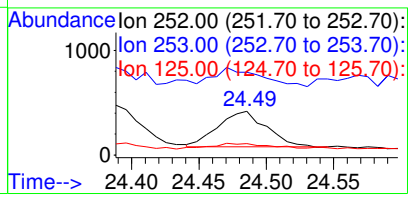




#23
Benzo(j)fluoranthene
Concen: 2.17 ug/kg
RT: 24.49 min Scan# 3397
Delta R.T. -0.02 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:252 Resp: 844

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.2	42.2
125	11.5	0.0	34.4



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080329.D Vial: 29
Acq On : 4 Aug 2016 5:13 am Operator: DEW
Sample : 1608019-03AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

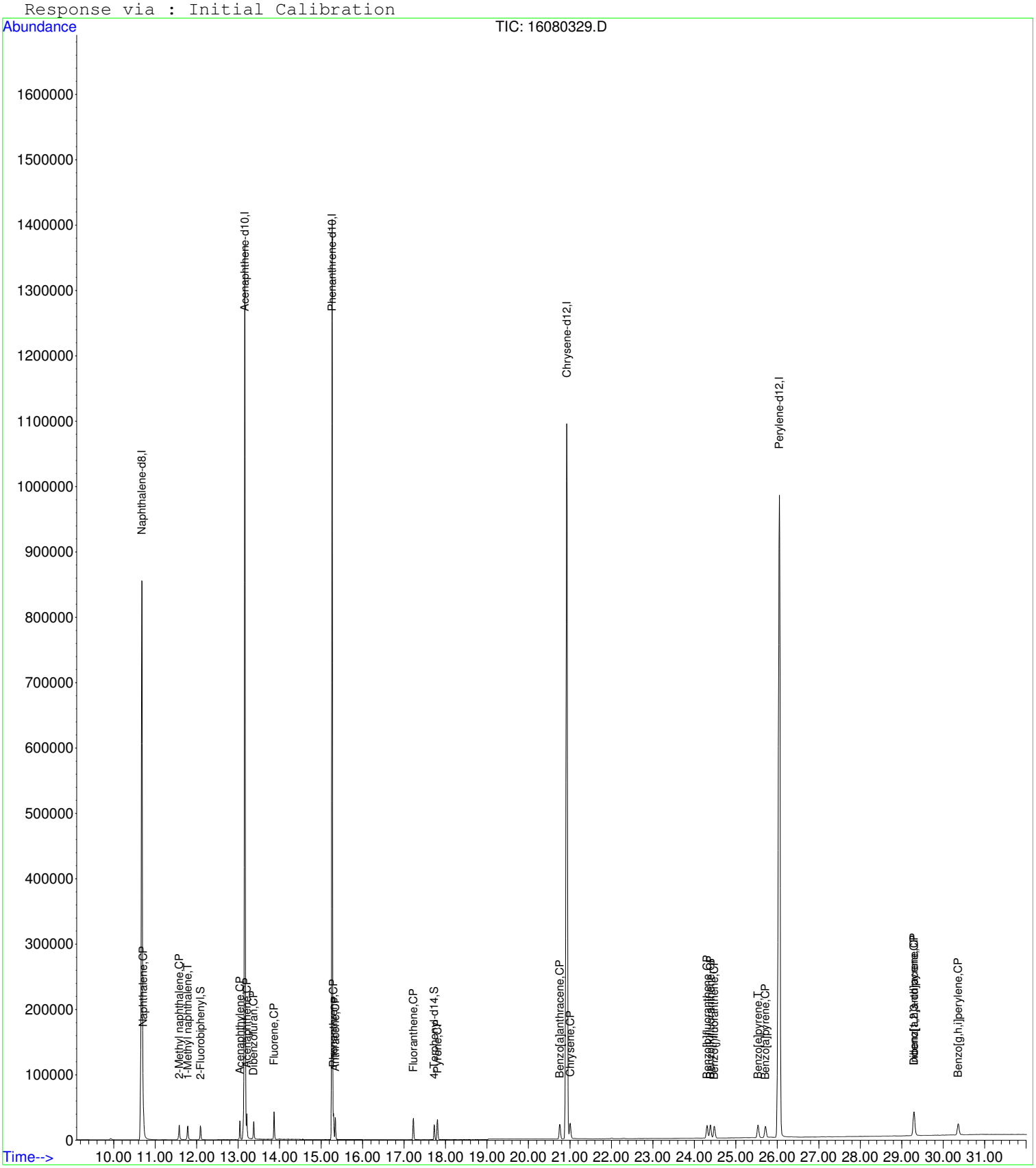
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1530458	4000.00	ug/kg	109
5) Acenaphthene-d10	13.16	164	854539	4000.00	ug/kg	143
11) Phenanthrene-d10	15.27	188	1607944	4000.00	ug/kg	101
17) Chrysene-d12	20.92	240	1947686	4000.00	ug/kg	106
20) Perylene-d12	26.05	264	2003946	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	23203	77.84	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.95%#		
16) 4-Terphenyl-d14	17.73	244	32296	85.11	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.13%#		
Target Compounds						Qvalue
2) Naphthalene	10.71	128	25207	72.39	ug/kg	99
3) 2-Methyl naphthalene	11.58	142	18315	81.13	ug/kg	98
4) 1-Methyl naphthalene	11.79	142	16618	83.11	ug/kg	98
6) Dibenzofuran	13.38	168	28013	81.00	ug/kg	100
8) Acenaphthylene	13.04	152	30591	80.84	ug/kg	99
9) Acenaphthene	13.21	154	16939	77.29	ug/kg	99
10) Fluorene	13.86	166	22879	83.05	ug/kg	99
12) Phenanthrene	15.30	178	31020	81.37	ug/kg	99
13) Anthracene	15.34	178	31038	77.38	ug/kg	99
14) Fluoranthene	17.22	202	35207	77.93	ug/kg	99
15) Pyrene	17.80	202	35979	78.54	ug/kg	99
18) Benzo[a]anthracene	20.75	228	36110	82.26	ug/kg	99
19) Chrysene	21.01	228	33723	79.85	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	39684	85.78	ug/kg	100
22) Benzo[k]fluoranthene	24.39	252	38297	90.24	ug/kg	99
23) Benzo(j)fluoranthene	24.49	252	35836	87.86	ug/kg	97
24) Benzo[e]pyrene	25.53	252	39339	87.63	ug/kg	98
25) Benzo[a]pyrene	25.71	252	37099	83.00	ug/kg	99
26) Dibenz[a,h]anthracene	29.29	278	36158	83.59	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	29.29	276	44093	85.90	ug/kg	98
28) Benzo[g,h,i]perylene	30.36	276	36614	85.16	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080329.D Vial: 29
Acq On : 4 Aug 2016 5:13 am Operator: DEW
Sample : 1608019-03AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080330.D Vial: 30
Acq On : 4 Aug 2016 5:53 am Operator: DEW
Sample : 1608019-03AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

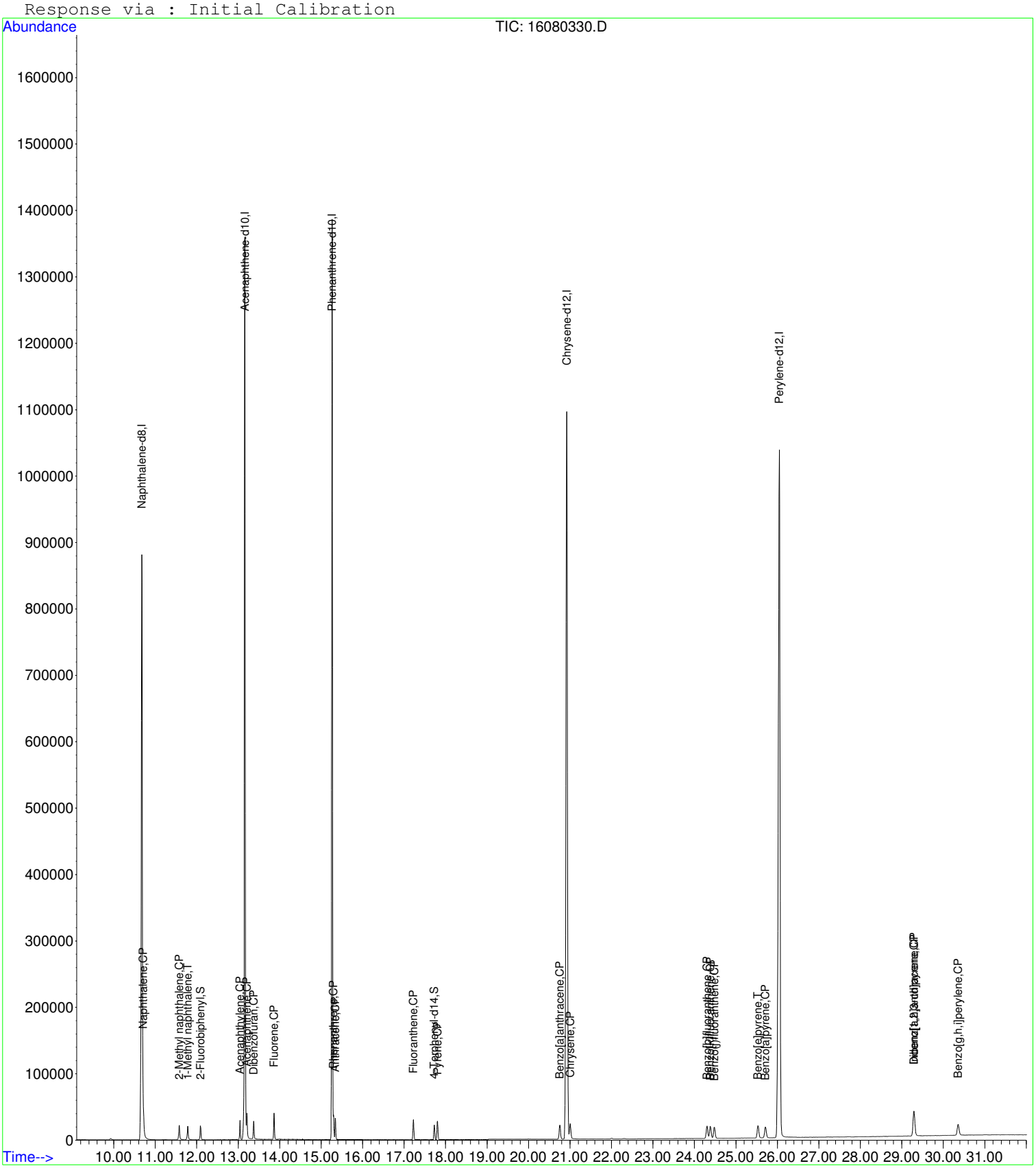
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.67	136	1498012	4000.00	ug/kg	107
5) Acenaphthene-d10	13.16	164	866463	4000.00	ug/kg	145
11) Phenanthrene-d10	15.26	188	1601406	4000.00	ug/kg	101
17) Chrysene-d12	20.92	240	1923553	4000.00	ug/kg	105
20) Perylene-d12	26.05	264	2058450	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	22902	75.78	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.89%#		
16) 4-Terphenyl-d14	17.73	244	30611	81.00	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.02%#		
Target Compounds						Qvalue
2) Naphthalene	10.71	128	24295	71.28	ug/kg	99
3) 2-Methyl naphthalene	11.58	142	17754	80.35	ug/kg	98
4) 1-Methyl naphthalene	11.79	142	16208	82.81	ug/kg	98
6) Dibenzofuran	13.37	168	27420	78.20	ug/kg	100
8) Acenaphthylene	13.04	152	29345	76.48	ug/kg	99
9) Acenaphthene	13.21	154	16863	75.88	ug/kg	99
10) Fluorene	13.86	166	22279	79.76	ug/kg	99
12) Phenanthrene	15.30	178	29847	78.61	ug/kg	99
13) Anthracene	15.34	178	29589	74.07	ug/kg	100
14) Fluoranthene	17.23	202	33545	74.55	ug/kg	98
15) Pyrene	17.80	202	34198	74.96	ug/kg	99
18) Benzo[a]anthracene	20.75	228	33836	78.04	ug/kg	99
19) Chrysene	21.01	228	32060	76.86	ug/kg	98
21) Benzo[b]fluoranthene	24.30	252	38178	80.34	ug/kg	99
22) Benzo[k]fluoranthene	24.38	252	35993	82.56	ug/kg	98
23) Benzo(j)fluoranthene	24.48	252	33692	80.42	ug/kg	99
24) Benzo[e]pyrene	25.53	252	38095	82.61	ug/kg	99
25) Benzo[a]pyrene	25.71	252	35285	76.85	ug/kg	99
26) Dibenz[a,h]anthracene	29.29	278	36634	82.45	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	29.29	276	43951	83.36	ug/kg	95
28) Benzo[g,h,i]perylene	30.36	276	36365	82.35	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080330.D Vial: 30
Acq On : 4 Aug 2016 5:53 am Operator: DEW
Sample : 1608019-03AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



GCMS6_160803C
For

DHL Work Order
1608019

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_160803C
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.**

Reviewed by Don Winston also.

Analyst: Karyn Lane Date: 8/4/2016

Second-Level Review: Janice Whitt Date: 8/22/2016

REVIEWED BY
By Janice Whitt at 10:22:22 AM, 8/22/2016

DHL Analytical, Inc.

Run ID: GCMS6_160803C **Run No.:** 87412

Analytical Run Date: 8/3/2016 **InstrumentID:** GCMS6

Analyst: Karyn Lane **Column:** Agilent (J&W) DB-EUPAH (20m x 0.18mmI

Calibration ID: 680 **Column ID:** 0.18mm

Column Length: 20m

Cal Comments: PP160801.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-160803	1	PAH_LL_SDOD1	TUNE	R87412	8/3/2016 7:10:00 PM		
ICV-160803	1	PAH_LL_SDOD1	ICV	R87412	8/3/2016 7:50:00 PM		
LCS-76642	1	PAH_LL_SDOD1	LCS	76642	8/3/2016 8:29:00 PM		
MB-76642	1	PAH_LL_SDOD1	MBLK	76642	8/3/2016 9:10:00 PM		
1608019-01A	10	PAH_LL_SDOD1	SAMP	76642	8/3/2016 9:50:00 PM		All samples run at 10x for this project - dilution meets project requirements and is approved by project manager.
1608019-02A	10	PAH_LL_SDOD1	SAMP	76642	8/3/2016 10:31:00 PM		
1608019-03A	10	PAH_LL_SDOD1	SAMP	76642	8/3/2016 11:11:00 PM		
1608019-04A	10	PAH_LL_SDOD1	SAMP	76642	8/3/2016 11:51:00 PM		
1608019-05A	10	PAH_LL_SDOD1	SAMP	76642	8/4/2016 12:31:00 AM		
1608019-06A	10	PAH_LL_SDOD1	SAMP	76642	8/4/2016 1:12:00 AM		
1608019-03AMS	10	PAH_LL_SDOD1	MS	76642	8/4/2016 5:13:00 AM		
1608019-03AMSD	10	PAH_LL_SDOD1	MSD	76642	8/4/2016 5:53:00 AM		
CCV1-160803	1	PAH_LL_SDOD1	CCV	R87412	8/4/2016 6:34:00 AM		

Sequence Name: C:\HPCHEM\1\SEQUENCE\160803.S
Comment:
Operator: DEW
Data Path: C:\HPCHEM\1\DATA\160803\
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	16080301	DFTPPPAH	DFTPP-160803
2	Sample	2	16080302	PP160801	ICV-160803
3	Sample	3	16080303	PP160801	SB-160803
4	Sample	4	16080304	PP160801	SB-160803
5	Sample	5	16080305	PP160801	1607256-33A
6	Sample	6	16080306	PP160801	1607256-35A
7	Sample	7	16080307	PP160801	1607219-18A
8	Sample	8	16080308	PP160801	1607219-22A
9	Sample	9	16080309	PP160801	1607239-01A
10	Sample	10	16080310	PP160801	1607239-05A
11	Sample	11	16080311	PP160801	1607239-11A
12	Sample	12	16080312	PP160801	1607239-17A
13	Sample	13	16080313	PP160801	CCV1-160803
14	Sample	14	16080314	DFTPPPAH	DFTPP-160803
15	Sample	15	16080315	PP160801	ICV-160803
16	Sample	16	16080316	PP160801	LCS-76642
17	Sample	17	16080317	PP160801	MB-76642
18	Sample	18	16080318	PP160801	1608019-01A
19	Sample	19	16080319	PP160801	1608019-02A
20	Sample	20	16080320	PP160801	1608019-03A
21	Sample	21	16080321	PP160801	1608019-04A
22	Sample	22	16080322	PP160801	1608019-05A
23	Sample	23	16080323	PP160801	1608019-06A
24	Sample	24	16080324	PP160801	1607254-05C
25	Sample	25	16080325	PP160801	1607260-01C
26	Sample	26	16080326	PP160801	1607260-04C
27	Sample	27	16080327	PP160801	1607254-02C
28	Sample	28	16080328	PP160801	1607260-11C
29	Sample	29	16080329	PP160801	1608019-03AMS
30	Sample	30	16080330	PP160801	1608019-03AMSD
31	Sample	31	16080331	PP160801	CCV1-160803

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/3/2016 10:36:07 AM**
Digestion:
Prep End Date: **8/3/2016 2:45:00 PM**

Prep Batch **76642** Prep Code: **3550_PAHDOD** Technician: **Alex Robbins**

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
1608019-01A	Soil		10.08	10	0.992	1 of 1	
1608019-02A	Soil		10.7	10	0.935	1 of 1	
1608019-03A	Soil		10.15	10	0.985	1 of 1	
1608019-03AMS	Soil		10.03	10	0.997	of	
Associated w/76628							
1608019-03AMSD	Soil		10.25	10	0.976	of	
Associated w/76628							
1608019-04A	Soil		10.08	10	0.992	1 of 1	
1608019-05A	Soil		10.06	10	0.994	1 of 1	
1608019-06A	Soil		10.14	10	0.986	1 of 1	
LCS-76642	Soil		10	10	1.000	of	
Associated w/76628							
MB-76642	Soil		10	10	1.000	of	
Associated w/76628							

Number	Reagent Name	Amt	Units	Exp. Da
10394	Purified Sodium Sulfate	10	g	05/23/2026
10419	Methylene Chloride	8	ml	05/31/2026
10536	Whatman 41 Filter	1	filter	07/11/2026
10591	1:1 MeCl2/Acetone	120	ml	07/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160727	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	10/25/2016
SVPREP160802	40 PPM Surrogate Standard	ALL	0.25	10/31/2016

REVIEWED BY
By Janice Whitt at 10:01:08 AM, 8/22/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/3/2016 10:36:07 AM**
Digestion:
Prep End Date: 8/3/2016 2:45 PM

Prep Batch **76642** Prep Code: **3550_PAHDOD** Technician: **Alex Robbins**

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
1608019-01A	Soil		10 .08	10	1.000	1 of 1	
1608019-02A	Soil		10 .70	10	1.000	1 of 1	
1608019-03A	Soil		10 .15	10	1.000	1 of 1	
1608019-03AMS	Soil		10 .03	10	1.000	1 of 1	
Associated w/76628							
1608019-03AMSD	Soil		10 .25	10	1.000	1 of 1	
Associated w/76628							
1608019-04A	Soil		10 .06	10	1.000	1 of 1	
1608019-05A	Soil		10 .09	10	1.000	1 of 1	
1608019-06A	Soil		10 .14	10	1.000	1 of 1	
LCS-76642	Soil		10	10	1.000	of	
Associated w/76628							
MB-76642	Soil		10	10	1.000	of	
Associated w/76628							

Number	Reagent Name	Amt	Units	Exp. Da
10394	Purified Sodium Sulfate	10	g	05/23/2026
10419	Methylene Chloride	8	ml	05/31/2026
10536	Whatman 41 Filter	1	filter	07/11/2026
10591	1:1 MeCl2/Acetone	120	ml	07/26/2026

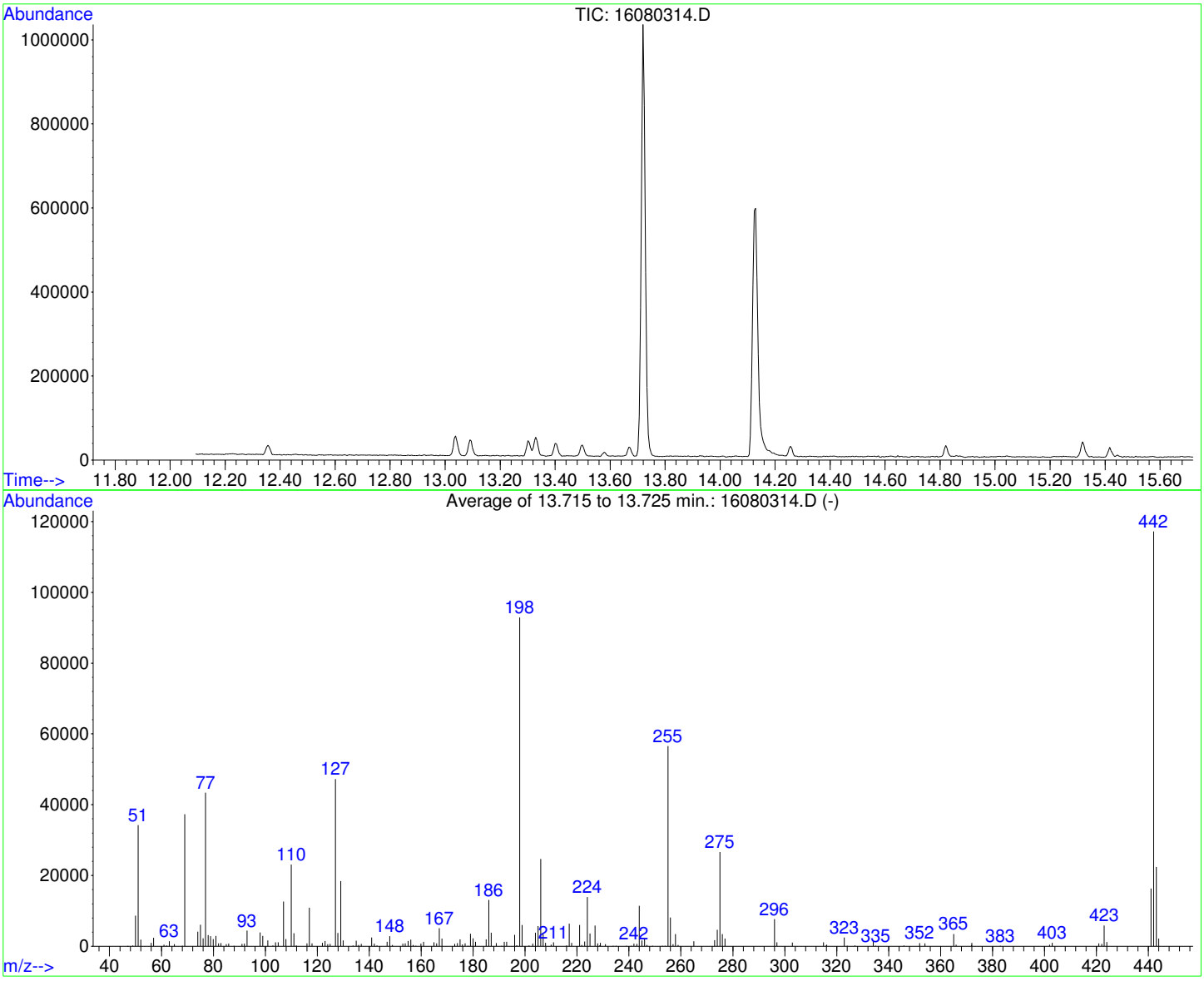
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160727	200 PPM PAH Spike Mix	LCS/MS/MSD	0.05	10/25/2016
SVPREP160802	40 PPM Surrogate Standard	ALL	0.25	10/31/2016

REVIEWED BY
By Janice Whitt at 10:01:05 AM, 8/22/2016

8/3/16

8/3/16

Data File : C:\HPCHEM\1\DATA\160803\16080314.D Vial: 14
Acq On : 3 Aug 2016 7:10 pm Operator: DEW
Sample : DFTPP-160803 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 346, 347, 348; Background Corrected with Scan 340

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	36.9	34261	PASS
68	69	0.00	2	0.5	170	PASS
69	198	0.00	100	40.1	37296	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	50.9	47253	PASS
197	198	0.00	2	0.3	277	PASS
198	198	100	100	100.0	92904	PASS
199	198	5	9	6.5	6043	PASS
275	198	10	60	28.7	26627	PASS
365	198	1	200	3.7	3466	PASS
441	442	0.01	24	13.9	16343	PASS
442	198	50	400	126.2	117213	PASS
443	442	15	24	19.1	22415	PASS

REVIEWED/APPROVED
By Sherri Herschmann at 10:29:29 AM, 8/5/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080315.D Vial: 15
Acq On : 3 Aug 2016 7:50 pm Operator: DEW
Sample : ICV-160803 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

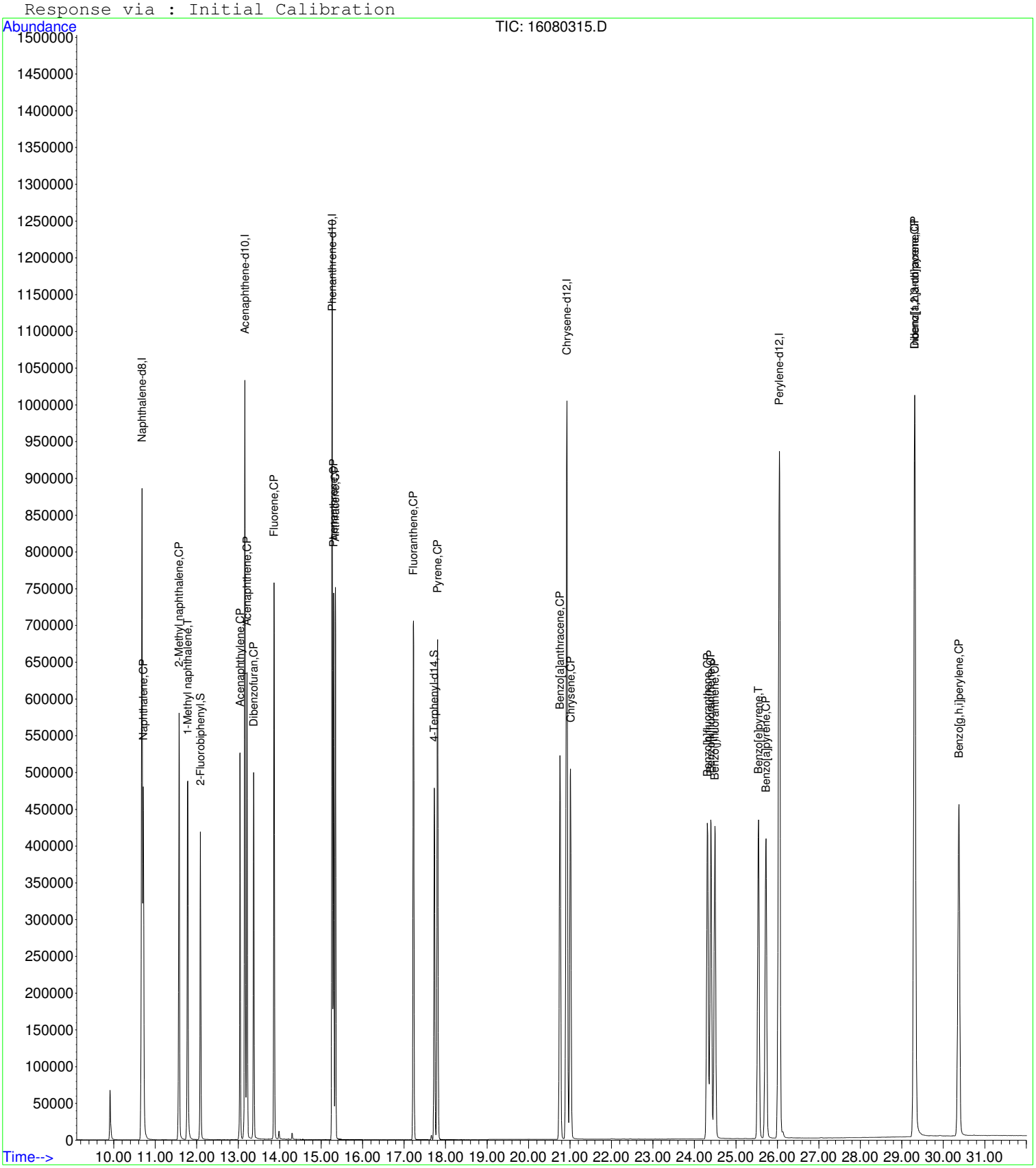
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1357377	4000.00	ug/kg	97
5) Acenaphthene-d10	13.16	164	599194	4000.00	ug/kg	100
11) Phenanthrene-d10	15.27	188	1447843	4000.00	ug/kg	91
17) Chrysene-d12	20.92	240	1772108	4000.00	ug/kg	97
20) Perylene-d12	26.05	264	1912975	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	406311	1944.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	48.60%		
16) 4-Terphenyl-d14	17.73	244	669574	1959.68	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	48.99%		
Target Compounds						Qvalue
2) Naphthalene	10.71	128	592417	1918.22	ug/kg	99
3) 2-Methyl naphthalene	11.57	142	386023	1928.08	ug/kg	95
4) 1-Methyl naphthalene	11.79	142	344672	1943.55	ug/kg	99
6) Dibenzofuran	13.38	168	476409	1964.69	ug/kg	100
8) Acenaphthylene	13.05	152	529451	1995.32	ug/kg	100
9) Acenaphthene	13.21	154	311648	2027.94	ug/kg	99
10) Fluorene	13.86	166	408489	2114.59	ug/kg	99
12) Phenanthrene	15.30	178	664579	1936.09	ug/kg	100
13) Anthracene	15.34	178	689996	1910.34	ug/kg	100
14) Fluoranthene	17.23	202	782796	1924.32	ug/kg	100
15) Pyrene	17.81	202	785618	1904.63	ug/kg	100
18) Benzo[a]anthracene	20.76	228	813518	2036.73	ug/kg	99
19) Chrysene	21.01	228	768363	1999.60	ug/kg	100
21) Benzo[b]fluoranthene	24.31	252	918477	2079.79	ug/kg	100
22) Benzo[k]fluoranthene	24.39	252	793613	1958.85	ug/kg	100
23) Benzo(j)fluoranthene	24.49	252	787998	2023.90	ug/kg	99
24) Benzo[e]pyrene	25.55	252	872141	2035.03	ug/kg	99
25) Benzo[a]pyrene	25.73	252	862003	2020.16	ug/kg	100
26) Dibenz[a,h]anthracene	29.31	278	961861	2329.42	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.32	276	1135020	2316.36	ug/kg	99
28) Benzo[g,h,i]perylene	30.38	276	954400	2325.52	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080315.D Vial: 15
Acq On : 3 Aug 2016 7:50 pm Operator: DEW
Sample : ICV-160803 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

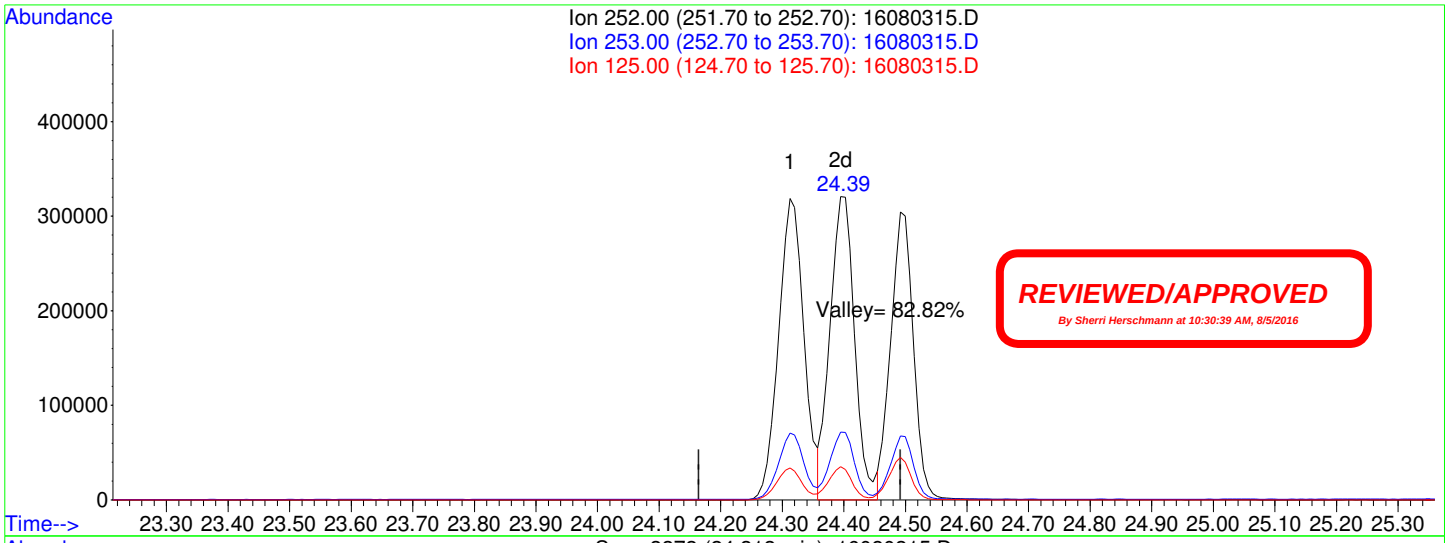
Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

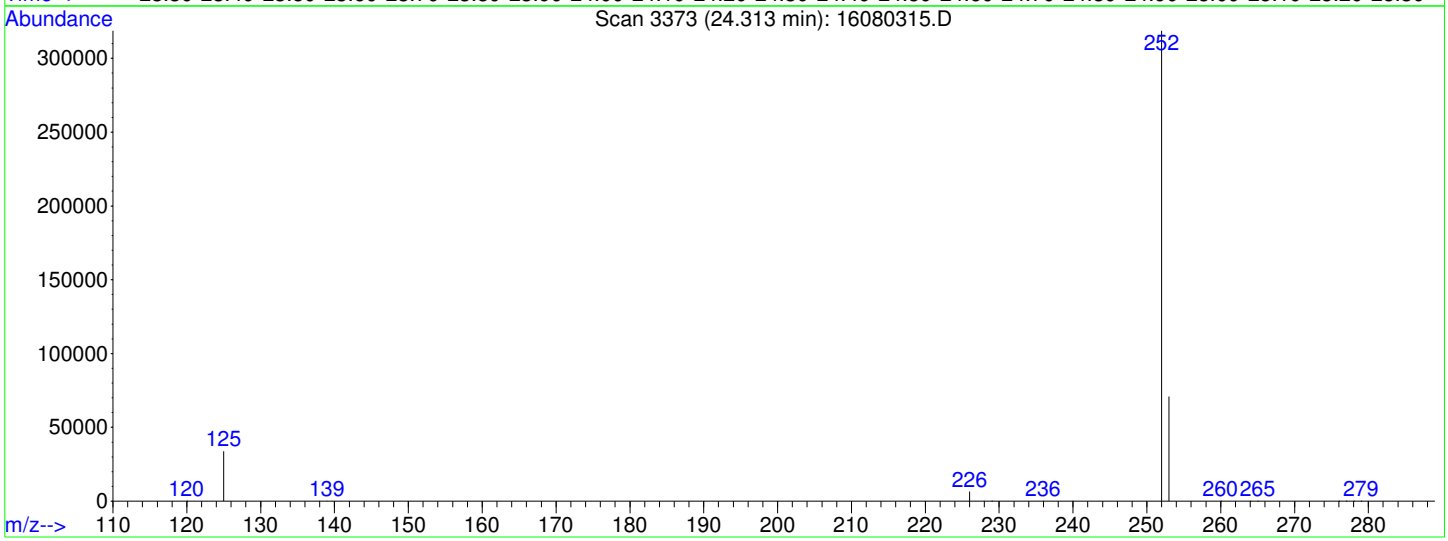


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\160803\16080315.D Vial: 15
Acq On : 3 Aug 2016 7:50 pm Operator: DEW
Sample : ICV-160803 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 3 20:22 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Multiple Level Calibration





TIC: 16080315.D

(21) Benzo[b]fluoranthene (CP)

24.31min 2079.79ug/kg

response 918477

Ion	Exp%	Act%
252.00	100	100
253.00	22.00	22.02
125.00	10.60	10.57
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080316.D Vial: 16
Acq On : 3 Aug 2016 8:29 pm Operator: DEW
Sample : LCS-76642 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

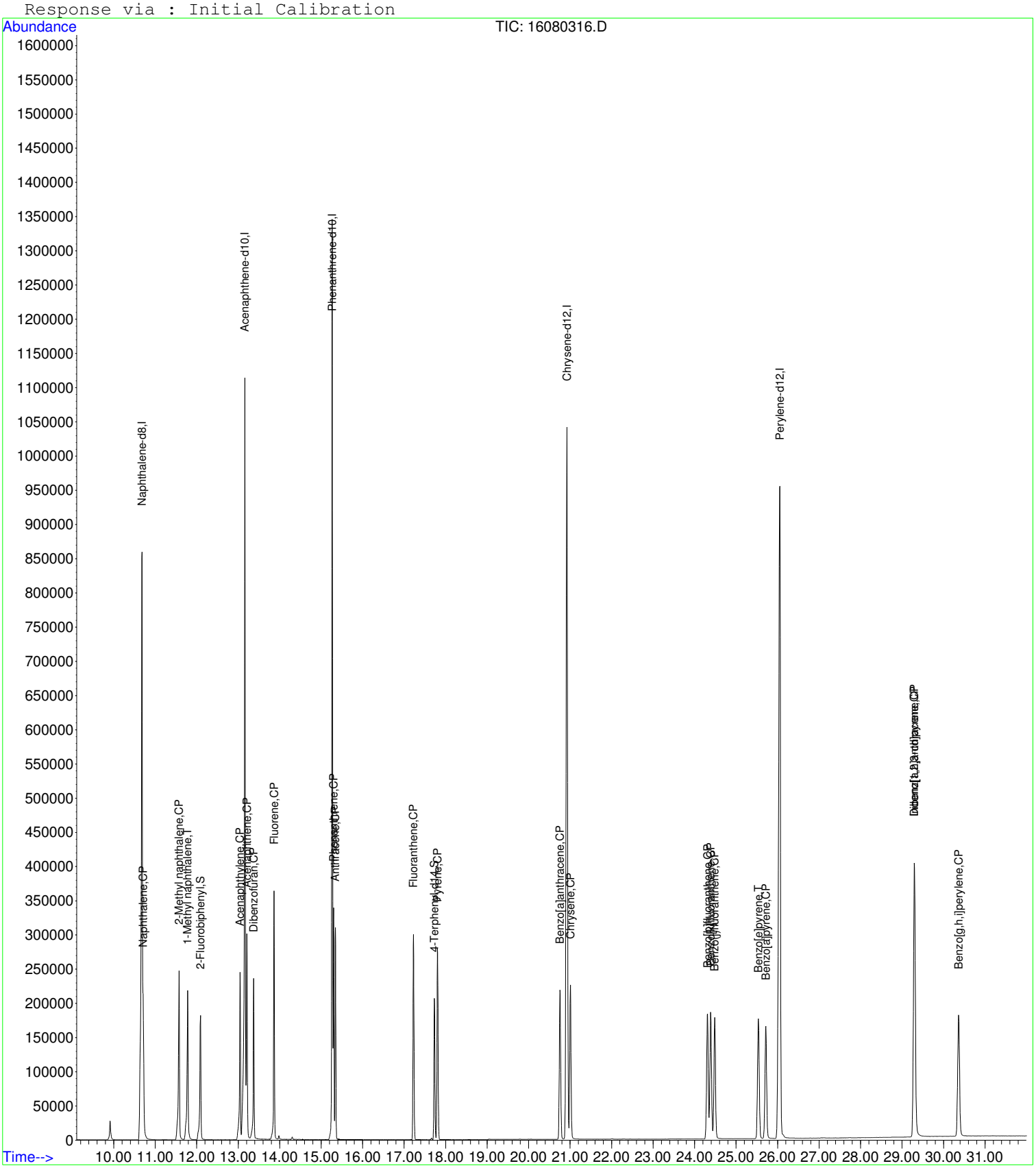
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1662476	4000.00	ug/kg	118
5) Acenaphthene-d10	13.16	164	828477	4000.00	ug/kg	138
11) Phenanthrene-d10	15.27	188	1559622	4000.00	ug/kg	98
17) Chrysene-d12	20.92	240	1862417	4000.00	ug/kg	102
20) Perylene-d12	26.06	264	1947688	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	234353	810.96	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 20.27%#			
16) 4-Terphenyl-d14	17.73	244	292983	796.03	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.90%#			
Target Compounds						Qvalue
2) Naphthalene	10.71	128	285983	756.06	ug/kg	100
3) 2-Methyl naphthalene	11.57	142	202818	827.11	ug/kg	97
4) 1-Methyl naphthalene	11.78	142	182332	839.46	ug/kg	96
6) Dibenzofuran	13.37	168	262449	782.79	ug/kg	100
8) Acenaphthylene	13.04	152	295106	804.36	ug/kg	99
9) Acenaphthene	13.21	154	176103	828.79	ug/kg	99
10) Fluorene	13.87	166	215659	807.42	ug/kg	99
12) Phenanthrene	15.30	178	309896	838.10	ug/kg	100
13) Anthracene	15.34	178	295127	758.53	ug/kg	100
14) Fluoranthene	17.22	202	328310	749.23	ug/kg	99
15) Pyrene	17.80	202	329032	740.53	ug/kg	100
18) Benzo[a]anthracene	20.75	228	344227	820.02	ug/kg	100
19) Chrysene	21.01	228	324103	802.55	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	378067	840.83	ug/kg	99
22) Benzo[k]fluoranthene	24.39	252	354775	860.07	ug/kg	99
23) Benzo(j)fluoranthene	24.48	252	332481	838.73	ug/kg	99
24) Benzo[e]pyrene	25.54	252	366358	839.61	ug/kg	99
25) Benzo[a]pyrene	25.72	252	337763	777.46	ug/kg	99
26) Dibenz[a,h]anthracene	29.29	278	383812	912.94	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.30	276	460717	923.48	ug/kg	99
28) Benzo[g,h,i]perylene	30.36	276	379032	907.10	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080316.D Vial: 16
Acq On : 3 Aug 2016 8:29 pm Operator: DEW
Sample : LCS-76642 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080317.D Vial: 17
Acq On : 3 Aug 2016 9:10 pm Operator: DEW
Sample : MB-76642 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

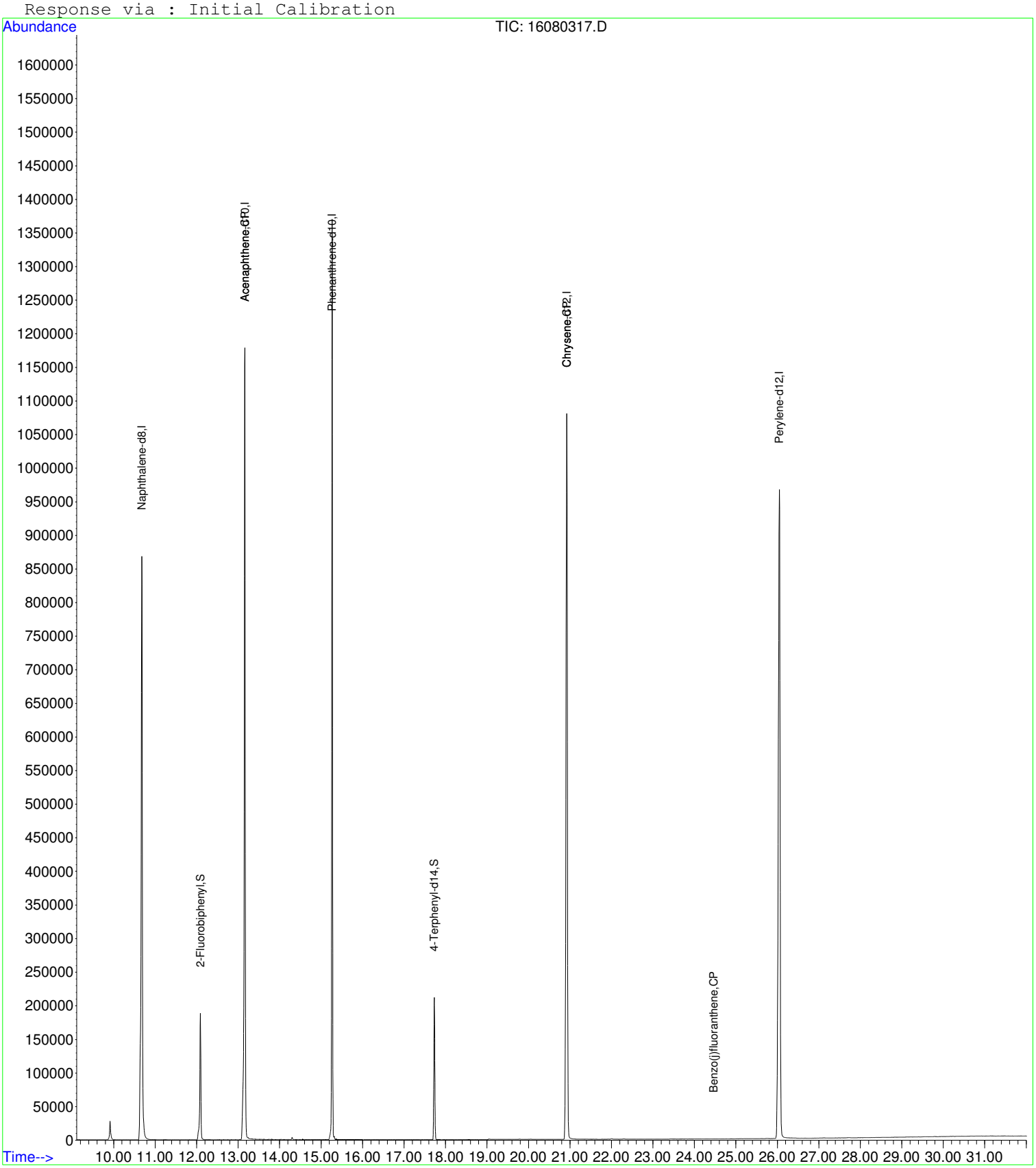
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1693893	4000.00	ug/kg	121
5) Acenaphthene-d10	13.16	164	860313	4000.00	ug/kg	144
11) Phenanthrene-d10	15.26	188	1619012	4000.00	ug/kg	102
17) Chrysene-d12	20.92	240	1901823	4000.00	ug/kg	104
20) Perylene-d12	26.05	264	1982107	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	232572	775.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.38%#			
16) 4-Terphenyl-d14	17.73	244	290945	761.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 19.04%#			
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2928	~~13.27~~	~~ug/kg#~~	~~11~~
19) Chrysene	20.92	228	4150	~~10.06~~	~~ug/kg~~	~~70~~
23) Benzo(j)fluoranthene	24.47	252	8	0.02	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080317.D Vial: 17
Acq On : 3 Aug 2016 9:10 pm Operator: DEW
Sample : MB-76642 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080318.D Vial: 18
Acq On : 3 Aug 2016 9:50 pm Operator: DEW
Sample : 1608019-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

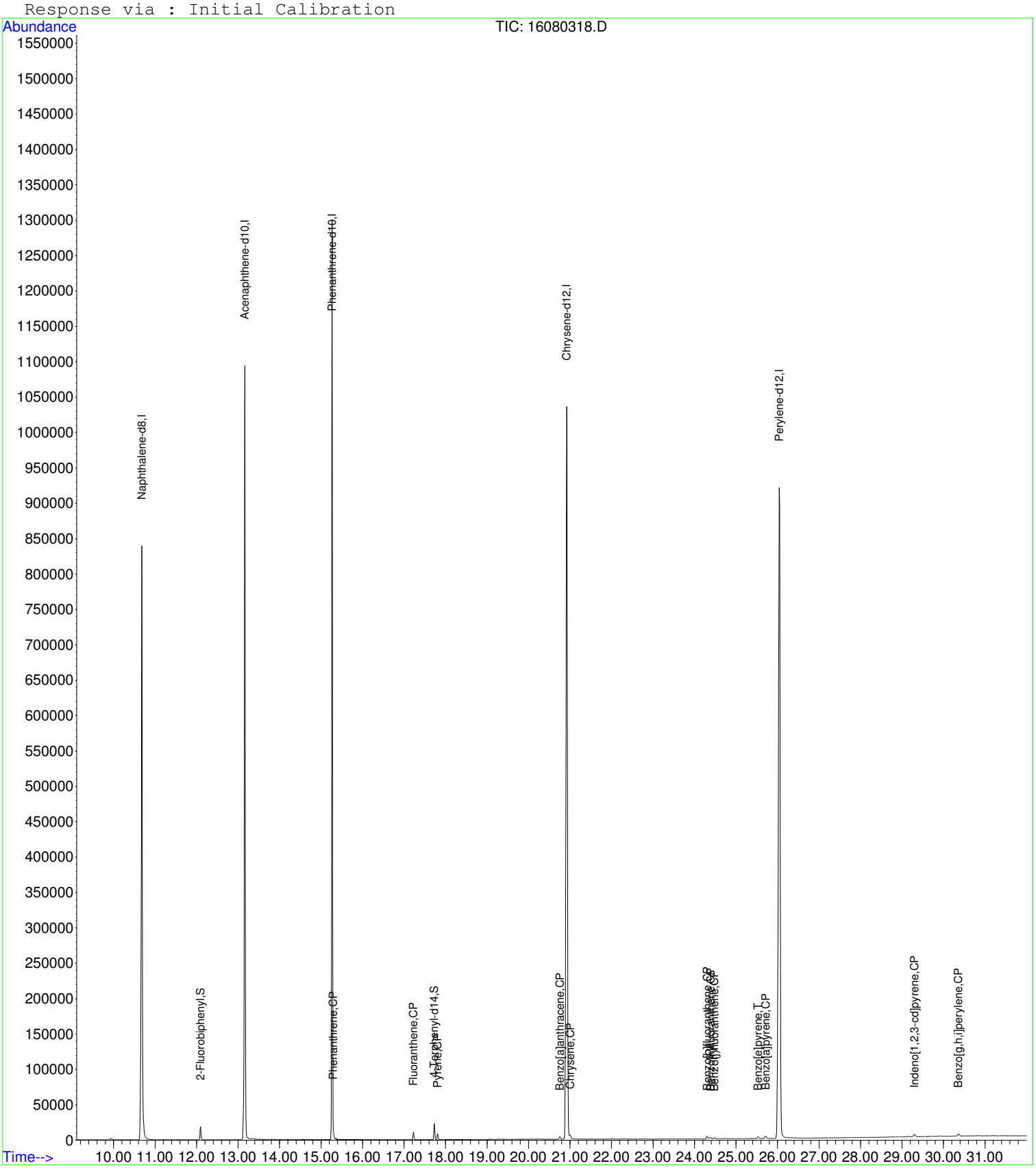
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1425979	4000.00	ug/kg	102
5) Acenaphthene-d10	13.16	164	683488	4000.00	ug/kg	114
11) Phenanthrene-d10	15.26	188	1503199	4000.00	ug/kg	95
17) Chrysene-d12	20.92	240	1820032	4000.00	ug/kg	99
20) Perylene-d12	26.04	264	1855906	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	20699	86.82	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.17%#		
16) 4-Terphenyl-d14	17.73	244	31719	89.42	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.24%#		
Target Compounds						Qvalue
12) Phenanthrene	15.30	178	5269	14.78	ug/kg	99
14) Fluoranthene	17.22	202	12450	29.48	ug/kg	99
15) Pyrene	17.81	202	10520	24.57	ug/kg	99
18) Benzo[a]anthracene	20.75	228	5918	14.43	ug/kg	95
19) Chrysene	21.00	228	6973	17.67	ug/kg	98
21) Benzo[b]fluoranthene	24.31	252	7092	16.55	ug/kg	99
22) Benzo[k]fluoranthene	24.39	252	3370	8.57	ug/kg	91
23) Benzo(j)fluoranthene	24.48	252	3197	8.46	ug/kg	92
24) Benzo[e]pyrene	25.53	252	5211	12.53	ug/kg	97
25) Benzo[a]pyrene	25.71	252	6861	16.57	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	29.30	276	6156	12.95	ug/kg	96
28) Benzo[g,h,i]perylene	30.36	276	6033	15.15	ug/kg	97

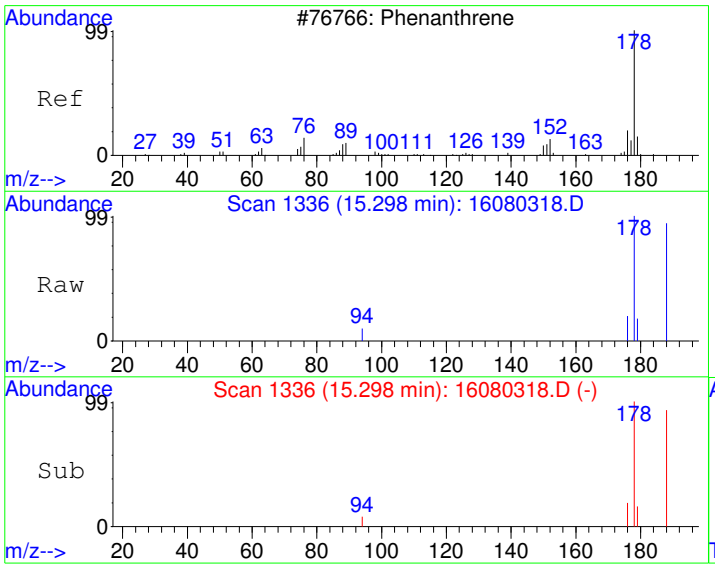
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080318.D Vial: 18
Acq On : 3 Aug 2016 9:50 pm Operator: DEW
Sample : 1608019-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

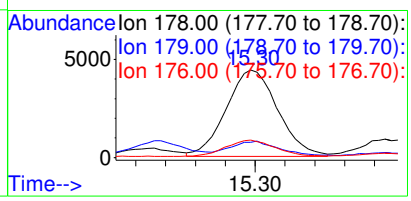


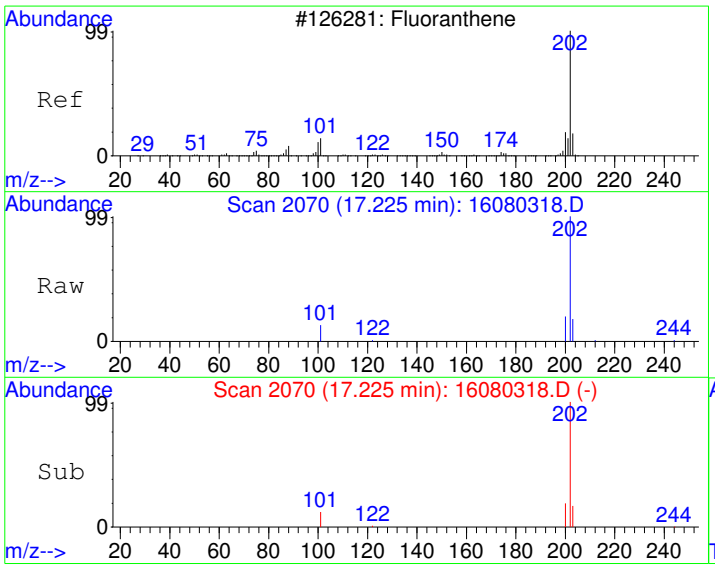


#12
Phenanthrene
Concen: 14.78 ug/kg
RT: 15.30 min Scan# 1336
Delta R.T. -0.01 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:178 Resp: 5269

Ion	Ratio	Lower	Upper
178	100		
179	15.4	0.0	45.7
176	19.1	0.0	48.7

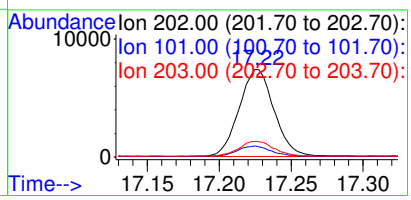


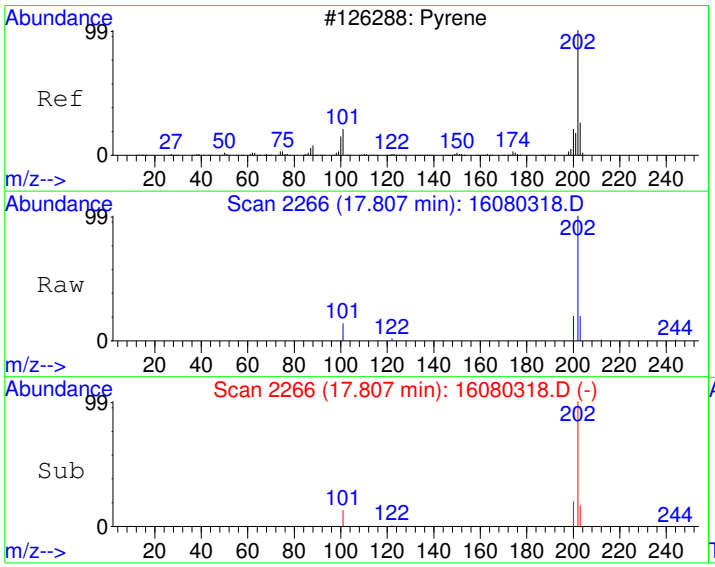


#14
Fluoranthene
Concen: 29.48 ug/kg
RT: 17.22 min Scan# 2070
Delta R.T. -0.01 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:202 Resp: 12450

Ion	Ratio	Lower	Upper
202	100		
101	12.0	0.0	42.1
203	17.3	0.0	47.9

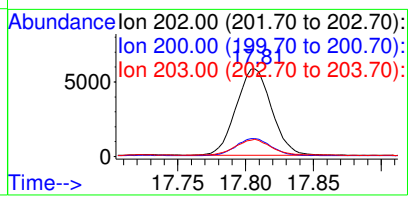


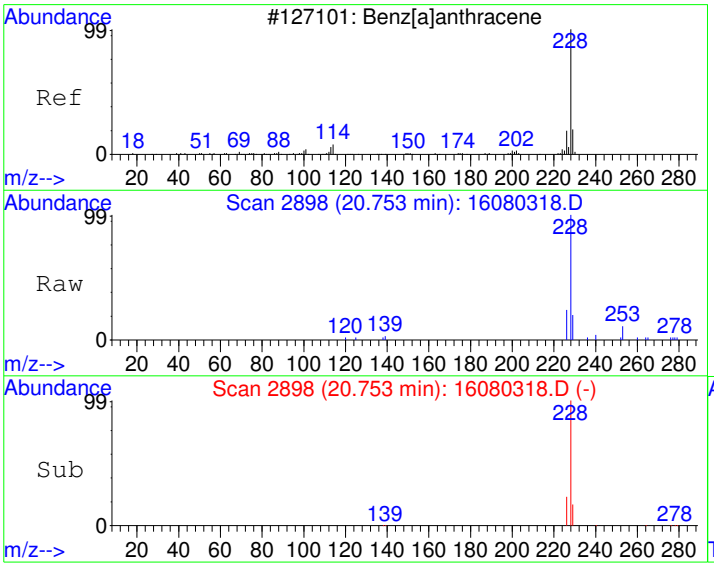


#15
Pyrene
Concen: 24.57 ug/kg
RT: 17.81 min Scan# 2266
Delta R.T. -0.01 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:202 Resp: 10520

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	49.7
203	18.5	0.0	47.8

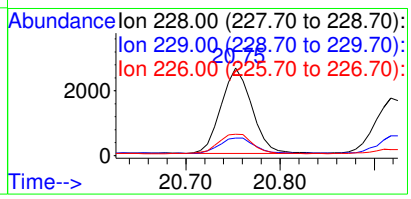


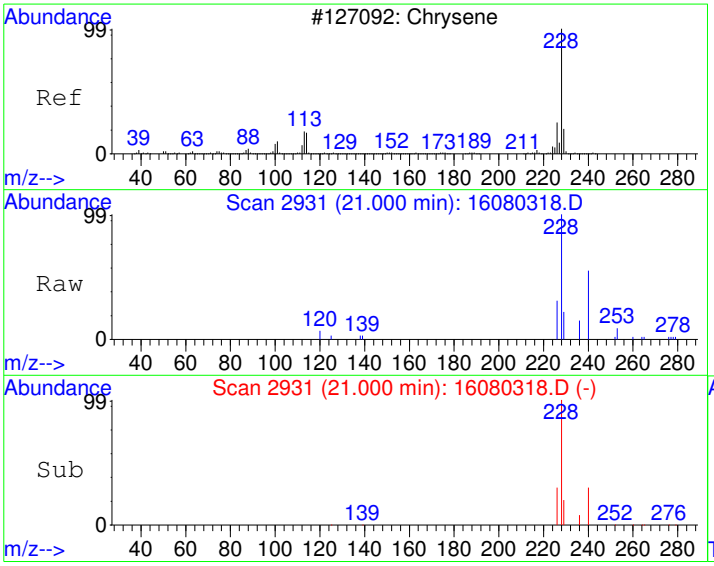


#18
Benzo[a]anthracene
Concen: 14.43 ug/kg
RT: 20.75 min Scan# 2898
Delta R.T. -0.01 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:228 Resp: 5918

Ion	Ratio	Lower	Upper
228	100		
229	17.7	0.0	49.8
226	22.7	0.0	55.8

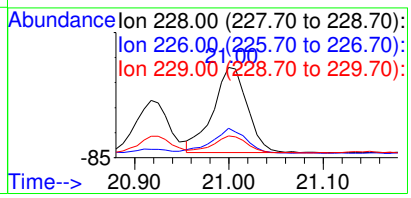


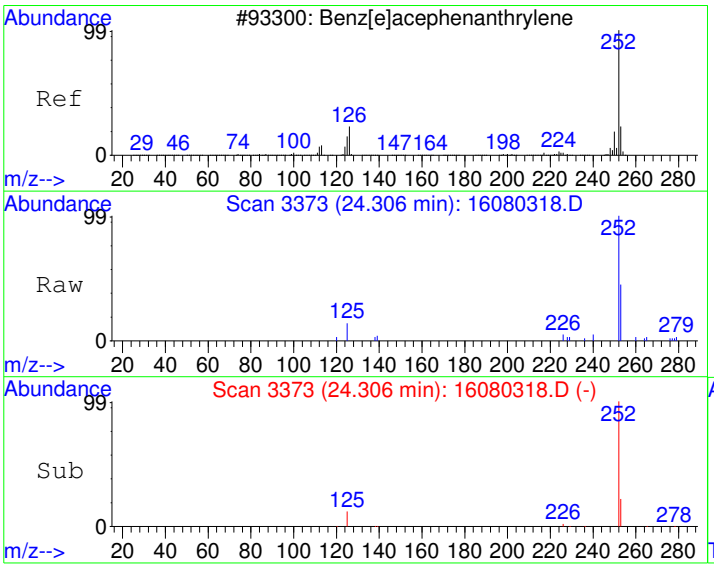


#19
Chrysene
Concen: 17.67 ug/kg
RT: 21.00 min Scan# 2931
Delta R.T. -0.02 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:228 Resp: 6973

Ion	Ratio	Lower	Upper
228	100		
226	29.4	0.0	58.1
229	19.9	0.0	50.0

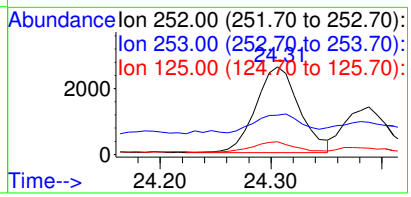


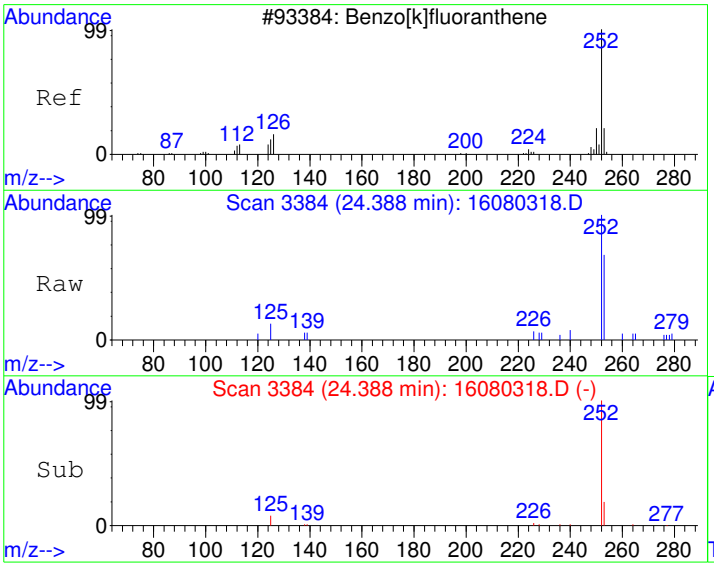


#21
Benzo[b]fluoranthene
Concen: 16.55 ug/kg
RT: 24.31 min Scan# 3373
Delta R.T. -0.02 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:252 Resp: 7092

Ion	Ratio	Lower	Upper
252	100		
253	21.6	0.0	52.0
125	11.4	0.0	40.6

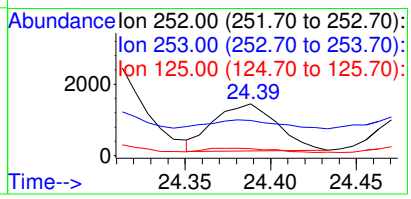


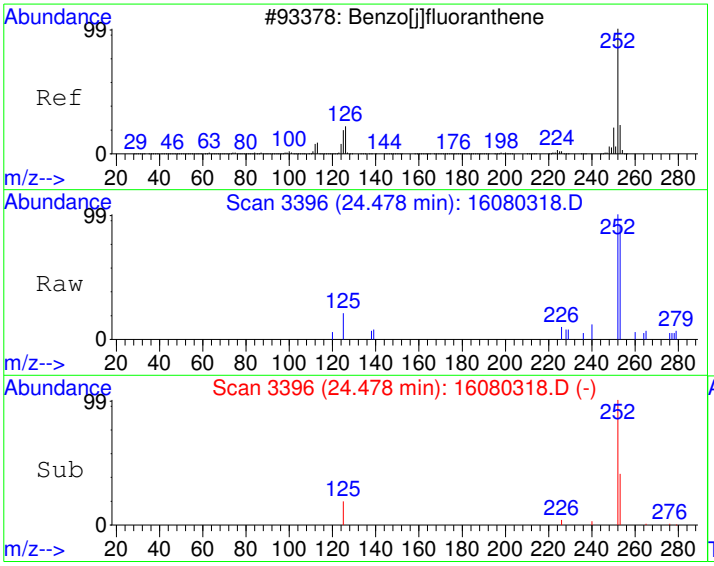


#22
Benzo[k]fluoranthene
Concen: 8.57 ug/kg
RT: 24.39 min Scan# 3384
Delta R.T. -0.02 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:252 Resp: 3370

Ion	Ratio	Lower	Upper
252	100		
253	17.7	2.2	42.2
125	7.7	0.0	30.3

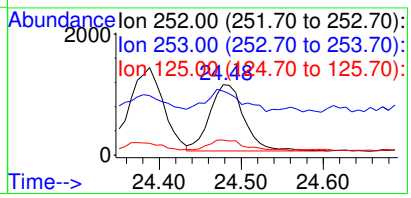


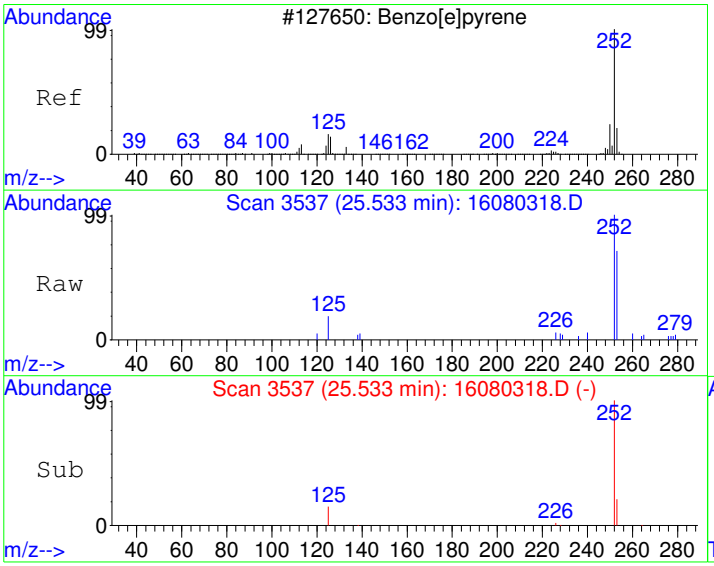


#23
Benzo(j)fluoranthene
Concen: 8.46 ug/kg
RT: 24.48 min Scan# 3396
Delta R.T. -0.03 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:252 Resp: 3197

Ion	Ratio	Lower	Upper
252	100		
253	27.8	2.2	42.2
125	13.9	0.0	34.4

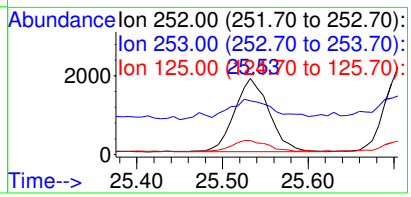


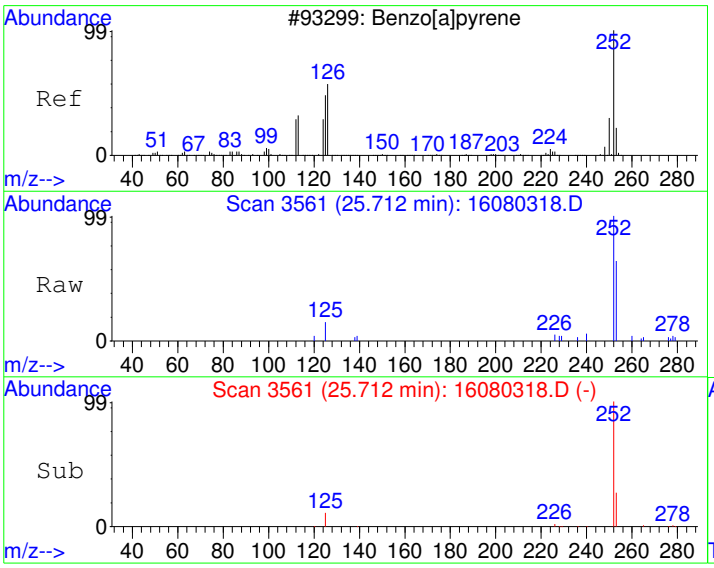


#24
Benzo[e]pyrene
Concen: 12.53 ug/kg
RT: 25.53 min Scan# 3537
Delta R.T. -0.02 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:252 Resp: 5211

Ion	Ratio	Lower	Upper
252	100		
253	24.1	2.2	42.2
125	15.0	0.0	35.7

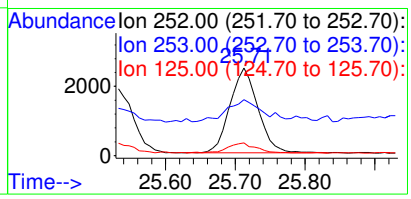


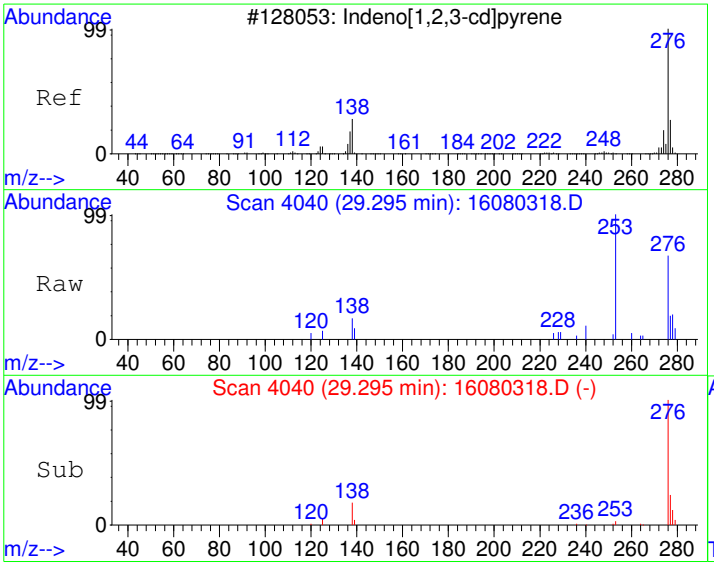


#25
Benzo[a]pyrene
Concen: 16.57 ug/kg
RT: 25.71 min Scan# 3561
Delta R.T. -0.02 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:252 Resp: 6861

Ion	Ratio	Lower	Upper
252	100		
253	22.0	2.0	42.0
125	12.1	0.0	31.6

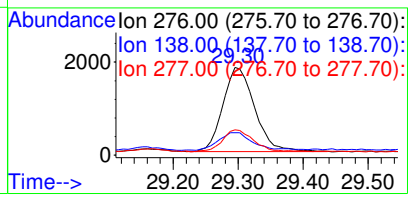


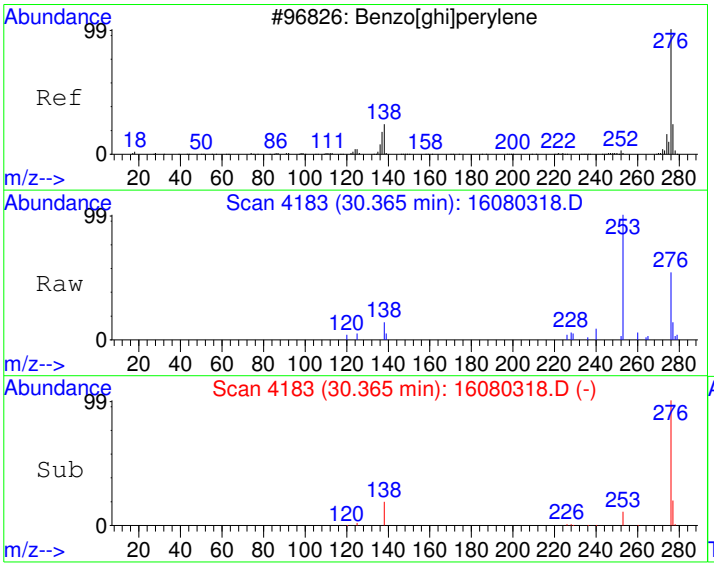


#27
Indeno[1,2,3-cd]pyrene
Concen: 12.95 ug/kg
RT: 29.30 min Scan# 4040
Delta R.T. -0.03 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:276 Resp: 6156

Ion	Ratio	Lower	Upper
276	100		
138	20.6	4.8	44.8
277	25.4	5.6	45.6

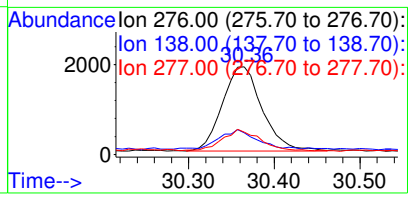




#28
Benzo[g,h,i]perylene
Concen: 15.15 ug/kg
RT: 30.36 min Scan# 4183
Delta R.T. -0.03 min
Lab File: 16080318.D
Acq: 3 Aug 2016 9:50 pm

Tgt Ion:276 Resp: 6033

Ion	Ratio	Lower	Upper
276	100		
138	18.7	0.0	38.1
277	22.0	4.1	44.1



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080319.D Vial: 19
Acq On : 3 Aug 2016 10:31 pm Operator: DEW
Sample : 1608019-02A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

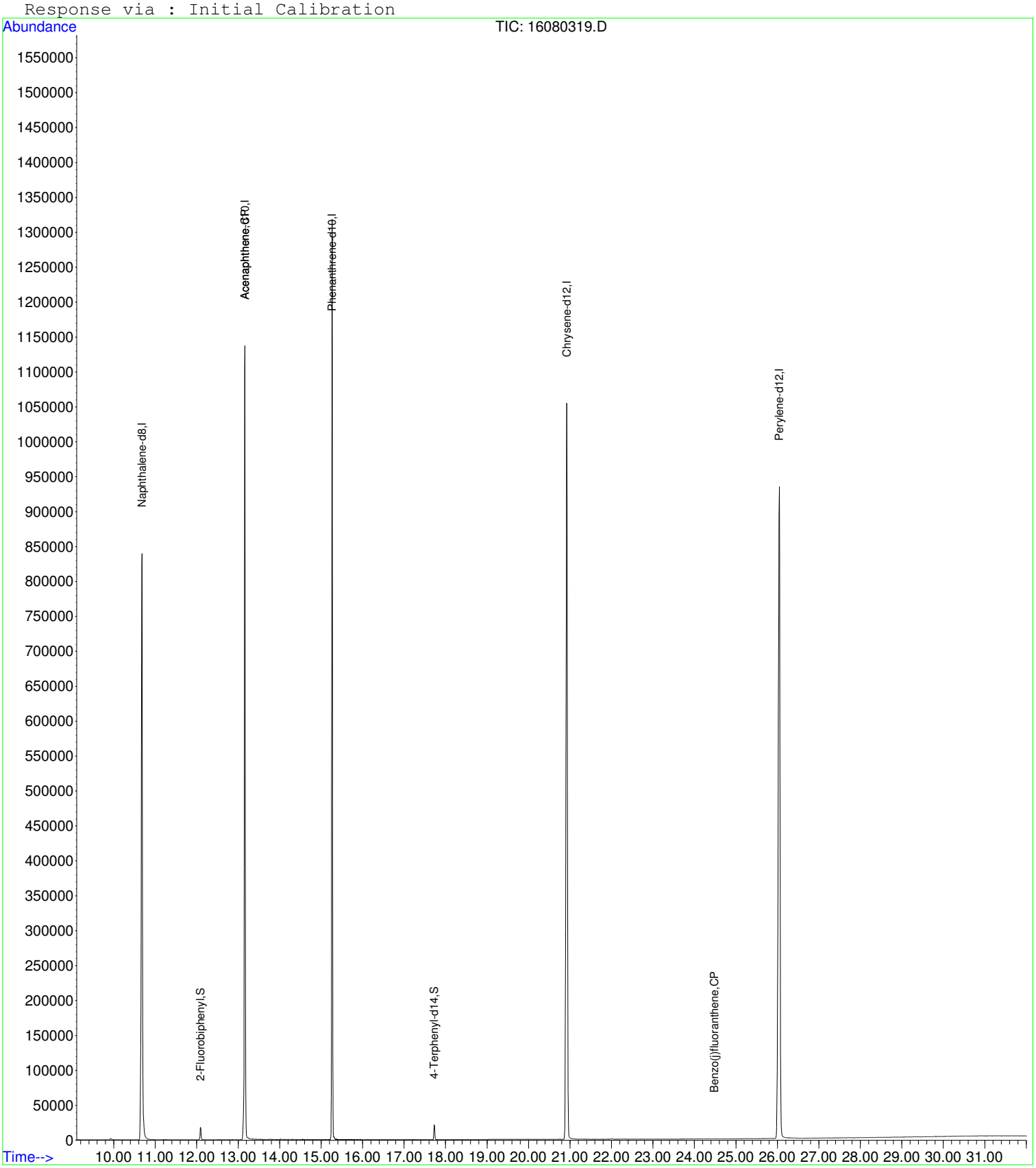
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1493894	4000.00	ug/kg	106
5) Acenaphthene-d10	13.16	164	728857	4000.00	ug/kg	122
11) Phenanthrene-d10	15.26	188	1506968	4000.00	ug/kg	95
17) Chrysene-d12	20.92	240	1841580	4000.00	ug/kg	100
20) Perylene-d12	26.05	264	1897472	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	21153	83.20	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.08%#		
16) 4-Terphenyl-d14	17.73	244	29995	84.34	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.11%#		
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2361	12.63	ug/kg#	10
23) Benzo(j)fluoranthene	24.48	252	31	0.08	ug/kg#	1

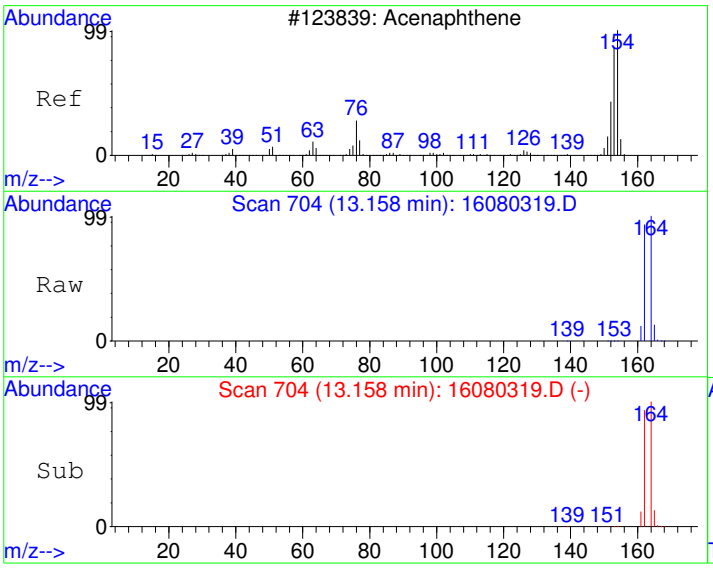
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080319.D Vial: 19
Acq On : 3 Aug 2016 10:31 pm Operator: DEW
Sample : 1608019-02A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

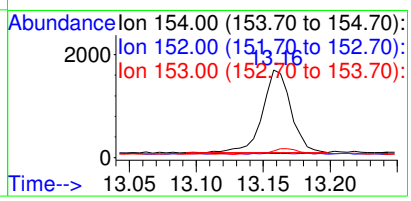


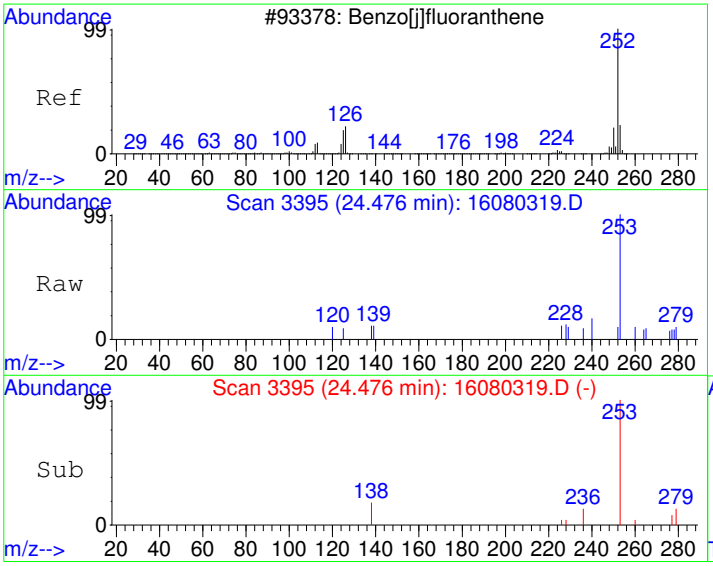


#9
Acenaphthene
Concen: 12.63 ug/kg
RT: 13.16 min Scan# 704
Delta R.T. -0.05 min
Lab File: 16080319.D
Acq: 3 Aug 2016 10:31 pm

Tgt Ion:154 Resp: 2361

Ion	Ratio	Lower	Upper
154	100		
152	0.7	19.1	79.1#
153	3.7	76.2	136.2#

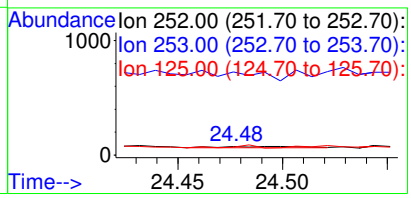




#23
Benzo(j)fluoranthene
Concen: 0.08 ug/kg
RT: 24.48 min Scan# 3395
Delta R.T. -0.03 min
Lab File: 16080319.D
Acq: 3 Aug 2016 10:31 pm

Tgt Ion:252 Resp: 31

Ion	Ratio	Lower	Upper
252	100		
253	236.4	2.2	42.2#
125	54.5	0.0	34.4#



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080320.D Vial: 20
Acq On : 3 Aug 2016 11:11 pm Operator: DEW
Sample : 1608019-03A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

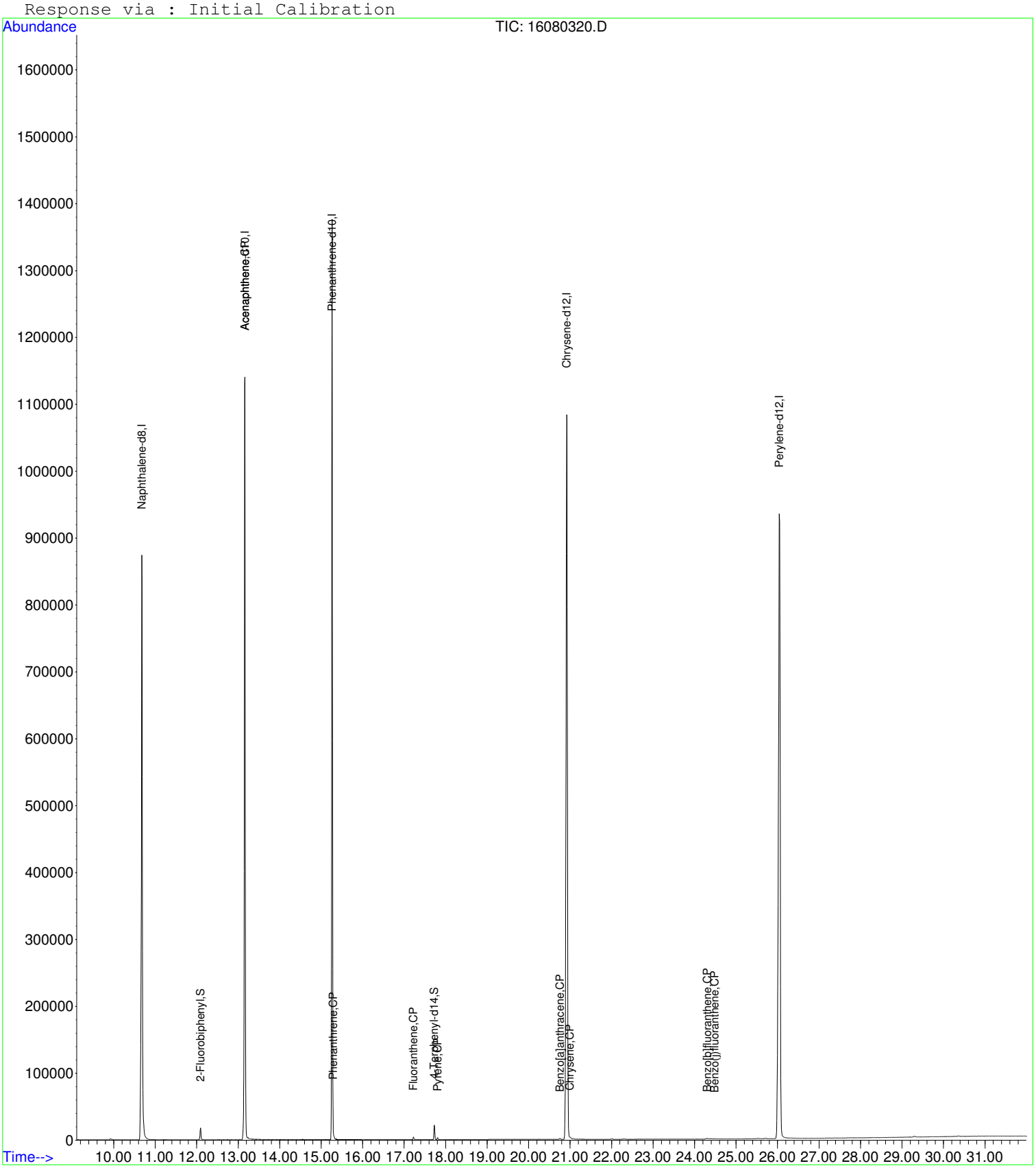
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1512448	4000.00	ug/kg	108
5) Acenaphthene-d10	13.16	164	734121	4000.00	ug/kg	122
11) Phenanthrene-d10	15.27	188	1583293	4000.00	ug/kg	100
17) Chrysene-d12	20.93	240	1902841	4000.00	ug/kg	104
20) Perylene-d12	26.04	264	1909838	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	20289	79.23	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.98%#		
16) 4-Terphenyl-d14	17.73	244	30658	82.05	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.05%#		
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2631	13.97	ug/kg#	10
12) Phenanthrene	15.30	178	2633	7.01	ug/kg	94
14) Fluoranthene	17.22	202	4988	11.21	ug/kg	97
15) Pyrene	17.80	202	4057	8.99	ug/kg	98
18) Benzo[a]anthracene	20.75	228	2243	5.23	ug/kg	95
19) Chrysene	21.00	228	2408	5.84	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	2216	5.03	ug/kg	95
23) Benzo(j)fluoranthene	24.49	252	844	2.17	ug/kg	97

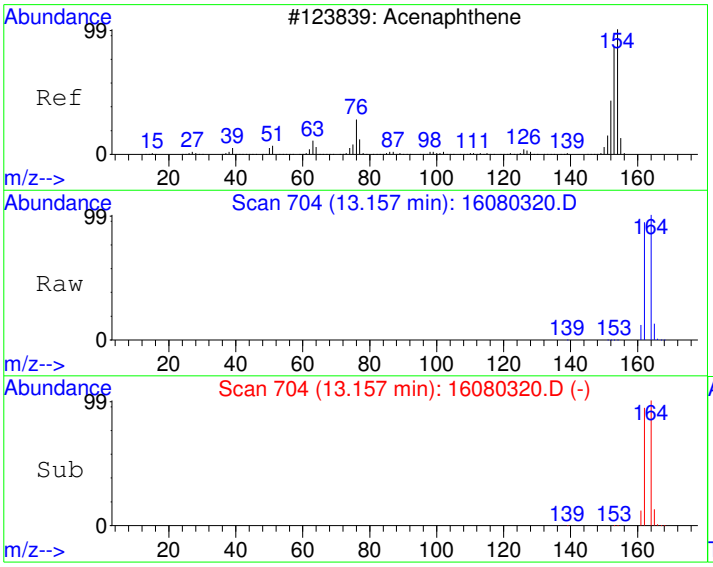
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080320.D Vial: 20
Acq On : 3 Aug 2016 11:11 pm Operator: DEW
Sample : 1608019-03A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

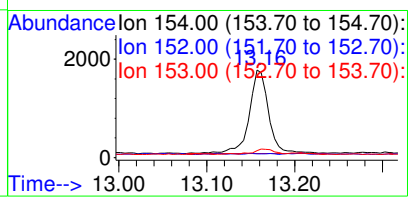


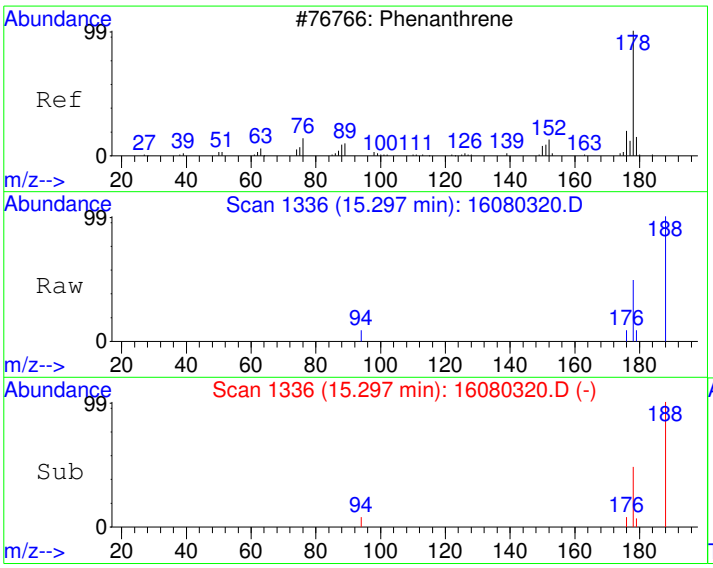


#9
Acenaphthene
Concen: 13.97 ug/kg
RT: 13.16 min Scan# 704
Delta R.T. -0.06 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:154 Resp: 2631

Ion	Ratio	Lower	Upper
154	100		
152	0.6	19.1	79.1#
153	4.4	76.2	136.2#

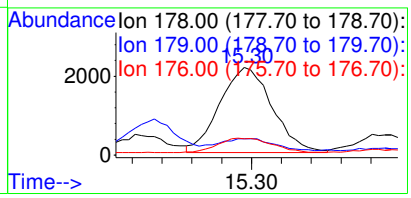


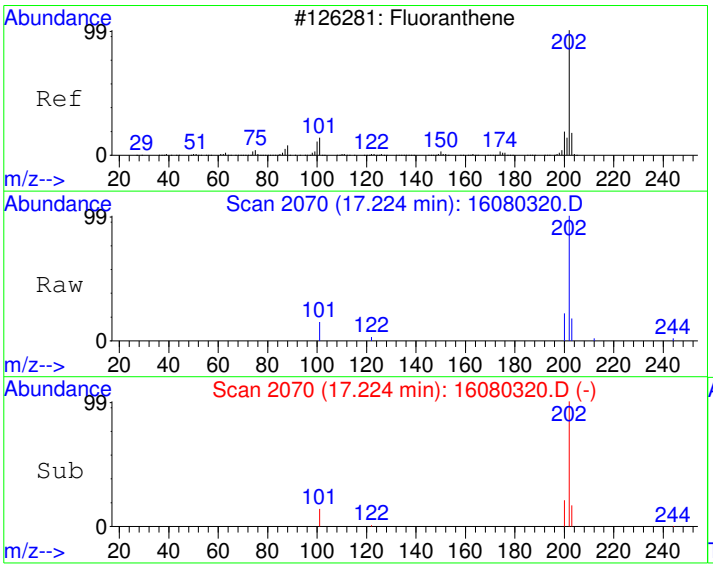


#12
Phenanthrene
Concen: 7.01 ug/kg
RT: 15.30 min Scan# 1336
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:178 Resp: 2633

Ion	Ratio	Lower	Upper
178	100		
179	13.2	0.0	45.7
176	16.1	0.0	48.7

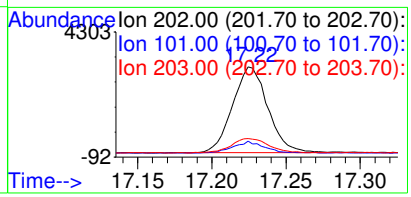


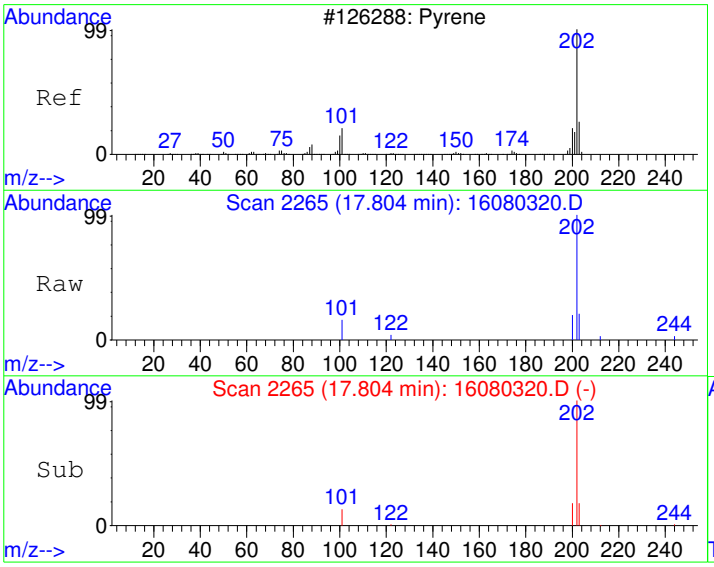


#14
Fluoranthene
Concen: 11.21 ug/kg
RT: 17.22 min Scan# 2070
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:202 Resp: 4988

Ion	Ratio	Lower	Upper
202	100		
101	13.7	0.0	42.1
203	16.8	0.0	47.9

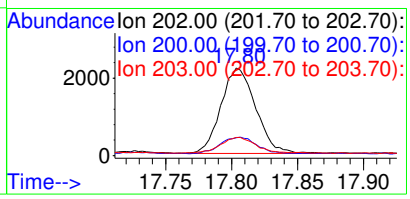


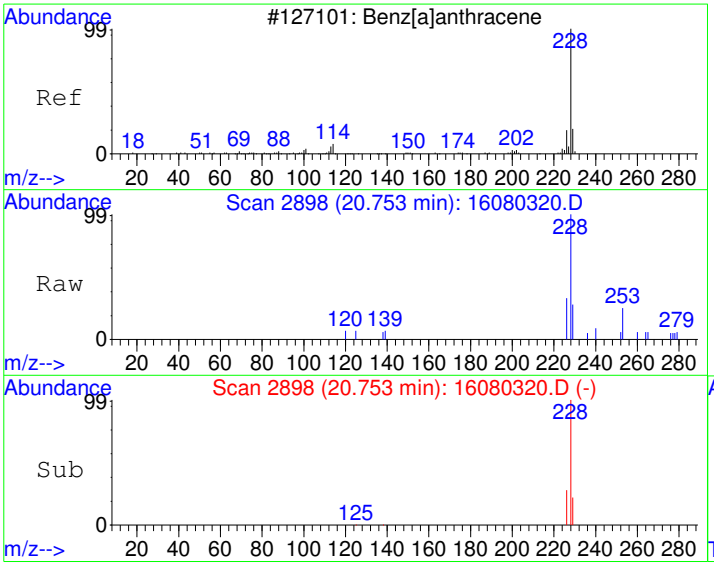


#15
Pyrene
Concen: 8.99 ug/kg
RT: 17.80 min Scan# 2265
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:202 Resp: 4057

Ion	Ratio	Lower	Upper
202	100		
200	18.4	0.0	49.7
203	18.2	0.0	47.8

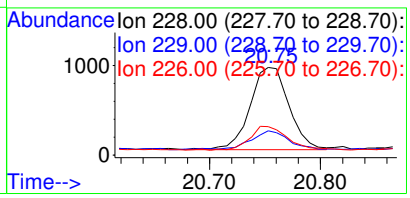


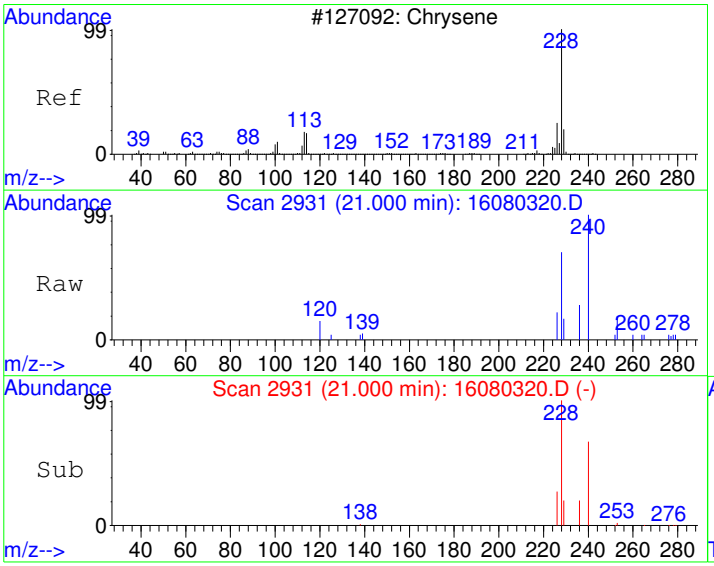


#18
Benzo[a]anthracene
Concen: 5.23 ug/kg
RT: 20.75 min Scan# 2898
Delta R.T. -0.01 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:228 Resp: 2243

Ion	Ratio	Lower	Upper
228	100		
229	22.1	0.0	49.8
226	28.6	0.0	55.8

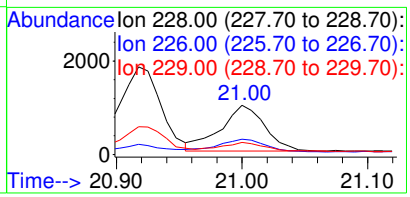


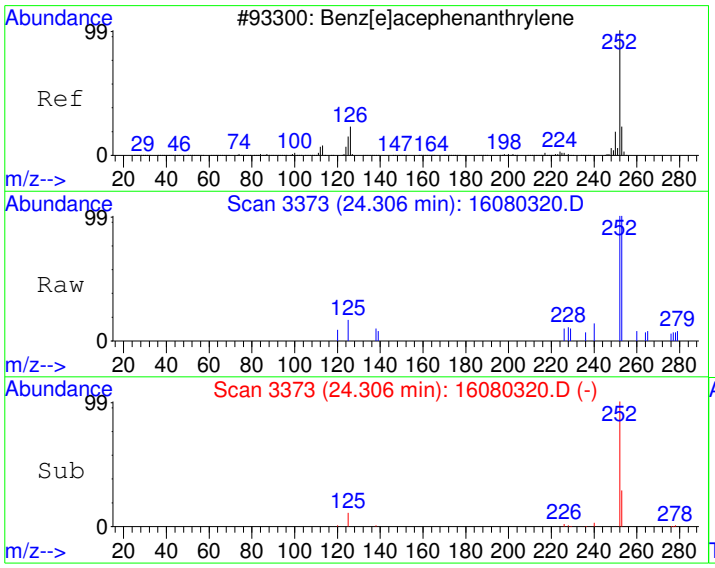


#19
Chrysene
Concen: 5.84 ug/kg
RT: 21.00 min Scan# 2931
Delta R.T. -0.02 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:228 Resp: 2408

Ion	Ratio	Lower	Upper
228	100		
226	27.5	0.0	58.1
229	19.4	0.0	50.0

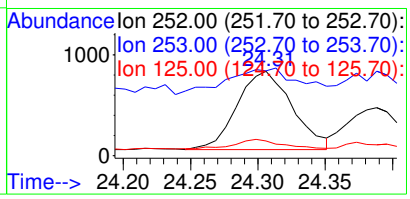


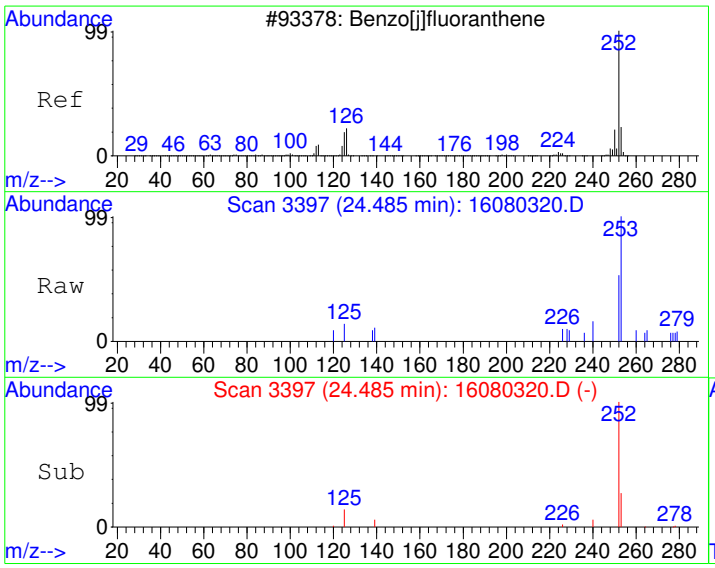


#21
Benzo[b]fluoranthene
Concen: 5.03 ug/kg
RT: 24.31 min Scan# 3373
Delta R.T. -0.02 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:252 Resp: 2216

Ion	Ratio	Lower	Upper
252	100		
253	25.4	0.0	52.0
125	10.1	0.0	40.6

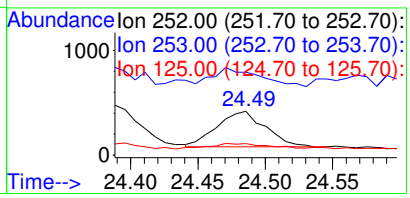




#23
Benzo(j)fluoranthene
Concen: 2.17 ug/kg
RT: 24.49 min Scan# 3397
Delta R.T. -0.02 min
Lab File: 16080320.D
Acq: 3 Aug 2016 11:11 pm

Tgt Ion:252 Resp: 844

Ion	Ratio	Lower	Upper
252	100		
253	22.5	2.2	42.2
125	11.5	0.0	34.4



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080321.D Vial: 21
Acq On : 3 Aug 2016 11:51 pm Operator: DEW
Sample : 1608019-04A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

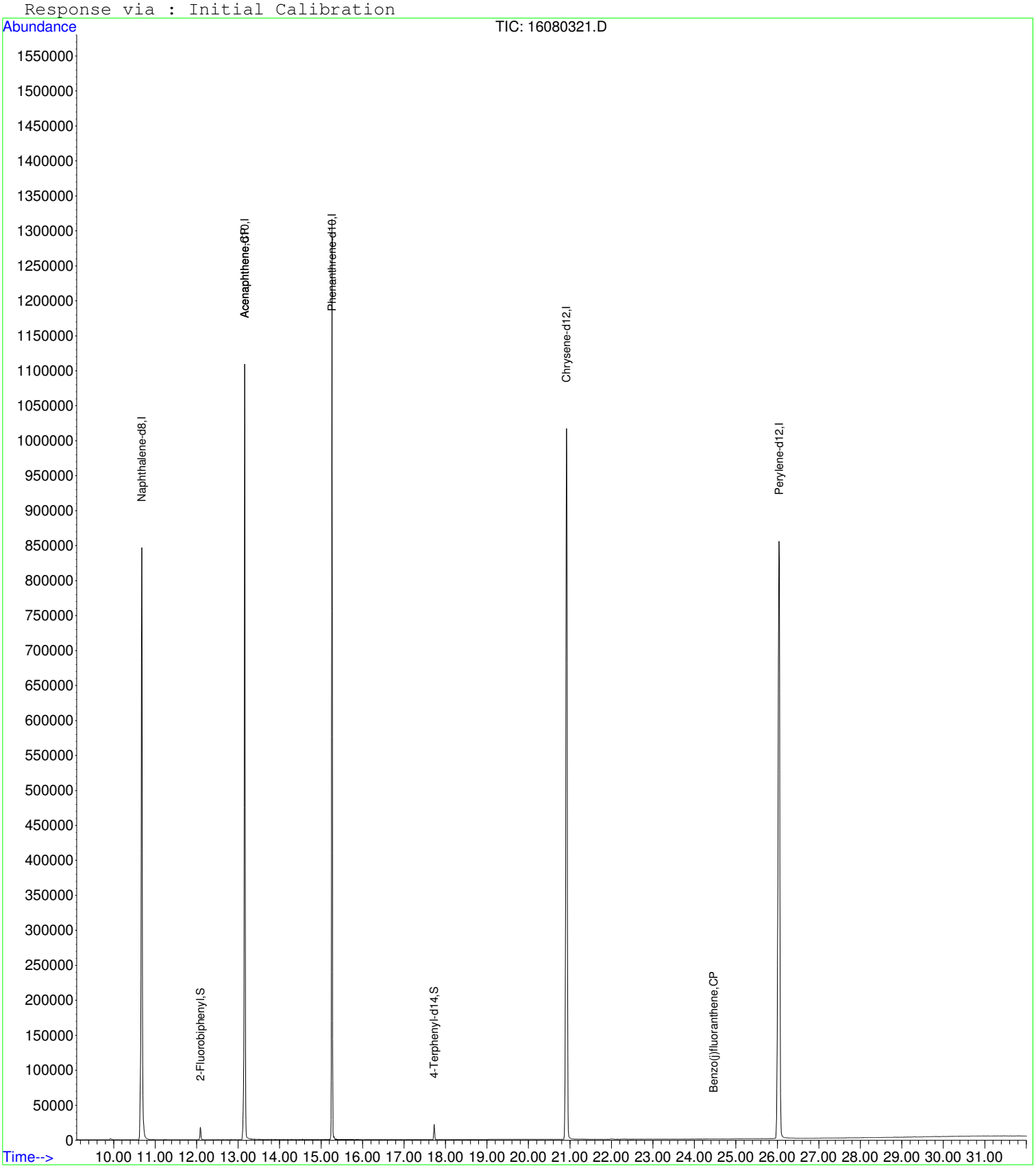
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1446824	4000.00	ug/kg	103
5) Acenaphthene-d10	13.16	164	703941	4000.00	ug/kg	117
11) Phenanthrene-d10	15.26	188	1497816	4000.00	ug/kg	94
17) Chrysene-d12	20.92	240	1781971	4000.00	ug/kg	97
20) Perylene-d12	26.04	264	1779783	4000.00	ug/kg	92
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	21103	85.94	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.15%#		
16) 4-Terphenyl-d14	17.73	244	30722	86.92	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.17%#		
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2391	~~13.24~~	~~ug/kg#~~	~~10~~
23) Benzo(j)fluoranthene	24.47	252	33	0.09	ug/kg#	1

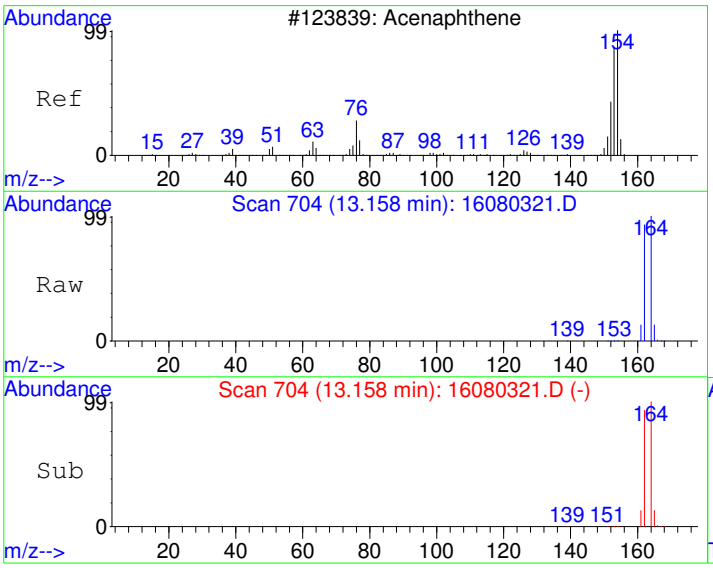
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080321.D Vial: 21
Acq On : 3 Aug 2016 11:51 pm Operator: DEW
Sample : 1608019-04A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:00 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

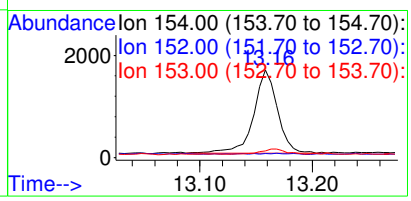


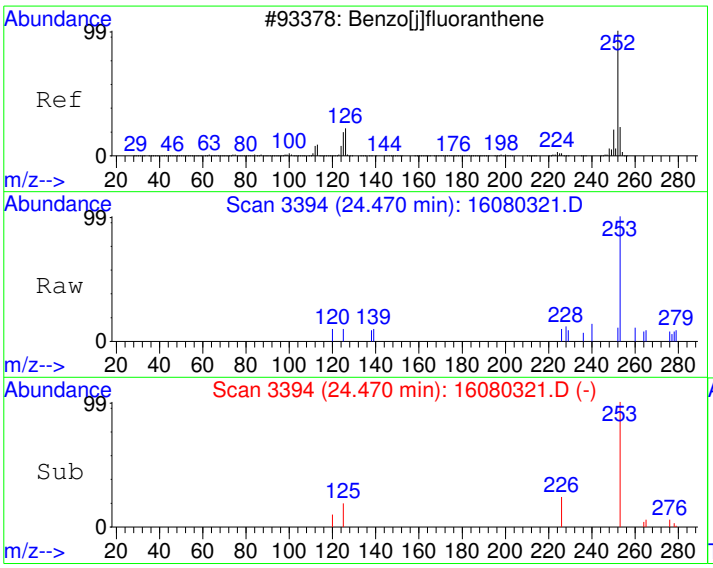


#9
Acenaphthene
Concen: 13.24 ug/kg
RT: 13.16 min Scan# 704
Delta R.T. -0.05 min
Lab File: 16080321.D
Acq: 3 Aug 2016 11:51 pm

Tgt Ion:154 Resp: 2391

Ion	Ratio	Lower	Upper
154	100		
152	0.7	19.1	79.1#
153	4.0	76.2	136.2#

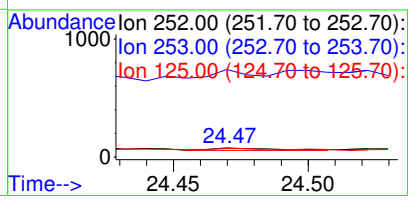




#23
Benzo(j)fluoranthene
Concen: 0.09 ug/kg
RT: 24.47 min Scan# 3394
Delta R.T. -0.04 min
Lab File: 16080321.D
Acq: 3 Aug 2016 11:51 pm

Tgt Ion:252 Resp: 33

Ion	Ratio	Lower	Upper
252	100		
253	347.6	2.2	42.2#
125	38.1	0.0	34.4#



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080322.D Vial: 22
Acq On : 4 Aug 2016 12:31 am Operator: DEW
Sample : 1608019-05A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:01 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

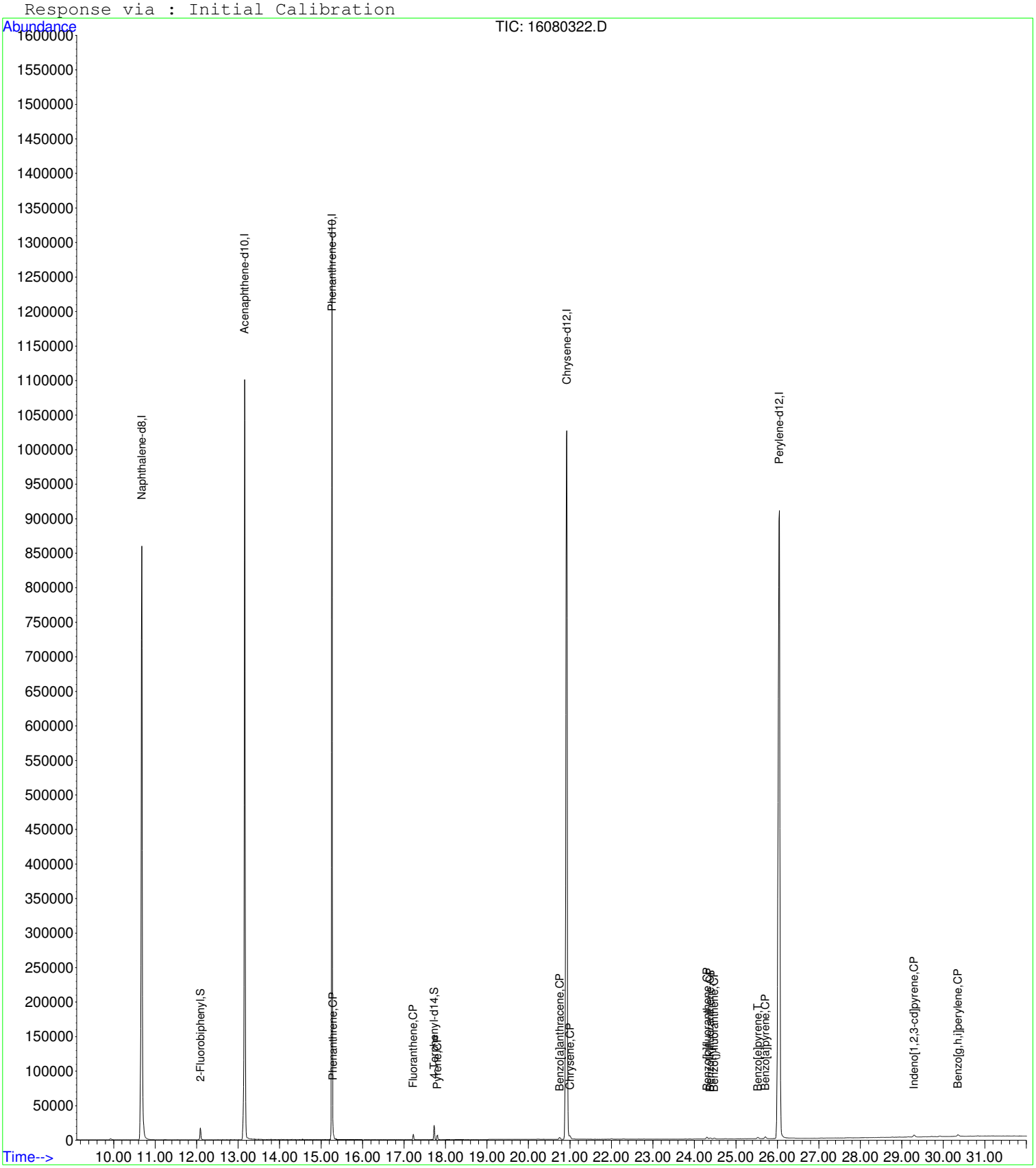
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1467311	4000.00	ug/kg	105
5) Acenaphthene-d10	13.16	164	701566	4000.00	ug/kg	117
11) Phenanthrene-d10	15.26	188	1517909	4000.00	ug/kg	95
17) Chrysene-d12	20.92	240	1826992	4000.00	ug/kg	100
20) Perylene-d12	26.05	264	1851115	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	19977	81.63	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.04%#		
16) 4-Terphenyl-d14	17.73	244	29952	83.62	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.09%#		
Target Compounds						Qvalue
12) Phenanthrene	15.30	178	3712	10.31	ug/kg	98
14) Fluoranthene	17.22	202	9133	21.41	ug/kg	97
15) Pyrene	17.80	202	8032	18.57	ug/kg	98
18) Benzo[a]anthracene	20.75	228	4619	11.22	ug/kg	97
19) Chrysene	21.00	228	5650	14.26	ug/kg	97
21) Benzo[b]fluoranthene	24.30	252	5488	12.84	ug/kg	97
22) Benzo[k]fluoranthene	24.38	252	2732	6.97	ug/kg	91
23) Benzo(j)fluoranthene	24.48	252	2564	6.81	ug/kg	98
24) Benzo[e]pyrene	25.53	252	4146	10.00	ug/kg	93
25) Benzo[a]pyrene	25.71	252	5509	13.34	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	29.30	276	4864	10.26	ug/kg	92
28) Benzo[g,h,i]perylene	30.36	276	4759	11.98	ug/kg	96

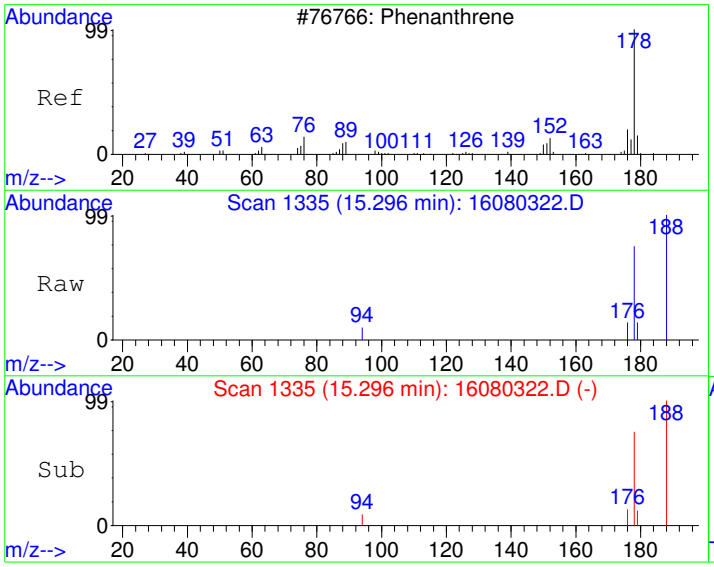
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080322.D Vial: 22
Acq On : 4 Aug 2016 12:31 am Operator: DEW
Sample : 1608019-05A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:01 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

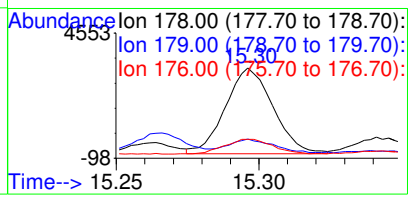


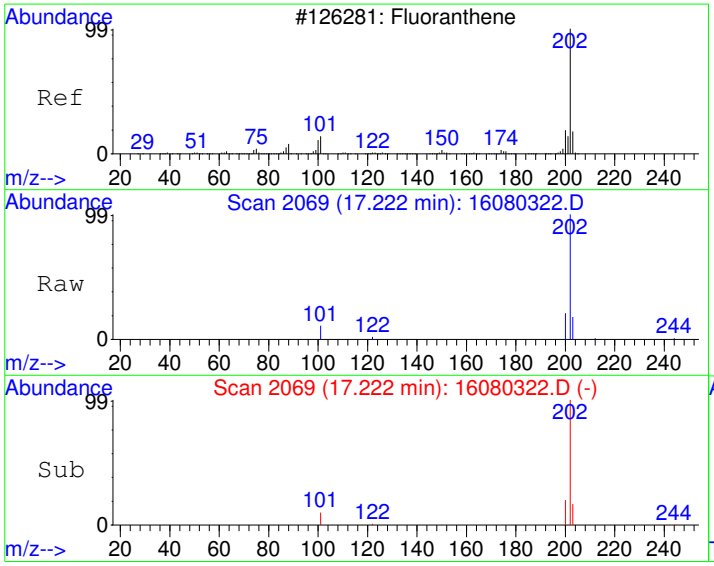


#12
Phenanthrene
Concen: 10.31 ug/kg
RT: 15.30 min Scan# 1335
Delta R.T. -0.01 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:178 Resp: 3712

Ion	Ratio	Lower	Upper
178	100		
179	15.8	0.0	45.7
176	17.4	0.0	48.7

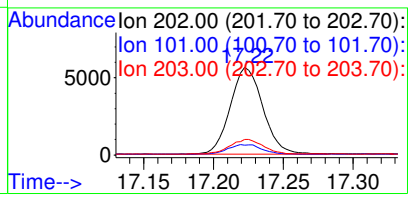


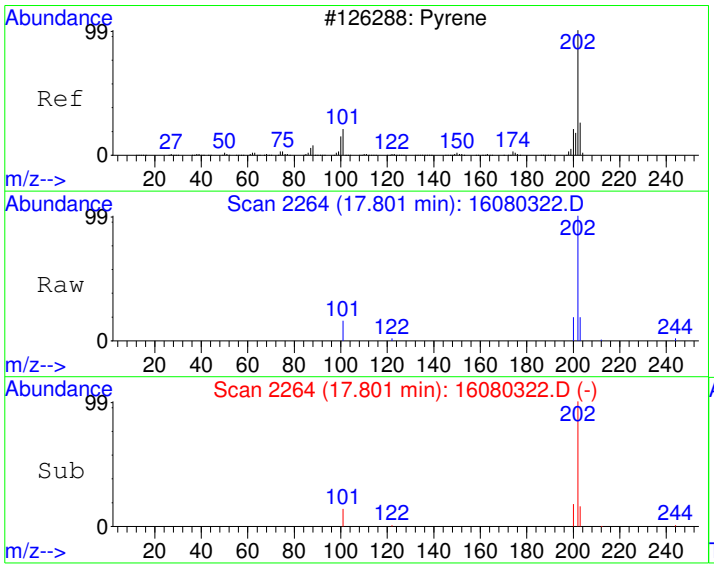


#14
Fluoranthene
Concen: 21.41 ug/kg
RT: 17.22 min Scan# 2069
Delta R.T. -0.01 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:202 Resp: 9133

Ion	Ratio	Lower	Upper
202	100		
101	10.3	0.0	42.1
203	17.0	0.0	47.9

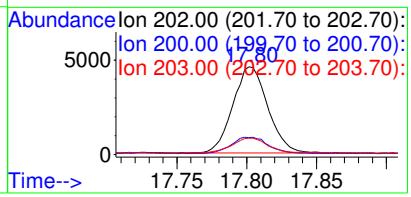


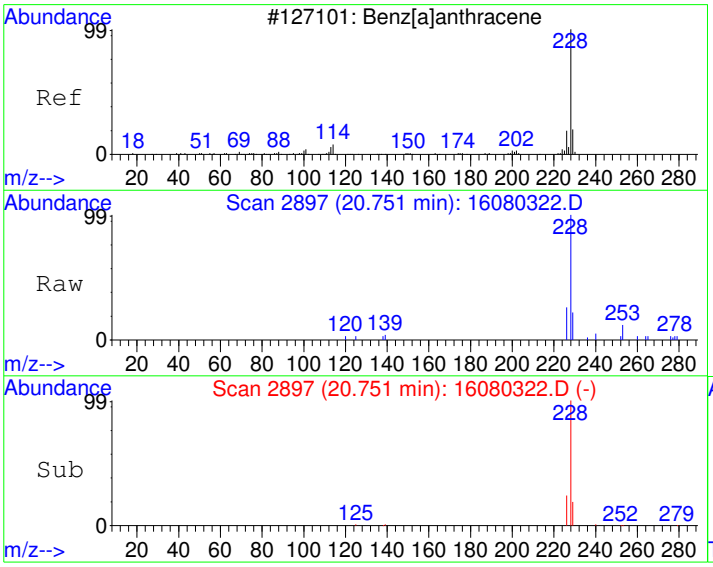


#15
Pyrene
Concen: 18.57 ug/kg
RT: 17.80 min Scan# 2264
Delta R.T. -0.01 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:202 Resp: 8032

Ion	Ratio	Lower	Upper
202	100		
200	18.6	0.0	49.7
203	17.0	0.0	47.8

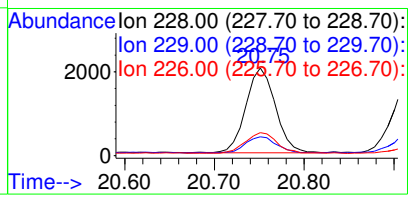


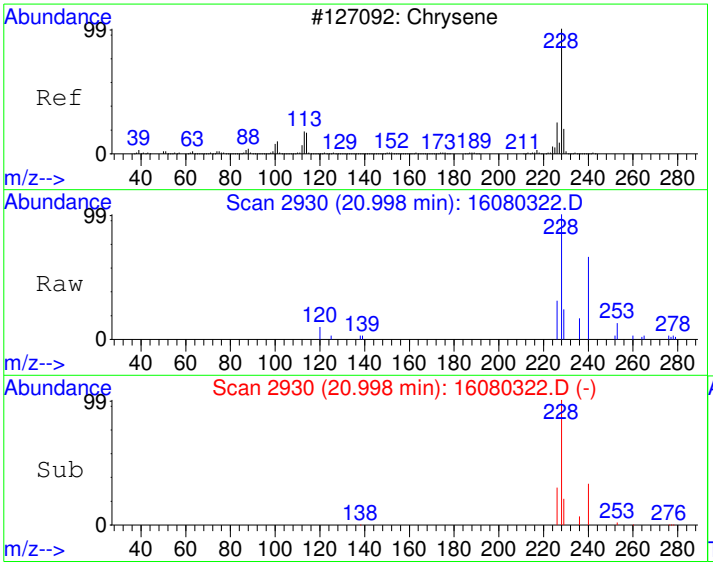


#18
Benzo[a]anthracene
Concen: 11.22 ug/kg
RT: 20.75 min Scan# 2897
Delta R.T. -0.02 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:228 Resp: 4619

Ion	Ratio	Lower	Upper
228	100		
229	18.9	0.0	49.8
226	24.2	0.0	55.8

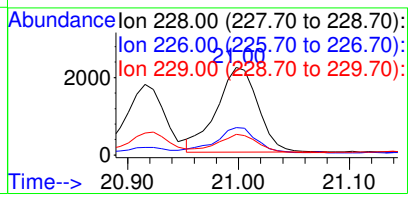


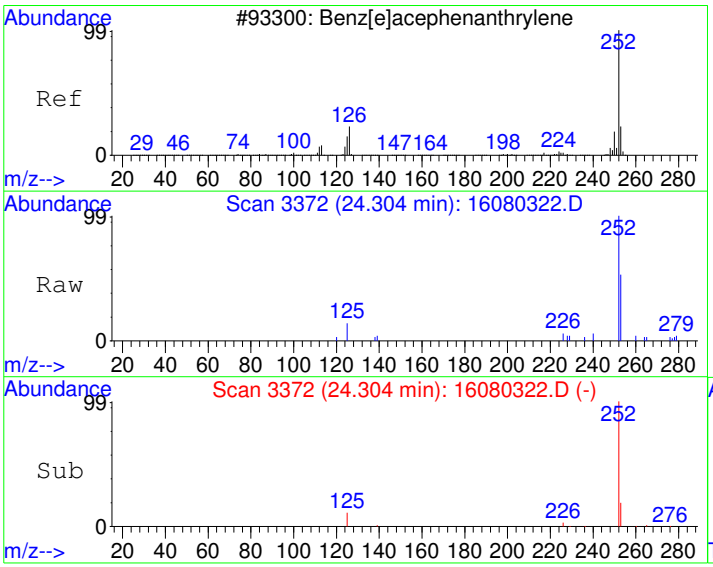


#19
Chrysene
Concen: 14.26 ug/kg
RT: 21.00 min Scan# 2930
Delta R.T. -0.02 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:228 Resp: 5650

Ion	Ratio	Lower	Upper
228	100		
226	29.9	0.0	58.1
229	21.3	0.0	50.0

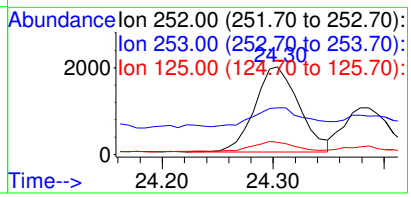


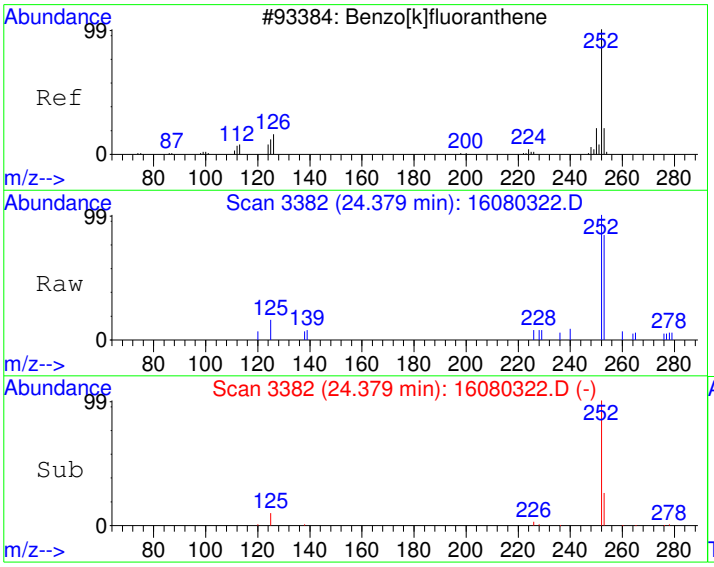


#21
Benzo[b]fluoranthene
Concen: 12.84 ug/kg
RT: 24.30 min Scan# 3372
Delta R.T. -0.02 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:252 Resp: 5488

Ion	Ratio	Lower	Upper
252	100		
253	19.7	0.0	52.0
125	10.5	0.0	40.6

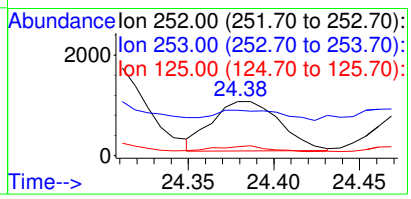


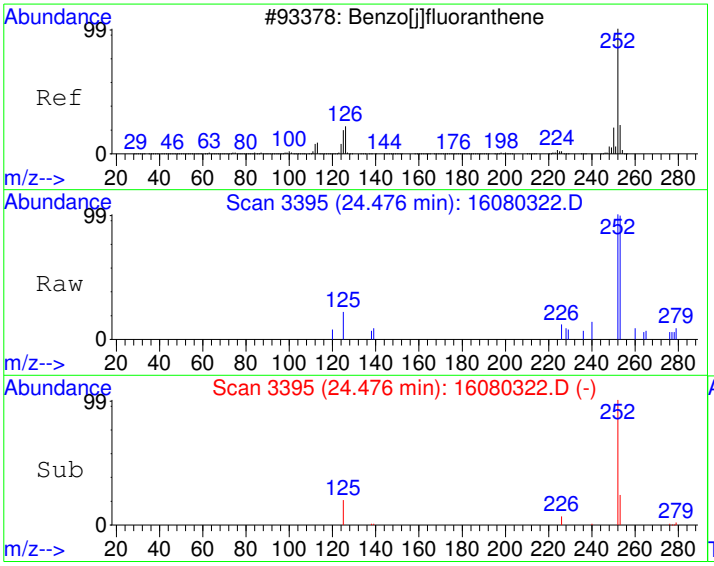


#22
Benzo[k]fluoranthene
Concen: 6.97 ug/kg
RT: 24.38 min Scan# 3382
Delta R.T. -0.03 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:252 Resp: 2732

Ion	Ratio	Lower	Upper
252	100		
253	16.0	2.2	42.2
125	9.5	0.0	30.3

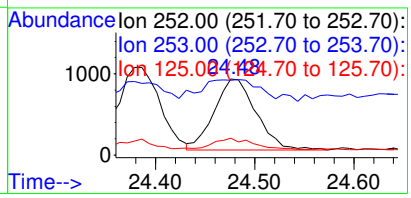


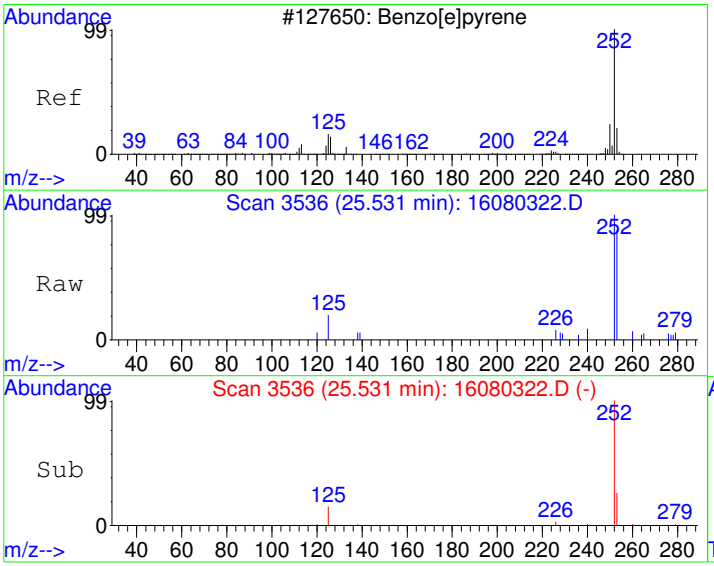


#23
Benzo(j)fluoranthene
Concen: 6.81 ug/kg
RT: 24.48 min Scan# 3395
Delta R.T. -0.03 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:252 Resp: 2564

Ion	Ratio	Lower	Upper
252	100		
253	21.1	2.2	42.2
125	15.5	0.0	34.4

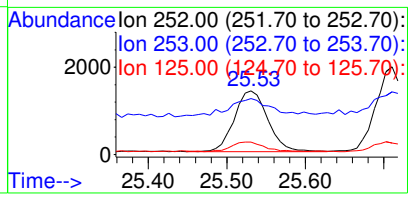


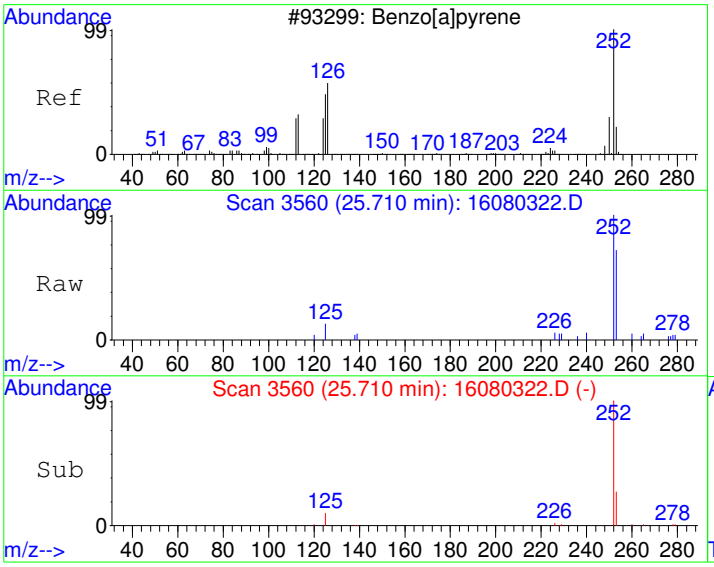


#24
Benzo[e]pyrene
Concen: 10.00 ug/kg
RT: 25.53 min Scan# 3536
Delta R.T. -0.02 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:252 Resp: 4146

Ion	Ratio	Lower	Upper
252	100		
253	27.4	2.2	42.2
125	15.5	0.0	35.7

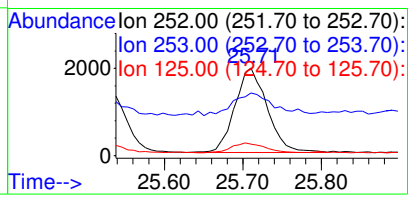


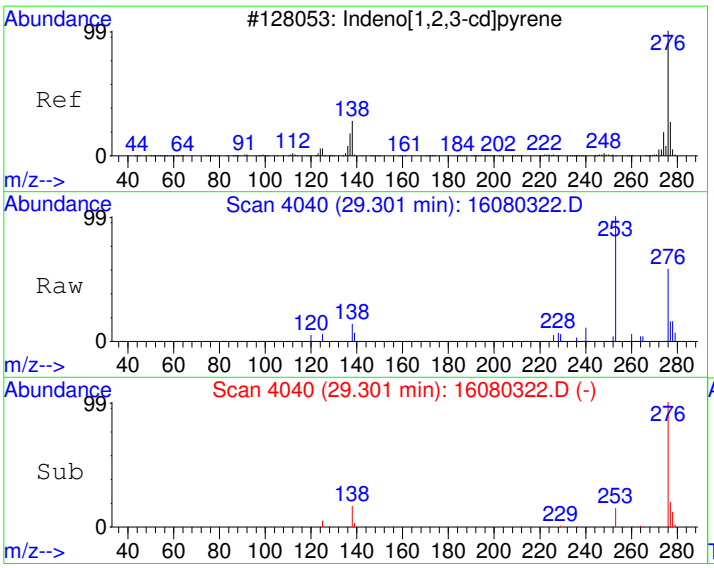


#25
Benzo[a]pyrene
Concen: 13.34 ug/kg
RT: 25.71 min Scan# 3560
Delta R.T. -0.02 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:252 Resp: 5509

Ion	Ratio	Lower	Upper
252	100		
253	24.6	2.0	42.0
125	9.9	0.0	31.6

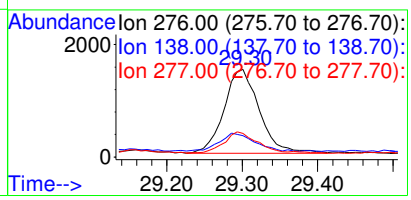


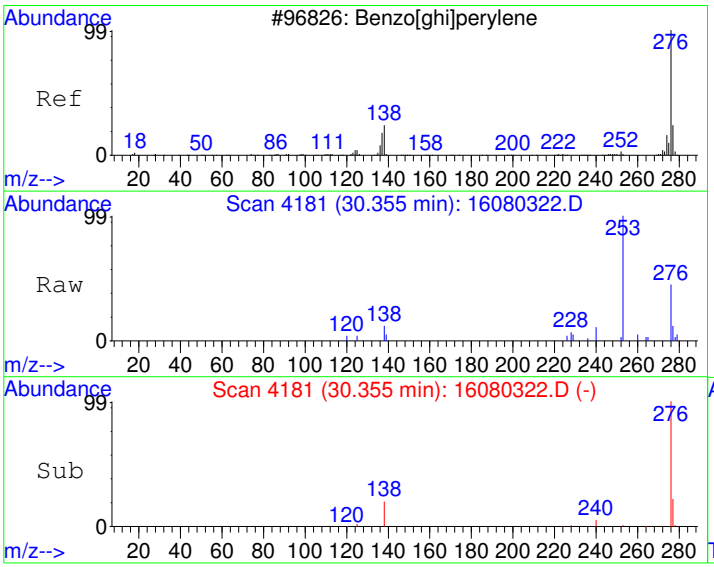


#27
Indeno[1,2,3-cd]pyrene
Concen: 10.26 ug/kg
RT: 29.30 min Scan# 4040
Delta R.T. -0.02 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:276 Resp: 4864

Ion	Ratio	Lower	Upper
276	100		
138	18.2	4.8	44.8
277	23.7	5.6	45.6

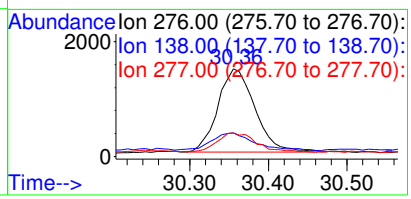




#28
Benzo[g,h,i]perylene
Concen: 11.98 ug/kg
RT: 30.36 min Scan# 4181
Delta R.T. -0.04 min
Lab File: 16080322.D
Acq: 4 Aug 2016 12:31 am

Tgt Ion:276 Resp: 4759

Ion	Ratio	Lower	Upper
276	100		
138	20.0	0.0	38.1
277	22.7	4.1	44.1



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080323.D Vial: 23
Acq On : 4 Aug 2016 1:12 am Operator: DEW
Sample : 1608019-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:01 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

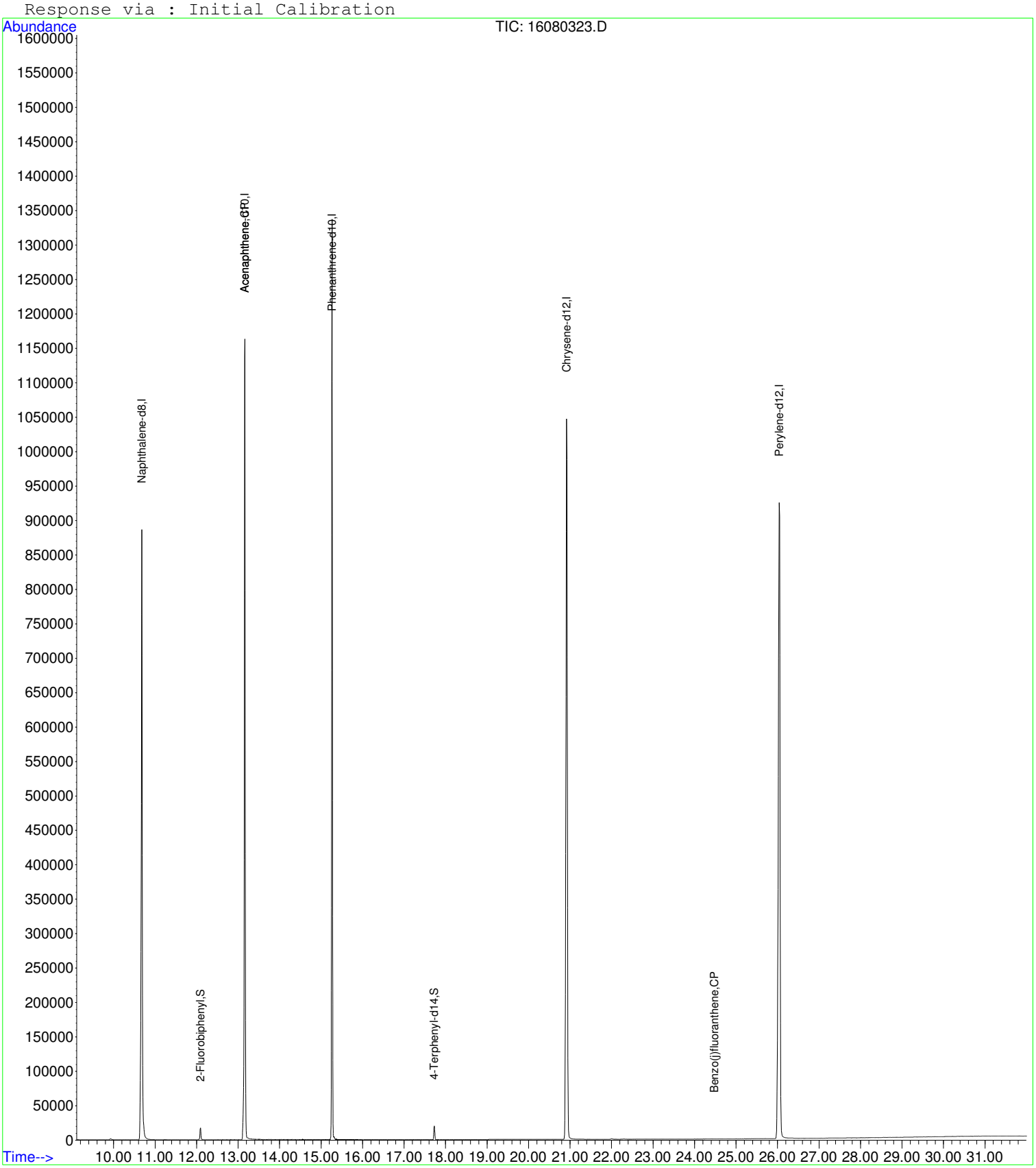
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1517555	4000.00	ug/kg	108
5) Acenaphthene-d10	13.16	164	734250	4000.00	ug/kg	122
11) Phenanthrene-d10	15.26	188	1552282	4000.00	ug/kg	98
17) Chrysene-d12	20.92	240	1836323	4000.00	ug/kg	100
20) Perylene-d12	26.04	264	1868135	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	20053	78.30	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.96%#		
16) 4-Terphenyl-d14	17.73	244	29158	79.60	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.99%#		
Target Compounds						Qvalue
9) Acenaphthene	13.16	154	2542	~~13.50~~	~~ug/kg#~~	~~10~~
23) Benzo(j)fluoranthene	24.47	252	17	0.04	ug/kg#	28

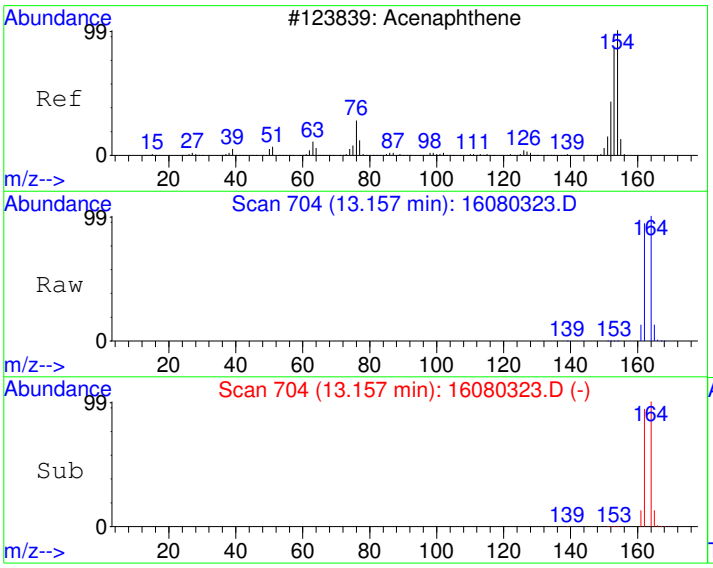
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080323.D Vial: 23
Acq On : 4 Aug 2016 1:12 am Operator: DEW
Sample : 1608019-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 8:01 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration

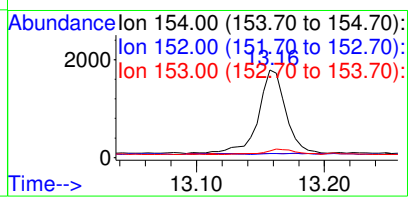


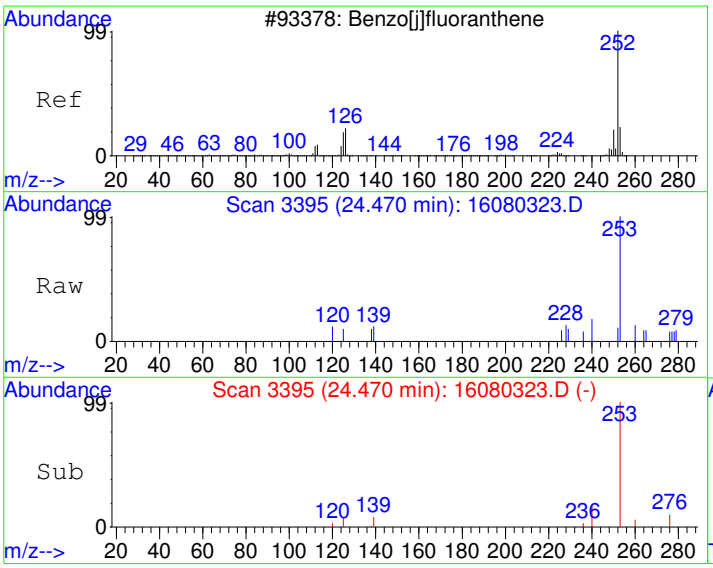


#9
Acenaphthene
Concen: 13.50 ug/kg
RT: 13.16 min Scan# 704
Delta R.T. -0.05 min
Lab File: 16080323.D
Acq: 4 Aug 2016 1:12 am

Tgt Ion:154 Resp: 2542

Ion	Ratio	Lower	Upper
154	100		
152	0.8	19.1	79.1#
153	4.2	76.2	136.2#

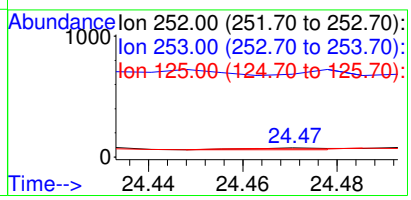




#23
Benzo(j)fluoranthene
Concen: 0.04 ug/kg
RT: 24.47 min Scan# 3395
Delta R.T. -0.04 min
Lab File: 16080323.D
Acq: 4 Aug 2016 1:12 am

Tgt Ion:252 Resp: 17

Ion	Ratio	Lower	Upper
252	100		
253	0.0	2.2	42.2#
125	60.0	0.0	34.4#



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080329.D Vial: 29
Acq On : 4 Aug 2016 5:13 am Operator: DEW
Sample : 1608019-03AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

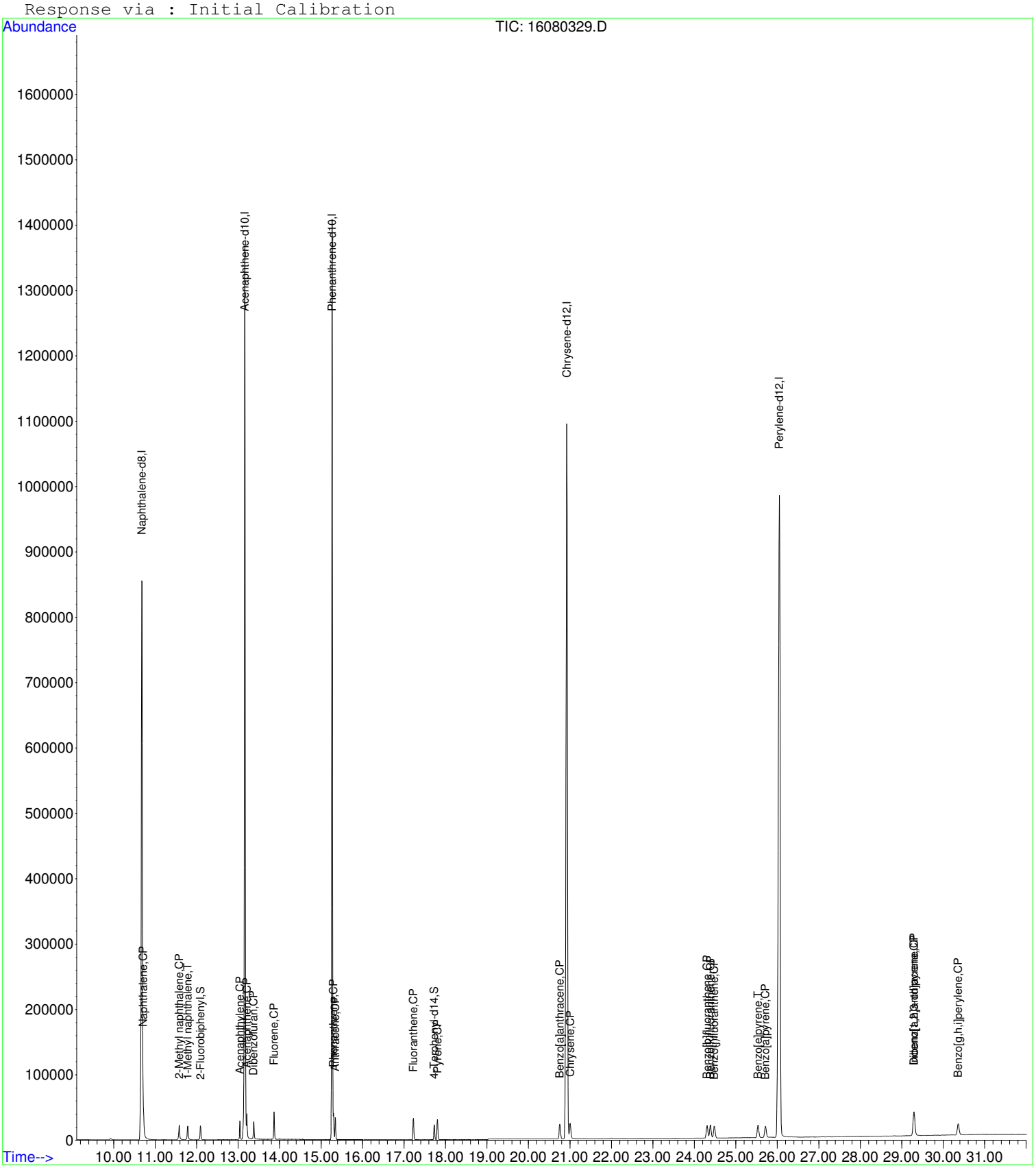
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1530458	4000.00	ug/kg	109
5) Acenaphthene-d10	13.16	164	854539	4000.00	ug/kg	143
11) Phenanthrene-d10	15.27	188	1607944	4000.00	ug/kg	101
17) Chrysene-d12	20.92	240	1947686	4000.00	ug/kg	106
20) Perylene-d12	26.05	264	2003946	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	23203	77.84	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.95%#		
16) 4-Terphenyl-d14	17.73	244	32296	85.11	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.13%#		
Target Compounds						Qvalue
2) Naphthalene	10.71	128	25207	72.39	ug/kg	99
3) 2-Methyl naphthalene	11.58	142	18315	81.13	ug/kg	98
4) 1-Methyl naphthalene	11.79	142	16618	83.11	ug/kg	98
6) Dibenzofuran	13.38	168	28013	81.00	ug/kg	100
8) Acenaphthylene	13.04	152	30591	80.84	ug/kg	99
9) Acenaphthene	13.21	154	16939	77.29	ug/kg	99
10) Fluorene	13.86	166	22879	83.05	ug/kg	99
12) Phenanthrene	15.30	178	31020	81.37	ug/kg	99
13) Anthracene	15.34	178	31038	77.38	ug/kg	99
14) Fluoranthene	17.22	202	35207	77.93	ug/kg	99
15) Pyrene	17.80	202	35979	78.54	ug/kg	99
18) Benzo[a]anthracene	20.75	228	36110	82.26	ug/kg	99
19) Chrysene	21.01	228	33723	79.85	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	39684	85.78	ug/kg	100
22) Benzo[k]fluoranthene	24.39	252	38297	90.24	ug/kg	99
23) Benzo(j)fluoranthene	24.49	252	35836	87.86	ug/kg	97
24) Benzo[e]pyrene	25.53	252	39339	87.63	ug/kg	98
25) Benzo[a]pyrene	25.71	252	37099	83.00	ug/kg	99
26) Dibenz[a,h]anthracene	29.29	278	36158	83.59	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	29.29	276	44093	85.90	ug/kg	98
28) Benzo[g,h,i]perylene	30.36	276	36614	85.16	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080329.D Vial: 29
Acq On : 4 Aug 2016 5:13 am Operator: DEW
Sample : 1608019-03AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080330.D Vial: 30
Acq On : 4 Aug 2016 5:53 am Operator: DEW
Sample : 1608019-03AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

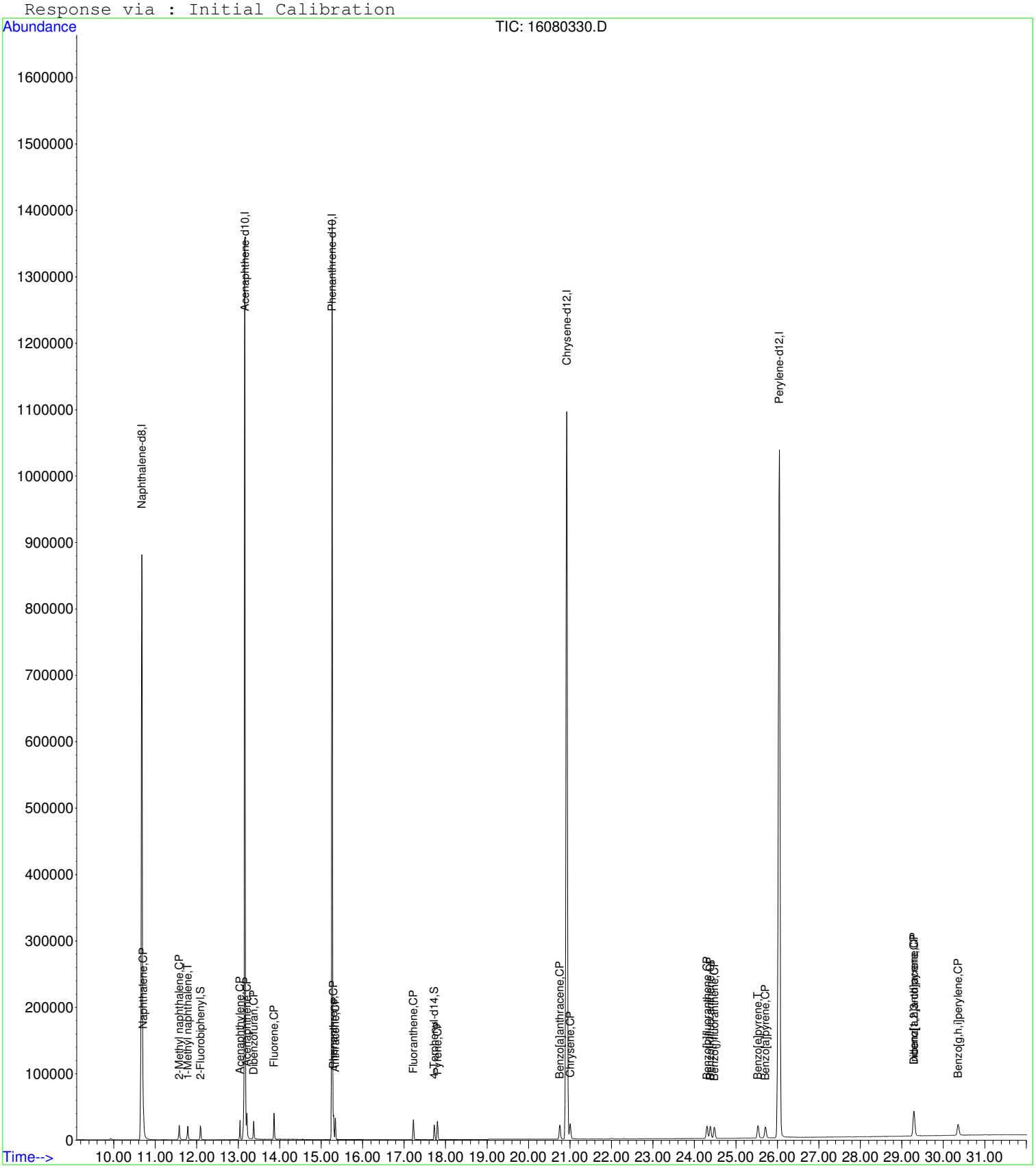
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.67	136	1498012	4000.00	ug/kg	107
5) Acenaphthene-d10	13.16	164	866463	4000.00	ug/kg	145
11) Phenanthrene-d10	15.26	188	1601406	4000.00	ug/kg	101
17) Chrysene-d12	20.92	240	1923553	4000.00	ug/kg	105
20) Perylene-d12	26.05	264	2058450	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	22902	75.78	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.89%#		
16) 4-Terphenyl-d14	17.73	244	30611	81.00	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.02%#		
Target Compounds						Qvalue
2) Naphthalene	10.71	128	24295	71.28	ug/kg	99
3) 2-Methyl naphthalene	11.58	142	17754	80.35	ug/kg	98
4) 1-Methyl naphthalene	11.79	142	16208	82.81	ug/kg	98
6) Dibenzofuran	13.37	168	27420	78.20	ug/kg	100
8) Acenaphthylene	13.04	152	29345	76.48	ug/kg	99
9) Acenaphthene	13.21	154	16863	75.88	ug/kg	99
10) Fluorene	13.86	166	22279	79.76	ug/kg	99
12) Phenanthrene	15.30	178	29847	78.61	ug/kg	99
13) Anthracene	15.34	178	29589	74.07	ug/kg	100
14) Fluoranthene	17.23	202	33545	74.55	ug/kg	98
15) Pyrene	17.80	202	34198	74.96	ug/kg	99
18) Benzo[a]anthracene	20.75	228	33836	78.04	ug/kg	99
19) Chrysene	21.01	228	32060	76.86	ug/kg	98
21) Benzo[b]fluoranthene	24.30	252	38178	80.34	ug/kg	99
22) Benzo[k]fluoranthene	24.38	252	35993	82.56	ug/kg	98
23) Benzo(j)fluoranthene	24.48	252	33692	80.42	ug/kg	99
24) Benzo[e]pyrene	25.53	252	38095	82.61	ug/kg	99
25) Benzo[a]pyrene	25.71	252	35285	76.85	ug/kg	99
26) Dibenz[a,h]anthracene	29.29	278	36634	82.45	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	29.29	276	43951	83.36	ug/kg	95
28) Benzo[g,h,i]perylene	30.36	276	36365	82.35	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080330.D Vial: 30
Acq On : 4 Aug 2016 5:53 am Operator: DEW
Sample : 1608019-03AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:55 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160803\16080331.D Vial: 31
Acq On : 4 Aug 2016 6:34 am Operator: DEW
Sample : CCV1-160803 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:56 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160801

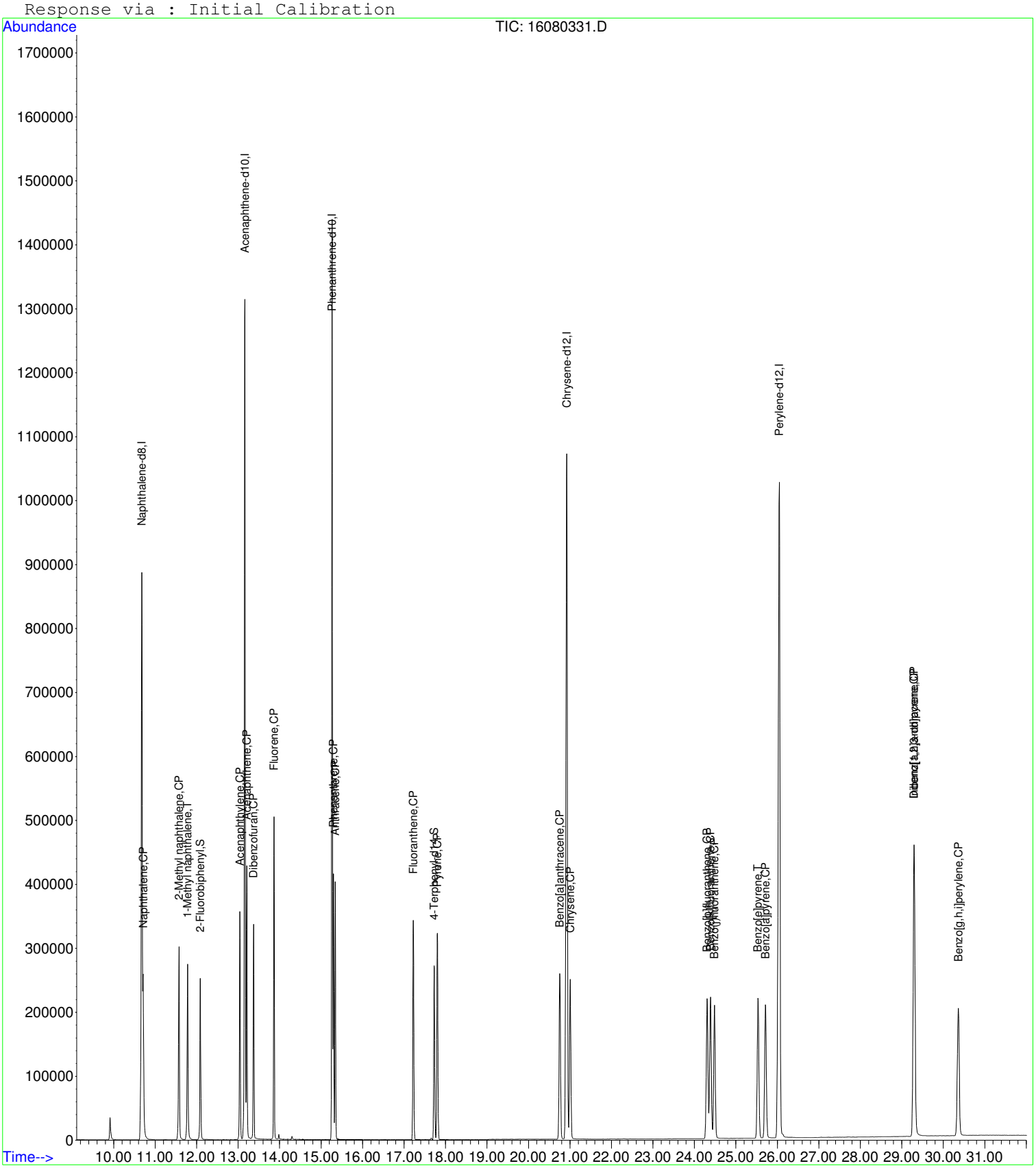
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1430020	4000.00	ug/kg	102
5) Acenaphthene-d10	13.16	164	808329	4000.00	ug/kg	135
11) Phenanthrene-d10	15.26	188	1639157	4000.00	ug/kg	103
17) Chrysene-d12	20.92	240	1922088	4000.00	ug/kg	105
20) Perylene-d12	26.05	264	2105187	4000.00	ug/kg	109
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	271890	964.30	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	24.11%#		
16) 4-Terphenyl-d14	17.73	244	376421	973.11	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	24.33%#		
Target Compounds						Qvalue
2) Naphthalene	10.71	128	304326	935.34	ug/kg	100
3) 2-Methyl naphthalene	11.57	142	206945	981.12	ug/kg	98
4) 1-Methyl naphthalene	11.78	142	186270	996.99	ug/kg	99
6) Dibenzofuran	13.37	168	320777	980.61	ug/kg	100
8) Acenaphthylene	13.04	152	345627	965.55	ug/kg	100
9) Acenaphthene	13.21	154	205635	991.90	ug/kg	100
10) Fluorene	13.86	166	271525	1041.92	ug/kg	98
12) Phenanthrene	15.30	178	363690	935.86	ug/kg	99
13) Anthracene	15.34	178	363426	888.75	ug/kg	99
14) Fluoranthene	17.22	202	383414	832.52	ug/kg	99
15) Pyrene	17.80	202	383030	820.23	ug/kg	100
18) Benzo[a]anthracene	20.75	228	402586	929.27	ug/kg	100
19) Chrysene	21.01	228	371892	892.30	ug/kg	99
21) Benzo[b]fluoranthene	24.31	252	457635	941.65	ug/kg	100
22) Benzo[k]fluoranthene	24.39	252	417389	936.16	ug/kg	100
23) Benzo(j)fluoranthene	24.48	252	390432	911.23	ug/kg	99
24) Benzo[e]pyrene	25.53	252	438054	928.82	ug/kg	99
25) Benzo[a]pyrene	25.71	252	437222	931.10	ug/kg	100
26) Dibenz[a,h]anthracene	29.29	278	434640	956.50	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	29.30	276	522343	968.67	ug/kg	96
28) Benzo[g,h,i]perylene	30.36	276	430971	954.24	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160803\16080331.D Vial: 31
Acq On : 4 Aug 2016 6:34 am Operator: DEW
Sample : CCV1-160803 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 4 7:56 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



GCMS6
Calibration Curve
For

DHL Work Order
1608019

CAL ID: 680

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #6 **Calibration File Name: PAH160801.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	----	PAHCAL160801	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV160725	1
SSCV 2500 ppb	----	PAHSSCV160801-1	1

Standards Used for the Calibration Curve

Primary Stock STDs	DHL Standard ID	Second Source (SS) Stock STDs	DHL Standard ID
5 PPM (5000 PPB) PAH CAL STD	**PAHCAL160801**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV160725**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV160801-1**

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			

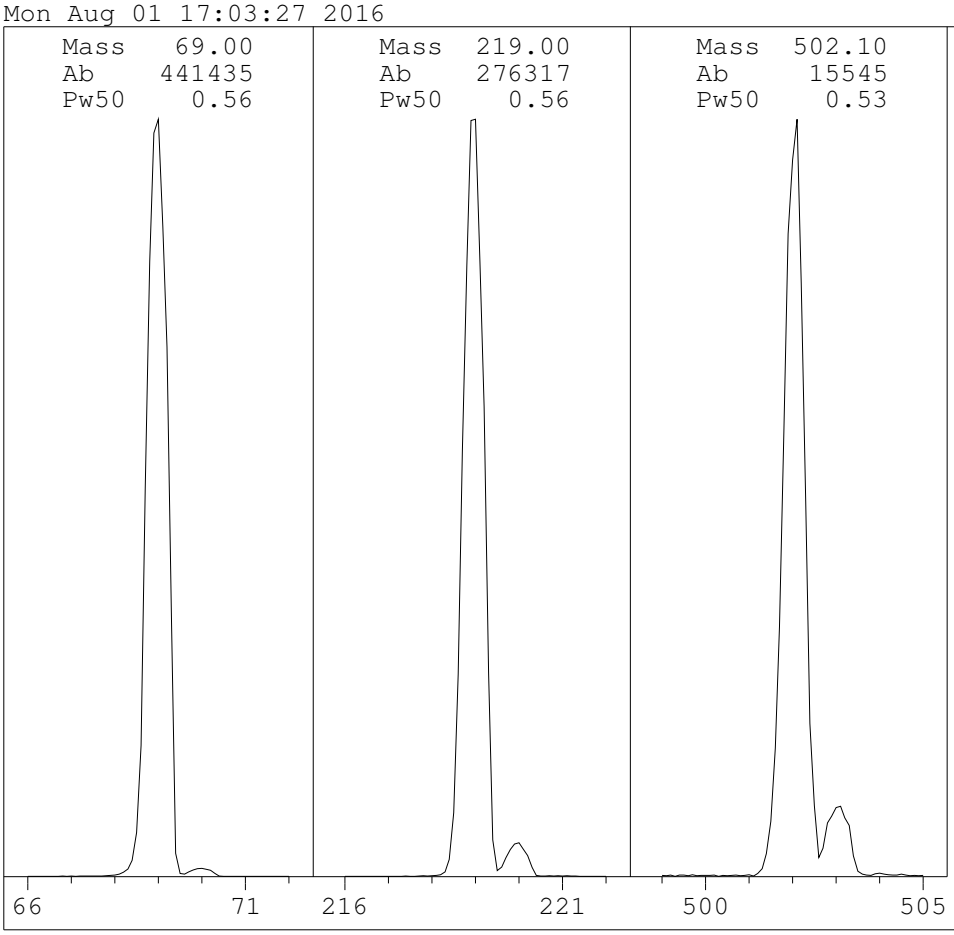
Analyst: Karyn Lane Date: 08/2/2016

Second-Level Review: Date: 08/02/2016

HP5973

Instrument: GC/MS #6

Mon Aug 01 17:03:27 2016 C:\HPCHEM\1\5973\ATUNE.U



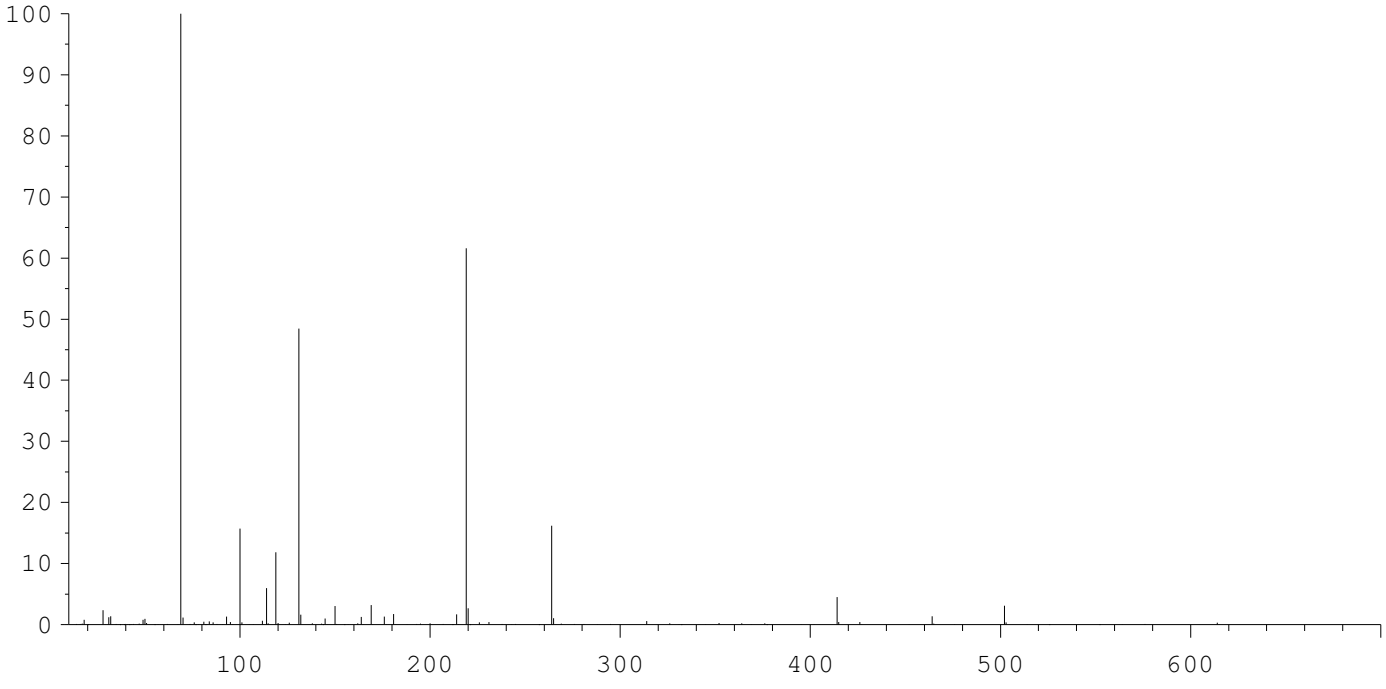
Ion Pol	POS	MassGain	7
		MassOffs	-14
Emission	34.6	AmuGain	2205
EleEnergy	69.9	AmuOffs	127
Filament	2	Wid219	0.011
		DC Pol	POS
Repeller	19.90		
IonFocus	79.7	HED	ON
EntLens	11.5	EMVolts	1635
EntOffs	17.32		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

Zones:

MS Source	230	Foreline	73
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100

130 peaks Base: 69.00 Abundance: 387008



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	387008	100.00	70.00	4591	1.19
219.00	238464	61.62	220.00	10470	4.39
502.00	12051	3.11	503.00	1348	11.19

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(%):	0.9	100.0	48.4	61.6	4.5	3.1

Response Factor Report GC/MS #6

Method Path : F:\IC\GCMS#6\
Method File : PP160801.M
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response Via : Initial Calibration

Calibration Files
1 =16080115.D 2 =16080116.D 3 =16080117.D 4 =16080118.D 5 =16080119.D 6 =16080120.D 7 =16080121.D
8 =16080122.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	1.062	0.956	0.902	0.953	0.875	0.840	0.843	0.850	0.910	8.46	A	0.0846	0.0000	0.9101	0.0000
3)	CP	2-Methyl napht...	0.657	0.607	0.603	0.634	0.582	0.556	0.544	0.538	0.590	7.26	A	0.0726	0.0000	0.5900	0.0000
4)	T	1-Methyl napht...	0.569	0.527	0.538	0.561	0.520	0.499	0.489	0.478	0.523	6.27	A	0.0627	0.0000	0.5226	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.855	1.646	1.595	1.674	1.561	1.494	1.545	1.580	1.619	6.85#	A	0.0685	0.0000	1.6187	0.0000
7)	S	2-Fluorobiphenyl	1.505	1.419	1.418	1.499	1.403	1.331	1.331	1.257	1.395	6.13	A	0.0613	0.0000	1.3953	0.0000
8)	CP	Acenaphthylene	1.909	1.776	1.725	1.858	1.776	1.710	1.719	1.699	1.771	4.29	A	0.0429	0.0000	1.7714	0.0000
9)	CP	Acenaphthene	1.094	1.023	0.977	1.046	1.046	1.000	1.006	1.015	1.026	3.51	A	0.0351	0.0000	1.0259	0.0000
10)	CP	Fluorene	1.255	1.199	1.247	1.317	1.265	1.228	1.349	1.457	1.290	6.43	A	0.0643	0.0000	1.2896	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	1.053	0.952	0.964	1.011	0.939	0.892	0.894	0.882	0.948	6.41	A	0.0641	0.0000	0.9483	0.0000
13)	CP	Anthracene	1.058	0.990	1.011	1.126	1.000	0.942	0.934	0.923	0.998	6.90	A	0.0690	0.0000	0.9979	0.0000
14)	CP	Fluoranthene	1.205	1.113	1.161	1.264	1.157	1.075	1.023	0.994	1.124	8.12	A	0.0812	0.0000	1.1239	0.0000
15)	CP	Pyrene	1.253	1.151	1.189	1.277	1.155	1.066	1.023	1.001	1.140	8.94	A	0.0894	0.0000	1.1396	0.0000
16)	S	4-Terphenyl-d14	1.010	0.954	0.994	1.028	0.963	0.903	0.855	0.845	0.944	7.36	A	0.0736	0.0000	0.9440	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...	0.947	0.855	0.875	0.990	0.923	0.876	0.891	0.855	0.902	5.32	A	0.0532	0.0000	0.9016	0.0000
19)	CP	Chrysene	0.947	0.853	0.845	0.946	0.876	0.826	0.841	0.805	0.867	6.08	A	0.0608	0.0000	0.8673	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	0.973	0.828	0.891	1.032	0.948	0.917	0.914	0.883	0.923	6.71	A	0.0671	0.0000	0.9234	0.0000
22)	CP	Benzo[k]fluora...	0.907	0.808	0.852	0.933	0.865	0.858	0.833	0.721	0.847	7.59	A	0.0759	0.0000	0.8471	0.0000
23)	CP	Benzo(j)fluora...	0.829	0.817	0.829	0.855	0.825	0.798	0.801	0.759	0.814	3.49	A	0.0349	0.0000	0.8141	0.0000
24)	T	Benzo[e]pyrene	0.975	0.872	0.898	0.928	0.898	0.875	0.887	0.836	0.896	4.63	A	0.0463	0.0000	0.8961	0.0000
25)	CP	Benzo[a]pyrene	0.935	0.858	0.875	0.982	0.895	0.872	0.887	0.833	0.892	5.25	A	0.0525	0.0000	0.8922	0.0000
26)	CP	Dibenz[a,h]ant...	0.893	0.809	0.838	0.933	0.879	0.864	0.878	0.812	0.863	4.86	A	0.0486	0.0000	0.8634	0.0000
27)	CP	Indeno[1,2,3-c...	1.061	0.963	0.998	1.125	1.039	1.019	1.033	0.957	1.025	5.33	A	0.0533	0.0000	1.0246	0.0000
28)	CP	Benzo[g,h,i]pe...	0.926	0.814	0.832	0.928	0.863	0.850	0.863	0.790	0.858	5.73	A	0.0573	0.0000	0.8581	0.0000

(#) = Out of Range

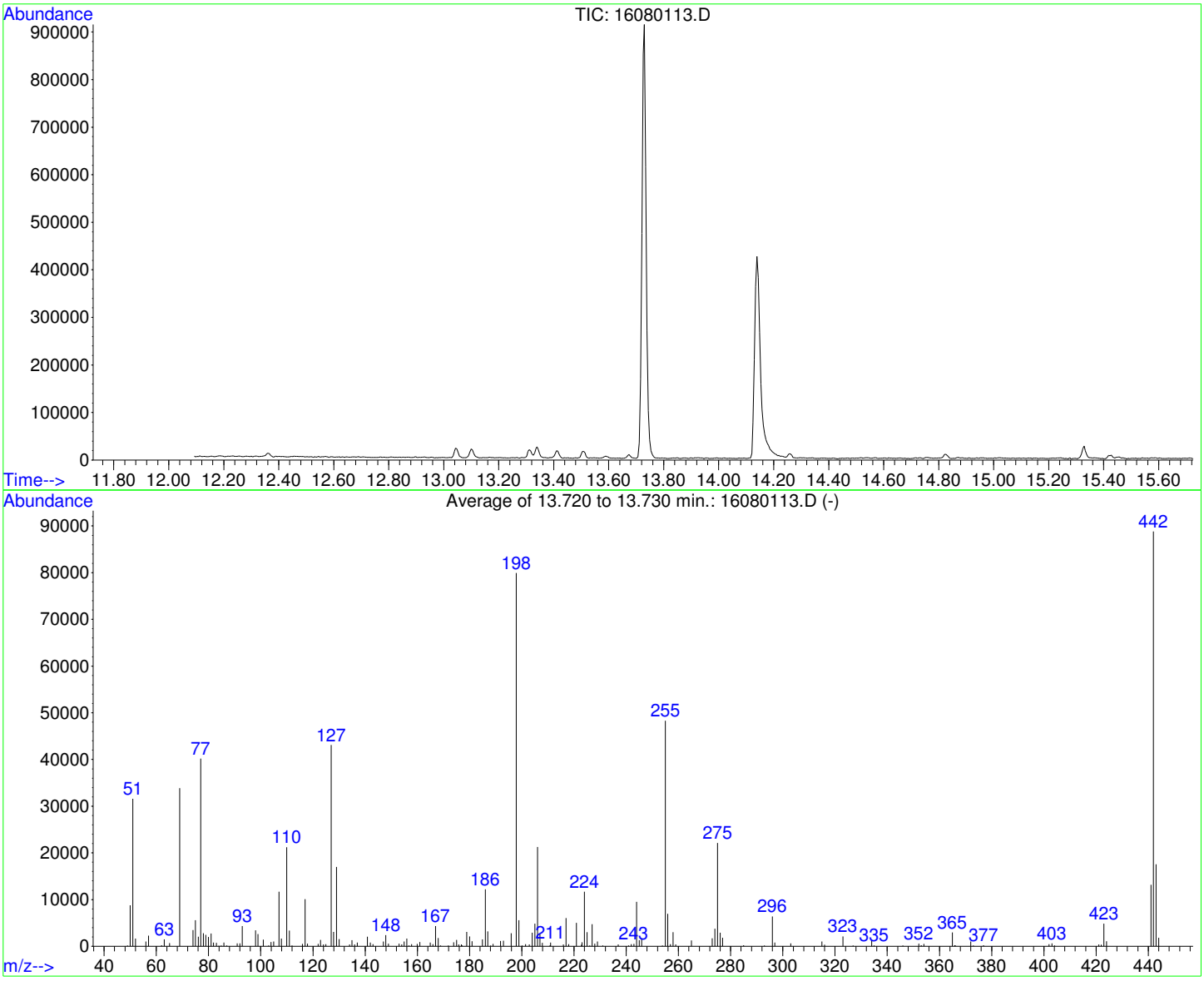
Sequence Name: C:\HPCHEM\1\SEQUENCE\160801.S
Comment:
Operator: DEW
Data Path: C:\HPCHEM\1\DATA\160801\
Pre-Seq Cmd:
Post-Seq Cmd:

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	16080101	PP160725	SBLK
2	Sample	2	16080102	DFTPPPAH	DFTPP-160801
3	Sample	3	16080103	PP160725	ICV-160801
4	Sample	4	16080104	PP160725	ICV-160801
5	Sample	5	16080105	PP160725	SB-160801
6	Sample	6	16080106	PP160725	1607269-12B
7					

Data File : C:\HPCHEM\1\DATA\160801\16080113.D Vial: 2
Acq On : 1 Aug 2016 6:30 pm Operator: DEW
Sample : DFTPP-160801 Inst : GC/MS #6
Misc : TUNE Multiplr: 5.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration



AutoFind: Scans 347, 348, 349; Background Corrected with Scan 341

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	39.5	31591	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	42.4	33861	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	53.9	43101	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	79947	PASS
199	198	5	9	7.0	5582	PASS
275	198	10	60	27.7	22112	PASS
365	198	1	200	3.7	2989	PASS
441	442	0.01	24	14.9	13202	PASS
442	198	50	400	111.1	88832	PASS
443	442	15	24	19.8	17564	PASS

REVIEWED/APPROVED
By Sherri Herschmann at 9:24:00 AM, 8/10/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080115.D Vial: 3
Acq On : 1 Aug 2016 7:50 pm Operator: DEW
Sample : CAL1 (5 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:43 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

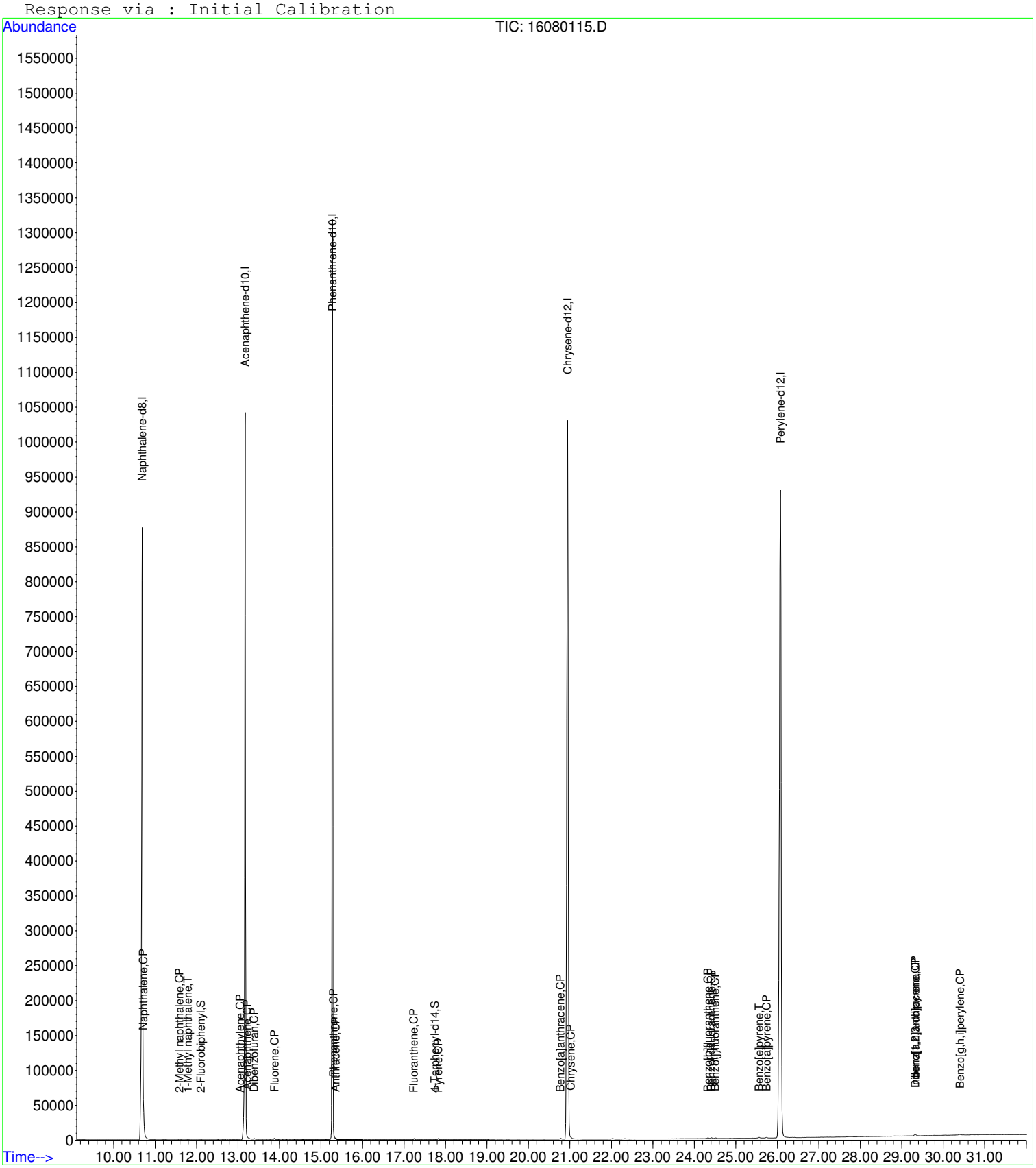
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.69	136	1503719	4000.00	ug/kg	107
5) Acenaphthene-d10	13.17	164	680588	4000.00	ug/kg	114
11) Phenanthrene-d10	15.28	188	1532486	4000.00	ug/kg	96
17) Chrysene-d12	20.95	240	1863885	4000.00	ug/kg	102
20) Perylene-d12	26.08	264	1934687	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	1280	5.39	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.13%#		
16) 4-Terphenyl-d14	17.74	244	1935	5.35	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.13%#		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	1997	5.84	ug/kg	99
3) 2-Methyl naphthalene	11.59	142	1234	5.56	ug/kg	96
4) 1-Methyl naphthalene	11.79	142	1069	5.44	ug/kg	98
6) Dibenzofuran	13.39	168	1578	5.73	ug/kg	92
8) Acenaphthylene	13.06	152	1624	5.39	ug/kg	95
9) Acenaphthene	13.22	154	931	5.33	ug/kg	89
10) Fluorene	13.87	166	1068	4.87	ug/kg	99
12) Phenanthrene	15.31	178	2017	5.55	ug/kg	96
13) Anthracene	15.35	178	2027	5.30	ug/kg	98
14) Fluoranthene	17.24	202	2308	5.36	ug/kg	96
15) Pyrene	17.82	202	2400	5.50	ug/kg	98
18) Benzo[a]anthracene	20.77	228	2207	5.25	ug/kg	92
19) Chrysene	21.02	228	2206	5.46	ug/kg	96
21) Benzo[b]fluoranthene	24.34	252	2354	5.27	ug/kg	99
22) Benzo[k]fluoranthene	24.41	252	2193	5.35	ug/kg	97
23) Benzo(j)fluoranthene	24.51	252	2005	5.09	ug/kg	90
24) Benzo[e]pyrene	25.56	252	2359	5.44	ug/kg	79
25) Benzo[a]pyrene	25.74	252	2262	5.24	ug/kg	98
26) Dibenz[a,h]anthracene	29.32	278	2159	5.17	ug/kg	93
27) Indeno[1,2,3-cd]pyrene	29.33	276	2567	5.18	ug/kg	90
28) Benzo[g,h,i]perylene	30.39	276	2240	5.40	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080115.D Vial: 3
Acq On : 1 Aug 2016 7:50 pm Operator: DEW
Sample : CAL1 (5 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:43 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080116.D Vial: 4
Acq On : 1 Aug 2016 8:32 pm Operator: DEW
Sample : CAL2 (10 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:43 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

Reprocessed low point.

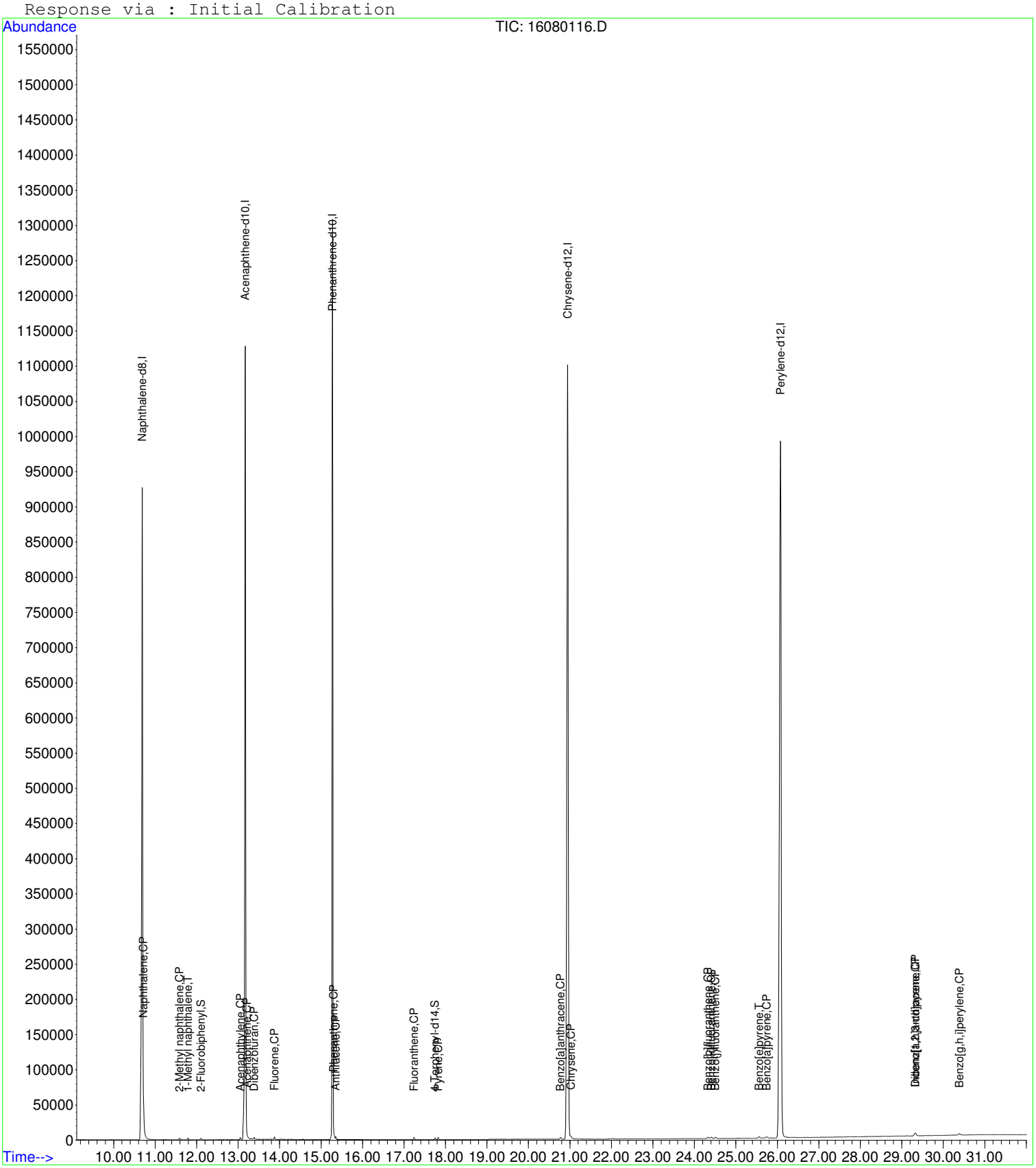
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.69	136	1613626	4000.00	ug/kg	115
5) Acenaphthene-d10	13.17	164	738139	4000.00	ug/kg	123
11) Phenanthrene-d10	15.28	188	1503918	4000.00	ug/kg	95
17) Chrysene-d12	20.95	240	1941488	4000.00	ug/kg	106
20) Perylene-d12	26.08	264	2020745	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	2618	10.17	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.25%#			
16) 4-Terphenyl-d14	17.74	244	3587	10.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.25%#			
Target Compounds						Qvalue
2) Naphthalene	10.72	128	3857	10.51	ug/kg	99
3) 2-Methyl naphthalene	11.59	142	2448	10.29	ug/kg	94
4) 1-Methyl naphthalene	11.79	142	2127	10.09	ug/kg	97
6) Dibenzofuran	13.39	168	3037	10.17	ug/kg	97
8) Acenaphthylene	13.05	152	3277	10.03	ug/kg	98
9) Acenaphthene	13.22	154	1887	9.97	ug/kg	98
10) Fluorene	13.87	166	2212	9.30	ug/kg	95
12) Phenanthrene	15.31	178	3581	10.04	ug/kg	99
13) Anthracene	15.35	178	3721	9.92	ug/kg	99
14) Fluoranthene	17.24	202	4183	9.90	ug/kg	96
15) Pyrene	17.82	202	4329	10.10	ug/kg	97
18) Benzo[a]anthracene	20.77	228	4152	9.49	ug/kg	99
19) Chrysene	21.02	228	4140	9.83	ug/kg	95
21) Benzo[b]fluoranthene	24.33	252	4184	8.97	ug/kg	91
22) Benzo[k]fluoranthene	24.41	252	4082	9.54	ug/kg	91
23) Benzo(j)fluoranthene	24.51	252	4125	10.03	ug/kg	96
24) Benzo[e]pyrene	25.56	252	4403	9.73	ug/kg	95
25) Benzo[a]pyrene	25.74	252	4335	9.62	ug/kg	97
26) Dibenz[a,h]anthracene	29.32	278	4089	9.37	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.32	276	4864	9.40	ug/kg	97
28) Benzo[g,h,i]perylene	30.39	276	4112	9.49	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080116.D Vial: 4
Acq On : 1 Aug 2016 8:32 pm Operator: DEW
Sample : CAL2 (10 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:43 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080117.D Vial: 5
Acq On : 1 Aug 2016 9:11 pm Operator: DEW
Sample : CAL3 (50 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:43 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

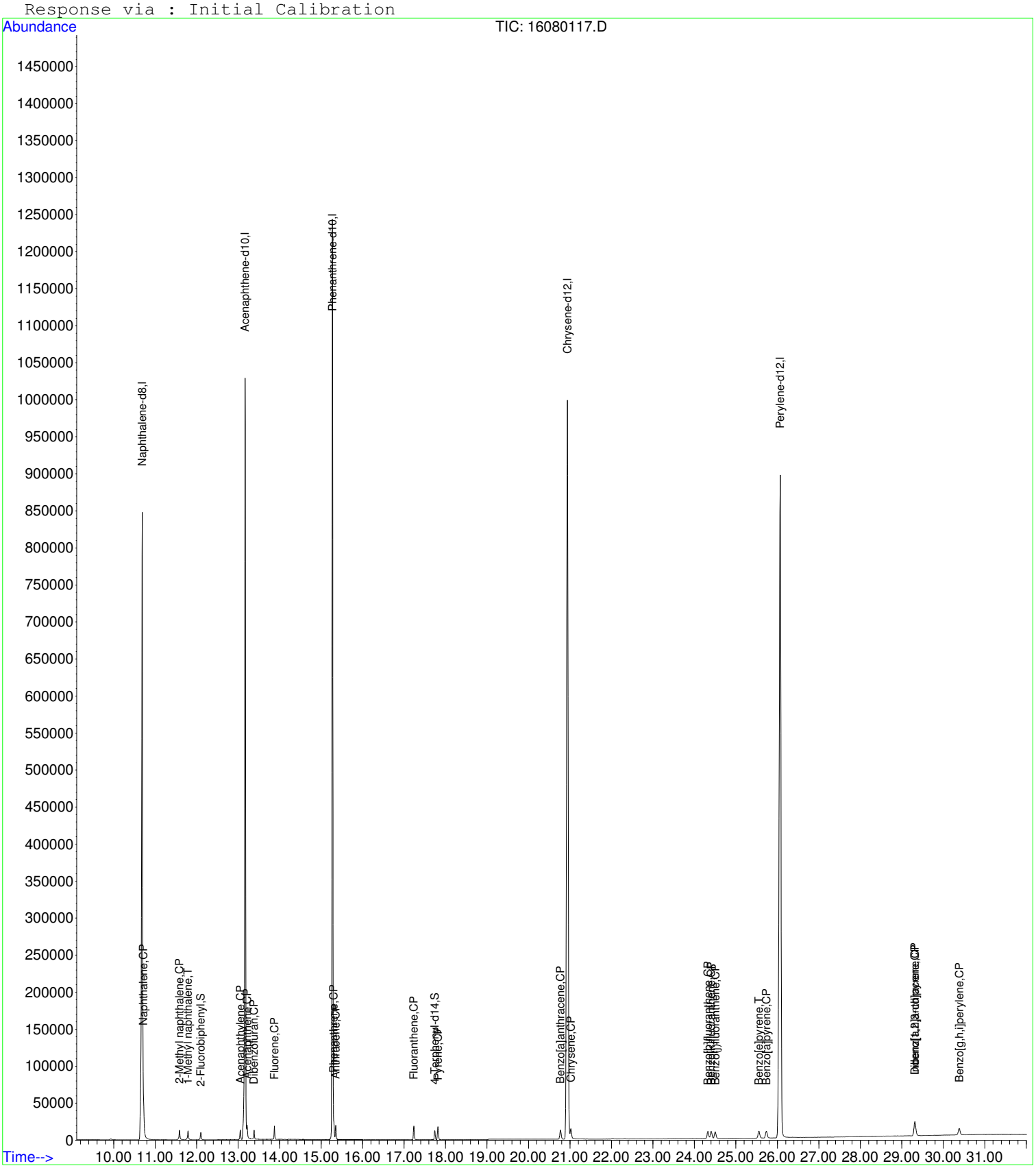
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.69	136	1483617	4000.00	ug/kg	106
5) Acenaphthene-d10	13.17	164	671495	4000.00	ug/kg	112
11) Phenanthrene-d10	15.27	188	1461166	4000.00	ug/kg	92
17) Chrysene-d12	20.94	240	1828455	4000.00	ug/kg	100
20) Perylene-d12	26.07	264	1813783	4000.00	ug/kg	94
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	11900	50.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.27%#		
16) 4-Terphenyl-d14	17.74	244	18151	52.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.32%#		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	16729	49.56	ug/kg	99
3) 2-Methyl naphthalene	11.59	142	11175	51.07	ug/kg	98
4) 1-Methyl naphthalene	11.79	142	9975	51.46	ug/kg	99
6) Dibenzofuran	13.38	168	13386	49.26	ug/kg	99
8) Acenaphthylene	13.05	152	14476	48.68	ug/kg	99
9) Acenaphthene	13.22	154	8199	47.61	ug/kg	98
10) Fluorene	13.87	166	10463	48.33	ug/kg	99
12) Phenanthrene	15.31	178	17603	50.81	ug/kg	98
13) Anthracene	15.35	178	18474	50.68	ug/kg	98
14) Fluoranthene	17.24	202	21208	51.66	ug/kg	98
15) Pyrene	17.82	202	21714	52.16	ug/kg	98
18) Benzo[a]anthracene	20.77	228	20007	48.55	ug/kg	98
19) Chrysene	21.02	228	19314	48.71	ug/kg	100
21) Benzo[b]fluoranthene	24.33	252	20206	48.26	ug/kg	99
22) Benzo[k]fluoranthene	24.40	252	19325	50.31	ug/kg	97
23) Benzo(j)fluoranthene	24.51	252	18806	50.94	ug/kg	99
24) Benzo[e]pyrene	25.55	252	20368	50.13	ug/kg	98
25) Benzo[a]pyrene	25.73	252	19849	49.06	ug/kg	99
26) Dibenz[a,h]anthracene	29.32	278	19000	48.53	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.32	276	22630	48.71	ug/kg	96
28) Benzo[g,h,i]perylene	30.39	276	18855	48.46	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080117.D Vial: 5
Acq On : 1 Aug 2016 9:11 pm Operator: DEW
Sample : CAL3 (50 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:43 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080118.D Vial: 6
Acq On : 1 Aug 2016 9:51 pm Operator: DEW
Sample : CAL4 (100 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

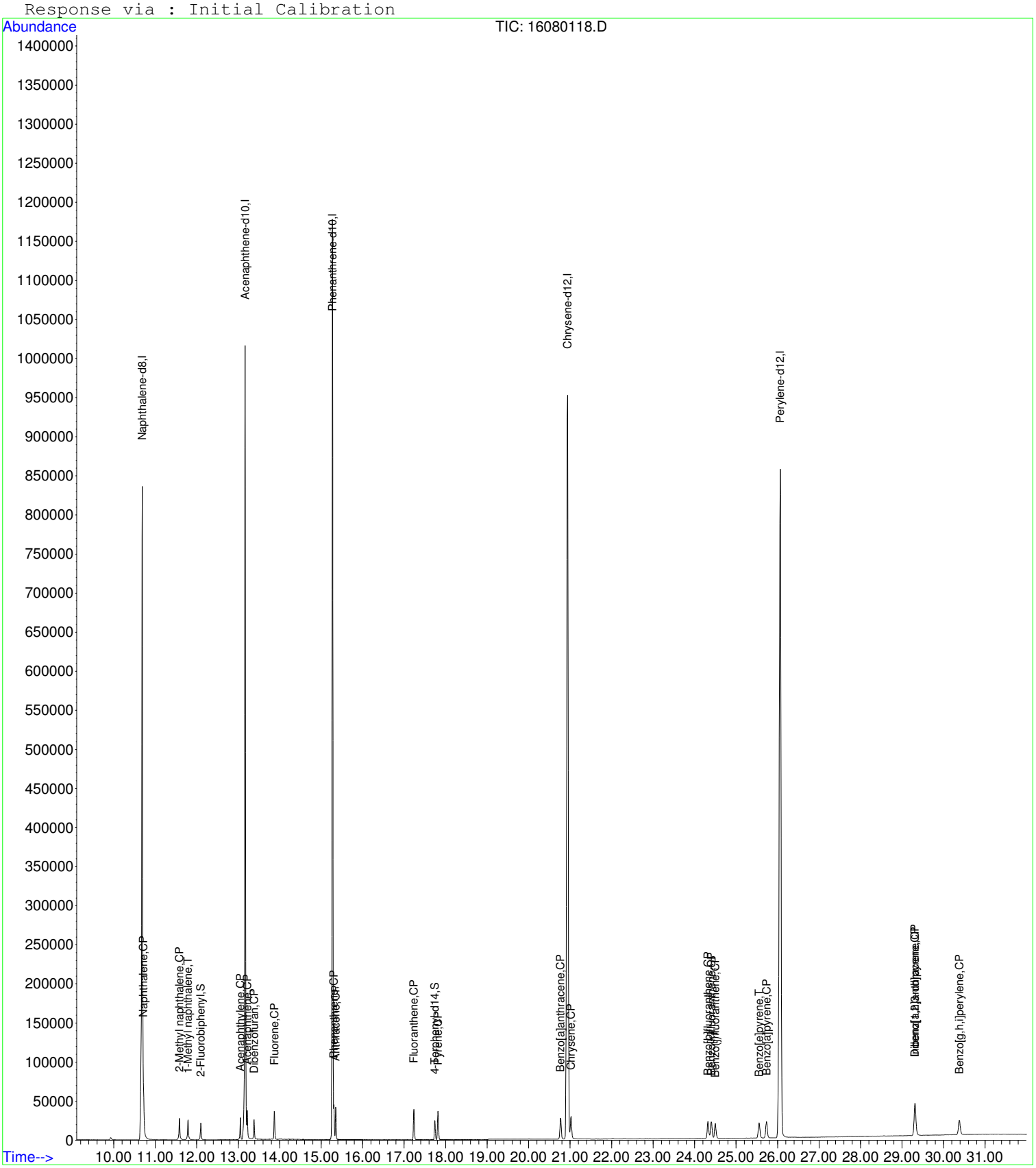
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.69	136	1417424	4000.00	ug/kg	101
5) Acenaphthene-d10	13.17	164	638853	4000.00	ug/kg	107
11) Phenanthrene-d10	15.27	188	1381998	4000.00	ug/kg	87
17) Chrysene-d12	20.94	240	1743437	4000.00	ug/kg	95
20) Perylene-d12	26.06	264	1747505	4000.00	ug/kg	91
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	23943	107.44	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.69%#		
16) 4-Terphenyl-d14	17.74	244	35511	108.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.72%#		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	33760	104.68	ug/kg	99
3) 2-Methyl naphthalene	11.59	142	22472	107.49	ug/kg	99
4) 1-Methyl naphthalene	11.79	142	19870	107.30	ug/kg	99
6) Dibenzofuran	13.38	168	26743	103.44	ug/kg	100
8) Acenaphthylene	13.05	152	29673	104.89	ug/kg	98
9) Acenaphthene	13.22	154	16709	101.98	ug/kg	100
10) Fluorene	13.87	166	21036	102.14	ug/kg	99
12) Phenanthrene	15.31	178	34943	106.65	ug/kg	98
13) Anthracene	15.35	178	38892	112.81	ug/kg	99
14) Fluoranthene	17.23	202	43667	112.46	ug/kg	99
15) Pyrene	17.82	202	44128	112.08	ug/kg	100
18) Benzo[a]anthracene	20.77	228	43135	109.77	ug/kg	99
19) Chrysene	21.02	228	41212	109.01	ug/kg	99
21) Benzo[b]fluoranthene	24.32	252	45107	111.81	ug/kg	99
22) Benzo[k]fluoranthene	24.40	252	40745	110.09	ug/kg	99
23) Benzo(j)fluoranthene	24.50	252	37339	104.98	ug/kg	97
24) Benzo[e]pyrene	25.55	252	40550	103.58	ug/kg	100
25) Benzo[a]pyrene	25.73	252	42902	110.06	ug/kg	98
26) Dibenz[a,h]anthracene	29.31	278	40760	108.06	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	29.32	276	49167	109.84	ug/kg	95
28) Benzo[g,h,i]perylene	30.38	276	40533	108.12	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080118.D Vial: 6
Acq On : 1 Aug 2016 9:51 pm Operator: DEW
Sample : CAL4 (100 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080119.D Vial: 7
Acq On : 1 Aug 2016 10:31 pm Operator: DEW
Sample : CAL5 (500 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

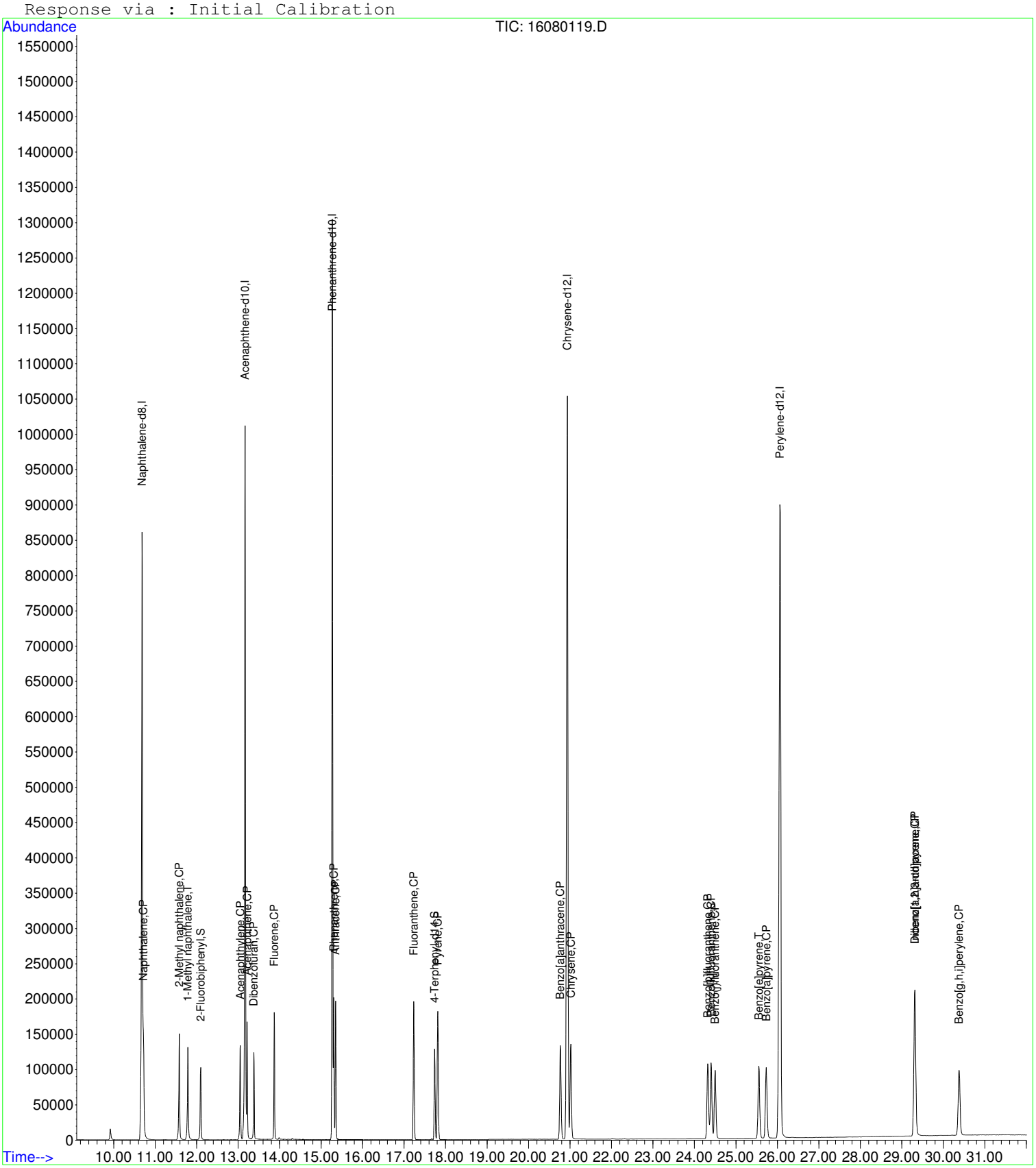
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1438697	4000.00	ug/kg	103
5) Acenaphthene-d10	13.17	164	632331	4000.00	ug/kg	105
11) Phenanthrene-d10	15.27	188	1502812	4000.00	ug/kg	94
17) Chrysene-d12	20.94	240	1837823	4000.00	ug/kg	100
20) Perylene-d12	26.06	264	1862883	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	110883	502.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	12.57%#		
16) 4-Terphenyl-d14	17.74	244	180912	510.12	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	12.75%#		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	157338	480.66	ug/kg	99
3) 2-Methyl naphthalene	11.58	142	104597	492.90	ug/kg	98
4) 1-Methyl naphthalene	11.79	142	93561	497.76	ug/kg	97
6) Dibenzofuran	13.38	168	123371	482.11	ug/kg	100
8) Acenaphthylene	13.05	152	140359	501.25	ug/kg	99
9) Acenaphthene	13.22	154	82644	509.59	ug/kg	98
10) Fluorene	13.87	166	99953	490.30	ug/kg	100
12) Phenanthrene	15.30	178	176305	494.83	ug/kg	99
13) Anthracene	15.35	178	187904	501.21	ug/kg	99
14) Fluoranthene	17.23	202	217298	514.64	ug/kg	99
15) Pyrene	17.81	202	217006	506.86	ug/kg	99
18) Benzo[a]anthracene	20.77	228	212082	511.98	ug/kg	99
19) Chrysene	21.02	228	201242	504.99	ug/kg	100
21) Benzo[b]fluoranthene	24.32	252	220851	513.54	ug/kg	100
22) Benzo[k]fluoranthene	24.40	252	201349	510.35	ug/kg	99
23) Benzo(j)fluoranthene	24.50	252	192031	506.48	ug/kg	99
24) Benzo[e]pyrene	25.55	252	208998	500.78	ug/kg	99
25) Benzo[a]pyrene	25.73	252	208397	501.53	ug/kg	100
26) Dibenz[a,h]anthracene	29.31	278	204642	508.93	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	29.32	276	241930	507.01	ug/kg	98
28) Benzo[g,h,i]perylene	30.39	276	200928	502.75	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080119.D Vial: 7
Acq On : 1 Aug 2016 10:31 pm Operator: DEW
Sample : CAL5 (500 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080120.D Vial: 8
Acq On : 1 Aug 2016 11:11 pm Operator: DEW
Sample : CAL6 (1000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

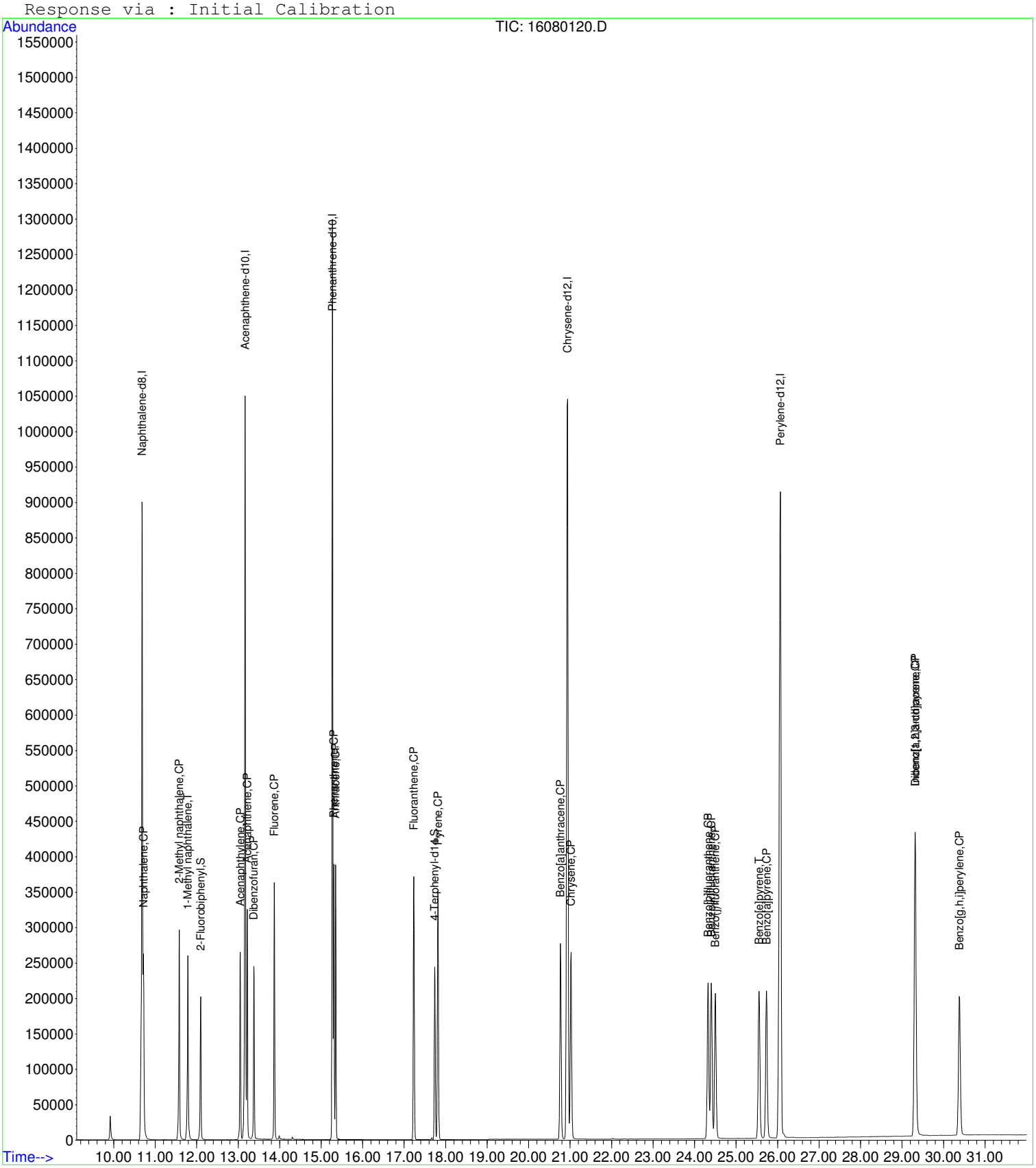
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1499252	4000.00	ug/kg	107
5) Acenaphthene-d10	13.17	164	657692	4000.00	ug/kg	110
11) Phenanthrene-d10	15.27	188	1538575	4000.00	ug/kg	97
17) Chrysene-d12	20.94	240	1921341	4000.00	ug/kg	105
20) Perylene-d12	26.07	264	1969102	4000.00	ug/kg	102
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	218820	953.83	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.85%#		
16) 4-Terphenyl-d14	17.74	244	347243	956.36	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.91%#		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	314807	922.87	ug/kg	100
3) 2-Methyl naphthalene	11.58	142	208479	942.76	ug/kg	99
4) 1-Methyl naphthalene	11.79	142	186882	954.08	ug/kg	98
6) Dibenzofuran	13.38	168	245676	923.04	ug/kg	100
8) Acenaphthylene	13.05	152	281204	965.50	ug/kg	100
9) Acenaphthene	13.22	154	164497	975.20	ug/kg	99
10) Fluorene	13.87	166	201948	952.42	ug/kg	100
12) Phenanthrene	15.30	178	342999	940.32	ug/kg	100
13) Anthracene	15.35	178	362165	943.57	ug/kg	99
14) Fluoranthene	17.23	202	413506	956.56	ug/kg	99
15) Pyrene	17.81	202	410166	935.76	ug/kg	100
18) Benzo[a]anthracene	20.77	228	420793	971.67	ug/kg	99
19) Chrysene	21.02	228	396650	952.07	ug/kg	99
21) Benzo[b]fluoranthene	24.33	252	451182	992.53	ug/kg	99
22) Benzo[k]fluoranthene	24.40	252	422580	1013.31	ug/kg	100
23) Benzo(j)fluoranthene	24.50	252	392898	980.36	ug/kg	99
24) Benzo[e]pyrene	25.55	252	430721	976.39	ug/kg	99
25) Benzo[a]pyrene	25.73	252	429307	977.43	ug/kg	100
26) Dibenz[a,h]anthracene	29.32	278	425555	1001.23	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	29.32	276	501658	994.61	ug/kg	96
28) Benzo[g,h,i]perylene	30.38	276	418580	990.85	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080120.D Vial: 8
Acq On : 1 Aug 2016 11:11 pm Operator: DEW
Sample : CAL6 (1000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080121.D Vial: 9
Acq On : 1 Aug 2016 11:50 pm Operator: DEW
Sample : CAL7 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

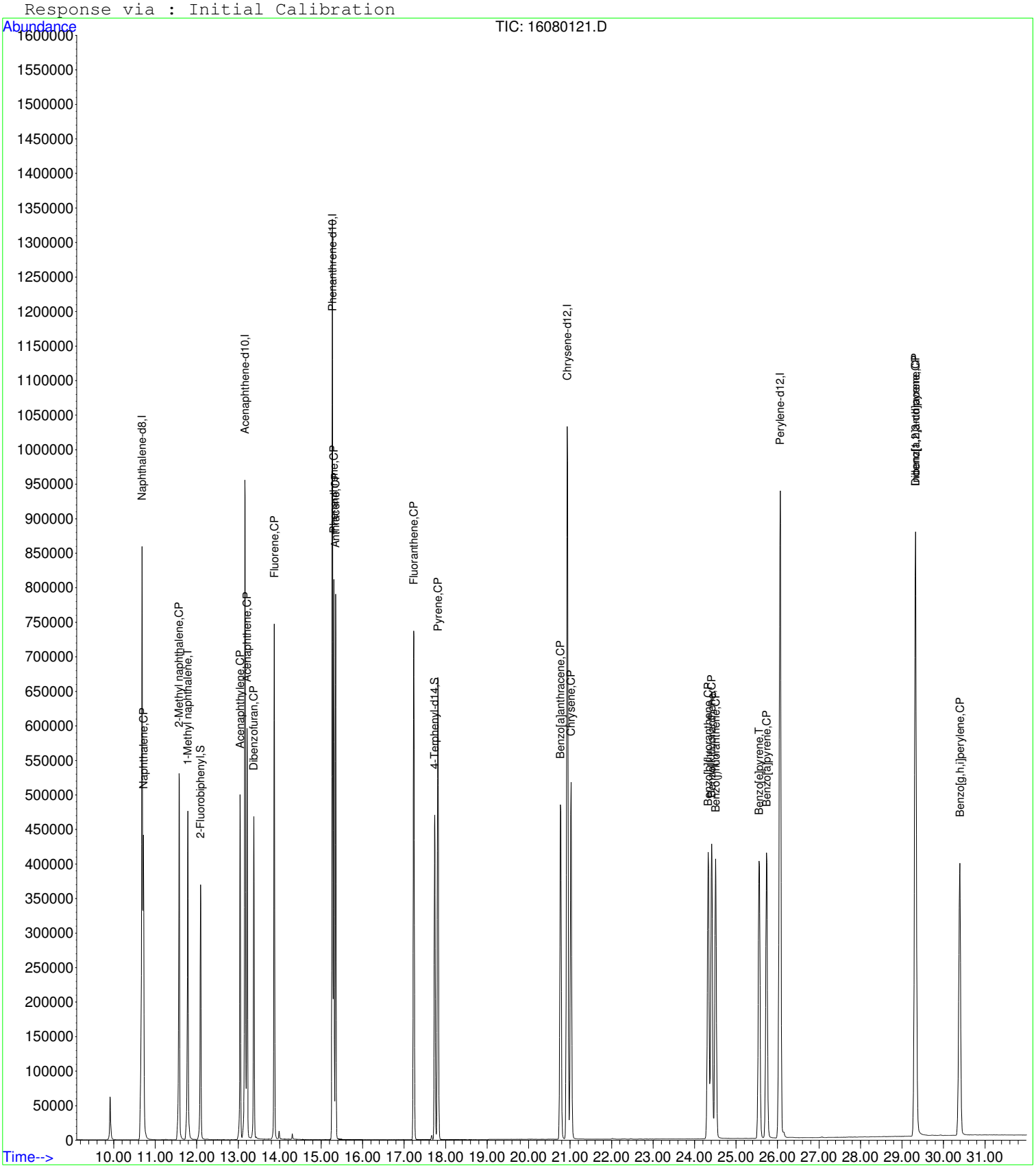
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1403212	4000.00	ug/kg	100
5) Acenaphthene-d10	13.16	164	599493	4000.00	ug/kg	100
11) Phenanthrene-d10	15.27	188	1590654	4000.00	ug/kg	100
17) Chrysene-d12	20.93	240	1834195	4000.00	ug/kg	100
20) Perylene-d12	26.06	264	1928719	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	398885	1907.53	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	47.69%		
16) 4-Terphenyl-d14	17.74	244	679973	1811.44	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	45.29%		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	591164	1851.64	ug/kg	100
3) 2-Methyl naphthalene	11.58	142	381572	1843.59	ug/kg	100
4) 1-Methyl naphthalene	11.79	142	343340	1872.80	ug/kg	100
6) Dibenzofuran	13.38	168	463067	1908.71	ug/kg	100
8) Acenaphthylene	13.05	152	515239	1940.79	ug/kg	100
9) Acenaphthene	13.21	154	301528	1961.11	ug/kg	100
10) Fluorene	13.87	166	404242	2091.56	ug/kg	100
12) Phenanthrene	15.30	178	710635	1884.39	ug/kg	100
13) Anthracene	15.35	178	742459	1871.03	ug/kg	100
14) Fluoranthene	17.23	202	813605	1820.49	ug/kg	100
15) Pyrene	17.81	202	813802	1795.83	ug/kg	100
18) Benzo[a]anthracene	20.77	228	817037	1976.30	ug/kg	100
19) Chrysene	21.02	228	771703	1940.31	ug/kg	100
21) Benzo[b]fluoranthene	24.33	252	881066	1978.79	ug/kg	100
22) Benzo[k]fluoranthene	24.41	252	803567	1967.23	ug/kg	100
23) Benzo(j)fluoranthene	24.51	252	772683	1968.36	ug/kg	100
24) Benzo[e]pyrene	25.55	252	855110	1979.00	ug/kg	100
25) Benzo[a]pyrene	25.73	252	855355	1988.22	ug/kg	100
26) Dibenz[a,h]anthracene	29.32	278	847106	2034.76	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	29.32	276	996633	2017.34	ug/kg	100
28) Benzo[g,h,i]perylene	30.39	276	831770	2010.17	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080121.D Vial: 9
Acq On : 1 Aug 2016 11:50 pm Operator: DEW
Sample : CAL7 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080122.D Vial: 10
Acq On : 2 Aug 2016 12:29 am Operator: DEW
Sample : CAL8 (5000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

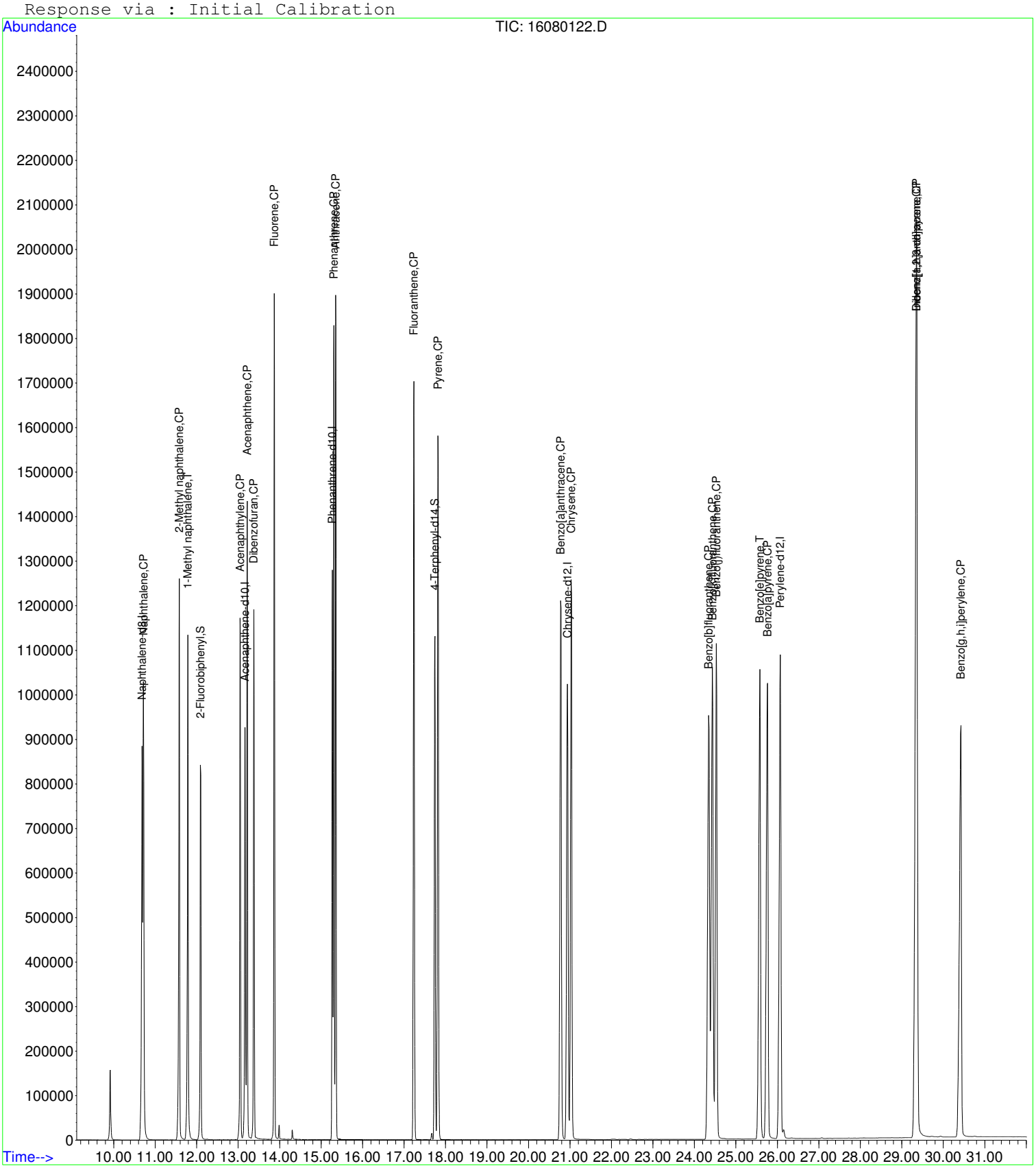
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1300974	4000.00	ug/kg	93
5) Acenaphthene-d10	13.16	164	578980	4000.00	ug/kg	97
11) Phenanthrene-d10	15.27	188	1540055	4000.00	ug/kg	97
17) Chrysene-d12	20.94	240	1926331	4000.00	ug/kg	105
20) Perylene-d12	26.07	264	2158387	4000.00	ug/kg	112
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	910049	4506.18	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 112.65%			
16) 4-Terphenyl-d14	17.74	244	1626864	4476.35	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 111.91%			
Target Compounds						Qvalue
2) Naphthalene	10.72	128	1382400	4670.22	ug/kg	99
3) 2-Methyl naphthalene	11.58	142	875199	4560.89	ug/kg	99
4) 1-Methyl naphthalene	11.79	142	777314	4573.18	ug/kg	98
6) Dibenzofuran	13.38	168	1143687	4881.17	ug/kg	99
8) Acenaphthylene	13.05	152	1229331	4794.69	ug/kg	99
9) Acenaphthene	13.22	154	734765	4948.15	ug/kg	98
10) Fluorene	13.87	166	1054816	5651.02	ug/kg	99
12) Phenanthrene	15.31	178	1698584	4652.11	ug/kg	99
13) Anthracene	15.35	178	1776151	4623.05	ug/kg	99
14) Fluoranthene	17.24	202	1912825	4420.67	ug/kg	99
15) Pyrene	17.82	202	1927732	4393.72	ug/kg	99
18) Benzo[a]anthracene	20.77	228	2058265	4740.53	ug/kg	99
19) Chrysene	21.03	228	1938788	4641.58	ug/kg	99
21) Benzo[b]fluoranthene	24.34	252	2383619	4783.74	ug/kg	99
22) Benzo[k]fluoranthene	24.43	252	1945183	4255.32	ug/kg	99
23) Benzo(j)fluoranthene	24.53	252	2048212	4662.49	ug/kg	99
24) Benzo[e]pyrene	25.58	252	2256081	4665.72	ug/kg	99
25) Benzo[a]pyrene	25.76	252	2246996	4667.24	ug/kg	99
26) Dibenz[a,h]anthracene	29.35	278	2191792	4704.51	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.36	276	2582958	4671.97	ug/kg	98
28) Benzo[g,h,i]perylene	30.42	276	2131025	4602.12	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080122.D Vial: 10
Acq On : 2 Aug 2016 12:29 am Operator: DEW
Sample : CAL8 (5000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080123.D Vial: 11
Acq On : 2 Aug 2016 1:09 am Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

Dibenzofuran and benzo(J)fluoranthene SSCV.

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1325276	4000.00	ug/kg	94
5) Acenaphthene-d10	13.16	164	707178	4000.00	ug/kg	118
11) Phenanthrene-d10	15.27	188	1448385	4000.00	ug/kg	91
17) Chrysene-d12	20.93	240	1824407	4000.00	ug/kg	99
20) Perylene-d12	26.06	264	1845448	4000.00	ug/kg	96
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.10	172	49	0.20	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.01%#		
16) 4-Terphenyl-d14	17.74	244	223	0.65	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.02%#		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	159	0.53	ug/kg	88
3) 2-Methyl naphthalene	11.58	142	146	0.75	ug/kg	83
4) 1-Methyl naphthalene	11.79	142	32	0.18	ug/kg	89
6) Dibenzofuran	13.38	168	646698	2259.71	ug/kg	100
8) Acenaphthylene	13.05	152	144	0.46	ug/kg	70
9) Acenaphthene	13.21	154	171	0.94	ug/kg	87
10) Fluorene	13.87	166	5788	25.39	ug/kg	99
12) Phenanthrene	15.30	178	1058	3.08	ug/kg	95
13) Anthracene	15.35	178	2627	7.27	ug/kg	96
14) Fluoranthene	17.23	202	1405	3.45	ug/kg	94
15) Pyrene	17.81	202	1483	3.59	ug/kg	99
18) Benzo[a]anthracene	20.77	228	3151	7.66	ug/kg	98
19) Chrysene	21.01	228	2940	7.43	ug/kg	99
21) Benzo[b]fluoranthene	0.00	252	0	N.D.		
22) Benzo[k]fluoranthene	24.50	252	927856	~~2374.00~~	~~ug/kg~~	~~96~~
23) Benzo(j)fluoranthene	24.50	252	935770	2491.38	ug/kg	100
24) Benzo[e]pyrene	25.55	252	6358	15.38	ug/kg	98
25) Benzo[a]pyrene	25.73	252	3099	7.53	ug/kg	97
26) Dibenz[a,h]anthracene	29.30	278	2935	7.37	ug/kg	92
27) Indeno[1,2,3-cd]pyrene	29.32	276	3735	7.90	ug/kg	98
28) Benzo[g,h,i]perylene	30.38	276	2800	7.07	ug/kg	96

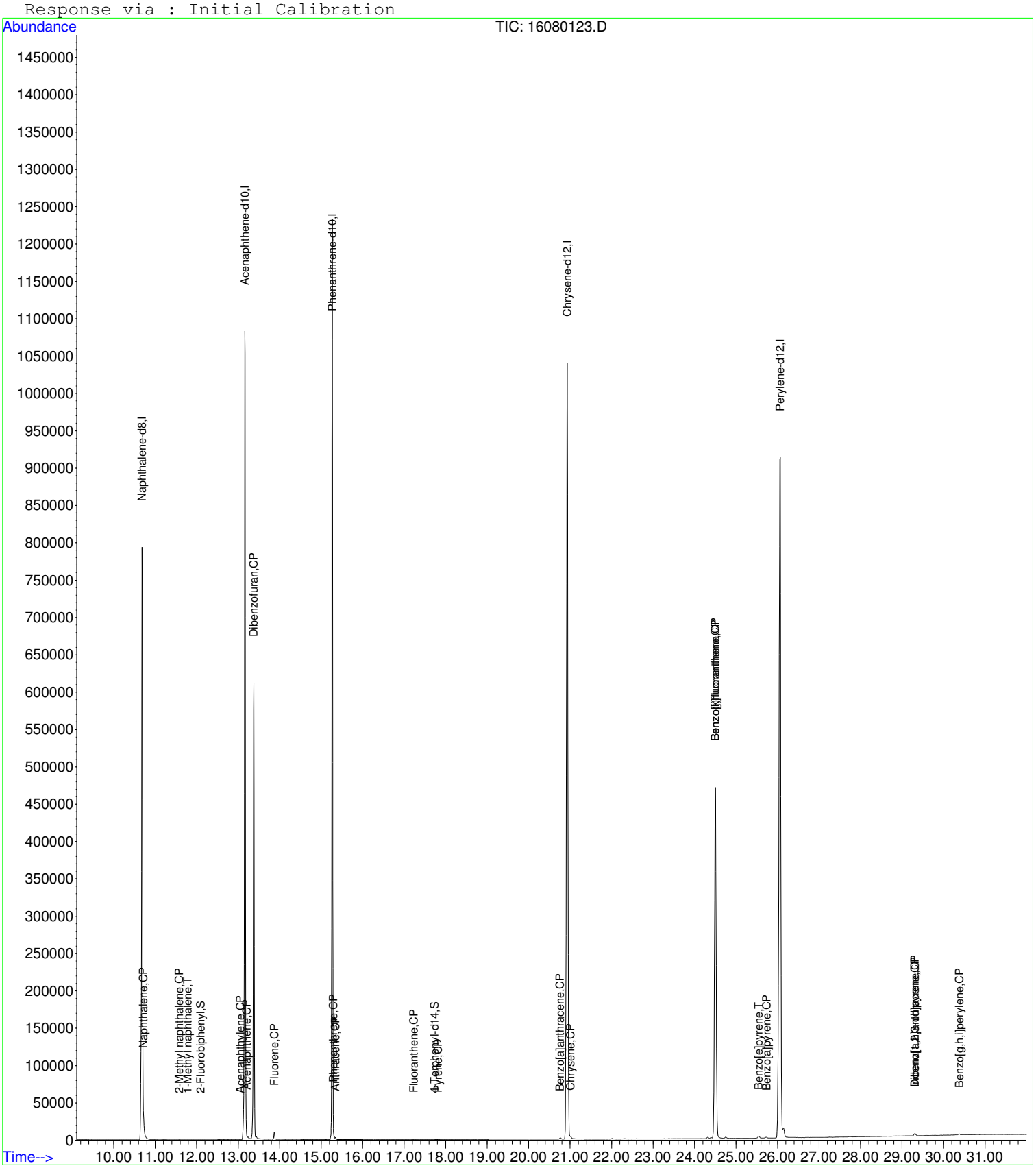
REVIEWED/APPROVED
By Sherri Herschmann at 9:39:32 AM, 8/10/2016

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080123.D Vial: 11
Acq On : 2 Aug 2016 1:09 am Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160801\16080124.D Vial: 12
Acq On : 2 Aug 2016 1:49 am Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration
DataAcq Meth : PP160725

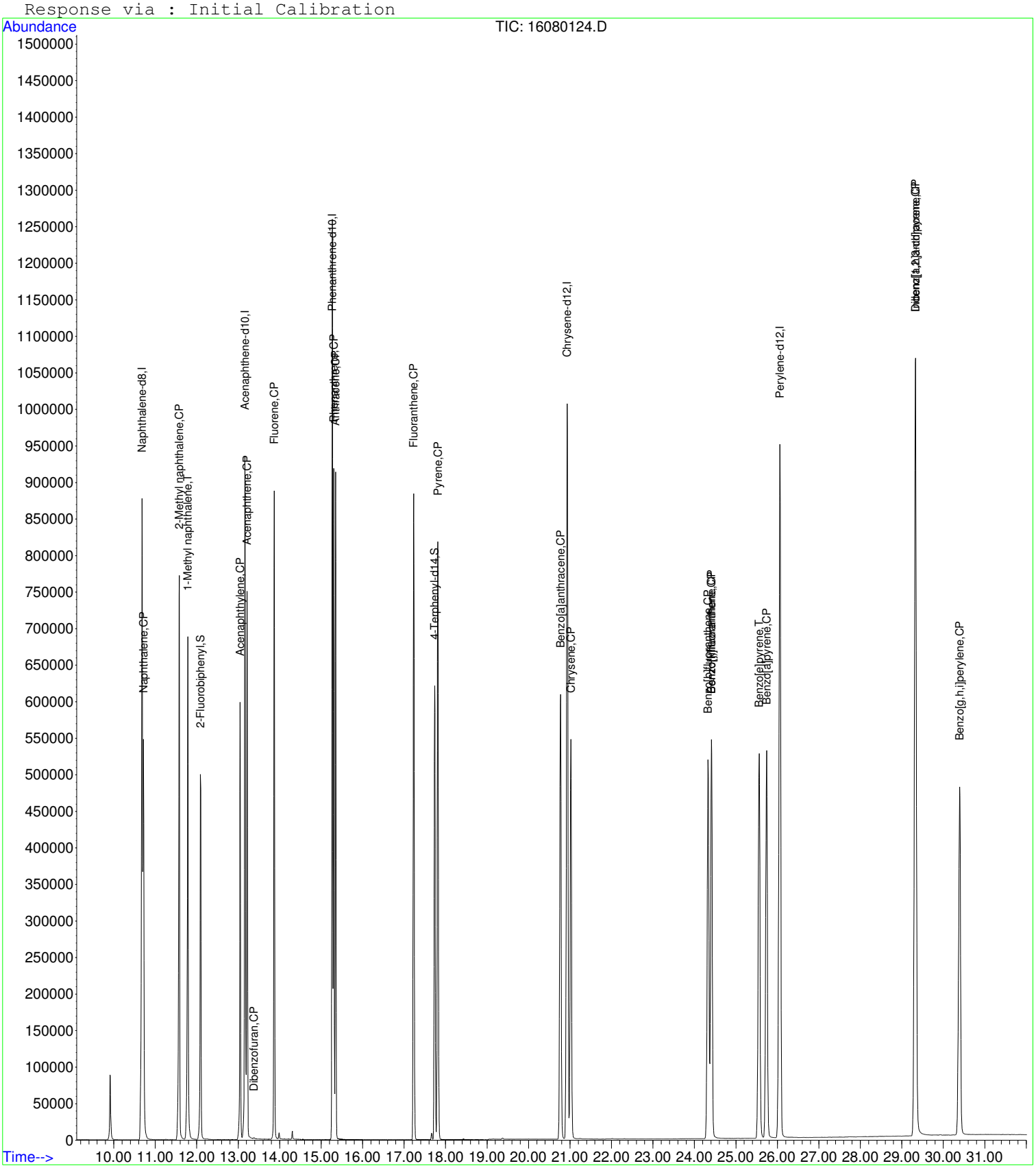
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	10.68	136	1382829	4000.00	ug/kg	99
5) Acenaphthene-d10	13.16	164	584199	4000.00	ug/kg	97
11) Phenanthrene-d10	15.27	188	1507995	4000.00	ug/kg	95
17) Chrysene-d12	20.93	240	1806763	4000.00	ug/kg	99
20) Perylene-d12	26.06	264	1922214	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	12.09	172	535064	2625.74	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	65.64%		
16) 4-Terphenyl-d14	17.74	244	917932	2579.40	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	64.48%		
Target Compounds						Qvalue
2) Naphthalene	10.72	128	729433	2318.41	ug/kg	100
3) 2-Methyl naphthalene	11.58	142	557797	2734.76	ug/kg	100
4) 1-Methyl naphthalene	11.78	142	488333	2702.95	ug/kg	99
6) Dibenzofuran	13.38	168	1665	7.04	ug/kg	92
8) Acenaphthylene	13.05	152	618455	2390.57	ug/kg	100
9) Acenaphthene	13.21	154	377577	2520.01	ug/kg	99
10) Fluorene	13.87	166	493842	2622.05	ug/kg	99
12) Phenanthrene	15.31	178	836523	2339.79	ug/kg	100
13) Anthracene	15.35	178	838710	2229.45	ug/kg	100
14) Fluoranthene	17.23	202	984348	2323.26	ug/kg	100
15) Pyrene	17.81	202	987430	2298.41	ug/kg	100
18) Benzo[a]anthracene	20.77	228	984666	2417.93	ug/kg	99
19) Chrysene	21.02	228	825681	2107.55	ug/kg	100
21) Benzo[b]fluoranthene	24.33	252	1115953	2514.81	ug/kg	100
22) Benzo[k]fluoranthene	24.41	252	1060340	2604.62	ug/kg	100
23) Benzo(j)fluoranthene	24.41	252	1065428	2723.30	ug/kg	96
24) Benzo[e]pyrene	25.56	252	1115693	2590.81	ug/kg	99
25) Benzo[a]pyrene	25.74	252	1079860	2518.56	ug/kg	100
26) Dibenz[a,h]anthracene	29.32	278	1039354	2504.99	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	29.33	276	1238582	2515.56	ug/kg	99
28) Benzo[g,h,i]perylene	30.39	276	1033552	2506.28	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160801\16080124.D Vial: 12
Acq On : 2 Aug 2016 1:49 am Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 5.00
MS Integration Params: RTEINT.P
Quant Time: Aug 2 9:44 2016 Quant Results File: PP160801.RES

Method : C:\HPCHEM\1\METHODS\PP160801.M (RTE Integrator)
Title : PAH Calibration
Last Update : Tue Aug 02 08:43:32 2016
Response via : Initial Calibration



ICP-MS4
For

DHL Work Order
1608019

ICP-MS4_160811D
For

DHL Work Order
1608019

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_160811D 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: ***QA APPROVED*** *By John DuPont at 10:46:11 AM, 8/18/2016*

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:

1607317-27A MS/MSD S -flag Pb- High; Verified thru rerun; Client approved as per JD.

Analyst: _____ Date of Completion: 08/12/2016

Second-Level Review: Janice Whitt Date Stamp: 8/18/2016

REVIEWED BY *By Janice Whitt at 10:29:19 AM, 8/18/2016*

DHL Analytical, Inc.

Run ID: **ICP-MS4_160811D** **Run No.:** 87573

Analytical Run Date: 8/11/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:52:00 PM		
L2-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:54:00 PM		
L-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:56:00 PM		
10X-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 1:58:00 PM		
5X-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:00:00 PM		
2X-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:02:00 PM		
H-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:04:00 PM		
H2-160811	1	ICPMS_TWDOD	CAL	R87573	8/11/2016 2:06:00 PM		
ICSA-160811	1	ICPMS_TWDOD	ICSA	R87573	8/11/2016 2:12:00 PM		
ICSAB-160811	1	ICPMS_TWDOD	ICSB	R87573	8/11/2016 2:14:00 PM		
ICV-160811	1	ICPMS_TWDOD	ICV	R87573	8/11/2016 2:20:00 PM		
LCVL-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 2:25:00 PM		
ICB-160811	1	ICPMS_TWDOD	ICB	R87573	8/11/2016 2:29:00 PM		
CCV2-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 3:57:00 PM		
LCVL2-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 4:08:00 PM		
CCB2-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 4:22:00 PM		
1607317-27A	5	ICPMS_TSDOD1	SAMP	76717	8/11/2016 4:24:00 PM		
1607317-27A SD	25	ICPMS_TSDOD1	SD	76717	8/11/2016 4:26:00 PM		
1607317-27A PDS	5	ICPMS_TSDOD1	PDS	76717	8/11/2016 4:28:00 PM		
1607317-27A MS	5	ICPMS_TSDOD1	MS	76717	8/11/2016 4:30:00 PM		S -flag Pb- High; Client approved as per JD
1607317-27A MSD	5	ICPMS_TSDOD1	MSD	76717	8/11/2016 4:32:00 PM		S -flag Pb- High; Client approved as per JD
CCV3-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 4:34:00 PM		
LCVL3-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 4:44:00 PM		
CCB3-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 4:46:00 PM		
CCV4-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 4:52:00 PM		
LCVL4-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 4:58:00 PM		
CCB4-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 5:00:00 PM		
MB-76748	5	ICPMS_TSDOD1	MBLK	76748	8/11/2016 5:02:00 PM		
LCS-76748	5	ICPMS_TSDOD1	LCS	76748	8/11/2016 5:04:00 PM		
LCSD-76748	5	ICPMS_TSDOD1	LCSD	76748	8/11/2016 5:06:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160804	ICPMS CCV 200/5000 PPB		02/02/2017
MET-H2CAL-1608	ICPMS High Cal2 2000ppb std 8		02/02/2017
MET-HCAL-16080	ICPMS High Cal 500ppb/10ppm s		02/02/2017
MET-ICV-160804	ICPMS ICV 100 ppb		02/02/2017
MET-IS-160630	INTERNAL STANDARD 1 PPM		12/28/2016
MET-L2CAL-16080	ICPMS Low Cal2 1/20ppb std 2		02/02/2017
MET-LCAL-160804	ICPMS Low Cal 10/200ppb std 3		02/02/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		02/02/2017
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		02/02/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		11/07/2016
MET-MCAL-16080	ICPMS Mid Cal 250/5000ppb std		02/02/2017
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
MET-PDS-160701-	10 PPM Ag+Sb PDS		01/01/2017
MET-PDS-160701-	10 PPM CUSTOM PDS SOLUTI		01/01/2017
MET-PDS-160701-	250 PPM Naturals+Al+Fe PDS		07/01/2017

Run ID: ICP-MS4_160811D **Run No.:** 87573

1607337-10A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:10:00 PM		
1607337-10A SD	25	ICPMS_TSDOD1	SD	76748	8/11/2016 5:12:00 PM		
1607337-14A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:14:00 PM		
1607337-15A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:16:00 PM		
1607337-16A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:18:00 PM		
1607337-17A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:20:00 PM		
1607337-18A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:22:00 PM		
1607337-19A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:24:00 PM		
1607337-20A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:26:00 PM		
1607337-21A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:28:00 PM		
1607337-22A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:30:00 PM		
1607337-10A PDS	5	ICPMS_TSDOD1	PDS	76748	8/11/2016 5:32:00 PM		
1607337-10A MS	5	ICPMS_TSDOD1	MS	76748	8/11/2016 5:34:00 PM		
1607337-10A MSD	5	ICPMS_TSDOD1	MSD	76748	8/11/2016 5:36:00 PM		
CCV5-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 5:38:00 PM		
LCVL5-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 5:42:00 PM		
CCB5-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 5:44:00 PM		
1607337-23A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:46:00 PM		
1607337-24A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:48:00 PM		
1607337-25A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:50:00 PM		
1608019-01A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:52:00 PM		
1608019-02A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:54:00 PM		
1608019-03A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:56:00 PM		
1608019-04A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 5:58:00 PM		
1608019-05A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 6:00:00 PM		
1608019-06A	5	ICPMS_TSDOD1	SAMP	76748	8/11/2016 6:02:00 PM		
CCV6-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 6:04:00 PM		
LCVL6-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 6:08:00 PM		
CCB6-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 6:10:00 PM		
MB-76774	1	ICPMS_TWDOD	MBLK	76774	8/11/2016 6:12:00 PM		
LCS-76774	1	ICPMS_TWDOD	LCS	76774	8/11/2016 6:14:00 PM		
LCSD-76774	1	ICPMS_TWDOD	LCSD	76774	8/11/2016 6:16:00 PM		
1607317-39A	1	ICPMS_TWDOD	SAMP	76774	8/11/2016 6:20:00 PM		
1607317-39A SD	5	ICPMS_TWDOD	SD	76774	8/11/2016 6:22:00 PM		
1607317-39A PDS	1	ICPMS_TWDOD	PDS	76774	8/11/2016 6:24:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160804	ICPMS CCV 200/5000 PPB		02/02/2017
MET-H2CAL-1608	ICPMS High Cal2 2000ppb std 8		02/02/2017
MET-HCAL-16080	ICPMS High Cal 500ppb/10ppm s		02/02/2017
MET-ICV-160804	ICPMS ICV 100 ppb		02/02/2017
MET-IS-160630	INTERNAL STANDARD 1 PPM		12/28/2016
MET-L2CAL-16080	ICPMS Low Cal2 1/20ppb std 2		02/02/2017
MET-LCAL-160804	ICPMS Low Cal 10/200ppb std 3		02/02/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		02/02/2017
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		02/02/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		11/07/2016
MET-MCAL-16080	ICPMS Mid Cal 250/5000ppb std		02/02/2017
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
MET-PDS-160701-	10 PPM Ag+Sb PDS		01/01/2017
MET-PDS-160701-	10 PPM CUSTOM PDS SOLUTI		01/01/2017
MET-PDS-160701-	250 PPM Naturals+Al+Fe PDS		07/01/2017

DHL Analytical, Inc.

Run ID: ICP-MS4_160811D **Run No.:** 87573

CCV7-160811	1	ICPMS_TWDOD	CCV	R87573	8/11/2016 6:26:00 PM		
LCVL7-160811	1	ICPMS_TWDOD	LCVL	R87573	8/11/2016 6:30:00 PM		
CCB7-160811	1	ICPMS_TWDOD	CCB	R87573	8/11/2016 6:47:00 PM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160804	ICPMS CCV 200/5000 PPB		02/02/2017
MET-H2CAL-1608	ICPMS High Cal2 2000ppb std 8		02/02/2017
MET-HCAL-16080	ICPMS High Cal 500ppb/10ppm s		02/02/2017
MET-ICV-160804	ICPMS ICV 100 ppb		02/02/2017
MET-IS-160630	INTERNAL STANDARD 1 PPM		12/28/2016
MET-L2CAL-16080	ICPMS Low Cal2 1/20ppb std 2		02/02/2017
MET-LCAL-160804	ICPMS Low Cal 10/200ppb std 3		02/02/2017
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		02/02/2017
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		02/02/2017
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		11/07/2016
MET-MCAL-16080	ICPMS Mid Cal 250/5000ppb std		02/02/2017
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
MET-PDS-160701-	10 PPM Ag+Sb PDS		01/01/2017
MET-PDS-160701-	10 PPM CUSTOM PDS SOLUTI		01/01/2017
MET-PDS-160701-	250 PPM Naturals+Al+Fe PDS		07/01/2017

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160811.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	L2-160811	CAL ICPMS_TW	2	2102	
14	CalStd	L-160811	CAL ICPMS_TW	3	2103	
15	CalStd	10X-160811	CAL ICPMS_TW	4	2104	
16	CalStd	5X-160811	CAL ICPMS_TW	5	2105	
17	CalStd	2X-160811	CAL ICPMS_TW	6	2106	
18	CalStd	H-160811	CAL ICPMS_TW	7	2107	
19	CalStd	H2-160811	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-160811	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-160811	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-160811	ICV ICPMS_TW		2111	
27	ICB	ICB-160811	ICB ICPMS_TW		1101	
28	LLICV	LCVL-160811	LCVLICPMS_TW		2112	
29	ICB	ICB-160811	ICB ICPMS_TW		1102	
30	ICB	ICB-160811	ICB ICPMS_TW		1103	
31	PB_W	MB-76749	MBLK200.8		2201	1
32	LCS_200	LCS-76749	LCS 200.8		2202	1
33	LCS_200	LCSD-76749	LCSD200.8		2203	1
34	CCB	RINSE	CCB ICPMS_TW		1101	
35	AllRef	1608076-01A	SAMP200.8		2204	1
36	SD	1608076-01A SD	SD 200.8		2205	5
37	SAMP_W	1608085-01A	SAMP200.8		2206	1
38	SAMP_W	1608084-01A	SAMP200.8		2207	1
39	SAMP_W	1608077-01A	SAMP200.8		2208	1
40	SAMP_W	1608078-01A	SAMP200.8		2209	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	SAMP_W	1608078-02A	SAMP200.8		2210	1
42	SAMP_W	1608089-01A	SAMP200.8		2211	1
43	SAMP_W	1608089-02A	SAMP200.8		2212	1
44	PDS	1608076-01A PDS	PDS 200.8		2301	1
45	CCB	RINSE	CCB ICPMS_TW		1103	
46	CCB	RINSE	CCB ICPMS_TW		1103	
47	SAMP_W	1608089-01A	SAMP200.8		2211	1

Sample List

48	SAMP_W	1608089-02A	SAMP200.8	2212	1
49	PDS	1608076-01A PDS	PDS 200.8	2301	1
50	MS_W	1608076-01A MS	MS 200.8	2302	1
51	MS_W	1608076-01A MSD	MSD 200.8	2303	1
52	CCV	CCV1-160811	CCV ICPMS_TW	1207	
53	CCB	CCB1-160811	CCB ICPMS_TW	1102	
54	LLCCV	LCVL1-160811	LCVLICPMS_TW	2112	
55	CCB	CCB1-160811	CCB ICPMS_TW	1103	
56	PB_W	MB-76758	MBLKTCLP_MET	2401	1
57	PB_W	MB-76738-SPLP	MBLKSPLP_MET	2402	1
58	LCS_S	LCS-76758	LCS TCLP_MET	2403	1
59	LCS_S	LCSD-76758	LCSDTCLP_MET	2404	1
60	CCB	RINSE	CCB ICPMS_TW	1101	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	AllRef	1608040-01A	SAMPTCLP_MET		2405	1
62	SD	1608040-01A SD	SD TCLP		2406	5
63	SAMP_W	1608075-02A	SAMPSPLP_MET		2407	1
64	SAMP_W	1608075-04A	SAMPSPLP_MET		2408	1
65	SAMP_W	1608075-05A	SAMPSPLP_MET		2409	1
66	SAMP_W	1608075-07A	SAMPSPLP_MET		2410	1
67	PDS	1608040-01A PDS	PDS TCLP_MET		2411	1
68	MS_W	1608040-01A MS	MS TCLP_MET		2412	1
69	MS_W	1608040-01A MSD	MSD TCLP_MET		2501	1
70	CCV	CCV2-160811	CCV ICPMS_TW		1207	
71	CCB	CCB2-160811	CCB ICPMS_TW		1102	
72	LLCCV	LCVL2-160811	LCVLICPMS_TW		2112	
73	CCB	CCB2-160811	CCB ICPMS_TW		1103	
74	PB	MB-62591	MBLKICPMS_TSDOD		3101	5
75	Sample	PAINT CHIPS AW-13	SAMPICPMS_TSDOD		3102	50
76	LCS_S	LCS-62591	LCS ICPMS_TSDOD		3103	5

Sample List

77	LCS_S	LCSD-62591	LCSDICPMS_TSDOD		3104	5
78	CCB	RINSE	CCB ICPMS_TW		1101	
79	AllRef	1403262-06A	SAMPICPMS_TSDOD		3105	5
80	SD	1403262-06A SD	SD ICPMS_TSDOD		3106	25

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	Sample	1403262-02A	SAMPICPMS_TSDOD		3107	5
82	Sample	1403262-03A	SAMPICPMS_TSDOD		3108	5
83	Sample	1403262-04A	SAMPICPMS_TSDOD		3109	5
84	Sample	1403262-05A	SAMPICPMS_TSDOD		3110	5
85	Sample	1403262-07A	SAMPICPMS_TSDOD		3111	5
86	Sample	1403262-08A	SAMPICPMS_TSDOD		3112	5
87	Sample	1403262-09A	SAMPICPMS_TSDOD		3201	5
88	Sample	1403262-10A	SAMPICPMS_TSDOD		3202	5
89	Sample	1403262-11A	SAMPICPMS_TSDOD		3203	5
90	PDS	1403262-06A PDS	PDS ICPMS_TSDOD		3204	5
91	MS_S	1403262-06A MS	MS ICPMS_TSDOD		3205	5
92	MS_S	1403262-06A MSD	MSD ICPMS_TSDOD		3206	5
93	CCV	CCV3-140402	CCV ICPMS_TW		1207	
94	CCB	CCB3-140402	CCB ICPMS_TW		1102	
95	LLCCV	LCVL3-140402	LCVLICPMS_TW		2512	
96	CCB	CCB3-140402	CCB ICPMS_TW		1103	
97	Sample	1403262-12A	SAMPICPMS_TSDOD		3207	5
98	Sample	1403262-13A	SAMPICPMS_TSDOD		3208	5
99	Sample	1403262-14A	SAMPICPMS_TSDOD		3209	5
100	Sample	1403263-01A	SAMPICPMS_TSDOD		3210	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	Sample	1403263-02A	SAMPICPMS_TSDOD		3211	5
102	Sample	1403263-03A	SAMPICPMS_TSDOD		3212	5
103	Sample	1403263-04A	SAMPICPMS_TSDOD		3301	5
104	Sample	1403263-05A	SAMPICPMS_TSDOD		3302	5
105	Sample	1403263-06A	SAMPICPMS_TSDOD		3303	5
106	Sample	1403263-07A	SAMPICPMS_TSDOD		3304	5
107	CCV	CCV4-140402	CCV ICPMS_TW		1207	
108	CCB	CCB4-140402	CCB ICPMS_TW		1102	
109	LLCCV	LCVL4-140402	LCVLICPMS_TW		2512	
110	CCB	CCB4-140402	CCB ICPMS_TW		1103	
111	PB	MB-62609	MBLKICPMS_TSDOD		3401	5
112	Sample	PAINT CHIPS AW-13	SAMPICPMS_TSDOD		3402	50
113	LCS_S	LCS-62609	LCS ICPMS_TSDOD		3403	5
114	LCS_S	LCSD-62609	LCSDICPMS_TSDOD		3404	5
115	CCB	RINSE	CCB ICPMS_TW		1101	
116	AllRef	1403264-10A	SAMPICPMS_TSDOD		3405	5
117	SD	1403264-10A SD	SD ICPMS_TSDOD		3406	25
118	Sample	1403263-08A	SAMPICPMS_TSDOD		3407	5
119	Sample	1403263-09A	SAMPICPMS_TSDOD		3408	5
120	Sample	1403264-01A	SAMPICPMS_TSDOD		3409	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1403264-02A	SAMPICPMS_TSDOD		3410	5
122	Sample	1403264-03A	SAMPICPMS_TSDOD		3411	5
123	Sample	1403264-04A	SAMPICPMS_TSDOD		3412	5
124	Sample	1403264-05A	SAMPICPMS_TSDOD		3501	5
125	Sample	1403264-06A	SAMPICPMS_TSDOD		3502	5
126	Sample	1403264-07A	SAMPICPMS_TSDOD		3503	5
127	PDS	1403264-10A PDS	PDS ICPMS_TSDOD		3504	5
128	MS_S	1403264-10A MS	MS ICPMS_TSDOD		3505	5
129	MS_S	1403264-10A MSD	MSD ICPMS_TSDOD		3506	5
130	CCV	CCV5-140402	CCV ICPMS_TW		1207	
131	CCB	CCB5-140402	CCB ICPMS_TW		1102	
132	LLCCV	LCVL5-140402	LCVLICPMS_TW		2511	
133	CCB	CCB5-140402	CCB ICPMS_TW		1103	
134	Sample	1403264-08A	SAMPICPMS_TSDOD		3507	5
135	Sample	1403264-09A	SAMPICPMS_TSDOD		3508	5
136	Sample	1403264-11A	SAMPICPMS_TSDOD		3509	5
137	Sample	1403264-12A	SAMPICPMS_TSDOD		3510	5
138	Sample	1403264-13A	SAMPICPMS_TSDOD		3511	5
139	Sample	1403264-14A	SAMPICPMS_TSDOD		3512	5
140	Sample	1403264-15A	SAMPICPMS_TSDOD		3310	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	Sample	1403264-16A	SAMPICPMS_TSDOD		3311	5
142	Sample	1403264-17A	SAMPICPMS_TSDOD		3312	5
143	Sample	1403264-12A	SAMPICPMS_TSDOD		3510	5
144	CCV	CCV6-140402	CCV ICPMS_TW		1207	
145	CCB	CCB6-140402	CCB ICPMS_TW		1102	
146	LLCCV	LCVL6-140402	LCVLICPMS_TW		2511	
147	CCB	CCB6-140402	CCB ICPMS_TW		1103	
148	CCB	CCB6-140402	CCB ICPMS_TW		1102	
149	CCB	CCB6-140402	CCB ICPMS_TW		1102	

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Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160811.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	L2-160811	CAL ICPMS_TW	2	2102	
14	CalStd	L-160811	CAL ICPMS_TW	3	2103	
15	CalStd	10X-160811	CAL ICPMS_TW	4	2104	
16	CalStd	5X-160811	CAL ICPMS_TW	5	2105	
17	CalStd	2X-160811	CAL ICPMS_TW	6	2106	
18	CalStd	H-160811	CAL ICPMS_TW	7	2107	
19	CalStd	H2-160811	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-160811	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-160811	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-160811	ICV ICPMS_TW		2111	
27	ICB	ICB-160811	ICB ICPMS_TW		1101	
28	LLICV	LCVL-160811	LCVLICPMS_TW		2112	
29	ICB	ICB-160811	ICB ICPMS_TW		1102	
30	ICB	ICB-160811	ICB ICPMS_TW		1103	
31	PB_W	MB-76749	MBLK200.8		2201	1
32	LCS_200	LCS-76749	LCS 200.8		2202	1
33	LCS_200	LCSD-76749	LCSD200.8		2203	1
34	CCB	RINSE	CCB ICPMS_TW		1101	
35	AllRef	1608076-01A	SAMP200.8		2204	1
36	SD	1608076-01A SD	SD 200.8		2205	5
37	SAMP_W	1608085-01A	SAMP200.8		2206	1
38	SAMP_W	1608084-01A	SAMP200.8		2207	1
39	SAMP_W	1608077-01A	SAMP200.8		2208	1
40	SAMP_W	1608078-01A	SAMP200.8		2209	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	SAMP_W	1608078-02A	SAMP200.8		2210	1
42	SAMP_W	1608089-01A	SAMP200.8		2211	1
43	SAMP_W	1608089-02A	SAMP200.8		2212	1
44	PDS	1608076-01A PDS	PDS 200.8		2301	1
45	CCB	RINSE	CCB ICPMS_TW		1103	
46	CCB	RINSE	CCB ICPMS_TW		1103	
47	SAMP_W	1608089-01A	SAMP200.8		2211	1

Sample List

48	SAMP_W	1608089-02A	SAMP200.8	2212	1
49	PDS	1608076-01A PDS	PDS 200.8	2301	1
50	MS_W	1608076-01A MS	MS 200.8	2302	1
51	MS_W	1608076-01A MSD	MSD 200.8	2303	1
52	CCV	CCV1-160811	CCV ICPMS_TW	1207	
53	CCB	CCB1-160811	CCB ICPMS_TW	1102	
54	LLCCV	LCVL1-160811	LCVLICPMS_TW	2112	
55	CCB	CCB1-160811	CCB ICPMS_TW	1103	
56	PB_W	MB-76758	MBLKTCLP_MET	2401	1
57	PB_W	MB-76738-SPLP	MBLKSPLP_MET	2402	1
58	LCS_S	LCS-76758	LCS TCLP_MET	2403	1
59	LCS_S	LCSD-76758	LCSDTCLP_MET	2404	1
60	CCB	RINSE	CCB ICPMS_TW	1101	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	AllRef	1608040-01A	SAMPTCLP_MET		2405	1
62	SD	1608040-01A SD	SD TCLP		2406	5
63	SAMP_W	1608075-02A	SAMPSPLP_MET		2407	1
64	SAMP_W	1608075-04A	SAMPSPLP_MET		2408	1
65	SAMP_W	1608075-05A	SAMPSPLP_MET		2409	1
66	SAMP_W	1608075-07A	SAMPSPLP_MET		2410	1
67	PDS	1608040-01A PDS	PDS TCLP_MET		2411	1
68	MS_W	1608040-01A MS	MS TCLP_MET		2412	1
69	MS_W	1608040-01A MSD	MSD TCLP_MET		2501	1
70	CCV	CCV2-160811	CCV ICPMS_TW		1207	
71	CCB	CCB2-160811	CCB ICPMS_TW		1102	
72	LLCCV	LCVL2-160811	LCVLICPMS_TW		2112	
73	CCB	CCB2-160811	CCB ICPMS_TW		1103	
74	AllRef	1607317-27A	SAMPICPMS_TSDOD1		3101	5
75	SD	1607317-27A SD	SD ICPMS_TSDOD1		3102	25
76	PDS	1607317-27A PDS	PDS ICPMS_TSDOD1		3103	5

Sample List

77	MS_S	1607317-27A MS	MS ICPMS_TSDOD1		3104	5
78	MS_S	1607317-27A MSD	MSD ICPMS_TSDOD1		3105	5
79	CCV	CCV3-160811	CCV ICPMS_TW		1207	
80	CCB	CCB3-160811	CCB ICPMS_TW		1102	

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	LLCCV	LCVL3-160811	LCVLICPMS_TW		2512	
82	CCB	CCB3-160811	CCB ICPMS_TW		1103	
83	SAMP_W	1608059-01A	SAMP200.8		3206	1
84	SAMP_W	1608063-01A	SAMP200.8		3207	1
85	CCV	CCV4-160811	CCV ICPMS_TW		1207	
86	CCB	CCB4-160811	CCB ICPMS_TW		1102	
87	LLCCV	LCVL4-160811	LCVLICPMS_TW		2512	
88	CCB	CCB4-160811	CCB ICPMS_TW		1103	
89	PB	MB-76748	MBLKICPMS_TSDOD1		4101	5
90	LCS_S	LCS-76748	LCS ICPMS_TSDOD1		4102	5
91	LCS_S	LCSD-76748	LCSDICPMS_TSDOD1		4103	5
92	CCB	RINSE	CCB ICPMS_TW		1101	
93	AllRef	1607337-10A	SAMPICPMS_TSDOD1		4104	5
94	SD	1607337-10A SD	SD ICPMS_TSDOD1		4105	25
95	Sample	1607337-14A	SAMPICPMS_TSDOD1		4106	5
96	Sample	1607337-15A	SAMPICPMS_TSDOD1		4107	5
97	Sample	1607337-16A	SAMPICPMS_TSDOD1		4108	5
98	Sample	1607337-17A	SAMPICPMS_TSDOD1		4109	5
99	Sample	1607337-18A	SAMPICPMS_TSDOD1		4110	5
100	Sample	1607337-19A	SAMPICPMS_TSDOD1		4111	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	Sample	1607337-20A	SAMPICPMS_TSDOD1		4112	5
102	Sample	1607337-21A	SAMPICPMS_TSDOD1		4201	5
103	Sample	1607337-22A	SAMPICPMS_TSDOD1		4202	5
104	PDS	1607337-10A PDS	PDS ICPMS_TSDOD1		4203	5
105	MS_S	1607337-10A MS	MS ICPMS_TSDOD1		4204	5
106	MS_S	1607337-10A MSD	MSD ICPMS_TSDOD1		4205	5
107	CCV	CCV5-160811	CCV ICPMS_TW		1207	
108	CCB	CCB5-160811	CCB ICPMS_TW		1102	
109	LLCCV	LCVL5-160811	LCVLICPMS_TW		2511	
110	CCB	CCB5-160811	CCB ICPMS_TW		1103	
111	Sample	1607337-23A	SAMPICPMS_TSDOD1		4206	5
112	Sample	1607337-24A	SAMPICPMS_TSDOD1		4207	5
113	Sample	1607337-25A	SAMPICPMS_TSDOD1		4208	5
114	Sample	1608019-01A	SAMPICPMS_TSDOD1		4209	5
115	Sample	1608019-02A	SAMPICPMS_TSDOD1		4210	5
116	Sample	1608019-03A	SAMPICPMS_TSDOD1		4211	5
117	Sample	1608019-04A	SAMPICPMS_TSDOD1		4212	5
118	Sample	1608019-05A	SAMPICPMS_TSDOD1		4301	5
119	Sample	1608019-06A	SAMPICPMS_TSDOD1		4302	5
120	CCV	CCV6-160811	CCV ICPMS_TW		1207	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	CCB	CCB6-160811	CCB ICPMS_TW		1102	
122	LLCCV	LCVL6-160811	LCVLICPMS_TW		2511	
123	CCB	CCB6-160811	CCB ICPMS_TW		1102	
124	PB_W	MB-76774	MBLKICPMS_TWDOD		3301	1
125	LCS_W	LCS-76774	LCS ICPMS_TWDOD		3302	1
126	LCS_W	LCSD-76774	LCSDICPMS_TWDOD		3303	1
127	CCB	RINSE	CCB ICPMS_TW		1101	
128	AllRef	1607317-39A	SAMPICPMS_TWDOD		3304	1
129	SD	1607317-39A SD	SD ICPMS_TWDOD		3305	5
130	PDS	1607317-39A PDS	PDS ICPMS_TWDOD		3306	1
131	CCV	CCV7-160811	CCV ICPMS_TW		1207	
132	CCB	CCB7-160811	CCB ICPMS_TW		1102	
133	LLCCV	LCVL7-160811	LCVLICPMS_TW		2511	
134	CCB	CCB7-160811	CCB ICPMS_TW		1102	
135	CCB	CCB7-160811	CCB ICPMS_TW		1102	
136	CCB	CCB7-160811	CCB ICPMS_TW		1102	
137	CCB	CCB7-160811	CCB ICPMS_TW		1102	
138	CCB	CCB7-160811	CCB ICPMS_TW		1103	
139	CCB	CCB7-160811	CCB ICPMS_TW		1103	
140	CCB	CCB7-160811	CCB ICPMS_TW		1103	

#	Skip

Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	CCB	CCB7-160811	CCB ICPMS_TW		1103	

#	Skip
141	

Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/10/2016 8:16:22 AM**
Digestion:
Prep End Date:

Prep Batch **76748** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

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

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-10A	Soil		1.07	50	50.000	1 of 3	
1607337-10AMS	Soil		1.06	50	50.000	1 of 3	
1607337-10AMSD	Soil		1.07	50	50.000	1 of 3	
1607337-14A	Soil		1.10	50	50.000	1 of 1	
1607337-15A	Soil		1.04	50	50.000	1 of 1	
1607337-16A	Soil		1.01	50	50.000	1 of 1	
1607337-17A	Soil		1.04	50	50.000	1 of 1	
1607337-18A	Soil		1.03	50	50.000	1 of 1	
1607337-19A	Soil		1.03	50	50.000	1 of 1	
1607337-20A	Soil		1.07	50	50.000	1 of 1	
1607337-21A	Soil		1.03	50	50.000	1 of 1	
1607337-22A	Soil		1.03	50	50.000	1 of 1	
1607337-23A	Soil		1.12	50	50.000	1 of 1	
1607337-24A	Soil		1.02	50	50.000	1 of 1	
1607337-25A	Soil		1.02	50	50.000	1 of 1	
1608019-01A	Soil		1.09	50	50.000	1 of 1	
1608019-02A	Soil		1.06	50	50.000	1 of 1	
1608019-03A	Soil		1.14	50	50.000	1 of 1	
1608019-04A	Soil		1.02	50	50.000	1 of 1	
1608019-05A	Soil		1.07	50	50.000	1 of 1	
1608019-06A	Soil		1.07	50	50.000	1 of 1	
LCS-76748	Soil		1	50	50.000	of	
LCSD-76748	Soil		1	50	50.000	of	
MB-76748	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10527	Hydrogen Peroxide, 30%	3	ml	07/09/2017
10543	Nitric Acid (Trace Metals)	10	ml	01/10/2017
10544	Hydrochloric Acid (trace metal grade)	5	ml	01/10/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-150914-10	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-150914-9	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-SPIKE-160701-3	2500 PPM NATURALS SPIKE	LCS/MS/MSD	0.5	09/29/2016
MET-SPIKE-160715-4B	50 PPM Sb+Ag CAL	LCS/MS/MSD	1	10/13/2016
MET-SPIKE-160715-5B	50 PPM Custom+Sn,Ti,B,Mo,Sr CAL	LCS/MS/MSD	1	10/13/2016

10:25 - 10:35
10:36 - 12:36
12:56 - 14:56
15:10 - 15:25

8/10/16

REVIEWED BY
By Janice Whitt at 10:15:30 AM, 8/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/2/2016 3:09:13 PM**
Digestion: **Start: 8/2/2016 3:00:00 PM / Stop: 8/3/2016 9:45:00 AM**
Prep End Date: **8/3/2016 10:30:00 AM**

Prep Batch **76619** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1608019-01A SS	Soil		0	0	#Num!	1 of 1	
1608019-02A SS	Soil		0	0	#Num!	1 of 1	
1608019-03A SS	Soil		0	0	#Num!	1 of 1	
1608019-04A SS	Soil		0	0	#Num!	1 of 1	
1608019-05A SS	Soil		0	0	#Num!	1 of 1	
1608019-06A SS	Soil		0	0	#Num!	1 of 1	

REVIEWED BY
By Janice Whitt at 10:15:42 AM, 8/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/29/2016 3:00:00 PM**
Digestion: **Start: 7/29/2016 3:20:00 PM / Stop: 8/2/2016 10:15:00 AM**
Prep End Date: **8/2/2016 4:00:00 PM**

Prep Batch **76570** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-01A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-02A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-03A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-04A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-05A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-06A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-07A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-08A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-09A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-10A	Soil		0	0	#Num!	of 3	
SS MS/MSD							
1607337-11A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-12A	Soil		0	0	#Num!	1 of 1	
SS							
1607337-14A	Soil		0	0	#Num!	1 of 1	
SS							

REVIEWED BY
By Janice Whitt at 10:15:51 AM, 8/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **7/29/2016 3:00:00 PM**
Digestion: **Start: 7/29/2016 3:20:00 PM / Stop: 8/2/2016 10:15:00 AM**
Prep End Date: **8/2/2016 4:00:00 PM**

Prep Batch **76570** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-15A SS	Soil		0	0	#Num!	1 of 1	
1607337-16A SS	Soil		0	0	#Num!	1 of 1	
1607337-17A SS	Soil		0	0	#Num!	1 of 1	
1607337-18A SS	Soil		0	0	#Num!	1 of 1	
1607337-19A SS	Soil		0	0	#Num!	1 of 1	
1607337-20A SS	Soil		0	0	#Num!	1 of 1	
1607337-21A SS	Soil		0	0	#Num!	1 of 1	
1607337-22A SS	Soil		0	0	#Num!	1 of 1	
1607337-23A SS	Soil		0	0	#Num!	1 of 1	
1607337-24A SS	Soil		0	0	#Num!	1 of 1	
1607337-25A SS	Soil		0	0	#Num!	1 of 1	

REVIEWED BY
By Janice Whitt at 10:15:53 AM, 8/18/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	08/10/2016	**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**	4.9226	4.9325	**98.65**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		4.9870	4.9970	**99.94**		
3		4.9589	4.9688	**99.38**		
AVERAGE (MEAN)		**4.956**	**4.966**	**99.32**		**0.651**
						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**	0.2019	0.2023	**101.15**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.2020	0.2024	**101.20**		
3		0.2015	0.2019	**100.95**		
AVERAGE (MEAN)		**0.202**	**0.202**	**101.10**		**0.131**
						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)						

8/10/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:15:56 AM, 8/18/2016
Review and Approved / Date

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	RO	**BALANCE #:**	30	
TEST DATE:	08/11/2016	**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	4.0033	3.9953	99.88	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		3.9819	3.9739	99.35		
3		3.9890	3.9810	99.53		
AVERAGE (MEAN)		**3.991**	**3.983**	**99.59**		0.273
						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	0.9947	0.9927	99.27	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.9959	0.9939	99.39		
3		0.9963	0.9943	99.43		
AVERAGE (MEAN)		**0.996**	**0.994**	**99.36**		0.084
						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	0.4996	0.4986	99.72	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.5015	0.5005	100.10		
3		0.5003	0.4993	99.86		
AVERAGE (MEAN)		**0.500**	**0.499**	**99.89**		0.192
						PASS

8/11/16

Analyst / Date

REVIEWED BY
By Janice Whitt at 10:16:02 AM, 8/18/2016

Review and Approved / Date

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **8/10/2016 8:16:22 AM**
Digestion: **Start: 8/10/2016 10:25:00 AM / Stop: 8/10/2016 3:25:00 PM**
Prep End Date: **8/10/2016 4:27:10 PM**

Prep Batch **76748** Prep Code: **3050_IDOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/g**

Equipment List

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

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1607337-10A	Soil		1.07	50	46.729	of 3	
1607337-10A MS	Soil		1.06	50	47.170	of	
1607337-10A MSD	Soil		1.07	50	46.729	of	
1607337-10A PDS	Soil		1.07	50	46.729	of	
1607337-10A SD	Soil		1.07	50	46.729	of	
1607337-14A	Soil		1.1	50	45.455	1 of 1	
1607337-15A	Soil		1.04	50	48.077	1 of 1	
1607337-16A	Soil		1.01	50	49.505	1 of 1	
1607337-17A	Soil		1.04	50	48.077	1 of 1	
1607337-18A	Soil		1.03	50	48.544	1 of 1	
1607337-19A	Soil		1.03	50	48.544	1 of 1	
1607337-20A	Soil		1.07	50	46.729	1 of 1	
1607337-21A	Soil		1.03	50	48.544	1 of 1	
1607337-22A	Soil		1.03	50	48.544	1 of 1	
1607337-23A	Soil		1.12	50	44.643	1 of 1	
1607337-24A	Soil		1.02	50	49.020	1 of 1	
1607337-25A	Soil		1.02	50	49.020	1 of 1	
1608019-01A	Soil		1.09	50	45.872	1 of 1	
1608019-02A	Soil		1.06	50	47.170	1 of 1	
1608019-03A	Soil		1.14	50	43.860	1 of 1	
1608019-04A	Soil		1.02	50	49.020	1 of 1	
1608019-05A	Soil		1.07	50	46.729	1 of 1	
1608019-06A	Soil		1.07	50	46.729	1 of 1	
LCS-76748	Soil		1	50	50.000	of	
LCSD-76748	Soil		1	50	50.000	of	
MB-76748	Soil		1	50	50.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10056	Digestion Vessels	1	vessel	02/10/2026
10527	Hydrogen Peroxide, 30%	3	ml	07/09/2017
10543	Nitric Acid (Trace Metals)	10	ml	01/10/2017
10544	Hydrochloric Acid (trace metal grade)	5	ml	01/10/2017

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
MET-150914-10	AL PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-150914-9	FE PRIMARY STD 1000 PPM	LCS/MS/MSD	0.25	10/01/2016
MET-SPIKE-160701-3	2500 PPM NATURALS SPIKE	LCS/MS/MSD	0.5	09/29/2016
MET-SPIKE-160715-4B	50 PPM Sb+Ag CAL	LCS/MS/MSD	1	10/13/2016
MET-SPIKE-160715-5B	50 PPM Custom+Sn,Ti,B,Mo,Sr CAL	LCS/MS/MSD	1	10/13/2016

REVIEWED BY
By Janice Whitt at 10:16:06 AM, 8/18/2016

Calibration Summary Report

Date Acquired 8/11/2016 13:52
Data Batch 160811.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 + 1.8281E-004
Be	1.0000	y = 3.3084E-005 * x + 3.4014E-007
B	1.0000	y = 1.5198E-005 * x + 8.6859E-005
Na	1.0000	y = 7.9101E-004 * x + 0.0410
Mg	1.0000	y = 3.9777E-004 * x + 0.0013
Al	1.0000	y = 1.4926E-004 * x + 0.0021
K	1.0000	y = 3.7521E-004 * x + 0.0410
Ca	0.9999	y = 2.1848E-005 * x + 7.3205E-004
Ti	0.9999	y = 1.4894E-004 * x + 1.1173E-006
V	1.0000	y = 0.0047 * x + 0.0023
Cr	1.0000	y = 0.0056 * x + 0.0011
Mn	1.0000	y = 0.0033 * x + 0.0035
Fe	0.9999	y = 0.0049 * x + 0.0076
Co	0.9999	y = 0.0124 * x + 1.8909E-004
Ni	1.0000	y = 0.0034 * x + 0.0039
Cu	1.0000	y = 0.0095 * x + 0.0121
Zn	1.0000	y = 0.0015 * x + 0.0033
Se	1.0000	y = 7.4875E-005 * x + 9.0534E-005
Sr	0.9999	y = 6.2572E-004 * x + 1.1026E-004
Mo	1.0000	y = 5.4917E-004 * x + 8.3448E-006
Ag	1.0000	y = 0.0016 * x + 8.0266E-006
Cd	1.0000	y = 2.4560E-004 * x + 3.5317E-006
Sn	1.0000	y = 5.5037E-004 * x + 4.8260E-004
Sb	1.0000	y = 7.7911E-004 * x + 3.5581E-005
Tl	1.0000	y = 0.0016 * x + 2.6152E-005
Ba	1.0000	y = 2.7016E-004 * x + 1.0956E-005
Pb	1.0000	y = 0.0022 * x + 1.5135E-004
Li	0.9999	y = 2.3096E-005 * x + 6.7819E-006

REVIEWED BY
By Janice Whitt at 3:43:34 PM, 8/11/2016

Calibration Summary Report

Level 7 Cal

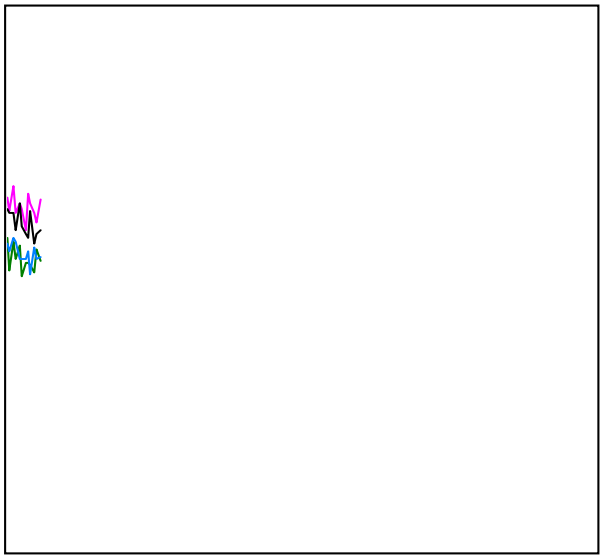
Ele	Conc	Calc	%Rec
As	500	497.46	99
Be	500	498.74	100
B	500	500.84	100
Na	10000	10016.41	100
Mg	10000	10028.31	100
Al	10000	9995.51	100
K	10000	10091.12	101
Ca	10000	9704.82	97
Ti	500	476.47	95
V	500	499.36	100
Cr	500	511.05	102
Mn	500	497.10	99
Fe	10000	10023.80	100
Co	500	516.89	103
Ni	500	502.12	100
Cu	500	503.72	101
Zn	500	499.93	100
Se	500	494.78	99
Sr	500	481.53	96
Mo	500	488.88	98
Ag	500	498.67	100
Cd	500	499.14	100
Sn	500	497.99	100
Sb	500	499.96	100
Tl	500	502.56	101
Ba	500	498.46	100
Pb	500	499.62	100

Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1999.87	100
Be	2000	2000.28	100
B	2000	2000.48	100
Na	25000	24981.91	100
Mg	25000	24967.89	100
K	25000	24946.39	100
Ca	25000	25136.28	99
Ti	2000	2007.06	100
V	2000	2000.00	100
Cr	2000	1996.07	100
Mn	2000	2000.16	100
Co	2000	1993.35	100
Ni	2000	1997.94	100
Cu	2000	1997.74	100
Zn	2000	1999.16	100
Se	2000	2000.40	100
Sr	2000	2005.81	100
Mo	2000	2003.73	100
Cd	2000	1999.94	100
Sn	2000	2000.49	100
Tl	2000	1998.16	100
Ba	2000	2000.58	100
Pb	2000	1999.19	100
Li	2000	2006.06	100

REVIEWED BY
By Janice Whitt at 3:43:37 PM, 8/11/2016

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
51	200	104	100.2	8.44
59	2000	1064	1075.4	4.23
89	2000	1084	1095.0	3.32
140	5000	3239	3166.3	3.52
205	5000	2942	3009.2	3.98
156/140	1	0.278 %	0.293 %	29.32
75	20	4	5.1	63.58
78	20	12	6.3	56.31
56	2000	1045	1008.7	4.58
Integration Time [sec]		0.10		

Plasma Parameters

RF Power	1550	Carrier Gas	0.55
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	8.1
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-100	Cell Exit	-60
Deflect	1.2		

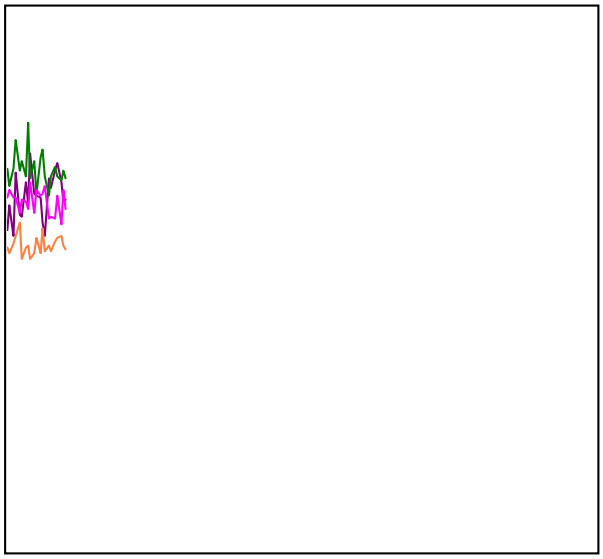
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	190
Energy Discrimination	3.0		

Meters

IF/BK Press	2.43E+2	Pa	Carrier Gas(BP)	1.05E+2	kPa
Analyzer Press	2.11E-4	Pa	Reflected Power	6	W
Forward Power	1550	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
7	1000	645	650.5	6.63
59	2000	1368	1403.5	4.48
89	5000	2766	2813.4	3.02
140	5000	3136	3212.9	3.47
205	5000	2368	2340.8	3.10
156/140	2	0.925 %	0.937 %	20.27
95	20	2	3.7	62.39
78	2000	1762	1645.9	2.98
63	200	169	162.4	8.66
75	5000	2742	2836.7	2.35
Integration Time [sec]		0.10		

Plasma Parameters

RF Power	1550	Carrier Gas	0.55
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	8.1
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	190
Energy Discrimination	3.0		

Meters

IF/BK Press	2.42E+2	Pa	Carrier Gas(BP)	1.05E+2	kPa
Analyzer Press	1.25E-4	Pa	Reflected Power	6	W
Forward Power	1551	W			

US EPA Tune Check Sample Report

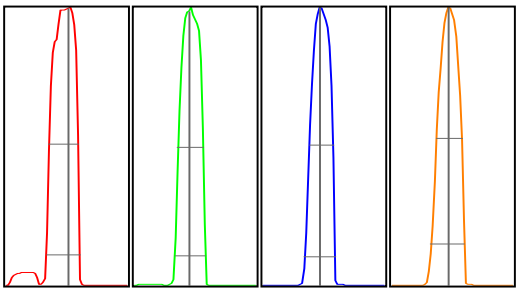
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	1149856	0.54	5.00	
59	2211072	0.89	5.00	
115	3907791	1.26	5.00	
205	3687028	0.63	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	1153422	1147861	1139820	1155206	1152973
59	2219241	2190562	2189182	2228583	2227790
115	3936867	3891511	3828408	3942105	3940061
205	3718397	3691854	3653723	3679735	3691429

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	171704	7.05	6.9 - 7.1		0.815	0.850	
59	386412	58.90	58.9 - 59.1		0.747	0.850	
115	725659	114.95	114.9 - 115.1		0.724	0.850	
205	638803	204.95	204.9 - 205.1		0.801	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	0.55	L/min	Makeup/Dilution Gas	0.50	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	8.1	V	Plate Bias	-60	V

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By Janice Whitt at 3:43:46 PM, 8/11/2016

Cell Parameters

ParameterName	Value	Unit	ParameterName	Value	Unit
Use Gas	false		OctP Bias	-18.0	V
He Flow	0.0	mL/min	OctP RF	190	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: 08/11/2016 13:52:06

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1745 V
PulseHV: 1384 V

Acquired: 08/11/2016 13:21:16

Mass[u]	Element	P/A Factor
6	Li	0.100619
9	Be	0.113142
23	Na	0.120227
24	Mg	0.125043
27	Al	0.128519
39	K	0.130813
45	Sc	0.131680
48		0.132911
51	V	0.133073
52	Cr	0.136832
55	Mn	0.138251
59	Co	0.141755
60	Ni	0.141770
63	Cu	0.145147
66	Zn	0.144887
72		0.143963
74	Ge	0.143920
75	As	0.143867
88	Sr	0.145073
89		0.143183
95		0.144204
97	Mo	0.143957
98	Mo	0.144465
99	[Mo]	0.145871
101		0.146409
105		0.148620
111	Cd	0.149899
114	Cd	0.149755
115	In	0.150549
118	Sn	0.149251
121		0.149907
123	Sb	0.150308
135	Ba	0.149537
138		0.150779
175		0.154181
193		0.155321
205	Tl	0.155621
206	[Pb]	0.156019
207	[Pb]	0.156868
208	Pb	0.157372
209	Bi	0.157439
232		0.157128
238	U	0.156691
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 3:43:48 PM, 8/11/2016

Calibration Blank Report

Date Acquired	8/11/2016 13:52	Sample Name	BLANK STD 1
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	7	48.22
9	Be	45	0	173.21
11	B	45	86	5.95
23	Na	45	40403	2.09
24	Mg	45	1233	6.30
27	Al	45	2109	11.60
39	K	45	40372	0.97
44	Ca	45	721	6.36
47	Ti	45	1	173.21
51	V	45	2307	3.36
52	Cr	45	1081	6.86
55	Mn	45	3423	5.26
56	Fe	45	7536	3.09
59	Co	72	131	5.29
60	Ni	72	2670	2.58
63	Cu	72	8422	2.10
66	Zn	72	2288	3.89
75	As	72	127	5.70
78	Se	72	63	9.51
88	Sr	115	800	15.12
95	Mo	115	60	38.49
107	Ag	115	58	23.32
111	Cd	115	26	27.15
118	Sn	115	3496	6.51
121	Sb	115	258	7.90
137	Ba	115	79	21.68
205	Tl	209	448	9.72
208	Pb	209	2590	3.41

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	985323	0.73
72	Ge	693391	0.90
115	In	7239973	3.32
209	Bi	17115037	0.97

Calibration Standard Report

Date Acquired	8/11/2016 13:54	Sample Name	L2-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	25	43.48
9	Be	45	34	16.04
11	B	45	93	27.90
23	Na	45	58417	0.93
24	Mg	45	9467	2.69
27	Al	45	5109	3.45
39	K	45	48606	1.38
44	Ca	45	1074	2.63
47	Ti	45	150	26.94
51	V	45	6949	2.48
52	Cr	45	6974	2.21
55	Mn	45	6943	0.82
56	Fe	45	105978	0.64
59	Co	72	9433	0.14
60	Ni	72	5240	2.32
63	Cu	72	15215	1.94
66	Zn	72	3474	2.66
75	As	72	931	4.41
78	Se	72	108	7.04
88	Sr	115	5362	2.80
95	Mo	115	3959	1.12
107	Ag	115	12404	1.66
111	Cd	115	1770	7.24
118	Sn	115	7484	3.17
121	Sb	115	5763	1.43
137	Ba	115	1963	5.44
205	Tl	209	29535	1.06
208	Pb	209	41555	1.75

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	977208	0.93	985323	99.18	70	120	
72	Ge	692474	0.37	693391	99.87	70	120	
115	In	7137209	1.27	7239973	98.58	70	120	
209	Bi	17155225	1.65	17115037	100.23	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 13:56	Sample Name	L-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	233	12.42
9	Be	45	346	4.99
11	B	45	202	22.38
23	Na	45	203024	0.69
24	Mg	45	82340	1.18
27	Al	45	32684	0.58
39	K	45	117686	2.07
44	Ca	45	5021	1.33
47	Ti	45	1475	5.18
51	V	45	49514	1.76
52	Cr	45	58862	1.51
55	Mn	45	36893	0.27
56	Fe	45	975397	0.95
59	Co	72	92214	1.18
60	Ni	72	27566	2.10
63	Cu	72	77348	1.54
66	Zn	72	13499	1.72
75	As	72	7914	0.12
78	Se	72	622	2.07
88	Sr	115	44413	0.31
95	Mo	115	37864	1.03
107	Ag	115	118848	0.88
111	Cd	115	17735	2.72
118	Sn	115	42944	2.12
121	Sb	115	56124	1.16
137	Ba	115	19400	0.60
205	Tl	209	285207	1.72
208	Pb	209	389114	1.65

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	992161	0.85	985323	100.69	70	120	
72	Ge	692387	0.73	693391	99.86	70	120	
115	In	7084158	0.96	7239973	97.85	70	120	
209	Bi	17361879	0.42	17115037	101.44	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 13:58	Sample Name	10X-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	1097	5.10
9	Be	45	1617	2.45
11	B	45	872	3.92
23	Na	45	840424	0.63
24	Mg	45	407750	0.25
27	Al	45	151765	0.79
39	K	45	422192	0.17
44	Ca	45	22107	0.53
47	Ti	45	7239	0.75
51	V	45	234455	0.37
52	Cr	45	286682	0.97
55	Mn	45	167648	0.39
56	Fe	45	4915590	0.81
59	Co	72	457589	0.28
60	Ni	72	126244	0.21
63	Cu	72	350493	1.03
66	Zn	72	56819	1.30
75	As	72	39591	0.68
78	Se	72	2738	2.33
88	Sr	115	217260	0.35
95	Mo	115	189797	0.69
107	Ag	115	594154	0.38
111	Cd	115	89654	0.75
118	Sn	115	198199	0.59
121	Sb	115	278379	0.89
137	Ba	115	94997	1.16
205	Tl	209	1442737	0.59
208	Pb	209	1946142	0.21

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	981259	0.52	985323	99.59	70	120	
72	Ge	686926	0.52	693391	99.07	70	120	
115	In	7098936	1.04	7239973	98.05	70	120	
209	Bi	17371179	0.71	17115037	101.50	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:00	Sample Name	5X-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2179	4.85
9	Be	45	3212	3.76
11	B	45	1545	7.39
23	Na	45	1603457	0.83
24	Mg	45	799474	0.26
27	Al	45	298222	0.23
39	K	45	793691	0.45
44	Ca	45	42726	0.83
47	Ti	45	14251	1.44
51	V	45	463630	0.70
52	Cr	45	568619	0.72
55	Mn	45	333863	0.22
56	Fe	45	9721549	1.14
59	Co	72	911594	0.23
60	Ni	72	248034	0.64
63	Cu	72	686160	1.10
66	Zn	72	110791	1.21
75	As	72	78855	0.56
78	Se	72	5351	1.94
88	Sr	115	430009	1.16
95	Mo	115	377434	1.56
107	Ag	115	1182188	0.43
111	Cd	115	175446	0.57
118	Sn	115	399247	0.46
121	Sb	115	559336	0.85
137	Ba	115	190756	0.41
205	Tl	209	2880780	0.70
208	Pb	209	3880567	0.33

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	970261	0.38	985323	98.47	70	120	
72	Ge	682369	0.17	693391	98.41	70	120	
115	In	7085865	1.46	7239973	97.87	70	120	
209	Bi	17256878	1.26	17115037	100.83	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:02	Sample Name	2X-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	5402	1.69
9	Be	45	8012	1.35
11	B	45	3677	0.55
23	Na	45	3893510	0.44
24	Mg	45	1951410	0.25
27	Al	45	722057	0.06
39	K	45	1872554	0.23
44	Ca	45	104628	0.59
47	Ti	45	34762	0.62
51	V	45	1134761	0.54
52	Cr	45	1391926	0.59
55	Mn	45	812707	1.56
56	Fe	45	23153027	1.47
59	Co	72	2230236	0.22
60	Ni	72	601400	0.48
63	Cu	72	1657141	0.20
66	Zn	72	264038	0.34
75	As	72	192890	0.59
78	Se	72	12979	0.48
88	Sr	115	1064984	0.50
95	Mo	115	941328	0.53
107	Ag	115	2914403	0.68
111	Cd	115	434339	0.76
118	Sn	115	968709	0.37
121	Sb	115	1366429	0.96
137	Ba	115	472271	0.66
205	Tl	209	7134215	1.90
208	Pb	209	9651897	0.44

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	967407	0.19	985323	98.18	70	120	
72	Ge	675540	0.43	693391	97.43	70	120	
115	In	7028496	0.72	7239973	97.08	70	120	
209	Bi	17110409	0.15	17115037	99.97	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:04	Sample Name	H-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	10593	1.40
9	Be	45	15731	1.25
11	B	45	7339	0.62
23	Na	45	7593101	1.30
24	Mg	45	3804193	0.08
27	Al	45	1424387	0.33
39	K	45	3649038	0.82
44	Ca	45	202858	1.30
47	Ti	45	67662	1.12
51	V	45	2227202	0.36
52	Cr	45	2725708	0.68
55	Mn	45	1569458	0.41
56	Fe	45	46455745	0.77
59	Co	72	4348529	0.22
60	Ni	72	1163618	0.21
63	Cu	72	3234064	0.68
66	Zn	72	517458	0.40
75	As	72	377518	0.16
78	Se	72	25144	1.70
88	Sr	115	2088197	1.05
95	Mo	115	1860151	1.03
107	Ag	115	5686596	0.83
111	Cd	115	849338	0.27
118	Sn	115	1902199	0.67
121	Sb	115	2698892	0.29
137	Ba	115	933041	0.56
205	Tl	209	14035025	0.93
208	Pb	209	19002877	1.87

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	953439	0.85	985323	96.76	70	120	
72	Ge	677078	0.34	693391	97.65	70	120	
115	In	6928235	0.55	7239973	95.69	70	120	
209	Bi	17284220	1.15	17115037	100.99	70	120	

Calibration Standard Report

Date Acquired	8/11/2016 14:06	Sample Name	H2-160811
Data Batch	160811.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	43229	0.27
9	Be	45	61739	0.75
11	B	45	28445	0.68
23	Na	45	18474614	1.67
24	Mg	45	9266983	2.12
27	Al	45	12334	1.87
39	K	45	8770680	0.94
44	Ca	45	513041	0.96
47	Ti	45	278884	1.22
51	V	45	8721954	1.32
52	Cr	45	10414881	1.87
55	Mn	45	6169912	1.52
56	Fe	45	46473	25.71
59	Co	72	16386110	2.09
60	Ni	72	4516222	0.79
63	Cu	72	12507243	1.32
66	Zn	72	2015196	0.40
75	As	72	1482473	0.60
78	Se	72	99149	1.30
88	Sr	115	8439033	2.04
95	Mo	115	7397242	0.79
107	Ag	115	2867	38.03
111	Cd	115	3302117	0.58
118	Sn	115	7404484	0.36
121	Sb	115	4335	2.11
137	Ba	115	3633512	0.31
205	Tl	209	54600342	1.02
208	Pb	209	74412898	1.04

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	932931	0.57	985323	94.68	70	120	
72	Ge	661555	1.00	693391	95.41	70	120	
115	In	6723156	1.26	7239973	92.86	70	120	
209	Bi	16915636	1.98	17115037	98.83	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	8/11/2016 14:12	Sample Name	ICSA-160811
Data Batch	160811.b	Comment	ICSAICPMS_TW
Data File Name	022ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.158	5	88.6	1.2	0.8	
11	B	16.038	314	10.0	30	30	
51	V	-0.116	1715	7.1	10	10	
52	Cr	0.872	5683	4.3	8	5	
55	Mn	0.435	4674	6.6	8	10	
59	Co	1.386	11529	0.9	8	10	
60	Ni	0.138	2863	7.8	8	10	
63	Cu	2.020	20700	1.3	8	10	
66	Zn	1.420	3617	3.9	10	5	
75	As	0.448	454	7.1	4	5	
78	Se	0.201	70	14.0	2	5	
88	Sr	1.147	5525	3.3	10	10	
107	Ag	0.103	1190	8.5	0.8	2	
111	Cd	0.598	1003	7.3	1.2	1	
118	Sn	0.785	6105	8.2	10	10	
121	Sb	0.127	897	13.0	4	2.5	
137	Ba	0.622	1195	7.9	8	10	
205	Tl	0.107	3191	4.6	4	1.5	
208	Pb	0.359	15135	1.2	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	951564	1.03	985323	96.57	70	120	
72	Ge	662253	0.57	693391	95.51	70	120	
115	In	6675881	0.63	7239973	92.21	70	120	
209	Bi	16084004	1.21	17115037	93.98	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	8/11/2016 14:14	Sample Name	ICSAB-160811
Data Batch	160811.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	39.980	180890	1.04	40	100.0	80	120	
52	Cr	45	21.309	114984	0.52	20	106.5	80	120	
55	Mn	45	19.816	65932	1.33	20	99.1	80	120	
59	Co	72	41.600	342158	0.97	40	104.0	80	120	
60	Ni	72	38.528	89612	0.59	40	96.3	80	120	
63	Cu	72	21.353	141682	0.90	20	106.8	80	120	
66	Zn	72	21.131	23466	1.12	20	105.7	80	120	
75	As	72	20.328	15194	1.67	20	101.6	80	120	
78	Se	72	19.709	1036	2.11	20	98.5	80	120	
107	Ag	115	19.476	214956	1.54	20	97.4	80	120	
111	Cd	115	10.029	16537	1.54	10	100.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	956179	1.05	985323	97.04	70	120	
72	Ge	661721	0.81	693391	95.43	70	120	
115	In	6703882	0.56	7239973	92.60	70	120	
209	Bi	15962545	0.64	17115037	93.27	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	8/11/2016 14:20	Sample Name	ICV-160811
Data Batch	160811.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	97.458	2184	3.36	100	97.5	90	110	
9	Be	45	102.902	3294	1.95	100	102.9	90	110	
11	B	45	106.658	1652	5.15	100	106.7	90	110	
23	Na	45	2627.569	2050548	0.65	2500	105.1	90	110	
24	Mg	45	2622.616	1010517	0.89	2500	104.9	90	110	
27	Al	45	2493.627	362142	0.81	2500	99.7	90	110	
39	K	45	2601.800	984115	0.10	2500	104.1	90	110	
44	Ca	45	2394.756	51331	1.44	2500	95.8	90	110	
47	Ti	45	98.614	14210	1.41	100	98.6	90	110	
51	V	45	102.679	466511	0.61	100	102.7	90	110	
52	Cr	45	107.180	580924	0.66	100	107.2	90	110	
55	Mn	45	100.479	324621	0.87	100	100.5	90	110	
56	Fe	45	2601.934	12243097	1.35	2500	104.1	90	110	
59	Co	72	106.226	908433	0.55	100	106.2	90	110	
60	Ni	72	101.990	242328	0.67	100	102.0	90	110	
63	Cu	72	101.103	666448	0.76	100	101.1	90	110	
66	Zn	72	100.093	107120	0.80	100	100.1	90	110	
75	As	72	99.828	77104	1.04	100	99.8	90	110	
78	Se	72	100.814	5257	0.73	100	100.8	90	110	
88	Sr	115	97.208	435078	0.77	100	97.2	90	110	
95	Mo	115	96.305	377677	0.70	100	96.3	90	110	
107	Ag	115	100.118	1176692	0.67	100	100.1	90	110	
111	Cd	115	99.198	173980	0.78	100	99.2	90	110	
118	Sn	115	99.947	396214	0.71	100	99.9	90	110	
121	Sb	115	99.909	556037	0.52	100	99.9	90	110	
137	Ba	115	98.472	190031	1.17	100	98.5	90	110	
205	Tl	209	103.820	2875222	0.91	100	103.8	90	110	
208	Pb	209	102.845	3881006	0.35	100	102.8	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	967513	0.75	985323	98.19	70	120	
72	Ge	688193	0.77	693391	99.25	70	120	
115	In	7140231	0.55	7239973	98.62	70	120	
209	Bi	17137771	0.98	17115037	100.13	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 14:25	Sample Name	LCVL-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	028LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	11.300	260	5.03	10	113.0	70	130	
9	Be	45	1.091	35	31.56	1	109.1	70	130	
11	B	45	24.261	442	11.31	20	121.3	70	130	
23	Na	45	117.530	130099	0.78	100	117.5	70	130	
24	Mg	45	109.017	43323	1.27	100	109.0	70	130	
27	Al	45	107.223	17619	1.32	100	107.2	70	130	
39	K	45	113.828	81265	0.79	100	113.8	70	130	
44	Ca	45	109.515	3035	4.19	100	109.5	70	130	
47	Ti	45	5.423	786	3.94	5	108.5	70	130	
51	V	45	1.059	7078	3.61	1	105.9	70	130	
52	Cr	45	5.601	31480	1.95	5	112.0	70	130	
55	Mn	45	5.334	20491	1.24	5	106.7	70	130	
56	Fe	45	115.134	550842	0.11	100	115.1	70	130	
59	Co	72	5.562	47966	2.00	5	111.2	70	130	
60	Ni	72	5.473	15600	1.69	5	109.5	70	130	
63	Cu	72	5.477	44261	0.93	5	109.5	70	130	
66	Zn	72	5.499	8079	3.43	5	110.0	70	130	
75	As	72	5.294	4232	1.49	5	105.9	70	130	
78	Se	72	5.628	354	9.36	5	112.6	70	130	
88	Sr	115	5.280	24283	1.01	5	105.6	70	130	
95	Mo	115	5.356	20981	1.48	5	107.1	70	130	
107	Ag	115	2.157	25311	2.62	2	107.9	70	130	
111	Cd	115	1.062	1880	11.26	1	106.2	70	130	
118	Sn	115	5.538	25112	0.80	5	110.8	70	130	
121	Sb	115	2.113	11961	2.78	2	105.6	70	130	
137	Ba	115	5.394	10443	2.05	5	107.9	70	130	
205	Tl	209	1.090	31275	0.82	1	109.0	70	130	
208	Pb	209	1.103	45113	1.07	1	110.3	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	971094	0.51	985323	98.56	70	120	
72	Ge	692120	0.57	693391	99.82	70	120	
115	In	7112495	0.68	7239973	98.24	70	120	
209	Bi	17492239	1.67	17115037	102.20	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	8/11/2016 14:29	Sample Name	ICB-160811
Data Batch	160811.b	Comment	ICB ICPMS_TW
Data File Name	030_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.176	3	57.3	2	5	
9	Be	45	0.010	1	86.6	0.4	0.3	
11	B	45	2.769	127	24.1	10	10	
23	Na	45	-5.715	35871	0.9	50	100	
24	Mg	45	-1.423	674	9.3	50	100	
27	Al	45	-2.194	1782	4.6	50	10	
39	K	45	-7.101	37662	1.0	50	100	
44	Ca	45	-7.928	549	4.9	50	100	
47	Ti	45	0.084	13	43.3	4	3	
51	V	45	-0.033	2151	4.8	4	3	
52	Cr	45	-0.009	1030	3.1	2	2	
55	Mn	45	-1.004	153	28.5	2	3	
56	Fe	45	0.790	11296	3.1	50	50	
59	Co	72	-0.007	76	35.7	2	3	
60	Ni	72	-1.024	248	8.2	2	3	
63	Cu	72	-1.082	1346	2.7	2	2	
66	Zn	72	-1.820	372	6.8	4	2	
75	As	72	0.009	135	21.5	2	2	
78	Se	72	-0.197	53	7.4	1	2	
88	Sr	115	-0.012	728	9.7	4	3	
95	Mo	115	0.168	712	6.8	2	2	
107	Ag	115	0.005	117	15.1	0.4	1	
111	Cd	115	-0.002	22	48.2	0.4	0.3	
118	Sn	115	-0.513	1416	4.8	4	3	
121	Sb	115	-0.001	247	6.2	2	0.8	
137	Ba	115	0.082	233	16.5	2	3	
205	Tl	209	0.000	452	4.9	2	0.5	
208	Pb	209	0.019	3387	4.1	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	983056	0.54	985323	99.77	70	120	
72	Ge	702505	0.60	693391	101.31	70	120	
115	In	7068515	0.53	7239973	97.63	70	120	
209	Bi	17456049	0.12	17115037	101.99	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 15:57	Sample Name	CCV2-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	070_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	198.434	4587	0.29	200	99.2	90	110	
9	Be	45	205.648	6799	0.48	200	102.8	90	110	
11	B	45	407.646	6278	3.62	200	203.8	90	110	Fail
23	Na	45	5479.146	4372082	0.50	5000	109.6	90	110	
24	Mg	45	5291.181	2104485	0.63	5000	105.8	90	110	
27	Al	45	5033.565	752921	0.28	5000	100.7	90	110	
39	K	45	5347.486	2046012	0.30	5000	106.9	90	110	
44	Ca	45	4969.623	109235	0.56	5000	99.4	90	110	
47	Ti	45	200.435	29834	2.24	200	100.2	90	110	
51	V	45	209.602	981240	0.53	200	104.8	90	110	
52	Cr	45	212.913	1190933	0.64	200	106.5	90	110	
55	Mn	45	206.461	685284	0.91	200	103.2	90	110	
56	Fe	45	5223.530	25378275	1.68	5000	104.5	90	110	
59	Co	72	216.078	1906763	0.25	200	108.0	90	110	
60	Ni	72	210.008	512065	0.40	200	105.0	90	110	
63	Cu	72	211.010	1426107	0.91	200	105.5	90	110	
66	Zn	72	207.015	226139	1.25	200	103.5	90	110	
75	As	72	206.292	164282	0.11	200	103.1	90	110	
78	Se	72	206.034	11019	1.81	200	103.0	90	110	
88	Sr	115	199.112	911186	0.79	200	99.6	90	110	
95	Mo	115	204.048	818820	0.52	200	102.0	90	110	
107	Ag	115	210.403	2530508	0.86	200	105.2	90	110	
111	Cd	115	207.339	372082	0.84	200	103.7	90	110	
118	Sn	115	205.611	830392	0.75	200	102.8	90	110	
121	Sb	115	204.627	1165004	0.36	200	102.3	90	110	
137	Ba	115	204.304	403374	0.59	200	102.2	90	110	
205	Tl	209	209.813	6116832	0.31	200	104.9	90	110	
208	Pb	209	207.181	8228459	0.23	200	103.6	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	999321	0.20	985323	101.42	70	120	
72	Ge	710232	1.18	693391	102.43	70	120	
115	In	7309115	2.45	7239973	100.96	70	120	
209	Bi	18044722	1.62	17115037	105.43	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 16:08	Sample Name	LCVL2-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	072LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.160	244	7.39	10	101.6	70	130	
9	Be	45	1.077	36	8.41	1	107.7	70	130	
11	B	45	198.119	3130	5.70	20	990.6	70	130	Fail
23	Na	45	186.894	190780	0.67	100	186.9	70	130	Fail
24	Mg	45	109.647	45325	0.48	100	109.6	70	130	
27	Al	45	108.229	18482	1.29	100	108.2	70	130	
39	K	45	121.651	87506	0.26	100	121.7	70	130	
44	Ca	45	108.612	3137	0.28	100	108.6	70	130	
47	Ti	45	5.224	787	12.80	5	104.5	70	130	
51	V	45	1.255	8292	1.36	1	125.5	70	130	
52	Cr	45	5.550	32459	1.30	5	111.0	70	130	
55	Mn	45	5.427	21626	0.82	5	108.5	70	130	
56	Fe	45	113.235	563711	0.94	100	113.2	70	130	
59	Co	72	5.526	49648	1.08	5	110.5	70	130	
60	Ni	72	5.532	16401	0.59	5	110.6	70	130	
63	Cu	72	5.363	45341	0.22	5	107.3	70	130	
66	Zn	72	5.507	8425	1.18	5	110.1	70	130	
75	As	72	5.331	4439	1.24	5	106.6	70	130	
78	Se	72	5.648	370	2.61	5	113.0	70	130	
88	Sr	115	5.387	25117	2.12	5	107.7	70	130	
95	Mo	115	5.201	20673	2.08	5	104.0	70	130	
107	Ag	115	2.131	25361	1.13	2	106.5	70	130	
111	Cd	115	1.048	1883	3.54	1	104.8	70	130	
118	Sn	115	5.476	25232	2.05	5	109.5	70	130	
121	Sb	115	2.144	12308	1.16	2	107.2	70	130	
137	Ba	115	5.304	10418	2.13	5	106.1	70	130	
205	Tl	209	1.089	31584	0.61	1	108.9	70	130	
208	Pb	209	1.085	44891	1.18	1	108.5	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1010266	0.75	985323	102.53	70	120	
72	Ge	721144	0.40	693391	104.00	70	120	
115	In	7216766	1.43	7239973	99.68	70	120	
209	Bi	17681721	0.65	17115037	103.31	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 16:22	Sample Name	CCB2-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	073_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.119	10	21.5	2	5	
9	Be	45	0.010	1	173.2	0.4	0.3	
11	B	45	133.856	2150	3.5	10	10	FailAq FailSoil
23	Na	45	42.102	75334	0.4	50	100	
24	Mg	45	-2.206	380	14.1	50	100	
27	Al	45	-2.707	1760	2.2	50	10	
39	K	45	0.861	41868	1.4	50	100	
44	Ca	45	-8.911	545	10.0	50	100	
47	Ti	45	0.015	3	173.2	4	3	
51	V	45	0.223	3433	5.9	4	3	
52	Cr	45	-0.033	922	17.3	2	2	
55	Mn	45	-1.018	111	17.3	2	3	
56	Fe	45	0.420	9823	2.5	50	50	
59	Co	72	-0.009	60	9.6	2	3	
60	Ni	72	-1.027	249	13.5	2	3	
63	Cu	72	-1.133	1041	6.0	2	2	
66	Zn	72	-1.760	451	10.1	4	2	
75	As	72	0.052	175	8.1	2	2	
78	Se	72	-0.061	62	10.5	1	2	
88	Sr	115	-0.003	776	8.4	4	3	
95	Mo	115	0.031	184	17.7	2	2	
107	Ag	115	0.004	108	14.3	0.4	1	
111	Cd	115	-0.011	7	86.6	0.4	0.3	
118	Sn	115	-0.683	767	1.9	4	3	
121	Sb	115	0.023	386	16.8	2	0.8	
137	Ba	115	0.107	286	13.5	2	3	
205	Tl	209	-0.006	278	1.4	2	0.5	
208	Pb	209	-0.027	1643	8.3	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1013771	0.60	985323	102.89	70	120	
72	Ge	726016	1.11	693391	104.71	70	120	
115	In	7187459	2.60	7239973	99.27	70	120	
209	Bi	17694453	1.95	17115037	103.39	70	120	

Dilution Sample (Dil) Report

Date Acquired	8/11/2016 16:26	Sample Name	1607317-27A SD
Data Batch	160811.b	Comment	SD ICPMS_TSDOD1
Data File Name	075_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	15.116	363	7.82	65.5	115.4	110	90	
9	Be	45	0.642	22	31.82	2.7	118.4	110	90	
11	B	45	140.718	2268	6.39	205.9	341.7	110	90	
23	Na	45	504.580	448509	0.45	2236.1	112.8	110	90	
24	Mg	45	2943.112	1194210	0.70	13617.1	108.1	110	90	Good
27	Al	45	15310.263	2330795	0.57	71559.1	107.0	110	90	Good
39	K	45	3415.353	1347601	0.81	16119.1	105.9	110	90	Good
44	Ca	45	10504.409	234615	0.41	49095.2	107.0	110	90	Good
47	Ti	45	54.166	8222	2.82	253.7	106.8	110	90	Good
51	V	45	21.549	105007	0.75	101.4	106.3	110	90	Good
52	Cr	45	13.473	77895	0.41	63.4	106.3	110	90	Good
55	Mn	45	125.457	426016	0.28	586.4	107.0	110	90	Good
56	Fe	45	14400.882	71332744	2.19	67814.1	106.2	110	90	Good
59	Co	72	5.433	48717	1.21	26.0	104.4	110	90	Good
60	Ni	72	7.906	22204	2.45	41.4	95.6	110	90	Good
63	Cu	72	4.185	37228	0.71	23.6	88.7	110	90	
66	Zn	72	46.814	53655	1.81	216.9	107.9	110	90	Good
75	As	72	4.722	3939	3.06	22.8	103.4	110	90	Good
78	Se	72	0.987	118	5.64	5.4	90.6	110	90	Good
88	Sr	115	65.302	306623	0.87	323.4	101.0	110	90	Good
95	Mo	115	0.336	1446	4.15	1.7	98.4	110	90	Good
107	Ag	115	0.039	547	7.39	0.2	111.5	110	90	
111	Cd	115	0.100	211	10.27	0.4	114.0	110	90	
118	Sn	115	0.482	5597	2.25	5.0	48.0	110	90	
121	Sb	115	0.875	5371	3.17	4.3	101.6	110	90	Good
137	Ba	115	69.420	140444	1.30	339.9	102.1	110	90	Good
205	Tl	209	0.124	4032	0.72	0.6	102.0	110	90	Good
208	Pb	209	41.281	1621324	0.63	199.1	103.7	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1019024	0.18	985323	103.42	70	120	
72	Ge	719658	0.47	693391	103.79	70	120	
115	In	7485166	1.26	7239973	103.39	70	120	
209	Bi	17821254	1.79	17115037	104.13	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	8/11/2016 16:28	Sample Name	1607317-27A PDS
Data Batch	160811.b	Comment	PDS ICPMS_TSDOD1
Data File Name	076_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	248.952	5970	3.67	65.5	200	91.7	75	125	
9	Be	45	191.468	6570	1.59	2.7	200	94.4	75	125	
11	B	45	389.890	6236	1.60	205.9	200	92.0	75	125	
23	Na	45	7162.433	5918510	1.52	2236.1	5000	98.5	75	125	
24	Mg	45	18993.234	7836356	1.62	13617.1	5000	107.5	75	125	
27	Al	45	78514.398	12156006	1.24	71559.1	5000	139.1	75	125	Fail
39	K	45	21204.448	8293640	1.69	16119.1	5000	101.7	75	125	
44	Ca	45	54722.382	1240749	0.63	49095.2	5000	112.5	75	125	
47	Ti	45	448.289	69247	1.11	253.7	200	97.3	75	125	
51	V	45	303.139	1471739	0.69	101.4	200	100.9	75	125	
52	Cr	45	268.641	1559193	0.59	63.4	200	102.6	75	125	
55	Mn	45	791.095	2714919	0.29	586.4	200	102.4	75	125	
56	Fe	45	74013.025	373090021	0.59	67814.1	5000	124.0	75	125	
59	Co	72	229.189	2065205	0.27	26.0	200	101.6	75	125	
60	Ni	72	235.532	586082	0.57	41.4	200	97.1	75	125	
63	Cu	72	216.399	1493117	0.69	23.6	200	96.4	75	125	
66	Zn	72	414.156	459549	0.82	216.9	200	98.6	75	125	
75	As	72	218.282	177496	0.26	22.8	200	97.7	75	125	
78	Se	72	197.372	10782	1.08	5.4	200	96.0	75	125	
88	Sr	115	528.679	2413497	0.74	323.4	200	102.6	75	125	
95	Mo	115	192.989	772955	0.66	1.7	200	95.6	75	125	
107	Ag	115	194.985	2340672	0.47	0.2	200	97.4	75	125	
111	Cd	115	193.233	346175	0.15	0.4	200	96.4	75	125	
118	Sn	115	207.398	835960	0.49	5.0	200	101.2	75	125	
121	Sb	115	200.034	1136784	0.67	4.3	200	97.9	75	125	
137	Ba	115	541.586	1067196	0.83	339.9	200	100.8	75	125	
205	Tl	209	200.187	5702353	0.63	0.6	200	99.8	75	125	
208	Pb	209	402.544	15617543	0.65	199.1	200	101.7	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1037134	0.41	985323	105.26	70	120	
72	Ge	725183	0.20	693391	104.59	70	120	
115	In	7298754	3.23	7239973	100.81	70	120	
209	Bi	17628559	1.19	17115037	103.00	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 16:30	Sample Name	1607317-27A MS
Data Batch	160811.b	Comment	MS ICPMS_TSDOD1
Data File Name	077_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	256.941	6128	0.75	65.5	200	95.7	80	120	
9	Be	45	197.700	6748	1.35	2.7	200	97.5	80	120	
11	B	45	399.688	6355	4.35	205.9	200	96.9	80	120	
23	Na	45	7284.938	5986642	0.64	2236.1	1000	504.9	80	120	Fail
24	Mg	45	19870.801	8154249	0.92	13617.1	1000	625.4	80	120	Fail
27	Al	45	83490.779	12857216	0.62	71559.1	1000	1193.2	80	120	Fail
39	K	45	23373.946	9089594	1.31	16119.1	1000	725.5	80	120	Fail
44	Ca	45	54617.464	1231770	1.29	49095.2	1000	552.2	80	120	Fail
47	Ti	45	538.730	82766	1.31	253.7	200	142.5	80	120	Fail
51	V	45	319.393	1542194	0.33	101.4	200	109.0	80	120	
52	Cr	45	275.377	1589656	0.32	63.4	200	106.0	80	120	
55	Mn	45	803.397	2742330	0.55	586.4	200	108.5	80	120	
56	Fe	45	75169.538	376905852	1.62	67814.1	1000	735.5	80	120	Fail
59	Co	72	238.268	2120412	0.25	26.0	200	106.1	80	120	
60	Ni	72	248.766	611192	0.36	41.4	200	103.7	80	120	
63	Cu	72	226.453	1542706	0.46	23.6	200	101.4	80	120	
66	Zn	72	438.775	480695	0.17	216.9	200	110.9	80	120	
75	As	72	228.621	183596	0.35	22.8	200	102.9	80	120	
78	Se	72	204.778	11046	0.64	5.4	200	99.7	80	120	
88	Sr	115	656.625	2963153	1.46	323.4	200	166.6	80	120	Fail
95	Mo	115	188.678	747143	1.07	1.7	200	93.5	80	120	
107	Ag	115	201.448	2390656	0.76	0.2	200	100.6	80	120	
111	Cd	115	204.116	361473	1.35	0.4	200	101.8	80	120	
118	Sn	115	215.524	858652	0.07	5.0	200	105.2	80	120	
121	Sb	115	72.129	405422	0.90	4.3	200	33.9	80	120	Fail
137	Ba	115	569.388	1109132	0.56	339.9	200	114.7	80	120	
205	Tl	209	213.493	6010675	1.22	0.6	200	106.4	80	120	
208	Pb	209	712.553	27322213	0.85	199.1	200	256.7	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1031581	0.69	985323	104.69	70	120	
72	Ge	716205	0.45	693391	103.29	70	120	
115	In	7210069	1.08	7239973	99.59	70	120	
209	Bi	17422955	0.78	17115037	101.80	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 16:32	Sample Name	1607317-27A MSD
Data Batch	160811.b	Comment	MSD ICPMS_TSDOD1
Data File Name	078_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	252.343	5964	2.76	65.5	200	93.4	80	120	
9	Be	45	203.576	6885	1.82	2.7	200	100.4	80	120	
11	B	45	383.194	6041	4.38	205.9	200	88.6	80	120	
23	Na	45	7127.767	5806095	2.33	2236.1	1000	489.2	80	120	Fail
24	Mg	45	18781.861	7639129	1.25	13617.1	1000	516.5	80	120	Fail
27	Al	45	77166.749	11777303	0.74	71559.1	1000	560.8	80	120	Fail
39	K	45	21528.793	8300372	2.08	16119.1	1000	541.0	80	120	Fail
44	Ca	45	48199.280	1077299	0.64	49095.2	1000	-89.6	80	120	Fail
47	Ti	45	510.121	77672	0.14	253.7	200	128.2	80	120	Fail
51	V	45	307.205	1470071	0.92	101.4	200	102.9	80	120	
52	Cr	45	271.714	1554478	0.45	63.4	200	104.2	80	120	
55	Mn	45	763.028	2581239	0.68	586.4	200	88.3	80	120	
56	Fe	45	67525.040	335524920	0.27	67814.1	1000	-28.9	80	120	Fail
59	Co	72	234.191	2096320	1.16	26.0	200	104.1	80	120	
60	Ni	72	242.560	599505	1.35	41.4	200	100.6	80	120	
63	Cu	72	225.568	1545610	0.58	23.6	200	101.0	80	120	
66	Zn	72	413.667	455960	0.74	216.9	200	98.4	80	120	
75	As	72	223.270	180339	0.75	22.8	200	100.2	80	120	
78	Se	72	201.215	10918	1.04	5.4	200	97.9	80	120	
88	Sr	115	543.174	2424684	0.61	323.4	200	109.9	80	120	
95	Mo	115	190.902	747742	0.13	1.7	200	94.6	80	120	
107	Ag	115	202.455	2376604	0.25	0.2	200	101.1	80	120	
111	Cd	115	204.252	357782	0.56	0.4	200	101.9	80	120	
118	Sn	115	216.195	852025	1.06	5.0	200	105.6	80	120	
121	Sb	115	72.260	401764	0.80	4.3	200	34.0	80	120	Fail
137	Ba	115	562.237	1083360	0.64	339.9	200	111.1	80	120	
205	Tl	209	213.314	5960264	0.32	0.6	200	106.4	80	120	
208	Pb	209	644.770	24536182	0.75	199.1	200	222.8	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1022364	0.86	985323	103.76	70	120	
72	Ge	720373	0.77	693391	103.89	70	120	
115	In	7131813	0.22	7239973	98.51	70	120	
209	Bi	17291284	0.57	17115037	101.03	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 16:34	Sample Name	CCV3-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	079_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	200.484	4585	0.92	200	100.2	90	110	
9	Be	45	209.278	6847	2.16	200	104.6	90	110	
11	B	45	315.076	4820	4.99	200	157.5	90	110	Fail
23	Na	45	5313.754	4197367	1.34	5000	106.3	90	110	
24	Mg	45	5302.952	2087242	1.09	5000	106.1	90	110	
27	Al	45	5101.468	755098	0.55	5000	102.0	90	110	
39	K	45	5416.274	2050167	0.25	5000	108.3	90	110	
44	Ca	45	4984.391	108410	0.40	5000	99.7	90	110	
47	Ti	45	199.704	29414	0.38	200	99.9	90	110	
51	V	45	210.971	977300	0.25	200	105.5	90	110	
52	Cr	45	215.587	1193240	0.68	200	107.8	90	110	
55	Mn	45	209.120	686819	0.40	200	104.6	90	110	
56	Fe	45	5250.925	25245371	2.23	5000	105.0	90	110	
59	Co	72	215.505	1900668	0.30	200	107.8	90	110	
60	Ni	72	209.120	509627	0.22	200	104.6	90	110	
63	Cu	72	210.194	1419833	0.63	200	105.1	90	110	
66	Zn	72	206.207	225128	0.75	200	103.1	90	110	
75	As	72	207.622	165250	0.20	200	103.8	90	110	
78	Se	72	204.754	10946	1.54	200	102.4	90	110	
88	Sr	115	200.410	906480	1.51	200	100.2	90	110	
95	Mo	115	204.021	809141	0.38	200	102.0	90	110	
107	Ag	115	210.993	2507627	0.48	200	105.5	90	110	
111	Cd	115	209.457	371551	1.43	200	104.7	90	110	
118	Sn	115	206.299	823350	0.50	200	103.1	90	110	
121	Sb	115	205.359	1155619	0.95	200	102.7	90	110	
137	Ba	115	206.350	402654	1.07	200	103.2	90	110	
205	Tl	209	212.581	6081683	0.70	200	106.3	90	110	
208	Pb	209	208.180	8113568	0.25	200	104.1	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	988930	0.91	985323	100.37	70	120	
72	Ge	709834	0.94	693391	102.37	70	120	
115	In	7222799	1.98	7239973	99.76	70	120	
209	Bi	17704592	0.63	17115037	103.44	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 16:44	Sample Name	LCVL3-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	081LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.029	244	9.95	10	100.3	70	130	
9	Be	45	0.886	30	15.58	1	88.6	70	130	
11	B	45	122.139	1989	3.69	20	610.7	70	130	Fail
23	Na	45	151.172	164334	0.62	100	151.2	70	130	Fail
24	Mg	45	107.686	45122	1.88	100	107.7	70	130	
27	Al	45	109.046	18843	2.90	100	109.0	70	130	
39	K	45	123.274	89271	0.37	100	123.3	70	130	
44	Ca	45	105.494	3108	2.87	100	105.5	70	130	
47	Ti	45	5.226	798	3.19	5	104.5	70	130	
51	V	45	1.169	7987	2.68	1	116.9	70	130	
52	Cr	45	5.589	33112	1.85	5	111.8	70	130	
55	Mn	45	5.272	21385	1.19	5	105.4	70	130	
56	Fe	45	114.034	575066	0.80	100	114.0	70	130	
59	Co	72	5.507	49992	1.97	5	110.1	70	130	
60	Ni	72	5.567	16659	1.18	5	111.3	70	130	
63	Cu	72	5.434	46301	0.33	5	108.7	70	130	
66	Zn	72	5.657	8679	2.90	5	113.1	70	130	
75	As	72	5.408	4549	2.35	5	108.2	70	130	
78	Se	72	5.600	372	4.75	5	112.0	70	130	
88	Sr	115	5.258	25152	1.09	5	105.2	70	130	
95	Mo	115	5.226	21287	1.54	5	104.5	70	130	
107	Ag	115	2.153	26275	2.47	2	107.7	70	130	
111	Cd	115	1.003	1848	6.78	1	100.3	70	130	
118	Sn	115	5.222	24830	2.54	5	104.4	70	130	
121	Sb	115	2.110	12423	1.09	2	105.5	70	130	
137	Ba	115	5.255	10582	3.38	5	105.1	70	130	
205	Tl	209	1.063	30946	1.80	1	106.3	70	130	
208	Pb	209	1.108	45908	1.39	1	110.8	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023460	1.12	985323	103.87	70	120	
72	Ge	728650	0.57	693391	105.08	70	120	
115	In	7397508	1.16	7239973	102.18	70	120	
209	Bi	17742398	2.24	17115037	103.67	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 16:46	Sample Name	CCB3-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	082_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.054	6	27.0	2	5	
9	Be	45	0.059	2	49.5	0.4	0.3	
11	B	45	98.898	1627	4.9	10	10	FailAq FailSoil
23	Na	45	25.299	62443	0.5	50	100	
24	Mg	45	-1.901	508	18.7	50	100	
27	Al	45	-2.255	1846	4.9	50	10	
39	K	45	0.205	42009	0.9	50	100	
44	Ca	45	-11.604	490	10.2	50	100	
47	Ti	45	0.138	22	67.6	4	3	
51	V	45	0.124	2990	2.7	4	3	
52	Cr	45	-0.037	910	3.1	2	2	
55	Mn	45	-1.001	169	18.7	2	3	
56	Fe	45	1.060	13098	2.9	50	50	
59	Co	72	-0.006	87	33.3	2	3	
60	Ni	72	-1.016	281	9.9	2	3	
63	Cu	72	-1.140	1007	10.1	2	2	
66	Zn	72	-1.570	671	53.9	4	2	
75	As	72	0.063	187	3.1	2	2	
78	Se	72	0.126	74	10.7	1	2	
88	Sr	115	0.011	851	4.7	4	3	
95	Mo	115	0.050	257	41.9	2	2	
107	Ag	115	0.006	133	15.6	0.4	1	
111	Cd	115	-0.003	20	0.0	0.4	0.3	
118	Sn	115	-0.635	968	4.0	4	3	
121	Sb	115	0.025	400	13.9	2	0.8	
137	Ba	115	0.090	257	7.9	2	3	
205	Tl	209	0.004	593	12.6	2	0.5	
208	Pb	209	0.007	2977	3.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023294	0.52	985323	103.85	70	120	
72	Ge	735646	0.26	693391	106.09	70	120	
115	In	7257227	2.33	7239973	100.24	70	120	
209	Bi	17820634	1.96	17115037	104.12	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 16:52	Sample Name	CCV4-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	085_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	194.011	4578	2.64	200	97.0	90	110	
9	Be	45	196.845	6644	0.99	200	98.4	90	110	
11	B	45	285.236	4511	6.28	200	142.6	90	110	Fail
23	Na	45	5508.358	4486412	2.39	5000	110.2	90	110	Fail
24	Mg	45	5214.346	2117097	0.10	5000	104.3	90	110	
27	Al	45	5064.198	773253	0.34	5000	101.3	90	110	
39	K	45	5424.443	2117959	1.79	5000	108.5	90	110	
44	Ca	45	5007.636	112354	0.88	5000	100.2	90	110	
47	Ti	45	200.712	30496	0.18	200	100.4	90	110	
51	V	45	208.413	995981	0.62	200	104.2	90	110	
52	Cr	45	211.609	1208298	0.70	200	105.8	90	110	
55	Mn	45	206.908	701058	0.40	200	103.5	90	110	
56	Fe	45	5105.348	25320619	0.91	5000	102.1	90	110	
59	Co	72	215.799	1941336	0.65	200	107.9	90	110	
60	Ni	72	208.063	517197	0.55	200	104.0	90	110	
63	Cu	72	208.272	1435002	0.91	200	104.1	90	110	
66	Zn	72	207.829	231418	0.94	200	103.9	90	110	
75	As	72	209.602	170162	0.40	200	104.8	90	110	
78	Se	72	209.565	11426	1.28	200	104.8	90	110	
88	Sr	115	200.570	933355	0.68	200	100.3	90	110	
95	Mo	115	200.706	818989	0.38	200	100.4	90	110	
107	Ag	115	205.894	2518179	0.83	200	102.9	90	110	
111	Cd	115	206.196	376321	0.74	200	103.1	90	110	
118	Sn	115	205.078	842183	0.29	200	102.5	90	110	
121	Sb	115	205.212	1188216	0.42	200	102.6	90	110	
137	Ba	115	204.213	410026	0.47	200	102.1	90	110	
205	Tl	209	213.173	6079831	0.81	200	106.6	90	110	
208	Pb	209	209.856	8153702	0.68	200	104.9	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1020127	0.36	985323	103.53	70	120	
72	Ge	723982	0.13	693391	104.41	70	120	
115	In	7431381	1.63	7239973	102.64	70	120	
209	Bi	17657287	2.87	17115037	103.17	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 16:58	Sample Name	LCVL4-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	087LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.871	241	10.59	10	98.7	70	130	
9	Be	45	0.825	28	34.82	1	82.5	70	130	
11	B	45	106.748	1755	7.17	20	533.7	70	130	Fail
23	Na	45	173.437	182930	1.10	100	173.4	70	130	Fail
24	Mg	45	107.937	45361	2.15	100	107.9	70	130	
27	Al	45	110.719	19161	2.41	100	110.7	70	130	
39	K	45	129.605	91982	0.64	100	129.6	70	130	
44	Ca	45	107.987	3173	6.76	100	108.0	70	130	
47	Ti	45	5.305	812	15.60	5	106.1	70	130	
51	V	45	1.309	8686	1.41	1	130.9	70	130	Fail
52	Cr	45	5.569	33098	0.19	5	111.4	70	130	
55	Mn	45	5.512	22266	0.73	5	110.2	70	130	
56	Fe	45	114.221	577719	0.95	100	114.2	70	130	
59	Co	72	5.540	50825	1.59	5	110.8	70	130	
60	Ni	72	5.358	16310	1.75	5	107.2	70	130	
63	Cu	72	5.236	45418	2.27	5	104.7	70	130	
66	Zn	72	5.683	8800	3.05	5	113.7	70	130	
75	As	72	5.332	4534	1.42	5	106.6	70	130	
78	Se	72	5.079	347	4.51	5	101.6	70	130	
88	Sr	115	5.374	25493	1.40	5	107.5	70	130	
95	Mo	115	5.102	20632	1.10	5	102.0	70	130	
107	Ag	115	2.136	25863	0.65	2	106.8	70	130	
111	Cd	115	1.020	1866	6.30	1	102.0	70	130	
118	Sn	115	5.381	25285	3.11	5	107.6	70	130	
121	Sb	115	2.135	12470	1.42	2	106.7	70	130	
137	Ba	115	5.336	10664	0.51	5	106.7	70	130	
205	Tl	209	1.089	31713	0.98	1	108.9	70	130	
208	Pb	209	1.094	45441	0.91	1	109.4	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1026541	0.62	985323	104.18	70	120	
72	Ge	736399	0.15	693391	106.20	70	120	
115	In	7341122	0.43	7239973	101.40	70	120	
209	Bi	17755224	1.89	17115037	103.74	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 17:00	Sample Name	CCB4-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	088_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.172	11	41.7	2	5	
9	Be	45	0.029	1	43.3	0.4	0.3	
11	B	45	86.559	1438	10.7	10	10	FailAq FailSoil
23	Na	45	43.369	77243	1.1	50	100	
24	Mg	45	-1.993	471	6.7	50	100	
27	Al	45	-2.152	1866	6.1	50	10	
39	K	45	6.905	44680	0.2	50	100	
44	Ca	45	-9.156	545	4.9	50	100	
47	Ti	45	0.022	4	43.4	4	3	
51	V	45	0.199	3357	1.1	4	3	
52	Cr	45	-0.004	1103	4.7	2	2	
55	Mn	45	-0.999	179	22.4	2	3	
56	Fe	45	0.856	12114	3.1	50	50	
59	Co	72	-0.005	97	36.5	2	3	
60	Ni	72	-1.028	249	17.5	2	3	
63	Cu	72	-1.147	950	2.0	2	2	
66	Zn	72	-1.774	440	13.3	4	2	
75	As	72	0.068	190	4.0	2	2	
78	Se	72	0.147	75	10.8	1	2	
88	Sr	115	-0.002	810	2.3	4	3	
95	Mo	115	0.063	317	3.6	2	2	
107	Ag	115	0.009	171	25.4	0.4	1	
111	Cd	115	-0.003	20	60.1	0.4	0.3	
118	Sn	115	-0.633	998	3.7	4	3	
121	Sb	115	0.025	411	20.1	2	0.8	
137	Ba	115	0.082	247	5.9	2	3	
205	Tl	209	0.001	504	8.5	2	0.5	
208	Pb	209	-0.007	2435	0.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1025578	0.74	985323	104.09	70	120	
72	Ge	733437	0.47	693391	105.78	70	120	
115	In	7420782	0.49	7239973	102.50	70	120	
209	Bi	17883652	0.59	17115037	104.49	70	120	

Method Blank Report

Date Acquired	8/11/16 5:02 PM	Sample Name	MB-76748
Data Batch	160811.b	Comment	MBLKICPMS_TSDOD1
Data File Name	089_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	-0.018	7	17.32		
9	Be	45	0.009	1	173.21		
11	B	45	80.686	1373	10.92		FAIL
23	Na	45	50.591	84740	2.19		FAIL
24	Mg	45	3.121	2608	1.41		
27	Al	45	-1.557	1996	1.85		
39	K	45	15.065	48766	1.39		
44	Ca	45	10.737	1011	4.46		
47	Ti	45	0.593	93	117.60		
51	V	45	0.211	3480	3.57		
52	Cr	45	0.122	1862	7.25		
55	Mn	45	0.327	4765	1.67		
56	Fe	45	10.672	62245	1.20		
59	Co	72	0.001	148	30.46		
60	Ni	72	-0.922	524	15.88		
63	Cu	72	-1.074	1491	4.88		
66	Zn	72	-0.389	2026	0.25		
75	As	72	0.042	172	8.10		
78	Se	72	-0.212	56	14.99		
88	Sr	115	0.029	978	4.70		
95	Mo	115	0.060	314	6.21		
107	Ag	115	0.009	171	13.82		
111	Cd	115	0.002	31	26.97		
118	Sn	115	4.088	20822	0.59		J
121	Sb	115	-0.001	264	18.28		
137	Ba	115	0.041	169	9.33		
205	Tl	209	0.007	679	7.95		
208	Pb	209	0.054	4934	1.30		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1045871	0.34	985323	106.14	70	120	
72	Ge	747931	0.60	693391	107.87	70	120	
115	In	7620689	1.15	7239973	105.26	70	120	
209	Bi	18305545	0.13	17115037	106.96	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 17:04	Sample Name	LCS-76748
Data Batch	160811.b	Comment	LCS ICPMS_TSDOD1
Data File Name	090_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	192.880	4651	0.96	200	96.4	80	120	
9	Be	45	199.735	6889	0.97	200	99.9	80	120	
11	B	45	257.063	4164	4.41	200	128.5	80	120	
23	Na	45	5136.368	4278203	0.65	1000	513.6	80	120	Fail
24	Mg	45	5106.332	2118707	0.71	1000	510.6	80	120	Fail
27	Al	45	987.081	155815	0.36	1000	98.7	80	120	
39	K	45	5229.136	2088074	0.81	1000	522.9	80	120	Fail
44	Ca	45	4802.106	110135	0.74	1000	480.2	80	120	Fail
47	Ti	45	199.024	30904	2.73	200	99.5	80	120	
51	V	45	206.439	1008187	0.81	200	103.2	80	120	
52	Cr	45	208.995	1219530	1.12	200	104.5	80	120	
55	Mn	45	203.934	706166	0.49	200	102.0	80	120	
56	Fe	45	1017.089	5161314	0.42	1000	101.7	80	120	
59	Co	72	210.746	1931306	0.95	200	105.4	80	120	
60	Ni	72	207.715	525983	0.98	200	103.9	80	120	
63	Cu	72	206.224	1447495	0.25	200	103.1	80	120	
66	Zn	72	202.178	229398	0.75	200	101.1	80	120	
75	As	72	203.288	168124	1.01	200	101.6	80	120	
78	Se	72	197.460	10970	2.99	200	98.7	80	120	
88	Sr	115	201.776	937059	1.03	200	100.9	80	120	
95	Mo	115	202.630	825282	0.48	200	101.3	80	120	
107	Ag	115	205.667	2510377	1.01	200	102.8	80	120	
111	Cd	115	205.439	374215	0.56	200	102.7	80	120	
118	Sn	115	212.174	869527	0.43	200	106.1	80	120	
121	Sb	115	200.895	1160871	1.50	200	100.4	80	120	
137	Ba	115	203.015	406803	1.63	200	101.5	80	120	
205	Tl	209	209.648	6115456	1.66	200	104.8	80	120	
208	Pb	209	205.238	8156181	0.15	200	102.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1042473	0.64	985323	105.80	70	120	
72	Ge	737510	0.48	693391	106.36	70	120	
115	In	7416619	1.24	7239973	102.44	70	120	
209	Bi	18052898	0.64	17115037	105.48	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 17:06	Sample Name	LCSD-76748
Data Batch	160811.b	Comment	LCSDICPMS_TSDOD1
Data File Name	091_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	194.819	4657	3.09	200	97.4	80	120	
9	Be	45	193.572	6619	1.29	200	96.8	80	120	
11	B	45	262.551	4213	5.32	200	131.3	80	120	
23	Na	45	5084.894	4199237	0.54	1000	508.5	80	120	Fail
24	Mg	45	5034.123	2070721	0.46	1000	503.4	80	120	Fail
27	Al	45	970.640	151937	0.70	1000	97.1	80	120	
39	K	45	5124.506	2029476	0.29	1000	512.5	80	120	Fail
44	Ca	45	4810.383	109375	0.16	1000	481.0	80	120	Fail
47	Ti	45	197.529	30407	1.53	200	98.8	80	120	
51	V	45	204.296	989168	0.63	200	102.1	80	120	
52	Cr	45	207.299	1199215	0.20	200	103.6	80	120	
55	Mn	45	201.756	692663	0.98	200	100.9	80	120	
56	Fe	45	1004.982	5055996	0.48	1000	100.5	80	120	
59	Co	72	210.697	1910574	0.55	200	105.3	80	120	
60	Ni	72	205.850	515851	0.73	200	102.9	80	120	
63	Cu	72	203.462	1413394	1.16	200	101.7	80	120	
66	Zn	72	200.969	225655	0.32	200	100.5	80	120	
75	As	72	201.857	165188	0.50	200	100.9	80	120	
78	Se	72	198.887	10935	1.20	200	99.4	80	120	
88	Sr	115	199.224	914628	0.24	200	99.6	80	120	
95	Mo	115	202.366	814728	0.26	200	101.2	80	120	
107	Ag	115	205.050	2474084	0.31	200	102.5	80	120	
111	Cd	115	201.609	362963	1.00	200	100.8	80	120	
118	Sn	115	210.205	851592	0.10	200	105.1	80	120	
121	Sb	115	197.183	1126497	0.89	200	98.6	80	120	
137	Ba	115	198.724	393643	0.72	200	99.4	80	120	
205	Tl	209	207.659	5984205	0.68	200	103.8	80	120	
208	Pb	209	204.912	8044159	0.50	200	102.5	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1033502	0.52	985323	104.89	70	120	
72	Ge	729822	0.95	693391	105.25	70	120	
115	In	7331202	1.24	7239973	101.26	70	120	
209	Bi	17837617	1.83	17115037	104.22	70	120	

Dilution Sample (Dil) Report

Date Acquired	8/11/2016 17:12	Sample Name	1607337-10A SD
Data Batch	160811.b	Comment	SD ICPMS_TSDOD1
Data File Name	094_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	11.952	286	3.67	57.7	103.5	110	90	Good
9	Be	45	0.577	20	12.80	2.6	113.1	110	90	
11	B	45	78.495	1296	2.78	139.0	282.3	110	90	
23	Na	45	411.204	370804	0.50	1856.7	110.7	110	90	
24	Mg	45	2997.210	1208183	0.05	13912.3	107.7	110	90	Good
27	Al	45	12104.663	1831182	0.02	58061.5	104.2	110	90	Good
39	K	45	2845.618	1122375	0.21	13820.9	102.9	110	90	Good
44	Ca	45	49825.319	1102789	0.32	235359.6	105.8	110	90	Good
47	Ti	45	37.955	5724	7.05	190.1	99.8	110	90	Good
51	V	45	21.645	104776	0.86	104.3	103.8	110	90	Good
52	Cr	45	12.937	74353	0.48	61.4	105.3	110	90	Good
55	Mn	45	272.778	916083	0.29	1300.5	104.9	110	90	Good
56	Fe	45	13912.510	68464006	0.74	65373.8	106.4	110	90	Good
59	Co	72	8.144	73091	0.89	38.9	104.6	110	90	Good
60	Ni	72	7.181	20458	1.65	38.5	93.1	110	90	Good
63	Cu	72	1.227	17127	0.20	10.1	60.9	110	90	
66	Zn	72	29.441	34689	0.68	144.1	102.1	110	90	Good
75	As	72	3.902	3284	0.91	19.3	101.3	110	90	Good
78	Se	72	0.989	119	14.88	5.6	88.4	110	90	
88	Sr	115	101.038	457886	0.96	499.2	101.2	110	90	Good
95	Mo	115	0.487	1992	4.36	2.1	114.8	110	90	
107	Ag	115	0.025	352	4.27	0.1	174.6	110	90	
111	Cd	115	0.077	162	16.48	0.4	106.6	110	90	Good
118	Sn	115	0.448	5270	1.86	5.0	44.3	110	90	
121	Sb	115	0.090	767	8.05	0.4	117.2	110	90	
137	Ba	115	94.579	184821	0.57	459.3	103.0	110	90	Good
205	Tl	209	0.106	3582	2.25	0.5	103.4	110	90	Good
208	Pb	209	5.674	228665	0.66	28.9	98.3	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1012355	0.24	985323	102.74	70	120	
72	Ge	720988	0.24	693391	103.98	70	120	
115	In	7230855	0.97	7239973	99.87	70	120	
209	Bi	18094336	1.19	17115037	105.72	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	8/11/2016 17:32	Sample Name	1607337-10A PDS
Data Batch	160811.b	Comment	PDS ICPMS_TSDOD1
Data File Name	104_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	239.731	5696	2.78	57.7	200	91.0	75	125	
9	Be	45	193.973	6595	1.89	2.6	200	95.7	75	125	
11	B	45	286.723	4568	2.47	139.0	200	73.9	75	125	Fail
23	Na	45	6837.605	5601465	1.53	1856.7	5000	99.6	75	125	
24	Mg	45	18842.931	7704365	1.62	13912.3	5000	98.6	75	125	
27	Al	45	63278.972	9709385	0.83	58061.5	5000	104.4	75	125	
39	K	45	18794.291	7290683	2.19	13820.9	5000	99.5	75	125	
44	Ca	45	########	5466551	2.22	235359.6	5000	160.2	75	125	Fail
47	Ti	45	381.651	58412	0.80	190.1	200	95.8	75	125	
51	V	45	305.877	1471601	0.80	104.3	200	100.8	75	125	
52	Cr	45	266.759	1534179	0.67	61.4	200	102.7	75	125	
55	Mn	45	1501.117	5101754	0.74	1300.5	200	100.3	75	125	
56	Fe	45	71486.435	357065275	1.78	65373.8	5000	122.3	75	125	
59	Co	72	244.536	2160182	0.58	38.9	200	102.8	75	125	
60	Ni	72	234.078	571050	0.35	38.5	200	97.8	75	125	
63	Cu	72	199.679	1351361	0.36	10.1	200	94.8	75	125	
66	Zn	72	335.812	365740	0.34	144.1	200	95.8	75	125	
75	As	72	216.513	172603	0.30	19.3	200	98.6	75	125	
78	Se	72	196.655	10533	1.21	5.6	200	95.5	75	125	
88	Sr	115	709.576	3160321	1.34	499.2	200	105.2	75	125	
95	Mo	115	199.824	780780	0.86	2.1	200	98.9	75	125	
107	Ag	115	195.127	2285399	0.80	0.1	200	97.5	75	125	
111	Cd	115	191.298	334343	1.47	0.4	200	95.5	75	125	
118	Sn	115	206.077	810517	1.15	5.0	200	100.5	75	125	
121	Sb	115	199.489	1106048	0.26	0.4	200	99.6	75	125	
137	Ba	115	671.329	1290482	0.14	459.3	200	106.0	75	125	
205	Tl	209	201.861	5616891	0.53	0.5	200	100.7	75	125	
208	Pb	209	227.167	8610368	0.57	28.9	200	99.2	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1027895	1.75	985323	104.32	70	120	
72	Ge	710948	0.45	693391	102.53	70	120	
115	In	7118544	2.89	7239973	98.32	70	120	
209	Bi	17219838	0.86	17115037	100.61	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 17:34	Sample Name	1607337-10A MS
Data Batch	160811.b	Comment	MS ICPMS_TSDOD1
Data File Name	105_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	240.479	5763	1.63	57.7	200	91.4	80	120	
9	Be	45	190.777	6541	0.59	2.6	200	94.1	80	120	
11	B	45	305.042	4894	5.90	139.0	200	83.0	80	120	
23	Na	45	6560.847	5420595	2.24	1856.7	1000	470.4	80	120	Fail
24	Mg	45	18349.723	7565345	0.56	13912.3	1000	443.7	80	120	Fail
27	Al	45	59029.369	9132290	3.11	58061.5	1000	96.8	80	120	
39	K	45	19065.776	7455911	0.91	13820.9	1000	524.5	80	120	Fail
44	Ca	45	########	5135401	1.31	235359.6	1000	-858.1	80	120	Fail
47	Ti	45	398.590	61524	0.85	190.1	200	104.2	80	120	
51	V	45	310.278	1505207	0.82	104.3	200	103.0	80	120	
52	Cr	45	264.492	1533997	0.87	61.4	200	101.5	80	120	
55	Mn	45	1300.517	4457508	0.35	1300.5	200	0.0	80	120	Fail
56	Fe	45	71202.257	358660946	0.80	65373.8	1000	582.8	80	120	Fail
59	Co	72	232.253	2058835	0.20	38.9	200	96.7	80	120	
60	Ni	72	235.139	575588	0.99	38.5	200	98.3	80	120	
63	Cu	72	206.759	1403790	0.77	10.1	200	98.3	80	120	
66	Zn	72	335.476	366644	0.36	144.1	200	95.7	80	120	
75	As	72	220.066	176039	0.58	19.3	200	100.4	80	120	
78	Se	72	202.586	10886	1.31	5.6	200	98.5	80	120	
88	Sr	115	699.842	3062437	0.86	499.2	200	100.3	80	120	
95	Mo	115	199.566	766331	1.09	2.1	200	98.7	80	120	
107	Ag	115	202.117	2326049	0.84	0.1	200	101.0	80	120	
111	Cd	115	201.164	345459	0.62	0.4	200	100.4	80	120	
118	Sn	115	212.797	822296	0.87	5.0	200	103.9	80	120	
121	Sb	115	76.992	419670	0.29	0.4	200	38.3	80	120	Fail
137	Ba	115	901.003	1702185	0.72	459.3	200	220.9	80	120	Fail
205	Tl	209	212.732	5802597	0.71	0.5	200	106.1	80	120	
208	Pb	209	234.417	8710384	0.71	28.9	200	102.8	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1036345	0.33	985323	105.18	70	120	
72	Ge	713429	0.71	693391	102.89	70	120	
115	In	6992817	1.22	7239973	96.59	70	120	
209	Bi	16882227	1.75	17115037	98.64	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	8/11/2016 17:36	Sample Name	1607337-10A MSD
Data Batch	160811.b	Comment	MSD ICPMS_TSDOD1
Data File Name	106_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	239.744	5785	2.05	57.7	200	91.0	80	120	
9	Be	45	196.757	6793	0.70	2.6	200	97.1	80	120	
11	B	45	301.623	4874	1.96	139.0	200	81.3	80	120	
23	Na	45	6589.830	5482255	0.75	1856.7	1000	473.3	80	120	Fail
24	Mg	45	18472.478	7668757	0.40	13912.3	1000	456.0	80	120	Fail
27	Al	45	59619.088	9287953	0.11	58061.5	1000	155.8	80	120	Fail
39	K	45	19008.343	7485046	2.08	13820.9	1000	518.7	80	120	Fail
44	Ca	45	########	5169120	0.63	235359.6	1000	-866.8	80	120	Fail
47	Ti	45	394.951	61383	0.59	190.1	200	102.4	80	120	
51	V	45	308.258	1505764	0.47	104.3	200	102.0	80	120	
52	Cr	45	268.032	1565257	0.45	61.4	200	103.3	80	120	
55	Mn	45	1342.274	4632346	0.21	1300.5	200	20.9	80	120	Fail
56	Fe	45	66341.023	336480049	0.91	65373.8	1000	96.7	80	120	
59	Co	72	234.571	2102669	1.05	38.9	200	97.8	80	120	
60	Ni	72	235.057	581844	0.16	38.5	200	98.3	80	120	
63	Cu	72	209.175	1436024	0.67	10.1	200	99.6	80	120	
66	Zn	72	335.196	370444	0.61	144.1	200	95.5	80	120	
75	As	72	219.650	177675	0.79	19.3	200	100.2	80	120	
78	Se	72	201.125	10929	1.04	5.6	200	97.8	80	120	
88	Sr	115	669.401	2997611	0.23	499.2	200	85.1	80	120	
95	Mo	115	196.857	773518	0.85	2.1	200	97.4	80	120	
107	Ag	115	201.111	2368190	0.83	0.1	200	100.5	80	120	
111	Cd	115	201.003	353212	0.30	0.4	200	100.3	80	120	
118	Sn	115	210.889	833853	0.53	5.0	200	102.9	80	120	
121	Sb	115	75.441	420774	0.35	0.4	200	37.5	80	120	Fail
137	Ba	115	723.182	1397863	1.49	459.3	200	132.0	80	120	Fail
205	Tl	209	215.410	5906616	0.63	0.5	200	107.4	80	120	
208	Pb	209	236.077	8818161	0.31	28.9	200	103.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1043514	0.14	985323	105.91	70	120	
72	Ge	721386	0.28	693391	104.04	70	120	
115	In	7155799	1.55	7239973	98.84	70	120	
209	Bi	16969165	0.70	17115037	99.15	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 17:38	Sample Name	CCV5-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	107_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	189.845	4577	1.79	200	94.9	90	110	
9	Be	45	200.332	6908	0.79	200	100.2	90	110	
11	B	45	230.791	3747	3.38	200	115.4	90	110	Fail
23	Na	45	5215.872	4342905	1.13	5000	104.3	90	110	
24	Mg	45	5170.700	2144938	0.97	5000	103.4	90	110	
27	Al	45	4934.669	769874	1.12	5000	98.7	90	110	
39	K	45	5327.892	2126339	0.72	5000	106.6	90	110	
44	Ca	45	5001.396	114652	1.88	5000	100.0	90	110	
47	Ti	45	195.434	30341	1.40	200	97.7	90	110	
51	V	45	206.083	1006280	0.47	200	103.0	90	110	
52	Cr	45	209.641	1223023	0.84	200	104.8	90	110	
55	Mn	45	202.324	700508	0.23	200	101.2	90	110	
56	Fe	45	5075.507	25720801	0.36	5000	101.5	90	110	
59	Co	72	215.113	1952536	0.31	200	107.6	90	110	
60	Ni	72	209.319	524977	0.78	200	104.7	90	110	
63	Cu	72	209.657	1457458	0.99	200	104.8	90	110	
66	Zn	72	204.876	230210	0.21	200	102.4	90	110	
75	As	72	206.689	169305	0.44	200	103.3	90	110	
78	Se	72	204.945	11276	0.72	200	102.5	90	110	
88	Sr	115	200.103	921924	0.53	200	100.1	90	110	
95	Mo	115	204.751	827237	0.79	200	102.4	90	110	
107	Ag	115	211.189	2557244	0.65	200	105.6	90	110	
111	Cd	115	206.805	373683	0.02	200	103.4	90	110	
118	Sn	115	205.197	834383	0.24	200	102.6	90	110	
121	Sb	115	204.174	1170500	0.71	200	102.1	90	110	
137	Ba	115	203.333	404223	0.43	200	101.7	90	110	
205	Tl	209	213.907	6081706	0.96	200	107.0	90	110	
208	Pb	209	209.733	8123187	0.14	200	104.9	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1042417	1.23	985323	105.79	70	120	
72	Ge	730478	0.18	693391	105.35	70	120	
115	In	7357387	1.15	7239973	101.62	70	120	
209	Bi	17594699	0.74	17115037	102.80	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 17:42	Sample Name	LCVL5-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	109LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.275	257	4.38	10	102.8	70	130	
9	Be	45	0.996	35	4.95	1	99.6	70	130	
11	B	45	62.579	1091	2.47	20	312.9	70	130	Fail
23	Na	45	146.444	164911	0.55	100	146.4	70	130	Fail
24	Mg	45	108.533	46704	2.90	100	108.5	70	130	
27	Al	45	107.351	19097	0.46	100	107.4	70	130	
39	K	45	122.443	91385	0.71	100	122.4	70	130	
44	Ca	45	104.300	3165	1.06	100	104.3	70	130	
47	Ti	45	5.493	861	8.83	5	109.9	70	130	
51	V	45	0.976	7257	2.09	1	97.6	70	130	
52	Cr	45	5.484	33395	1.50	5	109.7	70	130	
55	Mn	45	5.379	22338	2.44	5	107.6	70	130	
56	Fe	45	115.079	596108	0.14	100	115.1	70	130	
59	Co	72	5.500	50893	1.42	5	110.0	70	130	
60	Ni	72	5.541	16915	0.71	5	110.8	70	130	
63	Cu	72	5.404	46987	1.66	5	108.1	70	130	
66	Zn	72	5.483	8650	1.62	5	109.7	70	130	
75	As	72	5.517	4728	3.95	5	110.3	70	130	
78	Se	72	5.875	394	7.23	5	117.5	70	130	
88	Sr	115	5.472	25941	1.34	5	109.4	70	130	
95	Mo	115	5.337	21575	0.43	5	106.7	70	130	
107	Ag	115	2.155	26104	1.20	2	107.8	70	130	
111	Cd	115	1.050	1918	2.92	1	105.0	70	130	
118	Sn	115	5.372	25243	0.93	5	107.4	70	130	
121	Sb	115	2.139	12492	1.91	2	106.9	70	130	
137	Ba	115	5.396	10783	1.69	5	107.9	70	130	
205	Tl	209	1.094	32255	1.55	1	109.4	70	130	
208	Pb	209	1.119	46985	0.80	1	111.9	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1051407	0.57	985323	106.71	70	120	
72	Ge	742725	0.83	693391	107.11	70	120	
115	In	7341289	1.32	7239973	101.40	70	120	
209	Bi	17980078	0.74	17115037	105.05	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 17:44	Sample Name	CCB5-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	110_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.047	6	66.7	2	5	
9	Be	45	0.038	2	69.3	0.4	0.3	
11	B	45	41.231	750	8.0	10	10	FailAq FailSoil
23	Na	45	24.105	63167	1.3	50	100	
24	Mg	45	-1.455	708	11.4	50	100	
27	Al	45	-1.843	1961	2.5	50	10	
39	K	45	2.605	44111	0.6	50	100	
44	Ca	45	-3.597	687	6.3	50	100	
47	Ti	45	0.049	9	43.3	4	3	
51	V	45	-0.065	2142	3.0	4	3	
52	Cr	45	-0.027	994	3.3	2	2	
55	Mn	45	-0.969	284	10.6	2	3	
56	Fe	45	2.585	21251	5.0	50	50	
59	Co	72	0.000	147	32.8	2	3	
60	Ni	72	-1.033	244	18.4	2	3	
63	Cu	72	-1.119	1183	6.3	2	2	
66	Zn	72	-1.812	410	4.3	4	2	
75	As	72	0.032	165	8.7	2	2	
78	Se	72	0.040	71	4.8	1	2	
88	Sr	115	0.014	886	1.2	4	3	
95	Mo	115	0.096	456	9.7	2	2	
107	Ag	115	0.020	309	12.1	0.4	1	
111	Cd	115	-0.003	21	24.1	0.4	0.3	
118	Sn	115	-0.630	1011	12.9	4	3	
121	Sb	115	0.027	421	10.0	2	0.8	
137	Ba	115	0.121	324	9.8	2	3	
205	Tl	209	0.020	1053	9.7	2	0.5	
208	Pb	209	0.033	3978	3.6	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1051406	0.38	985323	106.71	70	120	
72	Ge	754765	0.96	693391	108.85	70	120	
115	In	7431039	0.61	7239973	102.64	70	120	
209	Bi	17821632	1.18	17115037	104.13	70	120	

Sample Report

Date Acquired	8/11/16 5:52 PM	Sample Name	1608019-01A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	114SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	69.207	1693	3.30	2000	>RL
9	Be	45	2.647	93	15.16	2000	>RL
11	B	45	112.575	1896	1.32	2000	>RL
23	Na	45	1612.133	1387976	0.78	25000	>RL
24	Mg	45	15609.066	6548739	2.40	25000	>RL
27	Al	45	81072.308	12762120	1.07	10000	OUTCAL
39	K	45	17579.885	6998904	0.87	25000	>RL
44	Ca	45	58547.743	1349701	1.85	25000	OUTCAL
47	Ti	45	270.720	42519	0.06	2000	>RL
51	V	45	118.489	586402	0.50	2000	>RL
52	Cr	45	73.263	433194	0.84	2000	>RL
55	Mn	45	678.152	2366884	1.10	2000	>RL
56	Fe	45	75863.660	388839371	1.03	10000	OUTCAL
59	Co	72	29.123	263225	1.73	2000	>RL
60	Ni	72	46.973	119430	1.13	2000	>RL
63	Cu	72	31.051	222363	1.16	2000	>RL
66	Zn	72	281.106	313494	0.68	2000	>RL
75	As	72	23.016	18883	1.69	2000	>RL
78	Se	72	5.839	384	1.06	2000	>RL
88	Sr	115	368.428	1654415	1.49	2000	>RL
95	Mo	115	2.411	9557	1.28	2000	>RL
107	Ag	115	0.178	2157	4.06	500	
111	Cd	115	0.586	1057	1.64	2000	>RL
118	Sn	115	5.835	26500	1.11	2000	>RL
121	Sb	115	2.515	14311	1.63	500	>RL
137	Ba	115	482.631	935333	0.86	2000	>RL
205	Tl	209	0.699	20098	1.38	2000	
208	Pb	209	99.705	3819857	1.03	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1054507	0.28	985323	107.02	70	120	
72	Ge	727057	0.34	693391	104.86	70	120	
115	In	7174252	1.66	7239973	99.09	70	120	
209	Bi	17399559	1.98	17115037	101.66	70	120	

Sample Report

Date Acquired	8/11/16 5:54 PM	Sample Name	1608019-02A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	115SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	81.958	1964	3.15	2000	>RL
9	Be	45	3.117	107	4.95	2000	>RL
11	B	45	135.468	2219	2.98	2000	>RL
23	Na	45	3079.564	2561453	0.40	25000	>RL
24	Mg	45	18166.643	7473956	1.29	25000	>RL
27	Al	45	81763.928	12621598	0.98	10000	OUTCAL
39	K	45	15141.777	5917346	1.18	25000	>RL
44	Ca	45	173705.234	3925300	0.12	25000	OUTCAL
47	Ti	45	272.979	42044	0.49	2000	>RL
51	V	45	148.421	719697	0.66	2000	>RL
52	Cr	45	74.640	432769	0.83	2000	>RL
55	Mn	45	604.586	2069514	1.06	2000	>RL
56	Fe	45	81373.622	408983726	0.71	10000	OUTCAL
59	Co	72	27.647	244813	1.19	2000	>RL
60	Ni	72	45.355	113068	1.38	2000	>RL
63	Cu	72	24.251	172031	0.74	2000	>RL
66	Zn	72	215.121	235592	1.10	2000	>RL
75	As	72	24.973	20062	0.80	2000	>RL
78	Se	72	5.991	384	1.41	2000	>RL
88	Sr	115	557.067	2458144	0.69	2000	>RL
95	Mo	115	1.758	6864	3.06	2000	
107	Ag	115	0.081	1000	4.48	500	
111	Cd	115	0.524	932	10.96	2000	>RL
118	Sn	115	6.178	27373	0.78	2000	>RL
121	Sb	115	0.378	2326	3.85	500	
137	Ba	115	744.751	1418560	1.00	2000	>RL
205	Tl	209	0.679	19077	0.42	2000	
208	Pb	209	36.402	1362720	0.69	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1034122	0.72	985323	104.95	70	120	
72	Ge	712296	0.73	693391	102.73	70	120	
115	In	7049871	0.35	7239973	97.37	70	120	
209	Bi	16978663	0.46	17115037	99.20	70	120	

Sample Report

Date Acquired	8/11/16 5:56 PM	Sample Name	1608019-03A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	116SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	78.124	1854	3.03	2000	>RL
9	Be	45	1.987	68	5.97	2000	>RL
11	B	45	151.533	2447	0.54	2000	>RL
23	Na	45	7949.677	6481037	3.48	25000	>RL
24	Mg	45	13033.986	5310239	2.58	25000	>RL
27	Al	45	57906.239	8852846	2.28	10000	OUTCAL
39	K	45	10382.833	4030908	0.39	25000	>RL
44	Ca	45	269444.493	6028954	1.77	25000	OUTCAL
47	Ti	45	146.608	22357	2.30	2000	>RL
51	V	45	110.848	532828	0.22	2000	>RL
52	Cr	45	62.407	358472	0.46	2000	>RL
55	Mn	45	212.167	721495	1.10	2000	>RL
56	Fe	45	70068.056	348713551	0.50	10000	OUTCAL
59	Co	72	15.869	140504	0.77	2000	>RL
60	Ni	72	23.990	61067	0.79	2000	>RL
63	Cu	72	14.500	106288	0.84	2000	>RL
66	Zn	72	139.437	153449	1.44	2000	>RL
75	As	72	21.652	17401	0.68	2000	>RL
78	Se	72	4.032	279	3.66	2000	>RL
88	Sr	115	875.656	3994142	0.28	2000	>RL
95	Mo	115	2.177	8774	2.41	2000	>RL
107	Ag	115	0.035	481	9.71	500	
111	Cd	115	0.188	362	8.35	2000	
118	Sn	115	5.335	24921	1.36	2000	>RL
121	Sb	115	0.183	1297	5.40	500	
137	Ba	115	960.629	1891491	0.89	2000	>RL
205	Tl	209	0.418	11972	1.40	2000	
208	Pb	209	52.291	1965572	0.30	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023957	0.86	985323	103.92	70	120	
72	Ge	711912	0.68	693391	102.67	70	120	
115	In	7289508	1.49	7239973	100.68	70	120	
209	Bi	17060762	1.38	17115037	99.68	70	120	

Sample Report

Date Acquired	8/11/16 5:58 PM	Sample Name	1608019-04A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	117SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	45.571	1085	2.77	2000	>RL
9	Be	45	1.417	48	13.46	2000	>RL
11	B	45	144.257	2334	4.34	2000	>RL
23	Na	45	5062.660	4142705	1.16	25000	>RL
24	Mg	45	8081.115	3292775	0.97	25000	>RL
27	Al	45	38388.506	5869465	1.62	10000	OUTCAL
39	K	45	7296.660	2845311	0.44	25000	>RL
44	Ca	45	223612.644	5003251	0.46	25000	OUTCAL
47	Ti	45	108.980	16621	1.02	2000	>RL
51	V	45	73.084	352109	0.97	2000	>RL
52	Cr	45	44.118	253743	0.36	2000	>RL
55	Mn	45	69.152	237546	0.57	2000	>RL
56	Fe	45	58595.572	291600993	1.44	10000	OUTCAL
59	Co	72	6.525	58152	0.95	2000	>RL
60	Ni	72	11.145	29991	0.13	2000	>RL
63	Cu	72	8.829	68449	0.46	2000	>RL
66	Zn	72	85.067	95022	1.06	2000	>RL
75	As	72	17.741	14355	0.62	2000	>RL
78	Se	72	3.208	237	4.19	2000	>RL
88	Sr	115	755.340	3404336	0.74	2000	>RL
95	Mo	115	2.158	8594	1.79	2000	>RL
107	Ag	115	0.020	297	5.62	500	
111	Cd	115	0.023	67	20.00	2000	
118	Sn	115	5.182	24006	1.02	2000	>RL
121	Sb	115	0.111	880	9.91	500	
137	Ba	115	195.610	380620	0.63	2000	>RL
205	Tl	209	0.254	7579	5.53	2000	
208	Pb	209	33.082	1267595	0.27	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1023977	0.82	985323	103.92	70	120	
72	Ge	715621	1.14	693391	103.21	70	120	
115	In	7202721	2.13	7239973	99.49	70	120	
209	Bi	17379743	1.81	17115037	101.55	70	120	

Sample Report

Date Acquired	8/11/16 6:00 PM	Sample Name	1608019-05A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	118SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	70.701	1721	1.69	2000	>RL
9	Be	45	3.569	124	15.14	2000	>RL
11	B	45	109.685	1841	1.03	2000	>RL
23	Na	45	1589.738	1363263	1.23	25000	>RL
24	Mg	45	15691.651	6554289	1.93	25000	>RL
27	Al	45	84647.045	13266696	1.91	10000	OUTCAL
39	K	45	18085.729	7167414	1.78	25000	>RL
44	Ca	45	43892.062	1007550	0.89	25000	OUTCAL
47	Ti	45	263.809	41251	2.01	2000	>RL
51	V	45	123.456	608193	0.51	2000	>RL
52	Cr	45	75.950	447062	1.25	2000	>RL
55	Mn	45	647.320	2249497	1.47	2000	>RL
56	Fe	45	80364.863	410112117	3.87	10000	OUTCAL
59	Co	72	29.886	271286	1.41	2000	>RL
60	Ni	72	47.490	121239	1.76	2000	>RL
63	Cu	72	25.399	184285	0.56	2000	>RL
66	Zn	72	257.108	288172	1.05	2000	>RL
75	As	72	24.055	19814	1.33	2000	>RL
78	Se	72	6.137	402	8.13	2000	>RL
88	Sr	115	329.765	1484612	0.87	2000	>RL
95	Mo	115	2.262	8995	2.46	2000	>RL
107	Ag	115	0.143	1746	4.03	500	
111	Cd	115	0.463	843	8.11	2000	>RL
118	Sn	115	5.754	26245	0.58	2000	>RL
121	Sb	115	2.843	16182	2.01	500	>RL
137	Ba	115	398.217	773703	2.39	2000	>RL
205	Tl	209	0.708	19934	0.94	2000	
208	Pb	209	110.635	4149089	0.47	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1049857	0.30	985323	106.55	70	120	
72	Ge	730190	1.04	693391	105.31	70	120	
115	In	7191336	0.45	7239973	99.33	70	120	
209	Bi	17033043	1.47	17115037	99.52	70	120	

Sample Report

Date Acquired	8/11/16 6:02 PM	Sample Name	1608019-06A
Data Batch	160811.b	Comment	SAMPICPMS_TSDOD1
Data File Name	119SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	80.537	1941	0.73	2000	>RL
9	Be	45	2.832	98	14.92	2000	>RL
11	B	45	129.100	2131	6.34	2000	>RL
23	Na	45	3404.692	2842933	0.32	25000	>RL
24	Mg	45	17642.756	7299221	1.91	25000	>RL
27	Al	45	77971.724	12102491	2.36	10000	OUTCAL
39	K	45	14660.298	5762411	0.65	25000	>RL
44	Ca	45	189036.422	4295417	0.70	25000	OUTCAL
47	Ti	45	249.715	38672	1.02	2000	>RL
51	V	45	135.168	659280	0.31	2000	>RL
52	Cr	45	72.530	422895	0.50	2000	>RL
55	Mn	45	570.251	1963086	0.25	2000	>RL
56	Fe	45	77072.678	389608936	3.28	10000	OUTCAL
59	Co	72	26.657	237914	1.10	2000	>RL
60	Ni	72	45.041	113188	0.49	2000	>RL
63	Cu	72	24.287	173649	1.58	2000	>RL
66	Zn	72	201.136	222168	0.86	2000	>RL
75	As	72	22.299	18068	0.38	2000	>RL
78	Se	72	5.259	348	3.36	2000	>RL
88	Sr	115	628.162	2772696	1.10	2000	>RL
95	Mo	115	1.623	6346	1.50	2000	
107	Ag	115	0.095	1157	5.34	500	
111	Cd	115	0.483	861	3.22	2000	>RL
118	Sn	115	5.977	26601	1.18	2000	>RL
121	Sb	115	0.444	2692	5.08	500	
137	Ba	115	1632.742	3111509	0.88	2000	>RL
205	Tl	209	0.656	18344	1.52	2000	
208	Pb	209	40.385	1502944	0.48	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1039869	1.07	985323	105.54	70	120	
72	Ge	717946	1.17	693391	103.54	70	120	
115	In	7054215	1.56	7239973	97.43	70	120	
209	Bi	16882699	0.78	17115037	98.64	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 18:04	Sample Name	CCV6-160811
Data Batch	160811.b	Comment	CCV ICPMS_TW
Data File Name	120_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	195.221	4614	0.93	200	97.6	90	110	
9	Be	45	202.937	6860	2.14	200	101.5	90	110	
11	B	45	213.066	3397	3.79	200	106.5	90	110	
23	Na	45	5223.480	4263946	0.68	5000	104.5	90	110	
24	Mg	45	5208.615	2118318	1.27	5000	104.2	90	110	
27	Al	45	4990.258	763303	0.12	5000	99.8	90	110	
39	K	45	5365.237	2098822	0.97	5000	107.3	90	110	
44	Ca	45	5056.542	113660	2.44	5000	101.1	90	110	
47	Ti	45	199.396	30350	1.30	200	99.7	90	110	
51	V	45	207.357	992632	1.11	200	103.7	90	110	
52	Cr	45	211.807	1211490	0.61	200	105.9	90	110	
55	Mn	45	203.540	690920	0.78	200	101.8	90	110	
56	Fe	45	5203.526	25853460	0.78	5000	104.1	90	110	
59	Co	72	216.236	1938684	0.21	200	108.1	90	110	
60	Ni	72	210.913	522474	0.62	200	105.5	90	110	
63	Cu	72	209.382	1437709	0.15	200	104.7	90	110	
66	Zn	72	203.482	225859	0.19	200	101.7	90	110	
75	As	72	206.967	167456	0.53	200	103.5	90	110	
78	Se	72	203.981	11085	0.26	200	102.0	90	110	
88	Sr	115	204.484	906993	0.37	200	102.2	90	110	
95	Mo	115	209.600	815299	0.41	200	104.8	90	110	
107	Ag	115	213.788	2492349	0.52	200	106.9	90	110	
111	Cd	115	209.109	363771	0.67	200	104.6	90	110	
118	Sn	115	210.017	822078	0.45	200	105.0	90	110	
121	Sb	115	209.520	1156367	0.08	200	104.8	90	110	
137	Ba	115	210.280	402411	0.47	200	105.1	90	110	
205	Tl	209	214.686	5946806	0.86	200	107.3	90	110	
208	Pb	209	210.709	7950864	0.11	200	105.4	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1021966	1.22	985323	103.72	70	120	
72	Ge	721529	0.15	693391	104.06	70	120	
115	In	7083372	1.49	7239973	97.84	70	120	
209	Bi	17141812	0.77	17115037	100.16	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 18:08	Sample Name	LCVL6-160811
Data Batch	160811.b	Comment	LCVLICPMS_TW
Data File Name	122LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.505	261	0.89	10	105.0	70	130	
9	Be	45	0.944	33	13.21	1	94.4	70	130	
11	B	45	46.401	828	4.44	20	232.0	70	130	Fail
23	Na	45	141.922	160188	0.47	100	141.9	70	130	Fail
24	Mg	45	106.692	45661	0.87	100	106.7	70	130	
27	Al	45	104.739	18577	1.41	100	104.7	70	130	
39	K	45	122.346	90807	0.87	100	122.3	70	130	
44	Ca	45	114.859	3388	2.25	100	114.9	70	130	
47	Ti	45	5.713	890	8.27	5	114.3	70	130	
51	V	45	1.032	7487	2.36	1	103.2	70	130	
52	Cr	45	5.583	33777	0.50	5	111.7	70	130	
55	Mn	45	5.265	21816	1.17	5	105.3	70	130	
56	Fe	45	115.207	593273	1.39	100	115.2	70	130	
59	Co	72	5.512	50731	1.02	5	110.2	70	130	
60	Ni	72	5.465	16631	2.32	5	109.3	70	130	
63	Cu	72	5.335	46251	0.65	5	106.7	70	130	
66	Zn	72	5.298	8395	3.70	5	106.0	70	130	
75	As	72	5.302	4523	0.16	5	106.0	70	130	
78	Se	72	5.534	373	7.01	5	110.7	70	130	
88	Sr	115	5.377	25560	2.45	5	107.5	70	130	
95	Mo	115	5.165	20922	2.38	5	103.3	70	130	
107	Ag	115	2.115	25663	1.29	2	105.8	70	130	
111	Cd	115	1.075	1968	2.18	1	107.5	70	130	
118	Sn	115	5.273	24896	3.72	5	105.5	70	130	
121	Sb	115	2.088	12224	1.10	2	104.4	70	130	
137	Ba	115	5.347	10703	1.33	5	106.9	70	130	
205	Tl	209	1.103	31428	0.56	1	110.3	70	130	
208	Pb	209	1.109	45054	0.94	1	110.9	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1045210	0.90	985323	106.08	70	120	
72	Ge	738668	0.50	693391	106.53	70	120	
115	In	7354915	1.26	7239973	101.59	70	120	
209	Bi	17383165	1.70	17115037	101.57	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 18:10	Sample Name	CCB6-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	123_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.050	8	56.7	2	5	
9	Be	45	-0.001	0	173.2	0.4	0.3	
11	B	45	26.621	514	10.7	10	10	FailAq FailSoil
23	Na	45	21.566	60811	0.3	50	100	
24	Mg	45	-1.596	647	8.0	50	100	
27	Al	45	-2.049	1921	1.0	50	10	
39	K	45	0.396	43066	0.7	50	100	
44	Ca	45	-0.682	751	15.4	50	100	
47	Ti	45	0.064	11	75.5	4	3	
51	V	45	-0.079	2068	1.9	4	3	
52	Cr	45	-0.023	1012	9.8	2	2	
55	Mn	45	-0.990	212	15.8	2	3	
56	Fe	45	2.215	19290	4.8	50	50	
59	Co	72	-0.005	91	28.4	2	3	
60	Ni	72	-1.016	280	2.1	2	3	
63	Cu	72	-1.129	1080	8.8	2	2	
66	Zn	72	-1.821	389	16.4	4	2	
75	As	72	0.030	159	2.2	2	2	
78	Se	72	0.113	73	19.3	1	2	
88	Sr	115	0.022	910	2.5	4	3	
95	Mo	115	0.059	300	5.6	2	2	
107	Ag	115	0.012	200	8.7	0.4	1	
111	Cd	115	-0.006	16	12.4	0.4	0.3	
118	Sn	115	-0.688	764	13.8	4	3	
121	Sb	115	0.009	316	13.0	2	0.8	
137	Ba	115	0.021	122	22.0	2	3	
205	Tl	209	0.007	664	12.6	2	0.5	
208	Pb	209	0.016	3248	3.5	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1047240	0.55	985323	106.28	70	120	
72	Ge	735642	1.07	693391	106.09	70	120	
115	In	7351490	2.24	7239973	101.54	70	120	
209	Bi	17423175	1.52	17115037	101.80	70	120	

Method Blank Report

Date Acquired	8/11/16 6:12 PM	Sample Name	MB-76774
Data Batch	160811.b	Comment	MBLKICPMS_TWDOD
Data File Name	124_LRB.d	Dilution	1

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	0.101	10	56.97		
9	Be	45	0.018	1	0.00		
11	B	45	27.579	537	3.29		J
23	Na	45	25.966	65284	1.04		
24	Mg	45	0.755	1647	3.78		
27	Al	45	-3.075	1783	2.33		
39	K	45	4.020	45062	0.96		
44	Ca	45	-6.269	631	9.02		
47	Ti	45	0.063	11	34.61		
51	V	45	-0.082	2079	3.94		
52	Cr	45	-0.003	1144	6.55		
55	Mn	45	0.910	6876	3.03		
56	Fe	45	32.714	176765	0.88		
59	Co	72	0.006	196	2.60		
60	Ni	72	-0.863	676	11.85		
63	Cu	72	0.114	9874	2.45		
66	Zn	72	-0.906	1435	2.69		
75	As	72	0.000	136	15.07		
78	Se	72	0.149	76	27.32		
88	Sr	115	-0.034	667	11.82		
95	Mo	115	0.038	220	4.55		
107	Ag	115	0.010	188	22.05		
111	Cd	115	-0.005	17	52.93		
118	Sn	115	-0.644	961	8.60		
121	Sb	115	0.011	334	8.30		
137	Ba	115	0.006	93	30.52		
205	Tl	209	0.000	461	3.01		
208	Pb	209	0.007	2979	4.78		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1060668	0.77	985323	107.65	70	120	
72	Ge	746475	0.91	693391	107.66	70	120	
115	In	7510837	0.94	7239973	103.74	70	120	
209	Bi	17815649	1.24	17115037	104.09	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 18:14	Sample Name	LCS-76774
Data Batch	160811.b	Comment	LCS ICPMS_TWDOD
Data File Name	125_LFB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	191.607	4634	2.13	200	95.8	80	120	
9	Be	45	196.538	6799	1.64	200	98.3	80	120	
11	B	45	211.477	3452	3.43	200	105.7	80	120	
23	Na	45	5138.523	4292866	0.49	5000	102.8	80	120	
24	Mg	45	5077.651	2113148	0.69	5000	101.6	80	120	
27	Al	45	4831.914	756310	0.43	5000	96.6	80	120	
39	K	45	5293.525	2119589	0.66	5000	105.9	80	120	
44	Ca	45	4900.850	112721	0.72	5000	98.0	80	120	
47	Ti	45	196.512	30604	0.60	200	98.3	80	120	
51	V	45	202.554	992213	1.49	200	101.3	80	120	
52	Cr	45	205.437	1202374	0.23	200	102.7	80	120	
55	Mn	45	197.426	685801	0.11	200	98.7	80	120	
56	Fe	45	4978.594	25309256	1.97	5000	99.6	80	120	
59	Co	72	209.030	1916993	0.33	200	104.5	80	120	
60	Ni	72	204.628	518589	0.66	200	102.3	80	120	
63	Cu	72	203.952	1432738	0.59	200	102.0	80	120	
66	Zn	72	199.021	226022	0.55	200	99.5	80	120	
75	As	72	200.816	166202	0.85	200	100.4	80	120	
78	Se	72	200.979	11173	0.31	200	100.5	80	120	
88	Sr	115	206.690	924488	1.02	200	103.3	80	120	
95	Mo	115	205.440	805856	0.44	200	102.7	80	120	
107	Ag	115	208.831	2455070	0.78	200	104.4	80	120	
111	Cd	115	206.207	361747	0.76	200	103.1	80	120	
118	Sn	115	203.453	803181	0.68	200	101.7	80	120	
121	Sb	115	201.507	1121530	0.96	200	100.8	80	120	
137	Ba	115	204.793	395215	1.02	200	102.4	80	120	
205	Tl	209	204.573	5780927	1.19	200	102.3	80	120	
208	Pb	209	201.194	7745202	0.56	200	100.6	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1045608	0.36	985323	106.12	70	120	
72	Ge	738060	0.32	693391	106.44	70	120	
115	In	7143283	1.74	7239973	98.66	70	120	
209	Bi	17487453	0.37	17115037	102.18	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	8/11/2016 18:16	Sample Name	LCSD-76774
Data Batch	160811.b	Comment	LCSDICPMS_TWDOD
Data File Name	126_LFB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	192.442	4629	1.22	200	96.2	80	120	
9	Be	45	196.088	6747	1.26	200	98.0	80	120	
11	B	45	219.859	3565	2.35	200	109.9	80	120	
23	Na	45	5129.674	4262097	0.68	5000	102.6	80	120	
24	Mg	45	5058.265	2093543	0.50	5000	101.2	80	120	
27	Al	45	4846.036	754370	1.21	5000	96.9	80	120	
39	K	45	5248.444	2090594	1.54	5000	105.0	80	120	
44	Ca	45	4821.606	110314	0.88	5000	96.4	80	120	
47	Ti	45	201.355	31189	1.70	200	100.7	80	120	
51	V	45	204.435	995973	1.05	200	102.2	80	120	
52	Cr	45	207.052	1205242	1.19	200	103.5	80	120	
55	Mn	45	202.552	699715	0.58	200	101.3	80	120	
56	Fe	45	4862.899	24587146	0.98	5000	97.3	80	120	
59	Co	72	210.878	1931134	0.91	200	105.4	80	120	
60	Ni	72	204.463	517453	1.04	200	102.2	80	120	
63	Cu	72	206.656	1449576	0.40	200	103.3	80	120	
66	Zn	72	199.877	226669	0.40	200	99.9	80	120	
75	As	72	202.194	167114	0.35	200	101.1	80	120	
78	Se	72	198.193	11004	1.79	200	99.1	80	120	
88	Sr	115	200.378	923440	0.57	200	100.2	80	120	
95	Mo	115	198.735	803272	1.13	200	99.4	80	120	
107	Ag	115	202.542	2453444	0.35	200	101.3	80	120	
111	Cd	115	201.302	363858	0.09	200	100.7	80	120	
118	Sn	115	199.949	813381	0.15	200	100.0	80	120	
121	Sb	115	197.030	1129930	0.47	200	98.5	80	120	
137	Ba	115	197.245	392260	0.65	200	98.6	80	120	
205	Tl	209	205.832	5780728	1.17	200	102.9	80	120	
208	Pb	209	204.856	7837979	1.04	200	102.4	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1040036	1.29	985323	105.55	70	120	
72	Ge	737109	1.29	693391	106.30	70	120	
115	In	7360332	1.59	7239973	101.66	70	120	
209	Bi	17384047	2.06	17115037	101.57	70	120	

Dilution Sample (Dil) Report

Date Acquired	8/11/2016 18:22	Sample Name	1607317-39A SD
Data Batch	160811.b	Comment	SD ICPMS_TWDOD
Data File Name	129_SD.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	-0.034	6	50.76	0.0	-379.4	110	90	
9	Be	45	-0.010	0	#DIV/0!	0.1	-54.8	110	90	
11	B	45	29.664	568	8.14	46.4	319.7	110	90	
23	Na	45	49.213	84439	0.27	113.8	216.2	110	90	
24	Mg	45	1.430	1923	10.96	7.5	95.8	110	90	Good
27	Al	45	1.301	2466	4.40	4.2	155.8	110	90	
39	K	45	8.973	46842	1.08	5.3	844.1	110	90	
44	Ca	45	5.921	910	2.63	23.3	127.3	110	90	
47	Ti	45	0.063	11	45.82	0.1	349.2	110	90	
51	V	45	-0.064	2156	4.62	-0.1	482.4	110	90	
52	Cr	45	-0.017	1057	4.45	0.0	-328.4	110	90	
55	Mn	45	-0.161	3108	2.45	-0.9	89.5	110	90	
56	Fe	45	1.099	13720	2.54	2.8	194.5	110	90	
59	Co	72	-0.001	133	7.50	0.0	-45.8	110	90	
60	Ni	72	-0.178	2408	9.20	-1.0	89.7	110	90	
63	Cu	72	-0.256	7223	3.42	-1.0	122.3	110	90	
66	Zn	72	-0.192	2235	4.37	-0.9	101.4	110	90	Good
75	As	72	0.043	171	8.76	0.0	503.4	110	90	
78	Se	72	0.202	78	5.00	0.4	277.7	110	90	
88	Sr	115	0.106	1300	3.15	0.4	122.6	110	90	
95	Mo	115	0.081	388	12.20	0.1	271.4	110	90	
107	Ag	115	0.016	248	21.75	0.0	301.1	110	90	
111	Cd	115	0.000	26	41.94	0.0	-19.5	110	90	
118	Sn	115	-0.124	3048	2.82	-0.4	148.7	110	90	
121	Sb	115	0.027	419	9.22	0.1	211.6	110	90	
137	Ba	115	0.033	146	13.02	0.0	377.3	110	90	
205	Tl	209	0.015	871	3.83	0.0	203.6	110	90	
208	Pb	209	0.022	3494	4.08	0.0	405.7	110	90	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1056326	0.53	985323	107.21	70	120	
72	Ge	742525	0.64	693391	107.09	70	120	
115	In	7356466	2.20	7239973	101.61	70	120	
209	Bi	17489552	1.48	17115037	102.19	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	8/11/2016 18:24	Sample Name	1607317-39A PDS
Data Batch	160811.b	Comment	PDS ICPMS_TWDOD
Data File Name	130_PDS.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	184.872	4500	2.65	0.0	200	92.4	75	125	
9	Be	45	193.033	6720	1.09	0.1	200	96.5	75	125	
11	B	45	219.186	3597	3.11	46.4	200	86.4	75	125	
23	Na	45	5155.617	4334141	0.23	113.8	5000	100.8	75	125	
24	Mg	45	5003.403	2095384	0.57	7.5	5000	99.9	75	125	
27	Al	45	4873.912	767682	0.29	4.2	5000	97.4	75	125	
39	K	45	5164.291	2081911	0.59	5.3	5000	103.2	75	125	
44	Ca	45	4631.900	107244	1.32	23.3	5000	92.2	75	125	
47	Ti	45	191.769	30056	2.61	0.1	200	95.8	75	125	
51	V	45	200.917	990454	0.93	-0.1	200	100.5	75	125	
52	Cr	45	208.413	1227483	0.11	0.0	200	104.2	75	125	
55	Mn	45	193.479	676386	0.93	-0.9	200	97.2	75	125	
56	Fe	45	4884.717	24987328	1.23	2.8	5000	97.6	75	125	
59	Co	72	205.327	1891897	0.42	0.0	200	102.7	75	125	
60	Ni	72	197.854	503875	0.30	-1.0	200	99.4	75	125	
63	Cu	72	196.271	1385598	0.62	-1.0	200	98.7	75	125	
66	Zn	72	192.484	219697	0.12	-0.9	200	96.7	75	125	
75	As	72	196.268	163203	0.70	0.0	200	98.1	75	125	
78	Se	72	191.132	10679	1.02	0.4	200	95.4	75	125	
88	Sr	115	194.329	910923	0.91	0.4	200	96.9	75	125	
95	Mo	115	186.432	766410	0.93	0.1	200	93.1	75	125	
107	Ag	115	194.399	2395108	0.90	0.0	200	97.2	75	125	
111	Cd	115	191.791	352598	0.12	0.0	200	95.9	75	125	
118	Sn	115	195.631	809508	0.64	-0.4	200	98.0	75	125	
121	Sb	115	175.238	1022126	0.95	0.1	200	87.6	75	125	
137	Ba	115	192.687	389736	0.51	0.0	200	96.3	75	125	
205	Tl	209	197.184	5632489	0.62	0.0	200	98.6	75	125	
208	Pb	209	195.821	7620161	0.28	0.0	200	97.9	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1052266	0.92	985323	106.79	70	120	
72	Ge	741548	0.93	693391	106.95	70	120	
115	In	7486824	1.87	7239973	103.41	70	120	
209	Bi	17677984	0.90	17115037	103.29	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	8/11/2016 18:26	Sample Name	CCV7-160811
Data Batch	160811.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	195.977	4736	4.24	200	98.0	90	110	
9	Be	45	202.513	7000	2.36	200	101.3	90	110	
11	B	45	202.935	3313	2.43	200	101.5	90	110	
23	Na	45	5310.351	4431270	0.78	5000	106.2	90	110	
24	Mg	45	5221.516	2171165	0.51	5000	104.4	90	110	
27	Al	45	4972.159	777570	0.29	5000	99.4	90	110	
39	K	45	5399.650	2159475	0.75	5000	108.0	90	110	
44	Ca	45	4989.547	114657	0.94	5000	99.8	90	110	
47	Ti	45	198.571	30899	0.55	200	99.3	90	110	
51	V	45	207.146	1013824	0.53	200	103.6	90	110	
52	Cr	45	210.526	1231106	0.68	200	105.3	90	110	
55	Mn	45	205.372	712658	0.54	200	102.7	90	110	
56	Fe	45	5052.101	25662071	1.20	5000	101.0	90	110	
59	Co	72	214.862	1959538	0.85	200	107.4	90	110	
60	Ni	72	210.438	530277	0.25	200	105.2	90	110	
63	Cu	72	209.313	1461987	0.81	200	104.7	90	110	
66	Zn	72	203.443	229704	0.66	200	101.7	90	110	
75	As	72	205.339	168999	0.26	200	102.7	90	110	
78	Se	72	204.286	11293	1.47	200	102.1	90	110	
88	Sr	115	207.834	920868	0.48	200	103.9	90	110	
95	Mo	115	212.788	826861	0.32	200	106.4	90	110	
107	Ag	115	217.564	2533465	0.75	200	108.8	90	110	
111	Cd	115	209.887	364714	0.21	200	104.9	90	110	
118	Sn	115	210.325	822268	0.71	200	105.2	90	110	
121	Sb	115	213.660	1178027	0.77	200	106.8	90	110	
137	Ba	115	207.327	396419	0.79	200	103.7	90	110	
205	Tl	209	210.272	5890780	0.30	200	105.1	90	110	
208	Pb	209	207.477	7918001	0.51	200	103.7	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1044759	0.53	985323	106.03	70	120	
72	Ge	733952	0.05	693391	105.85	70	120	
115	In	7081197	3.63	7239973	97.81	70	120	
209	Bi	17337529	0.91	17115037	101.30	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	8/11/2016 18:30	Sample Name	LCVL7-160811
Data Batch	160811.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	10.231	257	6.26	10	102.3	70	130	
9	Be	45	1.020	36	19.25	1	102.0	70	130	
11	B	45	41.923	766	4.14	20	209.6	70	130	Fail
23	Na	45	139.476	159989	0.30	100	139.5	70	130	Fail
24	Mg	45	108.593	46982	1.71	100	108.6	70	130	
27	Al	45	106.906	19130	0.88	100	106.9	70	130	
39	K	45	122.534	91926	0.56	100	122.5	70	130	
44	Ca	45	107.926	3266	5.47	100	107.9	70	130	
47	Ti	45	4.804	758	7.50	5	96.1	70	130	
51	V	45	1.068	7750	2.39	1	106.8	70	130	
52	Cr	45	5.468	33486	1.25	5	109.4	70	130	
55	Mn	45	5.223	21919	1.31	5	104.5	70	130	
56	Fe	45	112.129	584188	1.13	100	112.1	70	130	
59	Co	72	5.537	51385	0.80	5	110.7	70	130	
60	Ni	72	5.474	16793	2.01	5	109.5	70	130	
63	Cu	72	5.320	46534	0.42	5	106.4	70	130	
66	Zn	72	5.218	8376	2.43	5	104.4	70	130	
75	As	72	5.351	4602	1.02	5	107.0	70	130	
78	Se	72	5.792	391	8.81	5	115.8	70	130	
88	Sr	115	5.306	25387	2.38	5	106.1	70	130	
95	Mo	115	5.295	21582	1.13	5	105.9	70	130	
107	Ag	115	2.146	26204	0.85	2	107.3	70	130	
111	Cd	115	1.106	2036	4.51	1	110.6	70	130	
118	Sn	115	5.407	25596	0.64	5	108.1	70	130	
121	Sb	115	2.467	14485	2.73	2	123.3	70	130	
137	Ba	115	5.325	10728	1.21	5	106.5	70	130	
205	Tl	209	1.117	31941	1.11	1	111.7	70	130	
208	Pb	209	1.108	45181	1.71	1	110.8	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1057241	1.02	985323	107.30	70	120	
72	Ge	744913	0.70	693391	107.43	70	120	
115	In	7400536	0.21	7239973	102.22	70	120	
209	Bi	17449604	1.92	17115037	101.95	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	8/11/2016 18:47	Sample Name	CCB7-160811
Data Batch	160811.b	Comment	CCB ICPMS_TW
Data File Name	141_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	-0.076	5	10.8	2	5	
9	Be	45	-0.001	0	173.2	0.4	0.3	
11	B	45	18.908	397	5.5	10	10	FailAq FailSoil
23	Na	45	14.330	55487	0.7	50	100	
24	Mg	45	-2.009	480	9.8	50	100	
27	Al	45	-2.535	1868	2.7	50	10	
39	K	45	2.137	44285	1.1	50	100	
44	Ca	45	-7.575	601	5.0	50	100	
47	Ti	45	0.035	7	50.0	4	3	
51	V	45	-0.052	2227	8.3	4	3	
52	Cr	45	-0.040	926	4.2	2	2	
55	Mn	45	-1.010	146	17.2	2	3	
56	Fe	45	1.015	13336	1.6	50	50	
59	Co	72	-0.007	80	19.1	2	3	
60	Ni	72	-1.031	244	18.0	2	3	
63	Cu	72	-1.159	881	6.9	2	2	
66	Zn	72	-1.803	412	6.6	4	2	
75	As	72	-0.006	131	11.7	2	2	
78	Se	72	-0.136	59	19.0	1	2	
88	Sr	115	0.017	879	12.8	4	3	
95	Mo	115	0.016	127	10.5	2	2	
107	Ag	115	0.008	157	10.6	0.4	1	
111	Cd	115	-0.011	6	124.9	0.4	0.3	
118	Sn	115	-0.713	654	5.5	4	3	
121	Sb	115	0.036	461	12.1	2	0.8	
137	Ba	115	0.121	319	21.5	2	3	
205	Tl	209	-0.005	302	14.0	2	0.5	
208	Pb	209	-0.012	2167	4.7	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1060016	0.06	985323	107.58	70	120	
72	Ge	741387	1.14	693391	106.92	70	120	
115	In	7274680	1.15	7239973	100.48	70	120	
209	Bi	17389358	1.38	17115037	101.60	70	120	

October 13, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1610008

RE: Former Laredo AFB - Shotgun Range

Dear Alex Walter:

DHL Analytical, Inc. received 1 sample(s) on 10/4/2016 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
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

№ 72780

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 2929 Briarpark Dr., Suite 300
PHONE: 913-645-3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO:

DATE: 10/03/2016 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1610008
PROJECT LOCATION OR NAME: Former Laredo AFB-Shotgun Range
CLENT PROJECT #: 04285081.0000 COLLECTOR: AAT / AC

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 ☐ ☐ | 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 ☐ | Trace Metals - Pb only per Arcadis QL 10/4/16 | PAH

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	FIELD NOTES
~~IDW-20161003~~		~~10/03/2016~~	~~16:00~~	~~W~~	~~250GAMV~~							
IDW-20161003	01	10/03/2016	16:00	W	250GAMV	2				X		X
IDW-20161003		10/03/2016	16:00	W	500 HDPE	1		X		X		X

RELINQUISHED BY: (Signature) DATE/TIME 10/03/16 1615 RECEIVED BY: (Signature) Fed ex
RELINQUISHED BY: (Signature) DATE/TIME 10/4/16 920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

3

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.8 THERM #: 28
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

ORIGIN ID:LRDA (806) 752-6153
ADRIAN COVARRUBIAS

2929 BRIARPARK DR
300
HOUSTON, TX 77042
UNITED STATES US

SHIP DATE: 03OCT16
ACTWGT: 30.00 LB
CAD: 006994464/SSFE1721
DIMS: 18x16x10 IN

BILL THIRD PARTY

TO **DHL ANALYTICAL**

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

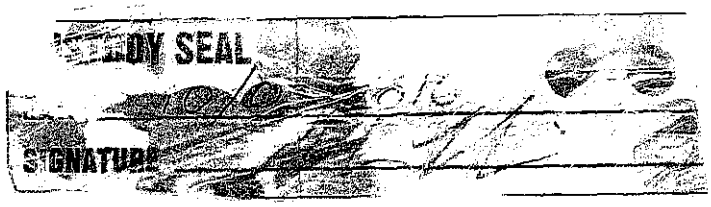
J162016070501uv

TRK# 0201 **7842 5195 7804**

TUE - 04 OCT 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**





...DY SEAL

SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 10/4/2016

Work Order Number 1610008 | Received by JB

Checklist completed by: [signature] 10/4/2016 (Signature / Date) | Reviewed by [initials] 10/4/2016 (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 ☐	0.8 °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 JT
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: Former Laredo AFB - Shotgun Range	**Date:** 10/13/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1610008
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			**R6-06**
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		
		4) Were MS/MSD RPDs within laboratory QC limits?			X		
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				
		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: Former Laredo AFB - Shotgun Range | **Date:** 10/13/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1610008

#[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				
		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

10/13/16

Date

DHL Analytical, Inc. **Date:** *13-Oct-16*

CLIENT: Arcadis
Project: Former Laredo AFB - Shotgun Range
Lab Order: 1610008

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 10/4/2016. A total of 1 sample was received and analyzed. The sample arrived in good condition and was properly packaged.

Exception Report R6-06

For PAH Analysis, the RPDs of seventeen compounds for the Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD-77477) were above the method control limit. These are flagged accordingly in the QC Summary Report. The recoveries of these compounds were within method control limits in the associated LCS/LCSD. 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 bottle kit was requested from Alex Walter of Arcadis sent via email to John DuPont on 7/5/2016. The following DHL Bottle Orders:
#7162 sent on 7/18/2016 via Lonestar Overnight Ground to arrive by 7/19/2016.

This sample delivery group arrives at DHL Analytical and the Sample Summary was sent on 10/4/2016. 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 10/10/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding matrix interference effectively raising the LOQ for the PAH analysis. The client accepted the

corrective action for the quality variances on 10/10/2016.

DHL Analytical, Inc.

Date: *13-Oct-16*

CLIENT: Arcadis
Project: Former Laredo AFB - Shotgun Range
Lab Order: 1610008

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1610008-01	IDW-20161003		10/03/16 04:00 PM	10/4/2016

Lab Order: 1610008
Client: Arcadis
Project: Former Laredo AFB - Shotgun Ran

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610008-01A	IDW-20161003	10/03/16 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/12/16 08:16 AM	77524
1610008-01B	IDW-20161003	10/03/16 04:00 PM	Aqueous	SW3510C	Aq Prep Sep Funnel: PAH	10/07/16 09:32 AM	77477
	IDW-20161003	10/03/16 04:00 PM	Aqueous	SW3510C	Aq Prep Sep Funnel: PAH	10/06/16 01:23 PM	77463

Lab Order: 1610008
Client: Arcadis
Project: Former Laredo AFB - Shotgun Ran

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610008-01A	IDW-20161003	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77524	10	10/13/16 11:11 AM	ICP-MS4_161013A
1610008-01B	IDW-20161003	Aqueous	SW8270D-LL	PAHs: GC/MS	77477	1	10/07/16 01:32 PM	GCMS6_161007A
	IDW-20161003	Aqueous	SW8270D-LL	PAHs: GC/MS	77463	1	10/06/16 06:25 PM	GCMS6_161006A

DHL Analytical, Inc.

Date: *13-Oct-16*

CLIENT: Arcadis
Project: Former Laredo AFB - Shotgun Range
Project No: 04285081.0000
Lab Order: 1610008

Client Sample ID: IDW-20161003
Lab ID: 1610008-01
Collection Date: 10/03/16 04:00 PM
Matrix: AQUEOUS

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER			**SW6020A**					Analyst: **CVD**
Lead	0.102	0.0150	0.0500	0.0450		mg/L	10	10/13/16 11:11 AM
IS: Bismuth	103	0	30-120	0		%REC	10	10/13/16 11:11 AM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Acenaphthene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Acenaphthylene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Anthracene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Benzo[a]anthracene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Benzo[a]pyrene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Benzo[b]fluoranthene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Benzo[e]pyrene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Benzo[g,h,i]perylene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Benzo[j]fluoranthene	0.00196	0.00123	0.00245	0.00196	NU	mg/L	1	10/07/16 01:32 PM
Benzo[k]fluoranthene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Chrysene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Dibenz[a,h]anthracene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Fluoranthene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Fluorene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Indeno[1,2,3-cd]pyrene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Phenanthrene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
Pyrene	0.00196	0.00123	0.00245	0.00196	U	mg/L	1	10/07/16 01:32 PM
IS: Acenaphthene-d10	86.1	0	50-200	0		%REC	1	10/07/16 01:32 PM
IS: Chrysene-d12	92.8	0	50-200	0		%REC	1	10/07/16 01:32 PM
IS: Naphthalene-d8	101	0	50-200	0		%REC	1	10/07/16 01:32 PM
IS: Perylene-d12	92.0	0	50-200	0		%REC	1	10/07/16 01:32 PM
IS: Phenanthrene-d10	87.2	0	50-200	0		%REC	1	10/07/16 01:32 PM
Surr: 2-Fluorobiphenyl	68.7	0	53-106	0		%REC	1	10/07/16 01:32 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: *13-Oct-16*

CLIENT:	Arcadis	**Client Sample ID:**	IDW-20161003
Project:	Former Laredo AFB - Shotgun Range	**Lab ID:**	1610008-01
Project No:	04285081.0000	**Collection Date:**	10/03/16 04:00 PM
Lab Order:	1610008	**Matrix:**	AQUEOUS

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **LG**
Surr: 4-Terphenyl-d14	66.0	0	58-132	0		%REC	1	10/07/16 01:32 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		

CLIENT: Arcadis
Work Order: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160728A

Sample ID **DCS1-76458** Batch ID: **76458** TestNo: **SW6020A** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS4_160728A** Analysis Date: **7/28/2016 11:11:00 AM** Prep Date: **7/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000500	0.00100	0.000500	0	100	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: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_161013A**

The QC data in batch 77524 applies to the following samples: 1610008-01A

Sample ID	**MB-77524**	Batch ID:	**77524**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_161013A**	Analysis Date:	**10/13/2016 11:03:00 A**	Prep Date:	**10/12/2016**

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		102	30	120			

Sample ID	**LCS-77524**	Batch ID:	**77524**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_161013A**	Analysis Date:	**10/13/2016 11:05:00 A**	Prep Date:	**10/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.200	0.00100	0.200	0	99.9	88	115			
IS: Bismuth	0.200		0.200		101	30	120			

Sample ID	**LCSD-77524**	Batch ID:	**77524**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_161013A**	Analysis Date:	**10/13/2016 11:07:00 A**	Prep Date:	**10/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0	99.4	88	115	0.601	20	
IS: Bismuth	0.200		0.200		102	30	120	0	0	

Sample ID	**1610008-01A SD**	Batch ID:	**77524**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_161013A**	Analysis Date:	**10/13/2016 11:13:00 A**	Prep Date:	**10/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.111	0.250	0	0.102				8.84	10	
IS: Bismuth	50.0		1.00		103	30	120	0	0	

Sample ID	**1610008-01A PDS**	Batch ID:	**77524**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_161013A**	Analysis Date:	**10/13/2016 11:15:00 A**	Prep Date:	**10/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	9.49	0.0500	10.0	0.102	93.8	80	120			
IS: Bismuth	10.0		10.0		100	30	120			

Sample ID	**1610008-01A MS**	Batch ID:	**77524**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_161013A**	Analysis Date:	**10/13/2016 11:17:00 A**	Prep Date:	**10/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	1.06	0.0500	1.00	0.102	96.2	88	115			
IS: Bismuth	10.0		1.00		102	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: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_161013A**

Sample ID **1610008-01A MSD**	Batch ID: **77524**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS4_161013A**	Analysis Date: **10/13/2016 11:19:00 A**	Prep Date: **10/12/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	1.07	0.0500	1.00	0.102	97.3	88	115	0.978	20	
IS: Bismuth	10.0		1.00		99.6	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

CLIENT: Arcadis
Work Order: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161013A

Sample ID **ICV-161013**	Batch ID: **R88544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161013A**	Analysis Date: **10/13/2016 10:34:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.0992	0.00100	0.100	0	99.2	90	110			
IS: Bismuth	0.200		0.200		101	30	120			

Sample ID **LCVL-161013**	Batch ID: **R88544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161013A**	Analysis Date: **10/13/2016 10:39:00 A**	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		98.4	30	120			

Sample ID **CCV1-161013**	Batch ID: **R88544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161013A**	Analysis Date: **10/13/2016 11:38:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.190	0.00100	0.200	0	95.0	90	110			
IS: Bismuth	0.200		0.200		107	30	120			

Sample ID **LCVL1-161013**	Batch ID: **R88544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161013A**	Analysis Date: **10/13/2016 11:59:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000930	0.00100	0.00100	0	93.0	80	120			
IS: Bismuth	0.200		0.200		101	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: 1610008
Project: Former Laredo AFB - Shotgun Range

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: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161007A

The QC data in batch 77477 applies to the following samples: 1610008-01B

Sample ID **LCS-77477** Batch ID: **77477** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS6_161007A** Analysis Date: **10/7/2016 12:08:00 PM** Prep Date: **10/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00342	0.0000500	0.00400	0	85.4	48	114			
Acenaphthylene	0.00340	0.0000500	0.00400	0	85.1	35	121			
Anthracene	0.00356	0.0000500	0.00400	0	89.1	53	119			
Benzo[a]anthracene	0.00376	0.0000500	0.00400	0	94.0	59	120			
Benzo[a]pyrene	0.00381	0.0000500	0.00400	0	95.3	53	120			
Benzo[b]fluoranthene	0.00354	0.0000500	0.00400	0	88.5	53	126			
Benzo[e]pyrene	0.00383	0.0000500	0.00400	0	95.7	40	140			
Benzo[g,h,i]perylene	0.00367	0.0000500	0.00400	0	91.9	44	128			
Benzo[j]fluoranthene	0.00368	0.0000500	0.00400	0	91.9	45	124			N
Benzo[k]fluoranthene	0.00388	0.0000500	0.00400	0	97.1	54	125			
Chrysene	0.00367	0.0000500	0.00400	0	91.8	57	120			
Dibenz[a,h]anthracene	0.00386	0.0000500	0.00400	0	96.4	44	131			
Fluoranthene	0.00372	0.0000500	0.00400	0	93.1	58	120			
Fluorene	0.00374	0.0000500	0.00400	0	93.5	50	118			
Indeno[1,2,3-cd]pyrene	0.00367	0.0000500	0.00400	0	91.8	48	130			
Phenanthrene	0.00372	0.0000500	0.00400	0	93.0	53	115			
Pyrene	0.00367	0.0000500	0.00400	0	91.8	53	121			
IS: Acenaphthene-d10	0.00800		0.00800		81.8	50	200			
IS: Chrysene-d12	0.00800		0.00800		88.0	50	200			
IS: Naphthalene-d8	0.00800		0.00800		94.9	50	200			
IS: Perylene-d12	0.00800		0.00800		87.1	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		83.9	50	200			
Surr: 2-Fluorobiphenyl	5.95		8.000		74.4	53	106			
Surr: 4-Terphenyl-d14	6.03		8.000		75.4	58	132			

Sample ID **LCSD-77477** Batch ID: **77477** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **LCSD** Run ID: **GCMS6_161007A** Analysis Date: **10/7/2016 12:36:00 PM** Prep Date: **10/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.00268	0.0000500	0.00400	0	67.0	48	114	24.2	20	R
Acenaphthylene	0.00264	0.0000500	0.00400	0	66.1	35	121	25.2	20	R
Anthracene	0.00276	0.0000500	0.00400	0	69.0	53	119	25.4	20	R
Benzo[a]anthracene	0.00288	0.0000500	0.00400	0	71.9	59	120	26.7	20	R
Benzo[a]pyrene	0.00288	0.0000500	0.00400	0	72.1	53	120	27.8	20	R
Benzo[b]fluoranthene	0.00276	0.0000500	0.00400	0	69.0	53	126	24.8	20	R
Benzo[e]pyrene	0.00291	0.0000500	0.00400	0	72.8	40	140	27.1	20	R
Benzo[g,h,i]perylene	0.00278	0.0000500	0.00400	0	69.6	44	128	27.6	20	R
Benzo[j]fluoranthene	0.00280	0.0000500	0.00400	0	70.1	45	124	27.0	2	RN
Benzo[k]fluoranthene	0.00296	0.0000500	0.00400	0	73.9	54	125	27.1	20	R
Chrysene	0.00279	0.0000500	0.00400	0	69.9	57	120	27.1	20	R

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: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161007A

Sample ID **LCSD-77477**	Batch ID: **77477**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **LCSD**	Run ID: **GCMS6_161007A**	Analysis Date: **10/7/2016 12:36:00 PM**	Prep Date: **10/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz[a,h]anthracene	0.00291	0.0000500	0.00400	0	72.7	44	131	28.0	20	R
Fluoranthene	0.00290	0.0000500	0.00400	0	72.4	58	120	25.0	20	R
Fluorene	0.00289	0.0000500	0.00400	0	72.2	50	118	25.8	20	R
Indeno[1,2,3-cd]pyrene	0.00277	0.0000500	0.00400	0	69.2	48	130	28.1	20	R
Phenanthrene	0.00288	0.0000500	0.00400	0	71.9	53	115	25.6	20	R
Pyrene	0.00284	0.0000500	0.00400	0	71.1	53	121	25.4	20	R
IS: Acenaphthene-d10	0.00800		0.00800		80.8	50	200	0	0	
IS: Chrysene-d12	0.00800		0.00800		87.3	50	200	0	0	
IS: Naphthalene-d8	0.00800		0.00800		95.8	50	200	0	0	
IS: Perylene-d12	0.00800		0.00800		85.9	50	200	0	0	
IS: Phenanthrene-d10	0.00800		0.00800		82.7	50	200	0	0	
Surr: 2-Fluorobiphenyl	4.57		8.000		57.1	53	106	0	0	
Surr: 4-Terphenyl-d14	4.89		8.000		61.2	58	132	0	0	

Sample ID **MB-77477**	Batch ID: **77477**	TestNo: **SW8270D-LL**	Units: **mg/L**
SampType: **MBLK**	Run ID: **GCMS6_161007A**	Analysis Date: **10/7/2016 1:04:00 PM**	Prep Date: **10/7/2016**

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
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		82.8	50	200			
IS: Chrysene-d12	0.00800		0.00800		91.1	50	200			
IS: Naphthalene-d8	0.00800		0.00800		96.4	50	200			
IS: Perylene-d12	0.00800		0.00800		90.3	50	200			
IS: Phenanthrene-d10	0.00800		0.00800		83.7	50	200			
Surr: 2-Fluorobiphenyl	5.62		8.000		70.2	53	106			

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: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161007A

Sample ID **MB-77477**	Batch ID: **77477**	TestNo: **SW8270D-LL**		Units:	**mg/L**
SampType: **MBLK**	Run ID: **GCMS6_161007A**	Analysis Date: **10/7/2016 1:04:00 PM**		Prep Date:	**10/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	6.18		8.000		77.2	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: 1610008
Project: Former Laredo AFB - Shotgun Range

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161007A

Sample ID **ICV-161007** Batch ID: **R88463** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **ICV** Run ID: **GCMS6_161007A** Analysis Date: **10/7/2016 11:40:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.90	0.0000500	2.00	0	94.9	80	120			
Acenaphthylene	1.93	0.0000500	2.00	0	96.7	80	120			
Anthracene	1.85	0.0000500	2.00	0	92.6	80	120			
Benzo[a]anthracene	1.89	0.0000500	2.00	0	94.6	80	120			
Benzo[a]pyrene	1.88	0.0000500	2.00	0	93.9	80	120			
Benzo[b]fluoranthene	1.94	0.0000500	2.00	0	97.1	80	120			
Benzo[e]pyrene	1.84	0.0000500	2.00	0	91.9	80	120			
Benzo[g,h,i]perylene	1.80	0.0000500	2.00	0	89.8	80	120			
Benzo[j]fluoranthene	1.81	0.0000500	2.00	0	90.4	80	120			N
Benzo[k]fluoranthene	1.66	0.0000500	2.00	0	82.8	80	120			
Chrysene	1.84	0.0000500	2.00	0	91.8	80	120			
Dibenz[a,h]anthracene	1.88	0.0000500	2.00	0	94.1	80	120			
Fluoranthene	1.88	0.0000500	2.00	0	94.1	80	120			
Fluorene	1.91	0.0000500	2.00	0	95.4	80	120			
Indeno[1,2,3-cd]pyrene	1.81	0.0000500	2.00	0	90.7	80	120			
Phenanthrene	1.88	0.0000500	2.00	0	93.8	80	120			
Pyrene	1.86	0.0000500	2.00	0	92.9	80	120			
IS: Acenaphthene-d10	4.00		4.00		91.6	50	200			
IS: Chrysene-d12	4.00		4.00		97.2	50	200			
IS: Naphthalene-d8	4.00		4.00		107	50	200			
IS: Perylene-d12	4.00		4.00		98.4	50	200			
IS: Phenanthrene-d10	4.00		4.00		91.9	50	200			
Surr: 2-Fluorobiphenyl	1960		2000		97.9	65	120			
Surr: 4-Terphenyl-d14	1940		2000		97.2	65	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

DHL Analytical, Inc.

Date: *13-Oct-16*

CLIENT: Arcadis
Work Order: 1610008
Project: Former Laredo AFB - Shotgun Range

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Lead	0.000300	0.00100

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
1610008

GCMS6_161006A
For

DHL Work Order
1610008

DNR- See folder from the 7th of October 2016.

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_161006A
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: Lauren Garcia Date: 10/7/2016

Second-Level Review: Janice Whitt Date: 10/11/2016

REVIEWED BY
By Janice Whitt at 3:21:36 PM, 10/11/2016

DHL Analytical, Inc.

Run ID: GCMS6_161006A **Run No.:** 88441

Analytical Run Date: 10/6/2016 **InstrumentID:** GCMS6

Analyst: Lauren Garcia **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 698 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161004.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161006	1	PAH_LL_WDOD1	TUNE	R88441	10/6/2016 3:35:00 PM		DNR-see run for 10/07/2016.
ICV-161006	1	PAH_LL_WDOD1	ICV	R88441	10/6/2016 4:02:00 PM		
LCS-77463	1	PAH_LL_WDOD1	LCS	77463	10/6/2016 4:30:00 PM		
LCSD-77463	1	PAH_LL_WDOD1	LCSD	77463	10/6/2016 5:01:00 PM		
SB-161006	1	PAH_LL_WDOD1	SBLK	R88441	10/6/2016 5:29:00 PM		
MB-77463	1	PAH_LL_WDOD1	MBLK	77463	10/6/2016 5:57:00 PM		
1610008-01B	1	PAH_LL_WDOD1	SAMP	77463	10/6/2016 6:25:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160509	2.5 PPM 525 TUNE STD.	TUNE	05/07/2017
PAHICV161004	2 PPM PAH ICV	ICV	01/02/2017
SVI160510-5	4000 PPM INTERNAL STANDAR	ALL	09/08/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161006.S
Comment:
Operator: DEW
Data Path: C:\HPCHEM\1\DATA\161006\
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	16100601	DFTPPPAH	DFTPP-161006
2	Sample	2	16100602	PP161004	ICV-161006
3	Sample	3	16100603	PP161004	LCS-77463
4	Sample	4	16100604	PP161004	LCSD-77463
5	Sample	4	16100605	PP161004	LCSD-77463
6	Sample	5	16100606	PP161004	SB-161006
7	Sample	6	16100607	PP161004	MB-77463
8	Sample	7	16100608	PP161004	1610008-01B

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **10/6/2016 1:23:07 PM**
Digestion:
Prep End Date: **10/6/2016 3:40:00 PM**

Prep Batch **77463** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List

Turbo-Vap #2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1610008-01B	Aqueous	7	10	1	0.100	2 of 2	
About 10 mL of sample was diluted to 500 ml using Ozarka water. Re-filtered twice.							
LCS-77463	Aqueous	6	500	1	0.002	of	
LCSD-77463	Aqueous	6	500	1	0.002	of	
MB-77463	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
10622	Methylene Chloride	120	ml	08/04/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160825	200 PPM PAH Spike Mix	LCS/D	0.01	11/23/2016
SVPREP160902	40 PPM Surrogate Standard	ALL	0.1	12/01/2016

Report from batch 77477. jw 10/11/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **10/6/2016 1:23:07 PM**
Digestion:
Prep End Date: 10/6/2016 3:40 PM

Prep Batch **77463** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List
Turbo-Vap #2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1610008-01B	Aqueous	7	500	1	0.002	+2 of 2 10/6/16	~~521.7-214.0 =~~ 10/6/16 ~~531.7~~ ~~-108.6~~ 10/6/16 Analyst diluted 10mL of sample and diluted to 500mL with 0 zarka water Refiltered twice
LCS-77463	Aqueous	6	500	1	0.002	of	777.3 - 277.3 = 500.0
LCSD-77463	Aqueous	6	500	1	0.002	of	783.4 - 283.4 = 500.0
MB-77463	Aqueous	6	500	1	0.002	of	779.3 - 279.3 = 500.0

Number	Reagent Name	Amt	Units	Exp. D
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10622	Methylene Chloride	120	ml	08/04/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160825	200 PPM PAH Spike Mix	LCS/D	0.01	11/23/2016
SVPREP160902	40 PPM Surrogate Standard	ALL	0.1	12/01/2016

Reported from batch 77477. jw 10/11/2016

10/6/16

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161006\16100602.D Vial: 2
Acq On : 6 Oct 2016 4:02 pm Operator: DEW
Sample : ICV-161006 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

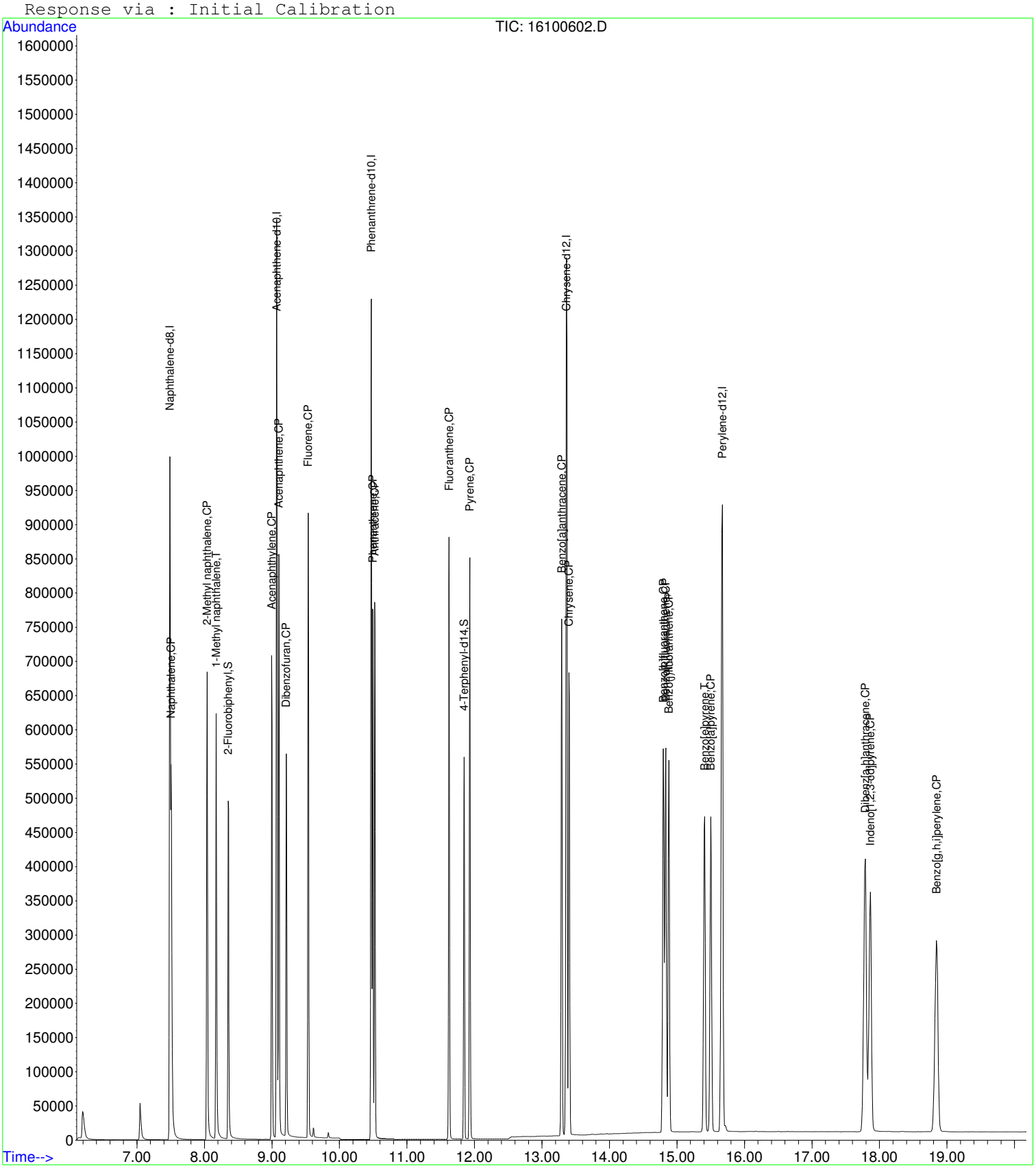
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1052859	4000.00	ug/kg	109
5) Acenaphthene-d10	9.07	164	563551	4000.00	ug/kg	93
11) Phenanthrene-d10	10.47	188	1022649	4000.00	ug/kg	93
17) Chrysene-d12	13.36	240	1177791	4000.00	ug/kg	96
20) Perylene-d12	15.67	264	1155623	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	384178	1962.32	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.06%			
16) 4-Terphenyl-d14	11.85	244	421980	1927.54	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 48.19%			
Target Compounds						Qvalue
2) Naphthalene	7.51	128	439093	1906.28	ug/kg	99
3) 2-Methyl naphthalene	8.04	142	328726	1783.56	ug/kg	98
4) 1-Methyl naphthalene	8.17	142	297219	1751.60	ug/kg	97
6) Dibenzofuran	9.22	168	418362	1944.04	ug/kg	99
8) Acenaphthylene	9.00	152	490719	1956.23	ug/kg	100
9) Acenaphthene	9.10	154	284351	1892.93	ug/kg	100
10) Fluorene	9.54	166	350312	1923.95	ug/kg	100
12) Phenanthrene	10.49	178	479953	1862.73	ug/kg	100
13) Anthracene	10.52	178	500828	1878.55	ug/kg	100
14) Fluoranthene	11.62	202	561046	1865.58	ug/kg	99
15) Pyrene	11.93	202	567006	1833.94	ug/kg	100
18) Benzo[a]anthracene	13.29	228	592419	1895.64	ug/kg	99
19) Chrysene	13.40	228	550447	1840.90	ug/kg	99
21) Benzo[b]fluoranthene	14.80	252	621334	1722.98	ug/kg	99
22) Benzo[k]fluoranthene	14.83	252	610453	1893.10	ug/kg	96
23) Benzo(j)fluoranthene	14.88	252	532634	1813.29	ug/kg	99
24) Benzo[e]pyrene	15.41	252	567780	1825.23	ug/kg	96
25) Benzo[a]pyrene	15.50	252	581918	1872.72	ug/kg	100
26) Dibenz[a,h]anthracene	17.79	278	584585	1890.19	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.86	276	570725	1802.37	ug/kg	98
28) Benzo[g,h,i]perylene	18.84	276	590148	1793.94	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161006\16100602.D Vial: 2
Acq On : 6 Oct 2016 4:02 pm Operator: DEW
Sample : ICV-161006 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161006\16100603.D Vial: 3
Acq On : 6 Oct 2016 4:30 pm Operator: DEW
Sample : LCS-77463 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

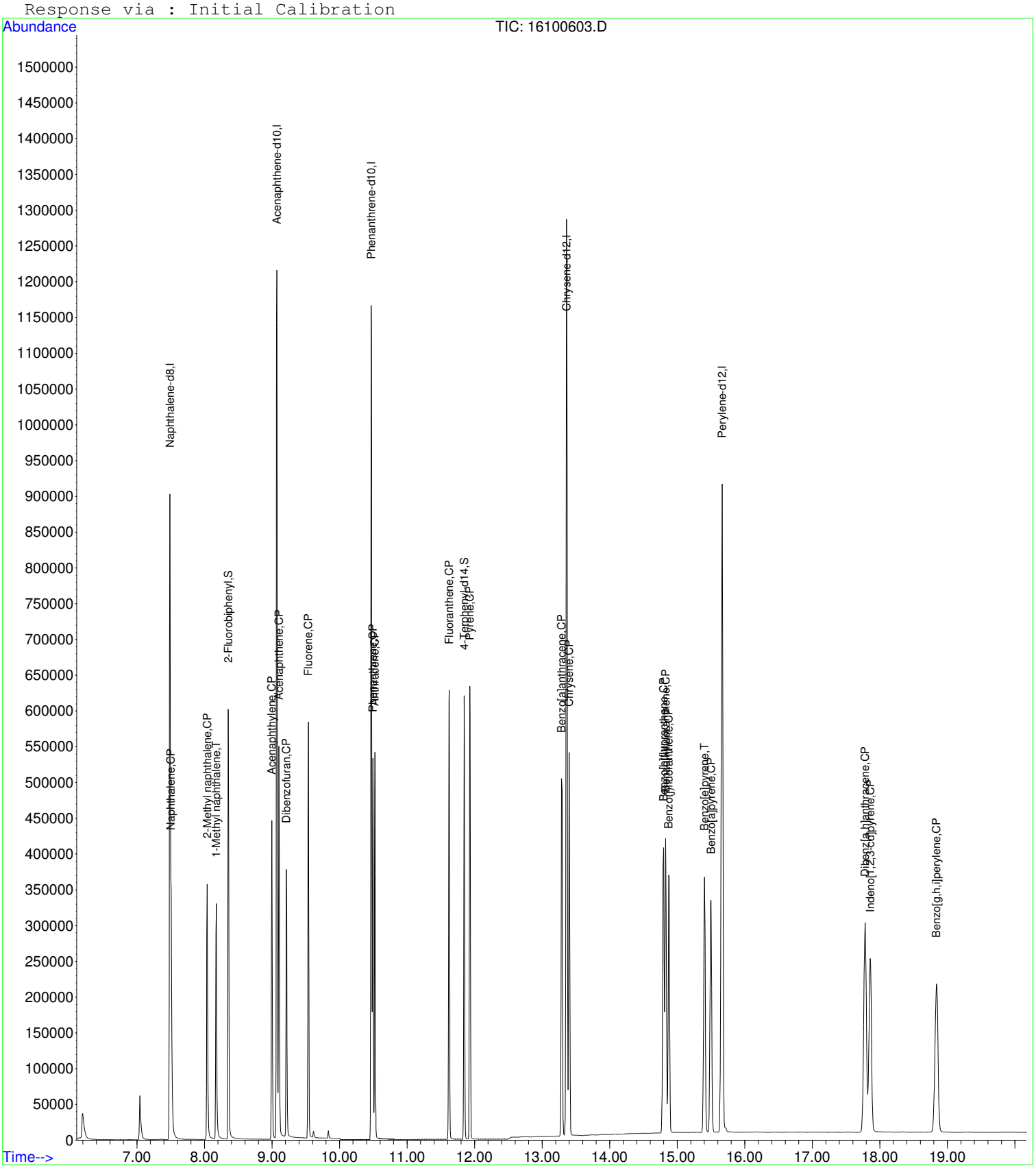
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	965204	4000.00	ug/kg	100
5) Acenaphthene-d10	9.07	164	525238	4000.00	ug/kg	87
11) Phenanthrene-d10	10.47	188	970668	4000.00	ug/kg	88
17) Chrysene-d12	13.36	240	1118524	4000.00	ug/kg	92
20) Perylene-d12	15.67	264	1075323	4000.00	ug/kg	91
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	410135	2247.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	56.19%		
16) 4-Terphenyl-d14	11.85	244	484220	2330.29	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.26%		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	242110	1146.55	ug/kg	100
3) 2-Methyl naphthalene	8.04	142	178918	1058.91	ug/kg	98
4) 1-Methyl naphthalene	8.18	142	165036	1060.93	ug/kg	98
6) Dibenzofuran	9.21	168	271779	1355.02	ug/kg	99
8) Acenaphthylene	9.00	152	303369	1297.58	ug/kg	100
9) Acenaphthene	9.10	154	176949	1263.88	ug/kg	98
10) Fluorene	9.54	166	229425	1351.93	ug/kg	99
12) Phenanthrene	10.49	178	332332	1358.87	ug/kg	100
13) Anthracene	10.52	178	347323	1372.54	ug/kg	99
14) Fluoranthene	11.62	202	404246	1416.18	ug/kg	99
15) Pyrene	11.93	202	408439	1391.81	ug/kg	99
18) Benzo[a]anthracene	13.29	228	433088	1459.24	ug/kg	99
19) Chrysene	13.40	228	400528	1410.49	ug/kg	99
21) Benzo[b]fluoranthene	14.80	252	477756	1423.76	ug/kg	99
22) Benzo[k]fluoranthene	14.83	252	403742	1345.56	ug/kg	98
23) Benzo(j)fluoranthene	14.88	252	385752	1411.32	ug/kg	99
24) Benzo[e]pyrene	15.40	252	416581	1439.18	ug/kg	98
25) Benzo[a]pyrene	15.50	252	421605	1458.12	ug/kg	99
26) Dibenz[a,h]anthracene	17.78	278	421585	1464.94	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.86	276	411190	1395.52	ug/kg	99
28) Benzo[g,h,i]perylene	18.84	276	429098	1401.78	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161006\16100603.D Vial: 3
Acq On : 6 Oct 2016 4:30 pm Operator: DEW
Sample : LCS-77463 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161006\16100605.D Vial: 4
Acq On : 6 Oct 2016 5:01 pm Operator: DEW
Sample : LCSD-77463 Inst : GC/MS #6
Misc : LCSD Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

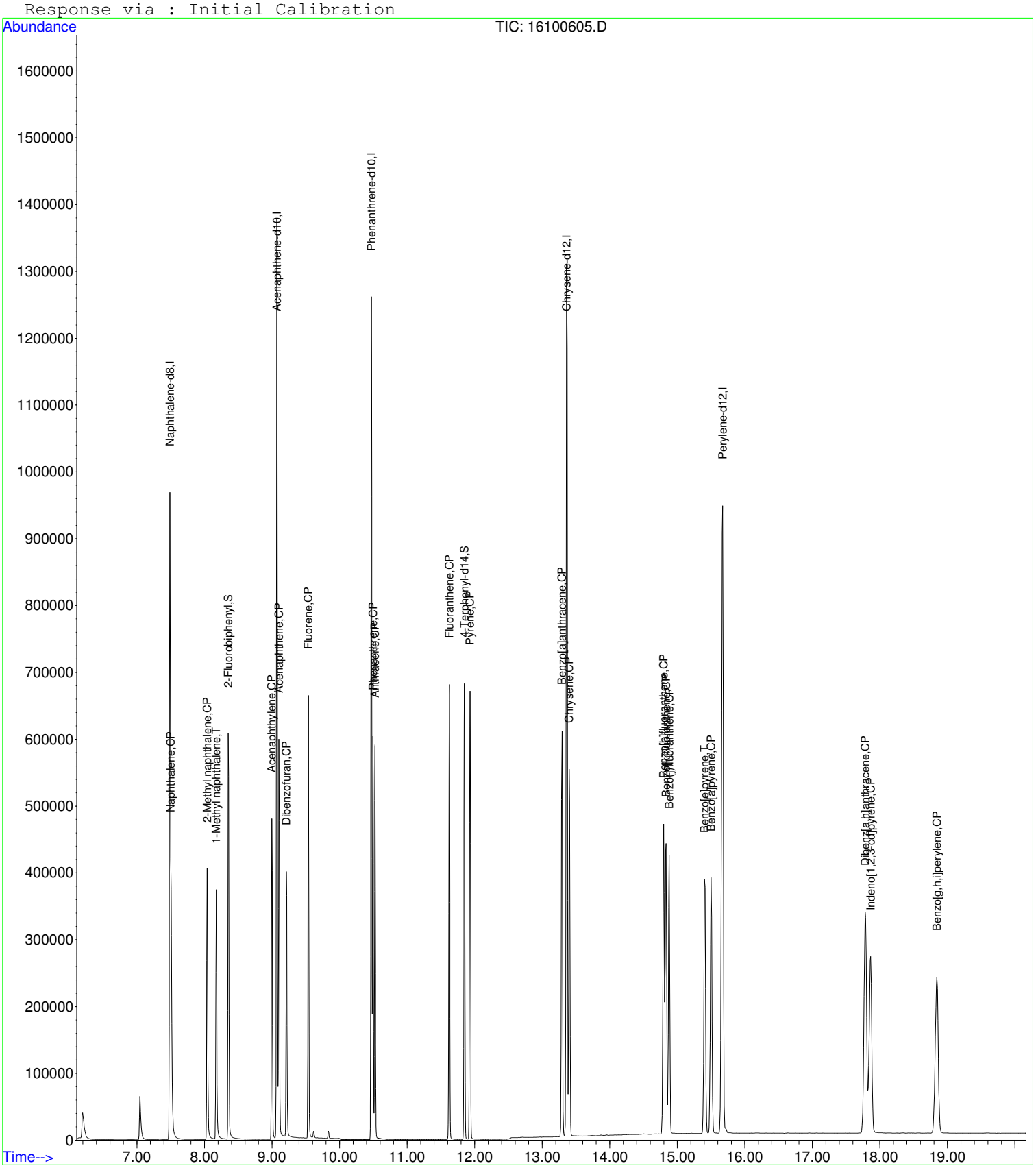
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1049016	4000.00	ug/kg	109
5) Acenaphthene-d10	9.07	164	568584	4000.00	ug/kg	94
11) Phenanthrene-d10	10.47	188	1046575	4000.00	ug/kg	95
17) Chrysene-d12	13.36	240	1214289	4000.00	ug/kg	99
20) Perylene-d12	15.67	264	1169551	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	436653	2210.61	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	55.27%		
16) 4-Terphenyl-d14	11.85	244	533785	2382.51	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	59.56%		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	255271	1112.29	ug/kg	99
3) 2-Methyl naphthalene	8.04	142	192339	1047.39	ug/kg	96
4) 1-Methyl naphthalene	8.18	142	177352	1049.02	ug/kg	95
6) Dibenzofuran	9.22	168	296194	1364.17	ug/kg	99
8) Acenaphthylene	9.00	152	332942	1315.51	ug/kg	100
9) Acenaphthene	9.10	154	193062	1273.84	ug/kg	99
10) Fluorene	9.54	166	253098	1377.73	ug/kg	99
12) Phenanthrene	10.49	178	365812	1387.28	ug/kg	99
13) Anthracene	10.52	178	378258	1386.37	ug/kg	99
14) Fluoranthene	11.63	202	443554	1441.18	ug/kg	99
15) Pyrene	11.93	202	451139	1425.81	ug/kg	99
18) Benzo[a]anthracene	13.29	228	477802	1482.93	ug/kg	99
19) Chrysene	13.40	228	444580	1442.15	ug/kg	99
21) Benzo[b]fluoranthene	14.80	252	502267	1376.21	ug/kg	99
22) Benzo[k]fluoranthene	14.84	252	487000	1492.27	ug/kg	96
23) Benzo(j)fluoranthene	14.88	252	421752	1418.71	ug/kg	99
24) Benzo[e]pyrene	15.40	252	466269	1481.05	ug/kg	99
25) Benzo[a]pyrene	15.50	252	469544	1493.08	ug/kg	100
26) Dibenz[a,h]anthracene	17.79	278	470379	1502.81	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.86	276	464773	1450.29	ug/kg	97
28) Benzo[g,h,i]perylene	18.84	276	476132	1430.11	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161006\16100605.D Vial: 4
Acq On : 6 Oct 2016 5:01 pm Operator: DEW
Sample : LCSD-77463 Inst : GC/MS #6
Misc : LCSD Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161006\16100606.D Vial: 5
Acq On : 6 Oct 2016 5:29 pm Operator: DEW
Sample : SB-161006 Inst : GC/MS #6
Misc : SBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

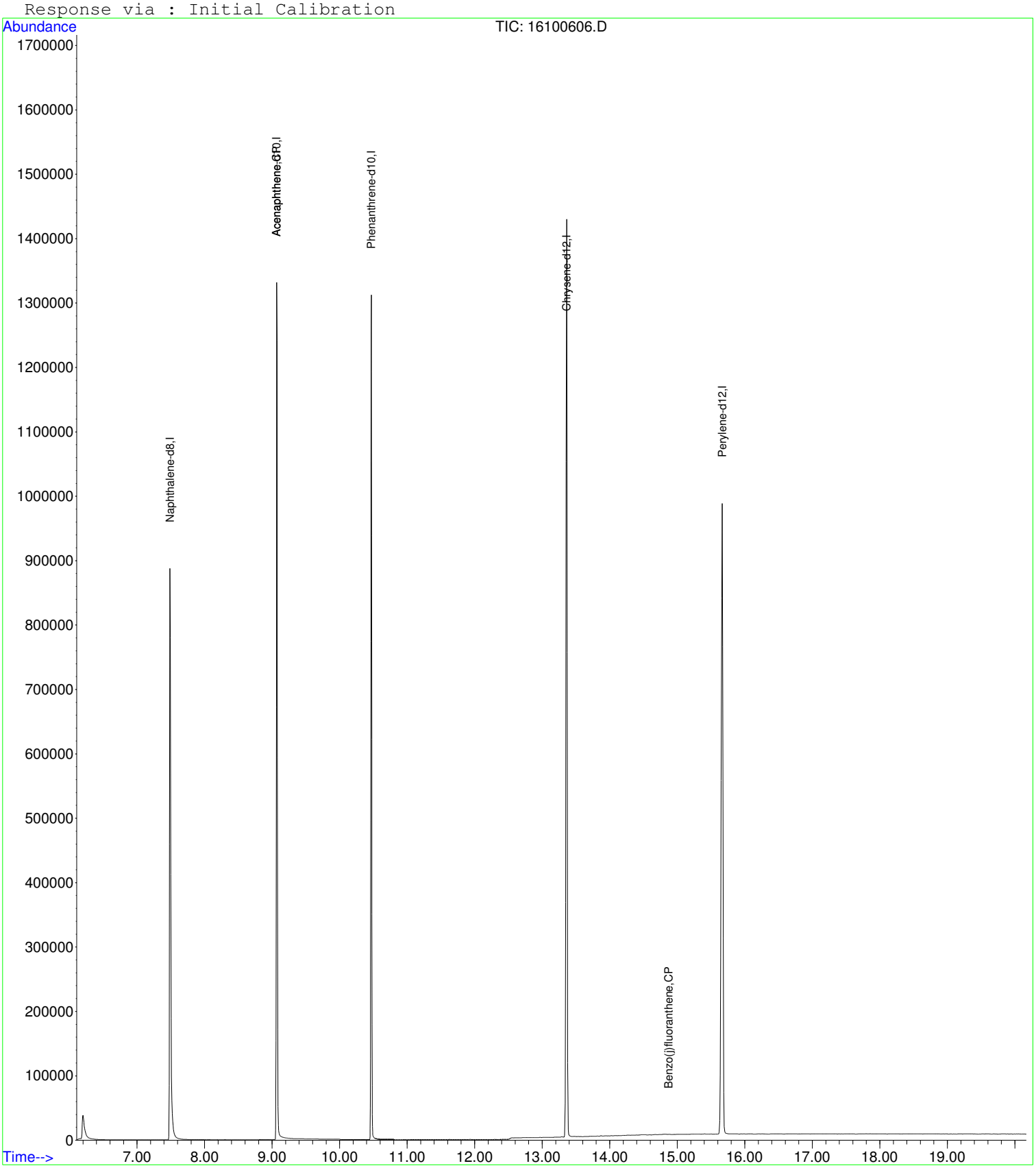
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1054899	4000.00	ug/kg	110
5) Acenaphthene-d10	9.07	164	575336	4000.00	ug/kg	95
11) Phenanthrene-d10	10.47	188	1047247	4000.00	ug/kg	95
17) Chrysene-d12	13.36	240	1224102	4000.00	ug/kg	100
20) Perylene-d12	15.67	264	1170925	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.37	172	26	0.13	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.00%#		
16) 4-Terphenyl-d14	11.85	244	143	0.64	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.02%#		
Target Compounds						Qvalue
9) Acenaphthene	9.07	154	1994	13.00	ug/kg#	9
23) Benzo(j)fluoranthene	14.88	252	95	0.32	ug/kg#	62

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161006\16100606.D Vial: 5
Acq On : 6 Oct 2016 5:29 pm Operator: DEW
Sample : SB-161006 Inst : GC/MS #6
Misc : SBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161006\16100607.D Vial: 6
Acq On : 6 Oct 2016 5:57 pm Operator: DEW
Sample : MB-77463 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

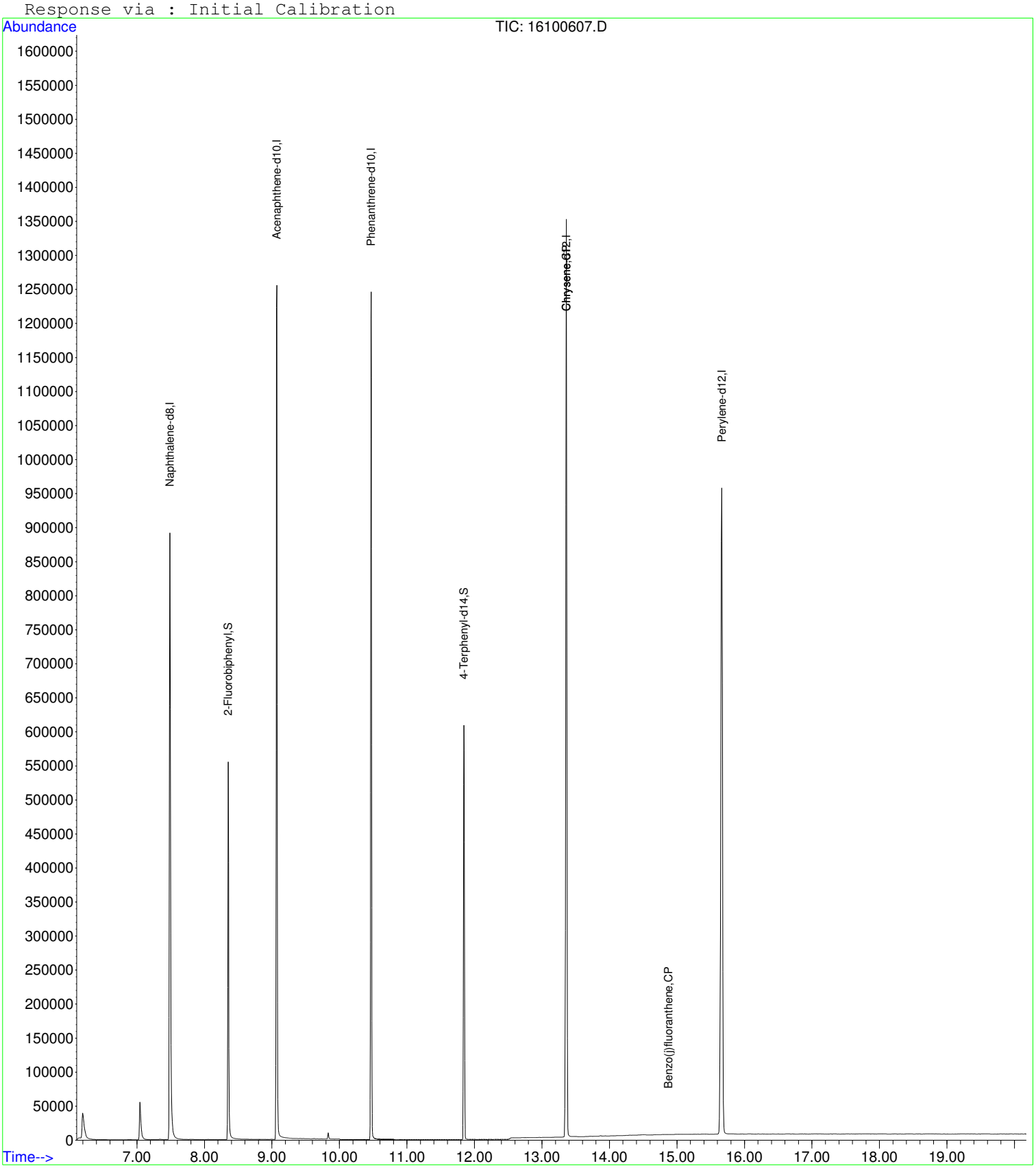
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1011132	4000.00	ug/kg	105
5) Acenaphthene-d10	9.07	164	554137	4000.00	ug/kg	92
11) Phenanthrene-d10	10.47	188	1012460	4000.00	ug/kg	92
17) Chrysene-d12	13.36	240	1178521	4000.00	ug/kg	96
20) Perylene-d12	15.66	264	1142836	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	377726	1962.14	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 49.05%			
16) 4-Terphenyl-d14	11.84	244	481116	2219.78	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 55.49%			
Target Compounds						Qvalue
19) Chrysene	13.36	228	2887	9.65	ug/kg	68
23) Benzo(j)fluoranthene	14.87	252	63	0.22	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161006\16100607.D Vial: 6
Acq On : 6 Oct 2016 5:57 pm Operator: DEW
Sample : MB-77463 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:09 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161006\16100608.D Vial: 7
Acq On : 6 Oct 2016 6:25 pm Operator: DEW
Sample : 1610008-01B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:11 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

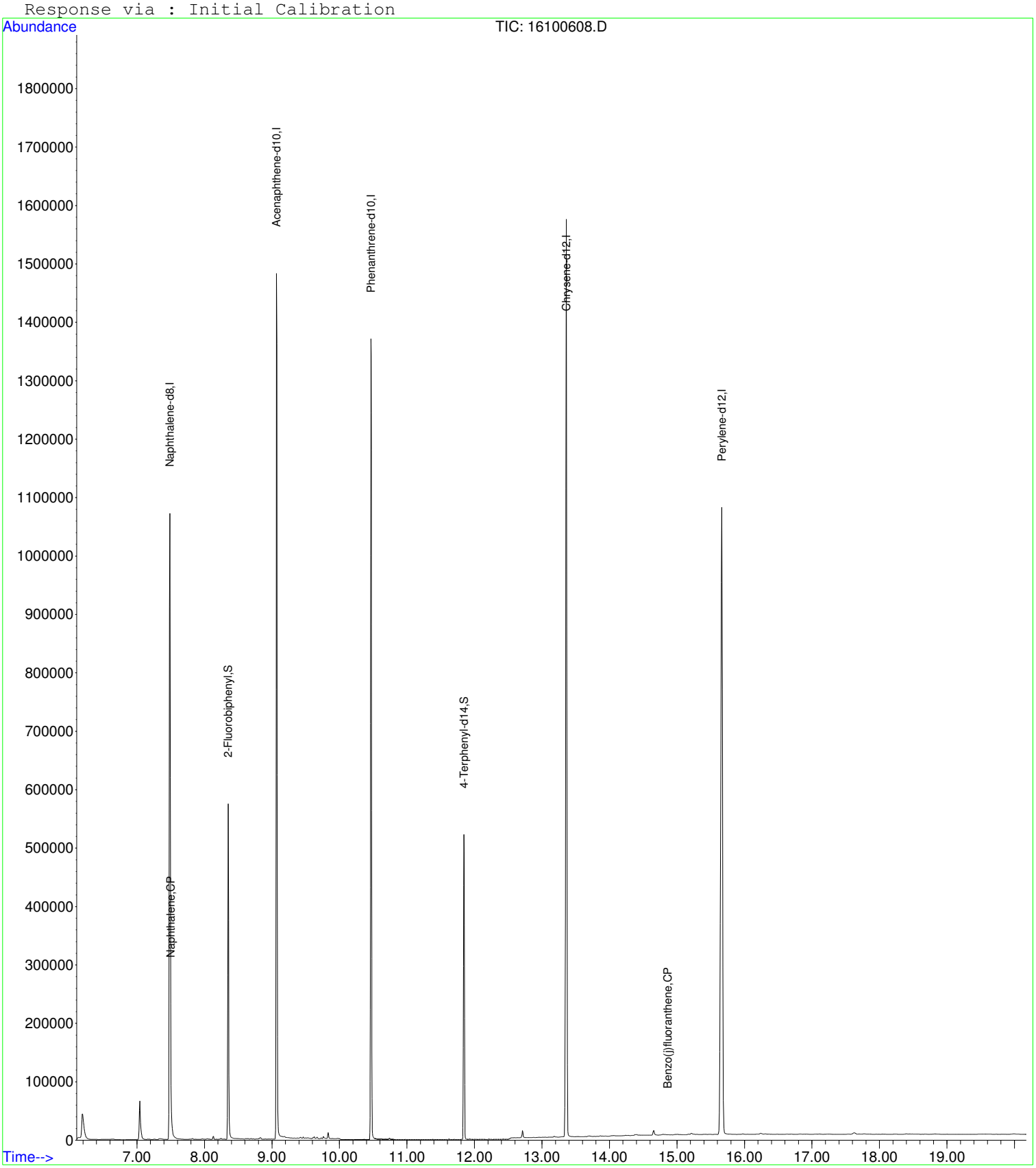
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1154824	4000.00	ug/kg	120
5) Acenaphthene-d10	9.07	164	631978	4000.00	ug/kg	104
11) Phenanthrene-d10	10.47	188	1151647	4000.00	ug/kg	105
17) Chrysene-d12	13.36	240	1332945	4000.00	ug/kg	109
20) Perylene-d12	15.66	264	1301209	4000.00	ug/kg	111
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	381633	1738.25	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 43.46%			
16) 4-Terphenyl-d14	11.84	244	407459	1652.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 41.32%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	1398	5.53	ug/kg#	47
23) Benzo(j)fluoranthene	14.87	252	265	0.80	ug/kg#	60

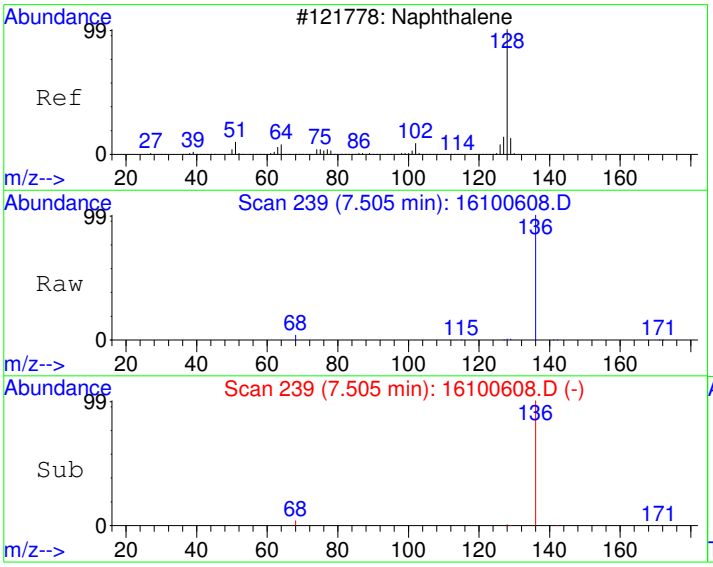
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161006\16100608.D Vial: 7
Acq On : 6 Oct 2016 6:25 pm Operator: DEW
Sample : 1610008-01B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 16:11 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration

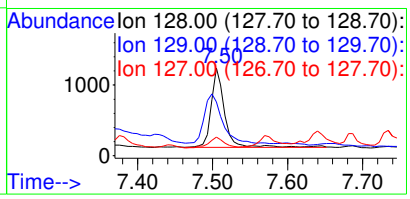


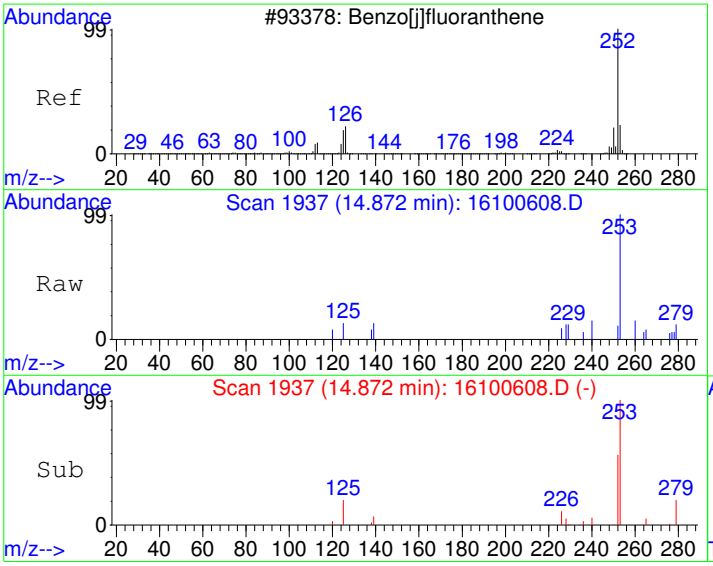


#2
Naphthalene
Concen: 5.53 ug/kg
RT: 7.50 min Scan# 239
Delta R.T. 0.00 min
Lab File: 16100608.D
Acq: 6 Oct 2016 6:25 pm

Tgt Ion:128 Resp: 1398

Ion	Ratio	Lower	Upper
128	100		
129	52.7	0.0	41.4#
127	13.7	0.0	42.5

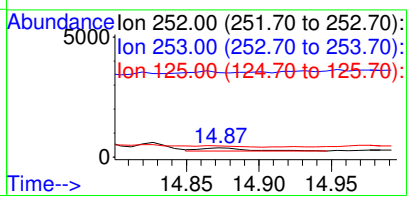




#23
Benzo(j)fluoranthene
Concen: 0.80 ug/kg
RT: 14.87 min Scan# 1937
Delta R.T. -0.02 min
Lab File: 16100608.D
Acq: 6 Oct 2016 6:25 pm

Tgt Ion:252 Resp: 265

Ion	Ratio	Lower	Upper
252	100		
253	0.0	2.3	42.3#
125	23.2	0.0	32.3



GCMS6_161007A
For

DHL Work Order
1610008

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_161007A
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: QA APPROVED By John DuPont at 4:34:38 PM, 10/11/2016 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
x 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.**

LCSD-77477 RPD above limit, recovery on all target analytes ok.

Analyst: Lauren Garcia Date: 10/7/2016

Second-Level Review: Janice Whitt Date: 10/11/2016

REVIEWED BY By Janice Whitt at 4:27:08 PM, 10/11/2016

DHL Analytical, Inc.

Run ID: GCMS6_161007A **Run No.:** 88463

Analytical Run Date: 10/7/2016 **InstrumentID:** GCMS6

Analyst: Lauren Garcia **Column:** Rxi®-17Sil-MS (30m x 0.25mm ID x 0.25µm

Calibration ID: 698 **Column ID:** 0.25mm

Column Length: 30m

Cal Comments: PP161004.M

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
DFTPP-161007	1	PAH_LL_WDOD1	TUNE	R88463	10/7/2016 11:12:00 AM		
ICV-161007	1	PAH_LL_WDOD1	ICV	R88463	10/7/2016 11:40:00 AM		
LCS-77477	1	PAH_LL_WDOD1	LCS	77477	10/7/2016 12:08:00 PM		
LCSD-77477	1	PAH_LL_WDOD1	LCSD	77477	10/7/2016 12:36:00 PM		RPD above limit, recovery on all target analytes ok.
MB-77477	1	PAH_LL_WDOD1	MBLK	77477	10/7/2016 1:04:00 PM		
1610008-01B	1	PAH_LL_WDOD1	SAMP	77463	10/7/2016 1:32:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160509	2.5 PPM 525 TUNE STD.	TUNE	05/07/2017
PAHICV161004	2 PPM PAH ICV	ICV	01/02/2017
SVI160510-5	4000 PPM INTERNAL STANDAR	ALL	09/08/2017

Sequence Name: C:\HPCHEM\1\SEQUENCE\161007.S
Comment:
Operator: LG
Data Path: C:\HPCHEM\1\DATA\161007\
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	16100701	DFTPPPAH	DFTPP-161007
2	Sample	2	16100702	PP161004	ICV-161007
3	Sample	3	16100703	PP161004	LCS-77477
4	Sample	4	16100704	PP161004	LCSD-77477
5	Sample	5	16100705	PP161004	MB-77477
6	Sample	6	16100706	PP161004	1610008-01B

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **10/7/2016 9:32:40 AM**
Digestion:
Prep End Date: **10/7/2016 11:40:00 AM**

Prep Batch **77477** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List

Turbo-Vap #2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1610008-01B	Aqueous	7	10.2	1	0.098	2 of 2	
	Analyst used pipette to measure out 10.2 mL of sample and diluted to 500.0 mL with Ozarka water.						
LCS-77477	Aqueous	6	500	1	0.002	of	
	This is a re-prep of batch 77463 using dry-disk method.						
LCSD-77477	Aqueous	6	500	1	0.002	of	
MB-77477	Aqueous	6	500	1	0.002	of	

Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10534	Dry Disk Membrane	1	disk	01/07/2027
10622	Methylene Chloride	120	ml	08/04/2026

Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160825	200 PPM PAH Spike Mix	LCS/D	0.01	11/23/2016
SVPREP160902	40 PPM Surrogate Standard	ALL	0.1	12/01/2016

REVIEWED BY
By Janice Whitt at 4:19:32 PM, 10/11/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **10/7/2016 9:32:40 AM**
Digestion:
Prep End Date: 10/7/2016 11:40 AM

Prep Batch **77477** Prep Code: **3510_PAHDOD** Technician: **Lauren Garcia**

Prep Factor Units: **mL/mL**

Equipment List
Turbo-Vap #2
Balance # 25, 29

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1610008-01B	Aqueous	7	500	1	0.002	1 of 2	4120-4018 = 10.2 Analyst used pipette to measure out 10.2 mL of sample and diluted to 5000 mL with OEarka water.
LCS-77477	Aqueous	6	500	1	0.002	of	
LCSD-77477	Aqueous	6	500	1	0.002	of	
MB-77477	Aqueous	6	500	1	0.002	of	

Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10534	Dry Disk Membrane	1	disk	01/07/2027
10622	Methylene Chloride	120	ml	08/04/2026

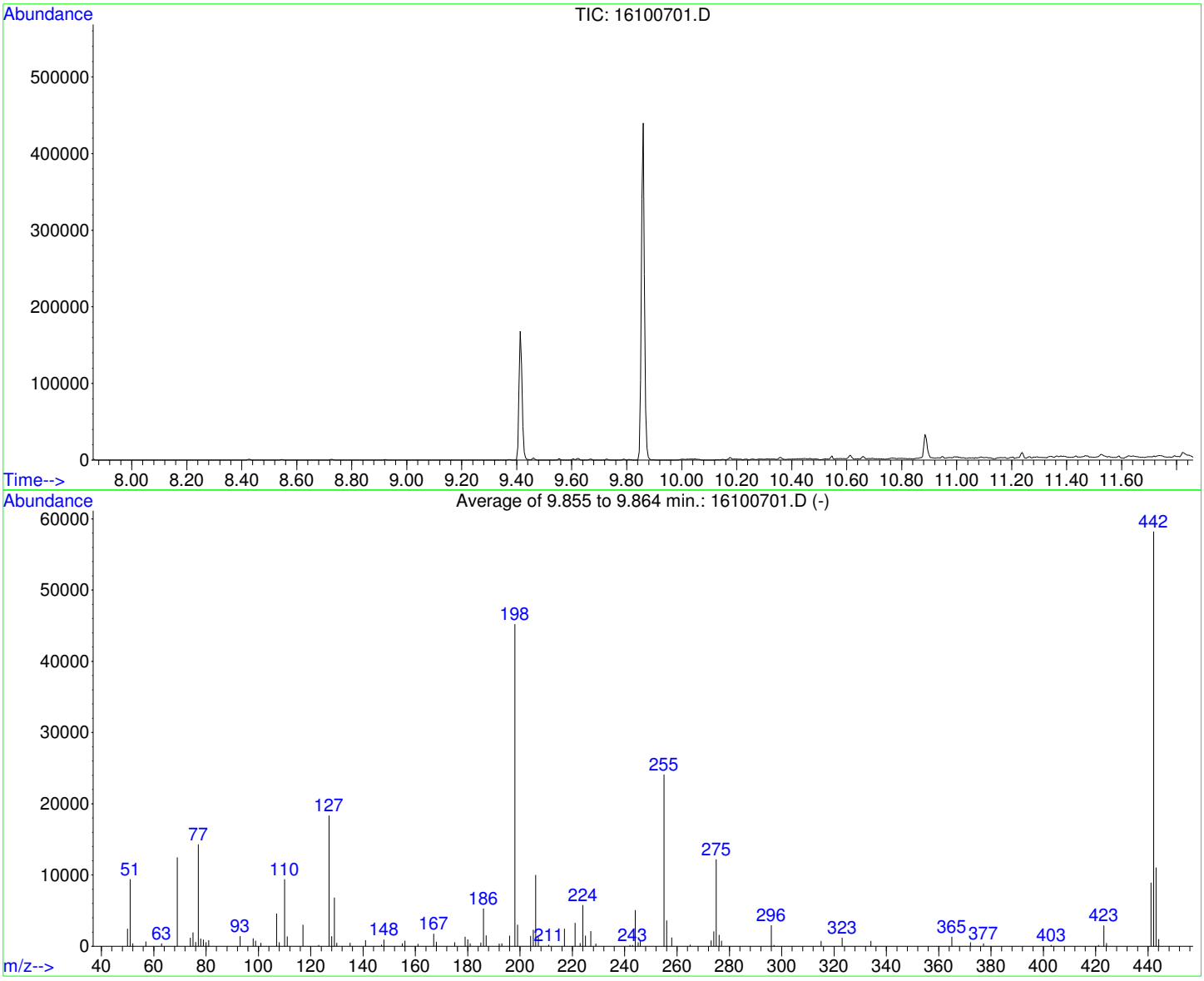
Spk ID	Spike Name	SampType	Amt (mL or g)	Exp. Date
PAHPREP160825	200 PPM PAH Spike Mix	LCS/D	0.01	11/23/2016
SVPREP160902	40 PPM Surrogate Standard	ALL	0.1	12/01/2016

REVIEWED BY
By Janice Whitt at 4:19:30 PM, 10/11/2016

10/7/16

10/17/16

Data File : C:\HPCHEM\1\DATA\161007\16100701.D Vial: 1
Acq On : 7 Oct 2016 11:12 am Operator: LG
Sample : DFTPP-161007 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 801, 802, 803; Background Corrected with Scan 796

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	20.9	9437	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	27.6	12486	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	40.6	18342	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	45213	PASS
199	198	5	9	6.7	3032	PASS
275	198	10	60	27.0	12210	PASS
365	198	1	200	3.0	1340	PASS
441	442	0.01	24	15.4	8942	PASS
442	198	50	400	128.8	58235	PASS
443	442	15	24	19.0	11070	PASS

REVIEWED BY
By Janice Whitt at 4:19:34 PM, 10/11/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161007\16100702.D Vial: 2
Acq On : 7 Oct 2016 11:40 am Operator: LG
Sample : ICV-161007 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

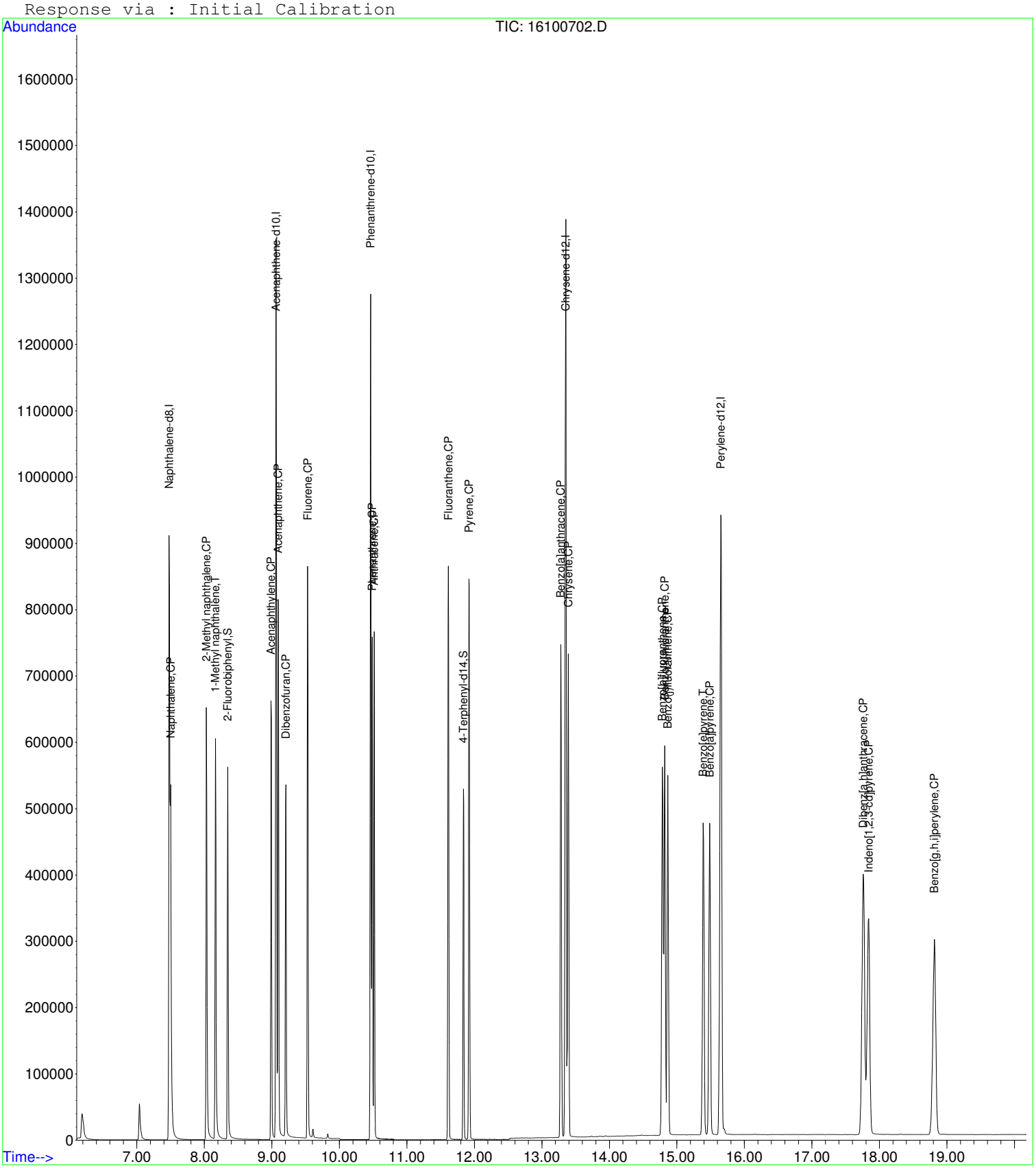
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	1025713	4000.00	ug/kg	107
5) Acenaphthene-d10	9.06	164	554160	4000.00	ug/kg	92
11) Phenanthrene-d10	10.46	188	1009053	4000.00	ug/kg	92
17) Chrysene-d12	13.35	240	1187578	4000.00	ug/kg	97
20) Perylene-d12	15.65	264	1158428	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	376872	1957.62	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 48.94%			
16) 4-Terphenyl-d14	11.84	244	419949	1944.11	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 48.60%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	432197	1926.00	ug/kg	100
3) 2-Methyl naphthalene	8.03	142	319949	1781.88	ug/kg	92
4) 1-Methyl naphthalene	8.16	142	289610	1751.93	ug/kg	92
6) Dibenzofuran	9.21	168	410119	1938.03	ug/kg	99
8) Acenaphthylene	8.99	152	477109	1934.20	ug/kg	100
9) Acenaphthene	9.09	154	280423	1898.41	ug/kg	99
10) Fluorene	9.53	166	341609	1907.94	ug/kg	98
12) Phenanthrene	10.49	178	476911	1875.86	ug/kg	99
13) Anthracene	10.51	178	487415	1852.88	ug/kg	99
14) Fluoranthene	11.61	202	558261	1881.33	ug/kg	99
15) Pyrene	11.92	202	566982	1858.57	ug/kg	100
18) Benzo[a]anthracene	13.28	228	596011	1891.41	ug/kg	100
19) Chrysene	13.39	228	553302	1835.20	ug/kg	99
21) Benzo[b]fluoranthene	14.78	252	702062	1942.12	ug/kg	99
22) Benzo[k]fluoranthene	14.82	252	535215	1655.76	ug/kg	96
23) Benzo(j)fluoranthene	14.86	252	532303	1807.78	ug/kg	99
24) Benzo[e]pyrene	15.39	252	573136	1837.99	ug/kg	98
25) Benzo[a]pyrene	15.49	252	585058	1878.27	ug/kg	99
26) Dibenz[a,h]anthracene	17.77	278	583683	1882.70	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.84	276	575806	1814.01	ug/kg	97
28) Benzo[g,h,i]perylene	18.81	276	592259	1795.99	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161007\16100702.D Vial: 2
Acq On : 7 Oct 2016 11:40 am Operator: LG
Sample : ICV-161007 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161007\16100703.D Vial: 3
Acq On : 7 Oct 2016 12:08 pm Operator: LG
Sample : LCS-77477 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

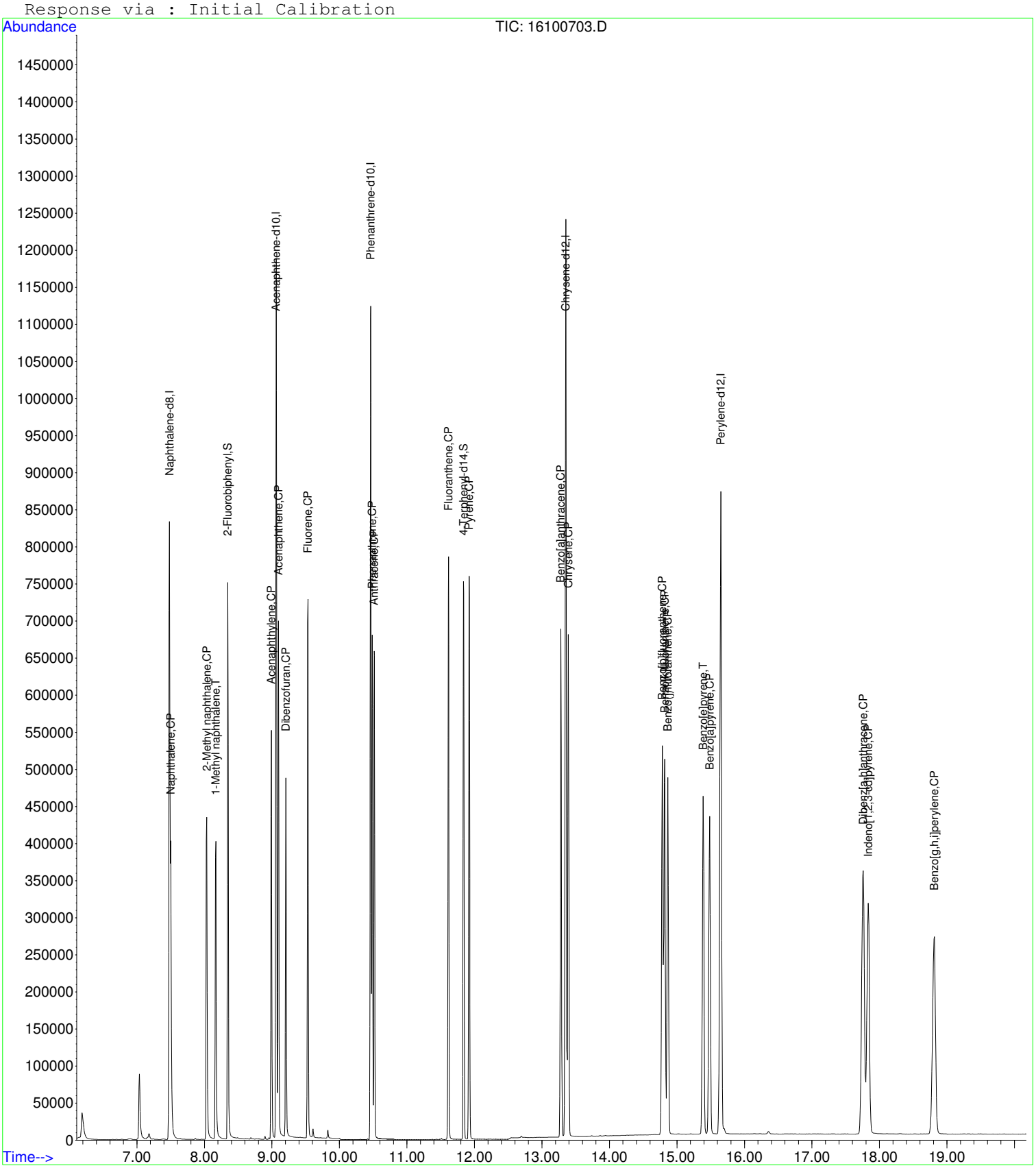
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	912429	4000.00	ug/kg	95
5) Acenaphthene-d10	9.06	164	495282	4000.00	ug/kg	82
11) Phenanthrene-d10	10.46	188	921076	4000.00	ug/kg	84
17) Chrysene-d12	13.35	240	1075370	4000.00	ug/kg	88
20) Perylene-d12	15.65	264	1025231	4000.00	ug/kg	87
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	511753	2974.25	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 74.36%			
16) 4-Terphenyl-d14	11.84	244	594585	3015.48	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 75.39%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	302006	1512.92	ug/kg	99
3) 2-Methyl naphthalene	8.03	142	221009	1383.68	ug/kg	100
4) 1-Methyl naphthalene	8.17	142	204692	1391.97	ug/kg	99
6) Dibenzofuran	9.21	168	348109	1840.56	ug/kg	99
8) Acenaphthylene	8.99	152	375236	1702.05	ug/kg	99
9) Acenaphthene	9.10	154	225562	1708.54	ug/kg	98
10) Fluorene	9.53	166	299400	1870.99	ug/kg	98
12) Phenanthrene	10.48	178	431696	1860.20	ug/kg	100
13) Anthracene	10.51	178	427730	1781.29	ug/kg	99
14) Fluoranthene	11.61	202	504215	1861.50	ug/kg	99
15) Pyrene	11.92	202	511109	1835.44	ug/kg	100
18) Benzo[a]anthracene	13.28	228	536549	1880.38	ug/kg	100
19) Chrysene	13.39	228	501049	1835.29	ug/kg	99
21) Benzo[b]fluoranthene	14.78	252	566205	1769.79	ug/kg	99
22) Benzo[k]fluoranthene	14.82	252	555556	1941.98	ug/kg	96
23) Benzo(j)fluoranthene	14.86	252	479084	1838.42	ug/kg	99
24) Benzo[e]pyrene	15.39	252	528069	1913.47	ug/kg	97
25) Benzo[a]pyrene	15.49	252	525641	1906.75	ug/kg	98
26) Dibenz[a,h]anthracene	17.76	278	529206	1928.76	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.83	276	515607	1835.40	ug/kg	98
28) Benzo[g,h,i]perylene	18.81	276	536182	1837.18	ug/kg	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161007\16100703.D Vial: 3
Acq On : 7 Oct 2016 12:08 pm Operator: LG
Sample : LCS-77477 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161007\16100704.D Vial: 4
Acq On : 7 Oct 2016 12:36 pm Operator: LG
Sample : LCSD-77477 Inst : GC/MS #6
Misc : LCSD Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

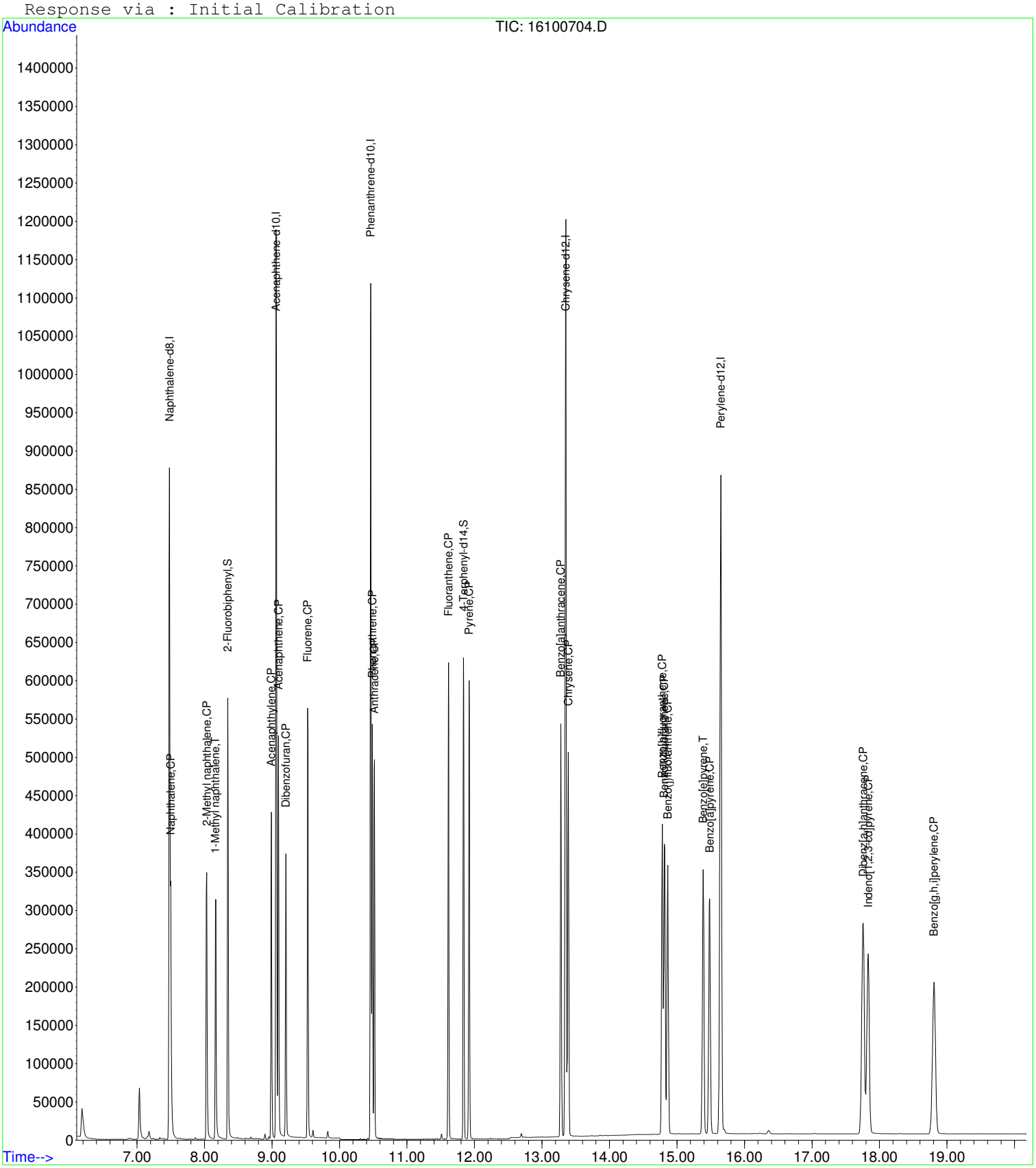
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	921545	4000.00	ug/kg	96
5) Acenaphthene-d10	9.06	164	488943	4000.00	ug/kg	81
11) Phenanthrene-d10	10.46	188	908229	4000.00	ug/kg	83
17) Chrysene-d12	13.35	240	1067564	4000.00	ug/kg	87
20) Perylene-d12	15.65	264	1011444	4000.00	ug/kg	86
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.34	172	387965	2284.04	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 57.10%			
16) 4-Terphenyl-d14	11.84	244	475856	2447.48	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 61.19%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	236669	1173.88	ug/kg	100
3) 2-Methyl naphthalene	8.03	142	175304	1086.67	ug/kg	99
4) 1-Methyl naphthalene	8.17	142	161422	1086.86	ug/kg	100
6) Dibenzofuran	9.21	168	267479	1432.58	ug/kg	99
8) Acenaphthylene	8.99	152	287645	1321.66	ug/kg	99
9) Acenaphthene	9.10	154	174587	1339.57	ug/kg	96
10) Fluorene	9.53	166	228027	1443.44	ug/kg	96
12) Phenanthrene	10.49	178	329006	1437.76	ug/kg	99
13) Anthracene	10.52	178	326560	1379.21	ug/kg	99
14) Fluoranthene	11.61	202	386752	1448.04	ug/kg	99
15) Pyrene	11.92	202	390397	1421.79	ug/kg	99
18) Benzo[a]anthracene	13.28	228	407382	1438.14	ug/kg	99
19) Chrysene	13.39	228	378703	1397.29	ug/kg	98
21) Benzo[b]fluoranthene	14.78	252	435543	1379.94	ug/kg	100
22) Benzo[k]fluoranthene	14.82	252	417326	1478.67	ug/kg	95
23) Benzo(j)fluoranthene	14.86	252	360337	1401.59	ug/kg	99
24) Benzo[e]pyrene	15.39	252	396444	1456.11	ug/kg	97
25) Benzo[a]pyrene	15.49	252	392070	1441.61	ug/kg	98
26) Dibenz[a,h]anthracene	17.76	278	393724	1454.54	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.83	276	383417	1383.45	ug/kg	97
28) Benzo[g,h,i]perylene	18.81	276	400747	1391.84	ug/kg	97

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161007\16100704.D Vial: 4
Acq On : 7 Oct 2016 12:36 pm Operator: LG
Sample : LCSD-77477 Inst : GC/MS #6
Misc : LCSD Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161007\16100705.D Vial: 5
Acq On : 7 Oct 2016 1:04 pm Operator: LG
Sample : MB-77477 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

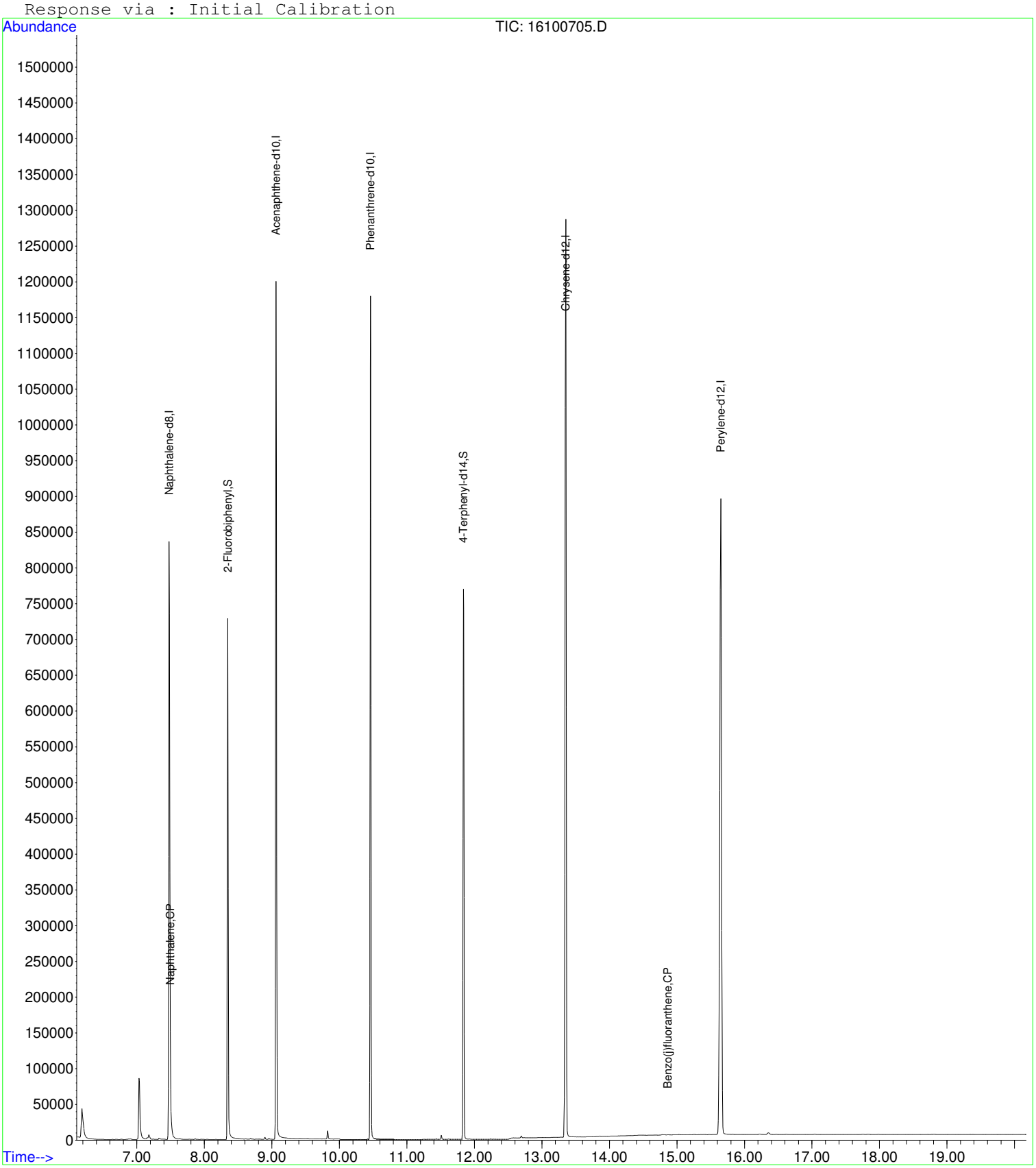
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	927488	4000.00	ug/kg	96
5) Acenaphthene-d10	9.06	164	500941	4000.00	ug/kg	83
11) Phenanthrene-d10	10.46	188	919630	4000.00	ug/kg	84
17) Chrysene-d12	13.35	240	1113116	4000.00	ug/kg	91
20) Perylene-d12	15.65	264	1062856	4000.00	ug/kg	90
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	488884	2809.24	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 70.23%			
16) 4-Terphenyl-d14	11.84	244	608218	3089.47	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 77.24%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	1225	6.04	ug/kg#	51
23) Benzo(j)fluoranthene	14.86	252	79	0.29	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161007\16100705.D Vial: 5
Acq On : 7 Oct 2016 1:04 pm Operator: LG
Sample : MB-77477 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:07 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161007\16100706.D Vial: 6
Acq On : 7 Oct 2016 1:32 pm Operator: LG
Sample : 1610008-01B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:08 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

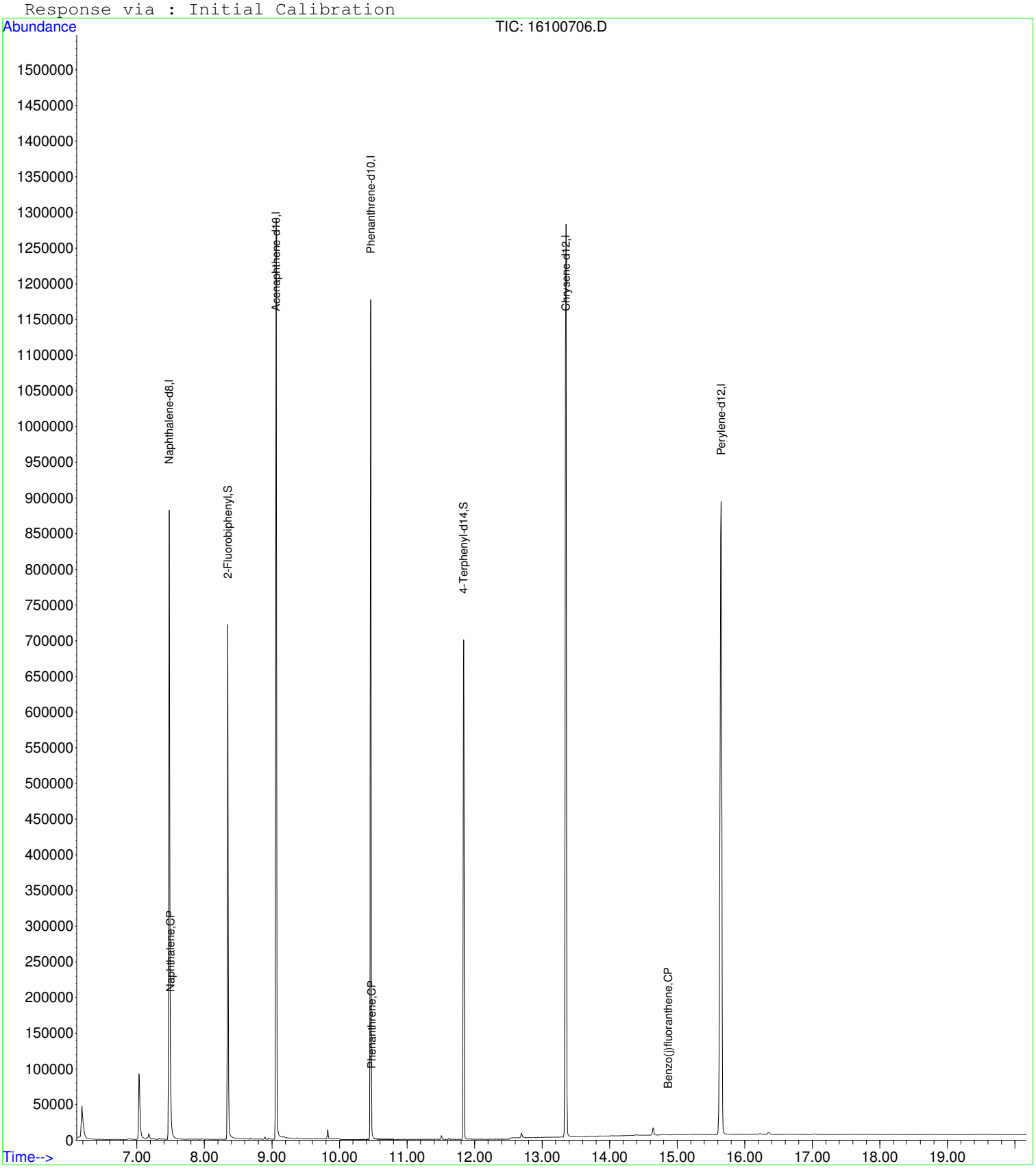
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	970313	4000.00	ug/kg	101
5) Acenaphthene-d10	9.06	164	521258	4000.00	ug/kg	86
11) Phenanthrene-d10	10.46	188	957972	4000.00	ug/kg	87
17) Chrysene-d12	13.35	240	1134080	4000.00	ug/kg	93
20) Perylene-d12	15.65	264	1083503	4000.00	ug/kg	92
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.35	172	497924	2749.67	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 68.74%			
16) 4-Terphenyl-d14	11.84	244	541126	2638.66	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 65.97%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	1134	5.34	ug/kg#	49
12) Phenanthrene	10.49	178	1606	6.65	ug/kg	98
23) Benzo(j)fluoranthene	14.86	252	171	0.62	ug/kg#	15

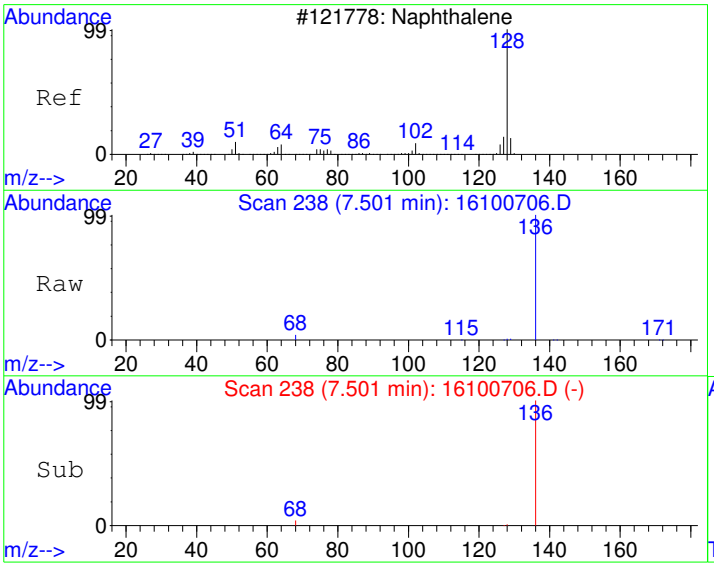
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161007\16100706.D Vial: 6
Acq On : 7 Oct 2016 1:32 pm Operator: LG
Sample : 1610008-01B Inst : GC/MS #6
Misc : SAMP Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 7 15:08 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration

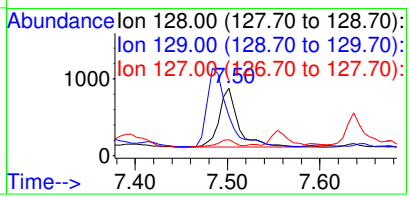


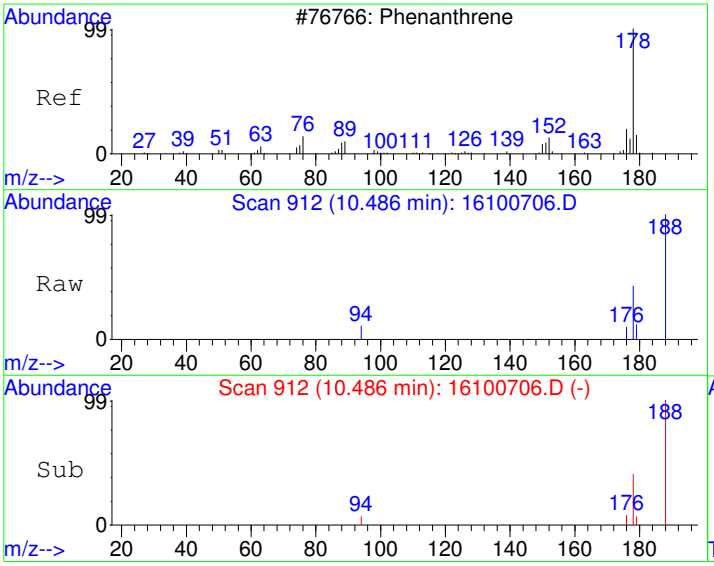


#2
Naphthalene
Concen: 5.34 ug/kg
RT: 7.50 min Scan# 238
Delta R.T. -0.00 min
Lab File: 16100706.D
Acq: 7 Oct 2016 1:32 pm

Tgt Ion:128 Resp: 1134

Ion	Ratio	Lower	Upper
128	100		
129	51.4	0.0	41.4#
127	13.2	0.0	42.5

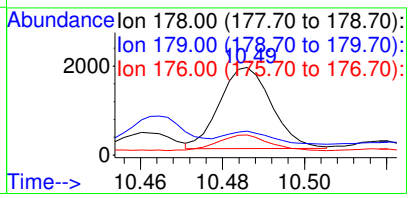


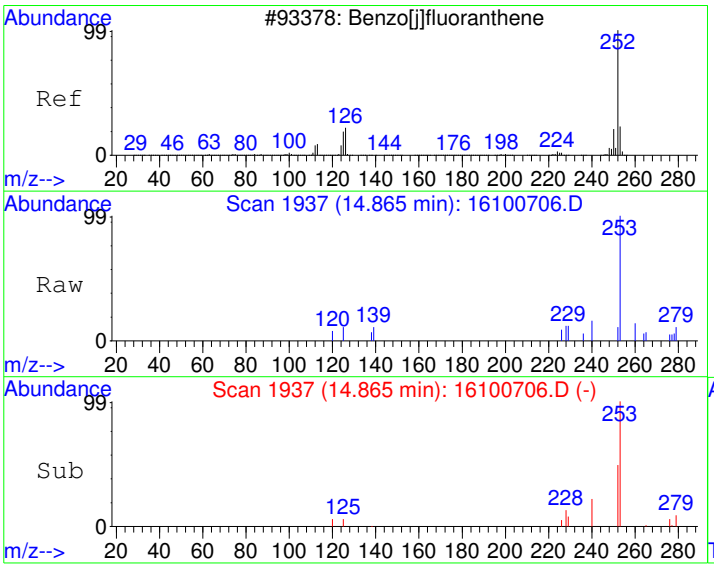


#12
Phenanthrene
Concen: 6.65 ug/kg
RT: 10.49 min Scan# 912
Delta R.T. -0.01 min
Lab File: 16100706.D
Acq: 7 Oct 2016 1:32 pm

Tgt Ion:178 Resp: 1606

Ion	Ratio	Lower	Upper
178	100		
179	16.7	0.0	45.6
176	19.7	0.0	49.0

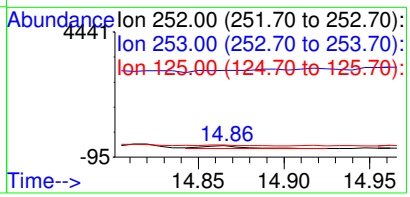




#23
Benzo(j)fluoranthene
Concen: 0.62 ug/kg
RT: 14.86 min Scan# 1937
Delta R.T. -0.02 min
Lab File: 16100706.D
Acq: 7 Oct 2016 1:32 pm

Tgt Ion:252 Resp: 171

Ion	Ratio	Lower	Upper
252	100		
253	71.6	2.3	42.3#
125	33.0	0.0	32.3#



GCMS6
Calibration Curve
For

DHL Work Order
1610008

CAL ID: 698

Method 8270 PAH Calibration Curve Sheet

Instrument ID: GCMS #6 **Calibration File Name:** PAH161004.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	----	PAHCAL161004	10
SSCV 2500 ppb	0.500	0.50 mL of PAHSSCV161005-1	1
SSCV 2500 ppb	----	PAHSSCV161004-2	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	**PAHCAL161004**	5PPM (5000PPB) PAH SSCV STD	**PAHSSCV160926-1**
		2.5PPM (2500PPB) PAH SSCV STD	**PAHSSCV161004-2**

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			

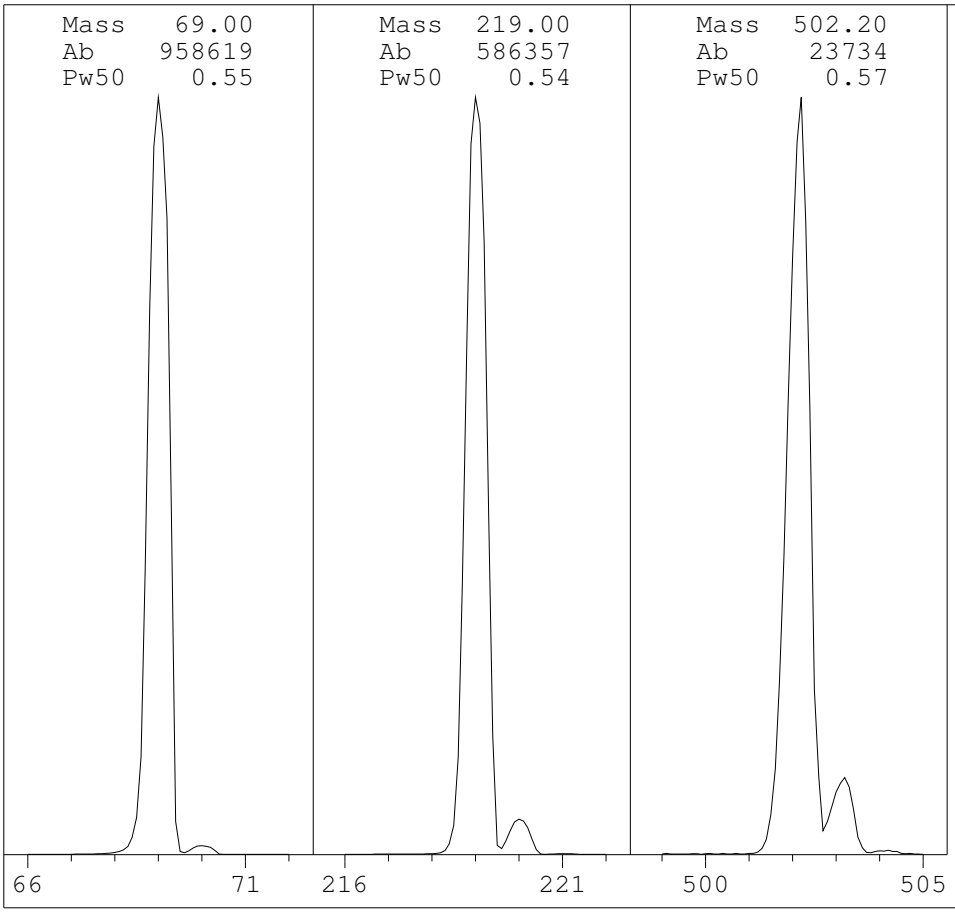
Analyst: Karyn Lane Date: 10/5/2016

Second-Level Review: Date: 10/07/16

HP5973

Instrument: GC/MS #6

Tue Oct 04 14:23:17 2016 C:\HPCHEM\1\5973\ATUNE.U



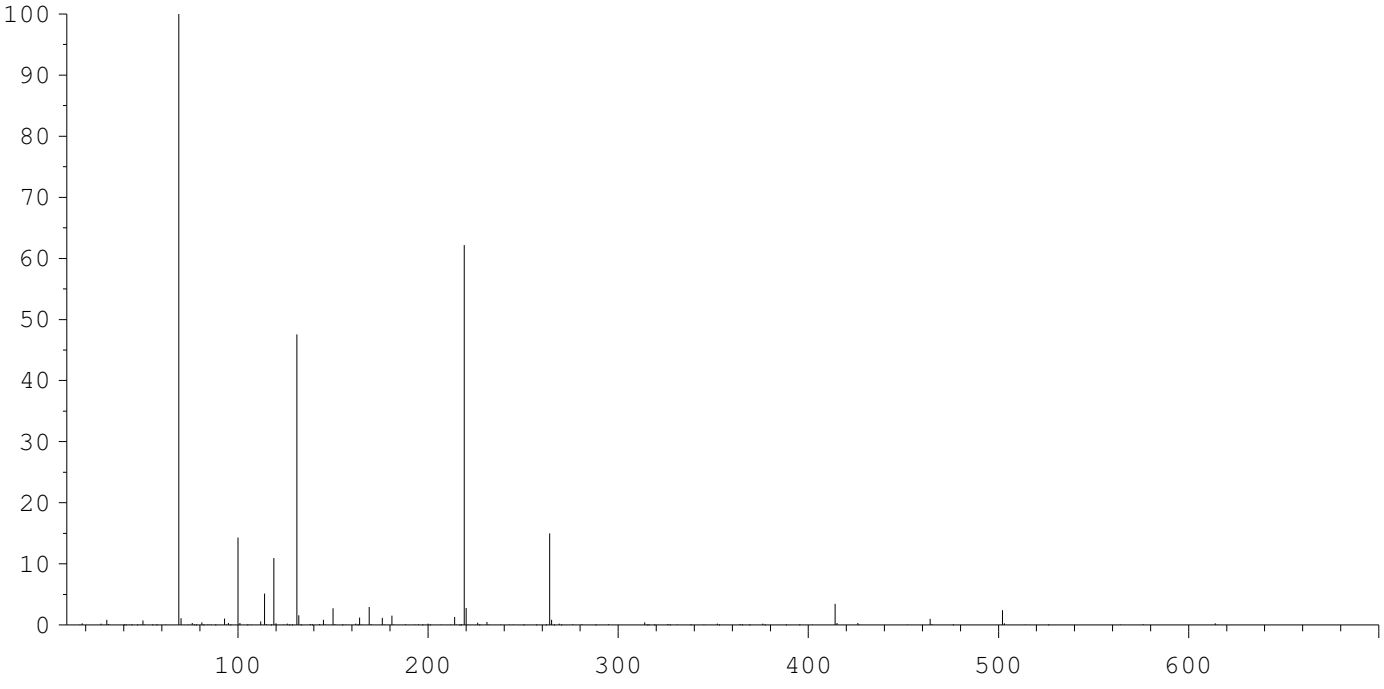
Ion Pol	POS	MassGain	22
		MassOffs	-14
Emission	34.6	AmuGain	2185
EleEnergy	69.9	AmuOffs	128
Filament	2	Wid219	0.011
		DC Pol	POS
Repeller	26.77		
IonFocus	60.7	HED	ON
EntLens	11.5	EMVolts	1365
EntOffs	17.32		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

Zones:

MS Source	230	Foreline	80
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100

137 peaks Base: 69.00 Abundance: 826432



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	826432	100.00	70.00	9328	1.13
219.00	513920	62.19	220.00	23136	4.50
502.20	20008	2.42	503.10	2073	10.36

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	47.5	68.2	3.5	2.4

Response Factor Report GC/MS #6

Method Path : F:\IC\GCMS#6\
Method File : PP161004.M
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response Via : Initial Calibration

Calibration Files
1 =16100413.D 2 =16100414.D 3 =16100415.D 4 =16100416.D 5 =16100417.D 6 =16100418.D 7 =16100419.D
8 =16100420.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	1.022	0.903	0.895	0.858	0.866	0.813	0.829	0.815	0.875	7.82	A	0.0782	0.0000	0.8751	0.0000
3)	CP	2-Methyl napht...	0.737	0.701	0.685	0.675	0.699	0.670	0.714	0.721	0.700	3.31	A	0.0331	0.0000	0.7002	0.0000
4)	T	1-Methyl napht...	0.681	0.655	0.637	0.631	0.642	0.608	0.647	0.657	0.645	3.28	A	0.0328	0.0000	0.6447	0.0000
5)	I	Acenaphthene-d10	----------ISTD----------														
6)	CP	Dibenzofuran	1.620	1.611	1.568	1.536	1.567	1.462	1.475	1.380	1.527	5.39#	A	0.0539	0.0000	1.5275	0.0000
7)	S	2-Fluorobiphenyl	1.515	1.459	1.408	1.370	1.418	1.326	1.347	1.274	1.390	5.53	A	0.0553	0.0000	1.3896	0.0000
8)	CP	Acenaphthylene	1.989	1.844	1.797	1.744	1.806	1.691	1.734	1.639	1.780	5.99	A	0.0599	0.0000	1.7805	0.0000
9)	CP	Acenaphthene	1.224	1.112	1.092	1.055	1.074	0.998	1.016	0.959	1.066	7.65	A	0.0765	0.0000	1.0662	0.0000
10)	CP	Fluorene	1.445	1.347	1.331	1.279	1.303	1.220	1.243	1.171	1.292	6.58	A	0.0658	0.0000	1.2924	0.0000
11)	I	Phenanthrene-d10	----------ISTD----------														
12)	CP	Phenanthrene	1.235	1.093	1.002	0.976	1.009	0.924	0.941	0.884	1.008	11.02	A	0.1102	0.0000	1.0078	0.0000
13)	CP	Anthracene	1.270	1.113	1.053	1.024	1.030	0.960	0.984	0.908	1.043	10.61	A	0.1061	0.0000	1.0428	0.0000
14)	CP	Fluoranthene	1.476	1.283	1.194	1.146	1.144	1.069	1.088	1.010	1.176	12.48	A	0.1248	0.0000	1.1763	0.0000
15)	CP	Pyrene	1.541	1.334	1.238	1.184	1.181	1.080	1.095	1.023	1.209	13.71	A	0.1371	0.0000	1.2093	0.0000
16)	S	4-Terphenyl-d14	1.054	0.933	0.883	0.841	0.842	0.779	0.792	0.726	0.856	11.95	A	0.1195	0.0000	0.8563	0.0000
17)	I	Chrysene-d12	----------ISTD----------														
18)	CP	Benzo[a]anthra...		1.261	1.109	1.043	1.063	0.990	1.016	0.947	1.061	9.61	A	0.0961	0.0000	1.0614	0.0000
19)	CP	Chrysene	1.267	1.119	1.014	0.970	1.007	0.928	0.937	0.883	1.015	12.20	A	0.1220	0.0000	1.0155	0.0000
20)	I	Perylene-d12	----------ISTD----------														
21)	CP	Benzo[b]fluora...	1.622	1.442	1.192	1.172	1.204	1.127	1.138	1.090	1.248	14.83	A	0.1483	0.0000	1.2482	0.0000
22)	CP	Benzo[k]fluora...	1.431	1.194	1.201	1.101	1.055	0.996	1.008	0.944	1.116	14.04	A	0.1404	0.0000	1.1161	0.0000
23)	CP	Benzo(j)fluora...	1.230	1.116	1.028	0.957	1.013	0.942	0.953	0.895	1.017	10.73	A	0.1073	0.0000	1.0167	0.0000
24)	T	Benzo[e]pyrene		1.365	1.122	1.053	1.059	0.987	0.998	0.953	1.077	12.90	A	0.1290	0.0000	1.0767	0.0000
25)	CP	Benzo[a]pyrene		1.249	1.128	1.071	1.075	1.008	1.022	0.976	1.076	8.51	A	0.0851	0.0000	1.0756	0.0000
26)	CP	Dibenz[a,h]ant...		1.221	1.117	1.057	1.084	1.016	1.011	0.988	1.070	7.51	A	0.0751	0.0000	1.0705	0.0000
27)	CP	Indeno[1,2,3-c...	1.423	1.208	1.085	1.032	1.054	0.990	0.998	0.978	1.096	13.81	A	0.1381	0.0000	1.0960	0.0000
28)	CP	Benzo[g,h,i]pe...	1.458	1.234	1.131	1.078	1.095	1.034	1.054	1.025	1.139	12.76	A	0.1276	0.0000	1.1387	0.0000

(#) = Out of Range

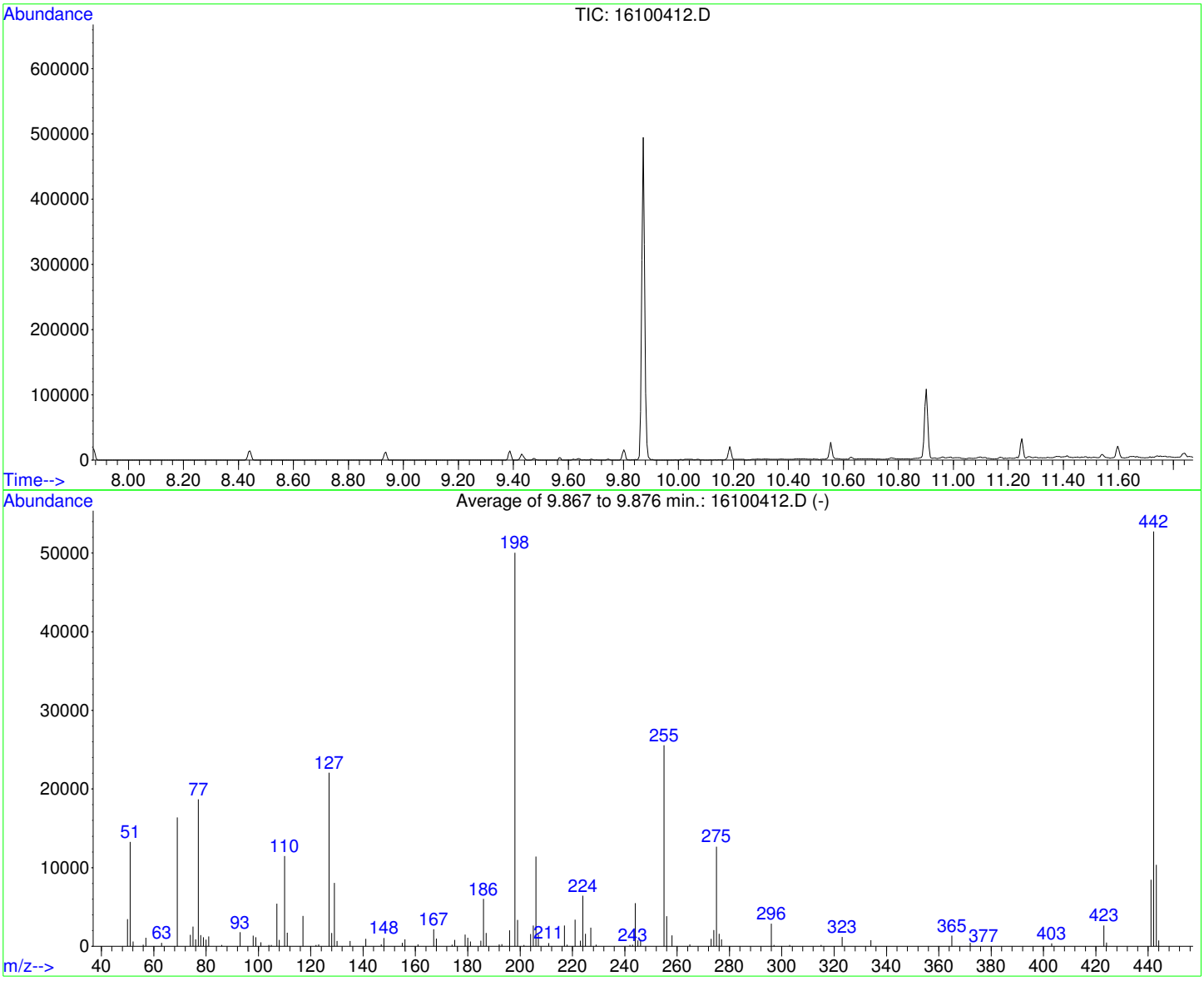
Sequence Name: C:\HPCHEM\1\SEQUENCE\161004.S
Comment:
Operator: DEW
Data Path: C:\HPCHEM\1\DATA\161004\
Pre-Seq Cmd:
Post-Seq Cmd:

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	16100412	DFTPPPAH	DFTPP-161004
2	Sample	2	16100413	NEWPAH	CAL1 (5 ppb)
3	Sample	3	16100414	NEWPAH	CAL2 (10 ppb)
4	Sample	4	16100415	NEWPAH	CAL3 (50 ppb)
5	Sample	5	16100416	NEWPAH	CAL4 (100 ppb)
6	Sample	6	16100417	NEWPAH	CAL5 (500 ppb)
7	Sample	7	16100418	NEWPAH	CAL6 (1000 ppb)
8	Sample	8	16100419	NEWPAH	CAL7 (2000 ppb)
9	Sample	9	16100420	NEWPAH	CAL8 (5000 ppb)
10	Sample	10	16100421	NEWPAH	SSCV (2500 ppb)
11	Sample	11	16100422	NEWPAH	SSCV (2500 ppb)
12	Sample	12	16100423	DFTPPPAH	DFTPP-161005
13	Sample	13	16100424	NEWPAH	ICV-161005
14	Sample	14	16100425	NEWPAH	SB-161005
15	Sample	15	16100426	NEWPAH	SB-161005
16	Sample	16	16100427	NEWPAH	1609207-09A
17	Sample	17	16100428	NEWPAH	1609207-10A
18	Sample	1	16100429	DFTPPPAH	DFTPP-161005
19	Sample	2	16100430	PP161004	SSCV (2500 ppb)
20	Sample	3	16100431	PP161004	ICV-161005
21	Sample	4	16100432	PP161004	SB-161005
22	Sample	5	16100433	PP161004	SB-161005
23	Sample	6	16100434	PP161004	1609207-01A
24	Sample	7	16100435	PP161004	1609207-02A
25	Sample	8	16100436	PP161004	1609207-04A
26	Sample	9	16100437	PP161004	1609207-08A

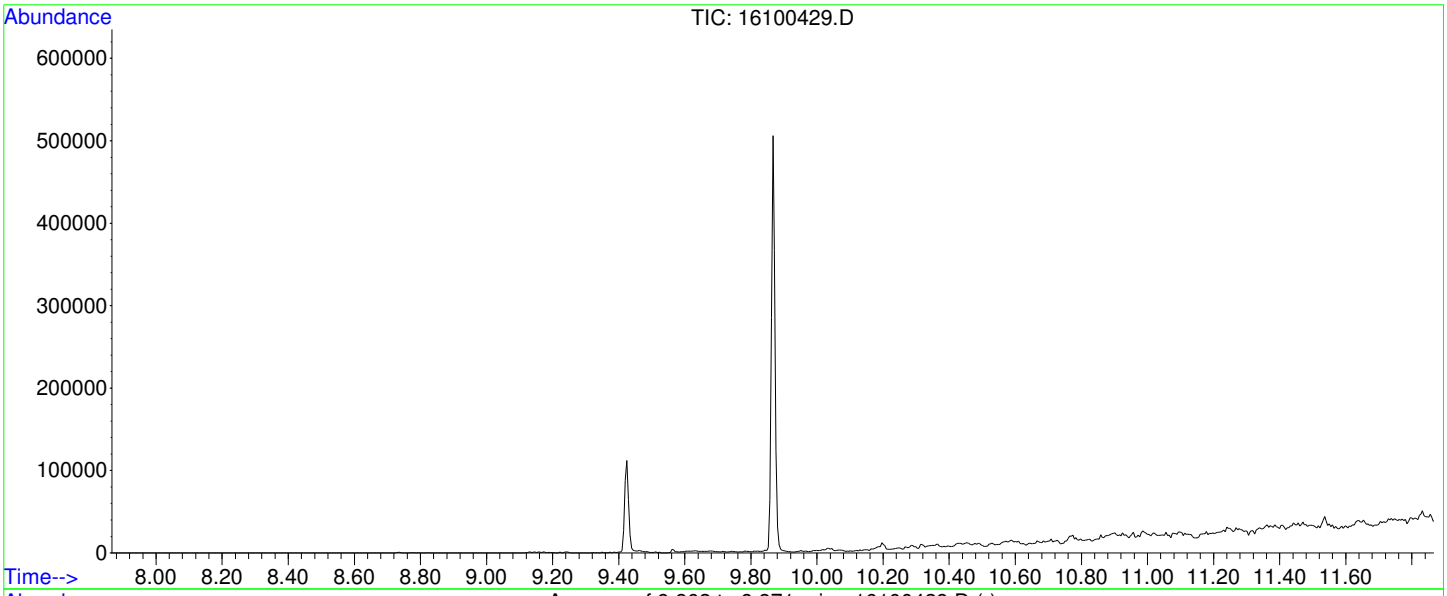
Data File : C:\HPCHEM\1\DATA\161004\16100412.D Vial: 1
Acq On : 4 Oct 2016 4:34 pm Operator: DEW
Sample : DFTPP-161004 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration

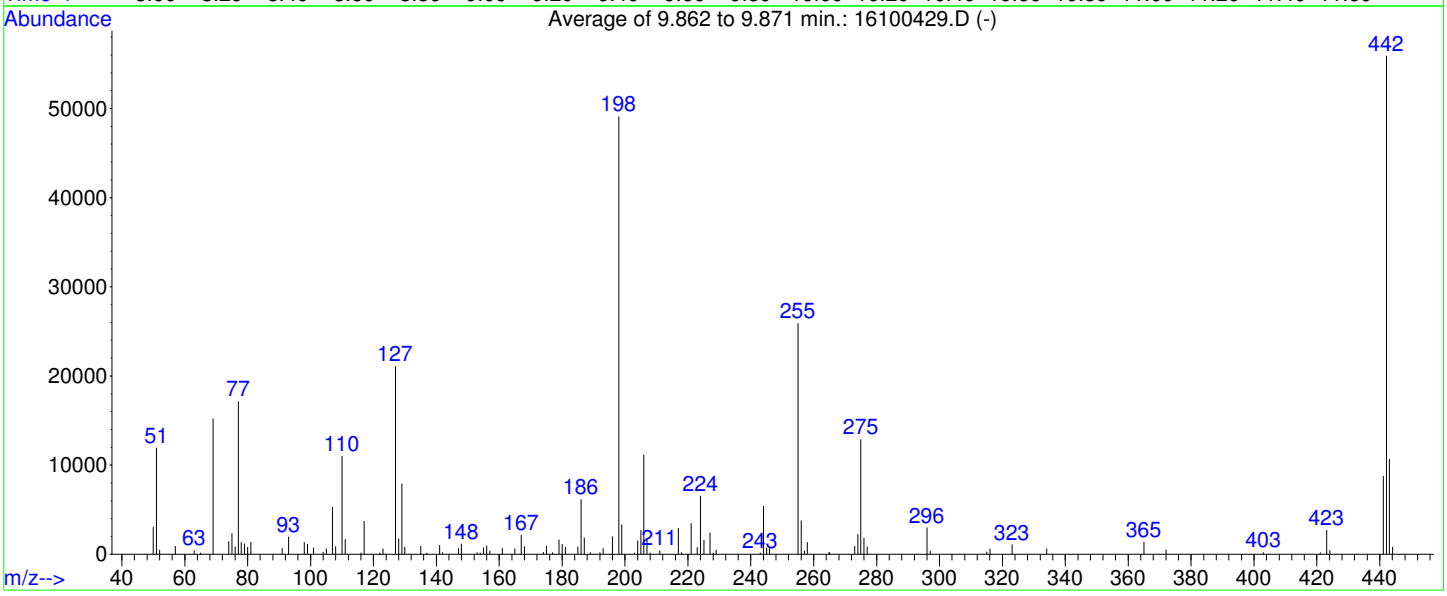


AutoFind: Scans 803, 804, 805; Background Corrected with Scan 798

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	26.5	13258	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	32.8	16402	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	44.1	22085	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	50051	PASS
199	198	5	9	6.7	3345	PASS
275	198	10	60	25.3	12664	PASS
365	198	1	200	2.7	1350	PASS
441	442	0.01	24	16.0	8453	PASS
442	198	50	400	105.4	52755	PASS
443	442	15	24	19.7	10370	PASS

Data File : C:\HPCHEM\1\DATA\161004\16100429.D Vial: 1
Acq On : 5 Oct 2016 8:52 am Operator: DEW
Sample : DFTPP-161005 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



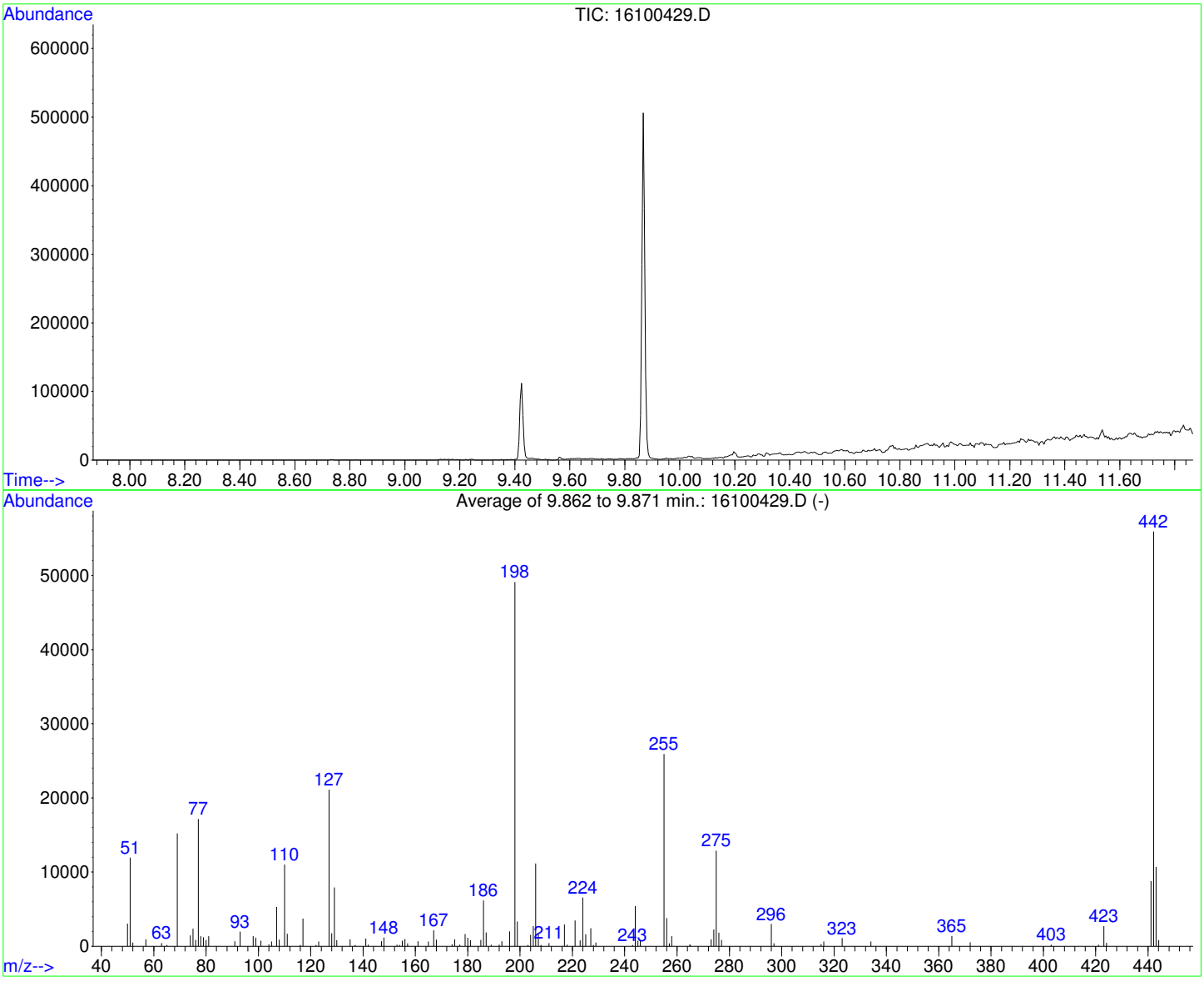


AutoFind: Scans 802, 803, 804; Background Corrected with Scan 797

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	24.3	11951	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	31.0	15229	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	43.0	21113	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	49107	PASS
199	198	5	9	6.8	3329	PASS
275	198	10	60	26.3	12892	PASS
365	198	1	200	2.8	1386	PASS
441	442	0.01	24	15.7	8802	PASS
442	198	50	400	113.9	55925	PASS
443	442	15	24	19.1	10706	PASS

REVIEWED BY
By Janice Whitt at 2:51:28 PM, 10/5/2016

Data File : C:\HPCHEM\1\DATA\161004\16100429.D Vial: 1
Acq On : 5 Oct 2016 8:52 am Operator: DEW
Sample : DFTPP-161005 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 802, 803, 804; Background Corrected with Scan 797

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	24.3	11951	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	31.0	15229	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	43.0	21113	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	49107	PASS
199	198	5	9	6.8	3329	PASS
275	198	10	60	26.3	12892	PASS
365	198	1	200	2.8	1386	PASS
441	442	0.01	24	15.7	8802	PASS
442	198	50	400	113.9	55925	PASS
443	442	15	24	19.1	10706	PASS

REVIEWED BY
By Janice Whitt at 2:51:30 PM, 10/5/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100413.D Vial: 2
Acq On : 4 Oct 2016 5:03 pm Operator: DEW
Sample : CAL1 (5 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

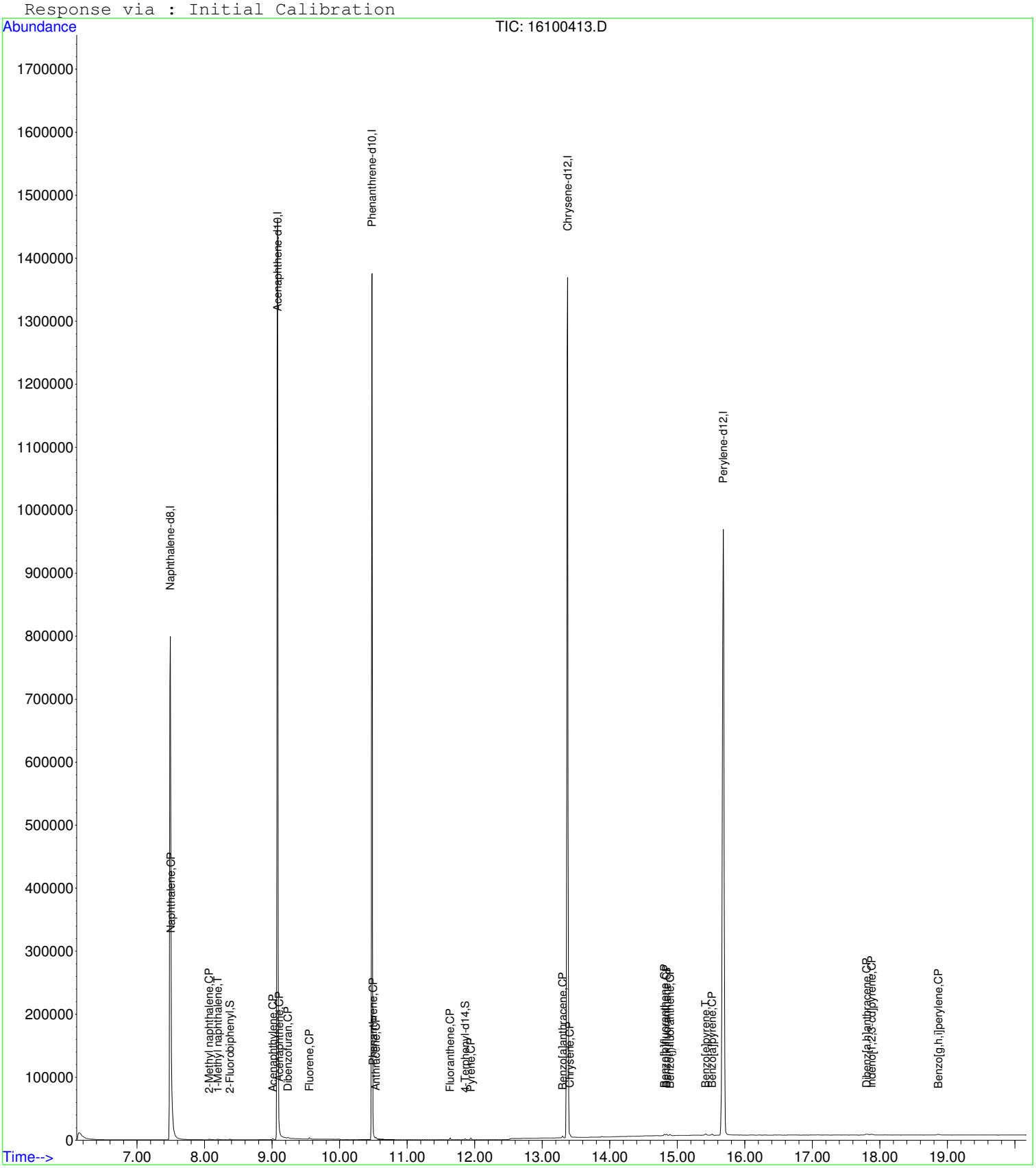
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1034527	4000.00	ug/kg	108
5) Acenaphthene-d10	9.08	164	621550	4000.00	ug/kg	103
11) Phenanthrene-d10	10.48	188	1117859	4000.00	ug/kg	102
17) Chrysene-d12	13.38	240	1237781	4000.00	ug/kg	101
20) Perylene-d12	15.68	264	1168454	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.37	172	1177	5.45	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.14%#		
16) 4-Terphenyl-d14	11.86	244	1473	6.16	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.15%#		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	1322	5.84	ug/kg	99
3) 2-Methyl naphthalene	8.07	142	953	5.26	ug/kg	95
4) 1-Methyl naphthalene	8.20	142	880	5.28	ug/kg	97
6) Dibenzofuran	9.24	168	1259	5.30	ug/kg	92
8) Acenaphthylene	9.01	152	1545	5.58	ug/kg	99
9) Acenaphthene	9.11	154	951	5.74	ug/kg	97
10) Fluorene	9.55	166	1123	5.59	ug/kg	100
12) Phenanthrene	10.50	178	1725	6.12	ug/kg	98
13) Anthracene	10.54	178	1775	6.09	ug/kg	96
14) Fluoranthene	11.63	202	2063	6.28	ug/kg	97
15) Pyrene	11.94	202	2153	6.37	ug/kg	98
18) Benzo[a]anthracene	13.30	228	2256	6.87	ug/kg	99
19) Chrysene	13.41	228	1960	6.24	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	2369	6.50	ug/kg	97
22) Benzo[k]fluoranthene	14.84	252	2090	6.41	ug/kg	93
23) Benzo(j)fluoranthene	14.90	252	1796	6.05	ug/kg	87
24) Benzo[e]pyrene	15.42	252	2463	7.83	ug/kg	96
25) Benzo[a]pyrene	15.52	252	2192	6.98	ug/kg	97
26) Dibenz[a,h]anthracene	17.81	278	2217	7.09	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.88	276	2079	6.49	ug/kg	99
28) Benzo[g,h,i]perylene	18.87	276	2130	6.40	ug/kg	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100413.D Vial: 2
Acq On : 4 Oct 2016 5:03 pm Operator: DEW
Sample : CAL1 (5 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100414.D Vial: 3
Acq On : 4 Oct 2016 5:30 pm Operator: DEW
Sample : CAL2 (10 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

Reprocessed low point.

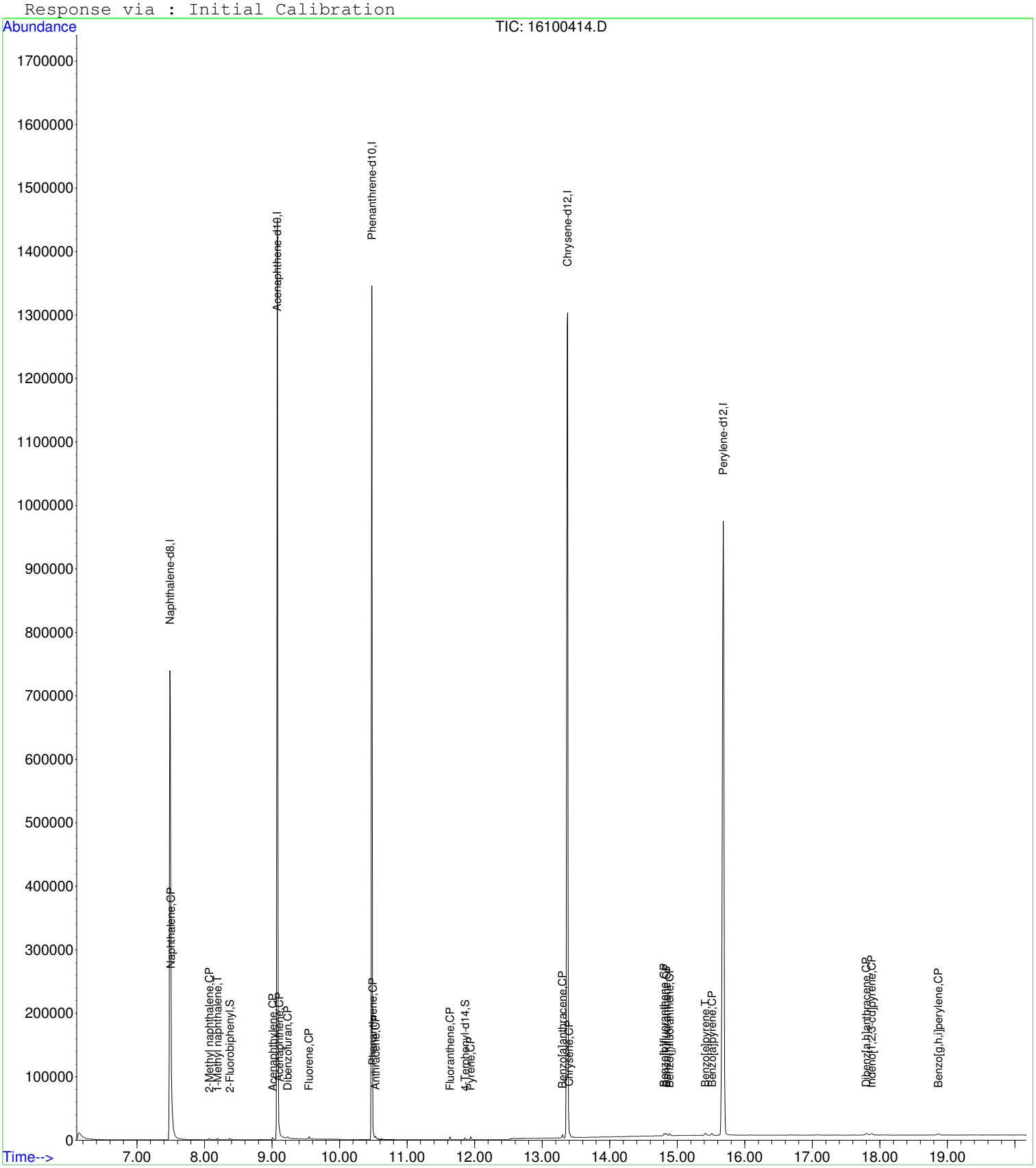
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	997025	4000.00	ug/kg	104
5) Acenaphthene-d10	9.08	164	607699	4000.00	ug/kg	100
11) Phenanthrene-d10	10.48	188	1090331	4000.00	ug/kg	99
17) Chrysene-d12	13.38	240	1212137	4000.00	ug/kg	99
20) Perylene-d12	15.68	264	1151201	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.38	172	2217	10.50	ug/kg	0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.26%#			
16) 4-Terphenyl-d14	11.86	244	2542	10.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.27%#			
Target Compounds						Qvalue
2) Naphthalene	7.51	128	2250	10.32	ug/kg	99
3) 2-Methyl naphthalene	8.07	142	1747	10.01	ug/kg	94
4) 1-Methyl naphthalene	8.19	142	1632	10.16	ug/kg	95
6) Dibenzofuran	9.23	168	2447	10.54	ug/kg	100
8) Acenaphthylene	9.01	152	2802	10.36	ug/kg	98
9) Acenaphthene	9.11	154	1690	10.43	ug/kg	96
10) Fluorene	9.55	166	2047	10.43	ug/kg	99
12) Phenanthrene	10.50	178	2978	10.84	ug/kg	99
13) Anthracene	10.53	178	3033	10.67	ug/kg	99
14) Fluoranthene	11.64	202	3498	10.91	ug/kg	97
15) Pyrene	11.94	202	3637	11.03	ug/kg	99
18) Benzo[a]anthracene	13.30	228	3820	11.88	ug/kg	100
19) Chrysene	13.41	228	3390	11.02	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	4149	11.55	ug/kg	95
22) Benzo[k]fluoranthene	14.84	252	3435	10.69	ug/kg	97
23) Benzo(j)fluoranthene	14.89	252	3211	10.97	ug/kg	94
24) Benzo[e]pyrene	15.42	252	3929	12.68	ug/kg	97
25) Benzo[a]pyrene	15.52	252	3595	11.61	ug/kg	97
26) Dibenz[a,h]anthracene	17.80	278	3515	11.41	ug/kg	93
27) Indeno[1,2,3-cd]pyrene	17.88	276	3476	11.02	ug/kg	96
28) Benzo[g,h,i]perylene	18.87	276	3551	10.84	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100414.D Vial: 3
Acq On : 4 Oct 2016 5:30 pm Operator: DEW
Sample : CAL2 (10 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100415.D Vial: 4
Acq On : 4 Oct 2016 5:58 pm Operator: DEW
Sample : CAL3 (50 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

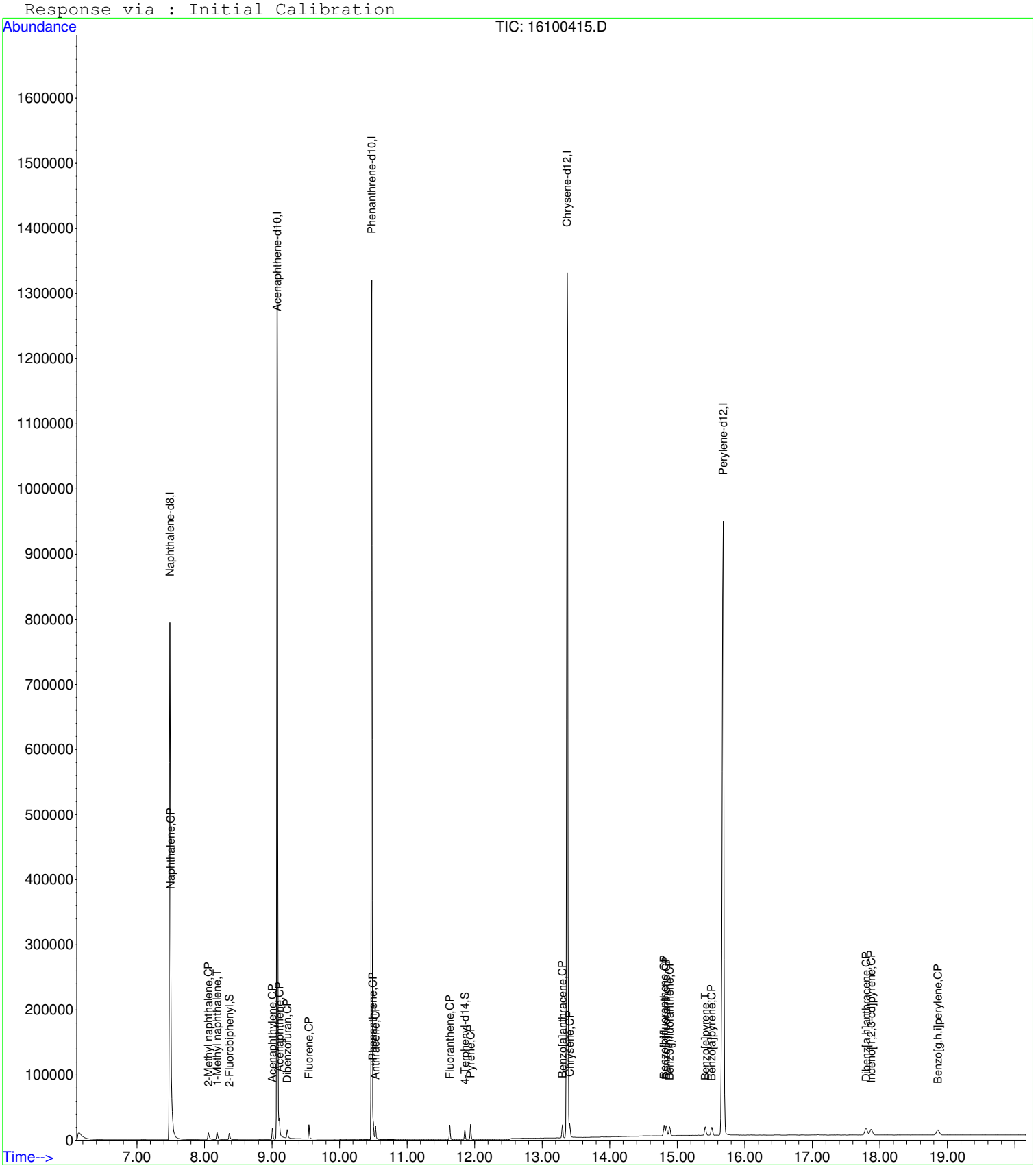
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	992018	4000.00	ug/kg	103
5) Acenaphthene-d10	9.08	164	598146	4000.00	ug/kg	99
11) Phenanthrene-d10	10.48	188	1076413	4000.00	ug/kg	98
17) Chrysene-d12	13.37	240	1196689	4000.00	ug/kg	98
20) Perylene-d12	15.68	264	1138137	4000.00	ug/kg	97
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.37	172	10527	50.66	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.27%#		
16) 4-Terphenyl-d14	11.85	244	11883	51.57	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	1.29%#		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	11096	51.13	ug/kg	99
3) 2-Methyl naphthalene	8.06	142	8488	48.88	ug/kg	95
4) 1-Methyl naphthalene	8.19	142	7894	49.37	ug/kg	95
6) Dibenzofuran	9.23	168	11722	51.32	ug/kg	100
8) Acenaphthylene	9.01	152	13434	50.46	ug/kg	100
9) Acenaphthene	9.11	154	8161	51.19	ug/kg	99
10) Fluorene	9.55	166	9948	51.48	ug/kg	98
12) Phenanthrene	10.50	178	13483	49.71	ug/kg	98
13) Anthracene	10.53	178	14171	50.50	ug/kg	98
14) Fluoranthene	11.63	202	16066	50.75	ug/kg	99
15) Pyrene	11.94	202	16654	51.18	ug/kg	99
18) Benzo[a]anthracene	13.30	228	16591	52.25	ug/kg	99
19) Chrysene	13.41	228	15162	49.91	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	16955	47.74	ug/kg	99
22) Benzo[k]fluoranthene	14.84	252	17080	53.78	ug/kg	99
23) Benzo(j)fluoranthene	14.89	252	14632	50.58	ug/kg	95
24) Benzo[e]pyrene	15.42	252	15969	52.12	ug/kg	97
25) Benzo[a]pyrene	15.51	252	16042	52.42	ug/kg	98
26) Dibenz[a,h]anthracene	17.80	278	15894	52.18	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.87	276	15435	49.49	ug/kg	98
28) Benzo[g,h,i]perylene	18.86	276	16089	49.66	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100415.D Vial: 4
Acq On : 4 Oct 2016 5:58 pm Operator: DEW
Sample : CAL3 (50 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100416.D Vial: 5
Acq On : 4 Oct 2016 6:26 pm Operator: DEW
Sample : CAL4 (100 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

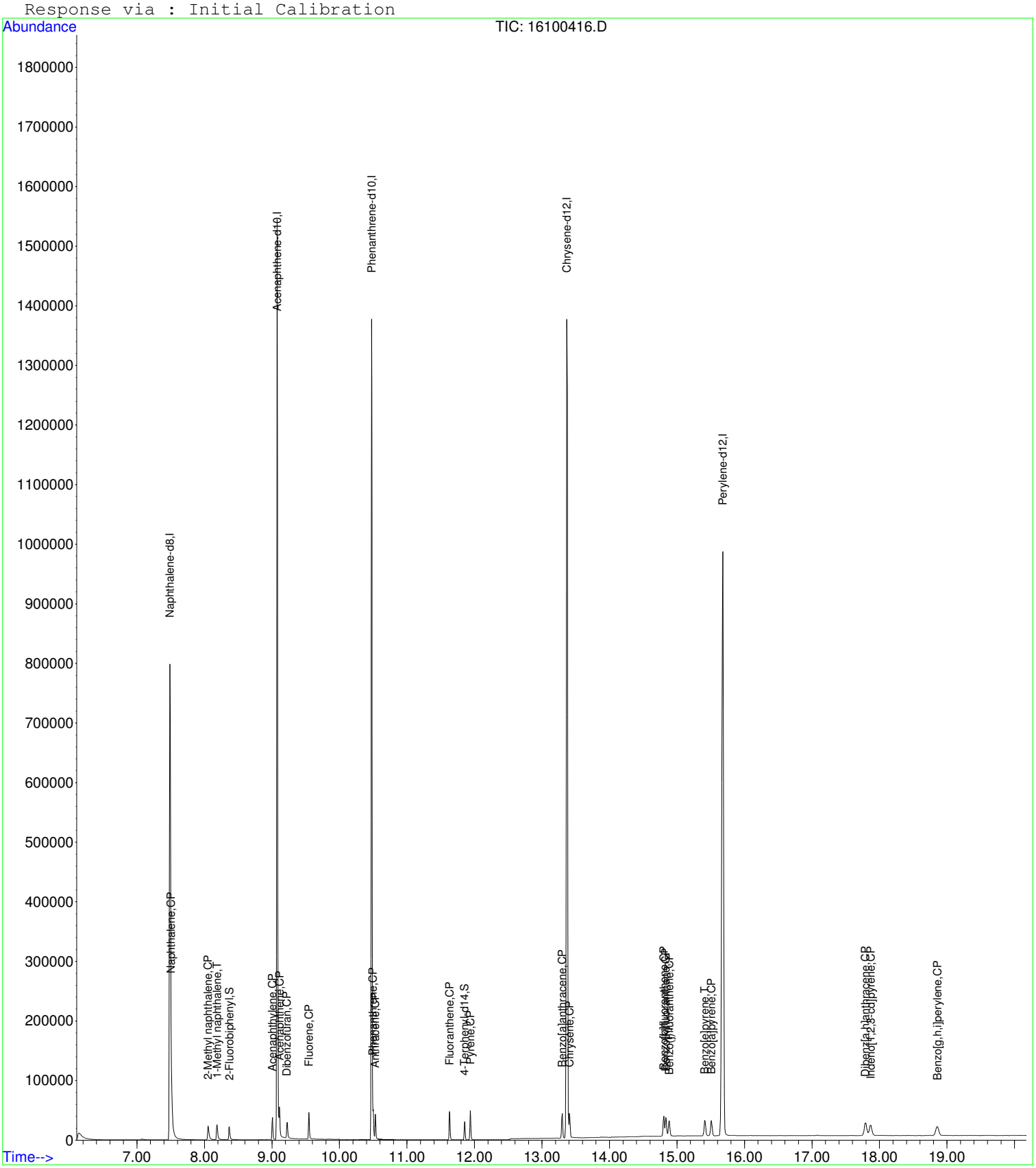
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1029079	4000.00	ug/kg	107
5) Acenaphthene-d10	9.08	164	623152	4000.00	ug/kg	103
11) Phenanthrene-d10	10.48	188	1120935	4000.00	ug/kg	102
17) Chrysene-d12	13.37	240	1256382	4000.00	ug/kg	103
20) Perylene-d12	15.68	264	1192112	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.37	172	21338	98.57	ug/kg	0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.46%#		
16) 4-Terphenyl-d14	11.86	244	23580	98.27	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.46%#		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	22075	98.05	ug/kg	99
3) 2-Methyl naphthalene	8.06	142	17365	96.39	ug/kg	97
4) 1-Methyl naphthalene	8.19	142	16241	97.92	ug/kg	94
6) Dibenzofuran	9.23	168	23924	100.54	ug/kg	99
8) Acenaphthylene	9.01	152	27167	97.94	ug/kg	99
9) Acenaphthene	9.11	154	16439	98.97	ug/kg	98
10) Fluorene	9.55	166	19926	98.97	ug/kg	99
12) Phenanthrene	10.50	178	27341	96.81	ug/kg	98
13) Anthracene	10.53	178	28701	98.22	ug/kg	98
14) Fluoranthene	11.63	202	32118	97.43	ug/kg	98
15) Pyrene	11.94	202	33167	97.87	ug/kg	98
18) Benzo[a]anthracene	13.30	228	32770	98.30	ug/kg	98
19) Chrysene	13.41	228	30476	95.55	ug/kg	99
21) Benzo[b]fluoranthene	14.80	252	34924	93.88	ug/kg	100
22) Benzo[k]fluoranthene	14.83	252	32805	98.62	ug/kg	97
23) Benzo(j)fluoranthene	14.89	252	28522	94.13	ug/kg	98
24) Benzo[e]pyrene	15.41	252	31376	97.78	ug/kg	99
25) Benzo[a]pyrene	15.51	252	31933	99.62	ug/kg	99
26) Dibenz[a,h]anthracene	17.80	278	31499	98.73	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.87	276	30762	94.17	ug/kg	98
28) Benzo[g,h,i]perylene	18.86	276	32142	94.71	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100416.D Vial: 5
Acq On : 4 Oct 2016 6:26 pm Operator: DEW
Sample : CAL4 (100 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100417.D Vial: 6
Acq On : 4 Oct 2016 6:55 pm Operator: DEW
Sample : CAL5 (500 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

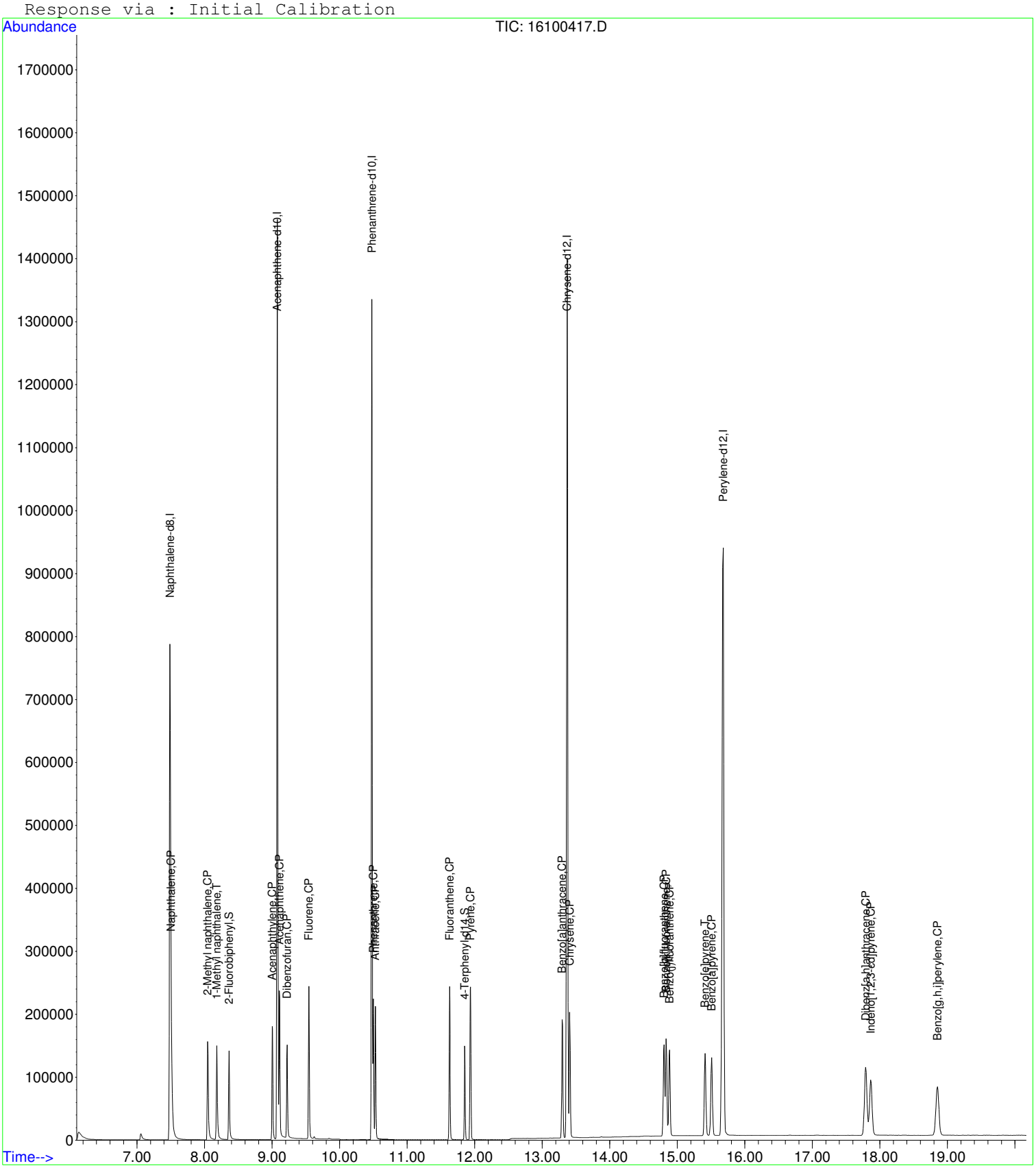
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	999937	4000.00	ug/kg	104
5) Acenaphthene-d10	9.08	164	600026	4000.00	ug/kg	99
11) Phenanthrene-d10	10.48	188	1089640	4000.00	ug/kg	99
17) Chrysene-d12	13.37	240	1220665	4000.00	ug/kg	100
20) Perylene-d12	15.68	264	1150230	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	106329	510.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.75%#			
16) 4-Terphenyl-d14	11.85	244	114717	491.79	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 12.29%#			
Target Compounds						Qvalue
2) Naphthalene	7.51	128	108189	494.55	ug/kg	99
3) 2-Methyl naphthalene	8.05	142	87403	499.32	ug/kg	90
4) 1-Methyl naphthalene	8.18	142	80225	497.81	ug/kg	91
6) Dibenzofuran	9.22	168	117558	513.06	ug/kg	99
8) Acenaphthylene	9.00	152	135452	507.15	ug/kg	99
9) Acenaphthene	9.11	154	80519	503.43	ug/kg	95
10) Fluorene	9.54	166	97730	504.11	ug/kg	98
12) Phenanthrene	10.50	178	137365	500.35	ug/kg	99
13) Anthracene	10.53	178	140287	493.85	ug/kg	99
14) Fluoranthene	11.63	202	155850	486.37	ug/kg	99
15) Pyrene	11.94	202	160832	488.22	ug/kg	99
18) Benzo[a]anthracene	13.29	228	162142	500.60	ug/kg	99
19) Chrysene	13.41	228	153703	495.99	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	173056	482.14	ug/kg	99
22) Benzo[k]fluoranthene	14.84	252	151711	472.68	ug/kg	99
23) Benzo(j)fluoranthene	14.89	252	145648	498.17	ug/kg	99
24) Benzo[e]pyrene	15.41	252	152279	491.82	ug/kg	98
25) Benzo[a]pyrene	15.51	252	154547	499.69	ug/kg	100
26) Dibenz[a,h]anthracene	17.79	278	155853	506.30	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.86	276	151478	480.62	ug/kg	100
28) Benzo[g,h,i]perylene	18.85	276	157373	480.63	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100417.D Vial: 6
Acq On : 4 Oct 2016 6:55 pm Operator: DEW
Sample : CAL5 (500 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100418.D Vial: 7
Acq On : 4 Oct 2016 7:22 pm Operator: DEW
Sample : CAL6 (1000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

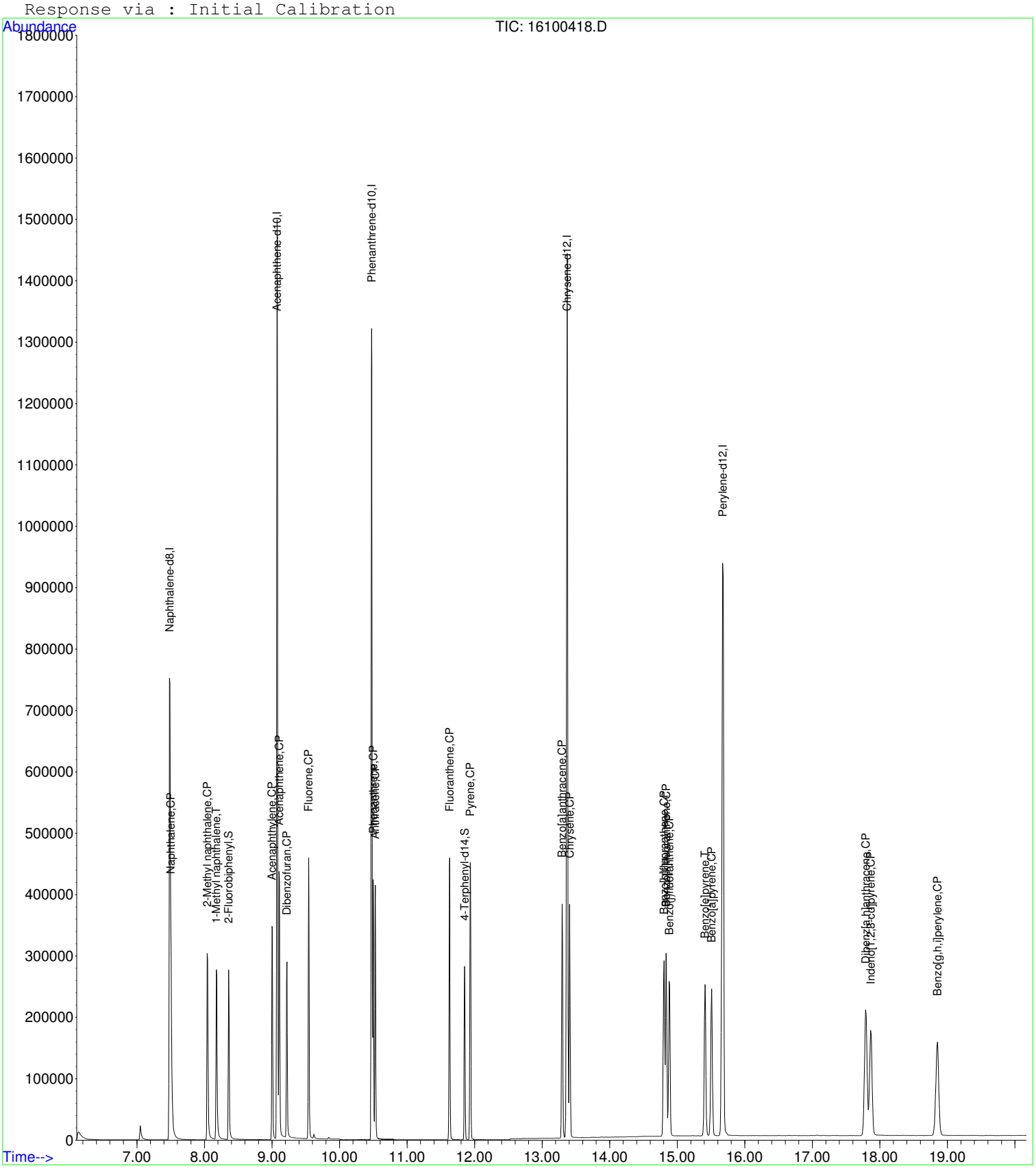
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	999669	4000.00	ug/kg	104
5) Acenaphthene-d10	9.08	164	606302	4000.00	ug/kg	100
11) Phenanthrene-d10	10.48	188	1111429	4000.00	ug/kg	101
17) Chrysene-d12	13.37	240	1229019	4000.00	ug/kg	101
20) Perylene-d12	15.67	264	1164585	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	200956	954.07	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.85%#		
16) 4-Terphenyl-d14	11.85	244	216572	910.25	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	22.76%#		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	203221	929.21	ug/kg	100
3) 2-Methyl naphthalene	8.05	142	167489	957.09	ug/kg	99
4) 1-Methyl naphthalene	8.18	142	152024	943.59	ug/kg	99
6) Dibenzofuran	9.22	168	221655	957.36	ug/kg	100
8) Acenaphthylene	9.00	152	256275	949.59	ug/kg	99
9) Acenaphthene	9.11	154	151293	936.14	ug/kg	96
10) Fluorene	9.54	166	184863	943.70	ug/kg	97
12) Phenanthrene	10.50	178	256872	917.30	ug/kg	99
13) Anthracene	10.53	178	266863	921.02	ug/kg	99
14) Fluoranthene	11.63	202	296910	908.42	ug/kg	99
15) Pyrene	11.94	202	300024	892.89	ug/kg	99
18) Benzo[a]anthracene	13.29	228	304262	933.00	ug/kg	100
19) Chrysene	13.41	228	285156	913.92	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	328208	903.13	ug/kg	100
22) Benzo[k]fluoranthene	14.84	252	290058	892.59	ug/kg	99
23) Benzo(j)fluoranthene	14.89	252	274168	926.19	ug/kg	99
24) Benzo[e]pyrene	15.41	252	287357	916.65	ug/kg	98
25) Benzo[a]pyrene	15.51	252	293481	937.21	ug/kg	99
26) Dibenz[a,h]anthracene	17.79	278	295677	948.68	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.86	276	288351	903.61	ug/kg	100
28) Benzo[g,h,i]perylene	18.85	276	301024	908.01	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100418.D Vial: 7
Acq On : 4 Oct 2016 7:22 pm Operator: DEW
Sample : CAL6 (1000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100419.D Vial: 8
Acq On : 4 Oct 2016 7:50 pm Operator: DEW
Sample : CAL7 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

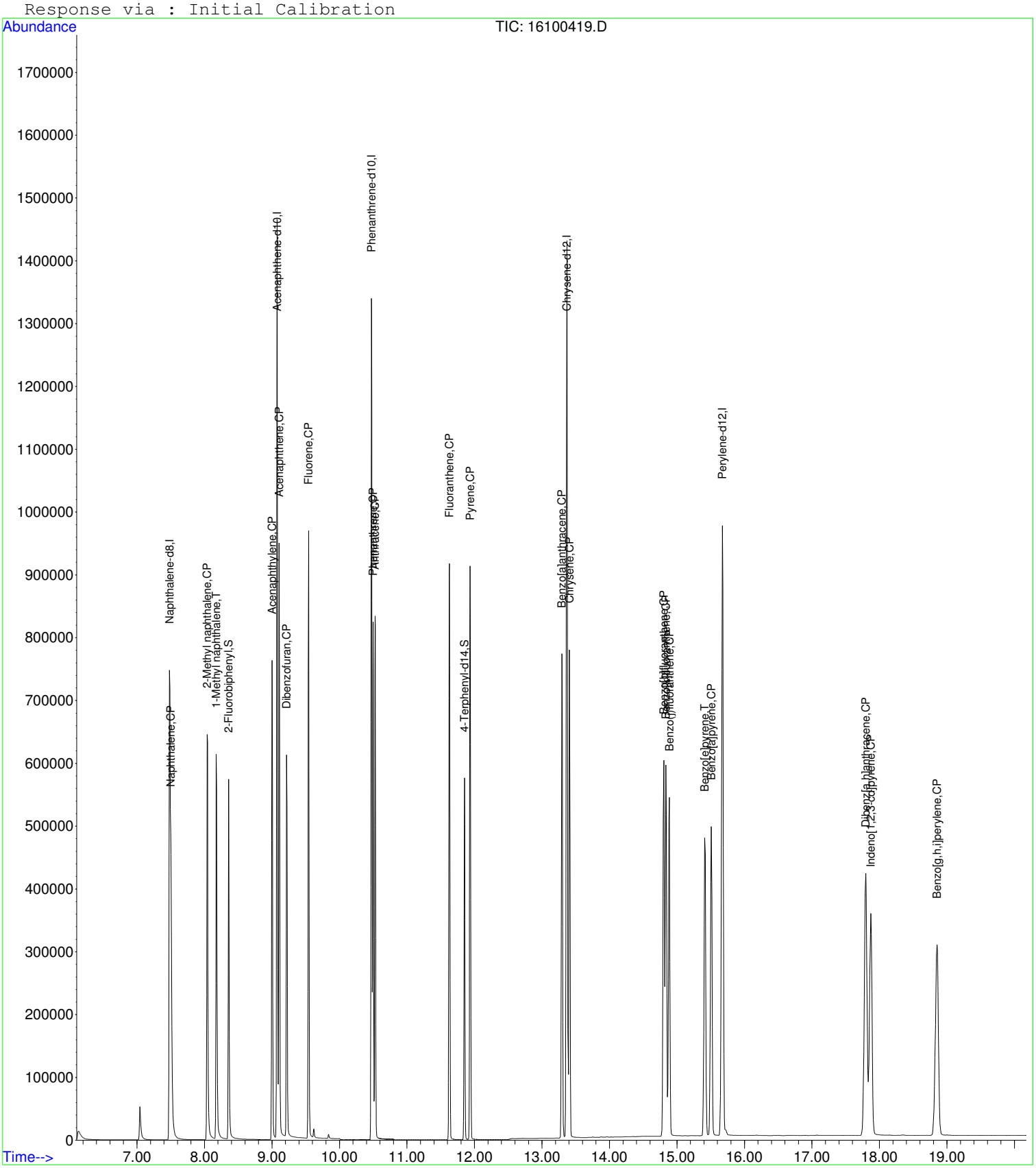
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	961950	4000.00	ug/kg	100
5) Acenaphthene-d10	9.08	164	605118	4000.00	ug/kg	100
11) Phenanthrene-d10	10.48	188	1098277	4000.00	ug/kg	100
17) Chrysene-d12	13.37	240	1222316	4000.00	ug/kg	100
20) Perylene-d12	15.67	264	1177434	4000.00	ug/kg	100
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	407690	1939.36	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 48.48%			
16) 4-Terphenyl-d14	11.85	244	434793	1849.31	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 46.23%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	398704	1894.52	ug/kg	100
3) 2-Methyl naphthalene	8.04	142	343295	2038.63	ug/kg	100
4) 1-Methyl naphthalene	8.18	142	311076	2006.51	ug/kg	100
6) Dibenzofuran	9.22	168	446393	1931.81	ug/kg	100
8) Acenaphthylene	9.00	152	524780	1948.31	ug/kg	100
9) Acenaphthene	9.11	154	307386	1905.71	ug/kg	100
10) Fluorene	9.54	166	375958	1922.96	ug/kg	100
12) Phenanthrene	10.50	178	516544	1866.69	ug/kg	100
13) Anthracene	10.53	178	540226	1886.80	ug/kg	100
14) Fluoranthene	11.63	202	597288	1849.33	ug/kg	100
15) Pyrene	11.93	202	601109	1810.36	ug/kg	100
18) Benzo[a]anthracene	13.29	228	621153	1915.18	ug/kg	100
19) Chrysene	13.41	228	572457	1844.77	ug/kg	100
21) Benzo[b]fluoranthene	14.81	252	669794	1822.95	ug/kg	100
22) Benzo[k]fluoranthene	14.83	252	593244	1805.66	ug/kg	100
23) Benzo(j)fluoranthene	14.89	252	561080	1874.75	ug/kg	100
24) Benzo[e]pyrene	15.41	252	587492	1853.61	ug/kg	100
25) Benzo[a]pyrene	15.51	252	601461	1899.76	ug/kg	100
26) Dibenz[a,h]anthracene	17.80	278	595026	1888.31	ug/kg	100
27) Indeno[1,2,3-cd]pyrene	17.87	276	587531	1821.07	ug/kg	100
28) Benzo[g,h,i]perylene	18.85	276	620653	1851.72	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100419.D Vial: 8
Acq On : 4 Oct 2016 7:50 pm Operator: DEW
Sample : CAL7 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:12 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100420.D Vial: 9
Acq On : 4 Oct 2016 8:18 pm Operator: DEW
Sample : CAL8 (5000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:13 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

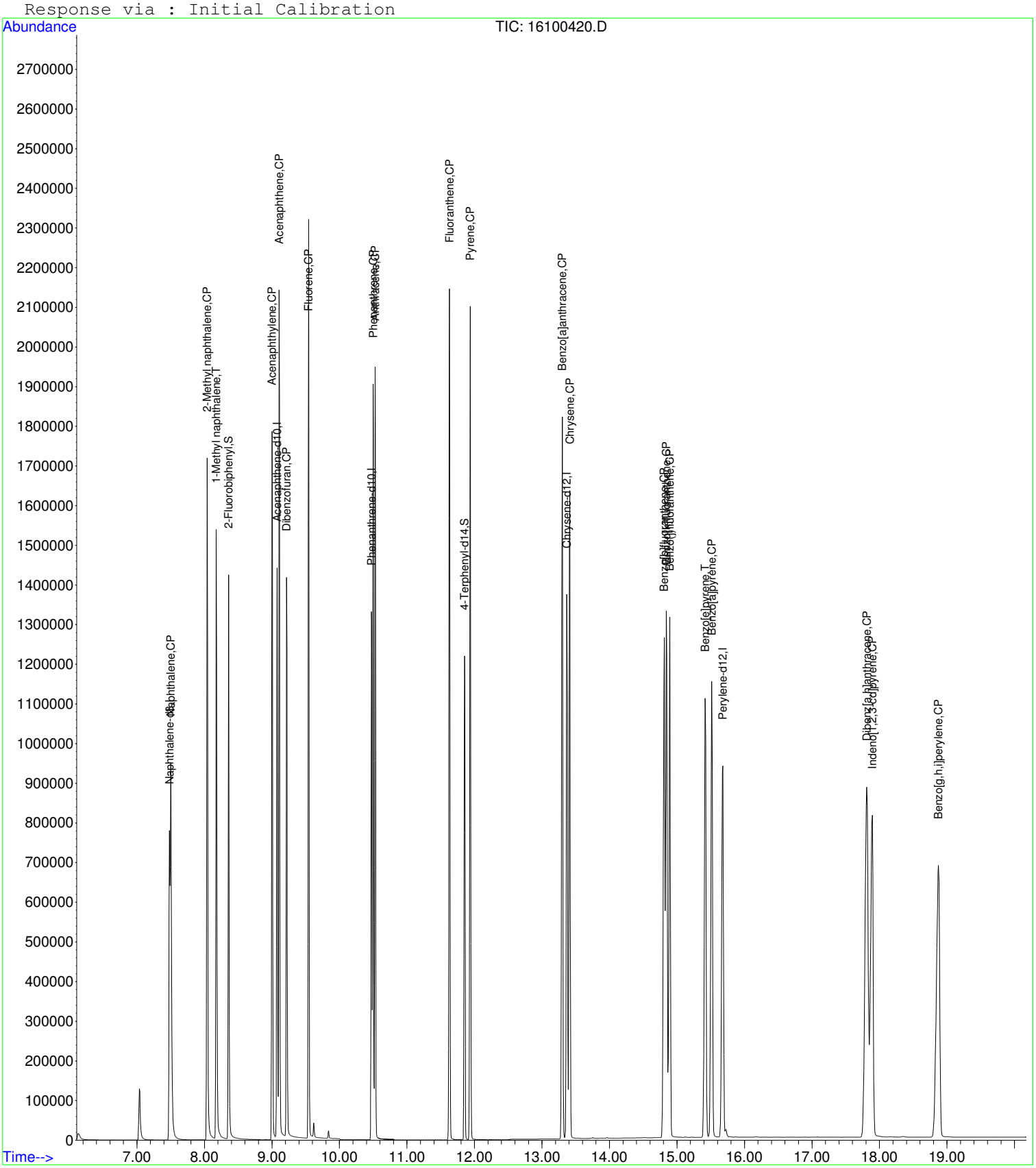
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.48	136	898617	4000.00	ug/kg	93
5) Acenaphthene-d10	9.08	164	599482	4000.00	ug/kg	99
11) Phenanthrene-d10	10.47	188	1087524	4000.00	ug/kg	99
17) Chrysene-d12	13.37	240	1219023	4000.00	ug/kg	100
20) Perylene-d12	15.68	264	1165979	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	954731	4584.31	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 114.61%			
16) 4-Terphenyl-d14	11.85	244	986344	4236.70	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 105.92%			
Target Compounds						Qvalue
2) Naphthalene	7.50	128	915802	4658.30	ug/kg	99
3) 2-Methyl naphthalene	8.04	142	810187	5150.32	ug/kg	93
4) 1-Methyl naphthalene	8.17	142	738278	5097.69	ug/kg	91
6) Dibenzofuran	9.22	168	1034168	4517.54	ug/kg	98
8) Acenaphthylene	9.00	152	1228392	4603.42	ug/kg	99
9) Acenaphthene	9.11	154	718622	4497.14	ug/kg	100
10) Fluorene	9.54	166	877820	4532.11	ug/kg	99
12) Phenanthrene	10.50	178	1201963	4386.62	ug/kg	98
13) Anthracene	10.53	178	1234101	4352.85	ug/kg	99
14) Fluoranthene	11.63	202	1373114	4293.48	ug/kg	99
15) Pyrene	11.94	202	1390502	4229.18	ug/kg	99
18) Benzo[a]anthracene	13.30	228	1443445	4462.55	ug/kg	98
19) Chrysene	13.41	228	1344753	4345.24	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	1588479	4365.77	ug/kg	98
22) Benzo[k]fluoranthene	14.84	252	1376266	4230.09	ug/kg	98
23) Benzo(j)fluoranthene	14.89	252	1304739	4402.39	ug/kg	97
24) Benzo[e]pyrene	15.42	252	1388456	4423.79	ug/kg	99
25) Benzo[a]pyrene	15.51	252	1422676	4537.77	ug/kg	99
26) Dibenz[a,h]anthracene	17.81	278	1439672	4613.68	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.89	276	1425530	4461.89	ug/kg	98
28) Benzo[g,h,i]perylene	18.87	276	1494002	4501.14	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100420.D Vial: 9
Acq On : 4 Oct 2016 8:18 pm Operator: DEW
Sample : CAL8 (5000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:13 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100421.D Vial: 10
Acq On : 4 Oct 2016 8:47 pm Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:13 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : NEWPAH

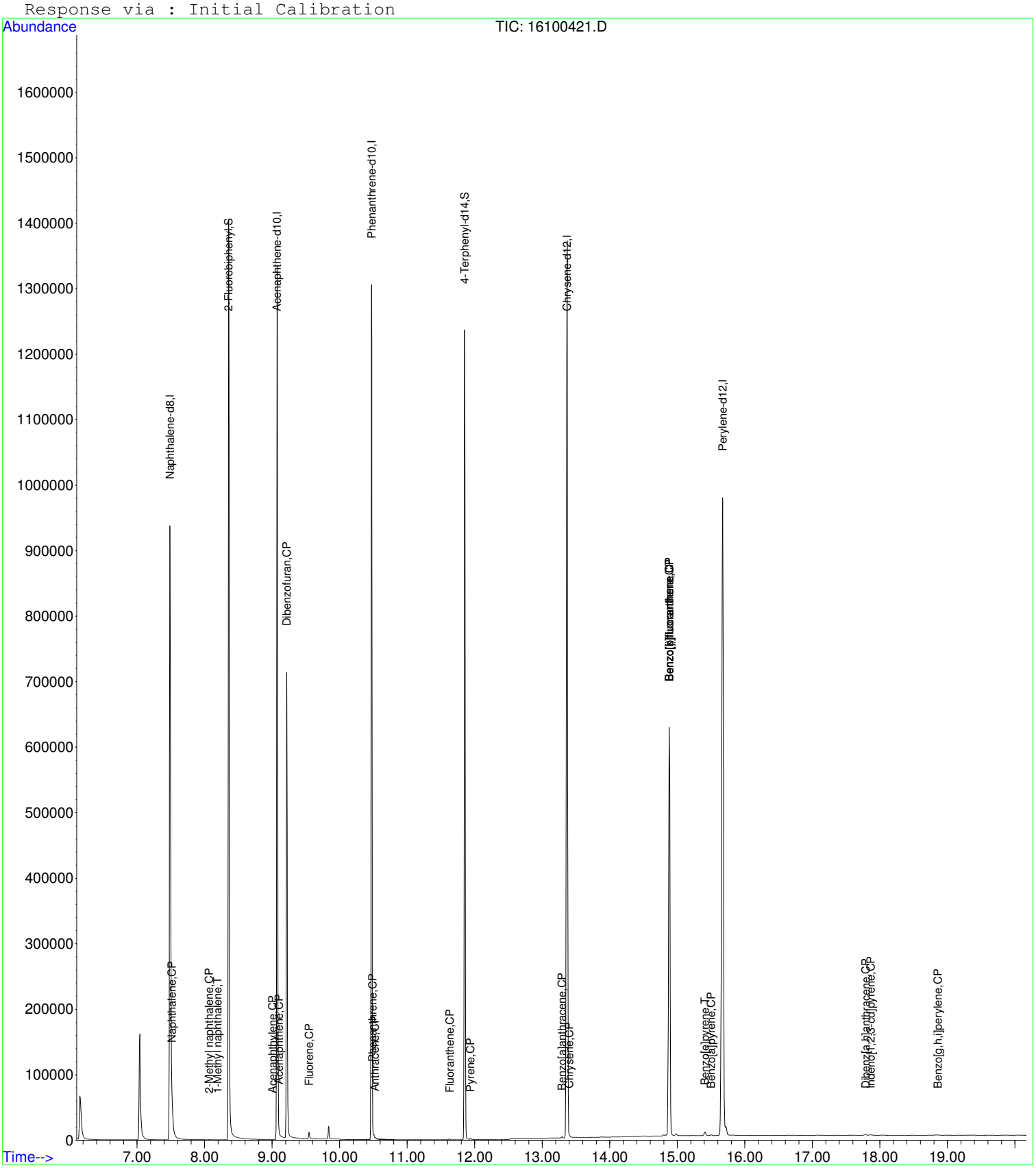
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1129392	4000.00	ug/kg	117
5) Acenaphthene-d10	9.07	164	592385	4000.00	ug/kg	98
11) Phenanthrene-d10	10.47	188	1065017	4000.00	ug/kg	97
17) Chrysene-d12	13.37	240	1205450	4000.00	ug/kg	99
20) Perylene-d12	15.67	264	1158760	4000.00	ug/kg	98
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	986474	4793.48	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 119.84%			
16) 4-Terphenyl-d14	11.85	244	1021705	4481.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 112.03%			
Target Compounds						Qvalue
2) Naphthalene	7.52	128	474	1.92	ug/kg#	1
3) 2-Methyl naphthalene	8.07	142	106	0.54	ug/kg	93
4) 1-Methyl naphthalene	8.19	142	45	0.25	ug/kg	92
6) Dibenzofuran	9.22	168	522179	2308.35	ug/kg	100
8) Acenaphthylene	9.01	152	136	0.52	ug/kg	86
9) Acenaphthene	9.11	154	183	1.16	ug/kg	89
10) Fluorene	9.55	166	4803	25.09	ug/kg	99
12) Phenanthrene	10.50	178	782	2.91	ug/kg	98
13) Anthracene	10.53	178	800	2.88	ug/kg	98
14) Fluoranthene	11.63	202	1230	3.93	ug/kg	99
15) Pyrene	11.94	202	1323	4.11	ug/kg	99
18) Benzo[a]anthracene	13.29	228	1657	5.18	ug/kg	98
19) Chrysene	13.41	228	1374	4.49	ug/kg	95
21) Benzo[b]fluoranthene	14.88	252	661999	1830.77	ug/kg	95
22) Benzo[k]fluoranthene	14.88	252	662136	2047.82	ug/kg	96
23) Benzo(j)fluoranthene	14.88	252	662136	2248.07	ug/kg	97
24) Benzo[e]pyrene	15.41	252	7037	22.56	ug/kg	96
25) Benzo[a]pyrene	15.51	252	1537	4.93	ug/kg	95
26) Dibenz[a,h]anthracene	17.79	278	1450	4.68	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	17.86	276	1498	4.72	ug/kg	99
28) Benzo[g,h,i]perylene	18.85	276	1648	5.00	ug/kg	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100421.D Vial: 10
Acq On : 4 Oct 2016 8:47 pm Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:13 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161004\16100430.D Vial: 2
Acq On : 5 Oct 2016 9:19 am Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:13 2016 Quant Results File: PP161004.RES

Quant Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration
DataAcq Meth : PP161004

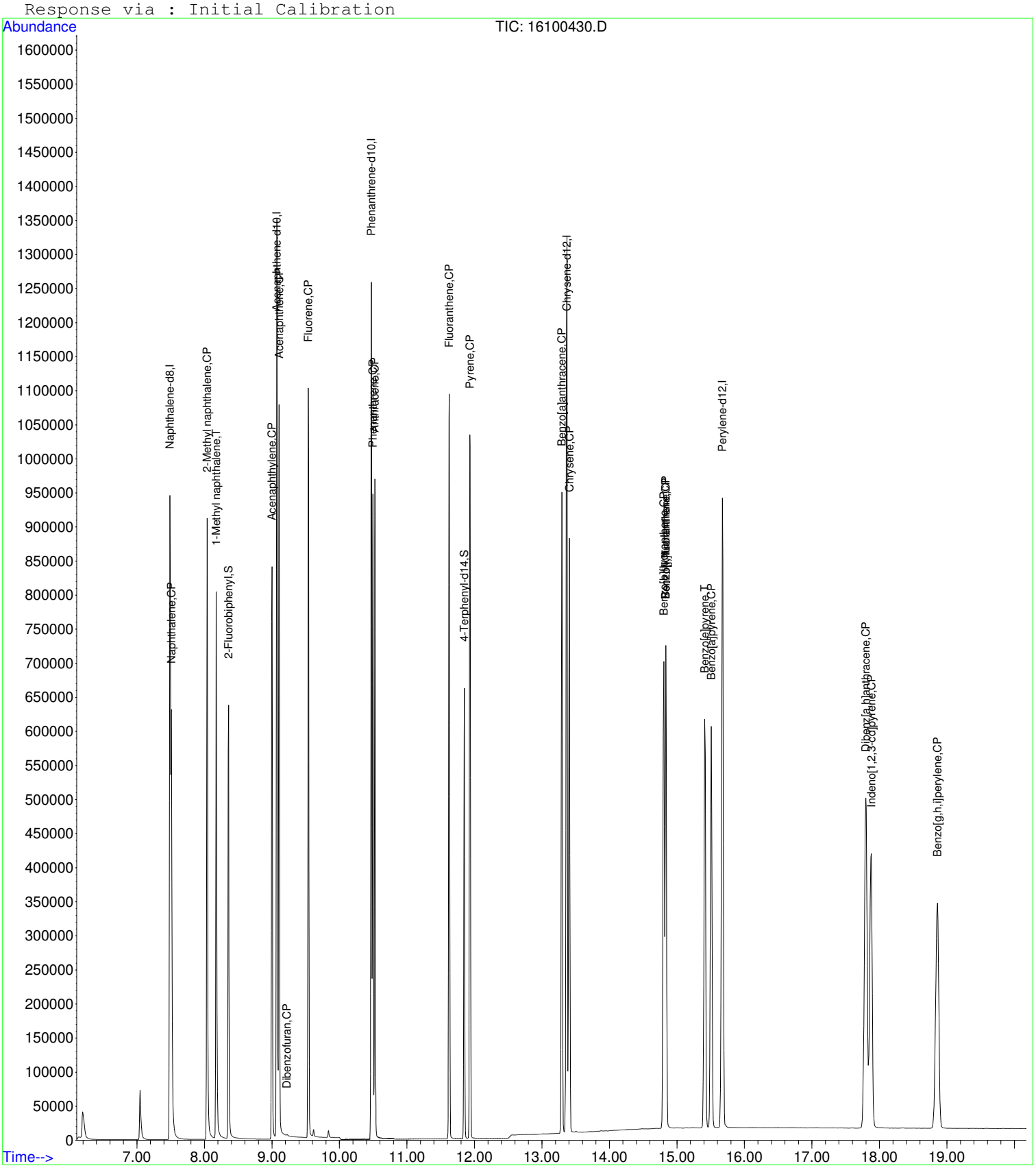
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.49	136	1033475	4000.00	ug/kg	107
5) Acenaphthene-d10	9.07	164	560884	4000.00	ug/kg	93
11) Phenanthrene-d10	10.47	188	1020751	4000.00	ug/kg	93
17) Chrysene-d12	13.37	240	1161740	4000.00	ug/kg	95
20) Perylene-d12	15.67	264	1110992	4000.00	ug/kg	94
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.36	172	470468	2414.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	60.36%		
16) 4-Terphenyl-d14	11.85	244	510516	2336.30	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	58.41%		
Target Compounds						Qvalue
2) Naphthalene	7.51	128	541384	2394.45	ug/kg	99
3) 2-Methyl naphthalene	8.04	142	419316	2317.74	ug/kg	96
4) 1-Methyl naphthalene	8.17	142	372149	2234.32	ug/kg	95
6) Dibenzofuran	9.23	168	1486	6.94	ug/kg#	44
8) Acenaphthylene	9.00	152	595964	2387.08	ug/kg	99
9) Acenaphthene	9.11	154	365303	2443.39	ug/kg	96
10) Fluorene	9.54	166	439973	2427.86	ug/kg	97
12) Phenanthrene	10.49	178	595288	2314.65	ug/kg	99
13) Anthracene	10.52	178	616343	2316.14	ug/kg	100
14) Fluoranthene	11.63	202	702414	2340.00	ug/kg	99
15) Pyrene	11.93	202	702824	2277.45	ug/kg	100
18) Benzo[a]anthracene	13.29	228	721161	2339.47	ug/kg	100
19) Chrysene	13.41	228	674338	2286.40	ug/kg	99
21) Benzo[b]fluoranthene	14.81	252	780927	2252.52	ug/kg	99
22) Benzo[k]fluoranthene	14.84	252	673420	2172.27	ug/kg	99
23) Benzo(j)fluoranthene	14.84	252	674467	2388.39	ug/kg	99
24) Benzo[e]pyrene	15.41	252	725807	2426.97	ug/kg	99
25) Benzo[a]pyrene	15.51	252	718412	2404.86	ug/kg	99
26) Dibenz[a,h]anthracene	17.80	278	717917	2414.56	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.88	276	681160	2237.54	ug/kg	98
28) Benzo[g,h,i]perylene	18.86	276	698984	2210.13	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161004\16100430.D Vial: 2
Acq On : 5 Oct 2016 9:19 am Operator: DEW
Sample : SSCV (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 5 11:13 2016 Quant Results File: PP161004.RES

Method : C:\HPCHEM\1\METHODS\PP161004.M (RTE Integrator)
Title : PAH Calibration
Last Update : Wed Oct 05 08:30:29 2016
Response via : Initial Calibration



ICP-MS4
For

DHL Work Order
1610008

ICP-MS4_161013A
For

DHL Work Order
1610008

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_161013A 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: Cassie Van Dyke Date of Completion: 10/13/2016

Second-Level Review: Janice Whitt Date Stamp: 10/13/2016

REVIEWED BY
By Janice Whitt at 2:11:33 PM, 10/13/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161013A **Run No.:** 88544

Analytical Run Date: 10/13/2016 **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	R88544	10/13/2016 9:53:00 AM		
L2-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 9:55:00 AM		
L-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 9:57:00 AM		
10X-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 9:59:00 AM		
5X-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 10:01:00 AM		
2X-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 10:03:00 AM		
H-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 10:05:00 AM		
H2-161013	1	ICPMS_TWDOD	CAL	R88544	10/13/2016 10:07:00 AM		
ICSA-161013	1	ICPMS_TWDOD	ICSA	R88544	10/13/2016 10:25:00 AM		
ICSAB-161013	1	ICPMS_TWDOD	ICSB	R88544	10/13/2016 10:28:00 AM		
ICV-161013	1	ICPMS_TWDOD	ICV	R88544	10/13/2016 10:34:00 AM		
ICB-161013	1	ICPMS_TWDOD	ICB	R88544	10/13/2016 10:37:00 AM		
LCVL-161013	1	ICPMS_TWDOD	LCVL	R88544	10/13/2016 10:39:00 AM		
MB-77524	1	ICPMS_TWDOD	MBLK	77524	10/13/2016 11:03:00 AM		
LCS-77524	1	ICPMS_TWDOD	LCS	77524	10/13/2016 11:05:00 AM		
LCSD-77524	1	ICPMS_TWDOD	LCSD	77524	10/13/2016 11:07:00 AM		
1610008-01A	10	ICPMS_TWDOD	SAMP	77524	10/13/2016 11:11:00 AM		
1610008-01A SD	50	ICPMS_TWDOD	SD	77524	10/13/2016 11:13:00 AM		
1610008-01A PDS	10	ICPMS_TWDOD	PDS	77524	10/13/2016 11:15:00 AM		
1610008-01A MS	10	ICPMS_TWDOD	MS	77524	10/13/2016 11:17:00 AM		
1610008-01A MSD	10	ICPMS_TWDOD	MSD	77524	10/13/2016 11:19:00 AM		
CCV1-161013	1	ICPMS_TWDOD	CCV	R88544	10/13/2016 11:38:00 AM		
CCB1-161013	1	ICPMS_TWDOD	CCB	R88544	10/13/2016 11:57:00 AM		
LCVL1-161013	1	ICPMS_TWDOD	LCVL	R88544	10/13/2016 11:59:00 AM		

Std ID	Std Name	Type	Exp. Date
MET-CCV-160927	ICPMS CCV 200/5000 PPB		12/26/2016
MET-H2CAL-1600	ICPMS High Cal2 2000ppb std 8		12/26/2016
MET-HCAL-16092	ICPMS High Cal 500ppb/10ppm s		12/26/2016
MET-ICV-160927	ICPMS ICV 100 ppb		12/26/2016
MET-IS-160808	INTERNAL STANDARD 1 PPM		01/06/2017
MET-L2CAL-16082	ICPMS Low Cal2 1/20ppb std 2		11/21/2016
MET-LCAL-160823	ICPMS Low Cal 10/200ppb std 3		11/21/2016
MET-LCAL10X-16	ICPMS Low Cal 10/200ppb std 4		11/21/2016
MET-LCAL5X-160	ICPMS Low Cal 10/200ppb std 5		11/21/2016
MET-LCVLSPIKE-	LCVL METALS SPIKE (100/500		02/21/2017
MET-MCAL-16082	ICPMS Mid Cal 250/5000ppb std		11/21/2016
MET-PA-160421	ICPMS PA FACTOR SOLUTION		10/20/2016
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\161013.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	L2-161013	CAL ICPMS_TW	2	2102	
14	CalStd	L-161013	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161013	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161013	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161013	CAL ICPMS_TW	6	2106	
18	CalStd	H-161013	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161013	CAL ICPMS_TW	8	2108	
20	ICB	BLANK	CCB ICPMS_TW		1102	

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
21	ICB	BLANK	CCB ICPMS_TW		1103	
22	ICSA	ICSA-161013	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-161013	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1102	
25	ICB	BLANK	CCB ICPMS_TW		1101	
26	ICB	BLANK	CCB ICPMS_TW		1101	
27	ICSA	ICSA-161013	ICSAICPMS_TW		2109	
28	ICSB	ICSAB-161013	ICSBICPMS_TW		2110	
29	ICB	BLANK	CCB ICPMS_TW		1102	
30	ICB	BLANK	CCB ICPMS_TW		1103	
31	ICV	ICV-161013	ICV ICPMS_TW		2111	
32	ICB	ICB-161013	ICB ICPMS_TW		1101	
33	LLICV	LCVL-161013	LCVLICPMS_TW		2112	
34	ICB	ICB-161013	ICB ICPMS_TW		1103	
35	PB_W	MB-77535	MBLK200.8		2201	1
36	LCS_W	LCS-77535	LCS 200.8		2202	1
37	LCS_W	LCSD-77535	LCSD200.8		2203	1
38	CCB	RINSE	CCB ICPMS_TW		1101	
39	AllRef	1610082-01A	SAMP200.8		2204	1
40	SD	1610082-01A SD	SD 200.8		2205	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	PDS	1610082-01A PDS	PDS 200.8		2206	1
42	MS_W	1610082-01A MS	MS 200.8		2207	1
43	MS_W	1610082-01A MSD	MSD 200.8		2208	1
44	CCB	RINSE	CCB ICPMS_TW		1101	
45	PB_W	MB-77524	MBLKICPMS_TWDOD		2209	1
46	LCS_W	LCS-77524	LCS ICPMS_TWDOD		2210	1
47	LCS_W	LCSD-77524	LCSDICPMS_TWDOD		2211	1

Sample List

48	CCB	RINSE	CCB ICPMS_TW		1101	
49	AllRef	1610008-01A	SAMPICPMS_TWDOD		2212	10
50	SD	1610008-01A SD	SD ICPMS_TWDOD		2301	50
51	PDS	1610008-01A PDS	PDS ICPMS_TWDOD		2302	10
52	MS_W	1610008-01A MS	MS ICPMS_TWDOD		2303	10
53	MS_W	1610008-01A MSD	MSD ICPMS_TWDOD		2304	10
54	CCB	RINSE	CCB ICPMS_TW		1101	
55	SAMP_W	1609289-01B	SAMPICPMS_TW		3101	1
56	SAMP_W	1609289-01B	SAMPICPMS_TW		3102	1
57	SAMP_W	1609289-01B	SAMPICPMS_TW		3103	10
58	SAMP_W	1609289-14B	SAMPICPMS_TW		3104	5
59	SAMP_W	1609289-14B	SAMPICPMS_TW		3105	5
60	SAMP_W	1609289-14B	SAMPICPMS_DW		3106	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	SAMP_W	1609249-29A	SAMP200.8_EPA		2305	10
62	CCV	CCV1-161013	CCV ICPMS_TW		1207	
63	CCB	CCB1-161013	CCB ICPMS_TW		1102	
64	LLCCV	LCVL1-161013	LCVLICPMS_TW		2112	
65	CCB	CCB1-161013	CCB ICPMS_TW		1102	
66	CCB	CCB1-161013	CCB ICPMS_TW		1103	
67	LLCCV	LCVL1-161013	LCVLICPMS_TW		2112	
68	CCB	CCB1-161013	CCB ICPMS_TW		1101	
69	CCB	CCB1-161013	CCB ICPMS_TW		1101	
70	LLCCV	LCVL1-161013	LCVLICPMS_TW		2112	
71	PB	MB-77502	MBLKICPMS_TS		2306	5
72	LCS_S	LCS-77502	LCS ICPMS_TS		2307	5
73	LCS_S	LCSD-77502	LCSDICPMS_TS		2308	5
74	CCB	RINSE	CCB ICPMS_TW		1101	
75	AllRef	1610045-01A	SAMPICPMS_TS		2309	5
76	SD	1610045-01A SD	SD ICPMS_TS		2310	25

Sample List

77	Sample	1610023-01B	SAMPICPMS_TS	2311	5
78	Sample	1610045-02A	SAMPICPMS_TS	2312	5
79	Sample	1610045-03A	SAMPICPMS_TS	2401	5
80	Sample	1610045-04A	SAMPICPMS_TS	2402	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	Sample	1610045-05A	SAMPICPMS_TS		2403	5
82	Sample	1610045-06A	SAMPICPMS_TS		2404	5
83	Sample	1610045-07A	SAMPICPMS_TS		2405	5
84	Sample	1610045-08A	SAMPICPMS_TS		2406	5
85	Sample	1610045-09A	SAMPICPMS_TS		2407	5
86	PDS	1610045-01A PDS	PDS ICPMS_TS		2408	5
87	MS_S	1610045-01A MS	MS ICPMS_TS		2409	5
88	MS_S	1610045-01A MSD	MSD ICPMS_TS		2410	5
89	CCV	CCV2-161013	CCV ICPMS_TW		1207	
90	CCB	CCB2-161013	CCB ICPMS_TW		1102	
91	LLCCV	LCVL2-161013	LCVLICPMS_TW		2112	
92	CCB	CCB2-161013	CCB ICPMS_TW		1102	
93	LLCCV	LCVL2-161013	LCVLICPMS_TW		2512	
94	CCB	CCB2-161013	CCB ICPMS_TW		1103	
95	Sample	1610045-10A	SAMPICPMS_TS		4211	5
96	Sample	1610045-11A	SAMPICPMS_TS		4212	5
97	Sample	1610045-12A	SAMPICPMS_TS		4301	5
98	Sample	1610045-13A	SAMPICPMS_TS		4302	5
99	Sample	1610045-14A	SAMPICPMS_TS		4303	5
100	Sample	1610045-15A	SAMPICPMS_TS		4304	5

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Sample List

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	Sample	1610045-16A	SAMPICPMS_TS		4305	5
102	Sample	1610045-17A	SAMPICPMS_TS		4306	5
103	Sample	1610045-18A	SAMPICPMS_TS		4307	5
104	Sample	1610030-01A	SAMPICPMS_TS		4308	5
105	CCV	CCV3-161013	CCV ICPMS_TW		1207	
106	CCB	CCB3-161013	CCB ICPMS_TW		1102	
107	LLCCV	LCVL3-161013	LCVLICPMS_TW		2512	
108	SAMP_W	1609249-29A	SAMP200.8_EPA		2509	10
109	CCV	CCV4-161013	CCV ICPMS_TW		1207	
110	CCB	CCB4-161013	CCB ICPMS_TW		1102	
111	LLCCV	LCVL4-161013	LCVLICPMS_TW		2512	
112	CCB	CCB4-161013	CCB ICPMS_TW		1103	
113	PB	MB-77502	MBLKICPMS_TS		2306	5
114	LCS_S	LCS-77502	LCS ICPMS_TS		2307	5
115	LCS_S	LCSD-77502	LCSDICPMS_TS		2308	5
116	CCB	RINSE	CCB ICPMS_TW		1101	
117	AllRef	1610045-01A	SAMPICPMS_TS		2309	5
118	SD	1610045-01A SD	SD ICPMS_TS		2310	25
119	Sample	1610045-10A	SAMPICPMS_TS		2411	5
120	Sample	1610045-11A	SAMPICPMS_TS		2412	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
121	Sample	1610045-12A	SAMPICPMS_TS		2501	5
122	Sample	1610045-13A	SAMPICPMS_TS		2502	5
123	Sample	1610045-14A	SAMPICPMS_TS		2503	5
124	Sample	1610045-15A	SAMPICPMS_TS		2504	5
125	Sample	1610045-16A	SAMPICPMS_TS		2505	5
126	Sample	1610045-17A	SAMPICPMS_TS		2506	5
127	Sample	1610045-18A	SAMPICPMS_TS		2507	5
128	Sample	1610030-01A	SAMPICPMS_TS		2508	5
129	PDS	1610045-01A PDS	PDS ICPMS_TS		2408	5
130	MS_S	1610045-01A MS	MS ICPMS_TS		2409	5
131	MS_S	1610045-01A MSD	MSD ICPMS_TS		2410	5
132	CCV	CCV5-161013	CCV ICPMS_TW		1207	
133	CCB	CCB5-161013	CCB ICPMS_TW		1102	
134	LLCCV	LCVL5-161013	LCVLICPMS_TW		2511	
135	CCB	CCB5-161013	CCB ICPMS_TW		1103	
136	Sample	1403264-08A	SAMPICPMS_TSDOD		3507	5
137	Sample	1403264-09A	SAMPICPMS_TSDOD		3508	5
138	Sample	1403264-11A	SAMPICPMS_TSDOD		3509	5
139	Sample	1403264-12A	SAMPICPMS_TSDOD		3510	5
140	Sample	1403264-13A	SAMPICPMS_TSDOD		3511	5

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Sample List

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
141	Sample	1403264-14A	SAMPICPMS_TSDOD		3512	5
142	Sample	1403264-15A	SAMPICPMS_TSDOD		3310	5
143	Sample	1403264-16A	SAMPICPMS_TSDOD		3311	5
144	Sample	1403264-17A	SAMPICPMS_TSDOD		3312	5
145	Sample	1403264-12A	SAMPICPMS_TSDOD		3510	5
146	CCV	CCV6-140402	CCV ICPMS_TW		1207	
147	CCB	CCB6-140402	CCB ICPMS_TW		1102	
148	LLCCV	LCVL6-140402	LCVLICPMS_TW		2511	
149	CCB	CCB6-140402	CCB ICPMS_TW		1103	
150	CCB	CCB6-140402	CCB ICPMS_TW		1102	
151	CCB	CCB6-140402	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: **10/12/2016 8:16:37 AM**
Digestion: **Start: 10/12/2016 9:00:00 AM / Stop: 10/12/2016 2:35:00 PM**
Prep End Date: **10/12/2016 4:22:31 PM**

Prep Batch **77524** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List

Hot Block #3
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1610008-01A	Aqueous		10	50	5.000	1 of 1	
IDW - use 10 ml							
1610008-01A MS	Aqueous		10	50	5.000	of	
1610008-01A MSD	Aqueous		10	50	5.000	of	
1610008-01A PDS	Aqueous		10	50	5.000	of	
1610008-01A SD	Aqueous		10	50	5.000	of	
LCS-77524	Aqueous		50	50	1.000	of	
LCSD-77524	Aqueous		50	50	1.000	of	
MB-77524	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Da
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026
10652	Digestion Vessels	1	ml	02/11/2017

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	0.1	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

REVIEWED BY
By Janice Whitt at 2:05:40 PM, 10/13/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **10/12/2016 8:16:37 AM**
Digestion:
Prep End Date:

Prep Batch **77524** Prep Code: **3005ADOD** Technician: **Sydney Powers**

Prep Factor Units: **mL/mL**

Equipment List
Hot Block #3
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1610008-01A	Aqueous		10	50	5.000	1 of 1	
IDW - use 10 ml							
1610008-01A MS	Aqueous		10	50	5.000	of	
1610008-01A MSD	Aqueous		10	50	5.000	of	
1610008-01A PDS	Aqueous		10	50	5.000	of	
1610008-01A SD	Aqueous		10	50	5.000	of	
LCS-77524	Aqueous		50	50	1.000	of	
LCSD-77524	Aqueous		50	50	1.000	of	
MB-77524	Aqueous		50	50	1.000	of	

Number	Reagent Name	Amt	Units	Exp. Di
10400	Hydrochloric Acid (trace metal grade)	1	ml	05/24/2026
10543	Nitric Acid (Trace Metals)	1	ml	07/14/2026
10652	Digestion Vessels	1	ml	02/11/2017

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	0.1	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,Tl,B,Mo,Sr,Li	LCS/MS/MSD	0.2	04/03/2017

9:00 - 14:35

10/12/16

REVIEWED BY
By Janice Whitt at 2:05:38 PM, 10/13/2016

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	SP	**BALANCE #:**	26	
TEST DATE:	08/10/2016	**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**	4.9958	5.0058	**100.12**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		5.0126	5.0226	**100.45**		
3		5.0119	5.0219	**100.44**		
AVERAGE (MEAN)		**5.007**	**5.017**	**100.34**		**0.190**
						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**	0.2012	0.2016	**100.80**	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.2014	0.2018	**100.90**		
3		0.2009	0.2013	**100.65**		
AVERAGE (MEAN)		**0.201**	**0.202**	**100.78**		**0.125**
						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)						

Done by Sydney Powers, see initials above.

Analyst / Date

REVIEWED BY
By Janice Whitt at 2:05:49 PM, 10/13/2016

Review and Approved / Date

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	CVD	**BALANCE #:**	30	
TEST DATE:	10/13/2016	**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**	4.0025	3.9945	99.86	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		3.9746	3.9667	99.17		
3		4.0018	3.9938	99.84		
AVERAGE (MEAN)		**3.993**	**3.985**	**99.62**		**0.398**
						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**	1.0002	0.9982	99.82	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.9996	0.9976	99.76		
3		0.9998	0.9978	99.78		
AVERAGE (MEAN)		**1.000**	**0.998**	**99.79**		**0.031**
						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**	0.5007	0.4997	99.94	**PASS**	**RSD MUST BE ≤ 1% OF TEST VOLUME VALUE**
2		0.5002	0.4992	99.84		
3		0.4997	0.4987	99.74		
AVERAGE (MEAN)		**0.500**	**0.499**	**99.84**		**0.100**
						PASS

10/13/16
Analyst / Date

Review and Approved / Date

Calibration Summary Report

Date Acquired 10/13/2016 9:53
Data Batch 161013.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 = 0.0012 * x + 4.4873E-004
Be	1.0000	y = 4.4828E-005 * x + 5.9974E-007
B	1.0000	y = 1.8217E-005 * x + 1.4912E-004
Na	1.0000	y = 8.1408E-004 * x + 0.0734
Mg	1.0000	y = 4.2845E-004 * x + 0.0010
Al	1.0000	y = 1.8339E-004 * x + 0.0068
K	1.0000	y = 4.7972E-004 * x + 0.0654
Ca	0.9999	y = 2.5601E-005 * x + 0.0013
Ti	0.9999	y = 1.5999E-004 * x + 1.5976E-005
V	1.0000	y = 0.0045 * x + 0.0043
Cr	1.0000	y = 0.0052 * x + 0.0021
Mn	1.0000	y = 0.0034 * x + 2.5928E-004
Fe	0.9999	y = 0.0047 * x + 0.0123
Co	1.0000	y = 0.0122 * x + 2.0690E-004
Ni	0.9999	y = 0.0032 * x + 2.4400E-004
Cu	0.9999	y = 0.0088 * x + 0.0023
Zn	1.0000	y = 0.0015 * x + 6.4854E-004
Se	1.0000	y = 8.6916E-005 * x + 2.4974E-004
Sr	1.0000	y = 7.7236E-004 * x + 2.2141E-004
Mo	1.0000	y = 5.2872E-004 * x + 1.4944E-005
Ag	1.0000	y = 0.0015 * x + 8.2357E-006
Cd	1.0000	y = 2.3772E-004 * x + 6.5866E-006
Sn	1.0000	y = 5.6275E-004 * x + 1.3125E-004
Sb	0.9999	y = 8.2415E-004 * x + 1.0867E-004
Tl	1.0000	y = 0.0018 * x + 9.5820E-006
Ba	1.0000	y = 2.8871E-004 * x + 1.0919E-005
Pb	1.0000	y = 0.0024 * x + 2.4947E-004
Li	1.0000	y = 3.7664E-005 * x + 6.6111E-006

REVIEWED BY
By Janice Whitt at 2:06:57 PM, 10/13/2016

Calibration Summary Report

Level 7 Cal

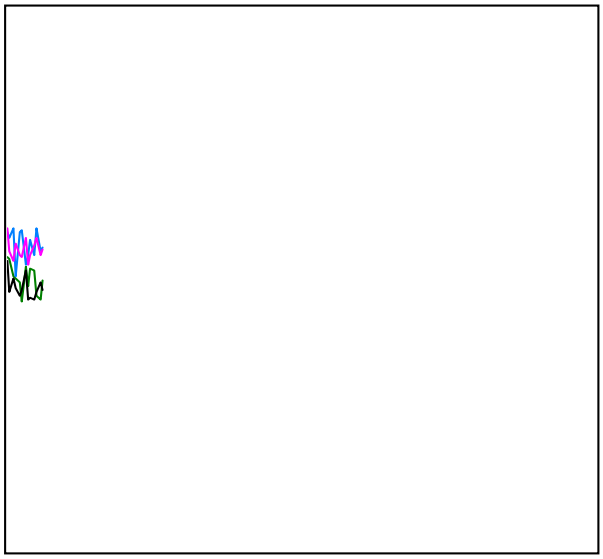
Ele	Conc	Calc	%Rec
As	500	507.02	101
Be	500	502.50	101
B	500	502.46	100
Na	10000	9930.11	99
Mg	10000	10030.98	100
Al	10000	9962.36	100
K	10000	10035.25	100
Ca	10000	9761.66	98
Ti	500	480.46	96
V	500	493.68	99
Cr	500	504.78	101
Mn	500	506.19	101
Fe	10000	9946.09	99
Co	500	516.22	103
Ni	500	519.02	104
Cu	500	517.03	103
Zn	500	515.53	103
Se	500	512.61	103
Sr	500	510.61	102
Mo	500	500.38	100
Ag	500	501.77	100
Cd	500	504.50	101
Sn	500	503.79	101
Sb	500	502.48	100
Tl	500	512.99	103
Ba	500	508.61	102
Pb	500	505.18	101

Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000	1997.45	100
Be	2000	1998.73	100
B	2000	1999.40	100
Na	25000	24995.65	100
Mg	25000	24961.14	100
K	25000	24963.22	100
Ca	25000	25113.80	100
Ti	2000	2006.17	100
V	2000	2001.48	100
Cr	2000	1997.59	100
Mn	2000	1997.36	100
Co	2000	1994.11	100
Ni	2000	1992.88	100
Cu	2000	1993.77	100
Zn	2000	1994.27	100
Se	2000	1995.05	100
Sr	2000	1997.41	100
Mo	2000	2000.82	100
Cd	2000	1998.73	100
Sn	2000	1999.88	100
Tl	2000	1996.58	100
Ba	2000	1998.09	100
Pb	2000	1998.20	100
Li	2000	1998.52	100

REVIEWED BY
By Janice Whitt at 2:07:02 PM, 10/13/2016

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
51	1000	467	479.2	5.61
59	2000	998	1001.6	5.27
89	2000	1116	1127.2	5.01
140	5000	2779	2776.0	3.40
205	5000	2401	2426.7	4.28
156/140	1	0.108 %	0.201 %	53.40
75	50	17	24.9	18.64
78	50	27	22.5	21.93
56	5000	4264	4123.2	2.53
31	100	43	61.5	21.98
Integration Time [sec]		0.10		

Plasma Parameters

RF Power	1550	Carrier Gas	0.45
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	7.6
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-90	Cell Exit	-60
Deflect	1.0		

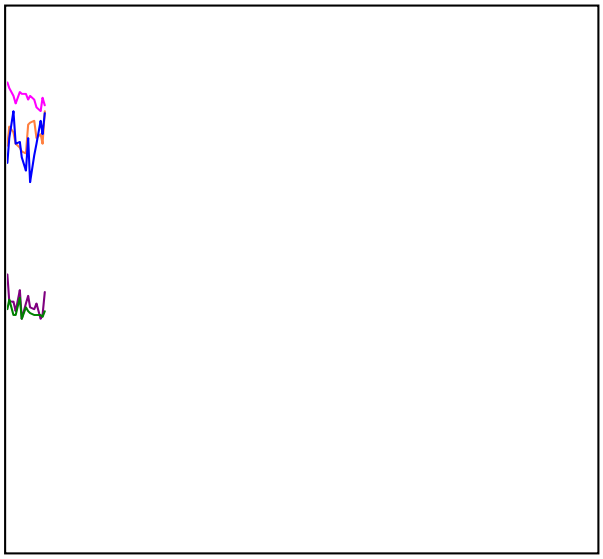
Cell Parameters

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	2.43E+2	Pa	Carrier Gas(BP)	9.66E+1	kPa
Analyzer Press	2.09E-4	Pa	Reflected Power	7	W
Forward Power	1550	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
7	2000	953	913.2	4.86
59	5000	2209	2205.4	2.57
89	5000	4038	3822.0	3.05
140	5000	4097	4168.1	1.73
205	5000	2608	2895.4	7.51
156/140	1	0.708 %	0.600 %	21.21
95	50	12	15.1	28.68
78	5000	2769	2765.4	2.62
63	500	403	374.5	5.04
75	20000	10241	10276.7	1.61
Integration Time [sec]		0.10		

Plasma Parameters

RF Power	1550	Carrier Gas	0.45
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	7.6
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-90	Cell Exit	-60
Deflect	14.6		

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)	9.72E+1	kPa
Analyzer Press	1.30E-4	Pa	Reflected Power	7	W
Forward Power	1549	W			

US EPA Tune Check Sample Report

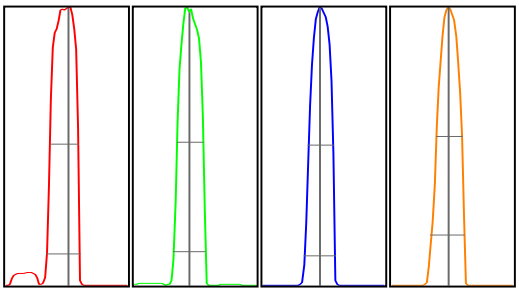
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	633186	0.86	5.00	
59	1540079	0.59	5.00	
115	2182994	0.62	5.00	
205	1735091	1.04	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	624753	633151	632162	637632	638234
59	1534400	1533421	1532590	1548311	1551671
115	2160933	2183244	2194378	2182226	2194188
205	1715397	1727692	1764323	1734576	1733469

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	95605	7.05	6.9 - 7.1		0.793	0.850	
59	252300	58.90	58.9 - 59.1		0.772	0.850	
115	392682	114.95	114.9 - 115.1		0.730	0.850	
205	296467	204.95	204.9 - 205.1		0.794	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	0.45	L/min	Makeup/Dilution Gas	0.60	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	-90	V	Deflect	14.6	V
Omega Lens	7.6	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 2:07:11 PM, 10/13/2016

P/A Factor Tuning Report

Current Sample

Sample Name: LCVL1-161013
Data File: 064LCCV.d
Acquired: 10/13/2016 11:42:05

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1741 V
PulseHV: 1475 V

Acquired: 10/13/2016 09:07:38

Mass[u]	Element	P/A Factor
6	Li	0.099362
9	Be	0.111204
23	Na	0.120388
24	Mg	0.124883
27	Al	0.128583
39	K	0.129870
45	Sc	0.131022
48		0.132162
51	V	0.133578
52	Cr	0.136516
55	Mn	0.137840
59	Co	0.140805
60	Ni	0.142674
63	Cu	0.144965
66	Zn	0.143894
72		0.143826
74	Ge	0.144197
75	As	0.142581
88	Sr	0.144611
89		0.144140
95		0.143454
97	Mo	0.143662
98	Mo	0.143917
99	[Mo]	0.145895
101		0.145751
105		0.148269
111	Cd	0.150033
114	Cd	0.148665
115	In	0.149338
118	Sn	0.149365
121		0.149174
123	Sb	0.150009
135	Ba	0.148757
138		0.149967
175		0.153413
193		0.154404
205	Tl	0.155966
206	[Pb]	0.156735
207	[Pb]	0.156625
208	Pb	0.155305
209	Bi	0.156161
232		0.155722
238	U	0.155783
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 2:07:14 PM, 10/13/2016

Calibration Blank Report

Date Acquired	10/13/2016 9:53	Sample Name	BLANK STD 1
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	7	28.39
9	Be	45	1	86.60
11	B	45	166	12.94
23	Na	45	81491	1.27
24	Mg	45	1158	12.98
27	Al	45	7543	0.53
39	K	45	72637	0.82
44	Ca	45	1435	4.87
47	Ti	45	18	28.64
51	V	45	4742	2.66
52	Cr	45	2328	5.00
55	Mn	45	288	17.58
56	Fe	45	13702	2.00
59	Co	72	149	3.42
60	Ni	72	176	7.67
63	Cu	72	1648	2.56
66	Zn	72	467	7.95
75	As	72	323	6.30
78	Se	72	180	14.33
88	Sr	115	1529	5.40
95	Mo	115	103	8.54
107	Ag	115	57	42.41
111	Cd	115	46	11.18
118	Sn	115	908	14.24
121	Sb	115	751	4.55
137	Ba	115	76	17.83
205	Tl	209	132	9.55
208	Pb	209	3438	1.36

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1110849	0.91
72	Ge	719580	0.20
115	In	6910036	1.52
209	Bi	13786118	2.05

Calibration Standard Report

Date Acquired	10/13/2016 9:55	Sample Name	L2-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	52	15.91
9	Be	45	41	4.88
11	B	45	101	11.58
23	Na	45	99155	0.87
24	Mg	45	10694	0.69
27	Al	45	11105	1.19
39	K	45	83250	1.29
44	Ca	45	1919	1.94
47	Ti	45	188	3.70
51	V	45	9619	2.32
52	Cr	45	7971	2.33
55	Mn	45	3981	3.24
56	Fe	45	114246	1.13
59	Co	72	8875	0.36
60	Ni	72	2524	5.32
63	Cu	72	8101	4.56
66	Zn	72	1477	4.23
75	As	72	1153	1.40
78	Se	72	269	1.64
88	Sr	115	6854	2.70
95	Mo	115	3473	2.71
107	Ag	115	10646	2.55
111	Cd	115	1632	6.06
118	Sn	115	4563	3.33
121	Sb	115	6200	2.75
137	Ba	115	1948	2.95
205	Tl	209	23654	1.62
208	Pb	209	35432	0.82

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1092382	0.19	1110849	98.34	70	120	
72	Ge	716606	0.68	719580	99.59	70	120	
115	In	6873143	0.78	6910036	99.47	70	120	
209	Bi	13766754	0.73	13786118	99.86	70	120	

Calibration Standard Report

Date Acquired	10/13/2016 9:57	Sample Name	L-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	428	4.74
9	Be	45	472	2.26
11	B	45	271	2.84
23	Na	45	263249	0.33
24	Mg	45	96735	0.39
27	Al	45	47637	0.37
39	K	45	179451	0.42
44	Ca	45	7193	3.58
47	Ti	45	1708	3.66
51	V	45	54460	0.66
52	Cr	45	60923	0.51
55	Mn	45	37902	2.81
56	Fe	45	1043402	0.39
59	Co	72	90578	0.82
60	Ni	72	24531	1.08
63	Cu	72	67134	0.56
66	Zn	72	11414	2.07
75	As	72	8777	0.84
78	Se	72	823	8.58
88	Sr	115	54690	1.35
95	Mo	115	35070	0.93
107	Ag	115	105218	0.80
111	Cd	115	16638	1.06
118	Sn	115	38558	1.43
121	Sb	115	55961	1.85
137	Ba	115	19537	2.86
205	Tl	209	238440	0.33
208	Pb	209	326700	0.34

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1087077	0.71	1110849	97.86	70	120	
72	Ge	708096	0.98	719580	98.40	70	120	
115	In	6984595	2.23	6910036	101.08	70	120	
209	Bi	13533825	2.06	13786118	98.17	70	120	

Calibration Standard Report

Date Acquired	10/13/2016 9:59	Sample Name	10X-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	2080	3.88
9	Be	45	2523	3.71
11	B	45	1118	6.30
23	Na	45	993420	0.39
24	Mg	45	479434	0.89
27	Al	45	208852	0.25
39	K	45	607998	0.30
44	Ca	45	29058	1.11
47	Ti	45	8430	2.47
51	V	45	254155	1.14
52	Cr	45	297090	0.74
55	Mn	45	188553	0.39
56	Fe	45	5215128	0.06
59	Co	72	451586	0.85
60	Ni	72	120298	0.92
63	Cu	72	327722	0.77
66	Zn	72	54530	0.59
75	As	72	42922	0.41
78	Se	72	3270	2.18
88	Sr	115	269002	0.52
95	Mo	115	178396	0.89
107	Ag	115	527108	0.63
111	Cd	115	81493	0.97
118	Sn	115	191124	0.08
121	Sb	115	280193	0.28
137	Ba	115	99342	1.43
205	Tl	209	1203621	1.14
208	Pb	209	1620994	0.43

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1091099	0.34	1110849	98.22	70	120	
72	Ge	693346	0.79	719580	96.35	70	120	
115	In	6867768	1.77	6910036	99.39	70	120	
209	Bi	13608407	1.31	13786118	98.71	70	120	

Calibration Standard Report

Date Acquired	10/13/2016 10:01	Sample Name	5X-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	4205	1.56
9	Be	45	5037	0.87
11	B	45	2312	6.08
23	Na	45	1918069	0.59
24	Mg	45	967258	0.60
27	Al	45	416103	0.33
39	K	45	1153633	0.47
44	Ca	45	57069	0.45
47	Ti	45	17255	0.81
51	V	45	508035	0.25
52	Cr	45	594029	0.57
55	Mn	45	381469	0.02
56	Fe	45	10690771	0.65
59	Co	72	908195	0.67
60	Ni	72	242131	0.95
63	Cu	72	659482	0.74
66	Zn	72	109777	0.65
75	As	72	85804	0.68
78	Se	72	6586	1.20
88	Sr	115	542016	0.35
95	Mo	115	360336	0.44
107	Ag	115	1074983	0.24
111	Cd	115	168290	1.54
118	Sn	115	388074	0.59
121	Sb	115	567367	1.07
137	Ba	115	201278	0.24
205	Tl	209	2451165	0.77
208	Pb	209	3327357	0.39

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1101387	0.33	1110849	99.15	70	120	
72	Ge	698878	0.96	719580	97.12	70	120	
115	In	7016749	0.16	6910036	101.54	70	120	
209	Bi	13860409	1.82	13786118	100.54	70	120	

Calibration Standard Report

Date Acquired	10/13/2016 10:03	Sample Name	2X-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	10600	0.65
9	Be	45	12551	0.99
11	B	45	5134	2.70
23	Na	45	4688045	1.00
24	Mg	45	2413029	0.67
27	Al	45	1030919	0.35
39	K	45	2762172	0.79
44	Ca	45	140215	0.16
47	Ti	45	42509	1.78
51	V	45	1258974	0.49
52	Cr	45	1487905	0.74
55	Mn	45	956854	0.58
56	Fe	45	26173909	1.22
59	Co	72	2272648	0.49
60	Ni	72	609134	0.23
63	Cu	72	1638801	0.70
66	Zn	72	275451	0.51
75	As	72	214554	0.39
78	Se	72	16385	1.99
88	Sr	115	1358977	0.65
95	Mo	115	908775	0.84
107	Ag	115	2673643	0.43
111	Cd	115	420033	0.34
118	Sn	115	969556	0.40
121	Sb	115	1428672	0.51
137	Ba	115	505129	0.80
205	Tl	209	6183663	0.52
208	Pb	209	8362371	1.32

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1102013	1.16	1110849	99.20	70	120	
72	Ge	712057	0.72	719580	98.95	70	120	
115	In	7043520	0.43	6910036	101.93	70	120	
209	Bi	13774135	2.19	13786118	99.91	70	120	

Calibration Standard Report

Date Acquired	10/13/2016 10:05	Sample Name	H-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	21082	1.76
9	Be	45	25057	0.33
11	B	45	10348	3.74
23	Na	45	9073155	1.96
24	Mg	45	4781520	0.46
27	Al	45	2039706	0.43
39	K	45	5427369	1.60
44	Ca	45	279406	0.30
47	Ti	45	85519	1.12
51	V	45	2500172	0.67
52	Cr	45	2934110	0.42
55	Mn	45	1898811	0.59
56	Fe	45	51766615	1.83
59	Co	72	4508746	0.58
60	Ni	72	1197640	0.54
63	Cu	72	3245949	0.27
66	Zn	72	544516	0.83
75	As	72	429035	0.39
78	Se	72	32052	1.25
88	Sr	115	2724337	0.27
95	Mo	115	1826669	0.79
107	Ag	115	5331012	0.40
111	Cd	115	828021	0.88
118	Sn	115	1958306	0.14
121	Sb	115	2859972	0.21
137	Ba	115	1013920	0.60
205	Tl	209	12601214	0.55
208	Pb	209	16632780	0.50

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1112302	0.21	1110849	100.13	70	120	
72	Ge	715383	0.21	719580	99.42	70	120	
115	In	6904643	1.00	6910036	99.92	70	120	
209	Bi	13772355	0.60	13786118	99.90	70	120	

Calibration Standard Report

Date Acquired	10/13/2016 10:07	Sample Name	H2-161013
Data Batch	161013.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	82001	0.62
9	Be	45	97600	0.33
11	B	45	39840	2.83
23	Na	45	22245503	0.54
24	Mg	45	11650468	1.21
27	Al	45	7423	3.51
39	K	45	13115892	1.02
44	Ca	45	701748	0.91
47	Ti	45	349642	0.27
51	V	45	9912679	1.79
52	Cr	45	11364410	1.44
55	Mn	45	7336534	0.92
56	Fe	45	114551	6.85
59	Co	72	17474649	1.75
60	Ni	72	4613063	0.87
63	Cu	72	12552623	1.31
66	Zn	72	2111982	0.20
75	As	72	1694893	0.76
78	Se	72	124641	0.67
88	Sr	115	10533816	0.97
95	Mo	115	7223049	1.07
107	Ag	115	1789	22.86
111	Cd	115	3243984	0.65
118	Sn	115	7686085	1.58
121	Sb	115	9636	8.34
137	Ba	115	3938397	0.84
205	Tl	209	48392089	0.97
208	Pb	209	64906104	1.09

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1089298	0.30	1110849	98.06	70	120	
72	Ge	717770	0.81	719580	99.75	70	120	
115	In	6829532	1.93	6910036	98.83	70	120	
209	Bi	13588783	0.58	13786118	98.57	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	10/13/2016 10:25	Sample Name	ICSA-161013
Data Batch	161013.b	Comment	ICSAICPMS_TW
Data File Name	027ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.013	1	43.3	1.2	0.8	
11	B	16.430	502	12.5	30	30	
51	V	-0.264	3442	7.4	10	10	
52	Cr	0.741	6683	3.9	8	5	
55	Mn	0.358	1643	1.6	8	10	
59	Co	1.236	10991	1.0	8	10	
60	Ni	0.386	1070	15.4	8	10	
63	Cu	2.243	15782	1.1	8	10	
66	Zn	1.621	2184	7.9	10	5	
75	As	0.289	568	3.1	4	5	
78	Se	0.401	205	9.1	2	5	
88	Sr	1.086	7162	1.4	10	10	
107	Ag	0.097	1060	11.5	0.8	2	
111	Cd	0.509	861	4.3	1.2	1	
118	Sn	0.572	3061	2.2	10	10	
121	Sb	0.062	1079	7.3	4	2.5	
137	Ba	0.475	1000	11.3	8	10	
205	Tl	0.024	694	11.7	4	1.5	
208	Pb	0.331	13660	5.3	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1120104	0.44	1110849	100.83	70	120	
72	Ge	718550	0.82	719580	99.86	70	120	
115	In	6754296	1.31	6910036	97.75	70	120	
209	Bi	13139956	0.30	13786118	95.31	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	10/13/2016 10:28	Sample Name	ICSAB-161013
Data Batch	161013.b	Comment	ICSBICPMS_TW
Data File Name	028ICSB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
51	V	45	37.170	198870	0.23	40	92.9	80	120	
52	Cr	45	19.747	120814	1.00	20	98.7	80	120	
55	Mn	45	18.881	73408	0.77	20	94.4	80	120	
59	Co	72	38.825	344175	0.72	40	97.1	80	120	
60	Ni	72	37.029	86852	0.67	40	92.6	80	120	
63	Cu	72	20.893	134668	0.39	20	104.5	80	120	
66	Zn	72	20.789	22731	2.37	20	103.9	80	120	
75	As	72	19.443	17005	1.16	20	97.2	80	120	
78	Se	72	19.475	1410	3.70	20	97.4	80	120	
107	Ag	115	18.407	193394	0.24	20	92.0	80	120	
111	Cd	115	9.619	15654	1.00	10	96.2	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1148319	0.30	1110849	103.37	70	120	
72	Ge	725800	0.36	719580	100.86	70	120	
115	In	6826589	1.43	6910036	98.79	70	120	
209	Bi	13167607	1.13	13786118	95.51	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	10/13/2016 10:34	Sample Name	ICV-161013
Data Batch	161013.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	94.773	4028	0.77	100	94.8	90	110	
9	Be	45	98.358	4967	1.74	100	98.4	90	110	
11	B	45	105.176	2326	1.58	100	105.2	90	110	
23	Na	45	2634.707	2498292	0.65	2500	105.4	90	110	
24	Mg	45	2545.437	1229432	0.36	2500	101.8	90	110	
27	Al	45	2447.324	513129	0.95	2500	97.9	90	110	
39	K	45	2539.051	1445478	0.77	2500	101.6	90	110	
44	Ca	45	2400.991	70681	0.40	2500	96.0	90	110	
47	Ti	45	97.225	17535	2.69	100	97.2	90	110	
51	V	45	100.559	519492	0.93	100	100.6	90	110	
52	Cr	45	104.985	619784	0.91	100	105.0	90	110	
55	Mn	45	100.167	380697	0.90	100	100.2	90	110	
56	Fe	45	2506.258	13217657	0.77	2500	100.3	90	110	
59	Co	72	104.694	925184	0.51	100	104.7	90	110	
60	Ni	72	103.703	242244	1.22	100	103.7	90	110	
63	Cu	72	102.720	653782	1.40	100	102.7	90	110	
66	Zn	72	103.195	110645	0.74	100	103.2	90	110	
75	As	72	100.534	86326	1.00	100	100.5	90	110	
78	Se	72	101.844	6586	1.11	100	101.8	90	110	
88	Sr	115	98.555	536031	0.41	100	98.6	90	110	
95	Mo	115	95.669	355259	1.02	100	95.7	90	110	
107	Ag	115	99.777	1078152	0.35	100	99.8	90	110	
111	Cd	115	98.424	164338	0.66	100	98.4	90	110	
118	Sn	115	100.485	397971	0.59	100	100.5	90	110	
121	Sb	115	100.151	580334	0.44	100	100.2	90	110	
137	Ba	115	99.019	200811	0.34	100	99.0	90	110	
205	Tl	209	96.919	2394821	0.57	100	96.9	90	110	
208	Pb	209	99.232	3288684	0.19	100	99.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1126260	0.61	1110849	101.39	70	120	
72	Ge	723765	1.14	719580	100.58	70	120	
115	In	7022221	1.06	6910036	101.62	70	120	
209	Bi	13858650	2.78	13786118	100.53	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	10/13/2016 10:37	Sample Name	ICB-161013
Data Batch	161013.b	Comment	ICB ICPMS_TW
Data File Name	032_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.252	18	44.1	2	5	
9	Be	45	0.007	1	173.2	0.4	0.3	
11	B	45	6.282	294	15.9	10	10	
23	Na	45	42.419	120485	1.0	50	100	
24	Mg	45	1.526	1895	6.5	50	100	
27	Al	45	-1.320	7312	1.6	50	10	
39	K	45	22.832	85247	0.6	50	100	
44	Ca	45	5.413	1597	1.9	50	100	
47	Ti	45	0.000	18	47.2	4	3	
51	V	45	0.033	4936	0.3	4	3	
52	Cr	45	0.018	2447	0.6	2	2	
55	Mn	45	0.096	652	8.6	2	3	
56	Fe	45	2.788	28338	1.9	50	50	
59	Co	72	0.008	223	28.8	2	3	
60	Ni	72	0.120	460	10.2	2	3	
63	Cu	72	0.194	2908	0.2	2	2	
66	Zn	72	0.530	1042	4.8	4	2	
75	As	72	0.011	337	7.5	2	2	
78	Se	72	0.707	227	2.0	1	2	
88	Sr	115	0.038	1737	7.4	4	3	
95	Mo	115	0.433	1692	4.0	2	2	
107	Ag	115	0.026	338	17.3	0.4	1	
111	Cd	115	0.003	50	20.0	0.4	0.3	
118	Sn	115	0.402	2477	3.8	4	3	
121	Sb	115	0.099	1319	10.0	2	0.8	
137	Ba	115	0.018	111	20.0	2	3	
205	Tl	209	0.022	658	13.2	2	0.5	
208	Pb	209	0.096	6548	3.4	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1116614	0.49	1110849	100.52	70	120	
72	Ge	728734	0.72	719580	101.27	70	120	
115	In	6932777	0.77	6910036	100.33	70	120	
209	Bi	13703956	1.38	13786118	99.40	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	10/13/2016 10:39	Sample Name	LCVL-161013
Data Batch	161013.b	Comment	LCVLICPMS_TW
Data File Name	033LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.912	420	7.15	10	99.1	70	130	
9	Be	45	0.841	42	3.61	1	84.1	70	130	
11	B	45	26.013	689	13.76	20	130.1	70	130	Fail
23	Na	45	119.801	188814	0.64	100	119.8	70	130	
24	Mg	45	98.866	47952	0.96	100	98.9	70	130	
27	Al	45	93.853	26522	2.16	100	93.9	70	130	
39	K	45	104.316	127539	0.73	100	104.3	70	130	
44	Ca	45	92.638	4046	2.85	100	92.6	70	130	
47	Ti	45	5.314	957	5.61	5	106.3	70	130	
51	V	45	1.077	10126	2.07	1	107.7	70	130	
52	Cr	45	5.150	32028	2.00	5	103.0	70	130	
55	Mn	45	5.629	21255	3.00	5	112.6	70	130	
56	Fe	45	101.335	537355	0.73	100	101.3	70	130	
59	Co	72	5.223	45987	1.20	5	104.5	70	130	
60	Ni	72	5.256	12360	1.44	5	105.1	70	130	
63	Cu	72	5.318	35184	0.77	5	106.4	70	130	
66	Zn	72	5.312	6100	2.75	5	106.2	70	130	
75	As	72	5.065	4627	1.43	5	101.3	70	130	
78	Se	72	5.035	494	3.79	5	100.7	70	130	
88	Sr	115	4.979	28211	2.34	5	99.6	70	130	
95	Mo	115	4.985	18382	0.84	5	99.7	70	130	
107	Ag	115	1.974	21122	1.61	2	98.7	70	130	
111	Cd	115	0.934	1586	7.89	1	93.4	70	130	
118	Sn	115	5.082	20746	0.82	5	101.6	70	130	
121	Sb	115	1.910	11670	1.80	2	95.5	70	130	
137	Ba	115	4.853	9792	1.40	5	97.1	70	130	
205	Tl	209	0.974	23688	0.82	1	97.4	70	130	
208	Pb	209	1.064	37888	1.15	1	106.4	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1104889	0.93	1110849	99.46	70	120	
72	Ge	718985	1.18	719580	99.92	70	120	
115	In	6935846	0.86	6910036	100.37	70	120	
209	Bi	13563891	0.74	13786118	98.39	70	120	

Method Blank Report

Date Acquired	10/13/16 11:03 AM	Sample Name	MB-77524
Data Batch	161013.b	Comment	MBLKICPMS_TWDOD
Data File Name	045_LRB.d	Dilution	1

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	0.266	19	29.50		
9	Be	45	0.040	3	43.30		
11	B	45	21.001	597	9.93		J
23	Na	45	17.079	97979	0.80		
24	Mg	45	1.251	1773	5.45		
27	Al	45	-11.008	5358	1.35		
39	K	45	33.446	91421	1.30		
44	Ca	45	-16.574	973	9.03		
47	Ti	45	0.036	24	20.83		
51	V	45	0.220	5913	3.98		
52	Cr	45	-0.031	2170	4.58		
55	Mn	45	0.086	616	10.19		
56	Fe	45	1.418	21292	1.89		
59	Co	72	0.010	239	11.36		
60	Ni	72	0.004	189	23.03		
63	Cu	72	0.273	3427	5.86		
66	Zn	72	0.529	1047	1.15		
75	As	72	0.117	430	4.75		
78	Se	72	0.524	216	11.59		
88	Sr	115	-0.116	946	7.20		
95	Mo	115	0.353	1442	5.46		
107	Ag	115	0.063	754	15.36		
111	Cd	115	-0.005	39	24.75		
118	Sn	115	0.342	2320	7.01		
121	Sb	115	0.827	5662	10.83		J
137	Ba	115	0.014	108	25.75		
205	Tl	209	0.059	1619	7.65		
208	Pb	209	0.119	7470	5.53		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1122740	0.97	1110849	101.07	70	120	
72	Ge	732205	0.80	719580	101.75	70	120	
115	In	7166949	1.69	6910036	103.72	70	120	
209	Bi	14008481	1.12	13786118	101.61	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	10/13/2016 11:05	Sample Name	LCS-77524
Data Batch	161013.b	Comment	LCS ICPMS_TWDOD
Data File Name	046_LFB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	188.907	8156	1.38	200	94.5	80	120	
9	Be	45	192.938	9905	1.42	200	96.5	80	120	
11	B	45	207.464	4498	5.79	200	103.7	80	120	
23	Na	45	5142.986	4878604	1.54	5000	102.9	80	120	
24	Mg	45	5030.583	2469511	0.22	5000	100.6	80	120	
27	Al	45	4884.498	1033618	0.15	5000	97.7	80	120	
39	K	45	5098.952	2876128	0.70	5000	102.0	80	120	
44	Ca	45	4818.565	142751	0.82	5000	96.4	80	120	
47	Ti	45	197.362	36180	1.30	200	98.7	80	120	
51	V	45	198.389	1037341	1.14	200	99.2	80	120	
52	Cr	45	201.975	1210181	0.75	200	101.0	80	120	
55	Mn	45	202.254	781307	1.00	200	101.1	80	120	
56	Fe	45	4998.218	26790624	0.43	5000	100.0	80	120	
59	Co	72	208.353	1868280	0.58	200	104.2	80	120	
60	Ni	72	207.701	492123	0.21	200	103.9	80	120	
63	Cu	72	206.373	1331129	1.34	200	103.2	80	120	
66	Zn	72	202.945	220345	0.35	200	101.5	80	120	
75	As	72	203.627	177079	0.70	200	101.8	80	120	
78	Se	72	204.627	13245	0.70	200	102.3	80	120	
88	Sr	115	197.998	1093454	0.52	200	99.0	80	120	
95	Mo	115	194.011	732595	0.88	200	97.0	80	120	
107	Ag	115	197.690	2172413	1.00	200	98.8	80	120	
111	Cd	115	197.771	335765	0.75	200	98.9	80	120	
118	Sn	115	198.826	799856	0.39	200	99.4	80	120	
121	Sb	115	197.286	1161619	0.48	200	98.6	80	120	
137	Ba	115	198.967	410191	0.69	200	99.5	80	120	
205	Tl	209	198.313	4934982	0.42	200	99.2	80	120	
208	Pb	209	199.898	6669613	0.35	200	99.9	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1145229	0.43	1110849	103.09	70	120	
72	Ge	734410	0.55	719580	102.06	70	120	
115	In	7141909	2.02	6910036	103.36	70	120	
209	Bi	13951971	0.48	13786118	101.20	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	10/13/2016 11:07	Sample Name	LCSD-77524
Data Batch	161013.b	Comment	LCSDICPMS_TWDOD
Data File Name	047_LFB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	194.402	8379	1.68	200	97.2	80	120	
9	Be	45	196.338	10064	1.38	200	98.2	80	120	
11	B	45	202.253	4383	2.53	200	101.1	80	120	
23	Na	45	5036.712	4772009	0.43	5000	100.7	80	120	
24	Mg	45	4988.573	2444935	0.16	5000	99.8	80	120	
27	Al	45	4856.823	1026134	0.12	5000	97.1	80	120	
39	K	45	5070.108	2855659	0.34	5000	101.4	80	120	
44	Ca	45	4773.539	141206	1.31	5000	95.5	80	120	
47	Ti	45	194.395	35577	0.35	200	97.2	80	120	
51	V	45	198.887	1038269	0.53	200	99.4	80	120	
52	Cr	45	202.432	1210935	0.90	200	101.2	80	120	
55	Mn	45	201.084	775554	0.38	200	100.5	80	120	
56	Fe	45	4975.808	26627006	0.54	5000	99.5	80	120	
59	Co	72	206.948	1865474	0.21	200	103.5	80	120	
60	Ni	72	206.349	491520	0.50	200	103.2	80	120	
63	Cu	72	206.328	1337831	0.51	200	103.2	80	120	
66	Zn	72	203.994	222660	0.63	200	102.0	80	120	
75	As	72	202.648	177171	0.56	200	101.3	80	120	
78	Se	72	204.014	13276	1.12	200	102.0	80	120	
88	Sr	115	197.164	1087465	0.53	200	98.6	80	120	
95	Mo	115	194.258	732529	0.34	200	97.1	80	120	
107	Ag	115	200.085	2195748	1.19	200	100.0	80	120	
111	Cd	115	199.727	338638	1.25	200	99.9	80	120	
118	Sn	115	201.158	808174	0.52	200	100.6	80	120	
121	Sb	115	198.486	1167312	0.88	200	99.2	80	120	
137	Ba	115	199.555	410921	0.58	200	99.8	80	120	
205	Tl	209	196.847	4942947	1.08	200	98.4	80	120	
208	Pb	209	198.701	6690279	0.78	200	99.4	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1143381	0.56	1110849	102.93	70	120	
72	Ge	738337	1.08	719580	102.61	70	120	
115	In	7131220	0.70	6910036	103.20	70	120	
209	Bi	14081834	1.89	13786118	102.15	70	120	

Sample Report

Date Acquired	10/13/16 11:11 AM	Sample Name	1610008-01A
Data Batch	161013.b	Comment	SAMPICPMS_TWDOD
Data File Name	049_ARF.d	Dilution	10

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	1.307	64	1.56	2000	
9	Be	45	0.039	3	43.30	2000	
11	B	45	21.376	618	9.79	2000	>RL
23	Na	45	7265.285	6862428	0.87	25000	>RL
24	Mg	45	333.344	164866	0.29	25000	>RL
27	Al	45	1619.752	348217	0.78	10000	>RL
39	K	45	440.575	317165	1.10	25000	>RL
44	Ca	45	1350.413	41104	2.20	25000	>RL
47	Ti	45	15.978	2944	14.46	2000	>RL
51	V	45	2.163	16159	2.80	2000	
52	Cr	45	5.138	33148	1.06	2000	>RL
55	Mn	45	15.680	60882	1.11	2000	>RL
56	Fe	45	1063.146	5713507	1.97	10000	>RL
59	Co	72	0.448	4314	3.57	2000	
60	Ni	72	2.742	6904	2.08	2000	>RL
63	Cu	72	4.177	29570	2.41	2000	>RL
66	Zn	72	34.089	38697	0.34	2000	>RL
75	As	72	0.486	777	3.67	2000	
78	Se	72	0.313	210	7.74	2000	
88	Sr	115	9.263	53289	0.51	2000	>RL
95	Mo	115	0.324	1346	2.82	2000	
107	Ag	115	0.051	624	12.86	500	
111	Cd	115	0.012	68	11.36	2000	
118	Sn	115	0.617	3457	5.24	2000	
121	Sb	115	0.526	3922	5.81	500	
137	Ba	115	9.962	20860	1.09	2000	>RL
205	Tl	209	0.054	1512	7.14	2000	
208	Pb	209	2.032	72862	1.02	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1146169	1.58	1110849	103.18	70	120	
72	Ge	759741	0.91	719580	105.58	70	120	
115	In	7226383	1.93	6910036	104.58	70	120	
209	Bi	14268019	0.89	13786118	103.50	70	120	

Dilution Sample (Dil) Report

Date Acquired	10/13/2016 11:13	Sample Name	1610008-01A SD
Data Batch	161013.b	Comment	SD ICPMS_TWDOD
Data File Name	050_SD.d	Dilution	50

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	0.504	29	12.43	1.3	192.7	110	90	
9	Be	45	0.013	1	86.60	0.0	166.8	110	90	
11	B	45	15.061	480	20.52	21.4	352.3	110	90	
23	Na	45	1483.910	1452285	0.42	7265.3	102.1	110	90	Good
24	Mg	45	66.633	33537	2.57	333.3	99.9	110	90	Good
27	Al	45	324.377	75117	0.68	1619.8	100.1	110	90	Good
39	K	45	91.766	124007	0.54	440.6	104.1	110	90	Good
44	Ca	45	263.667	9114	0.42	1350.4	97.6	110	90	Good
47	Ti	45	4.007	745	20.77	16.0	125.4	110	90	
51	V	45	0.579	7819	1.38	2.2	133.8	110	90	
52	Cr	45	1.007	8334	2.61	5.1	98.0	110	90	Good
55	Mn	45	3.131	12258	1.77	15.7	99.8	110	90	Good
56	Fe	45	208.878	1121427	0.81	1063.1	98.2	110	90	Good
59	Co	72	0.095	1020	10.33	0.4	105.6	110	90	Good
60	Ni	72	0.527	1453	4.42	2.7	96.0	110	90	Good
63	Cu	72	0.875	7460	3.22	4.2	104.8	110	90	Good
66	Zn	72	6.818	8011	1.24	34.1	100.0	110	90	Good
75	As	72	0.137	457	0.54	0.5	141.3	110	90	
78	Se	72	0.554	223	12.97	0.3	886.1	110	90	
88	Sr	115	1.872	11726	1.73	9.3	101.0	110	90	Good
95	Mo	115	0.165	718	10.35	0.3	254.1	110	90	
107	Ag	115	0.040	491	6.66	0.1	393.3	110	90	
111	Cd	115	-0.006	36	21.64	0.0	-274.2	110	90	
118	Sn	115	0.234	1850	4.84	0.6	190.0	110	90	
121	Sb	115	0.276	2362	5.70	0.5	262.0	110	90	
137	Ba	115	1.975	4088	0.89	10.0	99.1	110	90	Good
205	Tl	209	0.023	717	17.23	0.1	212.6	110	90	
208	Pb	209	0.444	18607	2.19	2.0	109.3	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1133372	0.26	1110849	102.03	70	120	
72	Ge	748317	0.56	719580	103.99	70	120	
115	In	7035398	1.42	6910036	101.81	70	120	
209	Bi	14185723	0.54	13786118	102.90	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	10/13/2016 11:15	Sample Name	1610008-01A PDS
Data Batch	161013.b	Comment	PDS ICPMS_TWDOD
Data File Name	051_PDS.d	Dilution	10

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	180.354	7705	1.19	1.3	200	89.5	75	125	
9	Be	45	186.528	9476	1.55	0.0	200	93.2	75	125	
11	B	45	189.318	4077	2.23	21.4	200	84.0	75	125	
23	Na	45	12077.099	11224909	0.90	7265.3	5000	96.2	75	125	
24	Mg	45	5064.246	2459920	0.62	333.3	5000	94.6	75	125	
27	Al	45	6319.590	1321008	0.22	1619.8	5000	94.0	75	125	
39	K	45	5174.648	2887108	0.77	440.6	5000	94.7	75	125	
44	Ca	45	5736.575	167890	0.91	1350.4	5000	87.7	75	125	
47	Ti	45	205.530	37279	2.52	16.0	200	94.8	75	125	
51	V	45	192.929	998369	0.35	2.2	200	95.4	75	125	
52	Cr	45	201.726	1196018	0.50	5.1	200	98.3	75	125	
55	Mn	45	206.031	787561	0.78	15.7	200	95.2	75	125	
56	Fe	45	5749.831	30493794	1.16	1063.1	5000	93.7	75	125	
59	Co	72	194.739	1762830	0.11	0.4	200	97.1	75	125	
60	Ni	72	195.666	468029	0.54	2.7	200	96.5	75	125	
63	Cu	72	193.874	1262438	0.85	4.2	200	94.8	75	125	
66	Zn	72	226.133	247804	0.75	34.1	200	96.0	75	125	
75	As	72	188.542	165552	0.13	0.5	200	94.0	75	125	
78	Se	72	188.978	12363	0.56	0.3	200	94.3	75	125	
88	Sr	115	200.366	1081130	0.21	9.3	200	95.6	75	125	
95	Mo	115	183.680	677594	0.86	0.3	200	91.7	75	125	
107	Ag	115	191.895	2060074	0.07	0.1	200	95.9	75	125	
111	Cd	115	189.207	313825	0.78	0.0	200	94.6	75	125	
118	Sn	115	193.367	760031	1.03	0.6	200	96.4	75	125	
121	Sb	115	175.117	1007633	1.36	0.5	200	87.3	75	125	
137	Ba	115	203.229	409407	0.83	10.0	200	96.6	75	125	
205	Tl	209	185.432	4575534	0.61	0.1	200	92.7	75	125	
208	Pb	209	189.732	6277085	0.38	2.0	200	93.8	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1133230	0.55	1110849	102.01	70	120	
72	Ge	741408	0.51	719580	103.03	70	120	
115	In	6976313	0.61	6910036	100.96	70	120	
209	Bi	13834299	0.52	13786118	100.35	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	10/13/2016 11:17	Sample Name	1610008-01A MS
Data Batch	161013.b	Comment	MS ICPMS_TWDOD
Data File Name	052_MSW.d	Dilution	10

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	20.254	859	3.72	1.3	200	9.5	80	120	Fail
9	Be	45	19.651	984	6.30	0.0	200	9.8	80	120	Fail
11	B	45	36.574	910	2.54	21.4	200	7.6	80	120	Fail
23	Na	45	7697.190	7075561	1.81	7265.3	5000	8.6	80	120	Fail
24	Mg	45	830.481	398281	0.61	333.3	5000	9.9	80	120	Fail
27	Al	45	2175.108	452779	2.14	1619.8	5000	11.1	80	120	Fail
39	K	45	939.811	576153	0.35	440.6	5000	10.0	80	120	Fail
44	Ca	45	1791.654	52634	1.87	1350.4	5000	8.8	80	120	Fail
47	Ti	45	41.917	7505	20.29	16.0	200	13.0	80	120	Fail
51	V	45	21.774	115192	1.15	2.2	200	9.8	80	120	Fail
52	Cr	45	26.155	154722	8.50	5.1	200	10.5	80	120	Fail
55	Mn	45	35.374	133408	0.55	15.7	200	9.8	80	120	Fail
56	Fe	45	1617.797	8461331	6.38	1063.1	5000	11.1	80	120	Fail
59	Co	72	20.470	184191	0.51	0.4	200	10.0	80	120	Fail
60	Ni	72	22.573	53788	1.10	2.7	200	9.9	80	120	Fail
63	Cu	72	24.240	158260	0.89	4.2	200	10.0	80	120	Fail
66	Zn	72	54.262	59423	0.53	34.1	200	10.1	80	120	Fail
75	As	72	19.942	17687	0.42	0.5	200	9.7	80	120	Fail
78	Se	72	20.328	1485	2.69	0.3	200	10.0	80	120	Fail
88	Sr	115	28.090	155775	0.80	9.3	200	9.4	80	120	Fail
95	Mo	115	19.010	71551	0.61	0.3	200	9.3	80	120	Fail
107	Ag	115	19.339	211560	1.27	0.1	200	9.6	80	120	Fail
111	Cd	115	19.256	32576	2.03	0.0	200	9.6	80	120	Fail
118	Sn	115	20.061	81184	0.90	0.6	200	9.7	80	120	Fail
121	Sb	115	19.976	117810	1.36	0.5	200	9.7	80	120	Fail
137	Ba	115	28.821	59221	0.95	10.0	200	9.4	80	120	Fail
205	Tl	209	18.898	473202	0.67	0.1	200	9.4	80	120	Fail
208	Pb	209	21.273	717167	0.57	2.0	200	9.6	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1116067	0.50	1110849	100.47	70	120	
72	Ge	736392	0.23	719580	102.34	70	120	
115	In	7109562	1.86	6910036	102.89	70	120	
209	Bi	14037579	1.64	13786118	101.82	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	10/13/2016 11:19	Sample Name	1610008-01A MSD
Data Batch	161013.b	Comment	MSD ICPMS_TWDOD
Data File Name	053_MSW.d	Dilution	10

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	19.399	829	7.66	1.3	200	9.0	80	120	Fail
9	Be	45	19.115	963	3.06	0.0	200	9.5	80	120	Fail
11	B	45	34.438	872	8.45	21.4	200	6.5	80	120	Fail
23	Na	45	7898.348	7305087	3.04	7265.3	5000	12.7	80	120	Fail
24	Mg	45	823.302	397415	1.06	333.3	5000	9.8	80	120	Fail
27	Al	45	2178.438	456402	0.13	1619.8	5000	11.2	80	120	Fail
39	K	45	948.488	584584	0.05	440.6	5000	10.2	80	120	Fail
44	Ca	45	1890.638	55821	0.31	1350.4	5000	10.8	80	120	Fail
47	Ti	45	40.993	7394	15.23	16.0	200	12.5	80	120	Fail
51	V	45	21.783	116008	1.45	2.2	200	9.8	80	120	Fail
52	Cr	45	24.772	147646	1.27	5.1	200	9.8	80	120	Fail
55	Mn	45	38.192	144952	0.33	15.7	200	11.3	80	120	Fail
56	Fe	45	1578.168	8306122	1.25	1063.1	5000	10.3	80	120	Fail
59	Co	72	20.659	185174	1.23	0.4	200	10.1	80	120	Fail
60	Ni	72	24.076	57133	7.76	2.7	200	10.7	80	120	Fail
63	Cu	72	24.342	158304	0.70	4.2	200	10.1	80	120	Fail
66	Zn	72	54.453	59403	0.43	34.1	200	10.2	80	120	Fail
75	As	72	19.936	17615	1.03	0.5	200	9.7	80	120	Fail
78	Se	72	18.967	1393	4.74	0.3	200	9.3	80	120	Fail
88	Sr	115	29.032	158241	1.09	9.3	200	9.9	80	120	Fail
95	Mo	115	19.156	70885	0.66	0.3	200	9.4	80	120	Fail
107	Ag	115	19.690	211786	0.63	0.1	200	9.8	80	120	Fail
111	Cd	115	19.772	32892	1.52	0.0	200	9.9	80	120	Fail
118	Sn	115	20.475	81439	0.49	0.6	200	9.9	80	120	Fail
121	Sb	115	18.832	109222	0.16	0.5	200	9.2	80	120	Fail
137	Ba	115	35.660	72022	0.78	10.0	200	12.8	80	120	Fail
205	Tl	209	19.225	471063	0.77	0.1	200	9.6	80	120	Fail
208	Pb	209	21.482	708591	0.26	2.0	200	9.7	80	120	Fail

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1123436	1.18	1110849	101.13	70	120	
72	Ge	733590	0.37	719580	101.95	70	120	
115	In	6988415	0.71	6910036	101.13	70	120	
209	Bi	13733731	0.45	13786118	99.62	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	10/13/2016 11:38	Sample Name	CCV1-161013
Data Batch	161013.b	Comment	CCV ICPMS_TW
Data File Name	062_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	200.092	8391	1.95	200	100.0	90	110	
9	Be	45	204.272	10188	0.57	200	102.1	90	110	
11	B	45	227.524	4777	3.29	200	113.8	90	110	Fail
23	Na	45	5214.560	4804314	0.58	5000	104.3	90	110	
24	Mg	45	5084.664	2424787	0.25	5000	101.7	90	110	
27	Al	45	4991.605	1025950	0.71	5000	99.8	90	110	
39	K	45	5080.231	2784075	0.24	5000	101.6	90	110	
44	Ca	45	4862.180	139917	1.29	5000	97.2	90	110	
47	Ti	45	195.241	34769	0.35	200	97.6	90	110	
51	V	45	202.425	1028169	0.72	200	101.2	90	110	
52	Cr	45	206.194	1200151	0.47	200	103.1	90	110	
55	Mn	45	204.368	766940	0.48	200	102.2	90	110	
56	Fe	45	5010.465	26089209	1.33	5000	100.2	90	110	
59	Co	72	210.569	1841228	0.91	200	105.3	90	110	
60	Ni	72	211.684	489120	0.88	200	105.8	90	110	
63	Cu	72	211.013	1327210	0.83	200	105.5	90	110	
66	Zn	72	210.985	223374	1.33	200	105.5	90	110	
75	As	72	208.534	176843	0.55	200	104.3	90	110	
78	Se	72	209.718	13233	1.19	200	104.9	90	110	
88	Sr	115	203.670	1093175	0.87	200	101.8	90	110	
95	Mo	115	202.035	741338	0.25	200	101.0	90	110	
107	Ag	115	202.127	2158772	5.25	200	101.1	90	110	
111	Cd	115	204.329	337106	0.44	200	102.2	90	110	
118	Sn	115	200.787	785033	0.69	200	100.4	90	110	
121	Sb	115	201.101	1150909	0.79	200	100.6	90	110	
137	Ba	115	202.651	406075	0.90	200	101.3	90	110	
205	Tl	209	188.209	4933117	0.85	200	94.1	90	110	
208	Pb	209	189.969	6676031	0.95	200	95.0	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1112522	0.22	1110849	100.15	70	120	
72	Ge	716180	0.42	719580	99.53	70	120	
115	In	6939995	1.34	6910036	100.43	70	120	
209	Bi	14694828	0.41	13786118	106.59	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	10/13/2016 11:57	Sample Name	CCB1-161013
Data Batch	161013.b	Comment	CCB ICPMS_TW
Data File Name	069_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.017	8	66.1	2	5	
9	Be	45	0.020	2	69.3	0.4	0.3	
11	B	45	4.805	262	9.5	10	10	
23	Na	45	37.945	115466	0.7	50	100	
24	Mg	45	0.064	1186	5.4	50	100	
27	Al	45	-2.726	6967	0.9	50	10	
39	K	45	28.361	87488	0.5	50	100	
44	Ca	45	2.244	1494	8.3	50	100	
47	Ti	45	0.000	18	28.6	4	3	
51	V	45	0.549	7491	2.1	4	3	
52	Cr	45	-0.017	2226	2.0	2	2	
55	Mn	45	0.077	573	8.1	2	3	
56	Fe	45	2.245	25249	31.0	50	50	
59	Co	72	-0.005	110	10.5	2	3	
60	Ni	72	0.112	439	6.3	2	3	
63	Cu	72	0.115	2385	2.8	2	2	
66	Zn	72	0.410	907	3.7	4	2	
75	As	72	0.081	394	4.0	2	2	
78	Se	72	0.972	242	2.7	1	2	
88	Sr	115	0.038	1721	4.1	4	3	
95	Mo	115	0.029	208	15.6	2	2	
107	Ag	115	0.173	1882	3.4	0.4	1	
111	Cd	115	-0.022	10	33.3	0.4	0.3	
118	Sn	115	0.046	1080	4.8	4	3	
121	Sb	115	-0.015	663	4.8	2	0.8	
137	Ba	115	0.021	117	32.5	2	3	
205	Tl	209	0.002	177	18.6	2	0.5	
208	Pb	209	-0.022	2708	3.5	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1107522	0.81	1110849	99.70	70	120	
72	Ge	723750	0.56	719580	100.58	70	120	
115	In	6866058	1.52	6910036	99.36	70	120	
209	Bi	13803452	3.49	13786118	100.13	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	10/13/2016 11:59	Sample Name	LCVL1-161013
Data Batch	161013.b	Comment	LCVLICPMS_TW
Data File Name	070LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	9.114	386	6.14	10	91.1	70	130	
9	Be	45	1.063	53	18.97	1	106.3	70	130	
11	B	45	22.517	618	7.56	20	112.6	70	130	
23	Na	45	114.817	184190	0.64	100	114.8	70	130	
24	Mg	45	98.504	47742	0.57	100	98.5	70	130	
27	Al	45	93.808	26490	0.58	100	93.8	70	130	
39	K	45	106.513	128607	0.73	100	106.5	70	130	
44	Ca	45	92.698	4045	4.93	100	92.7	70	130	
47	Ti	45	4.845	872	21.75	5	96.9	70	130	
51	V	45	1.469	12086	3.28	1	146.9	70	130	Fail
52	Cr	45	5.116	31806	0.97	5	102.3	70	130	
55	Mn	45	5.560	20983	0.80	5	111.2	70	130	
56	Fe	45	103.863	549995	0.26	100	103.9	70	130	
59	Co	72	5.154	45323	1.38	5	103.1	70	130	
60	Ni	72	5.092	11966	1.61	5	101.8	70	130	
63	Cu	72	5.373	35484	1.94	5	107.5	70	130	
66	Zn	72	5.368	6151	1.26	5	107.4	70	130	
75	As	72	5.082	4635	0.70	5	101.6	70	130	
78	Se	72	5.239	506	7.27	5	104.8	70	130	
88	Sr	115	4.977	28155	0.52	5	99.5	70	130	
95	Mo	115	4.747	17488	1.07	5	94.9	70	130	
107	Ag	115	1.913	20452	2.99	2	95.7	70	130	
111	Cd	115	0.942	1597	6.35	1	94.2	70	130	
118	Sn	115	4.960	20244	2.01	5	99.2	70	130	
121	Sb	115	1.864	11392	2.88	2	93.2	70	130	
137	Ba	115	4.959	9991	1.82	5	99.2	70	130	
205	Tl	209	0.962	23964	1.85	1	96.2	70	130	
208	Pb	209	0.930	34319	0.95	1	93.0	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1104049	0.97	1110849	99.39	70	120	
72	Ge	717972	0.12	719580	99.78	70	120	
115	In	6925984	0.79	6910036	100.23	70	120	
209	Bi	13886196	1.63	13786118	100.73	70	120	

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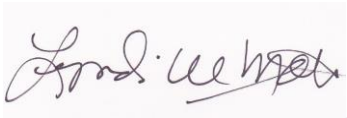

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72382

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill, STE 320, 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 01, 2016 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1611022
PROJECT LOCATION OR NAME:
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

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-DU172(0-2)-A	01	11-01-16	1106	S	Bag	1				X		X	
SGR-DU172(2-4)-A	02	11-01-16	1107	S	Bag	1				X		X	
SGR-DU172(4-6)-A	03	11-01-16	1111	S	Bag	1				X		X	
SGR-DU172(6-8)-A	04	11-01-16	1113	S	Bag	1				X		X	
SGR-DU172(02)-B	05	11-01-16	1118	S	Bag	1				X		X	
SGR-DU172(2-4)-B	06	11-01-16	1119	S	Bag	1				X		X	
SGR-DU172(4-6)-B	07	11-01-16	1122	S	Bag	1				X		X	Time: 1122
SGR-DU172(6-8)-B	08	11-01-16	1124	S	Bag	1				X		X	
SGR-DU172(0-2)-C	09	11-01-16	1127	S	Bag	1				X		X	
SGR-DU172(2-4)-C	10	11-01-16	1128	S	Bag	1				X		X	
SGR-DU172(4-6)-C	11	11-01-16	1129	S	Bag	1				X		X	
SGR-DU172(6-8)-C	12	11-01-16	1130	S	Bag	1				X		X	
SGR-EB172(20161101)	13	11-01-16	1415	W	Bottle	2		1		1		X	

RELINQUISHED BY: (Signature) DATE/TIME 11/1/16 1745 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/2/16 905 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: 0.4, 1.4, 2.2 THERM #: 28
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL ANALYTICAL
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Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73134

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 01, 2016 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1611022
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: 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 NOTES
SGR-DU103(0-2)-A	14	11-01-16	1530	S	Bag	1				X					X				X									
SGR-DU103(2-4)-A	15	11-01-16	1531	S	Bag	1				X					X				X									
SGR-DU103(4-6)-A	16	11-01-16	1532	S	Bag	1				X					X				X									
SGR-DU103(6-8)-A	17	11-01-16	1533	S	Bag	1				X					X				X									
SGR-DU103(0-2)-B	18	11-01-16	1538	S	Bag	1				X					X				X									
SGR-DU103(2-4)-B	19	11-01-16	1539	S	Bag	1				X					X				X									
SGR-DU103(4-6)-B	20	11-01-16	1540	S	Bag	1				X					X				X									
SGR-DU103(6-8)-B	21	11-01-16	1541	S	Bag	1				X					X				X									
SGR-DU103(0-2)-C	22	11-01-16	1550	S	Bag	1				X					X				X									
SGR-DU103(2-4)-C	23	11-01-16	1551	S	Bag	1				X					X				X									
SGR-DU103(4-6)-C	24	11-01-16	1552	S	Bag	1				X					X				X									
SGR-DU103(6-8)-C	25	11-01-16	1553	S	Bag	1				X					X				X									
SGR-EB103(20161101)	26	11-01-16	1604	W	Bottle	2	1			1					X				X									

RELINQUISHED BY: (Signature) DATE/TIME 11/01/16/1745 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/2/16 905 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: 1.0, 4.1 / 4.9 2.0 THERM #: 4.9 1.8
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: 11/2/2016

Work Order Number 1611022 | Received by JB

Checklist completed by: _____ 11/2/2016 (Signature / Date) | Reviewed by _____ 11/2/2016 (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 ☐	4.9 °C ; 1.0, 4.1, 2.0, 4.9
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 JB
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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-01
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:06 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	10.9	0.0926	0.278	0.139		mg/Kg-dry	5	11/10/16 12:01 PM
IS: Bismuth	95.0	0	30-120	0		%REC	5	11/10/16 12:01 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Acenaphthylene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Anthracene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[a]anthracene	0.0555	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[a]pyrene	0.0651	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[b]fluoranthene	0.0670	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[e]pyrene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[g,h,i]perylene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[j]fluoranthene	0.0749	0.0499	0.0998	0.0749	NU	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[k]fluoranthene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Chrysene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Dibenz[a,h]anthracene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Fluoranthene	0.0645	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Fluorene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Indeno[1,2,3-cd]pyrene	0.0575	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Phenanthrene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Pyrene	0.0576	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
IS: Acenaphthene-d10	95.3	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Naphthalene-d8	99.0	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Phenanthrene-d10	94.6	0	50-200	0		%REC	10	11/08/16 04:22 PM
Surr: 2-Fluorobiphenyl	99.1	0	46-115	0		%REC	10	11/08/16 04:22 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-DU172(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-01
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:06 AM
Lab Order:	1611022	**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	11/08/16 04:22 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-02
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:07 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.92	0.0980	0.294	0.147		mg/Kg-dry	5	11/10/16 12:03 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/10/16 12:03 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[b]fluoranthene	0.0533	0.0491	0.0982	0.0737	J	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Fluoranthene	0.0494	0.0491	0.0982	0.0737	J	mg/Kg-dry	10	11/08/16 04:50 PM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
IS: Acenaphthene-d10	94.6	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Chrysene-d12	97.4	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Naphthalene-d8	97.4	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Phenanthrene-d10	89.6	0	50-200	0		%REC	10	11/08/16 04:50 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 04:50 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(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-02
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:07 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	127	0	58-133	0		%REC	10	11/08/16 04:50 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-03
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:11 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.79	0.0935	0.280	0.140		mg/Kg-dry	5	11/10/16 12:05 PM
IS: Bismuth	92.4	0	30-120	0		%REC	5	11/10/16 12:05 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Acenaphthylene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[a]anthracene	0.0798	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[a]pyrene	0.0928	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[b]fluoranthene	0.103	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[e]pyrene	0.0527	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[g,h,i]perylene	0.0664	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[j]fluoranthene	0.0707	0.0471	0.0943	0.0707	NU	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[k]fluoranthene	0.0507	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Chrysene	0.0792	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Dibenz[a,h]anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Fluoranthene	0.0961	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/08/16 05:18 PM
Fluorene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Indeno[1,2,3-cd]pyrene	0.0762	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Phenanthrene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Pyrene	0.0832	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
IS: Acenaphthene-d10	96.9	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Chrysene-d12	97.7	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Naphthalene-d8	101	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Phenanthrene-d10	94.5	0	50-200	0		%REC	10	11/08/16 05:18 PM
Surr: 2-Fluorobiphenyl	93.8	0	46-115	0		%REC	10	11/08/16 05:18 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(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-03
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:11 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.3	0	58-133	0		%REC	10	11/08/16 05:18 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-04
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:13 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.58	0.0917	0.275	0.138		mg/Kg-dry	5	11/10/16 12:07 PM
IS: Bismuth	90.7	0	30-120	0		%REC	5	11/10/16 12:07 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	NU	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
IS: Acenaphthene-d10	93.6	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Chrysene-d12	93.9	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Naphthalene-d8	97.2	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Perylene-d12	106	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Phenanthrene-d10	93.1	0	50-200	0		%REC	10	11/08/16 05:46 PM
Surr: 2-Fluorobiphenyl	97.2	0	46-115	0		%REC	10	11/08/16 05:46 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(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-04
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:13 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.5	0	58-133	0		%REC	10	11/08/16 05:46 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-05
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:18 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.64	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:09 PM
IS: Bismuth	96.3	0	30-120	0		%REC	5	11/10/16 12:09 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Acenaphthylene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[a]anthracene	0.0600	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[a]pyrene	0.0694	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[b]fluoranthene	0.0705	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[e]pyrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[g,h,i]perylene	0.0498	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[j]fluoranthene	0.0734	0.0489	0.0978	0.0734	NU	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[k]fluoranthene	0.0503	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Chrysene	0.0535	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Dibenz[a,h]anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Fluoranthene	0.0673	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Fluorene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Indeno[1,2,3-cd]pyrene	0.0631	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Phenanthrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Pyrene	0.0629	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
IS: Acenaphthene-d10	95.6	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Chrysene-d12	99.1	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Naphthalene-d8	98.7	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Phenanthrene-d10	94.8	0	50-200	0		%REC	10	11/08/16 06:14 PM
Surr: 2-Fluorobiphenyl	95.5	0	46-115	0		%REC	10	11/08/16 06:14 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(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-05
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:18 AM
Lab Order:	1611022	**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	11/08/16 06:14 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-06
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:19 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.43	0.0952	0.286	0.143		mg/Kg-dry	5	11/10/16 12:11 PM
IS: Bismuth	92.2	0	30-120	0		%REC	5	11/10/16 12:11 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Acenaphthylene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[a]anthracene	0.0776	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[a]pyrene	0.0831	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[b]fluoranthene	0.0729	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[e]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[g,h,i]perylene	0.0534	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[j]fluoranthene	0.0730	0.0486	0.0973	0.0730	NU	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[k]fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Chrysene	0.0766	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Dibenz[a,h]anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Fluoranthene	0.101	0.0486	0.0973	0.0730		mg/Kg-dry	10	11/08/16 06:42 PM
Fluorene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Indeno[1,2,3-cd]pyrene	0.0688	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Phenanthrene	0.0518	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Pyrene	0.102	0.0486	0.0973	0.0730		mg/Kg-dry	10	11/08/16 06:42 PM
IS: Acenaphthene-d10	90.3	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Chrysene-d12	93.7	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Naphthalene-d8	96.7	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Phenanthrene-d10	93.1	0	50-200	0		%REC	10	11/08/16 06:42 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 06:42 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-DU172(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-06
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:19 AM
Lab Order:	1611022	**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	11/08/16 06:42 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-DU172(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-07
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:22 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.86	0.0943	0.283	0.142		mg/Kg-dry	5	11/10/16 12:13 PM
IS: Bismuth	91.4	0	30-120	0		%REC	5	11/10/16 12:13 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Acenaphthylene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Anthracene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[a]anthracene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[a]pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[b]fluoranthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[e]pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[g,h,i]perylene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[j]fluoranthene	0.0738	0.0492	0.0984	0.0738	NU	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[k]fluoranthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Chrysene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Dibenz[a,h]anthracene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Fluoranthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Fluorene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Indeno[1,2,3-cd]pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Phenanthrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
IS: Acenaphthene-d10	92.8	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Naphthalene-d8	96.5	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Phenanthrene-d10	91.9	0	50-200	0		%REC	10	11/08/16 07:10 PM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/08/16 07:10 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(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-07
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:22 AM
Lab Order:	1611022	**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	11/08/16 07:10 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-08
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:24 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.23	0.0971	0.291	0.146		mg/Kg-dry	5	11/10/16 12:14 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/10/16 12:14 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Acenaphthylene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[a]anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[a]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[b]fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[e]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[g,h,i]perylene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[j]fluoranthene	0.0746	0.0497	0.0994	0.0746	NU	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[k]fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Chrysene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Dibenz[a,h]anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Fluorene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Phenanthrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
IS: Acenaphthene-d10	91.3	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Chrysene-d12	101	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Naphthalene-d8	94.6	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Phenanthrene-d10	97.8	0	50-200	0		%REC	10	11/08/16 07:38 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/08/16 07:38 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-DU172(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-08
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:24 AM
Lab Order:	1611022	**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	11/08/16 07:38 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-09
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:27 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.7	0.0943	0.283	0.142		mg/Kg-dry	5	11/10/16 11:57 AM
IS: Bismuth	96.8	0	30-120	0		%REC	5	11/10/16 11:57 AM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Acenaphthylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[a]anthracene	0.0773	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[a]pyrene	0.0950	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[b]fluoranthene	0.0985	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[e]pyrene	0.0575	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[g,h,i]perylene	0.0761	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[j]fluoranthene	0.0712	0.0475	0.0950	0.0712	NU	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[k]fluoranthene	0.0604	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Chrysene	0.0799	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Dibenz[a,h]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Fluoranthene	0.101	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/08/16 08:05 PM
Fluorene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Indeno[1,2,3-cd]pyrene	0.0900	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Phenanthrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Pyrene	0.0852	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
IS: Acenaphthene-d10	97.6	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Naphthalene-d8	99.9	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Phenanthrene-d10	95.8	0	50-200	0		%REC	10	11/08/16 08:05 PM
Surr: 2-Fluorobiphenyl	97.0	0	46-115	0		%REC	10	11/08/16 08:05 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-DU172(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-09
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:27 AM
Lab Order:	1611022	**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	11/08/16 08:05 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-10
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:28 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.4	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:16 PM
IS: Bismuth	93.1	0	30-120	0		%REC	5	11/10/16 12:16 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[a]anthracene	0.0563	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[a]pyrene	0.0653	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[b]fluoranthene	0.0655	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	NU	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Chrysene	0.0526	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Fluoranthene	0.0689	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Indeno[1,2,3-cd]pyrene	0.0602	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Phenanthrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Pyrene	0.0602	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
IS: Acenaphthene-d10	94.4	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Chrysene-d12	96.7	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Naphthalene-d8	97.3	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Phenanthrene-d10	93.0	0	50-200	0		%REC	10	11/08/16 08:34 PM
Surr: 2-Fluorobiphenyl	95.9	0	46-115	0		%REC	10	11/08/16 08:34 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-10
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:28 AM
Lab Order:	1611022	**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	11/08/16 08:34 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-11
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:29 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.17	0.0980	0.294	0.147		mg/Kg-dry	5	11/10/16 12:34 PM
IS: Bismuth	93.3	0	30-120	0		%REC	5	11/10/16 12:34 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Acenaphthylene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Anthracene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[a]anthracene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[a]pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[b]fluoranthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[e]pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[g,h,i]perylene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[j]fluoranthene	0.0733	0.0489	0.0978	0.0733	NU	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[k]fluoranthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Chrysene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Dibenz[a,h]anthracene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Fluoranthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Fluorene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Indeno[1,2,3-cd]pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Phenanthrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
IS: Acenaphthene-d10	93.3	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Naphthalene-d8	97.0	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Phenanthrene-d10	91.8	0	50-200	0		%REC	10	11/08/16 09:01 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 09:01 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-11
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:29 AM
Lab Order:	1611022	**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	11/08/16 09:01 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		

CLIENT: Arcadis **Client Sample ID:** SGR-DU172(6-8)-C
Project: Laredo SGR **Lab ID:** 1611022-12
Project No: 04285081.0000.00043 **Collection Date:** 11/01/16 11:30 AM
Lab Order: 1611022 **Matrix:** SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.63	0.0980	0.294	0.147		mg/Kg-dry	5	11/10/16 12:36 PM
IS: Bismuth	93.8	0	30-120	0		%REC	5	11/10/16 12:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Acenaphthylene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[a]anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[a]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[b]fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[e]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[g,h,i]perylene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[j]fluoranthene	0.0730	0.0486	0.0973	0.0730	NU	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[k]fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Chrysene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Dibenz[a,h]anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Fluorene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Indeno[1,2,3-cd]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Phenanthrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
IS: Acenaphthene-d10	93.7	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Chrysene-d12	98.9	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Naphthalene-d8	98.0	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Perylene-d12	106	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Phenanthrene-d10	94.1	0	50-200	0		%REC	10	11/08/16 09:29 PM
Surr: 2-Fluorobiphenyl	98.8	0	46-115	0		%REC	10	11/08/16 09:29 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-DU172(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611022-12
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:30 AM
Lab Order:	1611022	**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	11/08/16 09:29 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-EB172(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-13
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 02:15 PM
Lab Order:	1611022	**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 02:30 PM
IS: Bismuth	82.4	0	30-120	0		%REC	1	11/16/16 02:30 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Acenaphthylene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Anthracene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[a]anthracene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[a]pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[b]fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[e]pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[g,h,i]perylene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[j]fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	NU	mg/L	1	11/08/16 11:04 AM
Benzo[k]fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Chrysene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Dibenz[a,h]anthracene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Fluorene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Indeno[1,2,3-cd]pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Phenanthrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
IS: Acenaphthene-d10	111	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Chrysene-d12	110	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Naphthalene-d8	112	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Perylene-d12	120	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Phenanthrene-d10	110	0	50-200	0		%REC	1	11/08/16 11:04 AM
Surr: 2-Fluorobiphenyl	69.0	0	53-106	0		%REC	1	11/08/16 11:04 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-EB172(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-13
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 02:15 PM
Lab Order:	1611022	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	80.1	0	58-132	0		%REC	1	11/08/16 11:04 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-DU103(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-14
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:30 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	120	0.0971	0.291	0.146		mg/Kg-dry	5	11/10/16 12:38 PM
IS: Bismuth	96.5	0	30-120	0		%REC	5	11/10/16 12:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Acenaphthylene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Anthracene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[a]anthracene	0.149	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[a]pyrene	0.159	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[b]fluoranthene	0.162	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[e]pyrene	0.106	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[g,h,i]perylene	0.122	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[j]fluoranthene	0.0617	0.0473	0.0945	0.0709	JN	mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[k]fluoranthene	0.0820	0.0473	0.0945	0.0709	J	mg/Kg-dry	10	11/08/16 09:57 PM
Chrysene	0.138	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Dibenz[a,h]anthracene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Fluoranthene	0.230	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Fluorene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Indeno[1,2,3-cd]pyrene	0.134	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Phenanthrene	0.0957	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Pyrene	0.190	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
IS: Acenaphthene-d10	96.0	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Chrysene-d12	96.8	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Naphthalene-d8	99.7	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Perylene-d12	108	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Phenanthrene-d10	93.9	0	50-200	0		%REC	10	11/08/16 09:57 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/08/16 09:57 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-DU103(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-14
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:30 PM
Lab Order:	1611022	**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	11/08/16 09:57 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-15
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:31 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.84	0.0952	0.286	0.143		mg/Kg-dry	5	11/10/16 12:40 PM
IS: Bismuth	94.0	0	30-120	0		%REC	5	11/10/16 12:40 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Acenaphthylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[a]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[a]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[b]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[e]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[g,h,i]perylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[j]fluoranthene	0.0746	0.0498	0.0995	0.0746	NU	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[k]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Chrysene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Dibenz[a,h]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Fluorene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Phenanthrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
IS: Acenaphthene-d10	89.4	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Chrysene-d12	98.8	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Naphthalene-d8	96.2	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Phenanthrene-d10	93.3	0	50-200	0		%REC	10	11/08/16 10:25 PM
Surr: 2-Fluorobiphenyl	104	0	46-115	0		%REC	10	11/08/16 10:25 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-DU103(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-15
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:31 PM
Lab Order:	1611022	**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	11/08/16 10:25 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-16
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:32 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	10.6	0.0971	0.291	0.146		mg/Kg-dry	5	11/10/16 12:42 PM
IS: Bismuth	93.7	0	30-120	0		%REC	5	11/10/16 12:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Acenaphthylene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Anthracene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[a]anthracene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[a]pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[b]fluoranthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[e]pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[g,h,i]perylene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[j]fluoranthene	0.0704	0.0469	0.0939	0.0704	NU	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[k]fluoranthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Chrysene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Dibenz[a,h]anthracene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Fluoranthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Fluorene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Indeno[1,2,3-cd]pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Phenanthrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
IS: Acenaphthene-d10	96.4	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Chrysene-d12	98.6	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Naphthalene-d8	96.1	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Phenanthrene-d10	91.7	0	50-200	0		%REC	10	11/08/16 10:53 PM
Surr: 2-Fluorobiphenyl	95.8	0	46-115	0		%REC	10	11/08/16 10:53 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-DU103(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-16
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:32 PM
Lab Order:	1611022	**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	11/08/16 10:53 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-DU103(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-17
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:33 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.2	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:44 PM
IS: Bismuth	92.1	0	30-120	0		%REC	5	11/10/16 12:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Acenaphthylene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Anthracene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[a]anthracene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[a]pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[b]fluoranthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[e]pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[g,h,i]perylene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[j]fluoranthene	0.0716	0.0477	0.0954	0.0716	NU	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[k]fluoranthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Chrysene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Dibenz[a,h]anthracene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Fluoranthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Fluorene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Indeno[1,2,3-cd]pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Phenanthrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
IS: Acenaphthene-d10	90.5	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Chrysene-d12	94.3	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Naphthalene-d8	92.7	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Phenanthrene-d10	89.1	0	50-200	0		%REC	10	11/08/16 11:21 PM
Surr: 2-Fluorobiphenyl	97.9	0	46-115	0		%REC	10	11/08/16 11:21 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-17
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:33 PM
Lab Order:	1611022	**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	11/08/16 11:21 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-18
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:38 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	53.3	0.0943	0.283	0.142		mg/Kg-dry	5	11/10/16 12:46 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/10/16 12:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Acenaphthylene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Anthracene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[a]anthracene	0.0872	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[a]pyrene	0.107	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[b]fluoranthene	0.110	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[e]pyrene	0.0643	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[g,h,i]perylene	0.0795	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[j]fluoranthene	0.0726	0.0484	0.0968	0.0726	NU	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[k]fluoranthene	0.0598	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Chrysene	0.0833	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Dibenz[a,h]anthracene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Fluoranthene	0.122	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
Fluorene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Indeno[1,2,3-cd]pyrene	0.0928	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Phenanthrene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Pyrene	0.109	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
IS: Acenaphthene-d10	88.3	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Chrysene-d12	92.2	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Naphthalene-d8	90.7	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Phenanthrene-d10	87.1	0	50-200	0		%REC	10	11/08/16 11:49 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 11:49 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-DU103(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-18
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:38 PM
Lab Order:	1611022	**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	11/08/16 11:49 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-19
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:39 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	25.7	0.0909	0.273	0.136		mg/Kg-dry	5	11/10/16 12:48 PM
IS: Bismuth	92.0	0	30-120	0		%REC	5	11/10/16 12:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Acenaphthylene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Anthracene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[a]anthracene	0.0644	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[a]pyrene	0.0697	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[b]fluoranthene	0.0753	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[e]pyrene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[g,h,i]perylene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[j]fluoranthene	0.0720	0.0480	0.0961	0.0720	NU	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[k]fluoranthene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Chrysene	0.0531	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Dibenz[a,h]anthracene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Fluoranthene	0.0775	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Fluorene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Indeno[1,2,3-cd]pyrene	0.0577	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Phenanthrene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Pyrene	0.0674	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
IS: Acenaphthene-d10	90.3	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Chrysene-d12	95.1	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Naphthalene-d8	93.4	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Phenanthrene-d10	91.3	0	50-200	0		%REC	10	11/09/16 12:17 AM
Surr: 2-Fluorobiphenyl	98.7	0	46-115	0		%REC	10	11/09/16 12:17 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-DU103(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-19
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:39 PM
Lab Order:	1611022	**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	11/09/16 12:17 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-20
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:40 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	10.5	0.0917	0.275	0.138		mg/Kg-dry	5	11/10/16 12:50 PM
IS: Bismuth	91.7	0	30-120	0		%REC	5	11/10/16 12:50 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Acenaphthylene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[a]anthracene	0.253	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[a]pyrene	0.348	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[b]fluoranthene	0.348	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[e]pyrene	0.237	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[g,h,i]perylene	0.246	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[j]fluoranthene	0.141	0.0485	0.0971	0.0728	N	mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[k]fluoranthene	0.188	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Chrysene	0.292	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Dibenz[a,h]anthracene	0.0548	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/09/16 12:45 AM
Fluoranthene	0.348	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Fluorene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Indeno[1,2,3-cd]pyrene	0.261	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Phenanthrene	0.0671	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/09/16 12:45 AM
Pyrene	0.334	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
IS: Acenaphthene-d10	92.1	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Chrysene-d12	95.8	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Naphthalene-d8	93.9	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Phenanthrene-d10	89.7	0	50-200	0		%REC	10	11/09/16 12:45 AM
Surr: 2-Fluorobiphenyl	96.0	0	46-115	0		%REC	10	11/09/16 12:45 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-DU103(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-20
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:40 PM
Lab Order:	1611022	**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	11/09/16 12:45 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-21
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:41 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.9	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:52 PM
IS: Bismuth	91.9	0	30-120	0		%REC	5	11/10/16 12:52 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[a]anthracene	0.0521	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[a]pyrene	0.0616	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[b]fluoranthene	0.0642	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	NU	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Chrysene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Fluoranthene	0.0530	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Indeno[1,2,3-cd]pyrene	0.0588	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Phenanthrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Pyrene	0.0511	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
IS: Acenaphthene-d10	90.2	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Chrysene-d12	93.2	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Naphthalene-d8	91.0	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Perylene-d12	99.1	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Phenanthrene-d10	89.5	0	50-200	0		%REC	10	11/09/16 01:13 AM
Surr: 2-Fluorobiphenyl	96.9	0	46-115	0		%REC	10	11/09/16 01:13 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-21
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:41 PM
Lab Order:	1611022	**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	11/09/16 01:13 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-22
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:50 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	31.1	0.0917	0.275	0.138		mg/Kg-dry	5	11/16/16 02:31 PM
IS: Bismuth	86.1	0	30-120	0		%REC	5	11/16/16 02:31 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Acenaphthylene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[a]anthracene	0.171	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[a]pyrene	0.211	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[b]fluoranthene	0.216	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[e]pyrene	0.167	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[g,h,i]perylene	0.172	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[j]fluoranthene	0.101	0.0492	0.0983	0.0737	N	mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[k]fluoranthene	0.103	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Chrysene	0.199	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Dibenz[a,h]anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Fluoranthene	0.276	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Fluorene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Indeno[1,2,3-cd]pyrene	0.168	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Phenanthrene	0.108	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Pyrene	0.243	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
IS: Acenaphthene-d10	79.4	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Chrysene-d12	81.3	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Naphthalene-d8	64.3	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Perylene-d12	83.3	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Phenanthrene-d10	80.5	0	50-200	0		%REC	10	11/10/16 11:46 AM
Surr: 2-Fluorobiphenyl	95.6	0	46-115	0		%REC	10	11/10/16 11:46 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-DU103(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-22
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:50 PM
Lab Order:	1611022	**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	11/10/16 11:46 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-23
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:51 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.38	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:33 PM
IS: Bismuth	86.4	0	30-120	0		%REC	5	11/16/16 02:33 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Acenaphthylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[a]anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[a]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[b]fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[e]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[g,h,i]perylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[j]fluoranthene	0.0721	0.0481	0.0962	0.0721	NU	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[k]fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Chrysene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Dibenz[a,h]anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Fluorene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Indeno[1,2,3-cd]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Phenanthrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
IS: Acenaphthene-d10	77.4	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Chrysene-d12	79.6	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Naphthalene-d8	61.2	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Perylene-d12	79.7	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Phenanthrene-d10	79.1	0	50-200	0		%REC	10	11/10/16 12:15 PM
Surr: 2-Fluorobiphenyl	97.3	0	46-115	0		%REC	10	11/10/16 12:15 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(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-23
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:51 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 12:15 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-24
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:52 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.08	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:35 PM
IS: Bismuth	84.8	0	30-120	0		%REC	5	11/16/16 02:35 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[b]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
IS: Acenaphthene-d10	79.2	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Chrysene-d12	82.1	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Naphthalene-d8	75.8	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Perylene-d12	82.6	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Phenanthrene-d10	80.7	0	50-200	0		%REC	10	11/10/16 12:44 PM
Surr: 2-Fluorobiphenyl	95.8	0	46-115	0		%REC	10	11/10/16 12:44 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-24
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:52 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 12:44 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611022-25
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:53 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	13.2	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:37 PM
IS: Bismuth	87.5	0	30-120	0		%REC	5	11/16/16 02:37 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Acenaphthylene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Anthracene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[a]anthracene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[a]pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[b]fluoranthene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[e]pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[g,h,i]perylene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[j]fluoranthene	0.0711	0.0474	0.0948	0.0711	NU	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[k]fluoranthene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Chrysene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Dibenz[a,h]anthracene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Fluoranthene	0.0477	0.0474	0.0948	0.0711	J	mg/Kg-dry	10	11/10/16 01:12 PM
Fluorene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Indeno[1,2,3-cd]pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Phenanthrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
IS: Acenaphthene-d10	80.6	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Chrysene-d12	82.5	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Naphthalene-d8	70.8	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Perylene-d12	83.5	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Phenanthrene-d10	82.4	0	50-200	0		%REC	10	11/10/16 01:12 PM
Surr: 2-Fluorobiphenyl	97.3	0	46-115	0		%REC	10	11/10/16 01:12 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611022-25
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:53 PM
Lab Order:	1611022	**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	11/10/16 01:12 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB103(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-26
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 04:04 PM
Lab Order:	1611022	**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 02:36 PM
IS: Bismuth	81.9	0	30-120	0		%REC	1	11/16/16 02:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Acenaphthylene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Anthracene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[a]anthracene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[a]pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[b]fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[e]pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[g,h,i]perylene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[j]fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	NU	mg/L	1	11/08/16 11:33 AM
Benzo[k]fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Chrysene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Dibenz[a,h]anthracene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Fluorene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Indeno[1,2,3-cd]pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Phenanthrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
IS: Acenaphthene-d10	97.7	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Chrysene-d12	100	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Naphthalene-d8	101	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Perylene-d12	108	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Phenanthrene-d10	100	0	50-200	0		%REC	1	11/08/16 11:33 AM
Surr: 2-Fluorobiphenyl	76.4	0	53-106	0		%REC	1	11/08/16 11:33 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB103(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-26
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 04:04 PM
Lab Order:	1611022	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	77.7	0	58-132	0		%REC	1	11/08/16 11:33 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		

November 21, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1611022

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 26 sample(s) on 11/2/2016 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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№ 72382

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill, STE 320, 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 01, 2016 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1611022
PROJECT LOCATION OR NAME:
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

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-DU172(0-2)-A	01	11-01-16	1106	S	Bag	1				X		X	
SGR-DU172(2-4)-A	02	11-01-16	1107	S	Bag	1				X		X	
SGR-DU172(4-6)-A	03	11-01-16	1111	S	Bag	1				X		X	
SGR-DU172(6-8)-A	04	11-01-16	1113	S	Bag	1				X		X	
SGR-DU172(02)-B	05	11-01-16	1118	S	Bag	1				X		X	
SGR-DU172(2-4)-B	06	11-01-16	1119	S	Bag	1				X		X	
SGR-DU172(4-6)-B	07	11-01-16	1122	S	Bag	1				X		X	Time: 1122
SGR-DU172(6-8)-B	08	11-01-16	1124	S	Bag	1				X		X	
SGR-DU172(0-2)-C	09	11-01-16	1127	S	Bag	1				X		X	
SGR-DU172(2-4)-C	10	11-01-16	1128	S	Bag	1				X		X	
SGR-DU172(4-6)-C	11	11-01-16	1129	S	Bag	1				X		X	
SGR-DU172(6-8)-C	12	11-01-16	1130	S	Bag	1				X		X	
SGR-EB172(20161101)	13	11-01-16	1415	W	Bottle	2		1		1		X	

RELINQUISHED BY: (Signature) DATE/TIME 11/1/16 1745 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/2/16 905 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: 0.4, 1.4, 2.2 THERM #: 28
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

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№ 73134

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 01, 2016 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1611022
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: 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 NOTES
SGR-DU103(0-2)-A	14	11-01-16	1530	S	Bag	1				X					X				X									
SGR-DU103(2-4)-A	15	11-01-16	1531	S	Bag	1				X					X				X									
SGR-DU103(4-6)-A	16	11-01-16	1532	S	Bag	1				X					X				X									
SGR-DU103(6-8)-A	17	11-01-16	1533	S	Bag	1				X					X				X									
SGR-DU103(0-2)-B	18	11-01-16	1538	S	Bag	1				X					X				X									
SGR-DU103(2-4)-B	19	11-01-16	1539	S	Bag	1				X					X				X									
SGR-DU103(4-6)-B	20	11-01-16	1540	S	Bag	1				X					X				X									
SGR-DU103(6-8)-B	21	11-01-16	1541	S	Bag	1				X					X				X									
SGR-DU103(0-2)-C	22	11-01-16	1550	S	Bag	1				X					X				X									
SGR-DU103(2-4)-C	23	11-01-16	1551	S	Bag	1				X					X				X									
SGR-DU103(4-6)-C	24	11-01-16	1552	S	Bag	1				X					X				X									
SGR-DU103(6-8)-C	25	11-01-16	1553	S	Bag	1				X					X				X									
SGR-EB103(20161101)	26	11-01-16	1604	W	Bottle	2	1			1					X				X									

RELINQUISHED BY: (Signature) DATE/TIME 11/01/16/1745 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/2/16 905 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: 1.0, 4.1 / 4.9 2.0 THERM #: 4.9 1.8
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

Street Address ... to P.O. boxes or P.O. ZIP codes

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 01NOV16
WGT: 78.50 LB
006994464/SSFE1722
24x14x13 IN
...IRD PARTY

Part # 156297V435 RT12 APV EXP 08/17

RT 512 FZ

TO DHL ANALYTICAL

2300 DOUBLE CREEK D...

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

1 10:30 C 3451 11.02

FedEx Express

E

J162016101201uv

5 of 5

MPS# 0263 7845 2318 3451

Mstr# 7845 2318 3418 0201

WED - 02 NOV 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

1/1/16

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 01NOV16
ACTWGT: 63.00 LB
CAD: 006994464/SSFE1722
DIMS: 24x14x13 IN

BILL THIRD PARTY

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J162016101201uv

3 of 5

MPS# 0263 7845 2318 3430

Mstr# 7845 2318 3418 0201

WED - 02 NOV 10:30A
PRIORITY OVERNIGHT

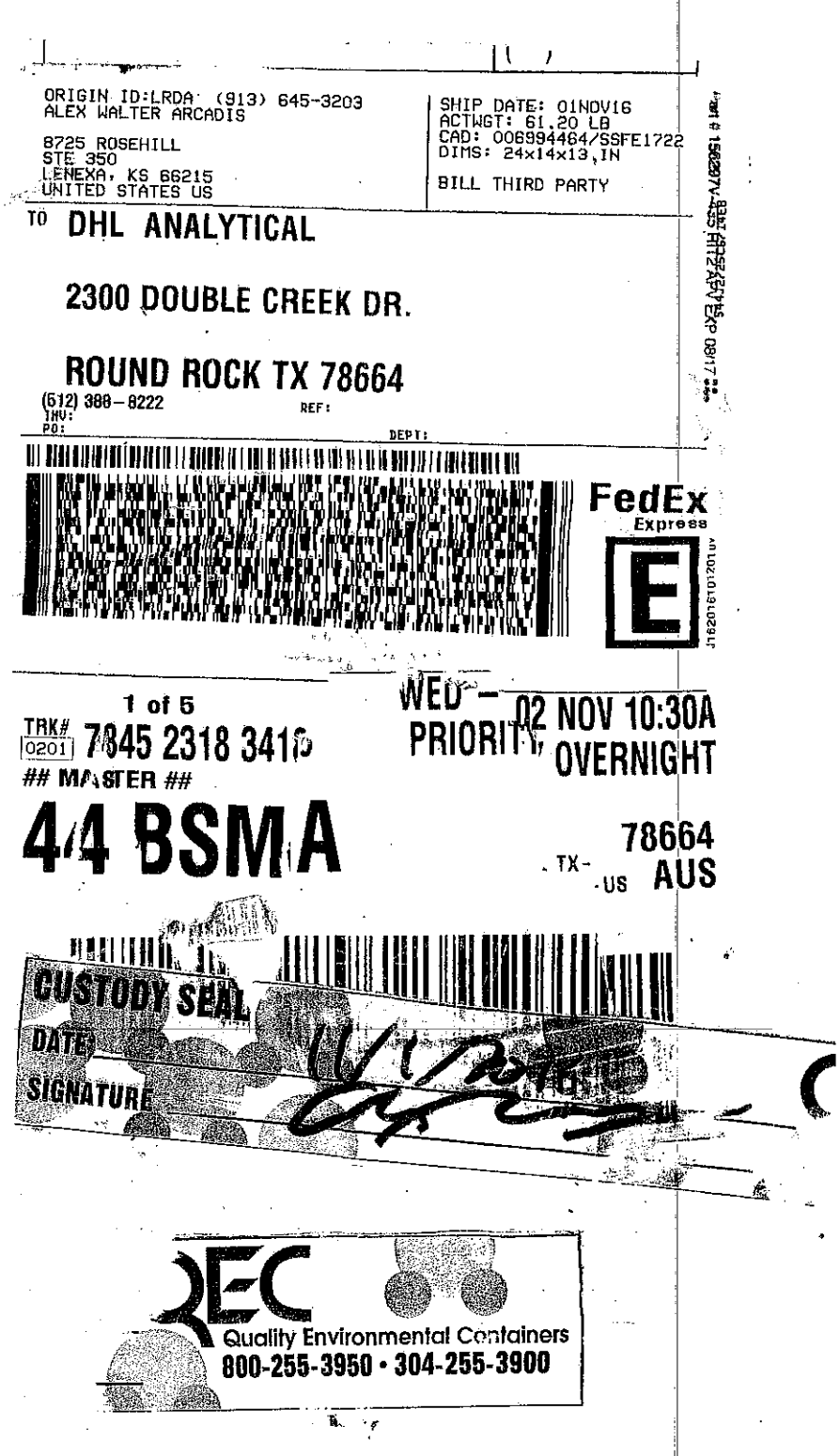
44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/1/2016
SIGNATURE


Dept /Floor/Suite/Room
ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS
8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US
SHIP DATE: 01NOV16
WGT: 51.50 LB
06994464/SSFE1722
14x13 IN
ARTY
TO DHL ANALYTICAL
2300 DOUBLE CR
ROUND ROCK
(512) 388-8222
INV:
PO:
FedEx Express
2 of 5
TRK# 7845 2318 3429
T# 7845 2318 3418
0201
WED - 02 NOV 10
PRIORITY OVERN
4 BSMA
TX-US
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900
CUSTODY SEAL
DATE
SIGNATURE


ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS
8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US
SHIP DATE: 01NOV16
ACTWGT: 61.20 LB
CAD: 006994464/SSFE1722
DIMS: 24x14x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
2300 DOUBLE CREEK DR.
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx Express
1 of 5
TRK# 7845 2318 3416
0201
MASTER
WED - 02 NOV 10:30A
PRIORITY OVERNIGHT
44 BSMA
78664
TX-US AUS
CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

-- P.O. boxes or P.O. zip

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 01NOV16
ACTWGT: 65.00 LB
CAD: 006994464/SSFE1722
DIMS: 24x14x13 IN

BILL THIRD PARTY

TO **DHL ANALYTICAL**

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

4 of 5

MPS# 0263 **7845 2318 3440**

Mstr# 7845 2318 3418 0201

WED - 02 NOV 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US **AUS**

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/01/2016
SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/2/2016

Work Order Number 1611022 | Received by JB

Checklist completed by: _____ 11/2/2016 (Signature / Date) | Reviewed by _____ 11/2/2016 (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 ☐	4.9 °C ; 1.0, 4.1, 2.0, 4.9
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 JB
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:** 11/21/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1611022
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**				
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:** 11/21/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1611022

#[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**				
		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

11/21/16

Date

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 11/2/2016. A total of 26 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For PAH Analysis, for soil batch 77815, the recovery of Phenanthrene for the Matrix Spike Duplicate (1611022-09 MSD) was slightly above the method control limits. This was flagged accordingly in the QC Summary Report. The recovery of this compound was within method control limits in the associated LCS/MS. 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 all of the surface and 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 twenty-four sub-surface samples for DHL WO # 1611022. These were processed to pass #10 sieve (2mm); of those subsurface samples, six 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.

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 11/2/2016. 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:
None

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611022

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1611022-01	SGR-DU172(0-2)-A		11/01/16 11:06 AM	11/2/2016
1611022-02	SGR-DU172(2-4)-A		11/01/16 11:07 AM	11/2/2016
1611022-03	SGR-DU172(4-6)-A		11/01/16 11:11 AM	11/2/2016
1611022-04	SGR-DU172(6-8)-A		11/01/16 11:13 AM	11/2/2016
1611022-05	SGR-DU172(0-2)-B		11/01/16 11:18 AM	11/2/2016
1611022-06	SGR-DU172(2-4)-B		11/01/16 11:19 AM	11/2/2016
1611022-07	SGR-DU172(4-6)-B		11/01/16 11:22 AM	11/2/2016
1611022-08	SGR-DU172(6-8)-B		11/01/16 11:24 AM	11/2/2016
1611022-09	SGR-DU172(0-2)-C		11/01/16 11:27 AM	11/2/2016
1611022-10	SGR-DU172(2-4)-C		11/01/16 11:28 AM	11/2/2016
1611022-11	SGR-DU172(4-6)-C		11/01/16 11:29 AM	11/2/2016
1611022-12	SGR-DU172(6-8)-C		11/01/16 11:30 AM	11/2/2016
1611022-13	SGR-EB172(20161101)		11/01/16 02:15 PM	11/2/2016
1611022-14	SGR-DU103(0-2)-A		11/01/16 03:30 PM	11/2/2016
1611022-15	SGR-DU103(2-4)-A		11/01/16 03:31 PM	11/2/2016
1611022-16	SGR-DU103(4-6)-A		11/01/16 03:32 PM	11/2/2016
1611022-17	SGR-DU103(6-8)-A		11/01/16 03:33 PM	11/2/2016
1611022-18	SGR-DU103(0-2)-B		11/01/16 03:38 PM	11/2/2016
1611022-19	SGR-DU103(2-4)-B		11/01/16 03:39 PM	11/2/2016
1611022-20	SGR-DU103(4-6)-B		11/01/16 03:40 PM	11/2/2016
1611022-21	SGR-DU103(6-8)-B		11/01/16 03:41 PM	11/2/2016
1611022-22	SGR-DU103(0-2)-C		11/01/16 03:50 PM	11/2/2016
1611022-23	SGR-DU103(2-4)-C		11/01/16 03:51 PM	11/2/2016
1611022-24	SGR-DU103(4-6)-C		11/01/16 03:52 PM	11/2/2016
1611022-25	SGR-DU103(6-8)-C		11/01/16 03:53 PM	11/2/2016
1611022-26	SGR-EB103(20161101)		11/01/16 04:04 PM	11/2/2016

Lab Order: 1611022
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611022-01A	SGR-DU172(0-2)-A	11/01/16 11:06 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(0-2)-A	11/01/16 11:06 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-02A	SGR-DU172(2-4)-A	11/01/16 11:07 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(2-4)-A	11/01/16 11:07 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-03A	SGR-DU172(4-6)-A	11/01/16 11:11 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(4-6)-A	11/01/16 11:11 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-04A	SGR-DU172(6-8)-A	11/01/16 11:13 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(6-8)-A	11/01/16 11:13 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-05A	SGR-DU172(0-2)-B	11/01/16 11:18 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(0-2)-B	11/01/16 11:18 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-06A	SGR-DU172(2-4)-B	11/01/16 11:19 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(2-4)-B	11/01/16 11:19 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-07A	SGR-DU172(4-6)-B	11/01/16 11:22 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(4-6)-B	11/01/16 11:22 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-08A	SGR-DU172(6-8)-B	11/01/16 11:24 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(6-8)-B	11/01/16 11:24 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-09A	SGR-DU172(0-2)-C	11/01/16 11:27 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(0-2)-C	11/01/16 11:27 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-10A	SGR-DU172(2-4)-C	11/01/16 11:28 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(2-4)-C	11/01/16 11:28 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-11A	SGR-DU172(4-6)-C	11/01/16 11:29 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(4-6)-C	11/01/16 11:29 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-12A	SGR-DU172(6-8)-C	11/01/16 11:30 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU172(6-8)-C	11/01/16 11:30 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-13A	SGR-EB172(20161101)	11/01/16 02:15 PM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611022-13B	SGR-EB172(20161101)	11/01/16 02:15 PM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/07/16 10:45 AM	77809
1611022-14A	SGR-DU103(0-2)-A	11/01/16 03:30 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(0-2)-A	11/01/16 03:30 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808

Lab Order: 1611022
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611022-15A	SGR-DU103(2-4)-A	11/01/16 03:31 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(2-4)-A	11/01/16 03:31 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-16A	SGR-DU103(4-6)-A	11/01/16 03:32 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(4-6)-A	11/01/16 03:32 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-17A	SGR-DU103(6-8)-A	11/01/16 03:33 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(6-8)-A	11/01/16 03:33 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-18A	SGR-DU103(0-2)-B	11/01/16 03:38 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(0-2)-B	11/01/16 03:38 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-19A	SGR-DU103(2-4)-B	11/01/16 03:39 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(2-4)-B	11/01/16 03:39 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-20A	SGR-DU103(4-6)-B	11/01/16 03:40 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(4-6)-B	11/01/16 03:40 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-21A	SGR-DU103(6-8)-B	11/01/16 03:41 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/07/16 01:37 PM	77815
	SGR-DU103(6-8)-B	11/01/16 03:41 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/07/16 09:27 AM	77808
1611022-22A	SGR-DU103(0-2)-C	11/01/16 03:50 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU103(0-2)-C	11/01/16 03:50 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611022-23A	SGR-DU103(2-4)-C	11/01/16 03:51 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU103(2-4)-C	11/01/16 03:51 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611022-24A	SGR-DU103(4-6)-C	11/01/16 03:52 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU103(4-6)-C	11/01/16 03:52 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611022-25A	SGR-DU103(6-8)-C	11/01/16 03:53 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU103(6-8)-C	11/01/16 03:53 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611022-26A	SGR-EB103(20161101)	11/01/16 04:04 PM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611022-26B	SGR-EB103(20161101)	11/01/16 04:04 PM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/07/16 10:45 AM	77809

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ISM PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611022-01A	SGR-DU172(0-2)-A	11/1/2016 11:06:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-02A	SGR-DU172(2-4)-A	11/1/2016 11:07:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-03A	SGR-DU172(4-6)-A	11/1/2016 11:11:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-04A	SGR-DU172(6-8)-A	11/1/2016 11:13:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-05A	SGR-DU172(0-2)-B	11/1/2016 11:18:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-06A	SGR-DU172(2-4)-B	11/1/2016 11:19:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-07A	SGR-DU172(4-6)-B	11/1/2016 11:22:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-08A	SGR-DU172(6-8)-B	11/1/2016 11:24:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-09A	SGR-DU172(0-2)-C	11/1/2016 11:27:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-10A	SGR-DU172(2-4)-C	11/1/2016 11:28:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-11A	SGR-DU172(4-6)-C	11/1/2016 11:29:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-12A	SGR-DU172(6-8)-C	11/1/2016 11:30:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-14A	SGR-DU103(0-2)-A	11/1/2016 3:30:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-15A	SGR-DU103(2-4)-A	11/1/2016 3:31:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-16A	SGR-DU103(4-6)-A	11/1/2016 3:32:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-17A	SGR-DU103(6-8)-A	11/1/2016 3:33:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-18A	SGR-DU103(0-2)-B	11/1/2016 3:38:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-19A	SGR-DU103(2-4)-B	11/1/2016 3:39:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-20A	SGR-DU103(4-6)-B	11/1/2016 3:40:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-21A	SGR-DU103(6-8)-B	11/1/2016 3:41:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-22A	SGR-DU103(0-2)-C	11/1/2016 3:50:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-23A	SGR-DU103(2-4)-C	11/1/2016 3:51:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-24A	SGR-DU103(4-6)-C	11/1/2016 3:52:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771
1611022-25A	SGR-DU103(6-8)-C	11/1/2016 3:53:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/2/2016 12:20:00 PM	77771

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611022-01A	SGR-DU172(0-2)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 04:22 PM	GCMS6_161108B
	SGR-DU172(0-2)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:01 PM	ICP-MS4_161110A
1611022-02A	SGR-DU172(2-4)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 04:50 PM	GCMS6_161108B
	SGR-DU172(2-4)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:03 PM	ICP-MS4_161110A
1611022-03A	SGR-DU172(4-6)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 05:18 PM	GCMS6_161108B
	SGR-DU172(4-6)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:05 PM	ICP-MS4_161110A
1611022-04A	SGR-DU172(6-8)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 05:46 PM	GCMS6_161108B
	SGR-DU172(6-8)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:07 PM	ICP-MS4_161110A
1611022-05A	SGR-DU172(0-2)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 06:14 PM	GCMS6_161108B
	SGR-DU172(0-2)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:09 PM	ICP-MS4_161110A
1611022-06A	SGR-DU172(2-4)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 06:42 PM	GCMS6_161108B
	SGR-DU172(2-4)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:11 PM	ICP-MS4_161110A
1611022-07A	SGR-DU172(4-6)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 07:10 PM	GCMS6_161108B
	SGR-DU172(4-6)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:13 PM	ICP-MS4_161110A
1611022-08A	SGR-DU172(6-8)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 07:38 PM	GCMS6_161108B
	SGR-DU172(6-8)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:14 PM	ICP-MS4_161110A
1611022-09A	SGR-DU172(0-2)-C	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 08:05 PM	GCMS6_161108B
	SGR-DU172(0-2)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 11:57 AM	ICP-MS4_161110A
1611022-10A	SGR-DU172(2-4)-C	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 08:34 PM	GCMS6_161108B
	SGR-DU172(2-4)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:16 PM	ICP-MS4_161110A
1611022-11A	SGR-DU172(4-6)-C	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 09:01 PM	GCMS6_161108B
	SGR-DU172(4-6)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:34 PM	ICP-MS4_161110A
1611022-12A	SGR-DU172(6-8)-C	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 09:29 PM	GCMS6_161108B
	SGR-DU172(6-8)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:36 PM	ICP-MS4_161110A
1611022-13A	SGR-EB172(20161101)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 02:30 PM	ICP-MS3_161116A
1611022-13B	SGR-EB172(20161101)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77809	1	11/08/16 11:04 AM	GCMS6_161108A
1611022-14A	SGR-DU103(0-2)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 09:57 PM	GCMS6_161108B
	SGR-DU103(0-2)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:38 PM	ICP-MS4_161110A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1611022-15A	SGR-DU103(2-4)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 10:25 PM	GCMS6_161108B
	SGR-DU103(2-4)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:40 PM	ICP-MS4_161110A
1611022-16A	SGR-DU103(4-6)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 10:53 PM	GCMS6_161108B
	SGR-DU103(4-6)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:42 PM	ICP-MS4_161110A
1611022-17A	SGR-DU103(6-8)-A	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 11:21 PM	GCMS6_161108B
	SGR-DU103(6-8)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:44 PM	ICP-MS4_161110A
1611022-18A	SGR-DU103(0-2)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/08/16 11:49 PM	GCMS6_161108B
	SGR-DU103(0-2)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:46 PM	ICP-MS4_161110A
1611022-19A	SGR-DU103(2-4)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/09/16 12:17 AM	GCMS6_161108B
	SGR-DU103(2-4)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:48 PM	ICP-MS4_161110A
1611022-20A	SGR-DU103(4-6)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/09/16 12:45 AM	GCMS6_161108B
	SGR-DU103(4-6)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:50 PM	ICP-MS4_161110A
1611022-21A	SGR-DU103(6-8)-B	Soil	SW8270D-LL	PAHs: GC/MS	77815	10	11/09/16 01:13 AM	GCMS6_161108B
	SGR-DU103(6-8)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77808	5	11/10/16 12:52 PM	ICP-MS4_161110A
1611022-22A	SGR-DU103(0-2)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 11:46 AM	GCMS8_161110A
	SGR-DU103(0-2)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:31 PM	ICP-MS4_161116B
1611022-23A	SGR-DU103(2-4)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 12:15 PM	GCMS8_161110A
	SGR-DU103(2-4)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:33 PM	ICP-MS4_161116B
1611022-24A	SGR-DU103(4-6)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 12:44 PM	GCMS8_161110A
	SGR-DU103(4-6)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:35 PM	ICP-MS4_161116B
1611022-25A	SGR-DU103(6-8)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 01:12 PM	GCMS8_161110A
	SGR-DU103(6-8)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:37 PM	ICP-MS4_161116B
1611022-26A	SGR-EB103(20161101)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 02:36 PM	ICP-MS3_161116A
1611022-26B	SGR-EB103(20161101)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77809	1	11/08/16 11:33 AM	GCMS6_161108A

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-01
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:06 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	10.9	0.0926	0.278	0.139		mg/Kg-dry	5	11/10/16 12:01 PM
IS: Bismuth	95.0	0	30-120	0		%REC	5	11/10/16 12:01 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Acenaphthylene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Anthracene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[a]anthracene	0.0555	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[a]pyrene	0.0651	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[b]fluoranthene	0.0670	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[e]pyrene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[g,h,i]perylene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[j]fluoranthene	0.0749	0.0499	0.0998	0.0749	NU	mg/Kg-dry	10	11/08/16 04:22 PM
Benzo[k]fluoranthene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Chrysene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Dibenz[a,h]anthracene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Fluoranthene	0.0645	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Fluorene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Indeno[1,2,3-cd]pyrene	0.0575	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
Phenanthrene	0.0749	0.0499	0.0998	0.0749	U	mg/Kg-dry	10	11/08/16 04:22 PM
Pyrene	0.0576	0.0499	0.0998	0.0749	J	mg/Kg-dry	10	11/08/16 04:22 PM
IS: Acenaphthene-d10	95.3	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Naphthalene-d8	99.0	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 04:22 PM
IS: Phenanthrene-d10	94.6	0	50-200	0		%REC	10	11/08/16 04:22 PM
Surr: 2-Fluorobiphenyl	99.1	0	46-115	0		%REC	10	11/08/16 04:22 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-DU172(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-01
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:06 AM
Lab Order:	1611022	**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	11/08/16 04:22 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-02
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:07 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.92	0.0980	0.294	0.147		mg/Kg-dry	5	11/10/16 12:03 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/10/16 12:03 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[b]fluoranthene	0.0533	0.0491	0.0982	0.0737	J	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	11/08/16 04:50 PM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Fluoranthene	0.0494	0.0491	0.0982	0.0737	J	mg/Kg-dry	10	11/08/16 04:50 PM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/08/16 04:50 PM
IS: Acenaphthene-d10	94.6	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Chrysene-d12	97.4	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Naphthalene-d8	97.4	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 04:50 PM
IS: Phenanthrene-d10	89.6	0	50-200	0		%REC	10	11/08/16 04:50 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 04:50 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(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-02
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:07 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	127	0	58-133	0		%REC	10	11/08/16 04:50 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-03
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:11 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.79	0.0935	0.280	0.140		mg/Kg-dry	5	11/10/16 12:05 PM
IS: Bismuth	92.4	0	30-120	0		%REC	5	11/10/16 12:05 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Acenaphthylene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[a]anthracene	0.0798	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[a]pyrene	0.0928	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[b]fluoranthene	0.103	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[e]pyrene	0.0527	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[g,h,i]perylene	0.0664	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[j]fluoranthene	0.0707	0.0471	0.0943	0.0707	NU	mg/Kg-dry	10	11/08/16 05:18 PM
Benzo[k]fluoranthene	0.0507	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Chrysene	0.0792	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Dibenz[a,h]anthracene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Fluoranthene	0.0961	0.0471	0.0943	0.0707		mg/Kg-dry	10	11/08/16 05:18 PM
Fluorene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Indeno[1,2,3-cd]pyrene	0.0762	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
Phenanthrene	0.0707	0.0471	0.0943	0.0707	U	mg/Kg-dry	10	11/08/16 05:18 PM
Pyrene	0.0832	0.0471	0.0943	0.0707	J	mg/Kg-dry	10	11/08/16 05:18 PM
IS: Acenaphthene-d10	96.9	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Chrysene-d12	97.7	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Naphthalene-d8	101	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 05:18 PM
IS: Phenanthrene-d10	94.5	0	50-200	0		%REC	10	11/08/16 05:18 PM
Surr: 2-Fluorobiphenyl	93.8	0	46-115	0		%REC	10	11/08/16 05:18 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(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-03
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:11 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.3	0	58-133	0		%REC	10	11/08/16 05:18 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-04
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:13 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.58	0.0917	0.275	0.138		mg/Kg-dry	5	11/10/16 12:07 PM
IS: Bismuth	90.7	0	30-120	0		%REC	5	11/10/16 12:07 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	NU	mg/Kg-dry	10	11/08/16 05:46 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/08/16 05:46 PM
IS: Acenaphthene-d10	93.6	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Chrysene-d12	93.9	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Naphthalene-d8	97.2	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Perylene-d12	106	0	50-200	0		%REC	10	11/08/16 05:46 PM
IS: Phenanthrene-d10	93.1	0	50-200	0		%REC	10	11/08/16 05:46 PM
Surr: 2-Fluorobiphenyl	97.2	0	46-115	0		%REC	10	11/08/16 05:46 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(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-04
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:13 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.5	0	58-133	0		%REC	10	11/08/16 05:46 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-05
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:18 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.64	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:09 PM
IS: Bismuth	96.3	0	30-120	0		%REC	5	11/10/16 12:09 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Acenaphthylene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[a]anthracene	0.0600	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[a]pyrene	0.0694	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[b]fluoranthene	0.0705	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[e]pyrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[g,h,i]perylene	0.0498	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[j]fluoranthene	0.0734	0.0489	0.0978	0.0734	NU	mg/Kg-dry	10	11/08/16 06:14 PM
Benzo[k]fluoranthene	0.0503	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Chrysene	0.0535	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Dibenz[a,h]anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Fluoranthene	0.0673	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Fluorene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Indeno[1,2,3-cd]pyrene	0.0631	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
Phenanthrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/08/16 06:14 PM
Pyrene	0.0629	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/08/16 06:14 PM
IS: Acenaphthene-d10	95.6	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Chrysene-d12	99.1	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Naphthalene-d8	98.7	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 06:14 PM
IS: Phenanthrene-d10	94.8	0	50-200	0		%REC	10	11/08/16 06:14 PM
Surr: 2-Fluorobiphenyl	95.5	0	46-115	0		%REC	10	11/08/16 06:14 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(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-05
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:18 AM
Lab Order:	1611022	**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	11/08/16 06:14 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-06
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:19 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.43	0.0952	0.286	0.143		mg/Kg-dry	5	11/10/16 12:11 PM
IS: Bismuth	92.2	0	30-120	0		%REC	5	11/10/16 12:11 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Acenaphthylene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[a]anthracene	0.0776	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[a]pyrene	0.0831	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[b]fluoranthene	0.0729	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[e]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[g,h,i]perylene	0.0534	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[j]fluoranthene	0.0730	0.0486	0.0973	0.0730	NU	mg/Kg-dry	10	11/08/16 06:42 PM
Benzo[k]fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Chrysene	0.0766	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Dibenz[a,h]anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Fluoranthene	0.101	0.0486	0.0973	0.0730		mg/Kg-dry	10	11/08/16 06:42 PM
Fluorene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 06:42 PM
Indeno[1,2,3-cd]pyrene	0.0688	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Phenanthrene	0.0518	0.0486	0.0973	0.0730	J	mg/Kg-dry	10	11/08/16 06:42 PM
Pyrene	0.102	0.0486	0.0973	0.0730		mg/Kg-dry	10	11/08/16 06:42 PM
IS: Acenaphthene-d10	90.3	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Chrysene-d12	93.7	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Naphthalene-d8	96.7	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 06:42 PM
IS: Phenanthrene-d10	93.1	0	50-200	0		%REC	10	11/08/16 06:42 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 06:42 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-DU172(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-06
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:19 AM
Lab Order:	1611022	**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	11/08/16 06:42 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-DU172(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-07
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:22 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.86	0.0943	0.283	0.142		mg/Kg-dry	5	11/10/16 12:13 PM
IS: Bismuth	91.4	0	30-120	0		%REC	5	11/10/16 12:13 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Acenaphthylene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Anthracene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[a]anthracene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[a]pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[b]fluoranthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[e]pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[g,h,i]perylene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[j]fluoranthene	0.0738	0.0492	0.0984	0.0738	NU	mg/Kg-dry	10	11/08/16 07:10 PM
Benzo[k]fluoranthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Chrysene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Dibenz[a,h]anthracene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Fluoranthene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Fluorene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Indeno[1,2,3-cd]pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Phenanthrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
Pyrene	0.0738	0.0492	0.0984	0.0738	U	mg/Kg-dry	10	11/08/16 07:10 PM
IS: Acenaphthene-d10	92.8	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Chrysene-d12	96.0	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Naphthalene-d8	96.5	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/08/16 07:10 PM
IS: Phenanthrene-d10	91.9	0	50-200	0		%REC	10	11/08/16 07:10 PM
Surr: 2-Fluorobiphenyl	102	0	46-115	0		%REC	10	11/08/16 07:10 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(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-07
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:22 AM
Lab Order:	1611022	**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	11/08/16 07:10 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-08
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:24 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.23	0.0971	0.291	0.146		mg/Kg-dry	5	11/10/16 12:14 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/10/16 12:14 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Acenaphthylene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[a]anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[a]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[b]fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[e]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[g,h,i]perylene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[j]fluoranthene	0.0746	0.0497	0.0994	0.0746	NU	mg/Kg-dry	10	11/08/16 07:38 PM
Benzo[k]fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Chrysene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Dibenz[a,h]anthracene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Fluoranthene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Fluorene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Phenanthrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
Pyrene	0.0746	0.0497	0.0994	0.0746	U	mg/Kg-dry	10	11/08/16 07:38 PM
IS: Acenaphthene-d10	91.3	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Chrysene-d12	101	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Naphthalene-d8	94.6	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 07:38 PM
IS: Phenanthrene-d10	97.8	0	50-200	0		%REC	10	11/08/16 07:38 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/08/16 07:38 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-DU172(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-08
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:24 AM
Lab Order:	1611022	**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	11/08/16 07:38 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-09
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:27 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.7	0.0943	0.283	0.142		mg/Kg-dry	5	11/10/16 11:57 AM
IS: Bismuth	96.8	0	30-120	0		%REC	5	11/10/16 11:57 AM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Acenaphthylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[a]anthracene	0.0773	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[a]pyrene	0.0950	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[b]fluoranthene	0.0985	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[e]pyrene	0.0575	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[g,h,i]perylene	0.0761	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[j]fluoranthene	0.0712	0.0475	0.0950	0.0712	NU	mg/Kg-dry	10	11/08/16 08:05 PM
Benzo[k]fluoranthene	0.0604	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Chrysene	0.0799	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Dibenz[a,h]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Fluoranthene	0.101	0.0475	0.0950	0.0712		mg/Kg-dry	10	11/08/16 08:05 PM
Fluorene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Indeno[1,2,3-cd]pyrene	0.0900	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
Phenanthrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/08/16 08:05 PM
Pyrene	0.0852	0.0475	0.0950	0.0712	J	mg/Kg-dry	10	11/08/16 08:05 PM
IS: Acenaphthene-d10	97.6	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Naphthalene-d8	99.9	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 08:05 PM
IS: Phenanthrene-d10	95.8	0	50-200	0		%REC	10	11/08/16 08:05 PM
Surr: 2-Fluorobiphenyl	97.0	0	46-115	0		%REC	10	11/08/16 08:05 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-DU172(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-09
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:27 AM
Lab Order:	1611022	**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	11/08/16 08:05 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-10
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:28 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.4	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:16 PM
IS: Bismuth	93.1	0	30-120	0		%REC	5	11/10/16 12:16 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[a]anthracene	0.0563	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[a]pyrene	0.0653	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[b]fluoranthene	0.0655	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	NU	mg/Kg-dry	10	11/08/16 08:34 PM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Chrysene	0.0526	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Fluoranthene	0.0689	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Indeno[1,2,3-cd]pyrene	0.0602	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
Phenanthrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/08/16 08:34 PM
Pyrene	0.0602	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/08/16 08:34 PM
IS: Acenaphthene-d10	94.4	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Chrysene-d12	96.7	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Naphthalene-d8	97.3	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Perylene-d12	105	0	50-200	0		%REC	10	11/08/16 08:34 PM
IS: Phenanthrene-d10	93.0	0	50-200	0		%REC	10	11/08/16 08:34 PM
Surr: 2-Fluorobiphenyl	95.9	0	46-115	0		%REC	10	11/08/16 08:34 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-10
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:28 AM
Lab Order:	1611022	**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	11/08/16 08:34 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-11
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:29 AM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	7.17	0.0980	0.294	0.147		mg/Kg-dry	5	11/10/16 12:34 PM
IS: Bismuth	93.3	0	30-120	0		%REC	5	11/10/16 12:34 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Acenaphthylene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Anthracene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[a]anthracene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[a]pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[b]fluoranthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[e]pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[g,h,i]perylene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[j]fluoranthene	0.0733	0.0489	0.0978	0.0733	NU	mg/Kg-dry	10	11/08/16 09:01 PM
Benzo[k]fluoranthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Chrysene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Dibenz[a,h]anthracene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Fluoranthene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Fluorene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Indeno[1,2,3-cd]pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Phenanthrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
Pyrene	0.0733	0.0489	0.0978	0.0733	U	mg/Kg-dry	10	11/08/16 09:01 PM
IS: Acenaphthene-d10	93.3	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Chrysene-d12	96.2	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Naphthalene-d8	97.0	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/08/16 09:01 PM
IS: Phenanthrene-d10	91.8	0	50-200	0		%REC	10	11/08/16 09:01 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 09:01 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU172(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-11
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:29 AM
Lab Order:	1611022	**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	11/08/16 09:01 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		

CLIENT: Arcadis **Client Sample ID:** SGR-DU172(6-8)-C
Project: Laredo SGR **Lab ID:** 1611022-12
Project No: 04285081.0000.00043 **Collection Date:** 11/01/16 11:30 AM
Lab Order: 1611022 **Matrix:** SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.63	0.0980	0.294	0.147		mg/Kg-dry	5	11/10/16 12:36 PM
IS: Bismuth	93.8	0	30-120	0		%REC	5	11/10/16 12:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Acenaphthylene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[a]anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[a]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[b]fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[e]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[g,h,i]perylene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[j]fluoranthene	0.0730	0.0486	0.0973	0.0730	NU	mg/Kg-dry	10	11/08/16 09:29 PM
Benzo[k]fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Chrysene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Dibenz[a,h]anthracene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Fluoranthene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Fluorene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Indeno[1,2,3-cd]pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Phenanthrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
Pyrene	0.0730	0.0486	0.0973	0.0730	U	mg/Kg-dry	10	11/08/16 09:29 PM
IS: Acenaphthene-d10	93.7	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Chrysene-d12	98.9	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Naphthalene-d8	98.0	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Perylene-d12	106	0	50-200	0		%REC	10	11/08/16 09:29 PM
IS: Phenanthrene-d10	94.1	0	50-200	0		%REC	10	11/08/16 09:29 PM
Surr: 2-Fluorobiphenyl	98.8	0	46-115	0		%REC	10	11/08/16 09:29 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-DU172(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611022-12
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 11:30 AM
Lab Order:	1611022	**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	11/08/16 09:29 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-EB172(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-13
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 02:15 PM
Lab Order:	1611022	**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 02:30 PM
IS: Bismuth	82.4	0	30-120	0		%REC	1	11/16/16 02:30 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Acenaphthylene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Anthracene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[a]anthracene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[a]pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[b]fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[e]pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[g,h,i]perylene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Benzo[j]fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	NU	mg/L	1	11/08/16 11:04 AM
Benzo[k]fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Chrysene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Dibenz[a,h]anthracene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Fluoranthene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Fluorene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Indeno[1,2,3-cd]pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Phenanthrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
Pyrene	0.0000639	0.0000399	0.0000799	0.0000639	U	mg/L	1	11/08/16 11:04 AM
IS: Acenaphthene-d10	111	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Chrysene-d12	110	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Naphthalene-d8	112	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Perylene-d12	120	0	50-200	0		%REC	1	11/08/16 11:04 AM
IS: Phenanthrene-d10	110	0	50-200	0		%REC	1	11/08/16 11:04 AM
Surr: 2-Fluorobiphenyl	69.0	0	53-106	0		%REC	1	11/08/16 11:04 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-EB172(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-13
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 02:15 PM
Lab Order:	1611022	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	80.1	0	58-132	0		%REC	1	11/08/16 11:04 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-DU103(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-14
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:30 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	120	0.0971	0.291	0.146		mg/Kg-dry	5	11/10/16 12:38 PM
IS: Bismuth	96.5	0	30-120	0		%REC	5	11/10/16 12:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Acenaphthylene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Anthracene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[a]anthracene	0.149	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[a]pyrene	0.159	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[b]fluoranthene	0.162	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[e]pyrene	0.106	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[g,h,i]perylene	0.122	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[j]fluoranthene	0.0617	0.0473	0.0945	0.0709	JN	mg/Kg-dry	10	11/08/16 09:57 PM
Benzo[k]fluoranthene	0.0820	0.0473	0.0945	0.0709	J	mg/Kg-dry	10	11/08/16 09:57 PM
Chrysene	0.138	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Dibenz[a,h]anthracene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Fluoranthene	0.230	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Fluorene	0.0709	0.0473	0.0945	0.0709	U	mg/Kg-dry	10	11/08/16 09:57 PM
Indeno[1,2,3-cd]pyrene	0.134	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Phenanthrene	0.0957	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
Pyrene	0.190	0.0473	0.0945	0.0709		mg/Kg-dry	10	11/08/16 09:57 PM
IS: Acenaphthene-d10	96.0	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Chrysene-d12	96.8	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Naphthalene-d8	99.7	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Perylene-d12	108	0	50-200	0		%REC	10	11/08/16 09:57 PM
IS: Phenanthrene-d10	93.9	0	50-200	0		%REC	10	11/08/16 09:57 PM
Surr: 2-Fluorobiphenyl	100	0	46-115	0		%REC	10	11/08/16 09:57 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-DU103(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611022-14
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:30 PM
Lab Order:	1611022	**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	11/08/16 09:57 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-15
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:31 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.84	0.0952	0.286	0.143		mg/Kg-dry	5	11/10/16 12:40 PM
IS: Bismuth	94.0	0	30-120	0		%REC	5	11/10/16 12:40 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Acenaphthylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[a]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[a]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[b]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[e]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[g,h,i]perylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[j]fluoranthene	0.0746	0.0498	0.0995	0.0746	NU	mg/Kg-dry	10	11/08/16 10:25 PM
Benzo[k]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Chrysene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Dibenz[a,h]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Fluorene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Phenanthrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
Pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/08/16 10:25 PM
IS: Acenaphthene-d10	89.4	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Chrysene-d12	98.8	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Naphthalene-d8	96.2	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/08/16 10:25 PM
IS: Phenanthrene-d10	93.3	0	50-200	0		%REC	10	11/08/16 10:25 PM
Surr: 2-Fluorobiphenyl	104	0	46-115	0		%REC	10	11/08/16 10:25 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-DU103(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611022-15
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:31 PM
Lab Order:	1611022	**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	11/08/16 10:25 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-16
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:32 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	10.6	0.0971	0.291	0.146		mg/Kg-dry	5	11/10/16 12:42 PM
IS: Bismuth	93.7	0	30-120	0		%REC	5	11/10/16 12:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Acenaphthylene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Anthracene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[a]anthracene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[a]pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[b]fluoranthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[e]pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[g,h,i]perylene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[j]fluoranthene	0.0704	0.0469	0.0939	0.0704	NU	mg/Kg-dry	10	11/08/16 10:53 PM
Benzo[k]fluoranthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Chrysene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Dibenz[a,h]anthracene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Fluoranthene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Fluorene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Indeno[1,2,3-cd]pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Phenanthrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
Pyrene	0.0704	0.0469	0.0939	0.0704	U	mg/Kg-dry	10	11/08/16 10:53 PM
IS: Acenaphthene-d10	96.4	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Chrysene-d12	98.6	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Naphthalene-d8	96.1	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Perylene-d12	107	0	50-200	0		%REC	10	11/08/16 10:53 PM
IS: Phenanthrene-d10	91.7	0	50-200	0		%REC	10	11/08/16 10:53 PM
Surr: 2-Fluorobiphenyl	95.8	0	46-115	0		%REC	10	11/08/16 10:53 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-DU103(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611022-16
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:32 PM
Lab Order:	1611022	**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	11/08/16 10:53 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-DU103(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-17
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:33 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.2	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:44 PM
IS: Bismuth	92.1	0	30-120	0		%REC	5	11/10/16 12:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Acenaphthylene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Anthracene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[a]anthracene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[a]pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[b]fluoranthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[e]pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[g,h,i]perylene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[j]fluoranthene	0.0716	0.0477	0.0954	0.0716	NU	mg/Kg-dry	10	11/08/16 11:21 PM
Benzo[k]fluoranthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Chrysene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Dibenz[a,h]anthracene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Fluoranthene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Fluorene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Indeno[1,2,3-cd]pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Phenanthrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
Pyrene	0.0716	0.0477	0.0954	0.0716	U	mg/Kg-dry	10	11/08/16 11:21 PM
IS: Acenaphthene-d10	90.5	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Chrysene-d12	94.3	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Naphthalene-d8	92.7	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Perylene-d12	102	0	50-200	0		%REC	10	11/08/16 11:21 PM
IS: Phenanthrene-d10	89.1	0	50-200	0		%REC	10	11/08/16 11:21 PM
Surr: 2-Fluorobiphenyl	97.9	0	46-115	0		%REC	10	11/08/16 11:21 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611022-17
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:33 PM
Lab Order:	1611022	**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	11/08/16 11:21 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-18
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:38 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	53.3	0.0943	0.283	0.142		mg/Kg-dry	5	11/10/16 12:46 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/10/16 12:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Acenaphthylene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Anthracene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[a]anthracene	0.0872	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[a]pyrene	0.107	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[b]fluoranthene	0.110	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[e]pyrene	0.0643	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[g,h,i]perylene	0.0795	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[j]fluoranthene	0.0726	0.0484	0.0968	0.0726	NU	mg/Kg-dry	10	11/08/16 11:49 PM
Benzo[k]fluoranthene	0.0598	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Chrysene	0.0833	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Dibenz[a,h]anthracene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Fluoranthene	0.122	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
Fluorene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Indeno[1,2,3-cd]pyrene	0.0928	0.0484	0.0968	0.0726	J	mg/Kg-dry	10	11/08/16 11:49 PM
Phenanthrene	0.0726	0.0484	0.0968	0.0726	U	mg/Kg-dry	10	11/08/16 11:49 PM
Pyrene	0.109	0.0484	0.0968	0.0726		mg/Kg-dry	10	11/08/16 11:49 PM
IS: Acenaphthene-d10	88.3	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Chrysene-d12	92.2	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Naphthalene-d8	90.7	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Perylene-d12	101	0	50-200	0		%REC	10	11/08/16 11:49 PM
IS: Phenanthrene-d10	87.1	0	50-200	0		%REC	10	11/08/16 11:49 PM
Surr: 2-Fluorobiphenyl	101	0	46-115	0		%REC	10	11/08/16 11:49 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-DU103(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611022-18
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:38 PM
Lab Order:	1611022	**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	11/08/16 11:49 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-19
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:39 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	25.7	0.0909	0.273	0.136		mg/Kg-dry	5	11/10/16 12:48 PM
IS: Bismuth	92.0	0	30-120	0		%REC	5	11/10/16 12:48 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Acenaphthylene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Anthracene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[a]anthracene	0.0644	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[a]pyrene	0.0697	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[b]fluoranthene	0.0753	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[e]pyrene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[g,h,i]perylene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[j]fluoranthene	0.0720	0.0480	0.0961	0.0720	NU	mg/Kg-dry	10	11/09/16 12:17 AM
Benzo[k]fluoranthene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Chrysene	0.0531	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Dibenz[a,h]anthracene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Fluoranthene	0.0775	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Fluorene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Indeno[1,2,3-cd]pyrene	0.0577	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
Phenanthrene	0.0720	0.0480	0.0961	0.0720	U	mg/Kg-dry	10	11/09/16 12:17 AM
Pyrene	0.0674	0.0480	0.0961	0.0720	J	mg/Kg-dry	10	11/09/16 12:17 AM
IS: Acenaphthene-d10	90.3	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Chrysene-d12	95.1	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Naphthalene-d8	93.4	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/09/16 12:17 AM
IS: Phenanthrene-d10	91.3	0	50-200	0		%REC	10	11/09/16 12:17 AM
Surr: 2-Fluorobiphenyl	98.7	0	46-115	0		%REC	10	11/09/16 12:17 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-DU103(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611022-19
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:39 PM
Lab Order:	1611022	**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	11/09/16 12:17 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-20
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:40 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	10.5	0.0917	0.275	0.138		mg/Kg-dry	5	11/10/16 12:50 PM
IS: Bismuth	91.7	0	30-120	0		%REC	5	11/10/16 12:50 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Acenaphthylene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[a]anthracene	0.253	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[a]pyrene	0.348	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[b]fluoranthene	0.348	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[e]pyrene	0.237	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[g,h,i]perylene	0.246	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[j]fluoranthene	0.141	0.0485	0.0971	0.0728	N	mg/Kg-dry	10	11/09/16 12:45 AM
Benzo[k]fluoranthene	0.188	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Chrysene	0.292	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Dibenz[a,h]anthracene	0.0548	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/09/16 12:45 AM
Fluoranthene	0.348	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Fluorene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/09/16 12:45 AM
Indeno[1,2,3-cd]pyrene	0.261	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
Phenanthrene	0.0671	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/09/16 12:45 AM
Pyrene	0.334	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/09/16 12:45 AM
IS: Acenaphthene-d10	92.1	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Chrysene-d12	95.8	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Naphthalene-d8	93.9	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Perylene-d12	104	0	50-200	0		%REC	10	11/09/16 12:45 AM
IS: Phenanthrene-d10	89.7	0	50-200	0		%REC	10	11/09/16 12:45 AM
Surr: 2-Fluorobiphenyl	96.0	0	46-115	0		%REC	10	11/09/16 12:45 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-DU103(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611022-20
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:40 PM
Lab Order:	1611022	**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	11/09/16 12:45 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-21
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:41 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.9	0.0962	0.288	0.144		mg/Kg-dry	5	11/10/16 12:52 PM
IS: Bismuth	91.9	0	30-120	0		%REC	5	11/10/16 12:52 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[a]anthracene	0.0521	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[a]pyrene	0.0616	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[b]fluoranthene	0.0642	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	NU	mg/Kg-dry	10	11/09/16 01:13 AM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Chrysene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Fluoranthene	0.0530	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Indeno[1,2,3-cd]pyrene	0.0588	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
Phenanthrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/09/16 01:13 AM
Pyrene	0.0511	0.0493	0.0985	0.0739	J	mg/Kg-dry	10	11/09/16 01:13 AM
IS: Acenaphthene-d10	90.2	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Chrysene-d12	93.2	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Naphthalene-d8	91.0	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Perylene-d12	99.1	0	50-200	0		%REC	10	11/09/16 01:13 AM
IS: Phenanthrene-d10	89.5	0	50-200	0		%REC	10	11/09/16 01:13 AM
Surr: 2-Fluorobiphenyl	96.9	0	46-115	0		%REC	10	11/09/16 01:13 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611022-21
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:41 PM
Lab Order:	1611022	**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	11/09/16 01:13 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-22
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:50 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	31.1	0.0917	0.275	0.138		mg/Kg-dry	5	11/16/16 02:31 PM
IS: Bismuth	86.1	0	30-120	0		%REC	5	11/16/16 02:31 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Acenaphthylene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[a]anthracene	0.171	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[a]pyrene	0.211	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[b]fluoranthene	0.216	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[e]pyrene	0.167	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[g,h,i]perylene	0.172	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[j]fluoranthene	0.101	0.0492	0.0983	0.0737	N	mg/Kg-dry	10	11/10/16 11:46 AM
Benzo[k]fluoranthene	0.103	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Chrysene	0.199	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Dibenz[a,h]anthracene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Fluoranthene	0.276	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Fluorene	0.0737	0.0492	0.0983	0.0737	U	mg/Kg-dry	10	11/10/16 11:46 AM
Indeno[1,2,3-cd]pyrene	0.168	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Phenanthrene	0.108	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
Pyrene	0.243	0.0492	0.0983	0.0737		mg/Kg-dry	10	11/10/16 11:46 AM
IS: Acenaphthene-d10	79.4	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Chrysene-d12	81.3	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Naphthalene-d8	64.3	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Perylene-d12	83.3	0	50-200	0		%REC	10	11/10/16 11:46 AM
IS: Phenanthrene-d10	80.5	0	50-200	0		%REC	10	11/10/16 11:46 AM
Surr: 2-Fluorobiphenyl	95.6	0	46-115	0		%REC	10	11/10/16 11:46 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-DU103(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611022-22
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:50 PM
Lab Order:	1611022	**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	11/10/16 11:46 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-23
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:51 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.38	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:33 PM
IS: Bismuth	86.4	0	30-120	0		%REC	5	11/16/16 02:33 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Acenaphthylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[a]anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[a]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[b]fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[e]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[g,h,i]perylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[j]fluoranthene	0.0721	0.0481	0.0962	0.0721	NU	mg/Kg-dry	10	11/10/16 12:15 PM
Benzo[k]fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Chrysene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Dibenz[a,h]anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Fluorene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Indeno[1,2,3-cd]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Phenanthrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
Pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/10/16 12:15 PM
IS: Acenaphthene-d10	77.4	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Chrysene-d12	79.6	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Naphthalene-d8	61.2	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Perylene-d12	79.7	0	50-200	0		%REC	10	11/10/16 12:15 PM
IS: Phenanthrene-d10	79.1	0	50-200	0		%REC	10	11/10/16 12:15 PM
Surr: 2-Fluorobiphenyl	97.3	0	46-115	0		%REC	10	11/10/16 12:15 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(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611022-23
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:51 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 12:15 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-24
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:52 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.08	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:35 PM
IS: Bismuth	84.8	0	30-120	0		%REC	5	11/16/16 02:35 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[b]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	11/10/16 12:44 PM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/10/16 12:44 PM
IS: Acenaphthene-d10	79.2	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Chrysene-d12	82.1	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Naphthalene-d8	75.8	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Perylene-d12	82.6	0	50-200	0		%REC	10	11/10/16 12:44 PM
IS: Phenanthrene-d10	80.7	0	50-200	0		%REC	10	11/10/16 12:44 PM
Surr: 2-Fluorobiphenyl	95.8	0	46-115	0		%REC	10	11/10/16 12:44 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611022-24
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:52 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 12:44 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611022-25
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:53 PM
Lab Order:	1611022	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	13.2	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:37 PM
IS: Bismuth	87.5	0	30-120	0		%REC	5	11/16/16 02:37 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Acenaphthylene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Anthracene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[a]anthracene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[a]pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[b]fluoranthene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[e]pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[g,h,i]perylene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[j]fluoranthene	0.0711	0.0474	0.0948	0.0711	NU	mg/Kg-dry	10	11/10/16 01:12 PM
Benzo[k]fluoranthene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Chrysene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Dibenz[a,h]anthracene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Fluoranthene	0.0477	0.0474	0.0948	0.0711	J	mg/Kg-dry	10	11/10/16 01:12 PM
Fluorene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Indeno[1,2,3-cd]pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Phenanthrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
Pyrene	0.0711	0.0474	0.0948	0.0711	U	mg/Kg-dry	10	11/10/16 01:12 PM
IS: Acenaphthene-d10	80.6	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Chrysene-d12	82.5	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Naphthalene-d8	70.8	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Perylene-d12	83.5	0	50-200	0		%REC	10	11/10/16 01:12 PM
IS: Phenanthrene-d10	82.4	0	50-200	0		%REC	10	11/10/16 01:12 PM
Surr: 2-Fluorobiphenyl	97.3	0	46-115	0		%REC	10	11/10/16 01:12 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU103(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611022-25
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 03:53 PM
Lab Order:	1611022	**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	11/10/16 01:12 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB103(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-26
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 04:04 PM
Lab Order:	1611022	**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 02:36 PM
IS: Bismuth	81.9	0	30-120	0		%REC	1	11/16/16 02:36 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Acenaphthylene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Anthracene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[a]anthracene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[a]pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[b]fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[e]pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[g,h,i]perylene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Benzo[j]fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	NU	mg/L	1	11/08/16 11:33 AM
Benzo[k]fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Chrysene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Dibenz[a,h]anthracene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Fluoranthene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Fluorene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Indeno[1,2,3-cd]pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Phenanthrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
Pyrene	0.0000647	0.0000404	0.0000809	0.0000647	U	mg/L	1	11/08/16 11:33 AM
IS: Acenaphthene-d10	97.7	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Chrysene-d12	100	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Naphthalene-d8	101	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Perylene-d12	108	0	50-200	0		%REC	1	11/08/16 11:33 AM
IS: Phenanthrene-d10	100	0	50-200	0		%REC	1	11/08/16 11:33 AM
Surr: 2-Fluorobiphenyl	76.4	0	53-106	0		%REC	1	11/08/16 11:33 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB103(20161101)
Project:	Laredo SGR	**Lab ID:**	1611022-26
Project No:	04285081.0000.00043	**Collection Date:**	11/01/16 04:04 PM
Lab Order:	1611022	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	77.7	0	58-132	0		%REC	1	11/08/16 11:33 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		

CLIENT: Arcadis
Work Order: 1611022
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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS3_161116A**

The QC data in batch 77913 applies to the following samples: 1611022-13A, 1611022-26A

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: 1611022
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: 1611022
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: 1611022
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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161110A

The QC data in batch 77808 applies to the following samples: 1611022-01A, 1611022-02A, 1611022-03A, 1611022-04A, 1611022-05A, 1611022-06A, 1611022-07A, 1611022-08A, 1611022-09A, 1611022-10A, 1611022-11A, 1611022-12A, 1611022-14A, 1611022-15A, 1611022-16A, 1611022-17A, 1611022-18A, 1611022-19A, 1611022-20A, 1611022-21A

Sample ID **MB-77808** Batch ID: **77808** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_161110A** Analysis Date: **11/10/2016 11:49:00 A** Prep Date: **11/7/2016**

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		103	30	120			

Sample ID **LCS-77808** Batch ID: **77808** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_161110A** Analysis Date: **11/10/2016 11:51:00 A** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	50.5	0.300	50.00	0	101	84	118			
IS: Bismuth	50.0		200.0		102	30	120			

Sample ID **LCSD-77808** Batch ID: **77808** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_161110A** Analysis Date: **11/10/2016 11:53:00 A** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	51.1	0.300	50.00	0	102	84	118	1.27	20	
IS: Bismuth	50.0		200.0		100	30	120	0	0	

Sample ID **1611022-09A SD** Batch ID: **77808** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_161110A** Analysis Date: **11/10/2016 11:59:00 A** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	11.8	1.42	0	11.70				1.16	10	
IS: Bismuth	236		188.7		101	30	120	0	0	

Sample ID **1611022-09A PDS** Batch ID: **77808** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_161110A** Analysis Date: **11/10/2016 12:18:00 P** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	59.5	0.283	47.17	11.70	101	80	120			
IS: Bismuth	47.2		943.4		95.7	30	120			

Sample ID **1611022-09A MS** Batch ID: **77808** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_161110A** Analysis Date: **11/10/2016 12:20:00 P** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	59.3	0.286	47.62	11.70	100	84	118			
IS: Bismuth	47.6		190.5		95.5	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161110A

Sample ID **1611022-09A MSD**	Batch ID: **77808**	TestNo: **SW6020A**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 12:22:00 P**	Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	59.0	0.278	46.30	11.70	102	84	118	0.523	20	
IS: Bismuth	46.3		185.2		93.0	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-MS4_161110A

Sample ID **ICV-161110**	Batch ID: **R88926**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 11:31:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.102	0.00100	0.100	0	102	90	110			
IS: Bismuth	0.200		0.200		101	30	120			

Sample ID **LCVL-161110**	Batch ID: **R88926**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 11:42:00 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		99.5	30	120			

Sample ID **CCV1-161110**	Batch ID: **R88926**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 12:24:00 P**	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		97.7	30	120			

Sample ID **LCVL1-161110**	Batch ID: **R88926**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 12:30:00 P**	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		98.1	30	120			

Sample ID **CCV2-161110**	Batch ID: **R88926**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 12:54:00 P**	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		96.1	30	120			

Sample ID **LCVL2-161110**	Batch ID: **R88926**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161110A**	Analysis Date: **11/10/2016 1:00:00 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		97.6	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

The QC data in batch 77902 applies to the following samples: 1611022-22A, 1611022-23A, 1611022-24A, 1611022-25A

Sample ID	**MB-77902**	Batch ID:	**77902**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**MBLK**	Run ID:	**ICP-MS4_161116B**	Analysis Date:	**11/16/2016 2:18:00 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		95.5	30	120			

Sample ID	**LCS-77902**	Batch ID:	**77902**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**LCS**	Run ID:	**ICP-MS4_161116B**	Analysis Date:	**11/16/2016 2:21:00 PM**	Prep Date:	**11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	48.8	0.300	50.00	0	97.6	84	118			
IS: Bismuth	50.0		200.0		93.7	30	120			

Sample ID	**LCSD-77902**	Batch ID:	**77902**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**LCSD**	Run ID:	**ICP-MS4_161116B**	Analysis Date:	**11/16/2016 2:23:00 PM**	Prep Date:	**11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.2	0.300	50.00	0	98.3	84	118	0.696	20	
IS: Bismuth	50.0		200.0		95.1	30	120	0	0	

Sample ID	**1611028-10A SD**	Batch ID:	**77902**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**SD**	Run ID:	**ICP-MS4_161116B**	Analysis Date:	**11/16/2016 2:29:00 PM**	Prep Date:	**11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	6.10	1.32	0	6.043				0.957	10	
IS: Bismuth	219		175.4		92.3	30	120	0	0	

Sample ID	**1611028-10A PDS**	Batch ID:	**77902**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**PDS**	Run ID:	**ICP-MS4_161116B**	Analysis Date:	**11/16/2016 2:53:00 PM**	Prep Date:	**11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	47.5	0.263	43.86	6.043	94.6	80	120			
IS: Bismuth	43.9		877.2		80.5	30	120			

Sample ID	**1611028-10A MS**	Batch ID:	**77902**	TestNo:	**SW6020A**	Units:	**mg/Kg-dry**
SampType:	**MS**	Run ID:	**ICP-MS4_161116B**	Analysis Date:	**11/16/2016 2:55:00 PM**	Prep Date:	**11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	52.6	0.278	46.30	6.043	101	84	118			
IS: Bismuth	46.3		185.2		84.9	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

Sample ID **1611028-10A MSD**	Batch ID: **77902**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 2:57:00 PM**	Prep Date: **11/14/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	48.9	0.270	45.05	6.043	95.2	84	118	7.21	20	
IS: Bismuth	45.0		180.2		81.7	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: 1611022
Project: Laredo SGR

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 **CCV3-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.204	0.00100	0.200	0	102	90	110			
IS: Bismuth	0.200		0.200		94.9	30	120			

Sample ID **LCVL3-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000959	0.00100	0.00100	0	95.9	80	120			
IS: Bismuth	0.200		0.200		94.7	30	120			

Sample ID **CCV4-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 2:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.204	0.00100	0.200	0	102	90	110			
IS: Bismuth	0.200		0.200		91.0	30	120			

Sample ID **LCVL4-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 3:06:00 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		92.8	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: 1611022
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: 1611022
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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

The QC data in batch 77809 applies to the following samples: 1611022-13B, 1611022-26B

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: 1611022
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: 1611022
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: 1611022
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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108B

The QC data in batch 77815 applies to the following samples: 1611022-01A, 1611022-02A, 1611022-03A, 1611022-04A, 1611022-05A, 1611022-06A, 1611022-07A, 1611022-08A, 1611022-09A, 1611022-10A, 1611022-11A, 1611022-12A, 1611022-14A, 1611022-15A, 1611022-16A, 1611022-17A, 1611022-18A, 1611022-19A, 1611022-20A, 1611022-21A

Sample ID **LCS-77815** Batch ID: **77815** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_161108B** Analysis Date: **11/8/2016 3:26:00 PM** Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.930	0.0100	1.000	0	93.0	44	111			
Acenaphthylene	0.957	0.0100	1.000	0	95.7	39	116			
Anthracene	0.916	0.0100	1.000	0	91.6	50	114			
Benzo[a]anthracene	1.01	0.0100	1.000	0	101	54	122			
Benzo[a]pyrene	0.931	0.0100	1.000	0	93.1	50	125			
Benzo[b]fluoranthene	0.946	0.0100	1.000	0	94.6	53	128			
Benzo[e]pyrene	0.991	0.0100	1.000	0	99.1	43	140			
Benzo[g,h,i]perylene	0.954	0.0100	1.000	0	95.4	49	127			
Benzo[j]fluoranthene	0.897	0.0100	1.000	0	89.7	45	125			N
Benzo[k]fluoranthene	1.02	0.0100	1.000	0	102	56	123			
Chrysene	1.02	0.0100	1.000	0	102	57	118			
Dibenz[a,h]anthracene	0.963	0.0100	1.000	0	96.3	50	129			
Fluoranthene	1.02	0.0100	1.000	0	102	55	119			
Fluorene	0.978	0.0100	1.000	0	97.8	47	114			
Indeno[1,2,3-cd]pyrene	0.973	0.0100	1.000	0	97.3	49	130			
Phenanthrene	0.970	0.0100	1.000	0	97.0	49	113			
Pyrene	0.996	0.0100	1.000	0	99.6	55	117			
IS: Acenaphthene-d10	4.00		4.000		104	50	200			
IS: Chrysene-d12	4.00		4.000		105	50	200			
IS: Naphthalene-d8	4.00		4.000		105	50	200			
IS: Perylene-d12	4.00		4.000		114	50	200			
IS: Phenanthrene-d10	4.00		4.000		101	50	200			
Surr: 2-Fluorobiphenyl	0.872		1.000		87.2	46	115			
Surr: 4-Terphenyl-d14	0.952		1.000		95.2	58	133			

Sample ID **MB-77815** Batch ID: **77815** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_161108B** Analysis Date: **11/8/2016 3:55:00 PM** Prep Date: **11/7/2016**

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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108B

Sample ID **MB-77815**	Batch ID: **77815**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS6_161108B**	Analysis Date: **11/8/2016 3:55:00 PM**	Prep Date: **11/7/2016**

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		100	50	200			
IS: Chrysene-d12	4.00		4.000		103	50	200			
IS: Naphthalene-d8	4.00		4.000		101	50	200			
IS: Perylene-d12	4.00		4.000		112	50	200			
IS: Phenanthrene-d10	4.00		4.000		98.6	50	200			
Surr: 2-Fluorobiphenyl	0.923		1.000		92.3	46	115			
Surr: 4-Terphenyl-d14	1.02		1.000		102	58	133			

Sample ID **1611022-09AMS**	Batch ID: **77815**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161108B**	Analysis Date: **11/9/2016 1:41:00 AM**	Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.07	0.0962	0.9615	0	111	44	111			
Acenaphthylene	1.08	0.0962	0.9615	0	113	39	116			
Anthracene	1.02	0.0962	0.9615	0	106	50	114			
Benzo[a]anthracene	1.14	0.0962	0.9615	0.07730	110	54	122			
Benzo[a]pyrene	1.10	0.0962	0.9615	0.09497	104	50	125			
Benzo[b]fluoranthene	1.15	0.0962	0.9615	0.09848	109	53	128			
Benzo[e]pyrene	1.08	0.0962	0.9615	0.05745	107	43	140			
Benzo[g,h,i]perylene	1.07	0.0962	0.9615	0.07607	103	49	127			
Benzo[j]fluoranthene	1.01	0.0962	0.9615	0	105	45	125			N
Benzo[k]fluoranthene	1.01	0.0962	0.9615	0.06040	98.7	56	123			
Chrysene	1.13	0.0962	0.9615	0.07987	109	57	118			
Dibenz[a,h]anthracene	1.05	0.0962	0.9615	0	109	50	129			
Fluoranthene	1.17	0.0962	0.9615	0.1011	111	55	119			
Fluorene	1.09	0.0962	0.9615	0	114	47	114			
Indeno[1,2,3-cd]pyrene	1.11	0.0962	0.9615	0.09003	106	49	130			
Phenanthrene	1.08	0.0962	0.9615	0	112	49	113			
Pyrene	1.20	0.0962	0.9615	0.08519	116	55	117			
IS: Acenaphthene-d10	38.5		3.846		90.8	50	200			
IS: Chrysene-d12	38.5		3.846		95.2	50	200			
IS: Naphthalene-d8	38.5		3.846		92.7	50	200			
IS: Perylene-d12	38.5		3.846		103	50	200			
IS: Phenanthrene-d10	38.5		3.846		89.9	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108B

Sample ID **1611022-09AMS**	Batch ID: **77815**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS6_161108B**	Analysis Date: **11/9/2016 1:41:00 AM**	Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	0.984		0.9615		102	46	115			
Surr: 4-Terphenyl-d14	1.03		0.9615		107	58	133			

Sample ID **1611022-09AMSD**	Batch ID: **77815**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS6_161108B**	Analysis Date: **11/9/2016 2:09:00 AM**	Prep Date: **11/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.09	0.0988	0.9881	0	110	44	111	2.05	20	
Acenaphthylene	1.09	0.0988	0.9881	0	110	39	116	0.265	20	
Anthracene	1.07	0.0988	0.9881	0	108	50	114	5.14	20	
Benzo[a]anthracene	1.19	0.0988	0.9881	0.07730	113	54	122	4.35	20	
Benzo[a]pyrene	1.16	0.0988	0.9881	0.09497	108	50	125	6.02	20	
Benzo[b]fluoranthene	1.19	0.0988	0.9881	0.09848	110	53	128	3.24	20	
Benzo[e]pyrene	1.15	0.0988	0.9881	0.05745	111	43	140	6.13	20	
Benzo[g,h,i]perylene	1.13	0.0988	0.9881	0.07607	107	49	127	6.21	20	
Benzo[j]fluoranthene	1.09	0.0988	0.9881	0	110	45	125	6.95	20	N
Benzo[k]fluoranthene	1.10	0.0988	0.9881	0.06040	105	56	123	8.22	20	
Chrysene	1.19	0.0988	0.9881	0.07987	113	57	118	5.52	20	
Dibenz[a,h]anthracene	1.12	0.0988	0.9881	0	113	50	129	6.38	20	
Fluoranthene	1.25	0.0988	0.9881	0.1011	116	55	119	6.52	20	
Fluorene	1.12	0.0988	0.9881	0	113	47	114	2.46	20	
Indeno[1,2,3-cd]pyrene	1.19	0.0988	0.9881	0.09003	111	49	130	6.62	20	
Phenanthrene	1.14	0.0988	0.9881	0	115	49	113	5.18	20	S
Pyrene	1.24	0.0988	0.9881	0.08519	117	55	117	3.62	20	
IS: Acenaphthene-d10	39.5		3.953		91.2	50	200	0	0	
IS: Chrysene-d12	39.5		3.953		93.4	50	200	0	0	
IS: Naphthalene-d8	39.5		3.953		94.5	50	200	0	0	
IS: Perylene-d12	39.5		3.953		105	50	200	0	0	
IS: Phenanthrene-d10	39.5		3.953		88.9	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.975		0.9881		98.6	46	115	0	0	
Surr: 4-Terphenyl-d14	1.03		0.9881		104	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108B

Sample ID **ICV-161108**	Batch ID: **R88913**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS6_161108B**	Analysis Date: **11/8/2016 2:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.23	0.0100	2.000	0	112	80	120			
Acenaphthylene	2.28	0.0100	2.000	0	114	80	120			
Anthracene	2.18	0.0100	2.000	0	109	80	120			
Benzo[a]anthracene	2.24	0.0100	2.000	0	112	80	120			
Benzo[a]pyrene	2.18	0.0100	2.000	0	109	80	120			
Benzo[b]fluoranthene	2.30	0.0100	2.000	0	115	80	120			
Benzo[e]pyrene	2.21	0.0100	2.000	0	110	80	120			
Benzo[g,h,i]perylene	2.16	0.0100	2.000	0	108	80	120			
Benzo[j]fluoranthene	2.18	0.0100	2.000	0	109	80	120			N
Benzo[k]fluoranthene	2.02	0.0100	2.000	0	101	80	120			
Chrysene	2.25	0.0100	2.000	0	112	80	120			
Dibenz[a,h]anthracene	2.17	0.0100	2.000	0	109	80	120			
Fluoranthene	2.26	0.0100	2.000	0	113	80	120			
Fluorene	2.28	0.0100	2.000	0	114	80	120			
Indeno[1,2,3-cd]pyrene	2.19	0.0100	2.000	0	109	80	120			
Phenanthrene	2.18	0.0100	2.000	0	109	80	120			
Pyrene	2.21	0.0100	2.000	0	111	80	120			
IS: Acenaphthene-d10	4.00		4.000		95.5	50	200			
IS: Chrysene-d12	4.00		4.000		100	50	200			
IS: Naphthalene-d8	4.00		4.000		101	50	200			
IS: Perylene-d12	4.00		4.000		108	50	200			
IS: Phenanthrene-d10	4.00		4.000		95.8	50	200			
Surr: 2-Fluorobiphenyl	2.36		2.000		118	65	120			
Surr: 4-Terphenyl-d14	2.40		2.000		120	65	120			

Sample ID **CCV1-161108**	Batch ID: **R88913**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161108B**	Analysis Date: **11/9/2016 2:36:00 AM**	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	1.08	0.0100	1.000	0	108	50	150			
Anthracene	1.04	0.0100	1.000	0	104	50	150			
Benzo[a]anthracene	1.01	0.0100	1.000	0	101	50	150			
Benzo[a]pyrene	0.981	0.0100	1.000	0	98.1	50	150			
Benzo[b]fluoranthene	1.03	0.0100	1.000	0	103	50	150			
Benzo[e]pyrene	0.995	0.0100	1.000	0	99.5	50	150			
Benzo[g,h,i]perylene	1.00	0.0100	1.000	0	100	50	150			
Benzo[j]fluoranthene	0.961	0.0100	1.000	0	96.1	50	150			N
Benzo[k]fluoranthene	0.888	0.0100	1.000	0	88.8	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108B

Sample ID **CCV1-161108**	Batch ID: **R88913**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS6_161108B**	Analysis Date: **11/9/2016 2:36:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.05	0.0100	1.000	0	105	50	150			
Fluorene	1.07	0.0100	1.000	0	107	50	150			
Indeno[1,2,3-cd]pyrene	1.03	0.0100	1.000	0	103	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.03	0.0100	1.000	0	103	50	150			
IS: Acenaphthene-d10	4.00		4.000		96.0	50	200			
IS: Chrysene-d12	4.00		4.000		104	50	200			
IS: Naphthalene-d8	4.00		4.000		102	50	200			
IS: Perylene-d12	4.00		4.000		113	50	200			
IS: Phenanthrene-d10	4.00		4.000		95.9	50	200			
Surr: 2-Fluorobiphenyl	1.13		1.000		113	50	150			
Surr: 4-Terphenyl-d14	1.13		1.000		113	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: 1611022
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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

The QC data in batch 77830 applies to the following samples: 1611022-22A, 1611022-23A, 1611022-24A, 1611022-25A

Sample ID **LCS-77830** Batch ID: **77830** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_161110A** Analysis Date: **11/10/2016 10:49:00 A** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.02	0.0100	1.000	0	102	44	111			
Acenaphthylene	1.03	0.0100	1.000	0	103	39	116			
Anthracene	0.942	0.0100	1.000	0	94.2	50	114			
Benzo[a]anthracene	1.07	0.0100	1.000	0	107	54	122			
Benzo[a]pyrene	0.992	0.0100	1.000	0	99.2	50	125			
Benzo[b]fluoranthene	1.10	0.0100	1.000	0	110	53	128			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	43	140			
Benzo[g,h,i]perylene	1.05	0.0100	1.000	0	105	49	127			
Benzo[j]fluoranthene	1.00	0.0100	1.000	0	100	45	125			N
Benzo[k]fluoranthene	1.02	0.0100	1.000	0	102	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	1.00	0.0100	1.000	0	100	55	119			
Fluorene	1.05	0.0100	1.000	0	105	47	114			
Indeno[1,2,3-cd]pyrene	1.06	0.0100	1.000	0	106	49	130			
Phenanthrene	1.02	0.0100	1.000	0	102	49	113			
Pyrene	0.979	0.0100	1.000	0	97.9	55	117			
IS: Acenaphthene-d10	4.00		4.000		80.1	50	200			
IS: Chrysene-d12	4.00		4.000		81.4	50	200			
IS: Naphthalene-d8	4.00		4.000		111	50	200			
IS: Perylene-d12	4.00		4.000		82.3	50	200			
IS: Phenanthrene-d10	4.00		4.000		82.3	50	200			
Surr: 2-Fluorobiphenyl	0.903		1.000		90.3	46	115			
Surr: 4-Terphenyl-d14	0.971		1.000		97.1	58	133			

Sample ID **MB-77830** Batch ID: **77830** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161110A** Analysis Date: **11/10/2016 11:17:00 A** Prep Date: **11/9/2016**

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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **MB-77830**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:17:00 A**	Prep Date: **11/9/2016**

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		81.4	50	200			
IS: Chrysene-d12	4.00		4.000		83.3	50	200			
IS: Naphthalene-d8	4.00		4.000		107	50	200			
IS: Perylene-d12	4.00		4.000		83.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		83.2	50	200			
Surr: 2-Fluorobiphenyl	0.916		1.000		91.6	46	115			
Surr: 4-Terphenyl-d14	0.999		1.000		99.9	58	133			

Sample ID **SB-161110**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **SBLK**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 4:05:00 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							
Surr: 2-Fluorobiphenyl	0.0000800		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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **SB-161110**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **SBLK**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 4:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	0.000350		0							

Sample ID **1611028-10AMS**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 10:48:00 P**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.02	0.0987	0.9872	0	103	44	111			
Acenaphthylene	0.984	0.0987	0.9872	0	99.7	39	116			
Anthracene	0.969	0.0987	0.9872	0	98.2	50	114			
Benzo[a]anthracene	1.02	0.0987	0.9872	0	103	54	122			
Benzo[a]pyrene	0.984	0.0987	0.9872	0	99.7	50	125			
Benzo[b]fluoranthene	0.981	0.0987	0.9872	0	99.3	53	128			
Benzo[e]pyrene	1.05	0.0987	0.9872	0	107	43	140			
Benzo[g,h,i]perylene	1.01	0.0987	0.9872	0	103	49	127			
Benzo[j]fluoranthene	1.02	0.0987	0.9872	0	103	45	125			N
Benzo[k]fluoranthene	1.08	0.0987	0.9872	0	109	56	123			
Chrysene	1.06	0.0987	0.9872	0	108	57	118			
Dibenz[a,h]anthracene	0.980	0.0987	0.9872	0	99.2	50	129			
Fluoranthene	1.03	0.0987	0.9872	0	105	55	119			
Fluorene	1.03	0.0987	0.9872	0	104	47	114			
Indeno[1,2,3-cd]pyrene	1.02	0.0987	0.9872	0	104	49	130			
Phenanthrene	1.03	0.0987	0.9872	0	104	49	113			
Pyrene	1.02	0.0987	0.9872	0	104	55	117			
IS: Acenaphthene-d10	39.5		3.949		82.4	50	200			
IS: Chrysene-d12	39.5		3.949		84.0	50	200			
IS: Naphthalene-d8	39.5		3.949		83.9	50	200			
IS: Perylene-d12	39.5		3.949		84.4	50	200			
IS: Phenanthrene-d10	39.5		3.949		82.5	50	200			
Surr: 2-Fluorobiphenyl	0.923		0.9872		93.5	46	115			
Surr: 4-Terphenyl-d14	0.981		0.9872		99.4	58	133			

Sample ID **1611028-10AMSD**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:16:00 P**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.966	0.0979	0.9794	0	98.6	44	111	5.07	20	
Acenaphthylene	0.942	0.0979	0.9794	0	96.1	39	116	4.43	20	
Anthracene	0.920	0.0979	0.9794	0	93.9	50	114	5.25	20	
Benzo[a]anthracene	0.974	0.0979	0.9794	0	99.5	54	122	4.42	20	
Benzo[a]pyrene	0.930	0.0979	0.9794	0	94.9	50	125	5.64	20	
Benzo[b]fluoranthene	0.912	0.0979	0.9794	0	93.1	53	128	7.28	20	

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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **1611028-10AMSD**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:16:00 P**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo[e]pyrene	0.987	0.0979	0.9794	0	101	43	140	6.38	20	
Benzo[g,h,i]perylene	0.960	0.0979	0.9794	0	98.0	49	127	5.31	20	
Benzo[j]fluoranthene	0.959	0.0979	0.9794	0	97.9	45	125	6.06	20	N
Benzo[k]fluoranthene	1.02	0.0979	0.9794	0	104	56	123	5.87	20	
Chrysene	1.02	0.0979	0.9794	0	104	57	118	4.36	20	
Dibenz[a,h]anthracene	0.934	0.0979	0.9794	0	95.4	50	129	4.73	20	
Fluoranthene	0.994	0.0979	0.9794	0	102	55	119	3.89	20	
Fluorene	0.983	0.0979	0.9794	0	100	47	114	4.76	20	
Indeno[1,2,3-cd]pyrene	0.972	0.0979	0.9794	0	99.2	49	130	5.13	20	
Phenanthrene	0.976	0.0979	0.9794	0	99.6	49	113	5.18	20	
Pyrene	0.987	0.0979	0.9794	0	101	55	117	3.62	20	
IS: Acenaphthene-d10	39.2		3.918		81.7	50	200	0	0	
IS: Chrysene-d12	39.2		3.918		83.6	50	200	0	0	
IS: Naphthalene-d8	39.2		3.918		77.5	50	200	0	0	
IS: Perylene-d12	39.2		3.918		84.5	50	200	0	0	
IS: Phenanthrene-d10	39.2		3.918		81.6	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.886		0.9794		90.4	46	115	0	0	
Surr: 4-Terphenyl-d14	0.963		0.9794		98.3	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **ICV-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 10:20:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.07	0.0100	2.000	0	104	80	120			
Acenaphthylene	2.06	0.0100	2.000	0	103	80	120			
Anthracene	1.95	0.0100	2.000	0	97.3	80	120			
Benzo[a]anthracene	2.05	0.0100	2.000	0	102	80	120			
Benzo[a]pyrene	2.01	0.0100	2.000	0	101	80	120			
Benzo[b]fluoranthene	1.91	0.0100	2.000	0	95.4	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.05	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	2.10	0.0100	2.000	0	105	80	120			
Chrysene	2.10	0.0100	2.000	0	105	80	120			
Dibenz[a,h]anthracene	2.05	0.0100	2.000	0	103	80	120			
Fluoranthene	1.89	0.0100	2.000	0	94.4	80	120			
Fluorene	2.03	0.0100	2.000	0	101	80	120			
Indeno[1,2,3-cd]pyrene	2.02	0.0100	2.000	0	101	80	120			
Phenanthrene	1.94	0.0100	2.000	0	97.1	80	120			
Pyrene	1.87	0.0100	2.000	0	93.5	80	120			
IS: Acenaphthene-d10	4.00		4.000		86.3	50	200			
IS: Chrysene-d12	4.00		4.000		87.2	50	200			
IS: Naphthalene-d8	4.00		4.000		64.1	50	200			
IS: Perylene-d12	4.00		4.000		88.8	50	200			
IS: Phenanthrene-d10	4.00		4.000		88.5	50	200			
Surr: 2-Fluorobiphenyl	2.07		2.000		104	65	120			
Surr: 4-Terphenyl-d14	2.07		2.000		104	65	120			

Sample ID **ICV2-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 3:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.10	0.0100	2.000	0	105	80	120			
Acenaphthylene	2.07	0.0100	2.000	0	104	80	120			
Anthracene	1.95	0.0100	2.000	0	97.4	80	120			
Benzo[a]anthracene	2.06	0.0100	2.000	0	103	80	120			
Benzo[a]pyrene	1.97	0.0100	2.000	0	98.5	80	120			
Benzo[b]fluoranthene	2.00	0.0100	2.000	0	99.9	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.03	0.0100	2.000	0	102	80	120			
Benzo[j]fluoranthene	2.03	0.0100	2.000	0	101	80	120			N
Benzo[k]fluoranthene	2.01	0.0100	2.000	0	101	80	120			
Chrysene	2.12	0.0100	2.000	0	106	80	120			
Dibenz[a,h]anthracene	2.03	0.0100	2.000	0	102	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: 1611022
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **ICV2-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 3:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.91	0.0100	2.000	0	95.7	80	120			
Fluorene	2.06	0.0100	2.000	0	103	80	120			
Indeno[1,2,3-cd]pyrene	2.02	0.0100	2.000	0	101	80	120			
Phenanthrene	1.95	0.0100	2.000	0	97.3	80	120			
Pyrene	1.89	0.0100	2.000	0	94.4	80	120			
IS: Acenaphthene-d10	4.00		4.000		84.5	50	200			
IS: Chrysene-d12	4.00		4.000		86.1	50	200			
IS: Naphthalene-d8	4.00		4.000		59.1	50	200			
IS: Perylene-d12	4.00		4.000		87.9	50	200			
IS: Phenanthrene-d10	4.00		4.000		87.0	50	200			
Surr: 2-Fluorobiphenyl	2.07		2.000		103	65	120			
Surr: 4-Terphenyl-d14	2.10		2.000		105	65	120			

Sample ID **CCV1-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:45:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.10	0.0100	1.000	0	110	50	150			
Acenaphthylene	1.10	0.0100	1.000	0	110	50	150			
Anthracene	1.05	0.0100	1.000	0	105	50	150			
Benzo[a]anthracene	1.08	0.0100	1.000	0	108	50	150			
Benzo[a]pyrene	1.04	0.0100	1.000	0	104	50	150			
Benzo[b]fluoranthene	1.10	0.0100	1.000	0	110	50	150			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	50	150			
Benzo[g,h,i]perylene	1.05	0.0100	1.000	0	105	50	150			
Benzo[j]fluoranthene	1.11	0.0100	1.000	0	111	50	150			N
Benzo[k]fluoranthene	1.00	0.0100	1.000	0	100	50	150			
Chrysene	1.11	0.0100	1.000	0	111	50	150			
Dibenz[a,h]anthracene	1.06	0.0100	1.000	0	106	50	150			
Fluoranthene	1.03	0.0100	1.000	0	103	50	150			
Fluorene	1.10	0.0100	1.000	0	110	50	150			
Indeno[1,2,3-cd]pyrene	1.05	0.0100	1.000	0	105	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.02	0.0100	1.000	0	102	50	150			
IS: Acenaphthene-d10	4.00		4.000		80.6	50	200			
IS: Chrysene-d12	4.00		4.000		83.1	50	200			
IS: Naphthalene-d8	4.00		4.000		71.0	50	200			
IS: Perylene-d12	4.00		4.000		83.4	50	200			
IS: Phenanthrene-d10	4.00		4.000		81.9	50	200			
Surr: 2-Fluorobiphenyl	1.11		1.000		111	50	150			
Surr: 4-Terphenyl-d14	1.13		1.000		113	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

Lab Order: 1611022
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
1611022-13B	SGR-EB172(20161101)	SW8270D-LL	77809	1	11/8/2016 11:04:00 AM	11/7/2016 10:45:00 AM	E
1611022-26B	SGR-EB103(20161101)	SW8270D-LL	77809	1	11/8/2016 11:33:00 AM	11/7/2016 10:45:00 AM	E
CCV1-161108	-----	SW8270D-LL	R88889	1	11/8/2016 1:53:00 PM		A

Lab Order: 1611022
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS6_161108B

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161108	-----	SW8270D-LL	R88913	1	11/8/2016 2:30:00 PM		S
ICV-161108	-----	SW8270D-LL	R88913	1	11/8/2016 2:58:00 PM		S
LCS-77815	-----	SW8270D-LL	77815	1	11/8/2016 3:26:00 PM	11/7/2016 1:37:00 PM	S
MB-77815	-----	SW8270D-LL	77815	1	11/8/2016 3:55:00 PM	11/7/2016 1:37:00 PM	S
1611022-01A	SGR-DU172(0-2)-A	SW8270D-LL	77815	10	11/8/2016 4:22:00 PM	11/7/2016 1:37:00 PM	S
1611022-02A	SGR-DU172(2-4)-A	SW8270D-LL	77815	10	11/8/2016 4:50:00 PM	11/7/2016 1:37:00 PM	S
1611022-03A	SGR-DU172(4-6)-A	SW8270D-LL	77815	10	11/8/2016 5:18:00 PM	11/7/2016 1:37:00 PM	S
1611022-04A	SGR-DU172(6-8)-A	SW8270D-LL	77815	10	11/8/2016 5:46:00 PM	11/7/2016 1:37:00 PM	S
1611022-05A	SGR-DU172(0-2)-B	SW8270D-LL	77815	10	11/8/2016 6:14:00 PM	11/7/2016 1:37:00 PM	S
1611022-06A	SGR-DU172(2-4)-B	SW8270D-LL	77815	10	11/8/2016 6:42:00 PM	11/7/2016 1:37:00 PM	S
1611022-07A	SGR-DU172(4-6)-B	SW8270D-LL	77815	10	11/8/2016 7:10:00 PM	11/7/2016 1:37:00 PM	S
1611022-08A	SGR-DU172(6-8)-B	SW8270D-LL	77815	10	11/8/2016 7:38:00 PM	11/7/2016 1:37:00 PM	S
1611022-09A	SGR-DU172(0-2)-C	SW8270D-LL	77815	10	11/8/2016 8:05:00 PM	11/7/2016 1:37:00 PM	S
1611022-10A	SGR-DU172(2-4)-C	SW8270D-LL	77815	10	11/8/2016 8:34:00 PM	11/7/2016 1:37:00 PM	S
1611022-11A	SGR-DU172(4-6)-C	SW8270D-LL	77815	10	11/8/2016 9:01:00 PM	11/7/2016 1:37:00 PM	S
1611022-12A	SGR-DU172(6-8)-C	SW8270D-LL	77815	10	11/8/2016 9:29:00 PM	11/7/2016 1:37:00 PM	S
1611022-14A	SGR-DU103(0-2)-A	SW8270D-LL	77815	10	11/8/2016 9:57:00 PM	11/7/2016 1:37:00 PM	S
1611022-15A	SGR-DU103(2-4)-A	SW8270D-LL	77815	10	11/8/2016 10:25:00 PM	11/7/2016 1:37:00 PM	S
1611022-16A	SGR-DU103(4-6)-A	SW8270D-LL	77815	10	11/8/2016 10:53:00 PM	11/7/2016 1:37:00 PM	S
1611022-17A	SGR-DU103(6-8)-A	SW8270D-LL	77815	10	11/8/2016 11:21:00 PM	11/7/2016 1:37:00 PM	S
1611022-18A	SGR-DU103(0-2)-B	SW8270D-LL	77815	10	11/8/2016 11:49:00 PM	11/7/2016 1:37:00 PM	S
1611022-19A	SGR-DU103(2-4)-B	SW8270D-LL	77815	10	11/9/2016 12:17:00 AM	11/7/2016 1:37:00 PM	S
1611022-20A	SGR-DU103(4-6)-B	SW8270D-LL	77815	10	11/9/2016 12:45:00 AM	11/7/2016 1:37:00 PM	S
1611022-21A	SGR-DU103(6-8)-B	SW8270D-LL	77815	10	11/9/2016 1:13:00 AM	11/7/2016 1:37:00 PM	S
1611022-09AMS	SGR-DU172(0-2)-CMS	SW8270D-LL	77815	10	11/9/2016 1:41:00 AM	11/7/2016 1:37:00 PM	S
1611022-09AMSD	SGR-DU172(0-2)-CMSD	SW8270D-LL	77815	10	11/9/2016 2:09:00 AM	11/7/2016 1:37:00 PM	S
CCV1-161108	-----	SW8270D-LL	R88913	1	11/9/2016 2:36:00 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: 1611022
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS8_161110A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161110	-----	SW8270D-LL	R88950	1	11/10/2016 9:51:00 AM		S
ICV-161110	-----	SW8270D-LL	R88950	1	11/10/2016 10:20:00 AM		S
LCS-77830	-----	SW8270D-LL	77830	1	11/10/2016 10:49:00 AM	11/9/2016 1:00:00 PM	S
MB-77830	-----	SW8270D-LL	77830	1	11/10/2016 11:17:00 AM	11/9/2016 1:00:00 PM	S
1611022-22A	SGR-DU103(0-2)-C	SW8270D-LL	77830	10	11/10/2016 11:46:00 AM	11/9/2016 1:00:00 PM	S
1611022-23A	SGR-DU103(2-4)-C	SW8270D-LL	77830	10	11/10/2016 12:15:00 PM	11/9/2016 1:00:00 PM	S
1611022-24A	SGR-DU103(4-6)-C	SW8270D-LL	77830	10	11/10/2016 12:44:00 PM	11/9/2016 1:00:00 PM	S
1611022-25A	SGR-DU103(6-8)-C	SW8270D-LL	77830	10	11/10/2016 1:12:00 PM	11/9/2016 1:00:00 PM	S
DFTPP2-161110	-----	SW8270D-LL	R88950	1	11/10/2016 3:08:00 PM		S
ICV2-161110	-----	SW8270D-LL	R88950	1	11/10/2016 3:37:00 PM		S
SB-161110	-----	SW8270D-LL	77830	1	11/10/2016 4:05:00 PM		S
1611028-10AMS	-----	SW8270D-LL	77830	10	11/10/2016 10:48:00 PM	11/9/2016 1:00:00 PM	S
1611028-10AMSD	-----	SW8270D-LL	77830	10	11/10/2016 11:16:00 PM	11/9/2016 1:00:00 PM	S
CCV1-161110	-----	SW8270D-LL	R88950	1	11/10/2016 11:45:00 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: 1611022
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
1611022-13A	SGR-EB172(20161101)	SW6020A	77913	1	11/16/2016 2:30:00 PM	11/15/2016 9:08:38 AM	E
1611022-26A	SGR-EB103(20161101)	SW6020A	77913	1	11/16/2016 2:36:00 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: 1611022
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: ICP-MS4_161110A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
BLANK STD 1	-----	SW6020A	R88926	1	11/10/2016 11:03:00 AM		A
L2-161110	-----	SW6020A	R88926	1	11/10/2016 11:05:00 AM		A
L-161110	-----	SW6020A	R88926	1	11/10/2016 11:07:00 AM		A
10X-161110	-----	SW6020A	R88926	1	11/10/2016 11:09:00 AM		A
5X-161110	-----	SW6020A	R88926	1	11/10/2016 11:11:00 AM		A
2X-161110	-----	SW6020A	R88926	1	11/10/2016 11:13:00 AM		A
H-161110	-----	SW6020A	R88926	1	11/10/2016 11:15:00 AM		A
H2-161110	-----	SW6020A	R88926	1	11/10/2016 11:17:00 AM		A
ICSA-161110	-----	SW6020A	R88926	1	11/10/2016 11:23:00 AM		A
ICSAB-161110	-----	SW6020A	R88926	1	11/10/2016 11:25:00 AM		A
ICV-161110	-----	SW6020A	R88926	1	11/10/2016 11:31:00 AM		A
LCVL-161110	-----	SW6020A	R88926	1	11/10/2016 11:42:00 AM		A
ICB-161110	-----	SW6020A	R88926	1	11/10/2016 11:47:00 AM		A
MB-77808	-----	SW6020A	77808	5	11/10/2016 11:49:00 AM	11/7/2016 9:27:40 AM	S
LCS-77808	-----	SW6020A	77808	5	11/10/2016 11:51:00 AM	11/7/2016 9:27:40 AM	S
LCSD-77808	-----	SW6020A	77808	5	11/10/2016 11:53:00 AM	11/7/2016 9:27:40 AM	S
1611022-09A	SGR-DU172(0-2)-C	SW6020A	77808	5	11/10/2016 11:57:00 AM	11/7/2016 9:27:40 AM	S
1611022-09A SD	SGR-DU172(0-2)-C	SW6020A	77808	25	11/10/2016 11:59:00 AM	11/7/2016 9:27:40 AM	S
1611022-01A	SGR-DU172(0-2)-A	SW6020A	77808	5	11/10/2016 12:01:00 PM	11/7/2016 9:27:40 AM	S
1611022-02A	SGR-DU172(2-4)-A	SW6020A	77808	5	11/10/2016 12:03:00 PM	11/7/2016 9:27:40 AM	S
1611022-03A	SGR-DU172(4-6)-A	SW6020A	77808	5	11/10/2016 12:05:00 PM	11/7/2016 9:27:40 AM	S
1611022-04A	SGR-DU172(6-8)-A	SW6020A	77808	5	11/10/2016 12:07:00 PM	11/7/2016 9:27:40 AM	S
1611022-05A	SGR-DU172(0-2)-B	SW6020A	77808	5	11/10/2016 12:09:00 PM	11/7/2016 9:27:40 AM	S
1611022-06A	SGR-DU172(2-4)-B	SW6020A	77808	5	11/10/2016 12:11:00 PM	11/7/2016 9:27:40 AM	S
1611022-07A	SGR-DU172(4-6)-B	SW6020A	77808	5	11/10/2016 12:13:00 PM	11/7/2016 9:27:40 AM	S
1611022-08A	SGR-DU172(6-8)-B	SW6020A	77808	5	11/10/2016 12:14:00 PM	11/7/2016 9:27:40 AM	S
1611022-10A	SGR-DU172(2-4)-C	SW6020A	77808	5	11/10/2016 12:16:00 PM	11/7/2016 9:27:40 AM	S
1611022-09A PDS	SGR-DU172(0-2)-C	SW6020A	77808	5	11/10/2016 12:18:00 PM	11/7/2016 9:27:40 AM	S
1611022-09A MS	SGR-DU172(0-2)-CMS	SW6020A	77808	5	11/10/2016 12:20:00 PM	11/7/2016 9:27:40 AM	S
1611022-09A MSD	SGR-DU172(0-2)-CMSD	SW6020A	77808	5	11/10/2016 12:22:00 PM	11/7/2016 9:27:40 AM	S
CCV1-161110	-----	SW6020A	R88926	1	11/10/2016 12:24:00 PM		A
LCVL1-161110	-----	SW6020A	R88926	1	11/10/2016 12:30:00 PM		A
CCB1-161110	-----	SW6020A	R88926	1	11/10/2016 12:32:00 PM		A
1611022-11A	SGR-DU172(4-6)-C	SW6020A	77808	5	11/10/2016 12:34:00 PM	11/7/2016 9:27:40 AM	S
1611022-12A	SGR-DU172(6-8)-C	SW6020A	77808	5	11/10/2016 12:36:00 PM	11/7/2016 9:27:40 AM	S
1611022-14A	SGR-DU103(0-2)-A	SW6020A	77808	5	11/10/2016 12:38:00 PM	11/7/2016 9:27:40 AM	S
1611022-15A	SGR-DU103(2-4)-A	SW6020A	77808	5	11/10/2016 12:40:00 PM	11/7/2016 9:27:40 AM	S
1611022-16A	SGR-DU103(4-6)-A	SW6020A	77808	5	11/10/2016 12:42:00 PM	11/7/2016 9:27:40 AM	S

Lab Order: 1611022
Client: Arcadis
Project: Laredo SGR

Sequence Report

1611022-17A	SGR-DU103(6-8)-A	SW6020A	77808	5	11/10/2016 12:44:00 PM	11/7/2016 9:27:40 AM	S
1611022-18A	SGR-DU103(0-2)-B	SW6020A	77808	5	11/10/2016 12:46:00 PM	11/7/2016 9:27:40 AM	S
1611022-19A	SGR-DU103(2-4)-B	SW6020A	77808	5	11/10/2016 12:48:00 PM	11/7/2016 9:27:40 AM	S
1611022-20A	SGR-DU103(4-6)-B	SW6020A	77808	5	11/10/2016 12:50:00 PM	11/7/2016 9:27:40 AM	S
1611022-21A	SGR-DU103(6-8)-B	SW6020A	77808	5	11/10/2016 12:52:00 PM	11/7/2016 9:27:40 AM	S
CCV2-161110	-----	SW6020A	R88926	1	11/10/2016 12:54:00 PM		A
LCVL2-161110	-----	SW6020A	R88926	1	11/10/2016 1:00:00 PM		A
CCB2-161110	-----	SW6020A	R88926	1	11/10/2016 1:02:00 PM		A

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
CCV3-161116	-----	SW6020A	R89029	1	11/16/2016 1:23:00 PM		A
LCVL3-161116	-----	SW6020A	R89029	1	11/16/2016 2:01:00 PM		A
CCB3-161116	-----	SW6020A	R89029	1	11/16/2016 2:16:00 PM		A
MB-77902	-----	SW6020A	77902	5	11/16/2016 2:18:00 PM	11/14/2016 3:30:43 PM	S
LCS-77902	-----	SW6020A	77902	5	11/16/2016 2:21:00 PM	11/14/2016 3:30:43 PM	S
LCSD-77902	-----	SW6020A	77902	5	11/16/2016 2:23:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A SD	-----	SW6020A	77902	25	11/16/2016 2:29:00 PM	11/14/2016 3:30:43 PM	S
1611022-22A	SGR-DU103(0-2)-C	SW6020A	77902	5	11/16/2016 2:31:00 PM	11/14/2016 3:30:43 PM	S
1611022-23A	SGR-DU103(2-4)-C	SW6020A	77902	5	11/16/2016 2:33:00 PM	11/14/2016 3:30:43 PM	S
1611022-24A	SGR-DU103(4-6)-C	SW6020A	77902	5	11/16/2016 2:35:00 PM	11/14/2016 3:30:43 PM	S
1611022-25A	SGR-DU103(6-8)-C	SW6020A	77902	5	11/16/2016 2:37:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A PDS	-----	SW6020A	77902	5	11/16/2016 2:53:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A MS	-----	SW6020A	77902	5	11/16/2016 2:55:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A MSD	-----	SW6020A	77902	5	11/16/2016 2:57:00 PM	11/14/2016 3:30:43 PM	S
CCV4-161116	-----	SW6020A	R89029	1	11/16/2016 2:59:00 PM		A
LCVL4-161116	-----	SW6020A	R89029	1	11/16/2016 3:06:00 PM		A
CCB4-161116	-----	SW6020A	R89029	1	11/16/2016 3:12:00 PM		A

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT: Arcadis
Work Order: 1611022
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
1611022

GCMS6_161108A
For

DHL Work Order
1611022

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

~~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

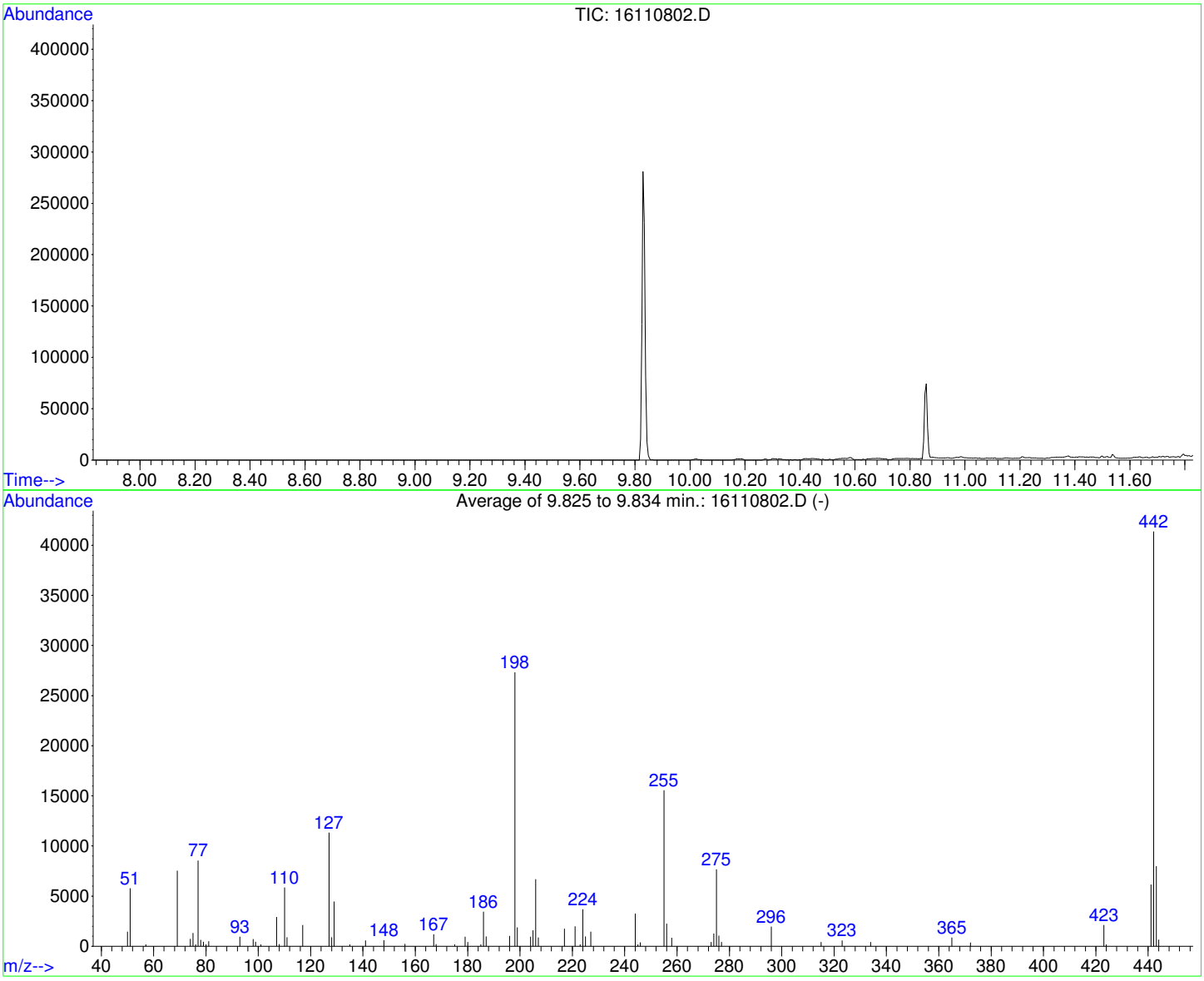
Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	120	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

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

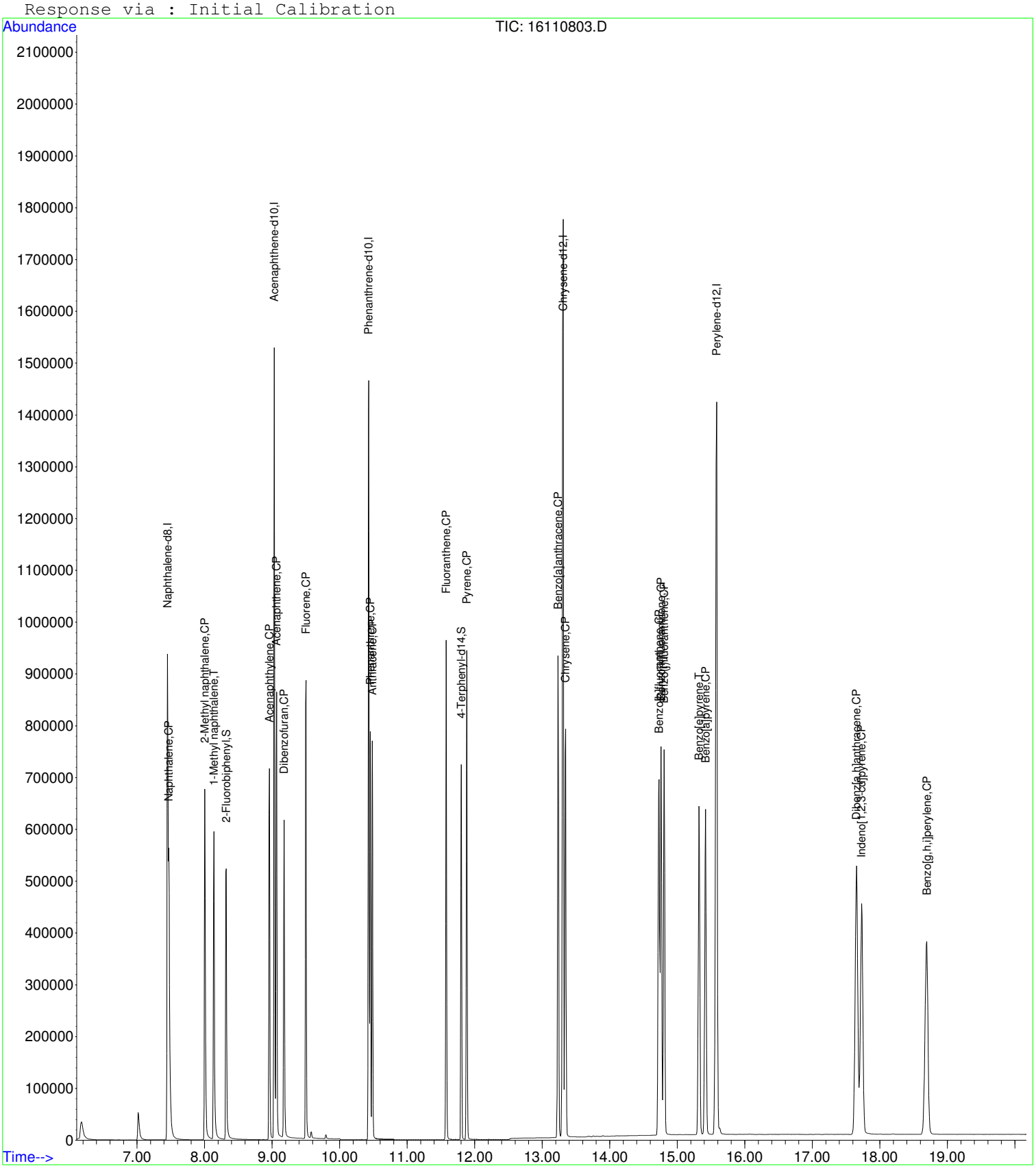
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1127580	4000.00	ug/kg	103
5) Acenaphthene-d10	9.03	164	606384	4000.00	ug/kg	96
11) Phenanthrene-d10	10.43	188	1183171	4000.00	ug/kg	99
17) Chrysene-d12	13.31	240	1572300	4000.00	ug/kg	102
20) Perylene-d12	15.58	264	1645898	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

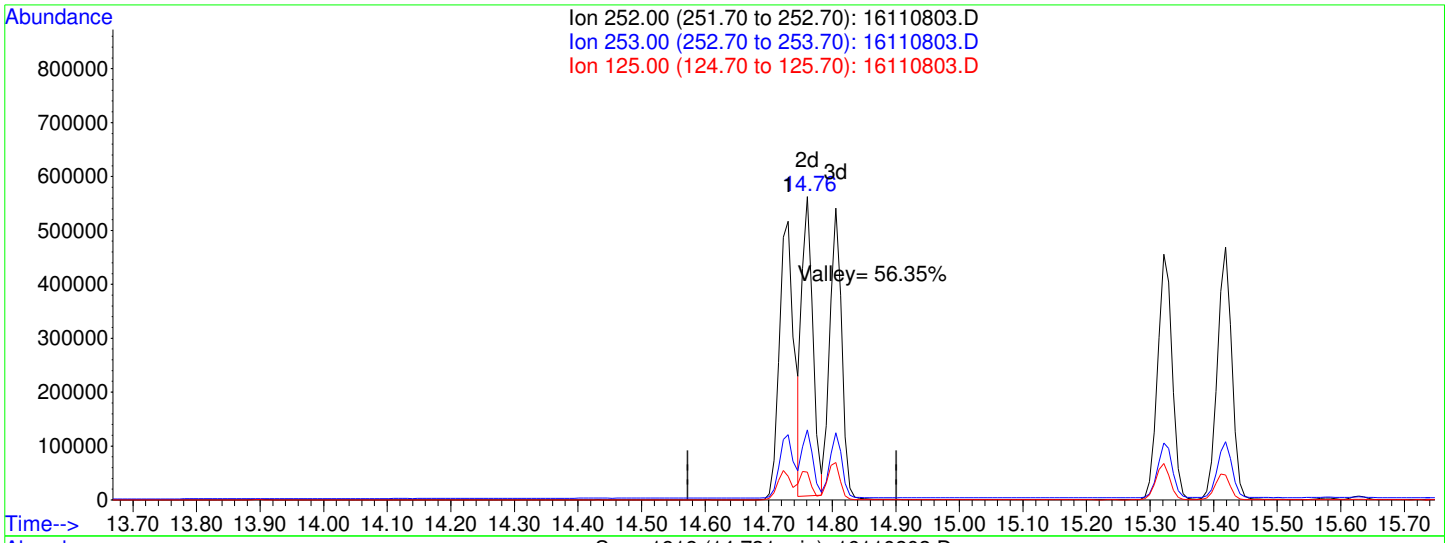
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration

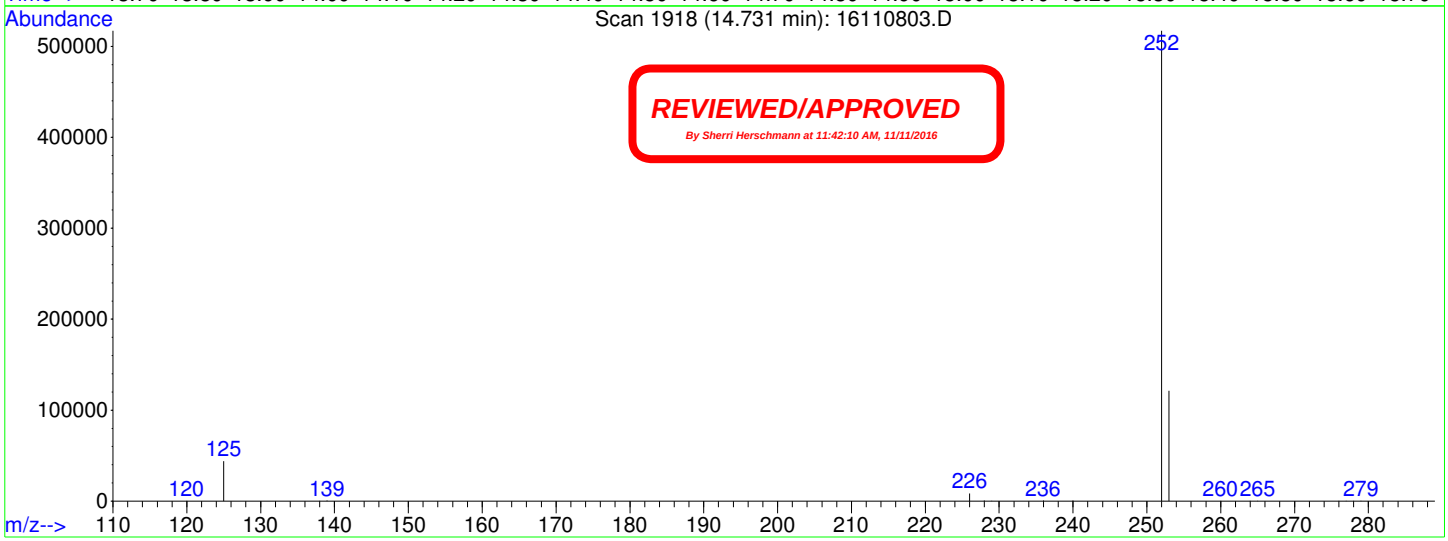


Quantitation Report (Qedit)

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





REVIEWED/APPROVED
By Sherri Herschmann at 11:42:10 AM, 11/11/2016

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

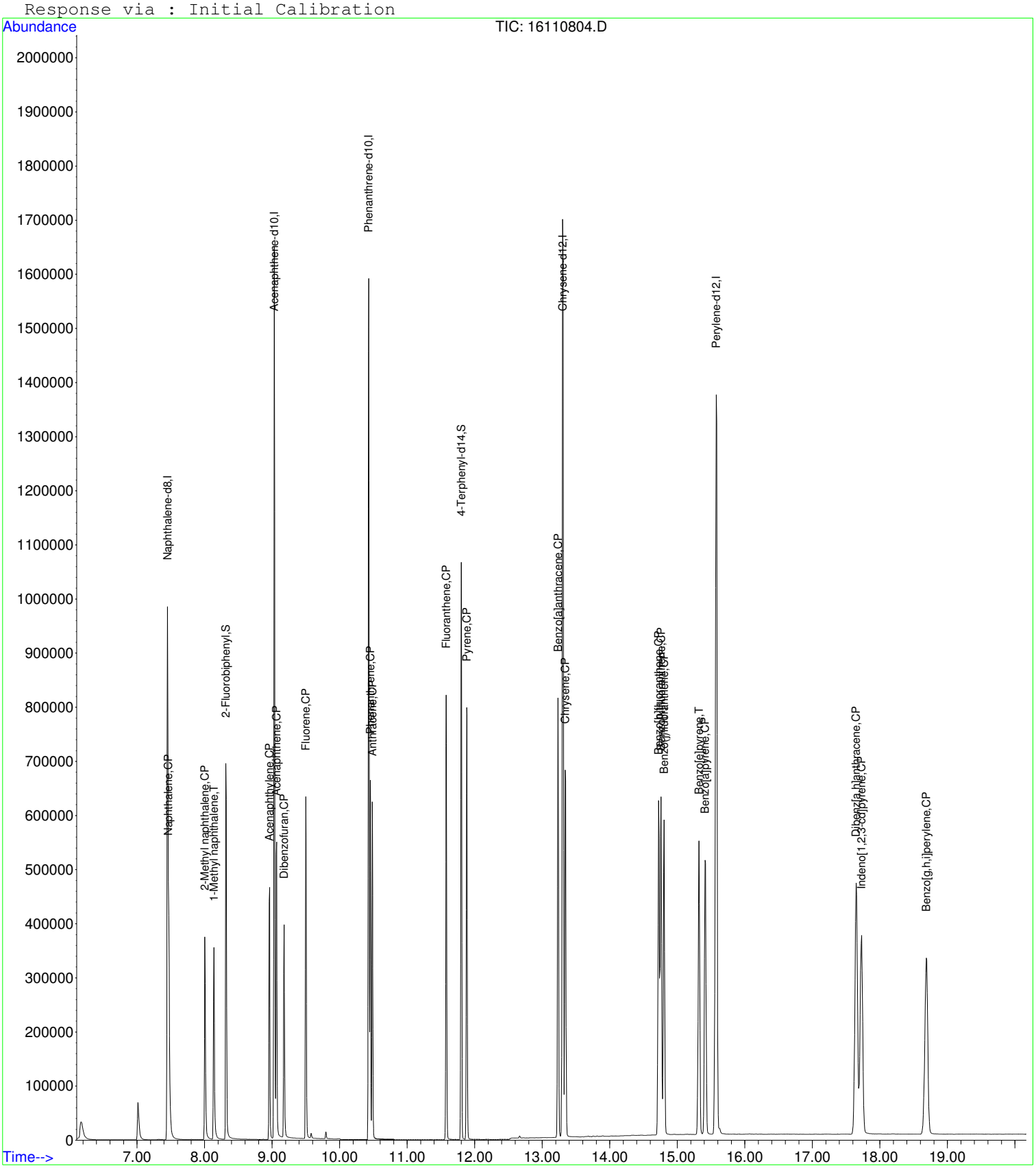
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1160264	4000.00	ug/kg	106
5) Acenaphthene-d10	9.03	164	652744	4000.00	ug/kg	103
11) Phenanthrene-d10	10.43	188	1237377	4000.00	ug/kg	103
17) Chrysene-d12	13.31	240	1603568	4000.00	ug/kg	104
20) Perylene-d12	15.58	264	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

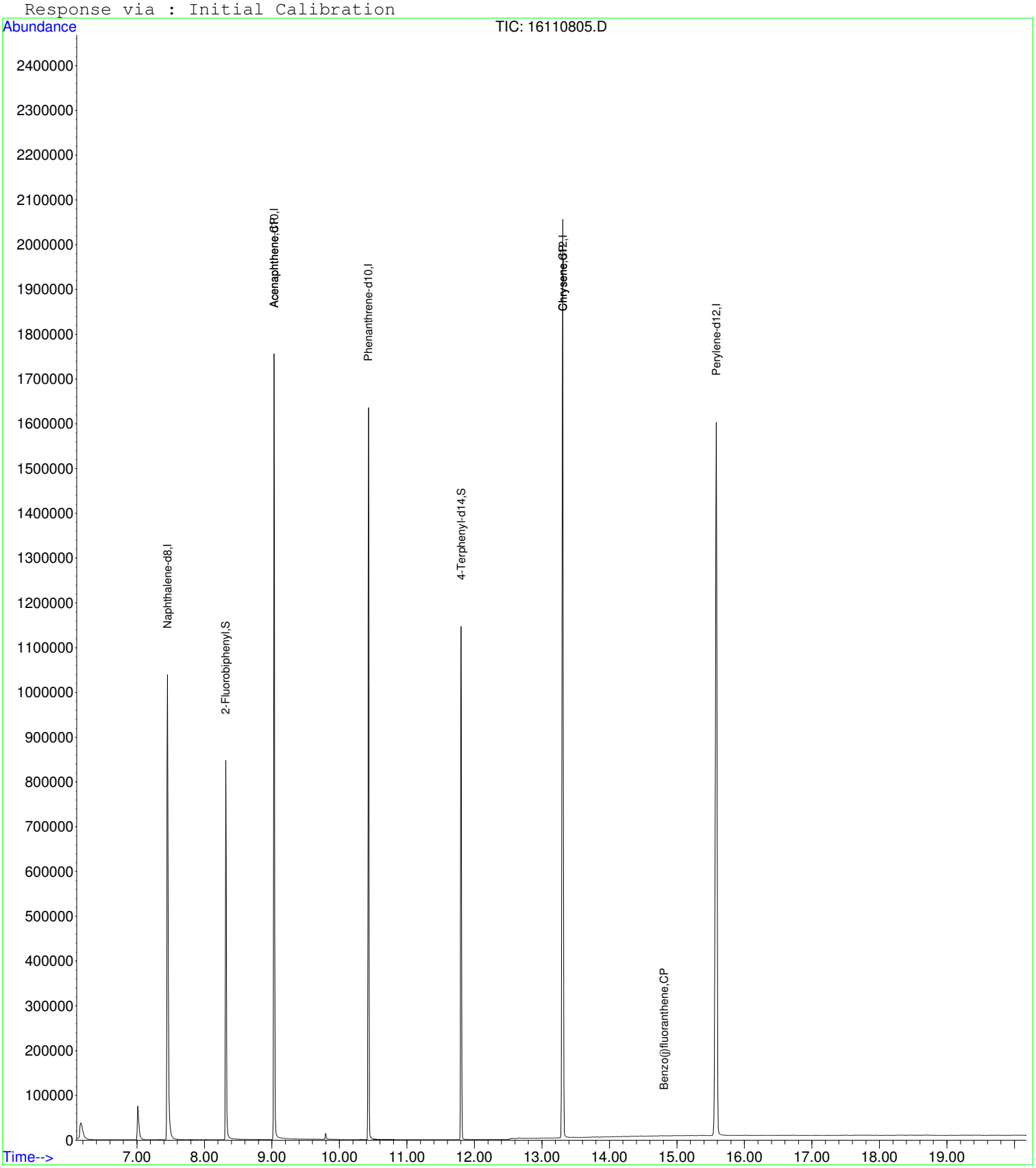
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1259697	4000.00	ug/kg	115
5) Acenaphthene-d10	9.03	164	718062	4000.00	ug/kg	113
11) Phenanthrene-d10	10.43	188	1317969	4000.00	ug/kg	110
17) Chrysene-d12	13.31	240	1816723	4000.00	ug/kg	118
20) Perylene-d12	15.58	264	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\16110806.D Vial: 6
Acq On : 8 Nov 2016 11:04 am Operator:
Sample : 1611022-13B 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

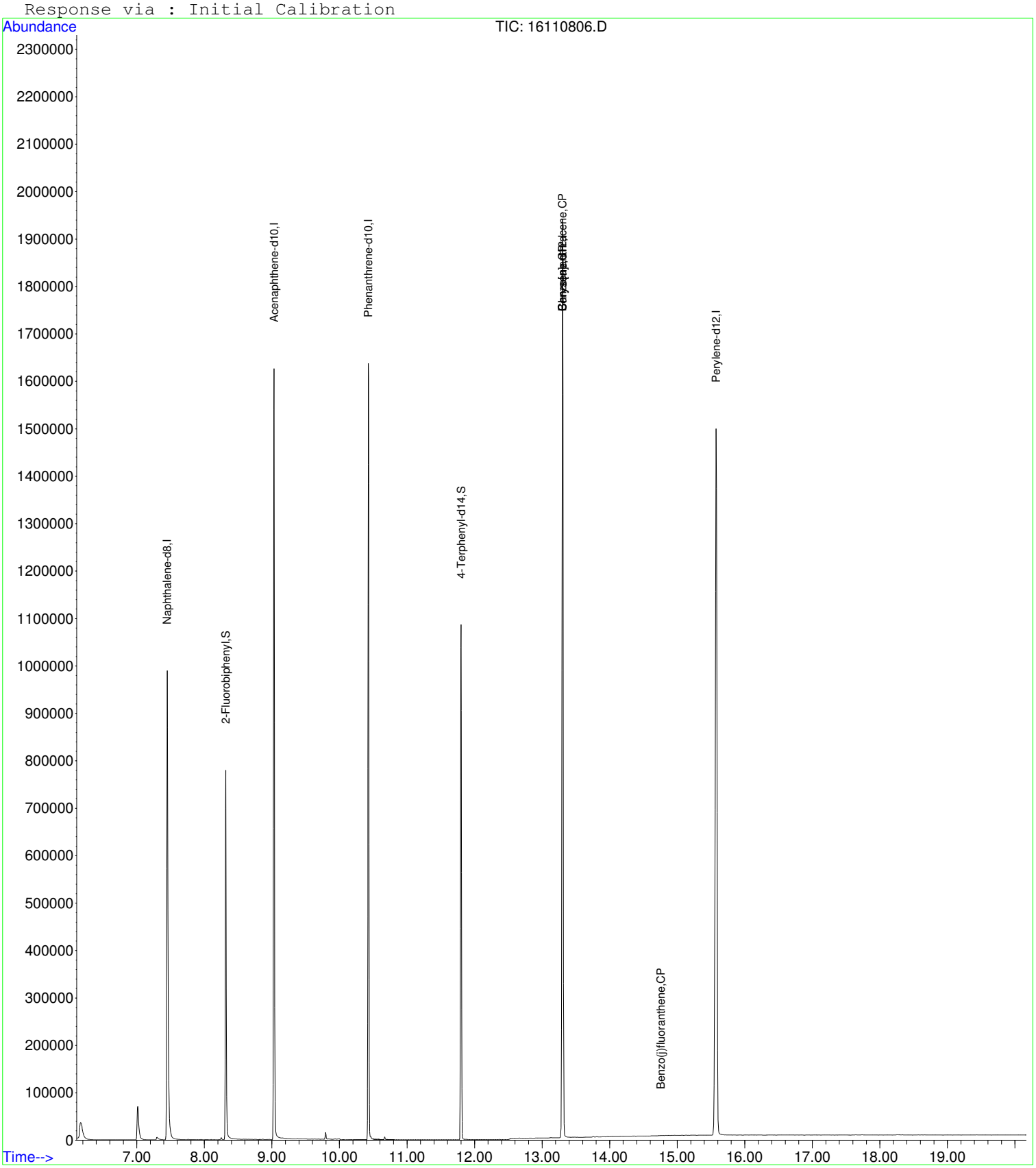
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1222556	4000.00	ug/kg	112
5) Acenaphthene-d10	9.03	164	705701	4000.00	ug/kg	111
11) Phenanthrene-d10	10.43	188	1318119	4000.00	ug/kg	110
17) Chrysene-d12	13.30	240	1689200	4000.00	ug/kg	110
20) Perylene-d12	15.58	264	1825108	4000.00	ug/kg	120
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	568660	2759.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 68.98%			
16) 4-Terphenyl-d14	11.80	244	848510	3205.10	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 80.13%			
Target Compounds						Qvalue
18) Benzo[a]anthracene	13.30	228	3899	11.81	ug/kg	74
19) Chrysene	13.30	228	3899	12.74	ug/kg	70
23) Benzo(j)fluoranthene	14.76	252	134	0.37	ug/kg#	1

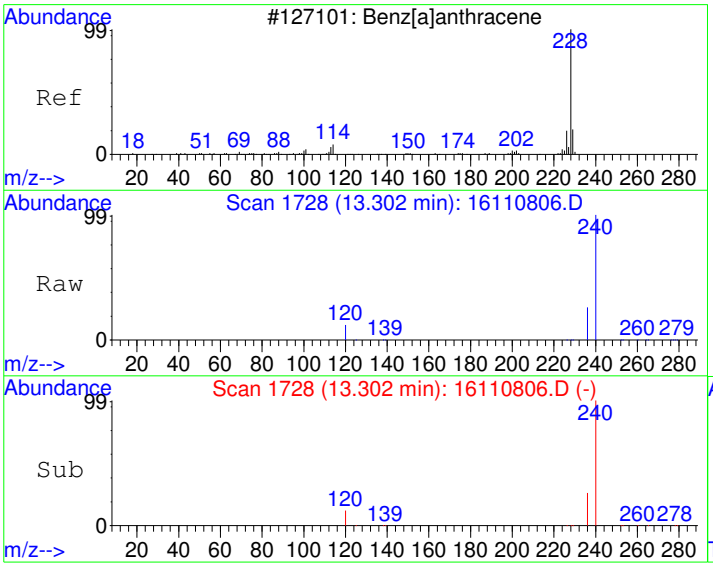
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110806.D Vial: 6
Acq On : 8 Nov 2016 11:04 am Operator:
Sample : 1611022-13B 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

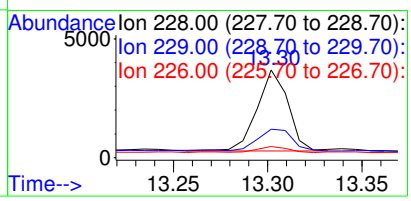


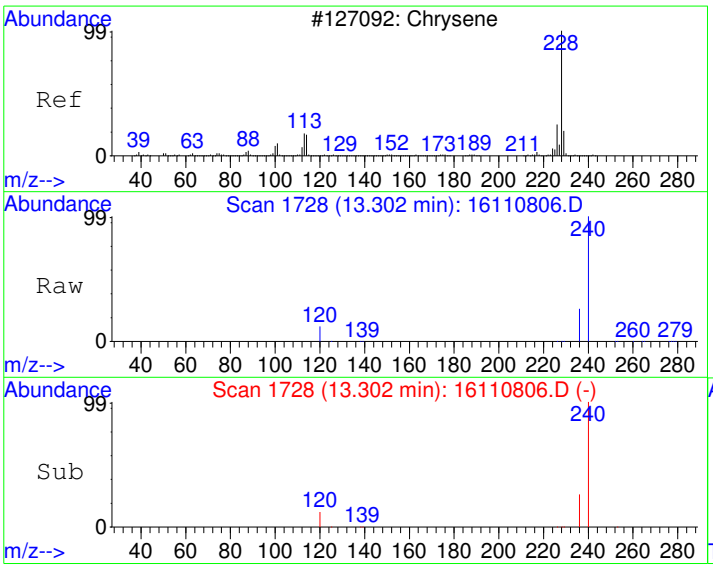


#18
Benzo[a]anthracene
Concen: 11.81 ug/kg
RT: 13.30 min Scan# 1728
Delta R.T. 0.05 min
Lab File: 16110806.D
Acq: 8 Nov 2016 11:04 am

Tgt Ion:228 Resp: 3899

Ion	Ratio	Lower	Upper
228	100		
229	27.2	0.0	50.4
226	7.5	0.0	55.6

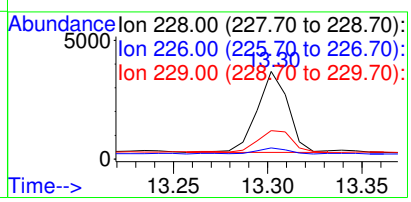


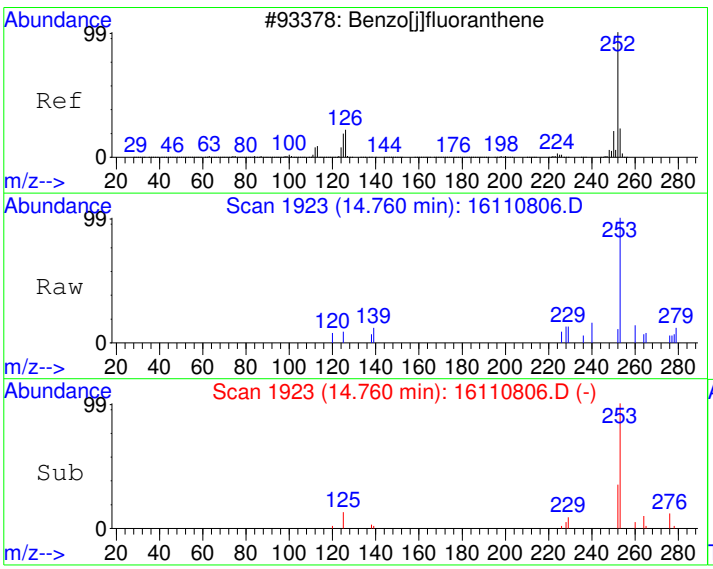


#19
Chrysene
Concen: 12.74 ug/kg
RT: 13.30 min Scan# 1728
Delta R.T. -0.05 min
Lab File: 16110806.D
Acq: 8 Nov 2016 11:04 am

Tgt Ion:228 Resp: 3899

Ion	Ratio	Lower	Upper
228	100		
226	7.5	0.0	58.8
229	27.2	0.0	50.2

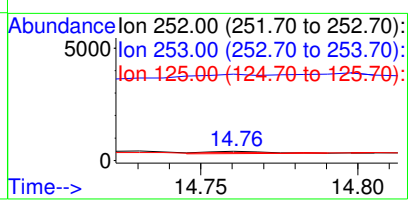




#23
Benzo(j)fluoranthene
Concen: 0.37 ug/kg
RT: 14.76 min Scan# 1923
Delta R.T. -0.06 min
Lab File: 16110806.D
Acq: 8 Nov 2016 11:04 am

Tgt Ion:252 Resp: 134

Ion	Ratio	Lower	Upper
252	100		
253	105.9	2.3	42.3#
125	38.8	0.0	32.6#



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110807.D Vial: 7
Acq On : 8 Nov 2016 11:33 am Operator:
Sample : 1611022-26B 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

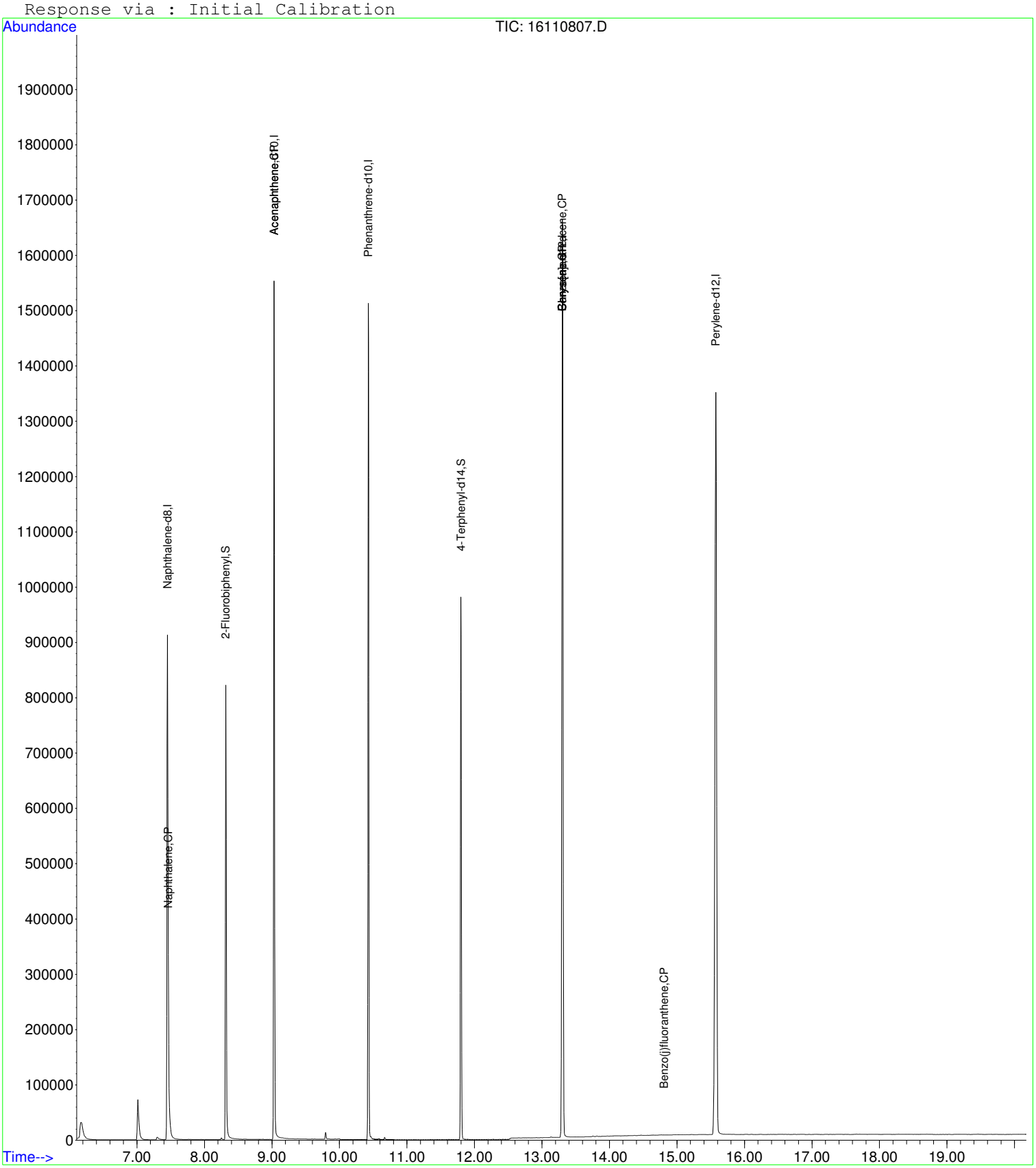
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1107399	4000.00	ug/kg	101
5) Acenaphthene-d10	9.03	164	619507	4000.00	ug/kg	98
11) Phenanthrene-d10	10.43	188	1205984	4000.00	ug/kg	100
17) Chrysene-d12	13.31	240	1542566	4000.00	ug/kg	100
20) Perylene-d12	15.57	264	1637466	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	552587	3054.16	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 76.35%			
16) 4-Terphenyl-d14	11.80	244	752575	3107.04	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 77.68%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	1140	5.72	ug/kg#	1
9) Acenaphthene	9.03	154	2009	15.34	ug/kg#	10
18) Benzo[a]anthracene	13.30	228	3781	12.54	ug/kg	73
19) Chrysene	13.30	228	3781	13.53	ug/kg	70
23) Benzo(j)fluoranthene	14.80	252	63	0.19	ug/kg#	1

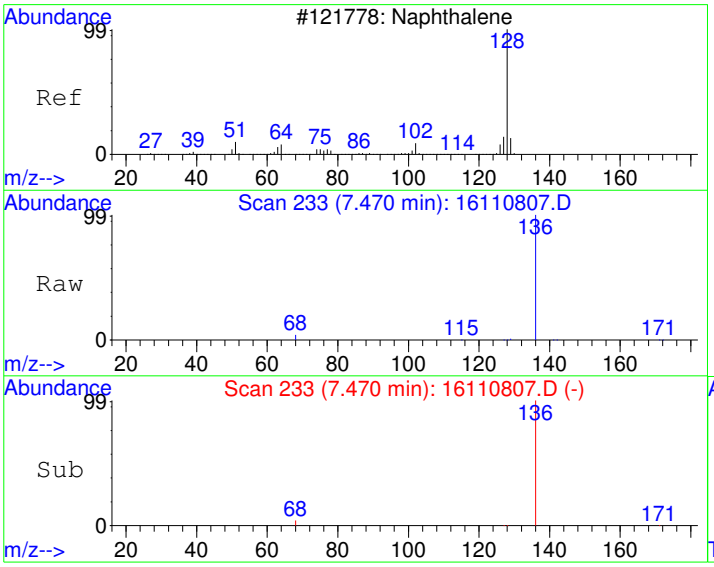
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110807.D Vial: 7
Acq On : 8 Nov 2016 11:33 am Operator:
Sample : 1611022-26B 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

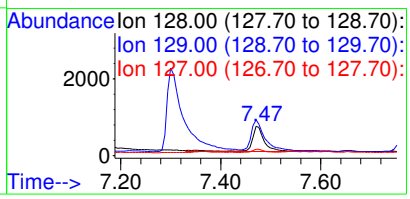


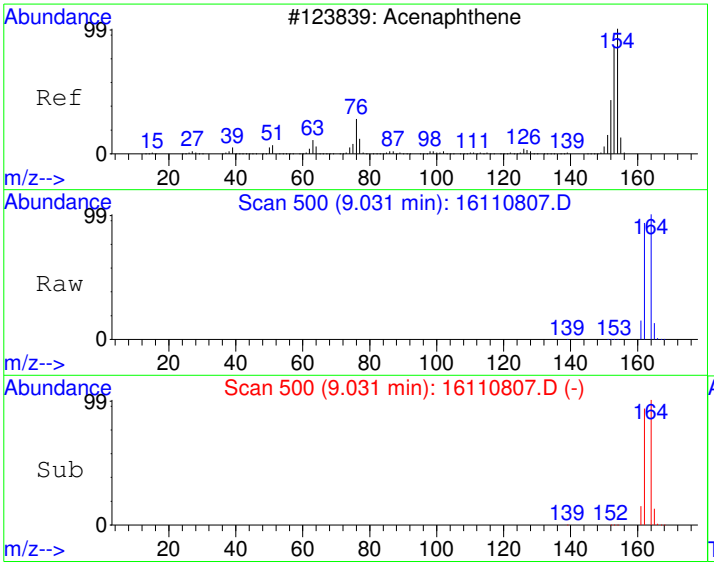


#2
Naphthalene
Concen: 5.72 ug/kg
RT: 7.47 min Scan# 233
Delta R.T. -0.00 min
Lab File: 16110807.D
Acq: 8 Nov 2016 11:33 am

Tgt Ion:128 Resp: 1140

Ion	Ratio	Lower	Upper
128	100		
129	123.5	0.0	41.1#
127	13.4	0.0	42.7

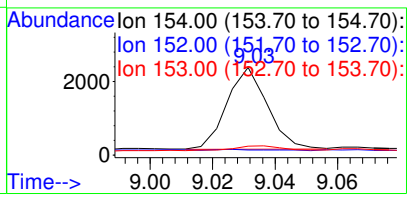


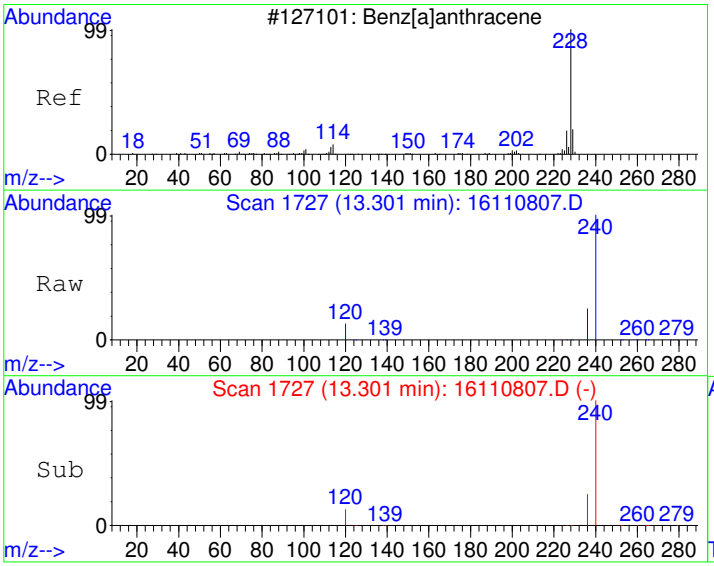


#9
Acenaphthene
Concen: 15.34 ug/kg
RT: 9.03 min Scan# 500
Delta R.T. -0.04 min
Lab File: 16110807.D
Acq: 8 Nov 2016 11:33 am

Tgt Ion:154 Resp: 2009

Ion	Ratio	Lower	Upper
154	100		
152	0.2	19.8	79.8#
153	5.5	77.1	137.1#

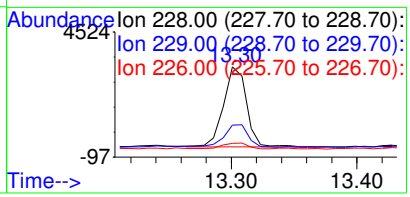


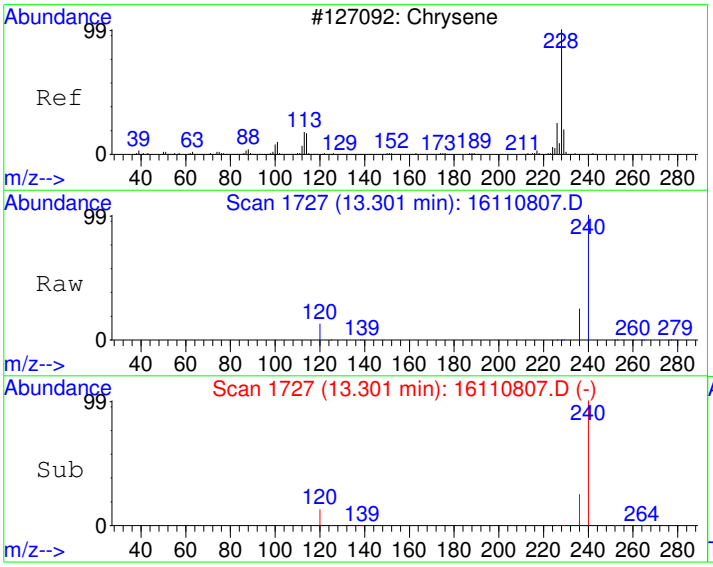


#18
Benzo[a]anthracene
Concen: 12.54 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. 0.05 min
Lab File: 16110807.D
Acq: 8 Nov 2016 11:33 am

Tgt Ion:228 Resp: 3781

Ion	Ratio	Lower	Upper
228	100		
229	27.2	0.0	50.4
226	7.1	0.0	55.6

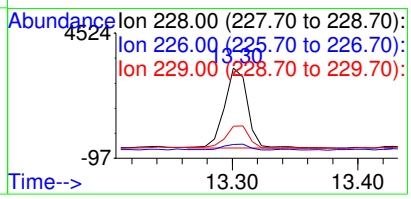


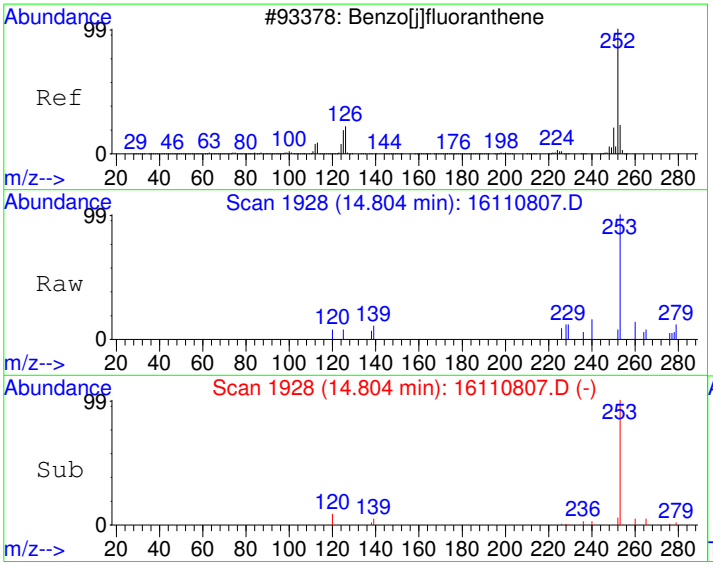


#19
Chrysene
Concen: 13.53 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.05 min
Lab File: 16110807.D
Acq: 8 Nov 2016 11:33 am

Tgt Ion:228 Resp: 3781

Ion	Ratio	Lower	Upper
228	100		
226	7.1	0.0	58.8
229	27.2	0.0	50.2

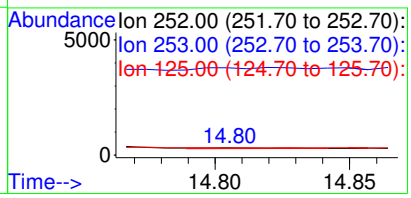




#23
Benzo(j)fluoranthene
Concen: 0.19 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.01 min
Lab File: 16110807.D
Acq: 8 Nov 2016 11:33 am

Tgt Ion:252 Resp: 63

Ion	Ratio	Lower	Upper
252	100		
253	326.7	2.3	42.3#
125	0.0	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

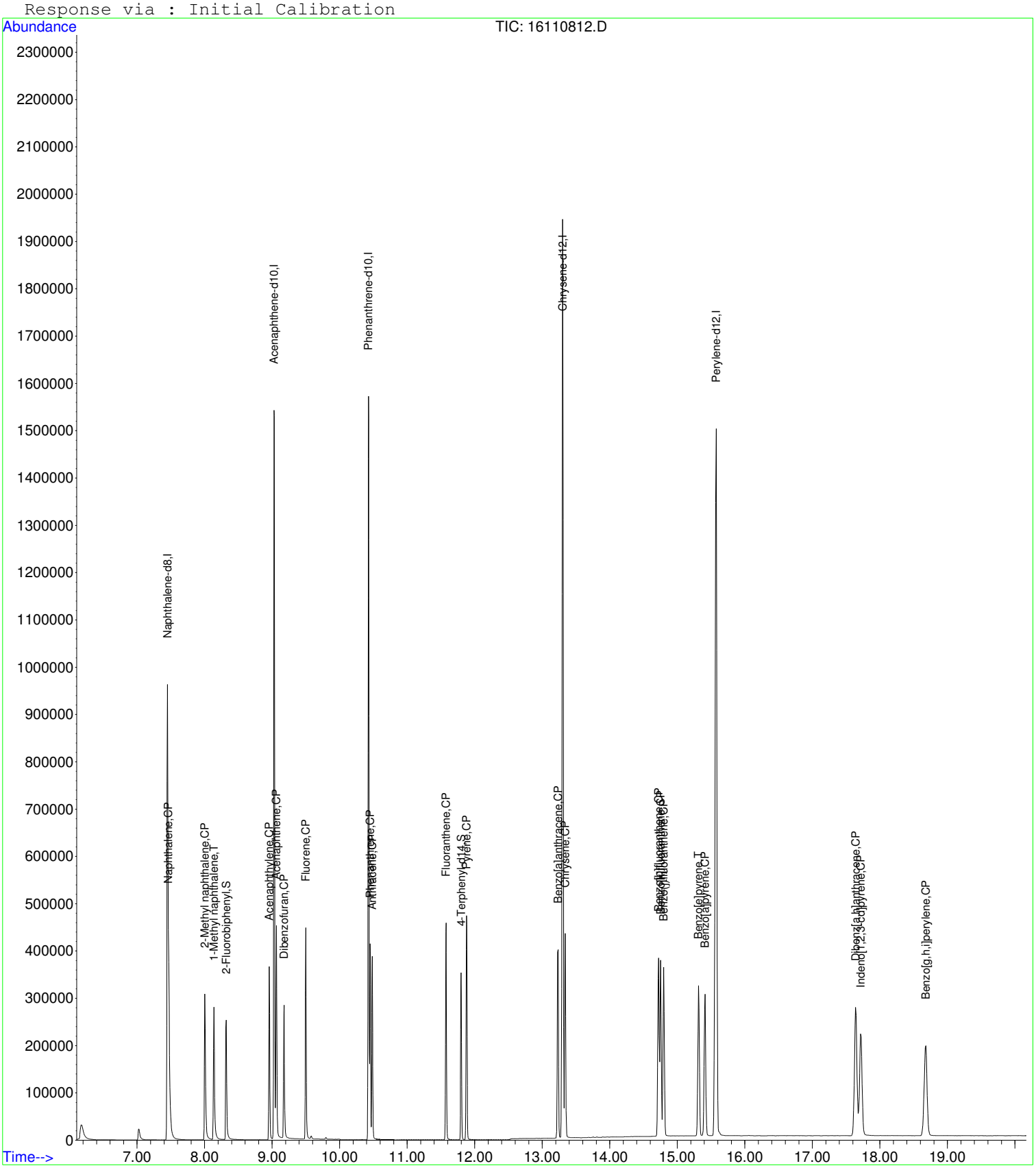
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1190454	4000.00	ug/kg	109
5) Acenaphthene-d10	9.03	164	666968	4000.00	ug/kg	105
11) Phenanthrene-d10	10.43	188	1263874	4000.00	ug/kg	105
17) Chrysene-d12	13.30	240	1659912	4000.00	ug/kg	108
20) Perylene-d12	15.58	264	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_161108B
For

DHL Work Order
1611022

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_161108B
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: 11/11/2016

Second-Level Review: Angie O'Donnell Date: 11/16/2016

DHL Analytical, Inc.

Run ID: GCMS6_161108B **Run No.:** 88913

Analytical Run Date: 11/8/2016 **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-161108	1	PAH_LL_SDOD1	TUNE	R88913	11/8/2016 2:30:00 PM		
ICV-161108	1	PAH_LL_SDOD1	ICV	R88913	11/8/2016 2:58:00 PM		
LCS-77815	1	PAH_LL_SDOD1	LCS	77815	11/8/2016 3:26:00 PM		
MB-77815	1	PAH_LL_SDOD1	MBLK	77815	11/8/2016 3:55:00 PM		
1611022-01A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 4:22:00 PM		
1611022-02A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 4:50:00 PM		
1611022-03A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 5:18:00 PM		
1611022-04A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 5:46:00 PM		
1611022-05A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 6:14:00 PM		MI
1611022-06A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 6:42:00 PM		
1611022-07A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 7:10:00 PM		
1611022-08A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 7:38:00 PM		
1611022-09A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 8:05:00 PM		MI
1611022-10A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 8:34:00 PM		
1611022-11A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 9:01:00 PM		
1611022-12A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 9:29:00 PM		
1611022-14A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 9:57:00 PM		
1611022-15A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 10:25:00 PM		
1611022-16A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 10:53:00 PM		
1611022-17A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 11:21:00 PM		
1611022-18A	10	PAH_LL_SDOD1	SAMP	77815	11/8/2016 11:49:00 PM		
1611022-19A	10	PAH_LL_SDOD1	SAMP	77815	11/9/2016 12:17:00 AM		
1611022-20A	10	PAH_LL_SDOD1	SAMP	77815	11/9/2016 12:45:00 AM		MI
1611022-21A	10	PAH_LL_SDOD1	SAMP	77815	11/9/2016 1:13:00 AM		
1611022-09AMS	10	PAH_LL_SDOD1	MS	77815	11/9/2016 1:41:00 AM		
1611022-09AMSD	10	PAH_LL_SDOD1	MSD	77815	11/9/2016 2:09:00 AM		High recovery for Phenanthrene.
CCV1-161108	1	PAH_LL_SDOD1	CCV	R88913	11/9/2016 2:36:00 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	01/11/2026

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 1:37:00 PM**
Digestion:
Prep End Date: **11/7/2016 4:00:00 PM**

Prep Batch **77815** 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
1611022-01A	Soil		10.02	10	0.998	1 of 1	
1611022-02A	Soil		10.18	10	0.982	1 of 1	
1611022-03A	Soil	10.61	~~15.01~~	10	0.641	1 of 1	afo 11/16/2016
1611022-04A	Soil		10.08	10	0.992	1 of 1	
1611022-05A	Soil		10.22	10	0.978	1 of 1	
1611022-06A	Soil		10.28	10	0.973	1 of 1	
1611022-07A	Soil		10.16	10	0.984	1 of 1	
1611022-08A	Soil		10.06	10	0.994	1 of 1	
1611022-09A	Soil		10.53	10	0.950	1 of 3	
1611022-09AMS	Soil		10.4	10	0.962	1 of	
1611022-09AMSD	Soil		10.12	10	0.988	1 of	
1611022-10A	Soil		10.15	10	0.985	1 of 1	
1611022-11A	Soil		10.23	10	0.978	1 of 1	
1611022-12A	Soil		10.28	10	0.973	1 of 1	
1611022-14A	Soil		10.58	10	0.945	1 of 1	
1611022-15A	Soil		10.05	10	0.995	1 of 1	
1611022-16A	Soil		10.65	10	0.939	1 of 1	
1611022-17A	Soil		10.48	10	0.954	1 of 1	
1611022-18A	Soil		10.33	10	0.968	1 of 1	
1611022-19A	Soil		10.41	10	0.961	1 of 1	
1611022-20A	Soil		10.3	10	0.971	1 of 1	
1611022-21A	Soil		10.15	10	0.985	1 of 1	
LCS-77815	Soil		10	10	1.000	of	
MB-77815	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

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/7/2016 1:37:00 PM**
Digestion:
Prep End Date: 11/7/16 4:00 PM

Prep Batch **77815** 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
1611022-01A	Soil		10.02	10	1.000	1 of 1	
1611022-02A	Soil		10.19	10	1.000	1 of 1	
1611022-03A	Soil		10.61	10	1.000	1 of 1	
1611022-04A	Soil		10.08	10	1.000	1 of 1	
1611022-05A	Soil		10.22	10	1.000	1 of 1	
1611022-06A	Soil		10.28	10	1.000	1 of 1	
1611022-07A	Soil		10.16	10	1.000	1 of 1	
1611022-08A	Soil		10.06	10	1.000	1 of 1	
1611022-09A	Soil		10.53	10	1.000	1 of 3	
1611022-09AMS	Soil		10.40	10	1.000	1 of 3	
1611022-09AMSD	Soil		10.12	10	1.000	1 of 3	
1611022-10A	Soil		10.15	10	1.000	1 of 1	
1611022-11A	Soil		10.23	10	1.000	1 of 1	
1611022-12A	Soil		10.28	10	1.000	1 of 1	
1611022-14A	Soil		10.58	10	1.000	1 of 1	
1611022-15A	Soil		10.05	10	1.000	1 of 1	
1611022-16A	Soil		10.65	10	1.000	1 of 1	
1611022-17A	Soil		10.48	10	1.000	1 of 1	
1611022-18A	Soil		10.33	10	1.000	1 of 1	
1611022-19A	Soil		10.41	10	1.000	1 of 1	
1611022-20A	Soil		10.30	10	1.000	1 of 1	
1611022-21A	Soil		10.15	10	1.000	1 of 1	
LCS-77815	Soil		10	10	1.000	of	
MB-77815	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

11/7/16

11/7/16

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/**

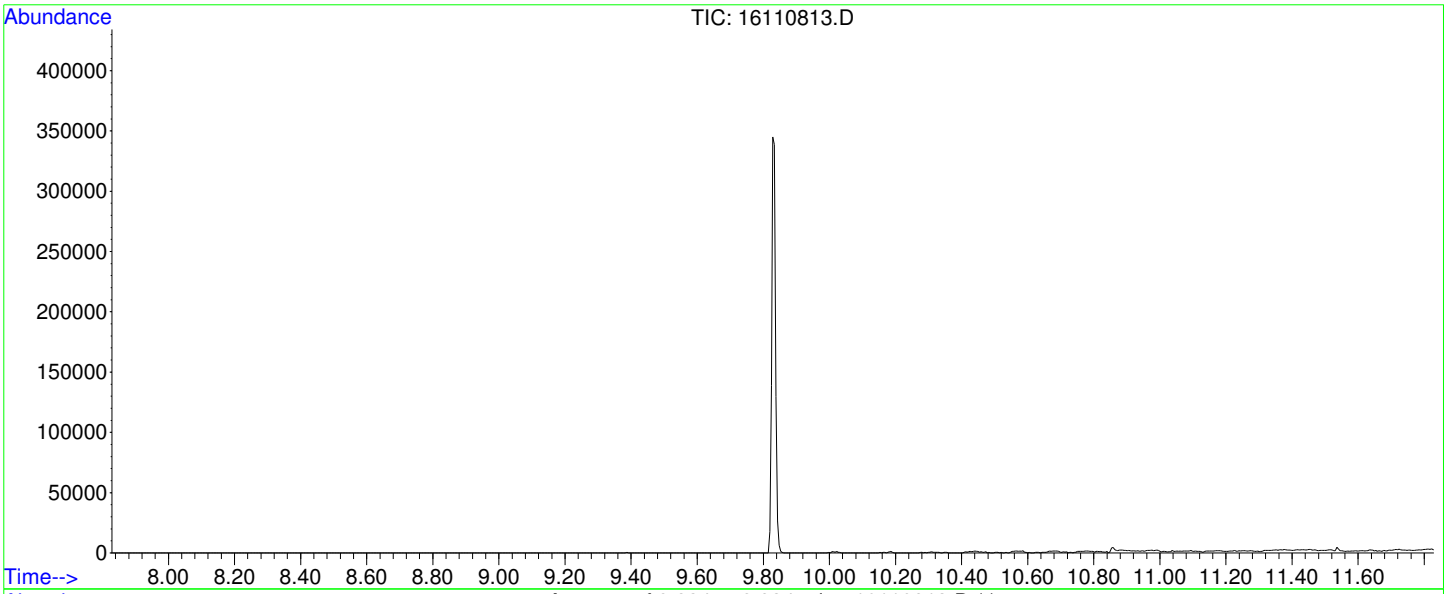
Sample ID	Matrix	pH	SampAmt	Fin Vol	Factor	Bottle #	Cleanup
1611022-01A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-02A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-03A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-04A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-05A	Soil		0	0	#Num!	1 of 1	
SS							
1611022-06A	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							

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							

Data File : C:\HPCHEM\1\DATA\161108\16110813.D Vial: 1
Acq On : 8 Nov 2016 2:30 pm 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	21.3	7269	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	28.4	9711	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	42.4	14476	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	34152	PASS
199	198	5	9	7.1	2438	PASS
275	198	10	60	29.9	10226	PASS
365	198	1	200	2.9	1007	PASS
441	442	0.01	24	15.0	7493	PASS
442	198	50	400	146.2	49932	PASS
443	442	15	24	19.2	9584	PASS

Manual Integrations Tracking Form - DoD QSM 5.0 Requirement

Instrument ID: GCMS #6 **Data Folder: GCMS6_161108B**

Sample ID	Analyte #1 Identification & Reason	Analyte #2 Identification & Reason	Analyte #3 Identification & Reason	Analyte #4 Identification & Reason
1611022-05A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611022-09A	Benzo[k]fluoranthene– Integrated wrong peak.			
1611022-20A	Benzo[k]fluoranthene– Integrated wrong peak.			

*Manually Integrated = MI

Don Winston

11-11-2016

Analyst Date

11/16/2016

2nd Level Review Date

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110814.D Vial: 2
Acq On : 8 Nov 2016 2:58 pm Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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

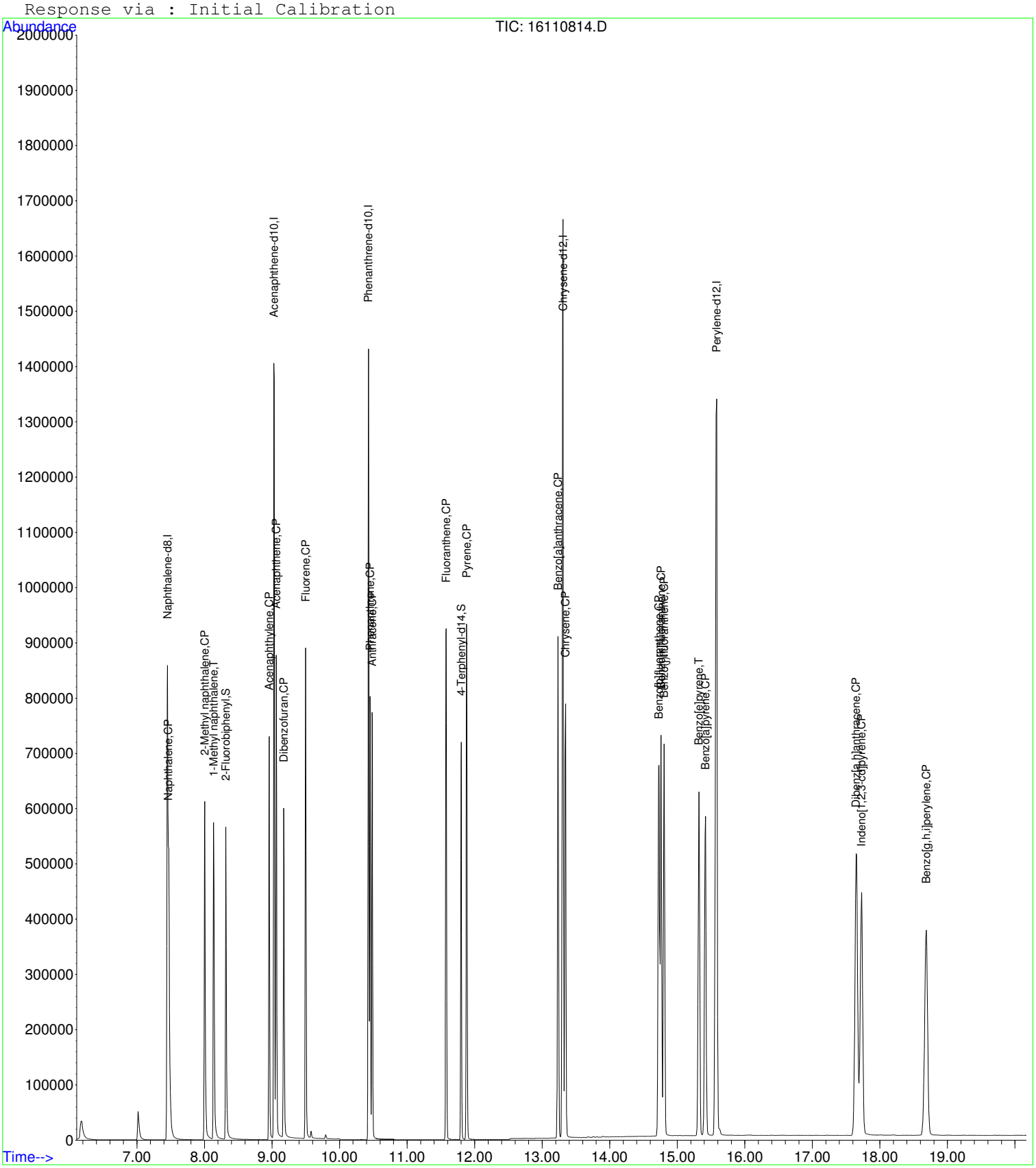
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1097904	4000.00	ug/kg	101
5) Acenaphthene-d10	9.03	164	605492	4000.00	ug/kg	96
11) Phenanthrene-d10	10.43	188	1150326	4000.00	ug/kg	96
17) Chrysene-d12	13.31	240	1542882	4000.00	ug/kg	100
20) Perylene-d12	15.58	264	1636772	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	416977	2357.98	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 58.95%			
16) 4-Terphenyl-d14	11.80	244	554705	2400.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 60.02%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	435852	2205.11	ug/kg	100
3) 2-Methyl naphthalene	8.01	142	326157	2217.36	ug/kg	99
4) 1-Methyl naphthalene	8.13	142	295135	2147.74	ug/kg	99
6) Dibenzofuran	9.17	168	442329	2296.09	ug/kg	99
8) Acenaphthylene	8.96	152	488099	2281.82	ug/kg	99
9) Acenaphthene	9.06	154	285631	2231.22	ug/kg	98
10) Fluorene	9.50	166	356750	2276.93	ug/kg	99
12) Phenanthrene	10.45	178	488166	2179.46	ug/kg	100
13) Anthracene	10.48	178	503502	2183.98	ug/kg	100
14) Fluoranthene	11.58	202	596907	2256.28	ug/kg	99
15) Pyrene	11.88	202	607189	2210.04	ug/kg	100
18) Benzo[a]anthracene	13.23	228	674728	2236.90	ug/kg	100
19) Chrysene	13.35	228	628188	2247.97	ug/kg	98
21) Benzo[b]fluoranthene	14.73	252	837234	2303.36	ug/kg	97
22) Benzo[k]fluoranthene	14.76	252	675535	2016.34	ug/kg	99
23) Benzo(j)fluoranthene	14.80	252	707195	2182.54	ug/kg	100
24) Benzo[e]pyrene	15.32	252	717320	2209.66	ug/kg	97
25) Benzo[a]pyrene	15.42	252	723590	2183.31	ug/kg	99
26) Dibenz[a,h]anthracene	17.65	278	756833	2173.98	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.73	276	734914	2185.17	ug/kg	98
28) Benzo[g,h,i]perylene	18.69	276	766955	2158.15	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110814.D Vial: 2
Acq On : 8 Nov 2016 2:58 pm Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 2016 Quant Results File: PP161020.RES

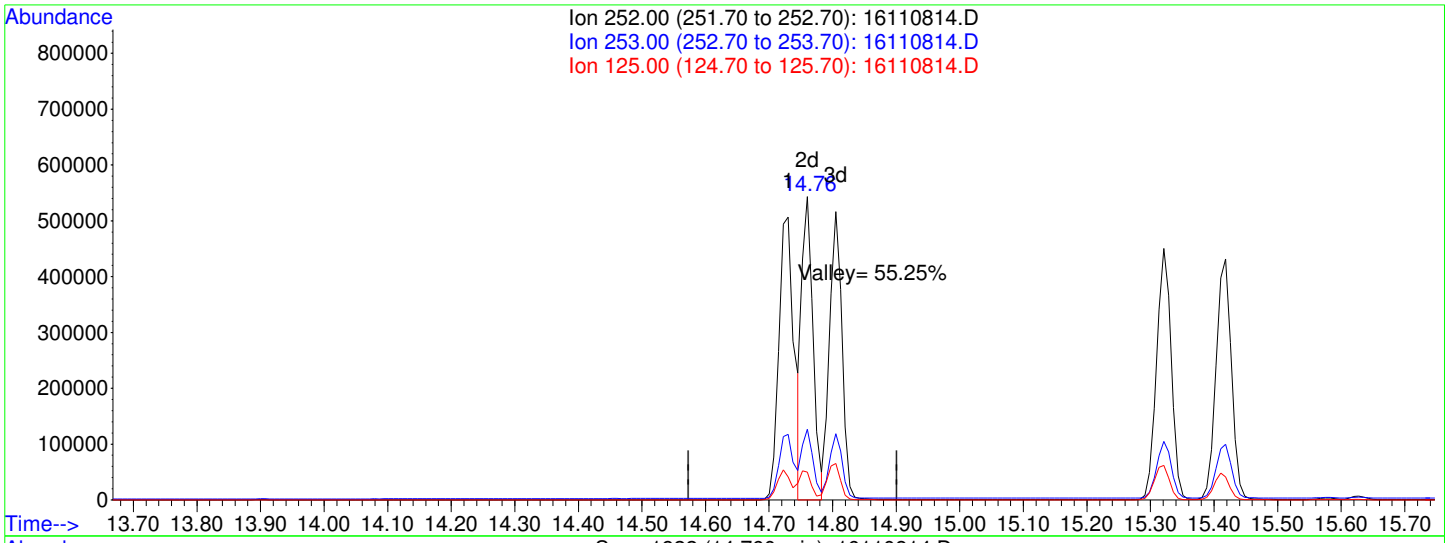
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration

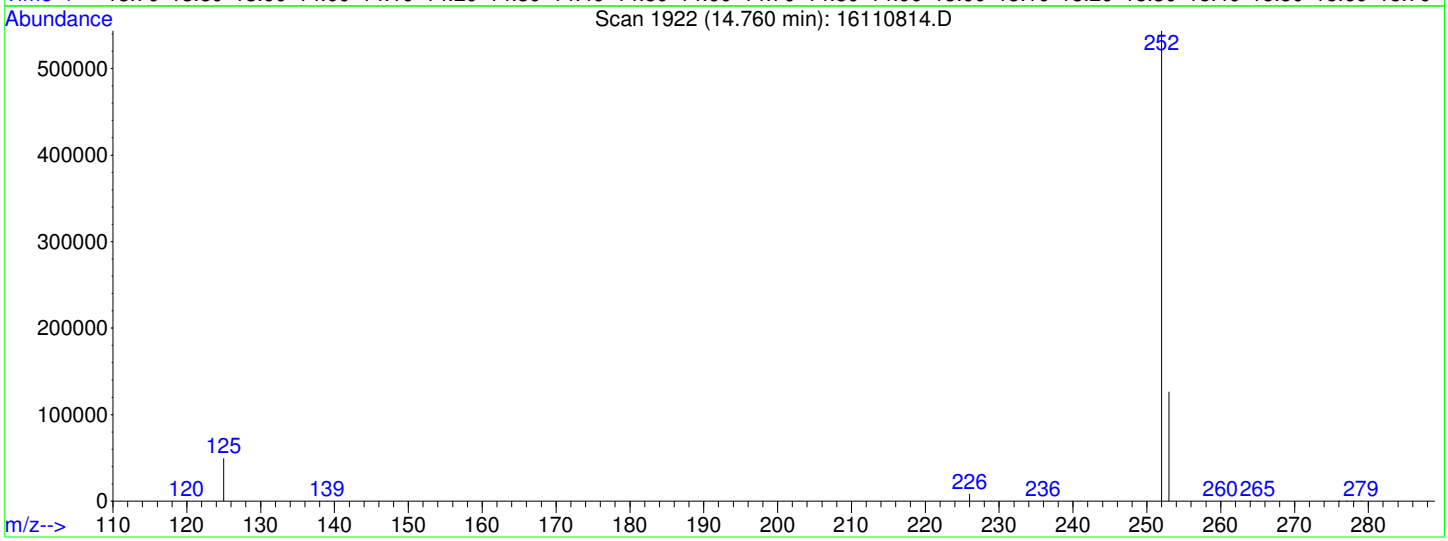


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161108\16110814.D Vial: 2
Acq On : 8 Nov 2016 2:58 pm Operator:
Sample : ICV-161108 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:18 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: 16110814.D

(21) Benzo[b]fluoranthene (CP)

14.76min 2043.14ug/kg m

response 742650

Ion	Exp%	Act%
252.00	100	100
253.00	22.10	23.26
125.00	10.50	9.14
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110815.D Vial: 3
Acq On : 8 Nov 2016 3:26 pm Operator:
Sample : LCS-77815 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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

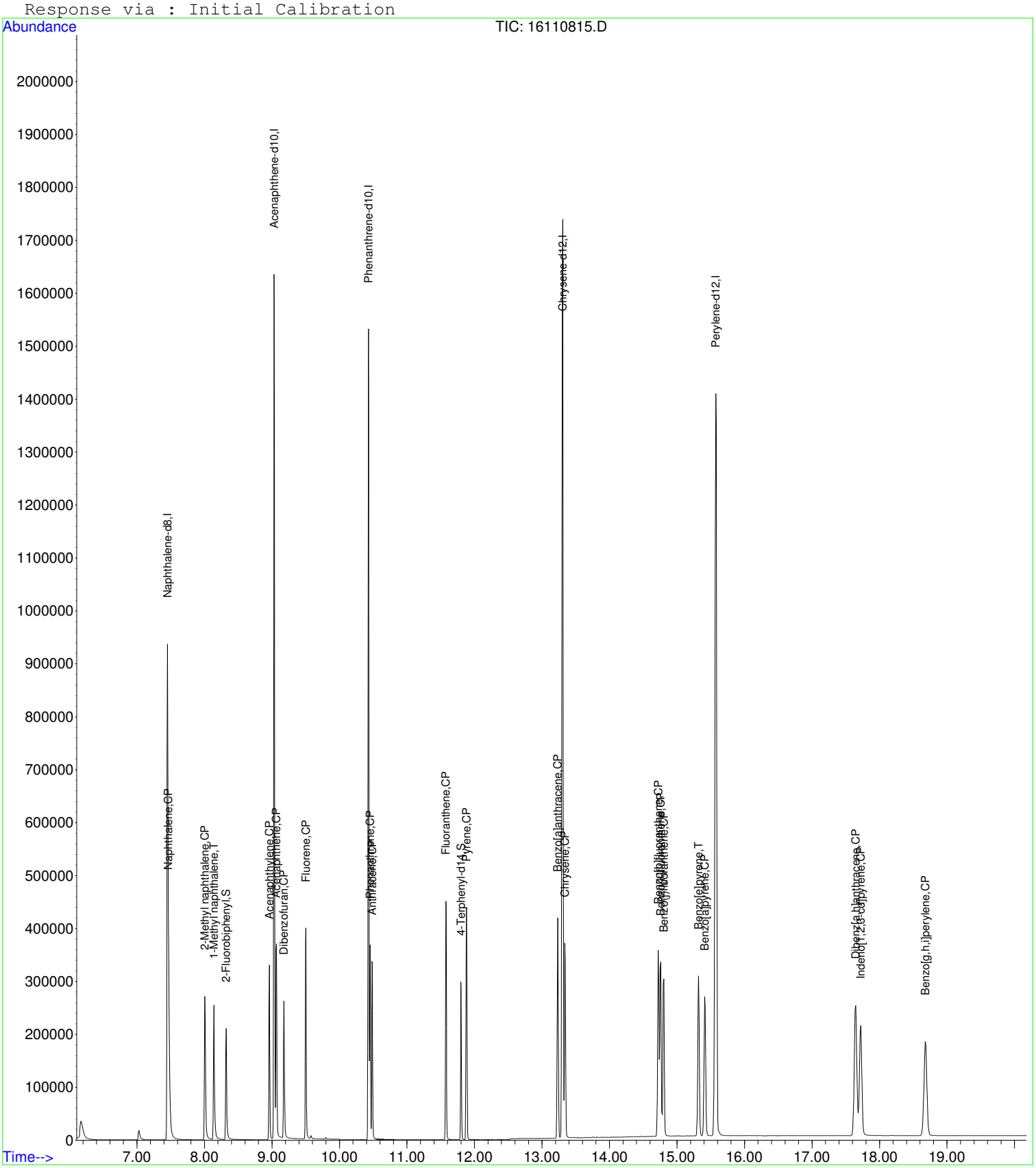
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1148514	4000.00	ug/kg	105
5) Acenaphthene-d10	9.03	164	658721	4000.00	ug/kg	104
11) Phenanthrene-d10	10.43	188	1212546	4000.00	ug/kg	101
17) Chrysene-d12	13.31	240	1612615	4000.00	ug/kg	105
20) Perylene-d12	15.57	264	1727753	4000.00	ug/kg	114
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	167840	872.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	21.81%#		
16) 4-Terphenyl-d14	11.80	244	231762	951.66	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.79%#		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	189158	914.84	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	145915	948.28	ug/kg	90
4) 1-Methyl naphthalene	8.14	142	131956	917.95	ug/kg	95
6) Dibenzofuran	9.18	168	198788	948.51	ug/kg	100
8) Acenaphthylene	8.96	152	222683	956.90	ug/kg	99
9) Acenaphthene	9.07	154	129587	930.48	ug/kg	97
10) Fluorene	9.50	166	166628	977.55	ug/kg	98
12) Phenanthrene	10.45	178	228946	969.70	ug/kg	100
13) Anthracene	10.48	178	222719	916.49	ug/kg	99
14) Fluoranthene	11.58	202	283805	1017.72	ug/kg	98
15) Pyrene	11.88	202	288540	996.34	ug/kg	100
18) Benzo[a]anthracene	13.23	228	317416	1006.81	ug/kg	100
19) Chrysene	13.34	228	296509	1015.17	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	362895	945.81	ug/kg	99
22) Benzo[k]fluoranthene	14.76	252	361384	1021.86	ug/kg	98
23) Benzo(j)fluoranthene	14.80	252	306935	897.38	ug/kg	98
24) Benzo[e]pyrene	15.32	252	339599	991.03	ug/kg	97
25) Benzo[a]pyrene	15.41	252	325692	930.97	ug/kg	99
26) Dibenz[a,h]anthracene	17.65	278	353792	962.74	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.72	276	345343	972.76	ug/kg	99
28) Benzo[g,h,i]perylene	18.68	276	358018	954.39	ug/kg	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110815.D Vial: 3
Acq On : 8 Nov 2016 3:26 pm Operator:
Sample : LCS-77815 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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\16110816.D Vial: 4
Acq On : 8 Nov 2016 3:55 pm Operator:
Sample : MB-77815 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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

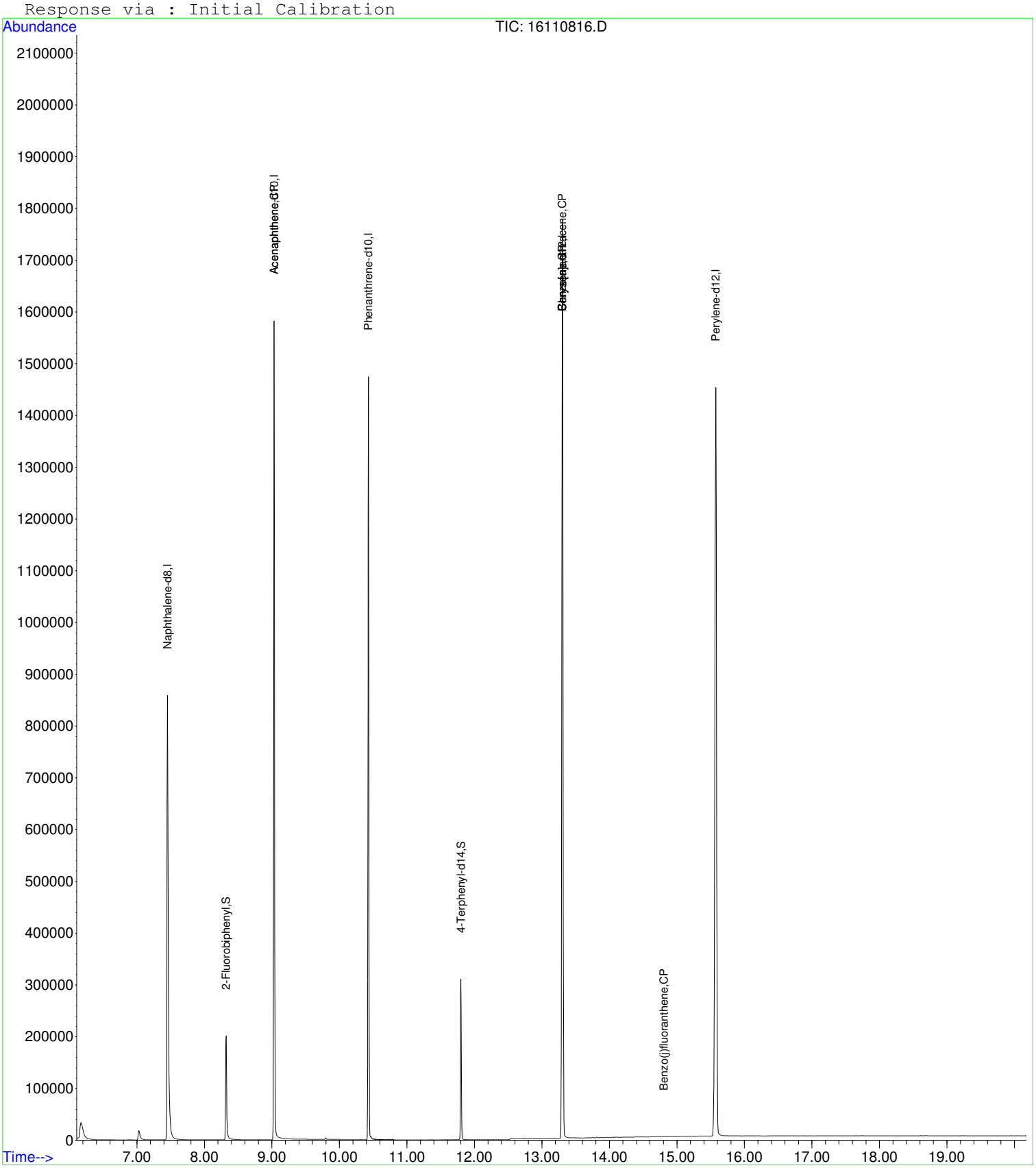
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1107641	4000.00	ug/kg	101
5) Acenaphthene-d10	9.03	164	633641	4000.00	ug/kg	100
11) Phenanthrene-d10	10.43	188	1183043	4000.00	ug/kg	99
17) Chrysene-d12	13.30	240	1590138	4000.00	ug/kg	103
20) Perylene-d12	15.58	264	1695282	4000.00	ug/kg	112
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	170772	922.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	23.07%#		
16) 4-Terphenyl-d14	11.80	244	242298	1019.74	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	25.49%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	2233	16.67	ug/kg#	10
18) Benzo[a]anthracene	13.30	228	3733	12.01	ug/kg	75
19) Chrysene	13.30	228	3708	12.87	ug/kg	72
23) Benzo(j)fluoranthene	14.81	252	174	0.52	ug/kg#	1

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110816.D Vial: 4
Acq On : 8 Nov 2016 3:55 pm Operator:
Sample : MB-77815 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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\16110817.D Vial: 5
Acq On : 8 Nov 2016 4:22 pm Operator:
Sample : 1611022-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:19 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	1080704	4000.00	ug/kg	99
5) Acenaphthene-d10	9.03	164	604132	4000.00	ug/kg	95
11) Phenanthrene-d10	10.43	188	1135375	4000.00	ug/kg	95
17) Chrysene-d12	13.30	240	1479935	4000.00	ug/kg	96
20) Perylene-d12	15.58	264	1590728	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17493	99.14	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.48%#			
16) 4-Terphenyl-d14	11.80	244	25627	112.38	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.81%#			
Target Compounds						Qvalue
14) Fluoranthene	11.58	202	1686	6.46	ug/kg	98
15) Pyrene	11.89	202	1566	5.77	ug/kg	96
18) Benzo[a]anthracene	13.23	228	1610	5.56	ug/kg	99
21) Benzo[b]fluoranthene	14.73	252	2372	6.71	ug/kg	96
23) Benzo(j)fluoranthene	14.80	252	484	1.54	ug/kg	83
24) Benzo[e]pyrene	15.41	252	2002	~~6.35~~	~~ug/kg~~	~~93~~
25) Benzo[a]pyrene	15.41	252	2099	6.52	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.73	276	1882	5.76	ug/kg	97

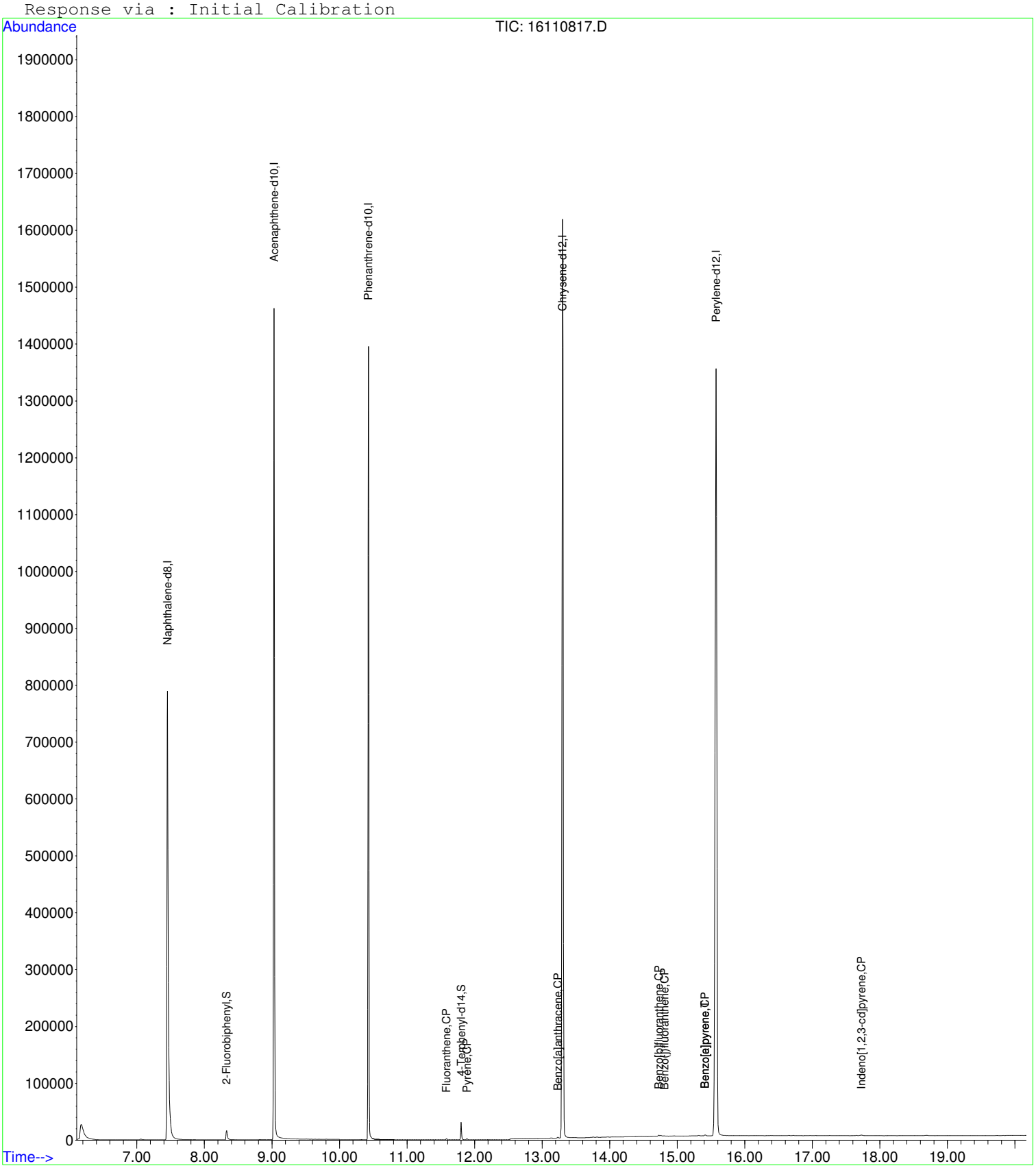
Wrong RT

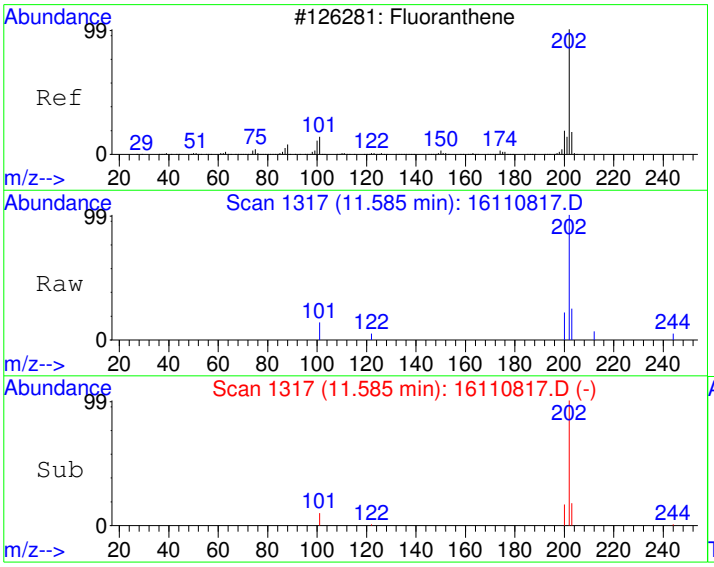
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110817.D Vial: 5
Acq On : 8 Nov 2016 4:22 pm Operator:
Sample : 1611022-01A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:19 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

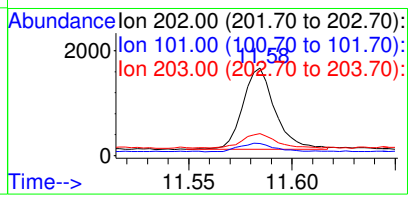


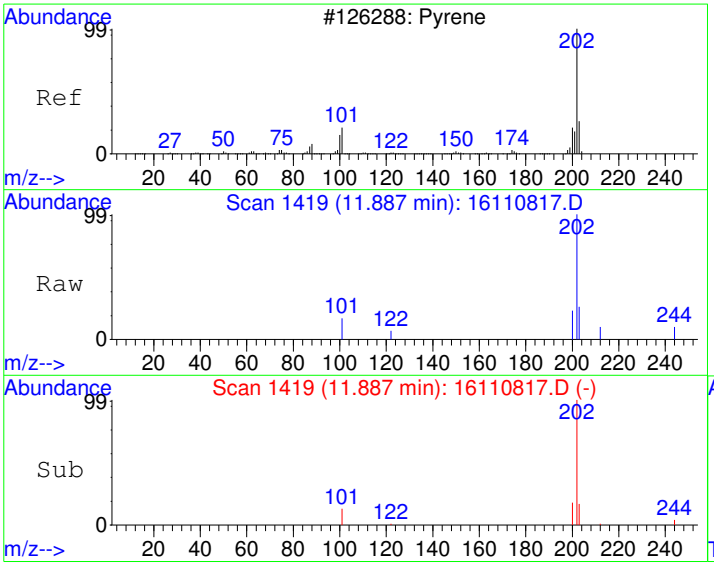


#14
Fluoranthene
Concen: 6.46 ug/kg
RT: 11.58 min Scan# 1317
Delta R.T. -0.00 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:202 Resp: 1686

Ion	Ratio	Lower	Upper
202	100		
101	9.6	0.0	40.6
203	17.4	0.0	48.0

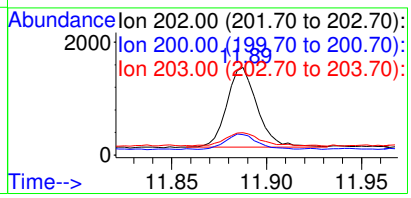


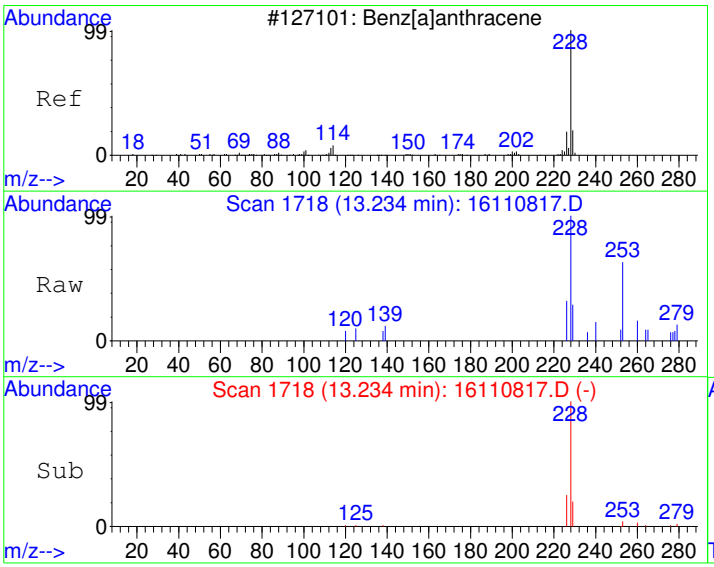


#15
Pyrene
Concen: 5.77 ug/kg
RT: 11.89 min Scan# 1419
Delta R.T. -0.00 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:202 Resp: 1566

Ion	Ratio	Lower	Upper
202	100		
200	17.7	0.0	50.1
203	17.0	0.0	47.8

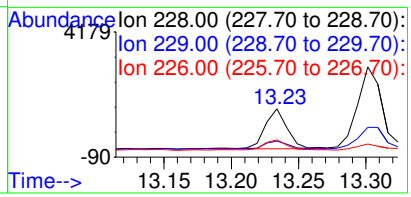


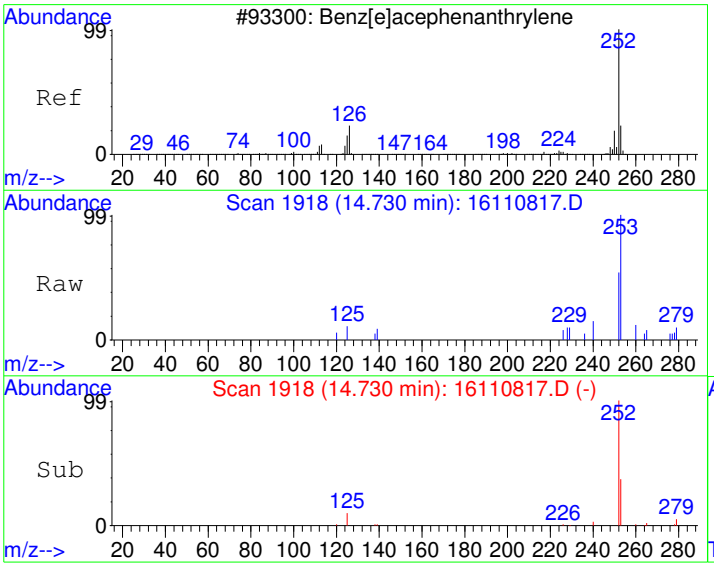


#18
Benzo[a]anthracene
Concen: 5.56 ug/kg
RT: 13.23 min Scan# 1718
Delta R.T. -0.01 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:228 Resp: 1610

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	50.4
226	25.4	0.0	55.6

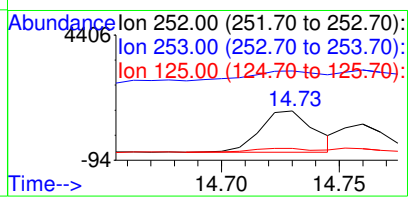


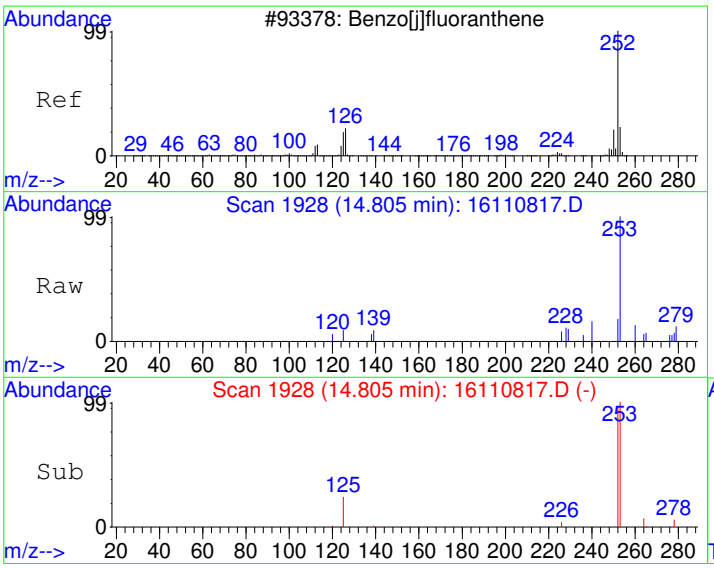


#21
Benzo[b]fluoranthene
Concen: 6.71 ug/kg
RT: 14.73 min Scan# 1918
Delta R.T. -0.01 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:252 Resp: 2372

Ion	Ratio	Lower	Upper
252	100		
253	23.9	0.0	52.1
125	9.2	0.0	40.5

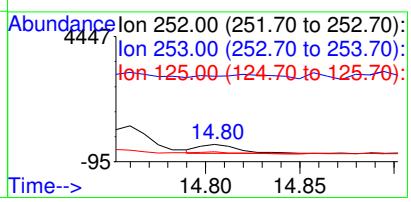


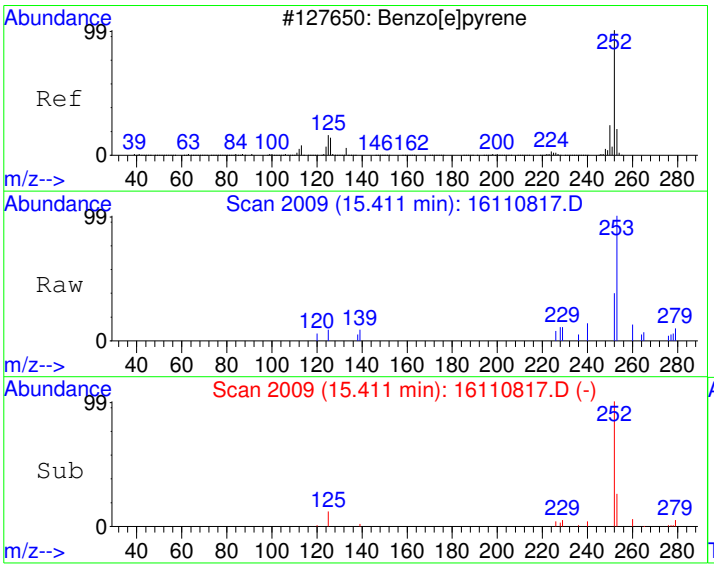


#23
Benzo(j)fluoranthene
Concen: 1.54 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.01 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:252 Resp: 484

Ion	Ratio	Lower	Upper
252	100		
253	14.3	2.3	42.3
125	19.8	0.0	32.6

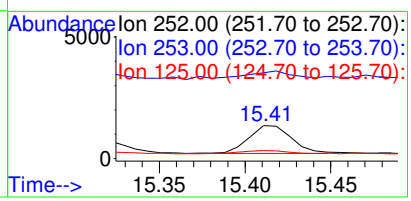


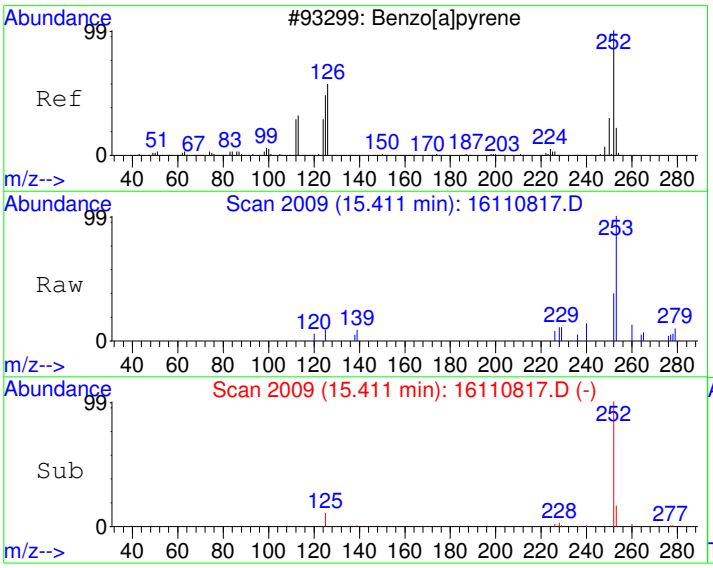


#24
Benzo[e]pyrene
Concen: 6.35 ug/kg
RT: 15.41 min Scan# 2009
Delta R.T. 0.08 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:252 Resp: 2002

Ion	Ratio	Lower	Upper
252	100		
253	24.3	1.8	41.8
125	11.7	0.0	35.7

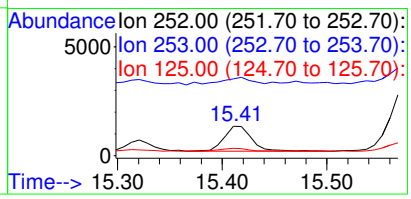


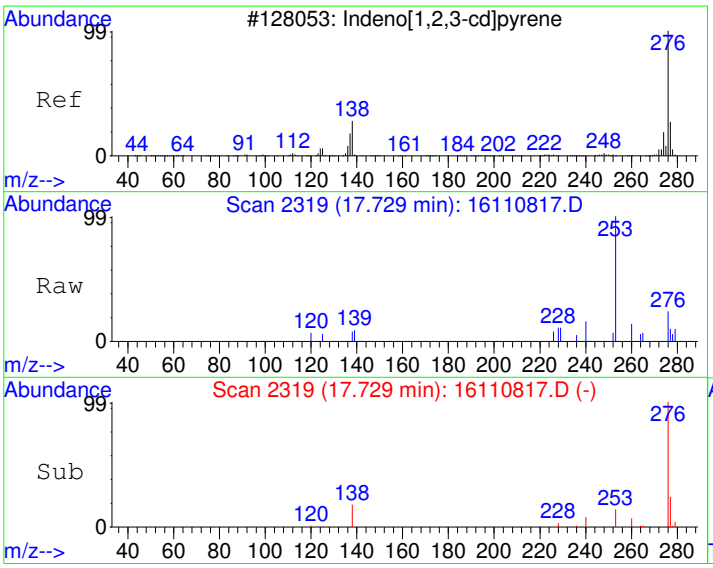


#25
Benzo[a]pyrene
Concen: 6.52 ug/kg
RT: 15.41 min Scan# 2009
Delta R.T. -0.02 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:252 Resp: 2099

Ion	Ratio	Lower	Upper
252	100		
253	24.1	2.2	42.2
125	11.7	0.0	30.8

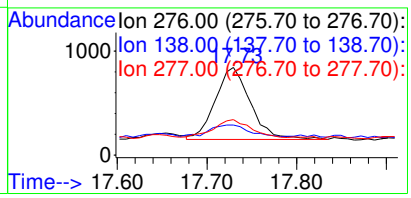




#27
Indeno[1,2,3-cd]pyrene
Concen: 5.76 ug/kg
RT: 17.73 min Scan# 2319
Delta R.T. -0.02 min
Lab File: 16110817.D
Acq: 8 Nov 2016 4:22 pm

Tgt Ion:276 Resp: 1882

Ion	Ratio	Lower	Upper
276	100		
138	16.9	0.0	39.3
277	24.3	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110818.D Vial: 6
Acq On : 8 Nov 2016 4:50 pm Operator:
Sample : 1611022-02A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:19 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

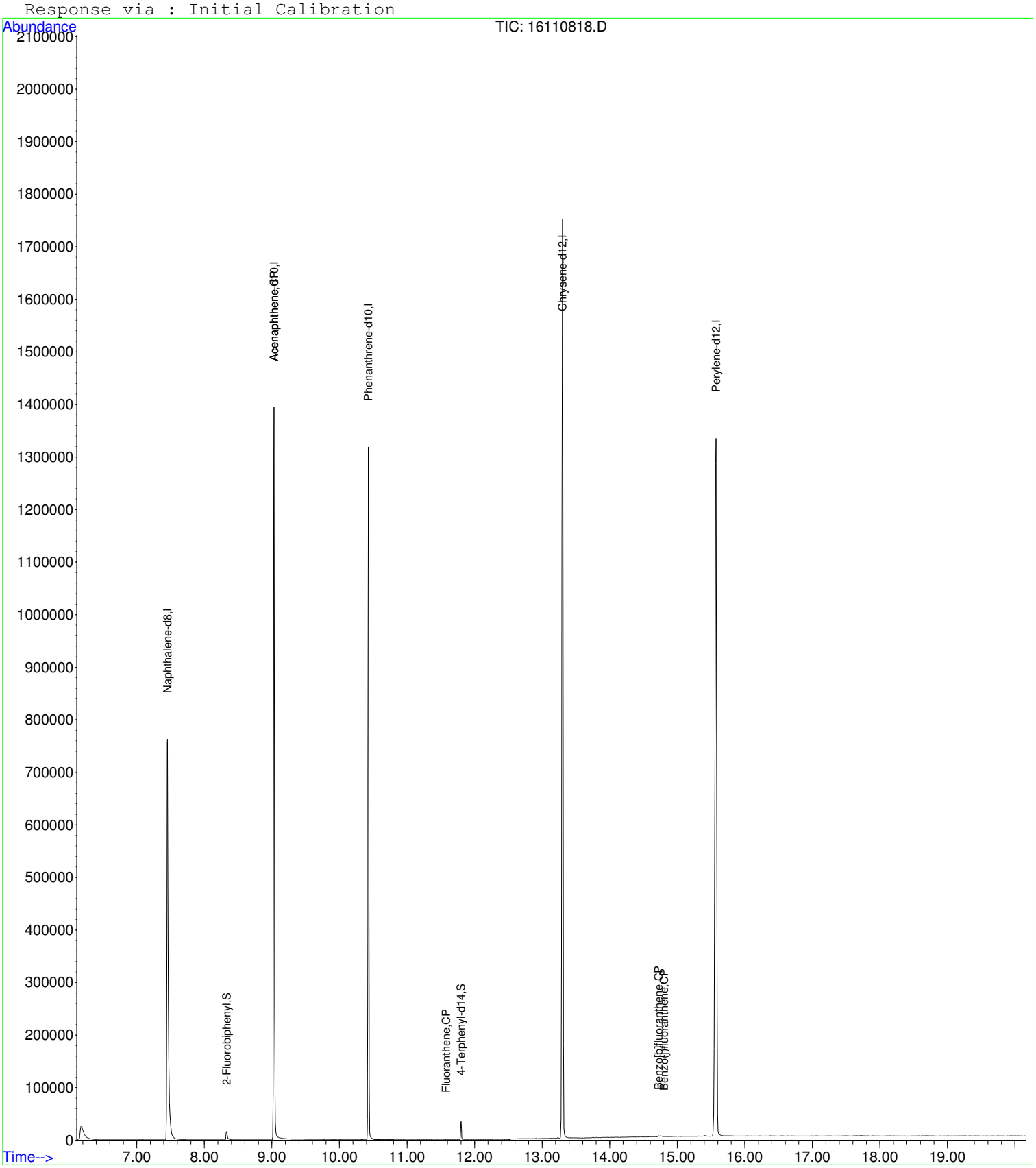
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1063175	4000.00	ug/kg	97
5) Acenaphthene-d10	9.03	164	599565	4000.00	ug/kg	95
11) Phenanthrene-d10	10.43	188	1075419	4000.00	ug/kg	90
17) Chrysene-d12	13.30	240	1501645	4000.00	ug/kg	97
20) Perylene-d12	15.58	264	1599057	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17635	100.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.52%#		
16) 4-Terphenyl-d14	11.80	244	27511	127.37	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	3.18%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1940	15.30	ug/kg#	9
14) Fluoranthene	11.58	202	1245	5.03	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	1928	5.43	ug/kg	97
23) Benzo(j)fluoranthene	14.80	252	225	0.71	ug/kg#	69

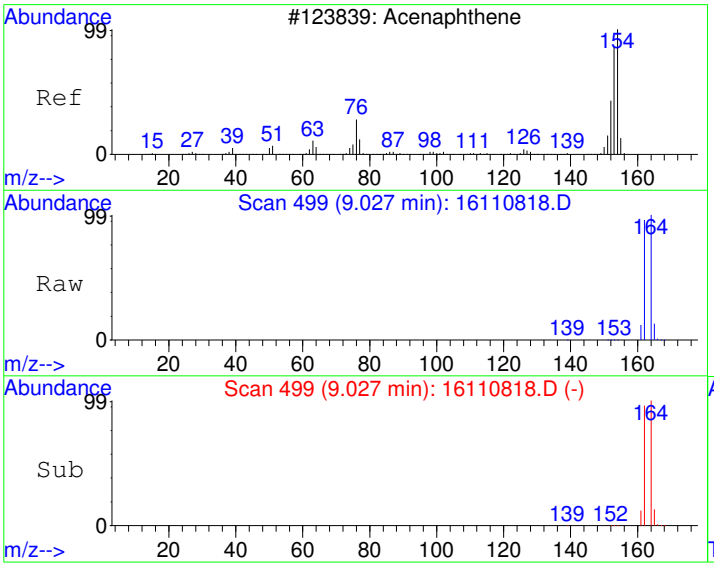
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110818.D Vial: 6
Acq On : 8 Nov 2016 4:50 pm Operator:
Sample : 1611022-02A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:19 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

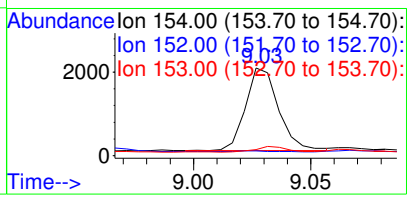


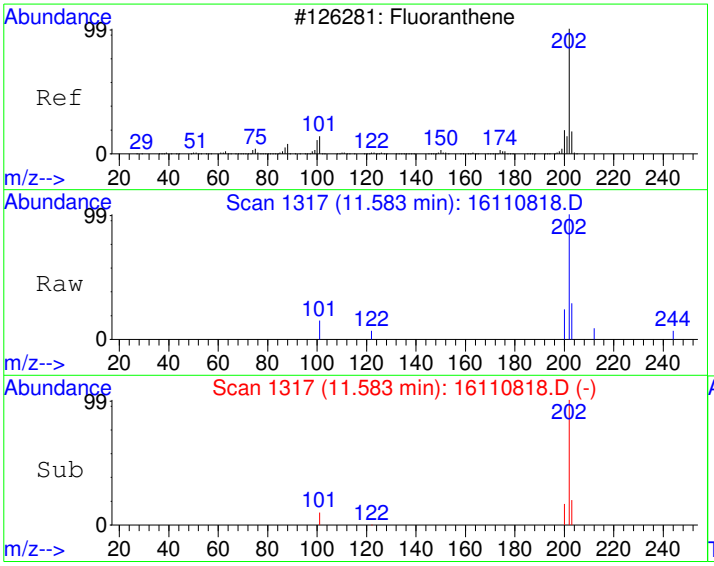


#9
Acenaphthene
Concen: 15.30 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110818.D
Acq: 8 Nov 2016 4:50 pm

Tgt Ion:154 Resp: 1940

Ion	Ratio	Lower	Upper
154	100		
152	0.8	19.8	79.8#
153	3.1	77.1	137.1#

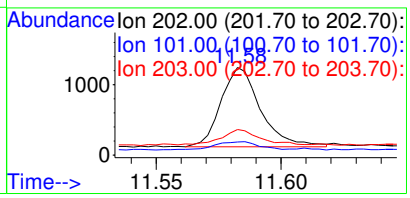


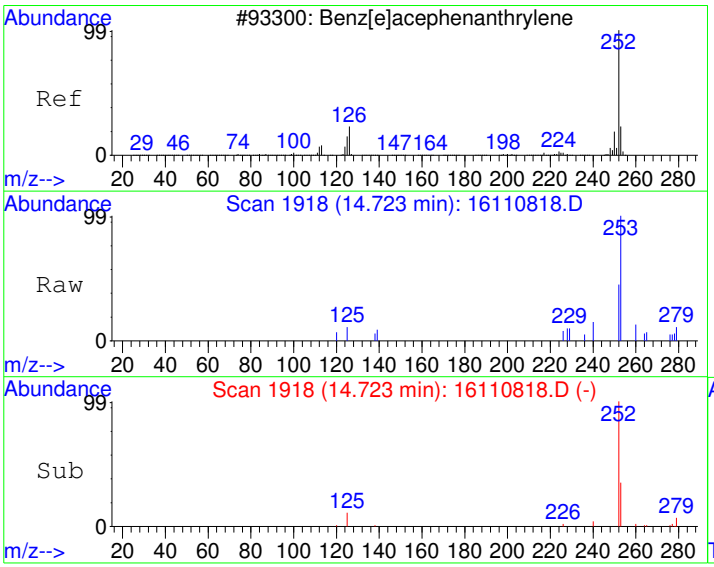


#14
Fluoranthene
Concen: 5.03 ug/kg
RT: 11.58 min Scan# 1317
Delta R.T. -0.01 min
Lab File: 16110818.D
Acq: 8 Nov 2016 4:50 pm

Tgt Ion:202 Resp: 1245

Ion	Ratio	Lower	Upper
202	100		
101	10.2	0.0	40.6
203	18.4	0.0	48.0

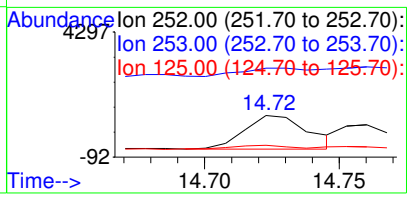


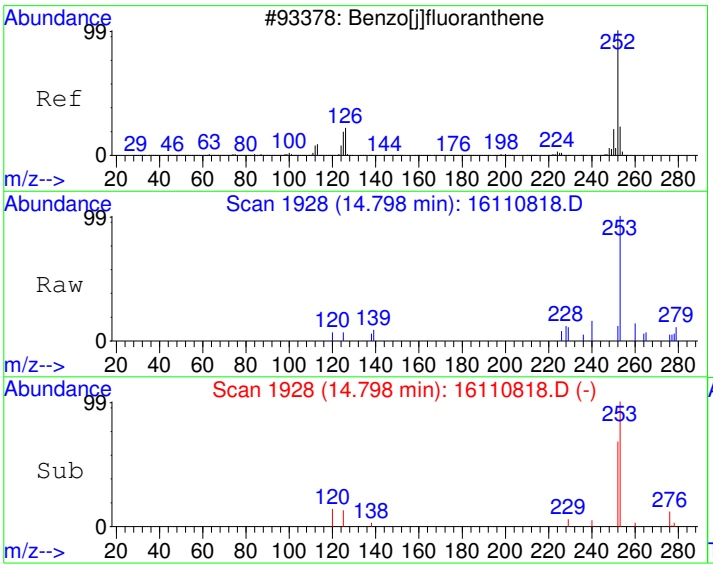


#21
Benzo[b]fluoranthene
Concen: 5.43 ug/kg
RT: 14.72 min Scan# 1918
Delta R.T. -0.01 min
Lab File: 16110818.D
Acq: 8 Nov 2016 4:50 pm

Tgt Ion:252 Resp: 1928

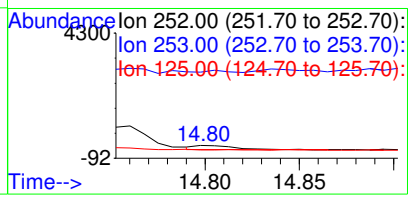
Ion	Ratio	Lower	Upper
252	100		
253	24.0	0.0	52.1
125	10.4	0.0	40.5





#23
Benzo(j)fluoranthene
Concen: 0.71 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.02 min
Lab File: 16110818.D
Acq: 8 Nov 2016 4:50 pm

Tgt Ion:252	Resp:	225	
Ion	Ratio	Lower	Upper
252	100		
253	0.0	2.3	42.3#
125	13.5	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110819.D Vial: 7
Acq On : 8 Nov 2016 5:18 pm Operator:
Sample : 1611022-03A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:19 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

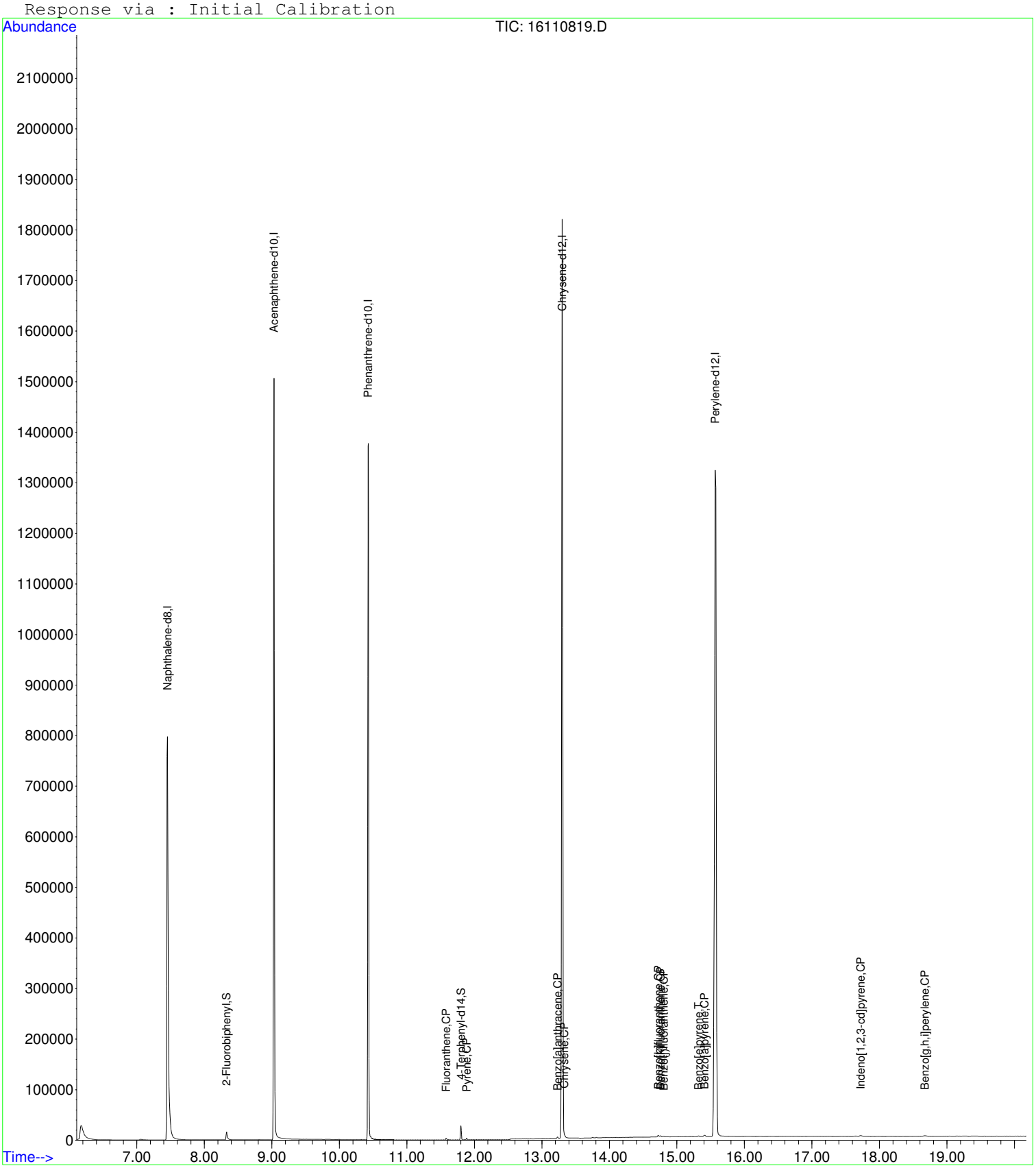
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1106173	4000.00	ug/kg	101
5) Acenaphthene-d10	9.03	164	614008	4000.00	ug/kg	97
11) Phenanthrene-d10	10.43	188	1133755	4000.00	ug/kg	94
17) Chrysene-d12	13.30	240	1505950	4000.00	ug/kg	98
20) Perylene-d12	15.57	264	1621679	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	16823	93.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.35%#		
16) 4-Terphenyl-d14	11.80	244	22374	98.26	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.46%#		
Target Compounds						Qvalue
14) Fluoranthene	11.58	202	2659	10.20	ug/kg	99
15) Pyrene	11.89	202	2391	8.83	ug/kg	96
18) Benzo[a]anthracene	13.23	228	2494	8.47	ug/kg	99
19) Chrysene	13.34	228	2290	8.40	ug/kg	97
21) Benzo[b]fluoranthene	14.72	252	3952	10.97	ug/kg	96
22) Benzo[k]fluoranthene	14.75	252	1787	5.38	ug/kg	91
23) Benzo(j)fluoranthene	14.80	252	1033	3.22	ug/kg	95
24) Benzo[e]pyrene	15.32	252	1798	5.59	ug/kg	88
25) Benzo[a]pyrene	15.41	252	3234	9.85	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.72	276	2695	8.09	ug/kg	99
28) Benzo[g,h,i]perylene	18.68	276	2481	7.05	ug/kg	96

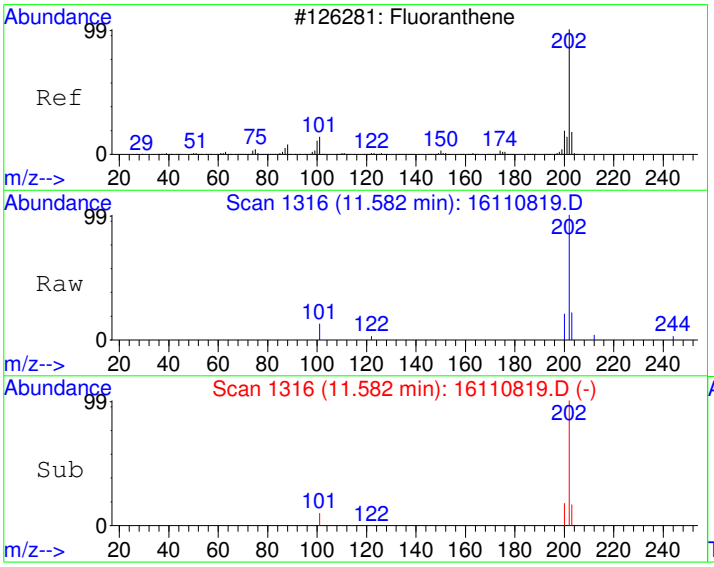
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110819.D Vial: 7
Acq On : 8 Nov 2016 5:18 pm Operator:
Sample : 1611022-03A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:19 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

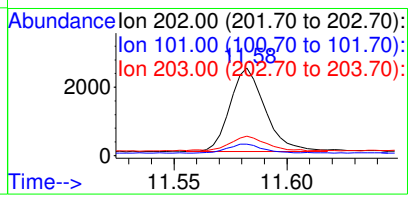


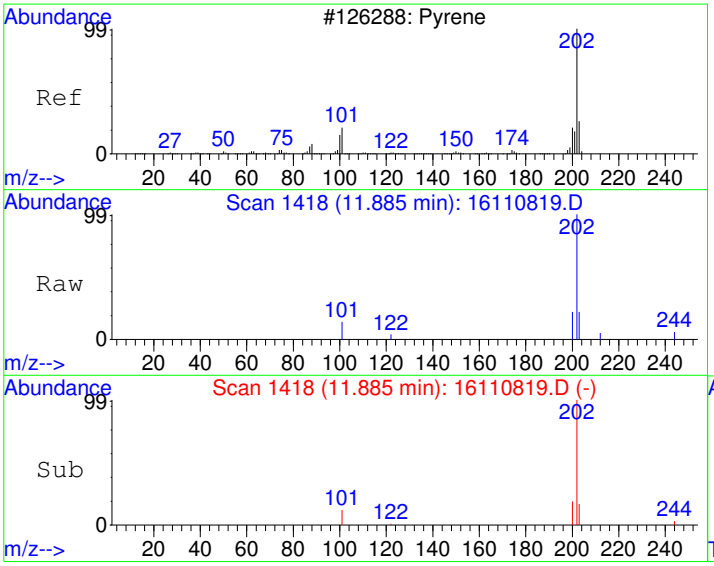


#14
Fluoranthene
Concen: 10.20 ug/kg
RT: 11.58 min Scan# 1316
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:202 Resp: 2659

Ion	Ratio	Lower	Upper
202	100		
101	10.8	0.0	40.6
203	17.2	0.0	48.0

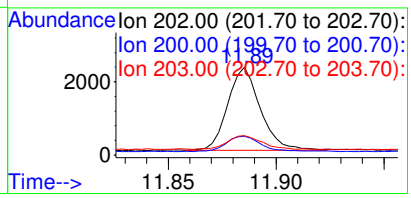


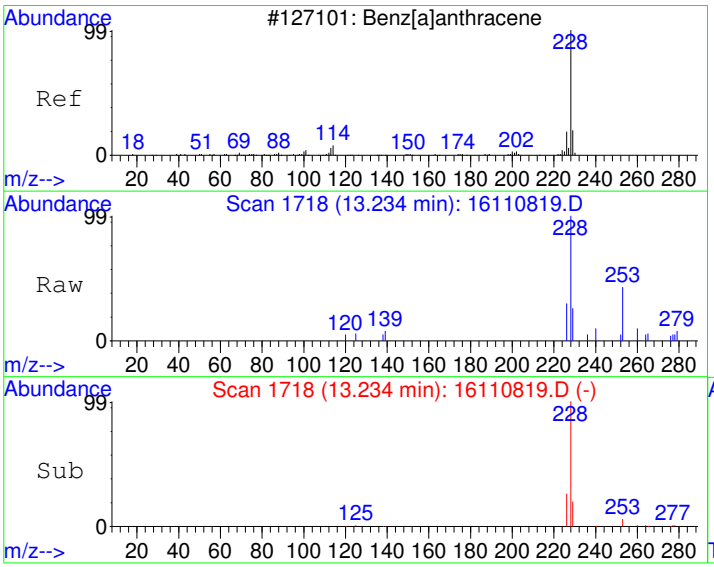


#15
Pyrene
Concen: 8.83 ug/kg
RT: 11.89 min Scan# 1418
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:202 Resp: 2391

Ion	Ratio	Lower	Upper
202	100		
200	18.3	0.0	50.1
203	16.2	0.0	47.8

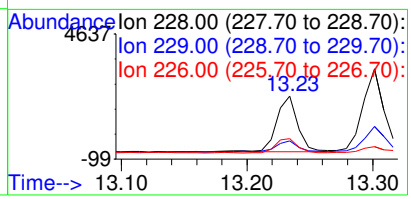


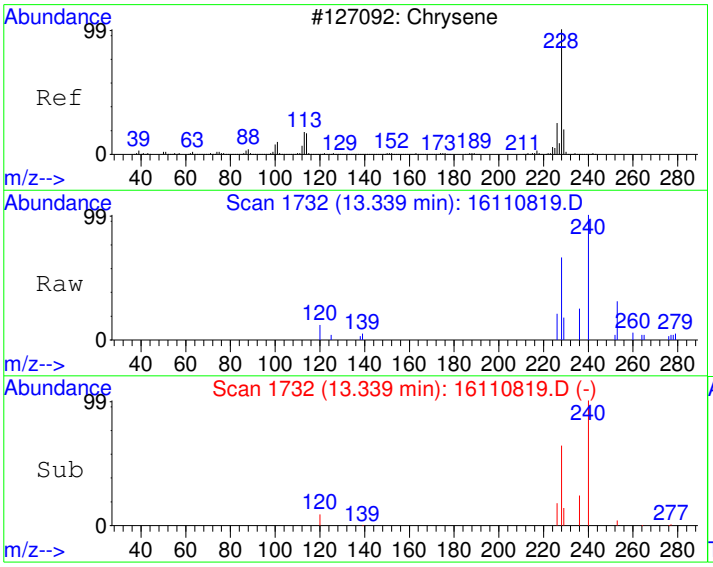


#18
Benzo[a]anthracene
Concen: 8.47 ug/kg
RT: 13.23 min Scan# 1718
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:228 Resp: 2494

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.4
226	25.4	0.0	55.6

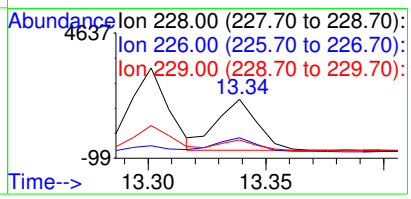


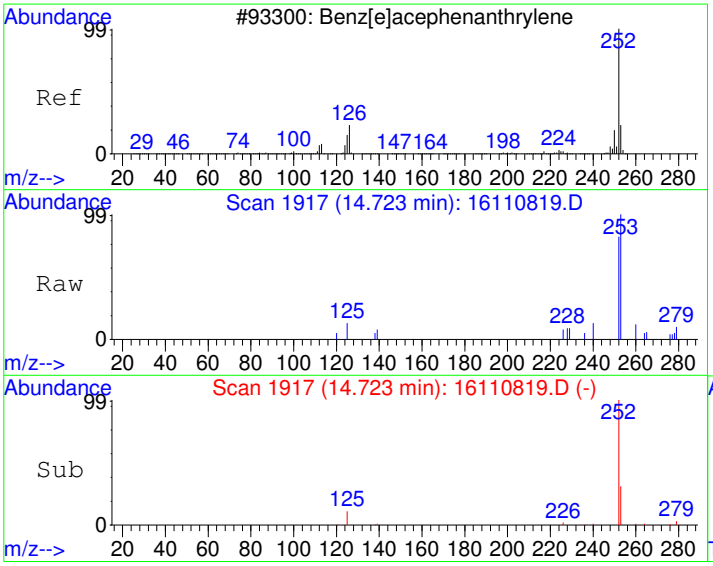


#19
Chrysene
Concen: 8.40 ug/kg
RT: 13.34 min Scan# 1732
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:228 Resp: 2290

Ion	Ratio	Lower	Upper
228	100		
226	27.4	0.0	58.8
229	21.3	0.0	50.2

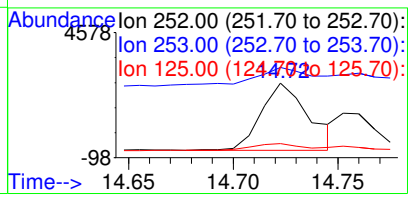


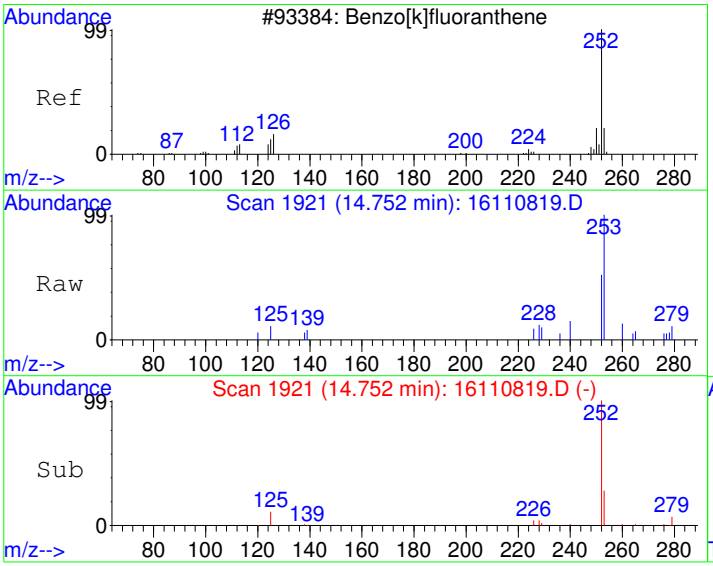


#21
Benzo[b]fluoranthene
Concen: 10.97 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:252 Resp: 3952

Ion	Ratio	Lower	Upper
252	100		
253	24.8	0.0	52.1
125	10.0	0.0	40.5

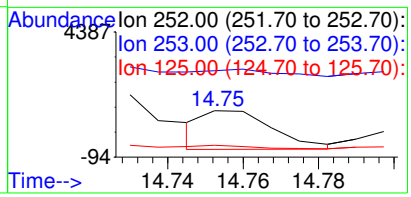


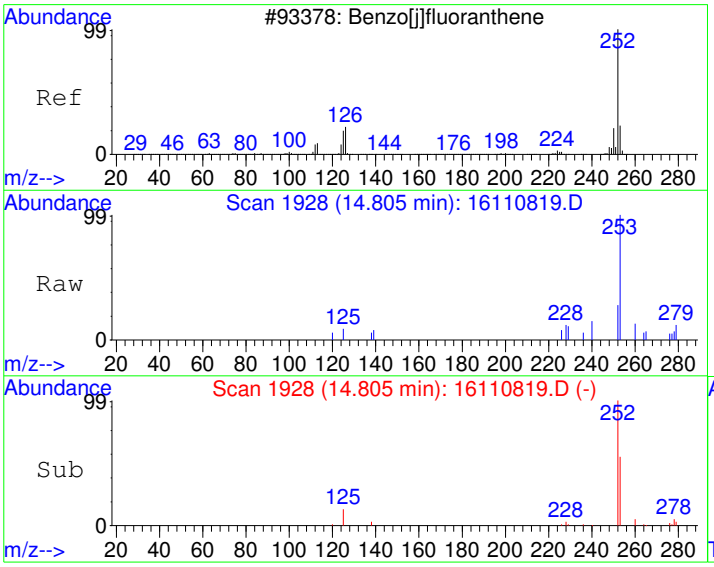


#22
Benzo[k]fluoranthene
Concen: 5.38 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.02 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:252 Resp: 1787

Ion	Ratio	Lower	Upper
252	100		
253	17.3	2.4	42.4
125	10.2	0.0	28.2

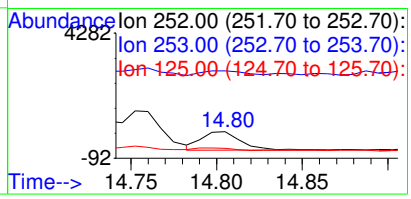


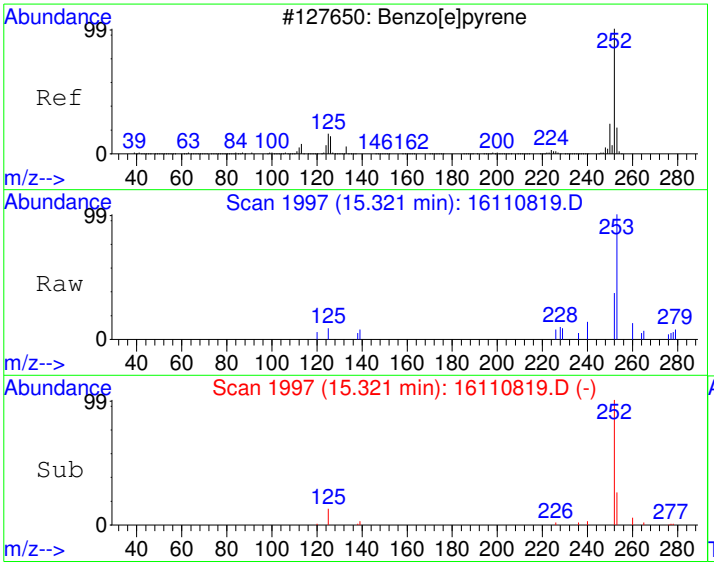


#23
Benzo(j)fluoranthene
Concen: 3.22 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:252 Resp: 1033

Ion	Ratio	Lower	Upper
252	100		
253	25.3	2.3	42.3
125	11.4	0.0	32.6

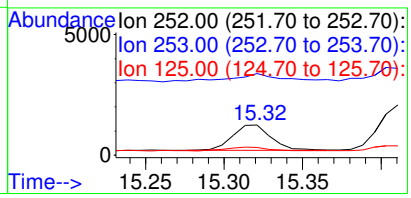


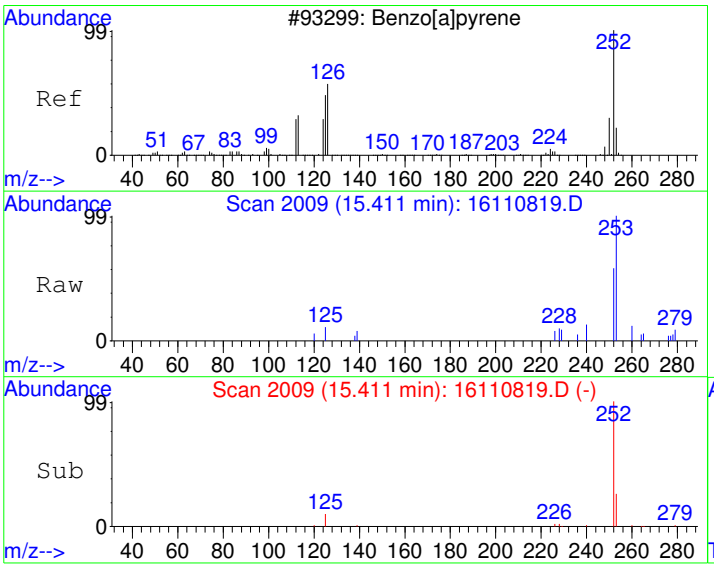


#24
Benzo[e]pyrene
Concen: 5.59 ug/kg
RT: 15.32 min Scan# 1997
Delta R.T. -0.01 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:252 Resp: 1798

Ion	Ratio	Lower	Upper
252	100		
253	28.8	1.8	41.8
125	12.0	0.0	35.7

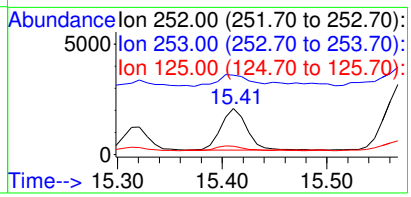


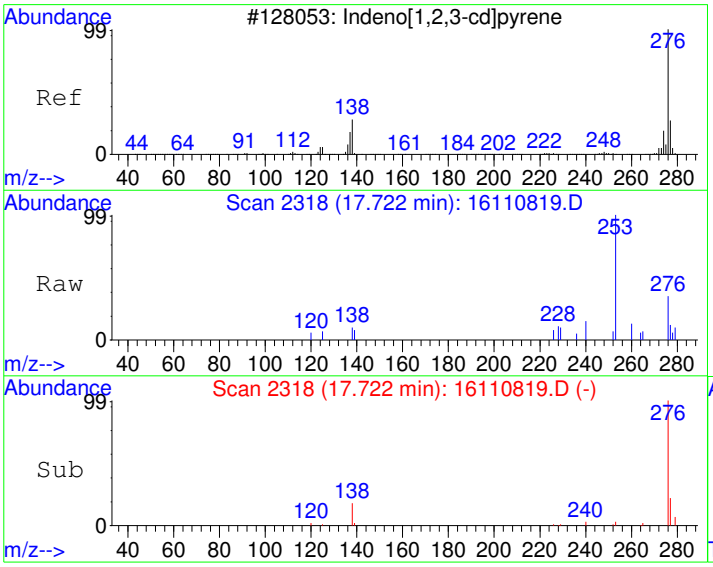


#25
Benzo[a]pyrene
Concen: 9.85 ug/kg
RT: 15.41 min Scan# 2009
Delta R.T. -0.02 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:252 Resp: 3234

Ion	Ratio	Lower	Upper
252	100		
253	24.5	2.2	42.2
125	10.4	0.0	30.8

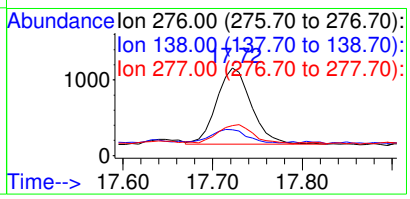


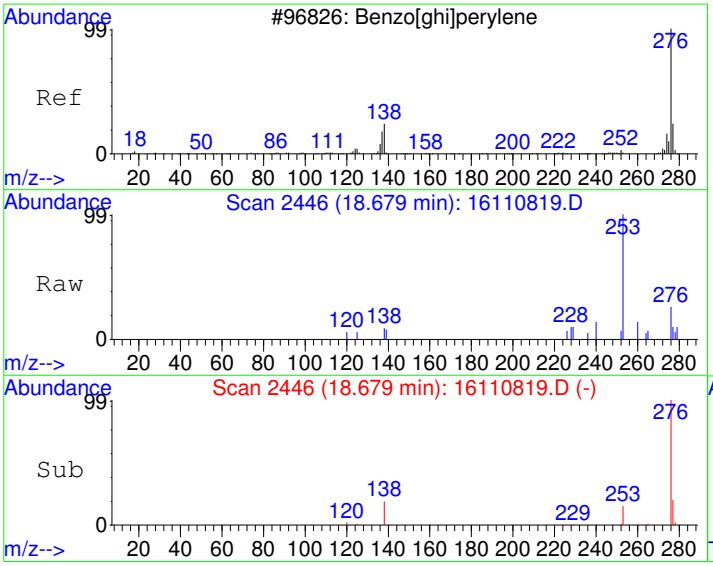


#27
Indeno[1,2,3-cd]pyrene
Concen: 8.09 ug/kg
RT: 17.72 min Scan# 2318
Delta R.T. -0.03 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:276 Resp: 2695

Ion	Ratio	Lower	Upper
276	100		
138	18.8	0.0	39.3
277	23.6	4.0	44.0

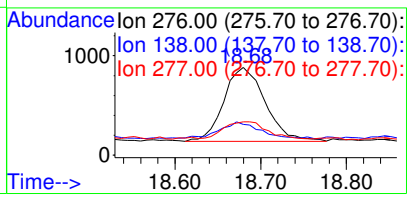




#28
Benzo[g,h,i]perylene
Concen: 7.05 ug/kg
RT: 18.68 min Scan# 2446
Delta R.T. -0.04 min
Lab File: 16110819.D
Acq: 8 Nov 2016 5:18 pm

Tgt Ion:276 Resp: 2481

Ion	Ratio	Lower	Upper
276	100		
138	18.5	0.8	40.8
277	22.5	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110820.D Vial: 8
Acq On : 8 Nov 2016 5:46 pm Operator:
Sample : 1611022-04A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

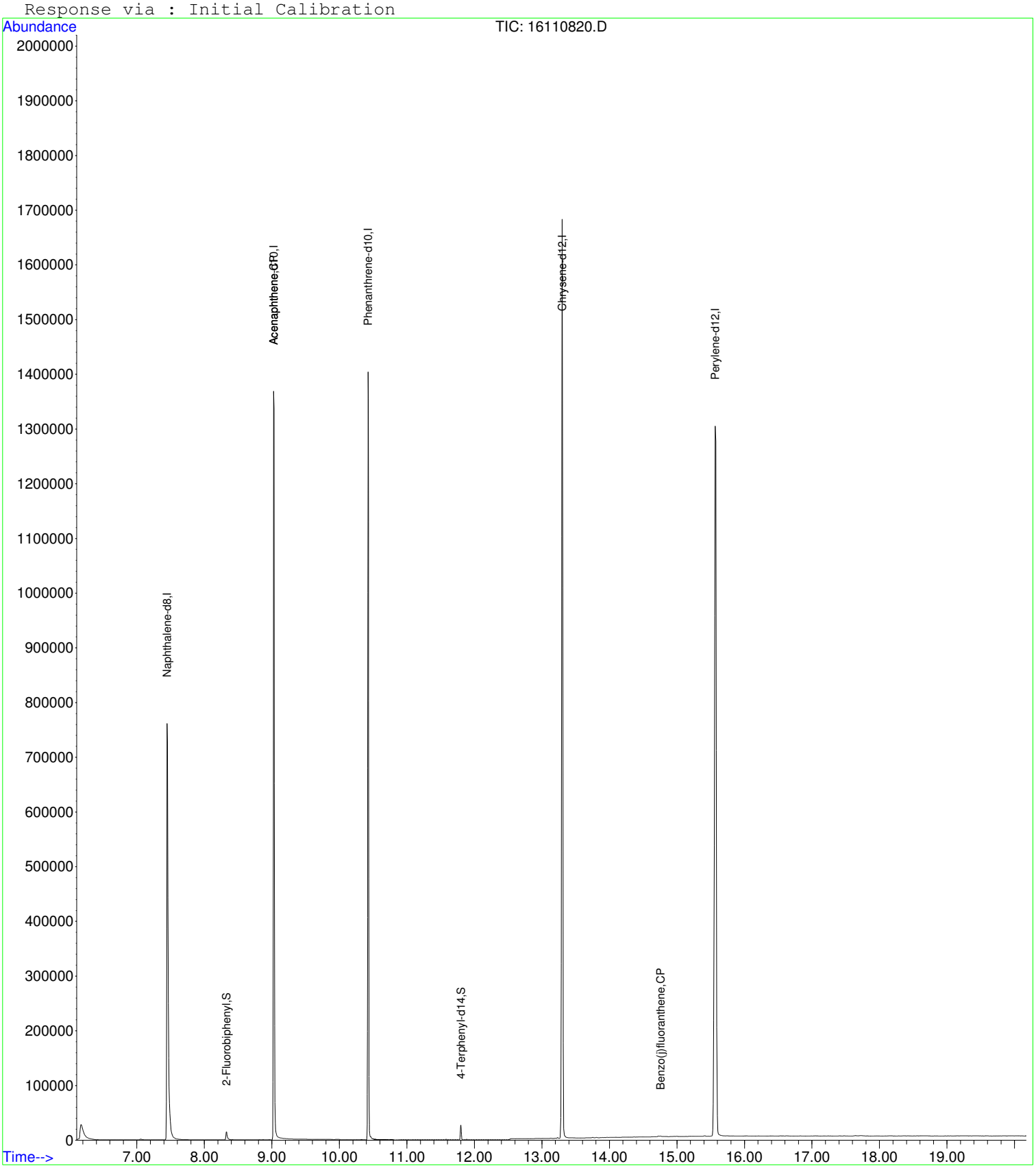
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1061220	4000.00	ug/kg	97
5) Acenaphthene-d10	9.03	164	593457	4000.00	ug/kg	94
11) Phenanthrene-d10	10.43	188	1117134	4000.00	ug/kg	93
17) Chrysene-d12	13.30	240	1447963	4000.00	ug/kg	94
20) Perylene-d12	15.57	264	1604599	4000.00	ug/kg	106
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	16853	97.24	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.43%#		
16) 4-Terphenyl-d14	11.80	244	22324	99.50	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.49%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1981	~~15.79~~	~~ug/kg#~~	~~10~~
23) Benzo(j)fluoranthene	14.75	252	1039	3.27	ug/kg	74

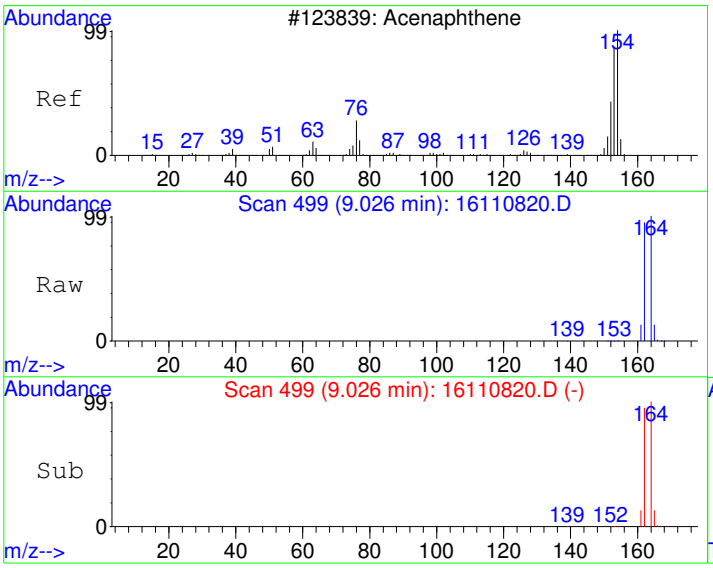
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110820.D Vial: 8
Acq On : 8 Nov 2016 5:46 pm Operator:
Sample : 1611022-04A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

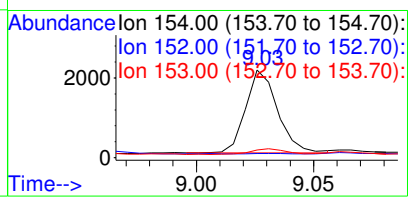


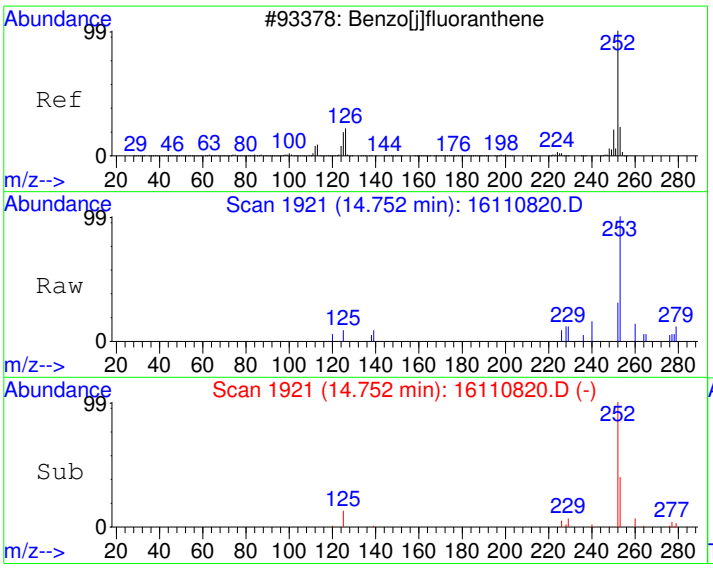


#9
Acenaphthene
Concen: 15.79 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.05 min
Lab File: 16110820.D
Acq: 8 Nov 2016 5:46 pm

Tgt Ion:154 Resp: 1981

Ion	Ratio	Lower	Upper
154	100		
152	0.3	19.8	79.8#
153	5.3	77.1	137.1#

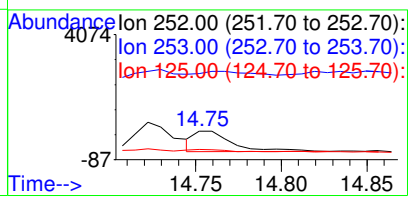




#23
Benzo(j)fluoranthene
Concen: 3.27 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.07 min
Lab File: 16110820.D
Acq: 8 Nov 2016 5:46 pm

Tgt Ion:252 Resp: 1039

Ion	Ratio	Lower	Upper
252	100		
253	3.1	2.3	42.3
125	11.7	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110821.D Vial: 9
Acq On : 8 Nov 2016 6:14 pm Operator:
Sample : 1611022-05A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

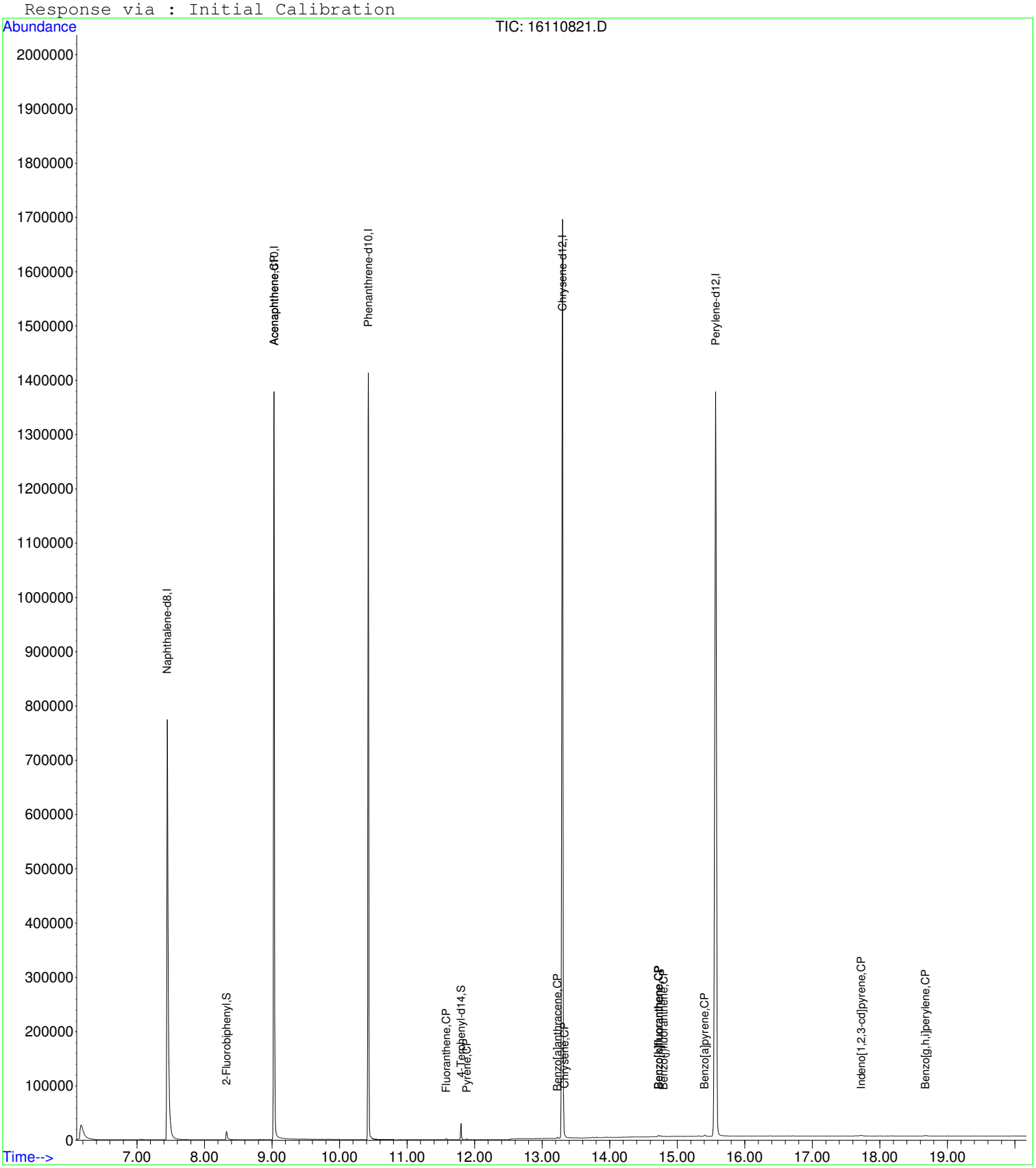
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1078109	4000.00	ug/kg	99
5) Acenaphthene-d10	9.03	164	605894	4000.00	ug/kg	96
11) Phenanthrene-d10	10.43	188	1137362	4000.00	ug/kg	95
17) Chrysene-d12	13.30	240	1527761	4000.00	ug/kg	99
20) Perylene-d12	15.57	264	1630513	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	16904	95.53	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.39%#		
16) 4-Terphenyl-d14	11.80	244	24172	105.82	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.65%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	2056	16.05	ug/kg#	9
14) Fluoranthene	11.58	202	1800	6.88	ug/kg	99
15) Pyrene	11.88	202	1746	6.43	ug/kg	99
18) Benzo[a]anthracene	13.23	228	1832	6.13	ug/kg	98
19) Chrysene	13.34	228	1513	5.47	ug/kg	95
21) Benzo[b]fluoranthene	14.72	252	2611	7.21	ug/kg	95
22) Benzo[k]fluoranthene	14.72	252	2611	7.82	ug/kg	98
23) Benzo(j)fluoranthene	14.80	252	643	1.99	ug/kg	80
25) Benzo[a]pyrene	15.40	252	2341	7.09	ug/kg	93
27) Indeno[1,2,3-cd]pyrene	17.72	276	2162	6.45	ug/kg	94
28) Benzo[g,h,i]perylene	18.68	276	1801	5.09	ug/kg	98

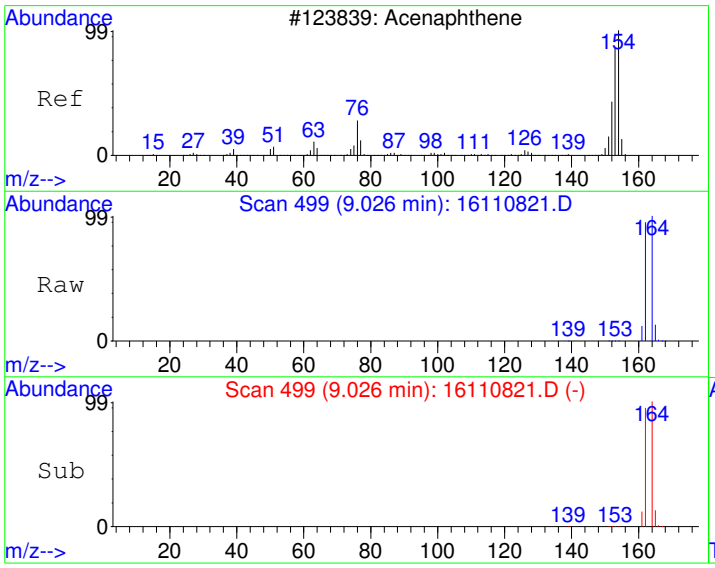
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110821.D Vial: 9
Acq On : 8 Nov 2016 6:14 pm Operator:
Sample : 1611022-05A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

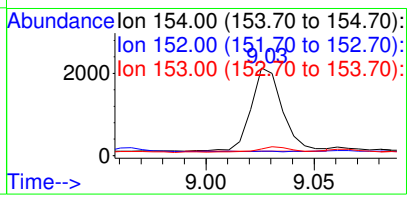


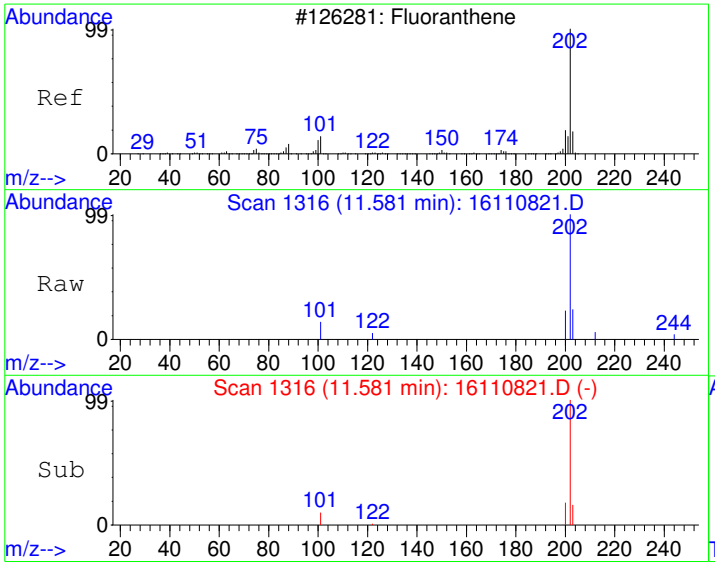


#9
Acenaphthene
Concen: 16.05 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.05 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:154 Resp: 2056

Ion	Ratio	Lower	Upper
154	100		
152	0.4	19.8	79.8#
153	3.7	77.1	137.1#

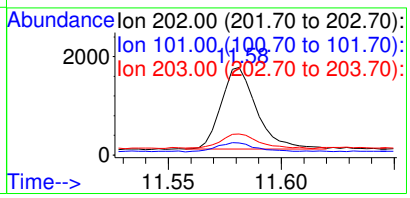


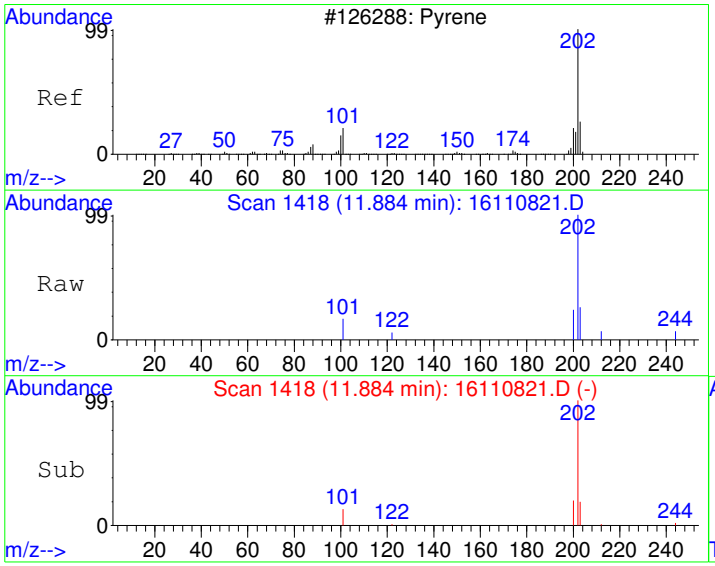


#14
Fluoranthene
Concen: 6.88 ug/kg
RT: 11.58 min Scan# 1316
Delta R.T. -0.01 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:202 Resp: 1800

Ion	Ratio	Lower	Upper
202	100		
101	10.7	0.0	40.6
203	17.1	0.0	48.0

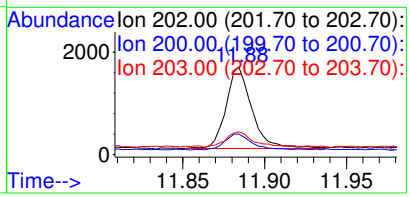


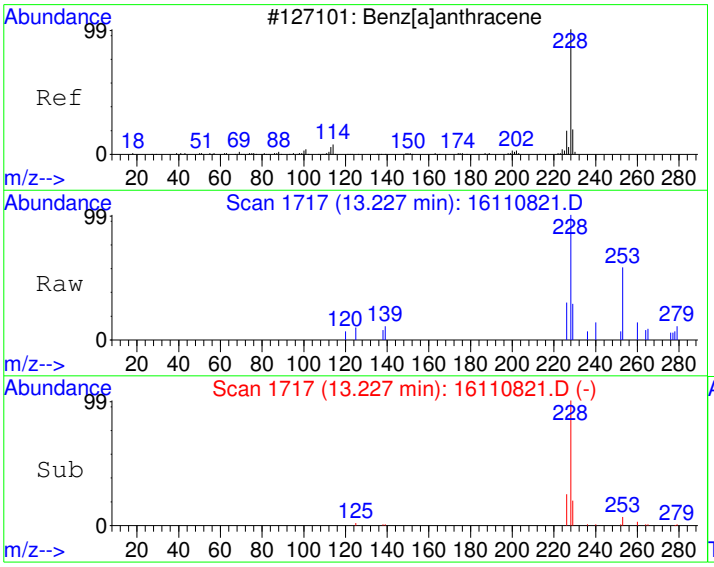


#15
Pyrene
Concen: 6.43 ug/kg
RT: 11.88 min Scan# 1418
Delta R.T. -0.01 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:202 Resp: 1746

Ion	Ratio	Lower	Upper
202	100		
200	19.1	0.0	50.1
203	17.9	0.0	47.8

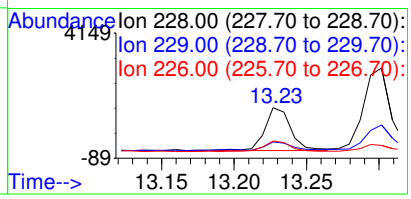


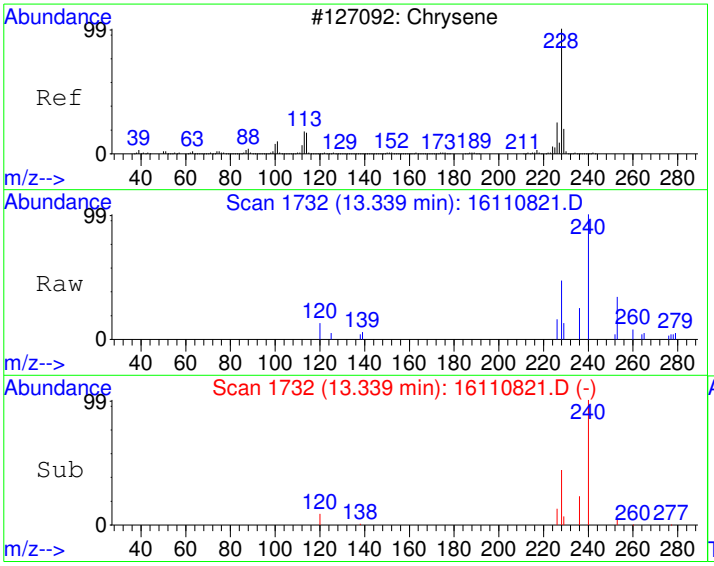


#18
Benzo[a]anthracene
Concen: 6.13 ug/kg
RT: 13.23 min Scan# 1717
Delta R.T. -0.02 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:228 Resp: 1832

Ion	Ratio	Lower	Upper
228	100		
229	20.4	0.0	50.4
226	24.0	0.0	55.6

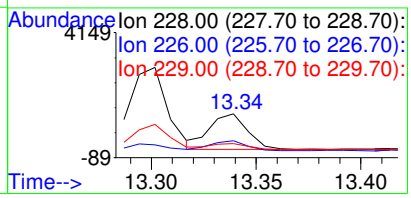


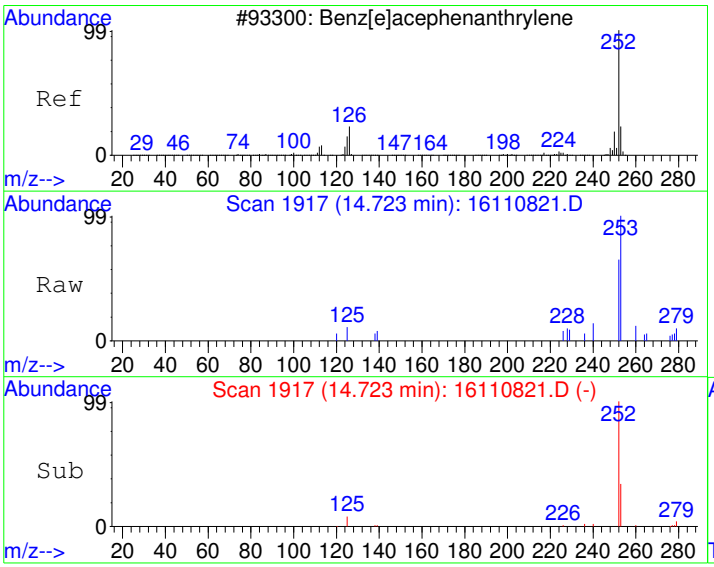


#19
Chrysene
Concen: 5.47 ug/kg
RT: 13.34 min Scan# 1732
Delta R.T. -0.01 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:228 Resp: 1513

Ion	Ratio	Lower	Upper
228	100		
226	27.1	0.0	58.8
229	17.2	0.0	50.2

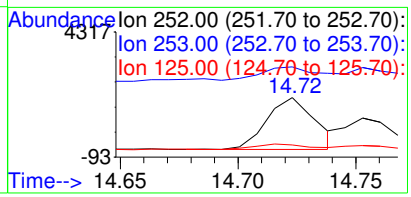


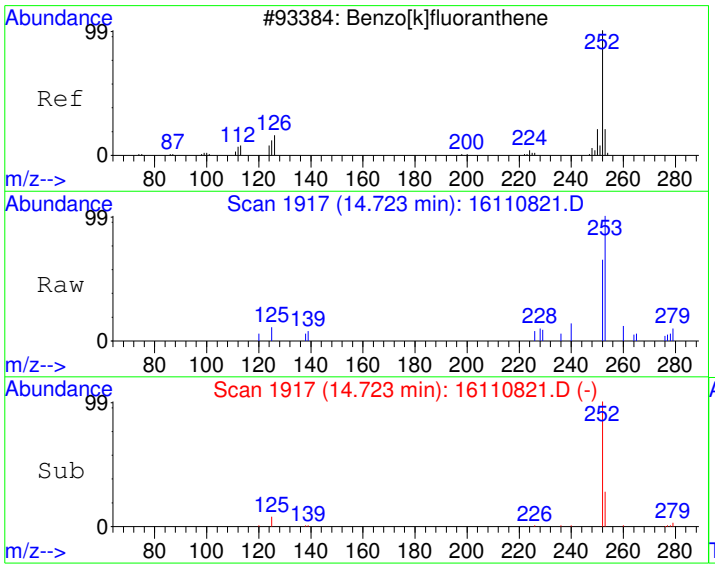


#21
Benzo[b]fluoranthene
Concen: 7.21 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.01 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:252 Resp: 2611

Ion	Ratio	Lower	Upper
252	100		
253	23.7	0.0	52.1
125	7.6	0.0	40.5

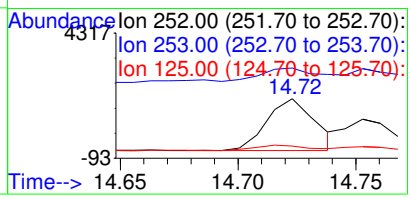




#22
Benzo[k]fluoranthene
Concen: 7.82 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.05 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

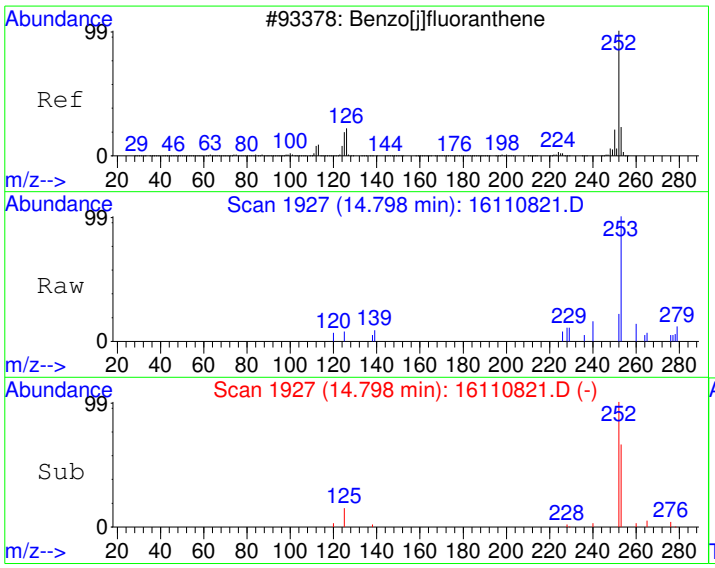
Tgt Ion:252 Resp: 2611

Ion	Ratio	Lower	Upper
252	100		
253	23.7	2.4	42.4
125	7.6	0.0	28.2



BEFORE MANUAL INTEGRATION

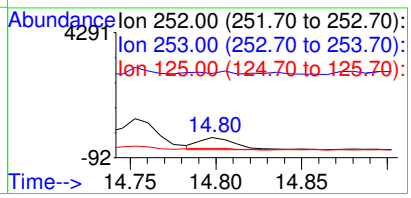
By Don Winston at 10:35:36 AM, 11/11/2016

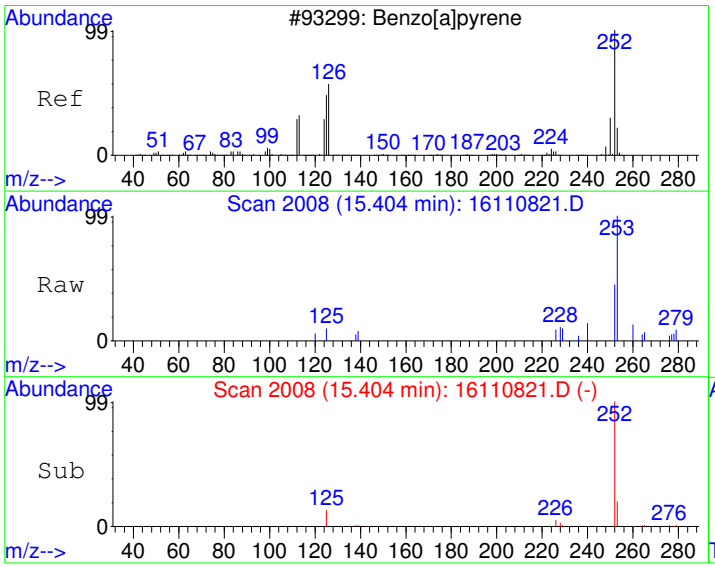


#23
Benzo(j)fluoranthene
Concen: 1.99 ug/kg
RT: 14.80 min Scan# 1927
Delta R.T. -0.02 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:252 Resp: 643

Ion	Ratio	Lower	Upper
252	100		
253	7.9	2.3	42.3
125	11.6	0.0	32.6

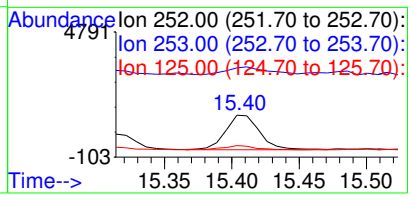




#25
Benzo[a]pyrene
Concen: 7.09 ug/kg
RT: 15.40 min Scan# 2008
Delta R.T. -0.03 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

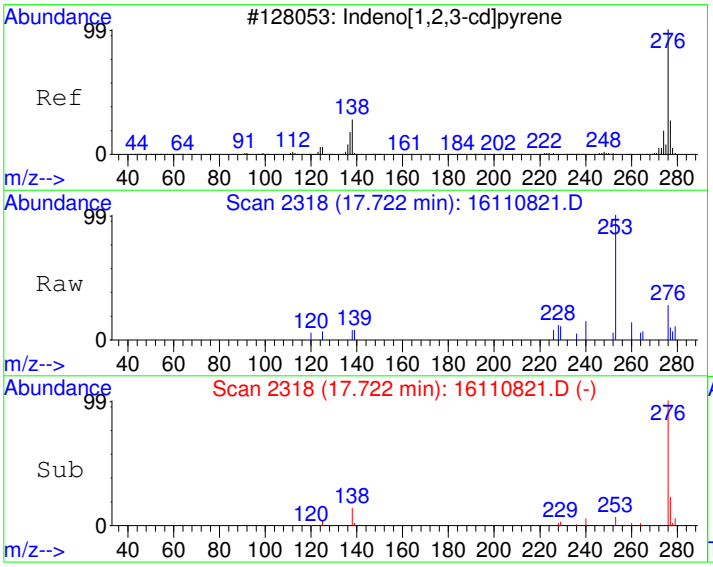
Tgt Ion:252 Resp: 2341

Ion	Ratio	Lower	Upper
252	100		
253	17.8	2.2	42.2
125	12.1	0.0	30.8



REVIEWED

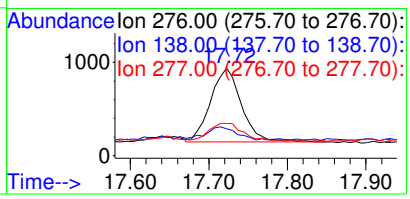
By Angie O'Donnell at 1:46:51 PM, 11/16/2016

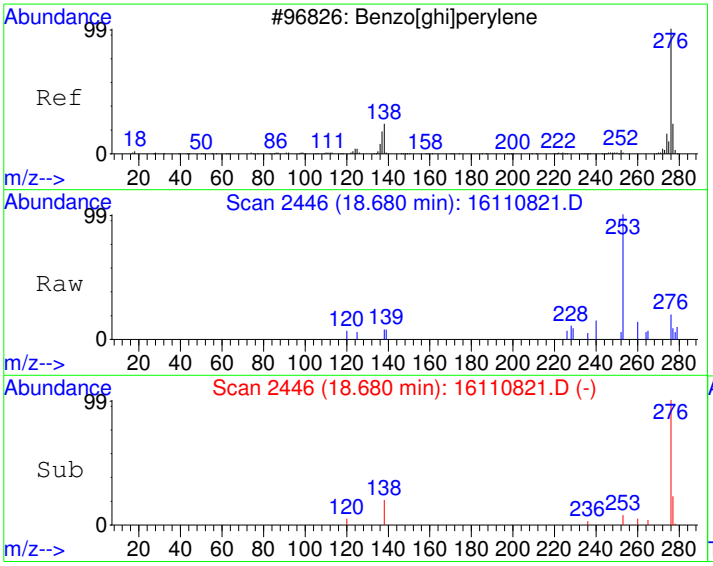


#27
Indeno[1,2,3-cd]pyrene
Concen: 6.45 ug/kg
RT: 17.72 min Scan# 2318
Delta R.T. -0.03 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:276 Resp: 2162

Ion	Ratio	Lower	Upper
276	100		
138	13.0	0.0	39.3
277	24.3	4.0	44.0

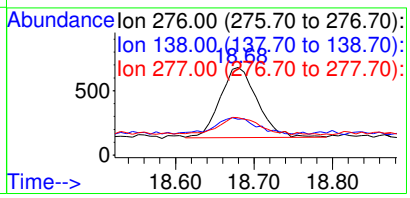




#28
Benzo[g,h,i]perylene
Concen: 5.09 ug/kg
RT: 18.68 min Scan# 2446
Delta R.T. -0.04 min
Lab File: 16110821.D
Acq: 8 Nov 2016 6:14 pm

Tgt Ion:276 Resp: 1801

Ion	Ratio	Lower	Upper
276	100		
138	19.8	0.8	40.8
277	23.5	4.0	44.0

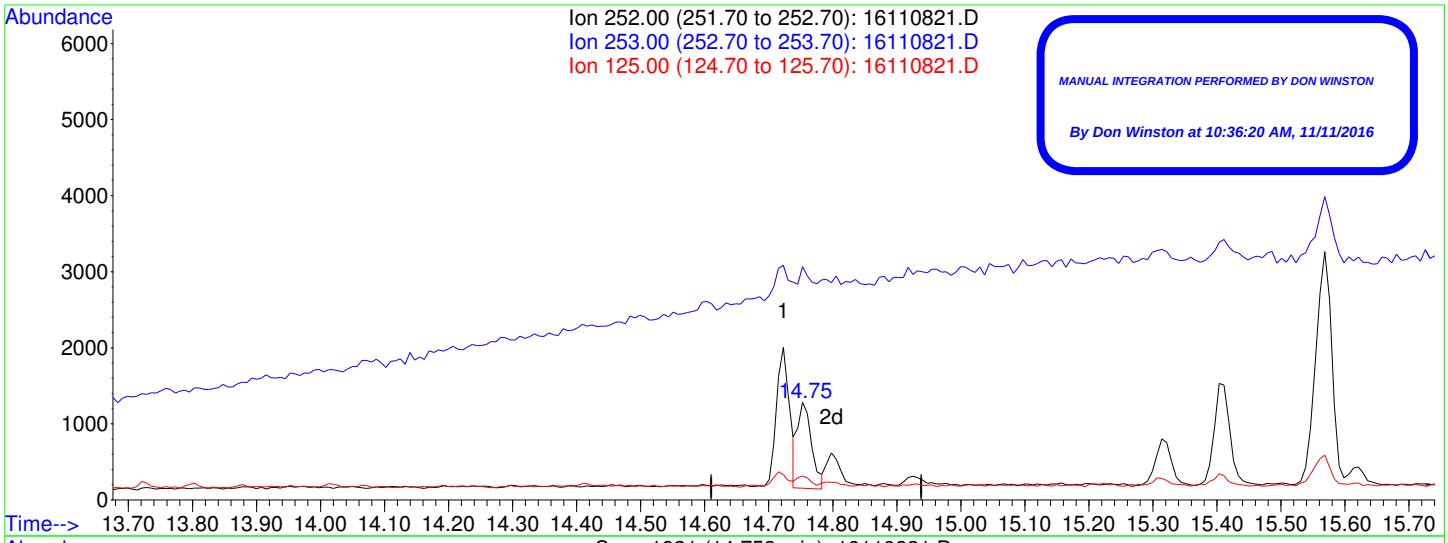


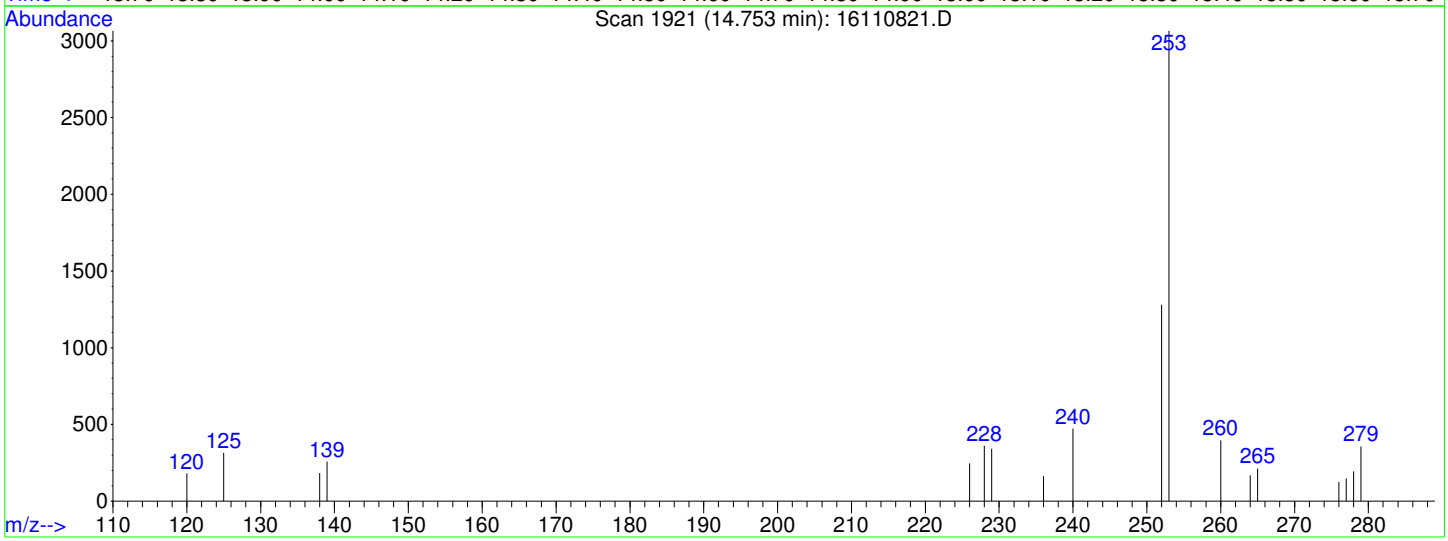
Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161108\16110821.D Vial: 9
Acq On : 8 Nov 2016 6:14 pm Operator:
Sample : 1611022-05A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 10:33 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 09:15:54 2016
Response via : Multiple Level Calibration

Integrated Benzo(k)fluoranthene peak.





TIC: 16110821.D

(22) Benzo[k]fluoranthene (CP)

14.75min 5.14ug/kg m

response 1715

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	239.34#
125.00	8.20	24.59
0.00	0.00	0.00

REVIEWED
By Angie O'Donnell at 1:46:58 PM, 11/16/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110822.D Vial: 10
Acq On : 8 Nov 2016 6:42 pm Operator:
Sample : 1611022-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

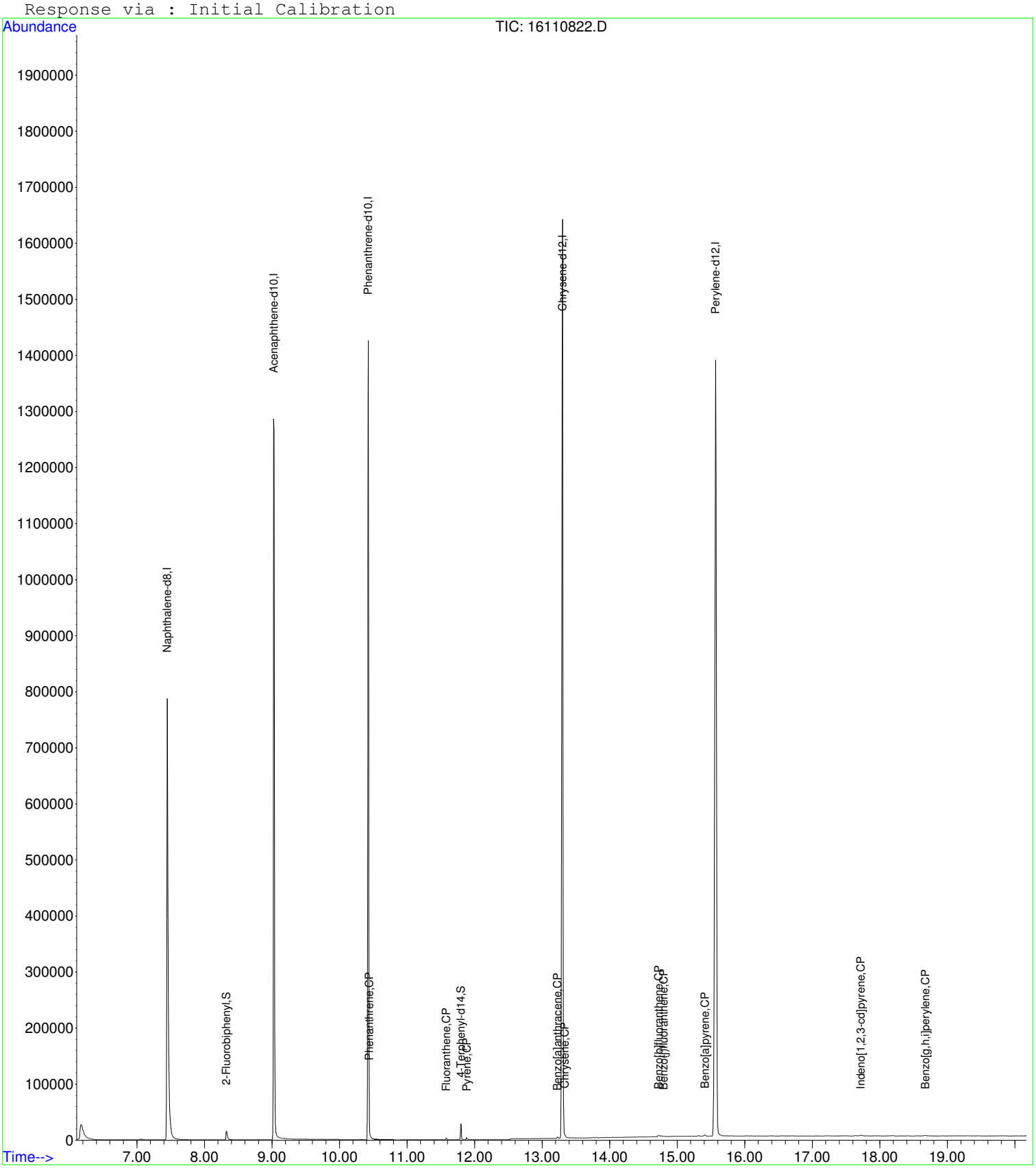
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1055671	4000.00	ug/kg	97
5) Acenaphthene-d10	9.03	164	572311	4000.00	ug/kg	90
11) Phenanthrene-d10	10.43	188	1117669	4000.00	ug/kg	93
17) Chrysene-d12	13.30	240	1444248	4000.00	ug/kg	94
20) Perylene-d12	15.57	264	1600072	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	16888	101.04	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.53%#			
16) 4-Terphenyl-d14	11.80	244	24176	107.70	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.69%#			
Target Compounds						Qvalue
12) Phenanthrene	10.45	178	1158	5.32	ug/kg	99
14) Fluoranthene	11.58	202	2676	10.41	ug/kg	97
15) Pyrene	11.88	202	2812	10.53	ug/kg	97
18) Benzo[a]anthracene	13.23	228	2252	7.98	ug/kg	99
19) Chrysene	13.34	228	2058	7.87	ug/kg	98
21) Benzo[b]fluoranthene	14.72	252	2662	7.49	ug/kg	84
23) Benzo(j)fluoranthene	14.80	252	845	2.67	ug/kg	90
25) Benzo[a]pyrene	15.41	252	2767	8.54	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.72	276	2324	7.07	ug/kg	93
28) Benzo[g,h,i]perylene	18.68	276	1908	5.49	ug/kg	93

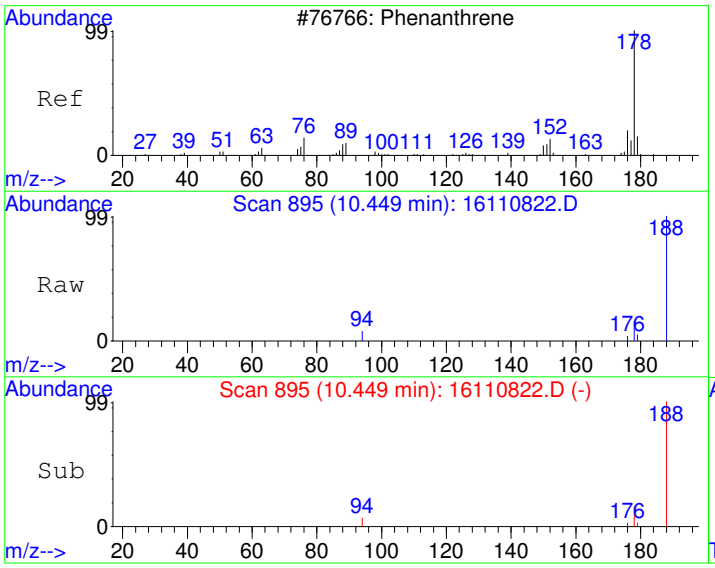
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110822.D Vial: 10
Acq On : 8 Nov 2016 6:42 pm Operator:
Sample : 1611022-06A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

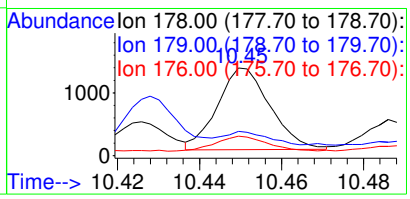


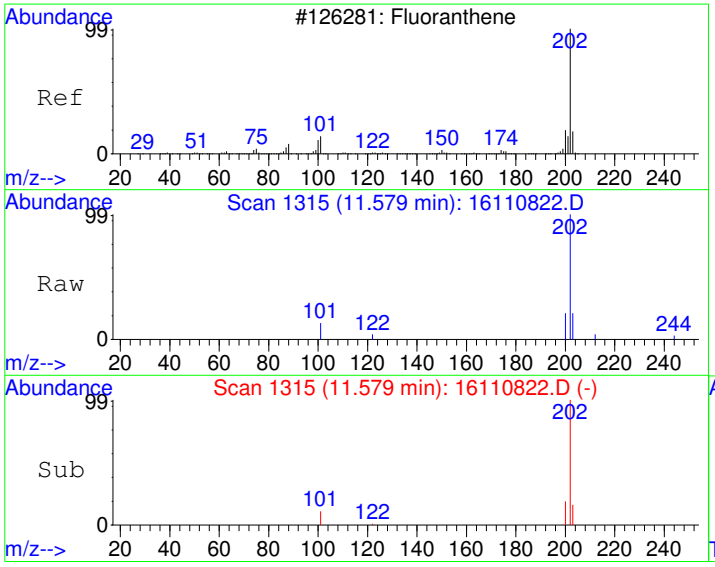


#12
Phenanthrene
Concen: 5.32 ug/kg
RT: 10.45 min Scan# 895
Delta R.T. -0.01 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:178 Resp: 1158

Ion	Ratio	Lower	Upper
178	100		
179	16.8	0.0	45.8
176	18.1	0.0	48.3

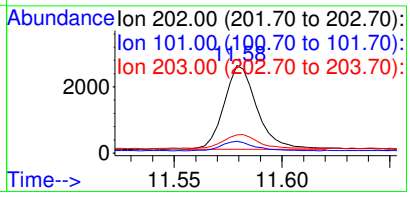


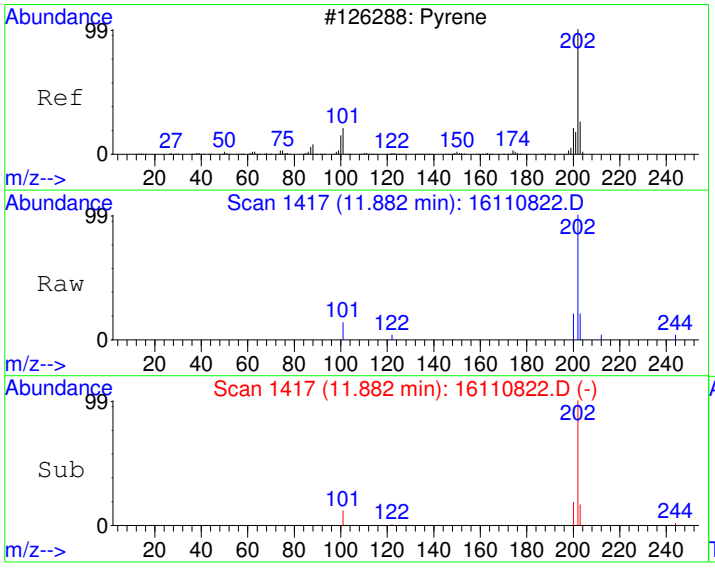


#14
Fluoranthene
Concen: 10.41 ug/kg
RT: 11.58 min Scan# 1315
Delta R.T. -0.01 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:202 Resp: 2676

Ion	Ratio	Lower	Upper
202	100		
101	11.2	0.0	40.6
203	16.0	0.0	48.0

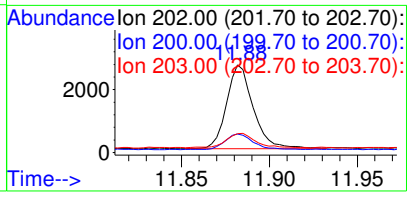


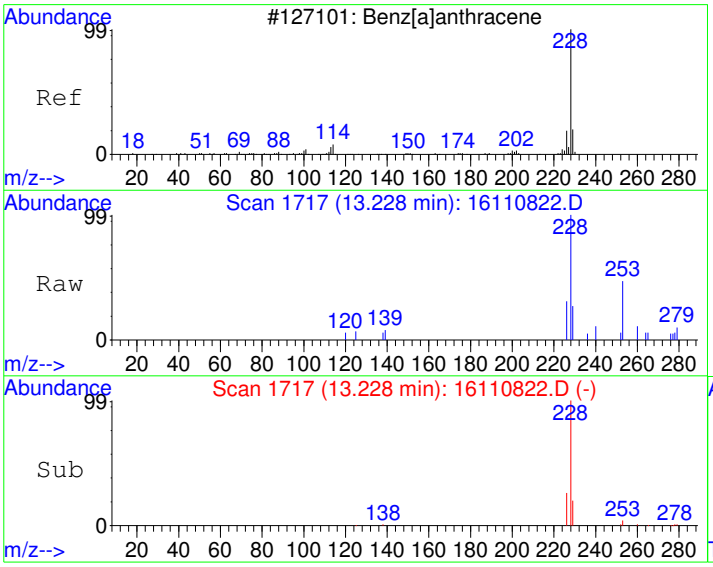


#15
Pyrene
Concen: 10.53 ug/kg
RT: 11.88 min Scan# 1417
Delta R.T. -0.01 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:202 Resp: 2812

Ion	Ratio	Lower	Upper
202	100		
200	18.3	0.0	50.1
203	16.7	0.0	47.8

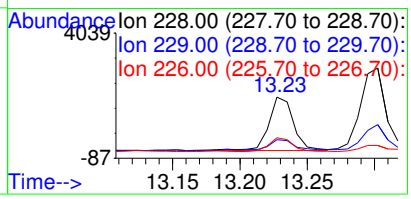


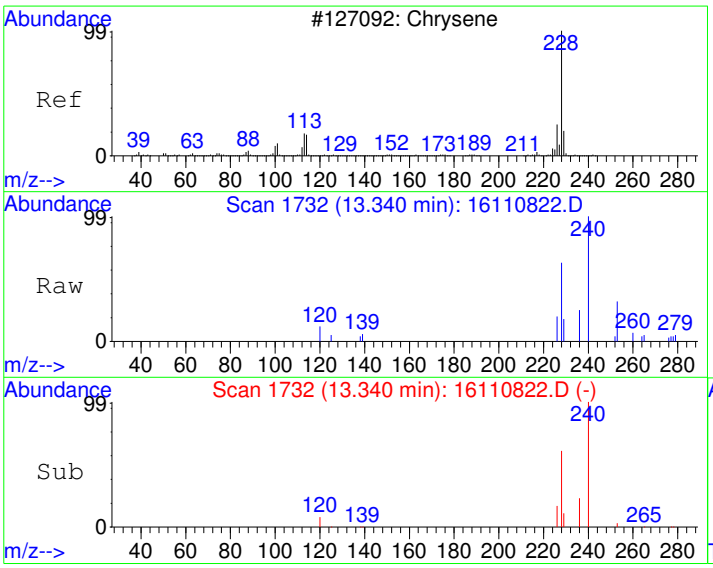


#18
Benzo[a]anthracene
Concen: 7.98 ug/kg
RT: 13.23 min Scan# 1717
Delta R.T. -0.02 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:228 Resp: 2252

Ion	Ratio	Lower	Upper
228	100		
229	20.5	0.0	50.4
226	26.0	0.0	55.6

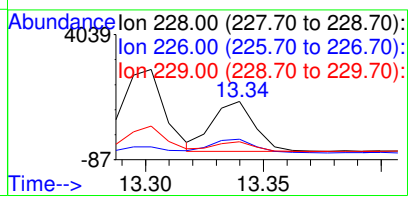


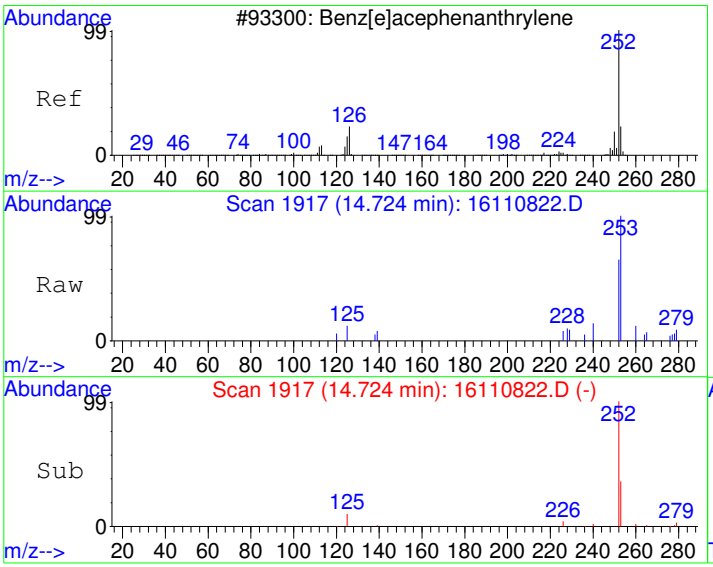


#19
Chrysene
Concen: 7.87 ug/kg
RT: 13.34 min Scan# 1732
Delta R.T. -0.01 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:228 Resp: 2058

Ion	Ratio	Lower	Upper
228	100		
226	27.6	0.0	58.8
229	19.7	0.0	50.2

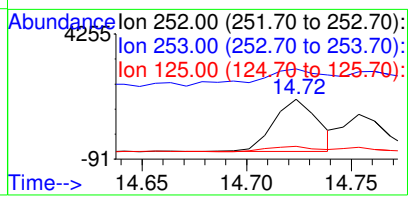


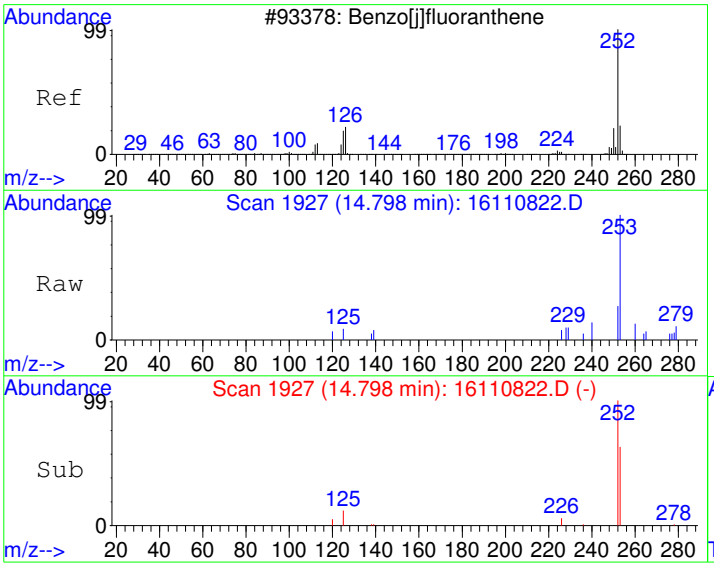


#21
Benzo[b]fluoranthene
Concen: 7.49 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.01 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:252 Resp: 2662

Ion	Ratio	Lower	Upper
252	100		
253	32.8	0.0	52.1
125	9.8	0.0	40.5

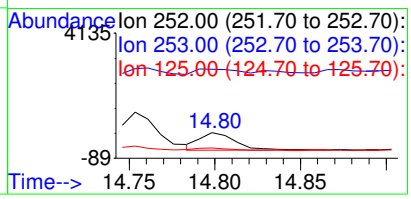


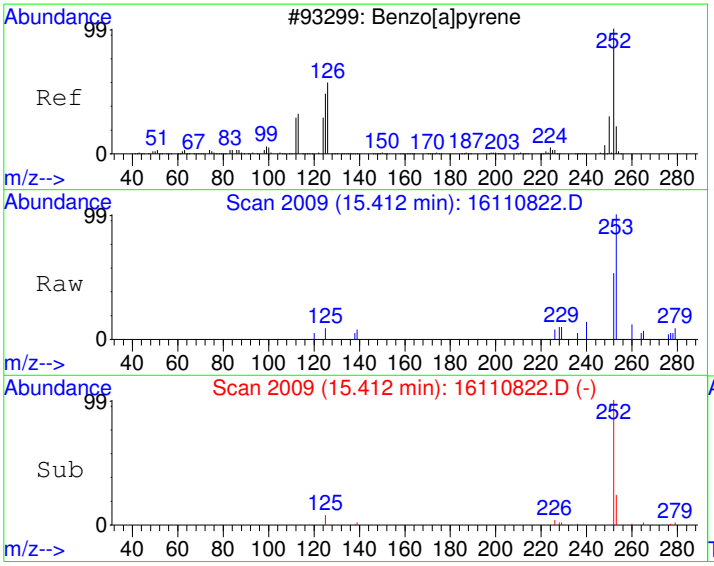


#23
Benzo(j)fluoranthene
Concen: 2.67 ug/kg
RT: 14.80 min Scan# 1927
Delta R.T. -0.02 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:252 Resp: 845

Ion	Ratio	Lower	Upper
252	100		
253	28.9	2.3	42.3
125	13.8	0.0	32.6

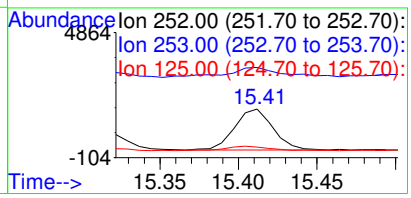


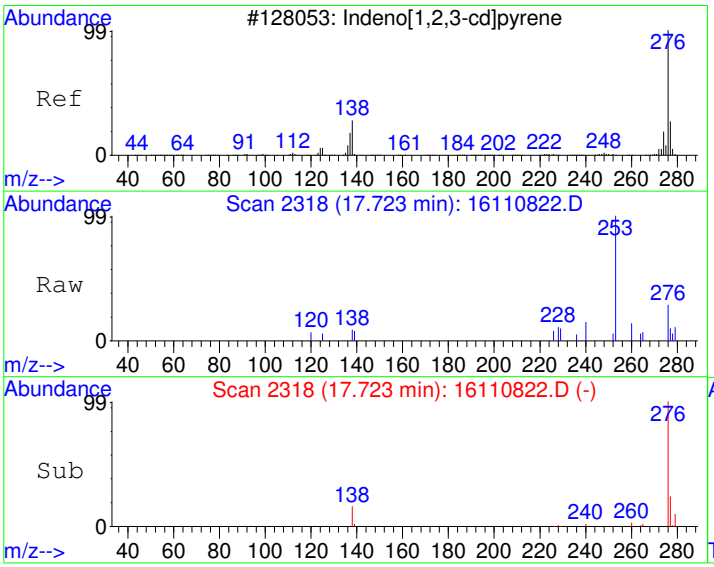


#25
Benzo[a]pyrene
Concen: 8.54 ug/kg
RT: 15.41 min Scan# 2009
Delta R.T. -0.02 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:252 Resp: 2767

Ion	Ratio	Lower	Upper
252	100		
253	20.8	2.2	42.2
125	8.3	0.0	30.8

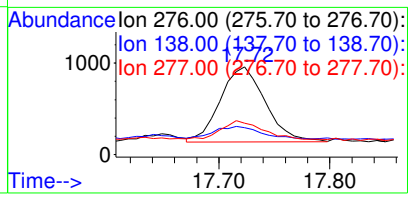


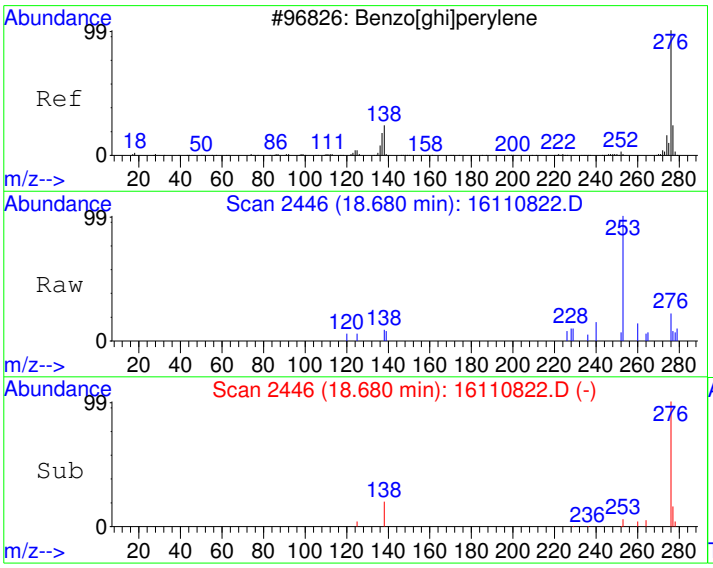


#27
Indeno[1,2,3-cd]pyrene
Concen: 7.07 ug/kg
RT: 17.72 min Scan# 2318
Delta R.T. -0.03 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:276 Resp: 2324

Ion	Ratio	Lower	Upper
276	100		
138	14.4	0.0	39.3
277	22.0	4.0	44.0

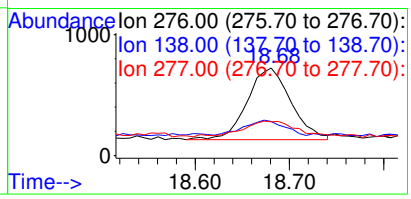




#28
Benzo[g,h,i]perylene
Concen: 5.49 ug/kg
RT: 18.68 min Scan# 2446
Delta R.T. -0.04 min
Lab File: 16110822.D
Acq: 8 Nov 2016 6:42 pm

Tgt Ion:276 Resp: 1908

Ion	Ratio	Lower	Upper
276	100		
138	18.8	0.8	40.8
277	19.6	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110823.D Vial: 11
Acq On : 8 Nov 2016 7:10 pm Operator:
Sample : 1611022-07A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

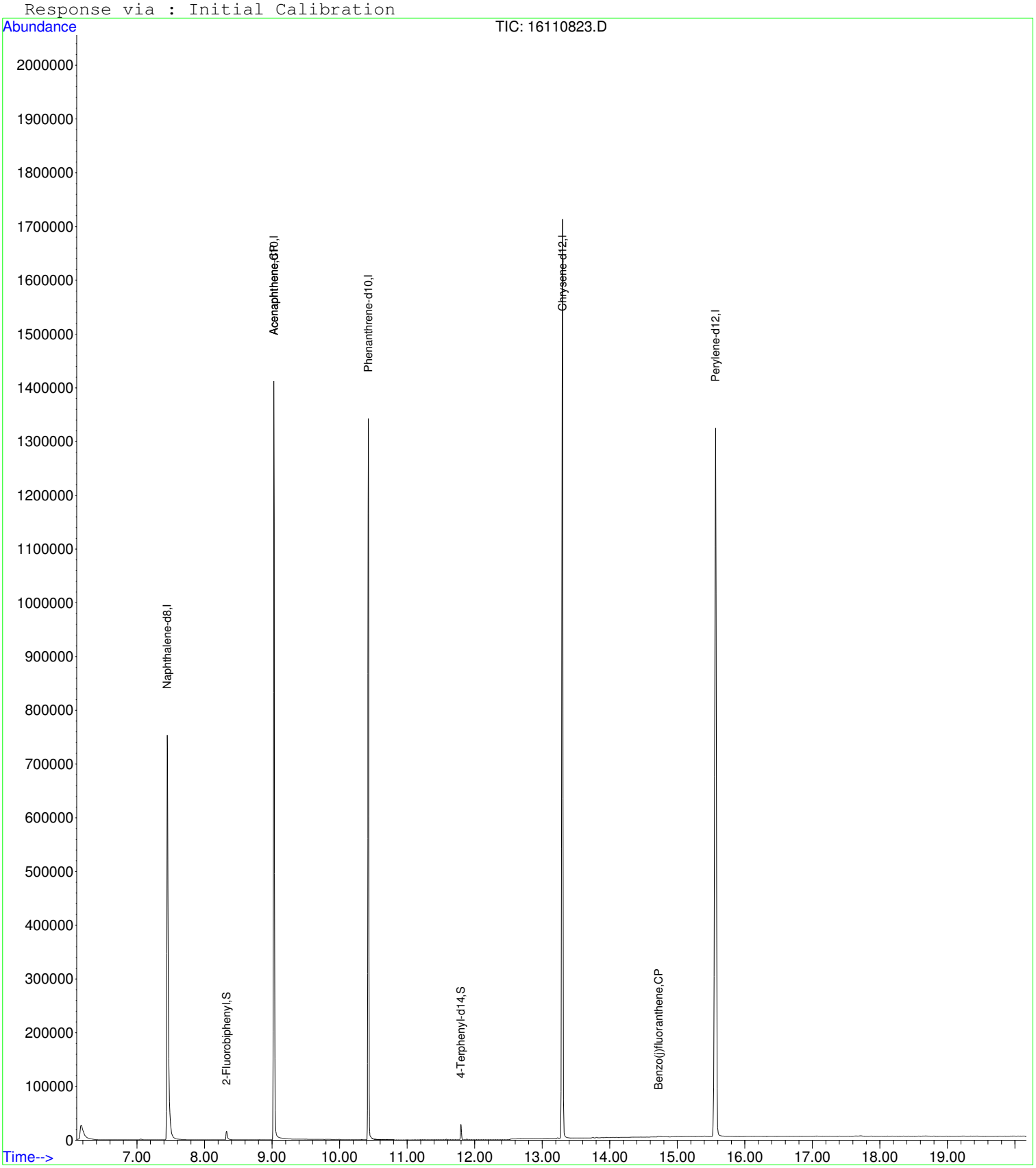
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1053907	4000.00	ug/kg	97
5) Acenaphthene-d10	9.03	164	588048	4000.00	ug/kg	93
11) Phenanthrene-d10	10.43	188	1102701	4000.00	ug/kg	92
17) Chrysene-d12	13.30	240	1480328	4000.00	ug/kg	96
20) Perylene-d12	15.57	264	1525624	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17520	102.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.55%#			
16) 4-Terphenyl-d14	11.80	244	23640	106.74	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.67%#			
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	2029	~~16.32~~	~~ug/kg#~~	~~10~~
23) Benzo(j)fluoranthene	14.72	252	1533	~~5.08~~	~~ug/kg~~	~~92~~

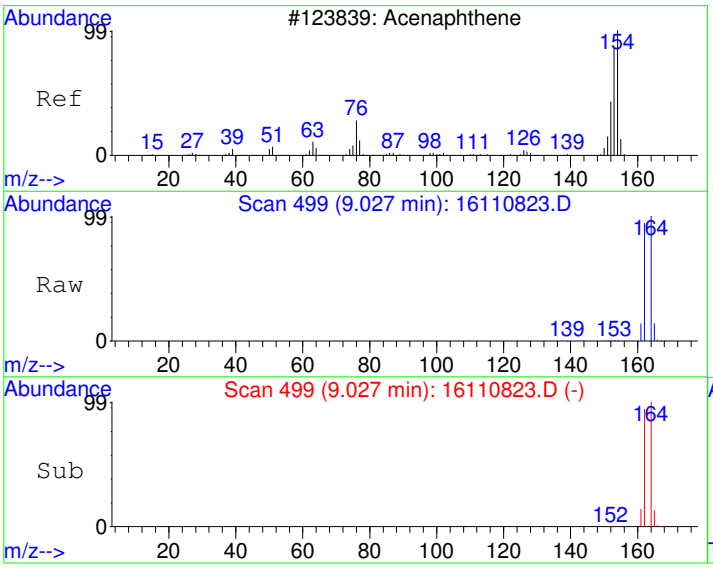
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110823.D Vial: 11
Acq On : 8 Nov 2016 7:10 pm Operator:
Sample : 1611022-07A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:20 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

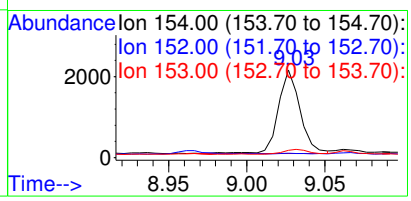


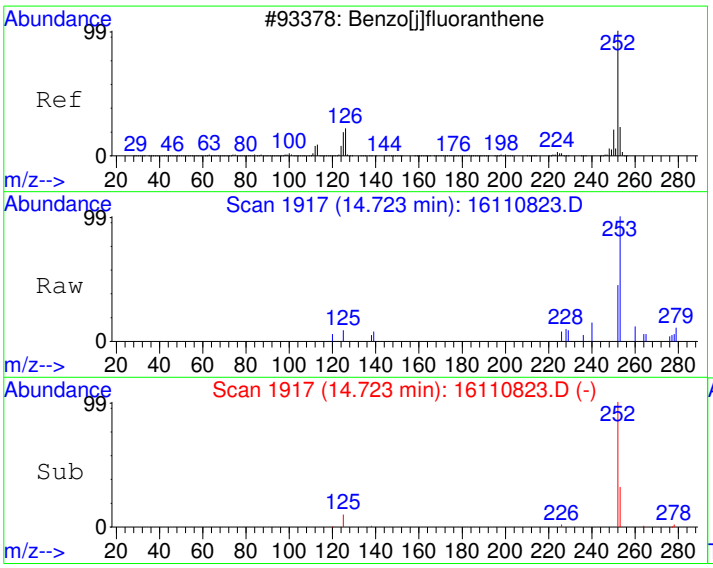


#9
Acenaphthene
Concen: 16.32 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110823.D
Acq: 8 Nov 2016 7:10 pm

Tgt Ion:154 Resp: 2029

Ion	Ratio	Lower	Upper
154	100		
152	0.8	19.8	79.8#
153	4.2	77.1	137.1#

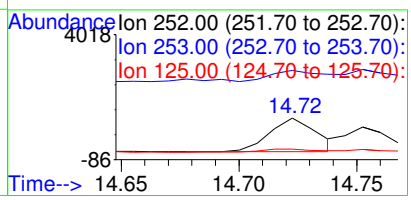




#23
Benzo(j)fluoranthene
Concen: 5.08 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.10 min
Lab File: 16110823.D
Acq: 8 Nov 2016 7:10 pm

Tgt Ion:252 Resp: 1533

Ion	Ratio	Lower	Upper
252	100		
253	26.0	2.3	42.3
125	9.6	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110824.D Vial: 12
Acq On : 8 Nov 2016 7:38 pm Operator:
Sample : 1611022-08A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

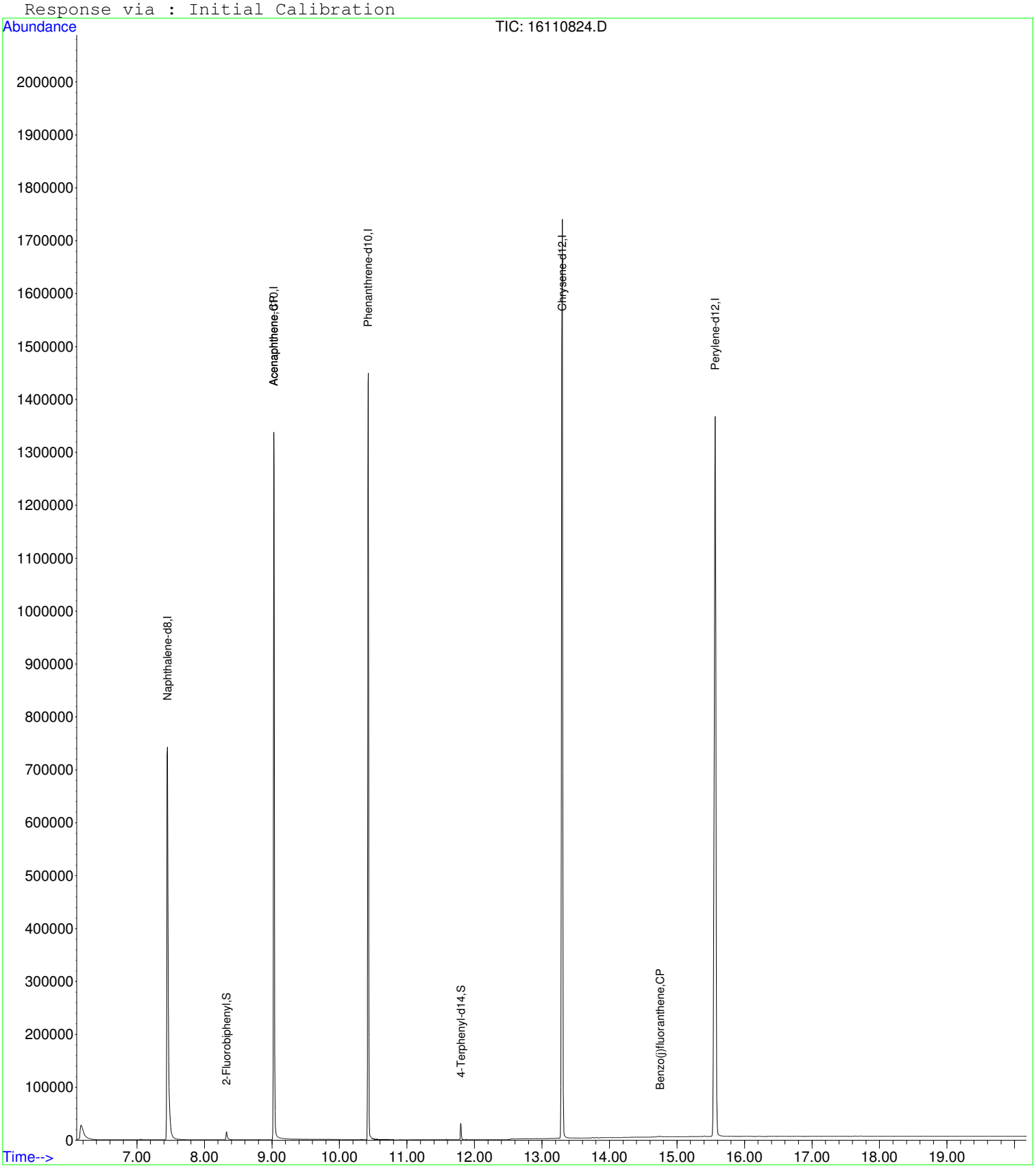
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1032641	4000.00	ug/kg	95
5) Acenaphthene-d10	9.03	164	578953	4000.00	ug/kg	91
11) Phenanthrene-d10	10.43	188	1173534	4000.00	ug/kg	98
17) Chrysene-d12	13.30	240	1561851	4000.00	ug/kg	101
20) Perylene-d12	15.57	264	1622338	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	16925	100.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.50%#		
16) 4-Terphenyl-d14	11.80	244	25389	107.72	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.69%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1924	~~15.72 ug/kg#~~		~~10~~
23) Benzo(j)fluoranthene	14.75	252	926	2.88	ug/kg	98

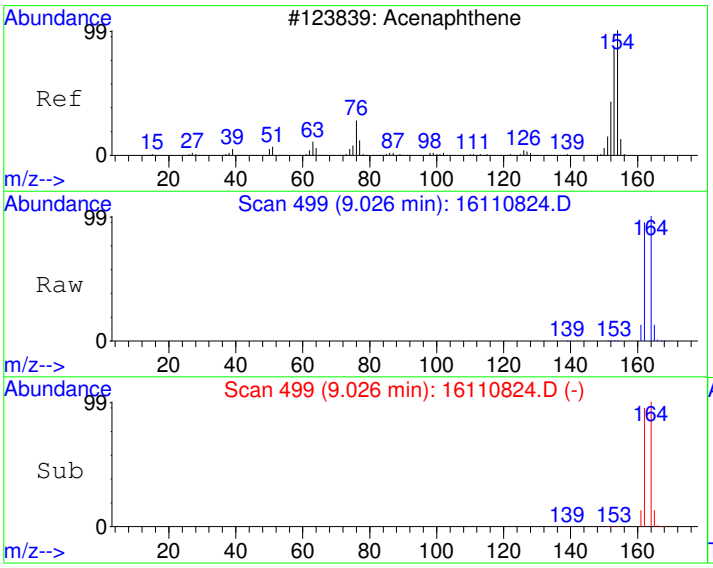
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110824.D Vial: 12
Acq On : 8 Nov 2016 7:38 pm Operator:
Sample : 1611022-08A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

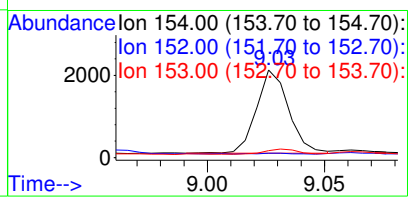


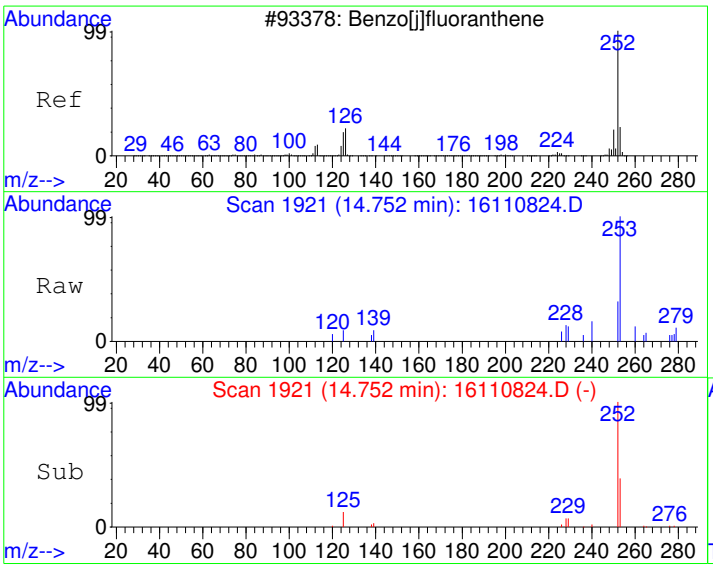


#9
Acenaphthene
Concen: 15.72 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.05 min
Lab File: 16110824.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:154 Resp: 1924

Ion	Ratio	Lower	Upper
154	100		
152	0.4	19.8	79.8#
153	3.9	77.1	137.1#

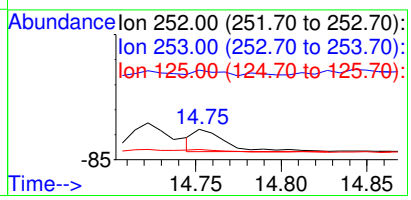




#23
Benzo(j)fluoranthene
Concen: 2.88 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.07 min
Lab File: 16110824.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:252 Resp: 926

Ion	Ratio	Lower	Upper
252	100		
253	21.1	2.3	42.3
125	12.3	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110825.D Vial: 13
Acq On : 8 Nov 2016 8:05 pm Operator:
Sample : 1611022-09A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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	1090485	4000.00	ug/kg	100
5) Acenaphthene-d10	9.03	164	618811	4000.00	ug/kg	98
11) Phenanthrene-d10	10.43	188	1150389	4000.00	ug/kg	96
17) Chrysene-d12	13.30	240	1483611	4000.00	ug/kg	96
20) Perylene-d12	15.57	264	1589681	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	17532	97.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.43%#		
16) 4-Terphenyl-d14	11.80	244	24087	104.25	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.61%#		
Target Compounds						Qvalue
14) Fluoranthene	11.58	202	2817	10.65	ug/kg	98
15) Pyrene	11.88	202	2465	8.97	ug/kg	99
18) Benzo[a]anthracene	13.23	228	2360	8.14	ug/kg	97
19) Chrysene	13.34	228	2260	8.41	ug/kg	95
21) Benzo[b]fluoranthene	14.72	252	3661	10.37	ug/kg	96
22) Benzo[k]fluoranthene	14.72	252	3661	~~11.25 ug/kg~~		~~98~~
23) Benzo(j)fluoranthene	14.80	252	1097	3.49	ug/kg	98
24) Benzo[e]pyrene	15.31	252	1908	6.05	ug/kg	88
25) Benzo[a]pyrene	15.41	252	3220	10.00	ug/kg	96
27) Indeno[1,2,3-cd]pyrene	17.71	276	3096	9.48	ug/kg	96
28) Benzo[g,h,i]perylene	18.68	276	2765	8.01	ug/kg	94

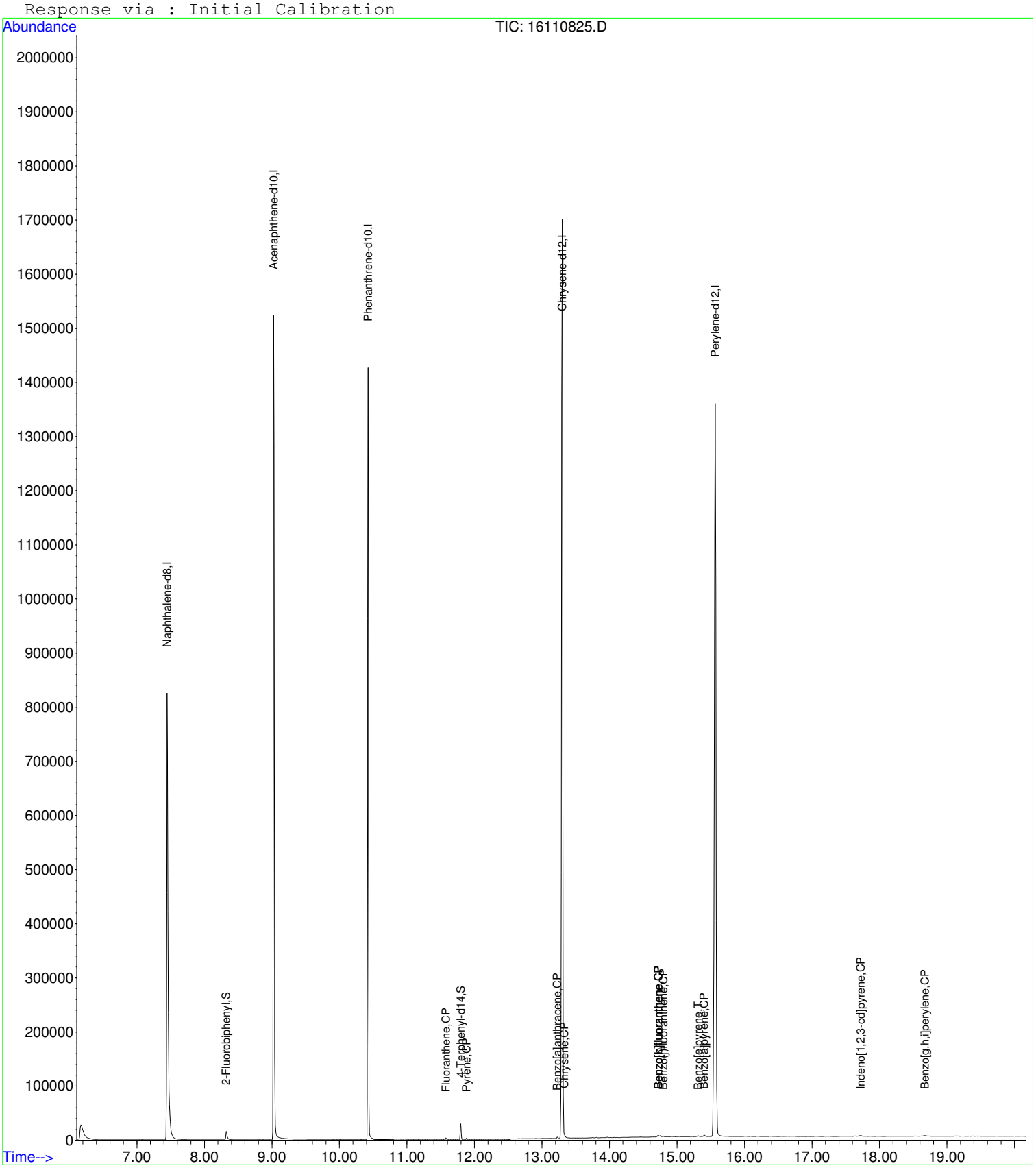
Wrong RT See MI

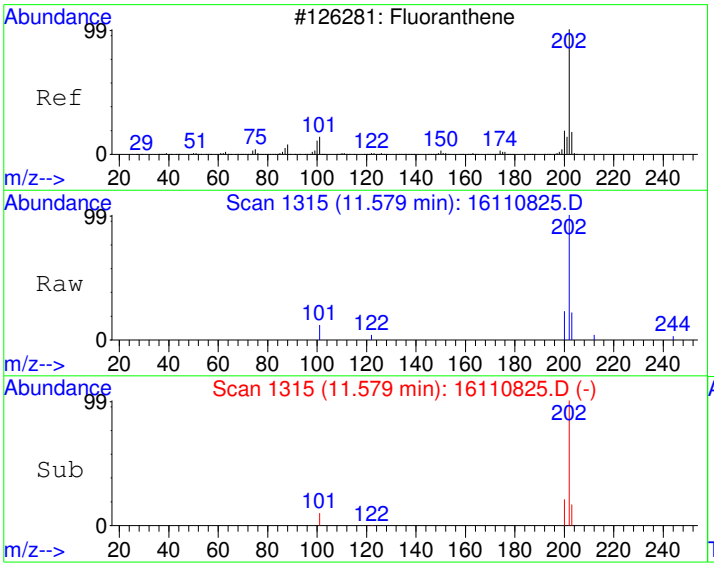
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110825.D Vial: 13
Acq On : 8 Nov 2016 8:05 pm Operator:
Sample : 1611022-09A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

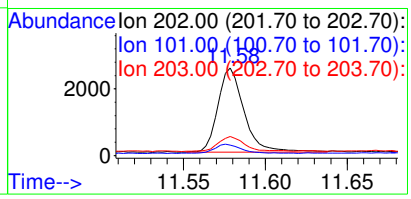


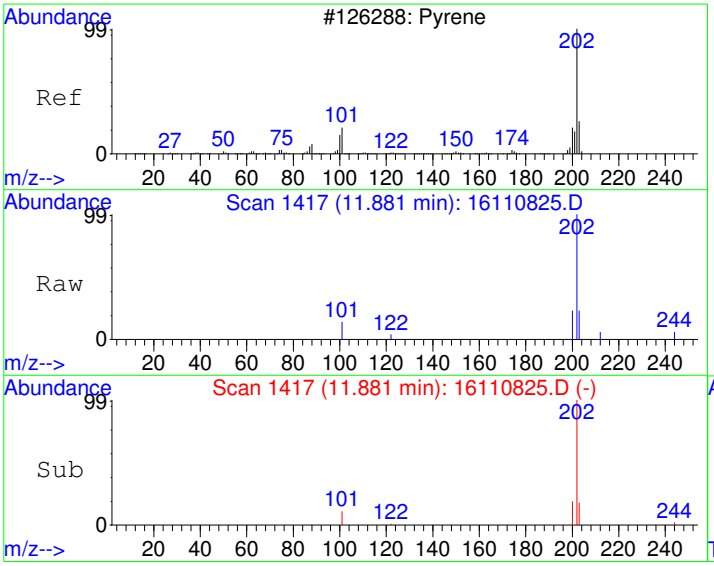


#14
Fluoranthene
Concen: 10.65 ug/kg
RT: 11.58 min Scan# 1315
Delta R.T. -0.01 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:202 Resp: 2817

Ion	Ratio	Lower	Upper
202	100		
101	9.6	0.0	40.6
203	17.3	0.0	48.0

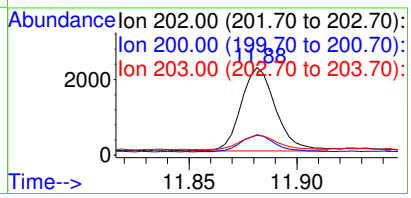


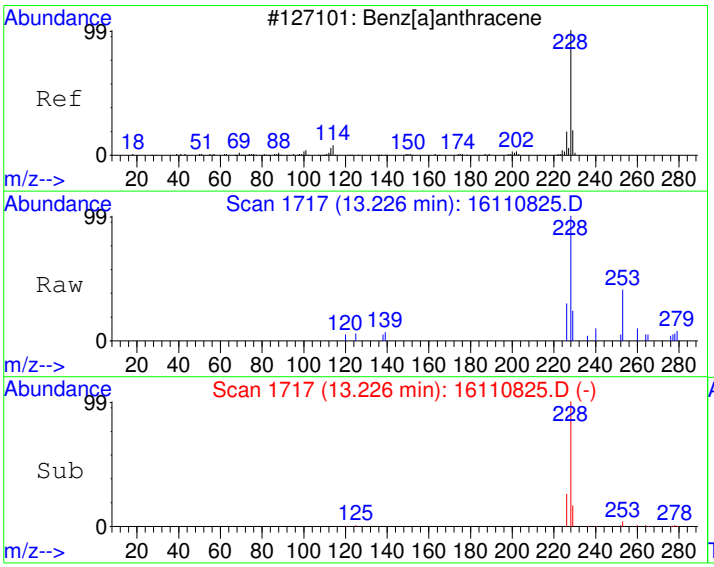


#15
Pyrene
Concen: 8.97 ug/kg
RT: 11.88 min Scan# 1417
Delta R.T. -0.01 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:202 Resp: 2465

Ion	Ratio	Lower	Upper
202	100		
200	19.4	0.0	50.1
203	17.5	0.0	47.8

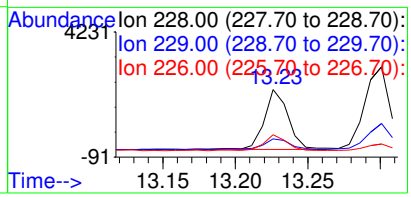


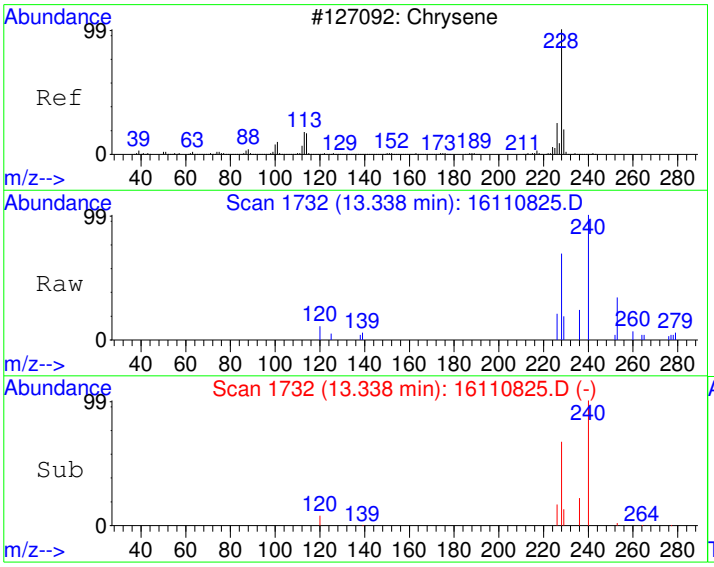


#18
Benzo[a]anthracene
Concen: 8.14 ug/kg
RT: 13.23 min Scan# 1717
Delta R.T. -0.02 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:228 Resp: 2360

Ion	Ratio	Lower	Upper
228	100		
229	17.9	0.0	50.4
226	26.1	0.0	55.6

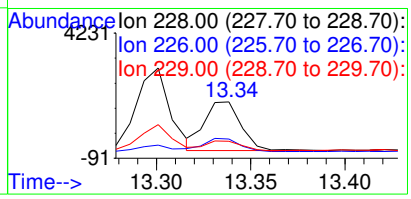


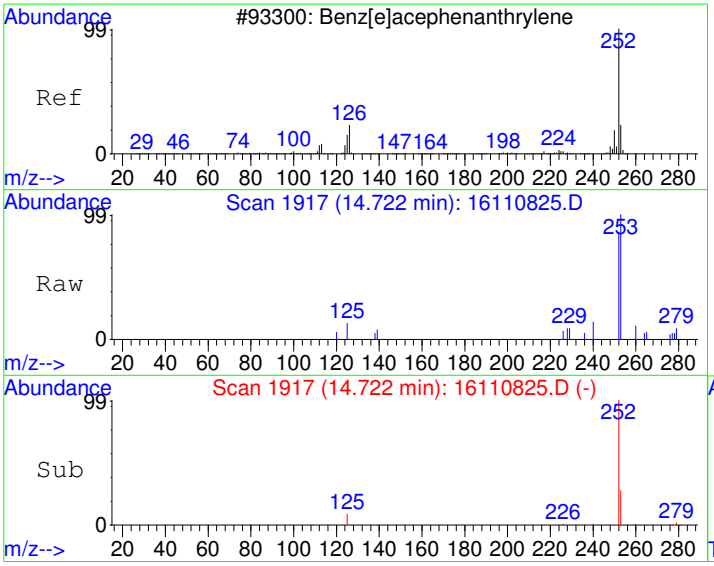


#19
Chrysene
Concen: 8.41 ug/kg
RT: 13.34 min Scan# 1732
Delta R.T. -0.01 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:228 Resp: 2260

Ion	Ratio	Lower	Upper
228	100		
226	25.3	0.0	58.8
229	18.6	0.0	50.2

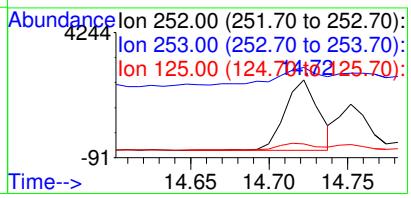


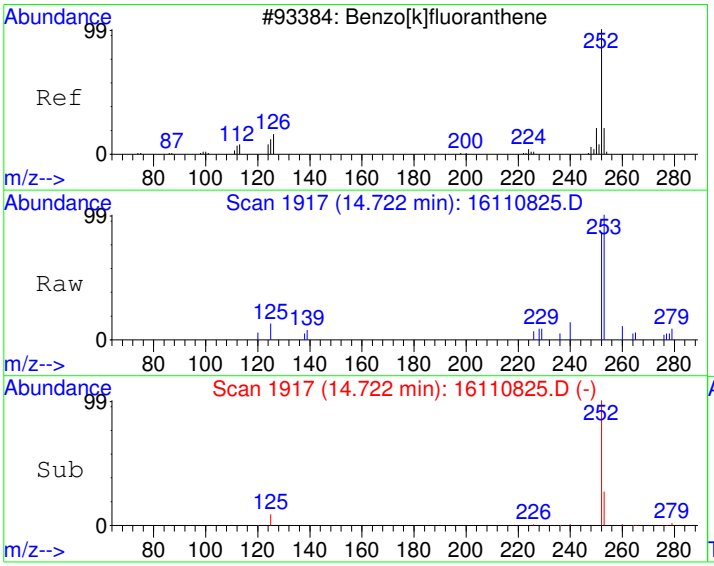


#21
Benzo[b]fluoranthene
Concen: 10.37 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.01 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:252 Resp: 3661

Ion	Ratio	Lower	Upper
252	100		
253	23.6	0.0	52.1
125	8.7	0.0	40.5

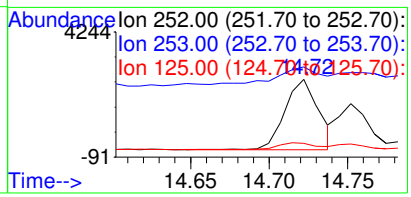




#22
Benzo[k]fluoranthene
Concen: 11.25 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.05 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

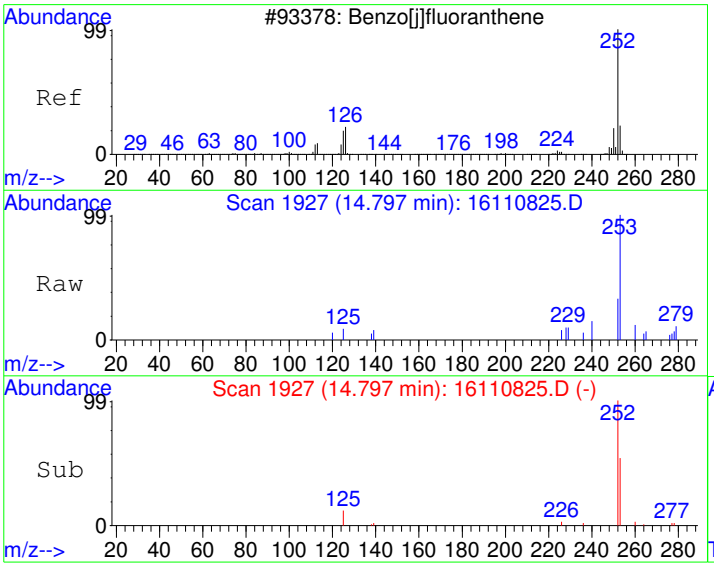
Tgt Ion:252 Resp: 3661

Ion	Ratio	Lower	Upper
252	100		
253	23.6	2.4	42.4
125	8.7	0.0	28.2



BEFORE MANUAL INTEGRATION
By Don Winston at 9:21:02 AM, 11/11/2016

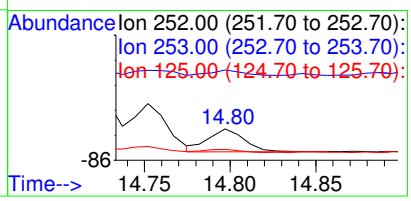
REVIEWED
By Angie O'Donnell at 1:48:37 PM, 11/16/2016

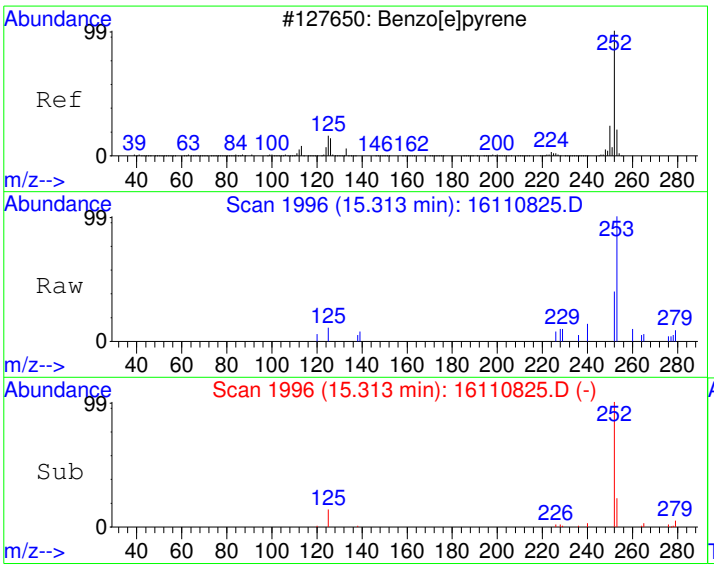


#23
Benzo(j)fluoranthene
Concen: 3.49 ug/kg
RT: 14.80 min Scan# 1927
Delta R.T. -0.02 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:252 Resp: 1097

Ion	Ratio	Lower	Upper
252	100		
253	23.6	2.3	42.3
125	13.3	0.0	32.6

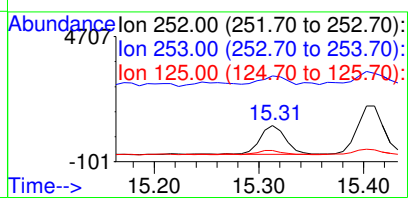


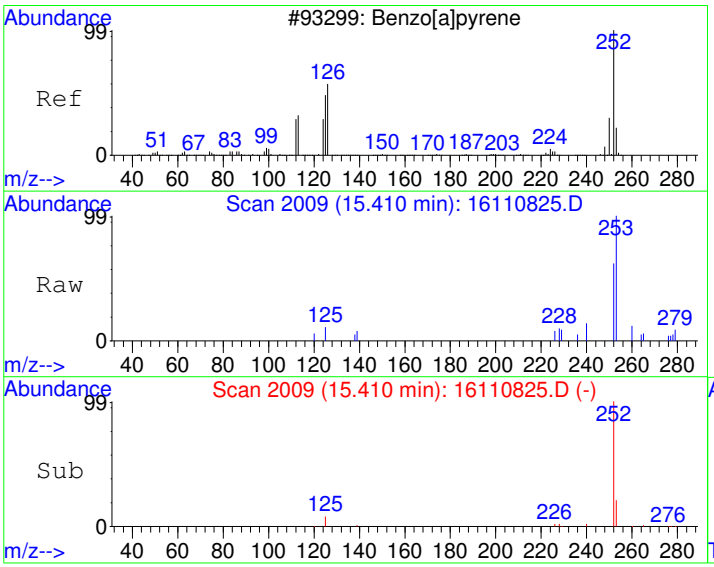


#24
Benzo[e]pyrene
Concen: 6.05 ug/kg
RT: 15.31 min Scan# 1996
Delta R.T. -0.02 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:252 Resp: 1908

Ion	Ratio	Lower	Upper
252	100		
253	30.4	1.8	41.8
125	14.0	0.0	35.7

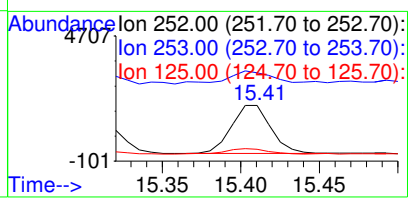


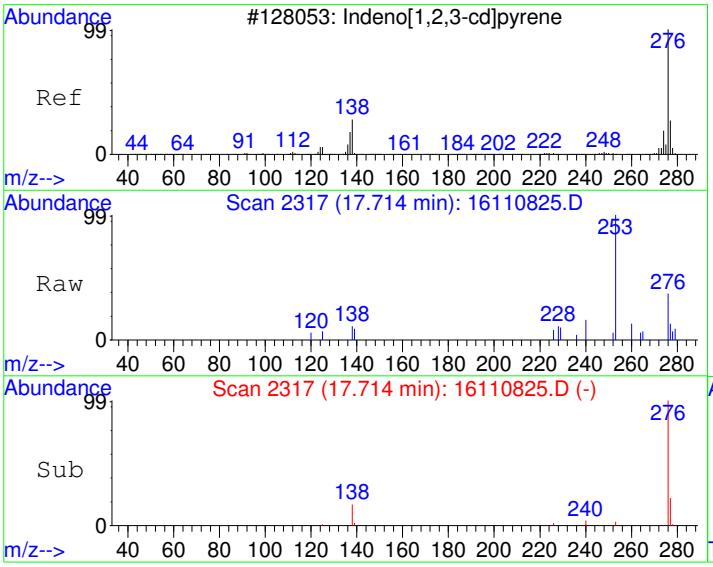


#25
Benzo[a]pyrene
Concen: 10.00 ug/kg
RT: 15.41 min Scan# 2009
Delta R.T. -0.02 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:252 Resp: 3220

Ion	Ratio	Lower	Upper
252	100		
253	20.5	2.2	42.2
125	9.4	0.0	30.8

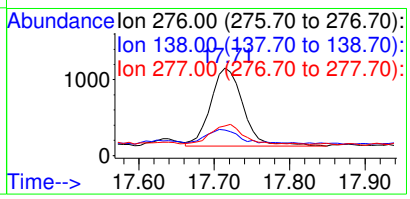


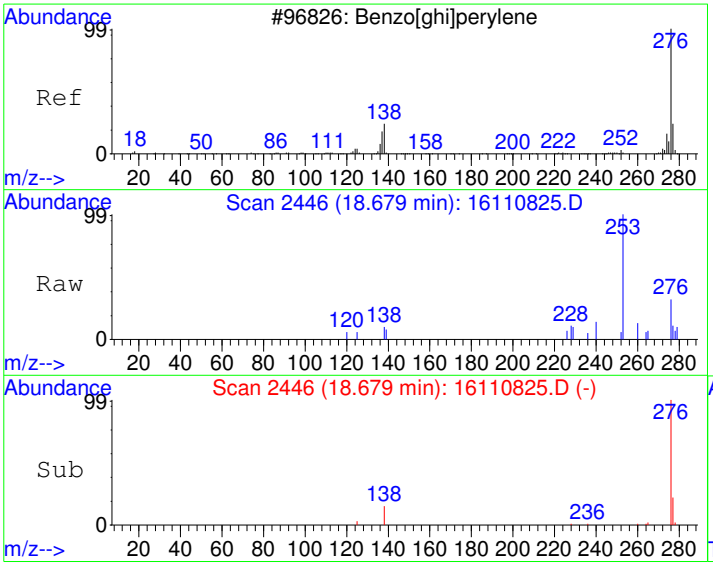


#27
Indeno[1,2,3-cd]pyrene
Concen: 9.48 ug/kg
RT: 17.71 min Scan# 2317
Delta R.T. -0.04 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:276 Resp: 3096

Ion	Ratio	Lower	Upper
276	100		
138	17.2	0.0	39.3
277	22.7	4.0	44.0

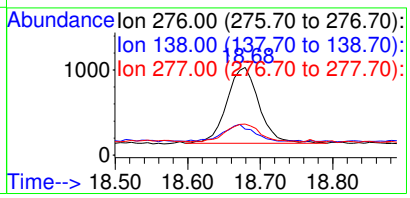




#28
Benzo[g,h,i]perylene
Concen: 8.01 ug/kg
RT: 18.68 min Scan# 2446
Delta R.T. -0.04 min
Lab File: 16110825.D
Acq: 8 Nov 2016 8:05 pm

Tgt Ion:276 Resp: 2765

Ion	Ratio	Lower	Upper
276	100		
138	16.3	0.8	40.8
277	23.0	4.0	44.0

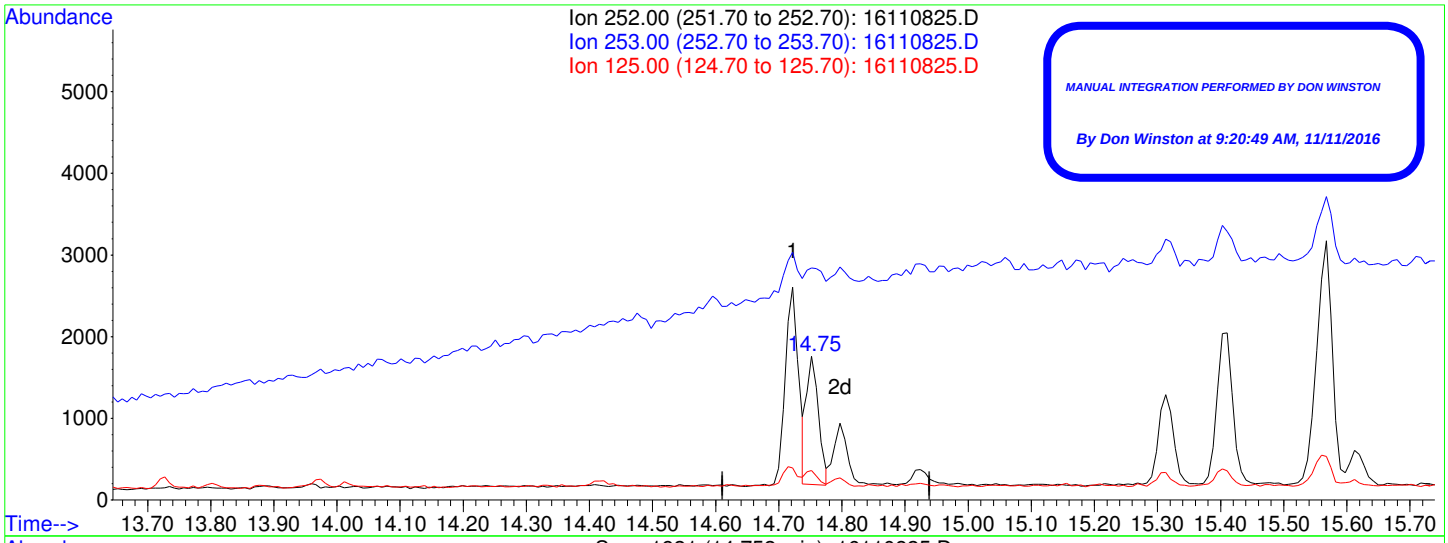


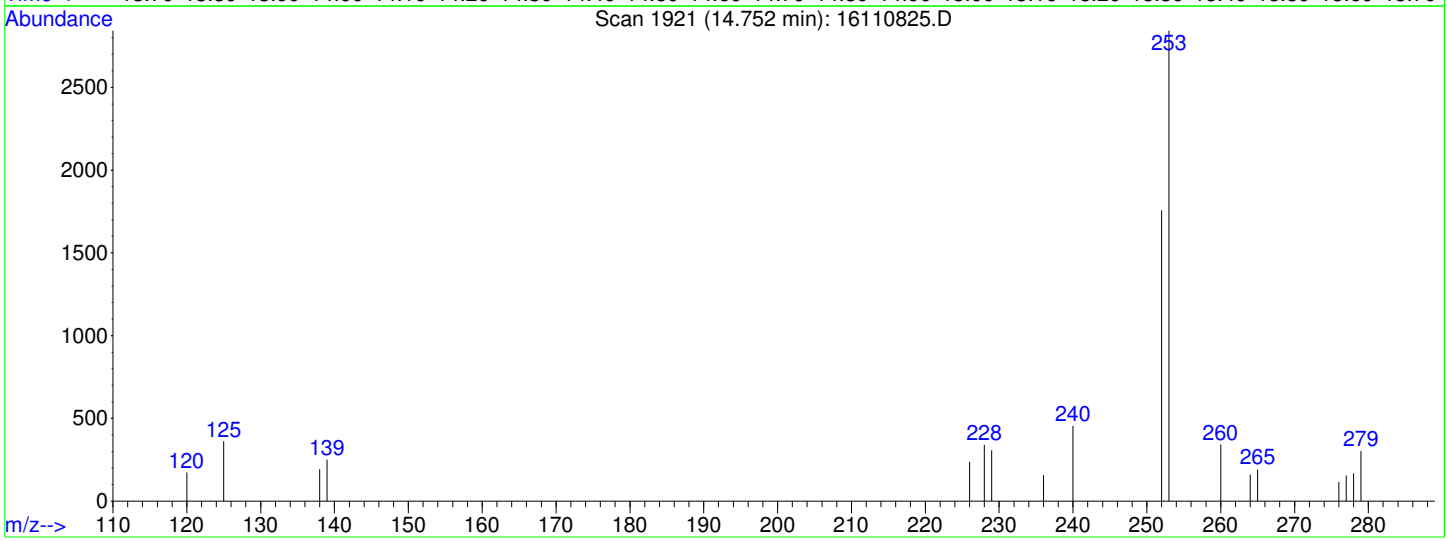
Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161108\16110825.D Vial: 13
Acq On : 8 Nov 2016 8:05 pm Operator:
Sample : 1611022-09A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 9:15 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

Integrated Benzo(k)fluoranthene peak.





TIC: 16110825.D

(22) Benzo[k]fluoranthene (CP)

14.75min 6.36ug/kg m

response 2069

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	161.66#
125.00	8.20	20.53
0.00	0.00	0.00

REVIEWED
By Angie O'Donnell at 1:48:44 PM, 11/16/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110826.D Vial: 14
Acq On : 8 Nov 2016 8:34 pm Operator:
Sample : 1611022-10A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

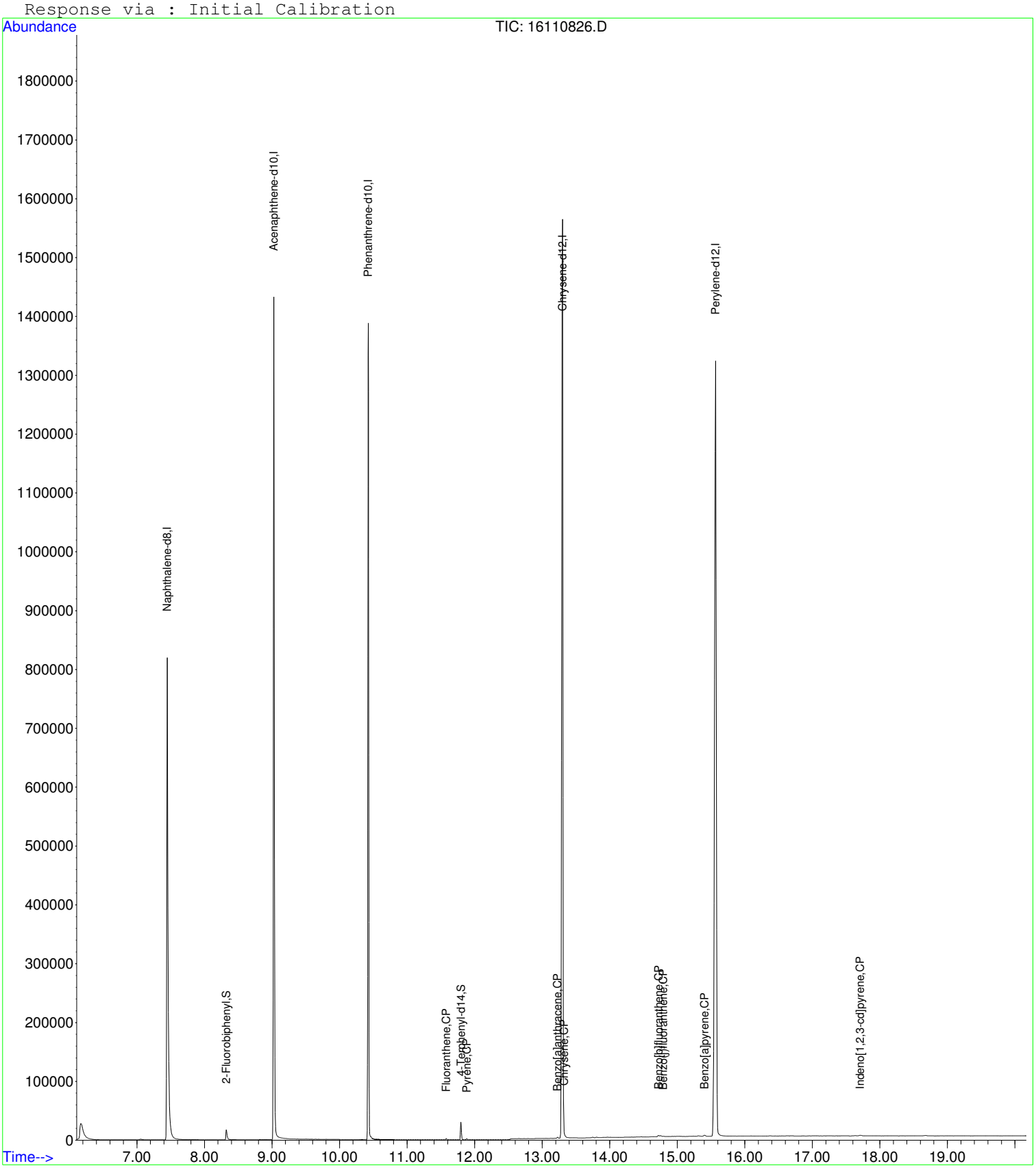
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1062185	4000.00	ug/kg	97
5) Acenaphthene-d10	9.03	164	598376	4000.00	ug/kg	94
11) Phenanthrene-d10	10.43	188	1115898	4000.00	ug/kg	93
17) Chrysene-d12	13.30	240	1491497	4000.00	ug/kg	97
20) Perylene-d12	15.57	264	1587770	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	16756	95.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.40%#		
16) 4-Terphenyl-d14	11.80	244	24582	109.68	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.74%#		
Target Compounds						Qvalue
14) Fluoranthene	11.58	202	1794	6.99	ug/kg	98
15) Pyrene	11.88	202	1628	6.11	ug/kg	97
18) Benzo[a]anthracene	13.23	228	1666	5.71	ug/kg	97
19) Chrysene	13.33	228	1442	5.34	ug/kg	94
21) Benzo[b]fluoranthene	14.72	252	2344	6.65	ug/kg	89
23) Benzo(j)fluoranthene	14.80	252	477	1.52	ug/kg	76
25) Benzo[a]pyrene	15.40	252	2132	6.63	ug/kg	81
27) Indeno[1,2,3-cd]pyrene	17.72	276	1993	6.11	ug/kg	99

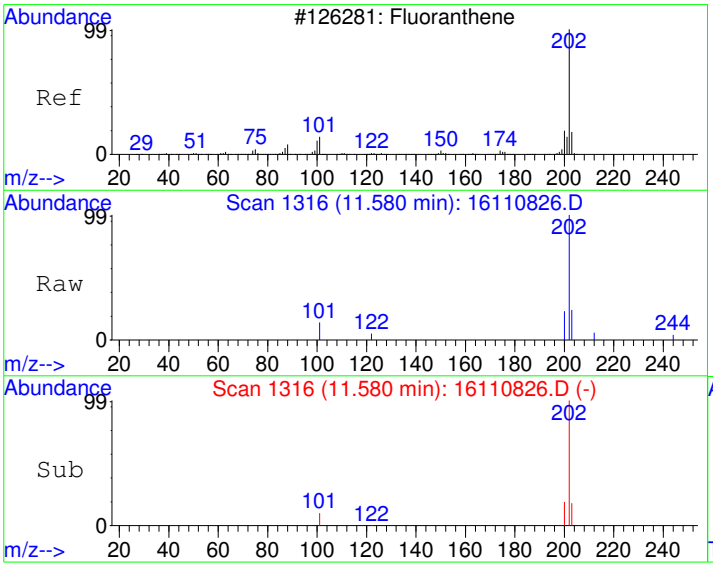
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110826.D Vial: 14
Acq On : 8 Nov 2016 8:34 pm Operator:
Sample : 1611022-10A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

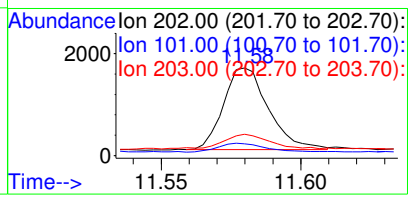


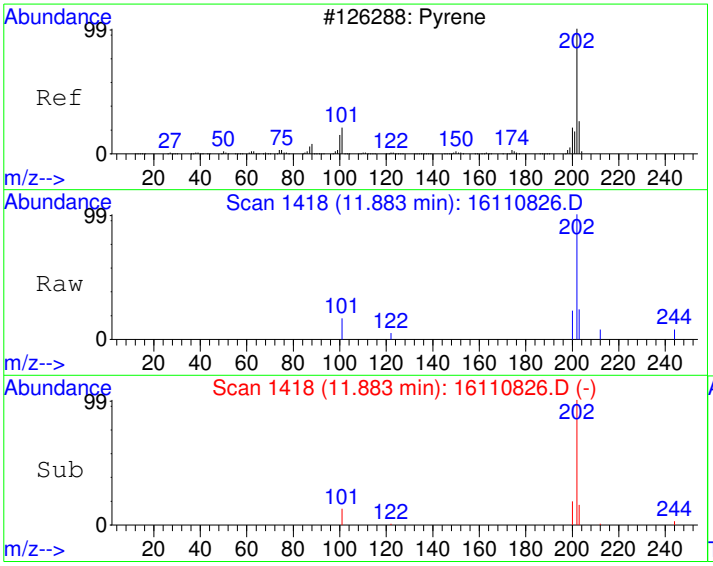


#14
Fluoranthene
Concen: 6.99 ug/kg
RT: 11.58 min Scan# 1316
Delta R.T. -0.01 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:202 Resp: 1794

Ion	Ratio	Lower	Upper
202	100		
101	10.3	0.0	40.6
203	16.6	0.0	48.0

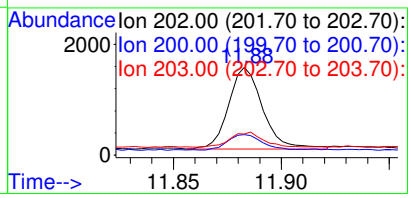


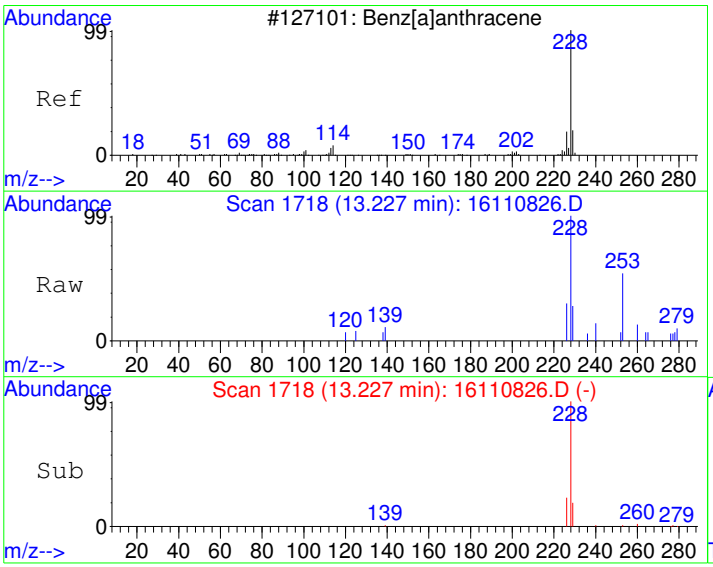


#15
Pyrene
Concen: 6.11 ug/kg
RT: 11.88 min Scan# 1418
Delta R.T. -0.01 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:202 Resp: 1628

Ion	Ratio	Lower	Upper
202	100		
200	19.0	0.0	50.1
203	16.4	0.0	47.8

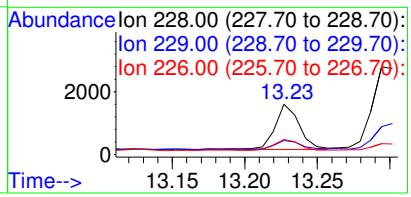


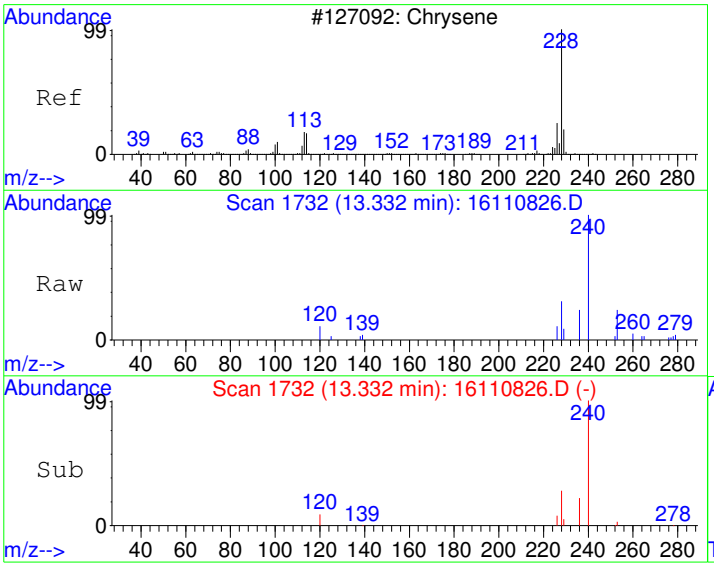


#18
Benzo[a]anthracene
Concen: 5.71 ug/kg
RT: 13.23 min Scan# 1718
Delta R.T. -0.02 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:228 Resp: 1666

Ion	Ratio	Lower	Upper
228	100		
229	19.4	0.0	50.4
226	23.9	0.0	55.6

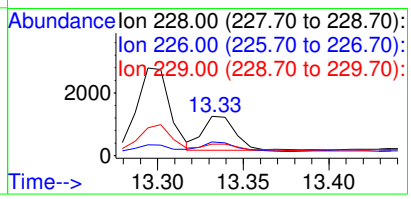


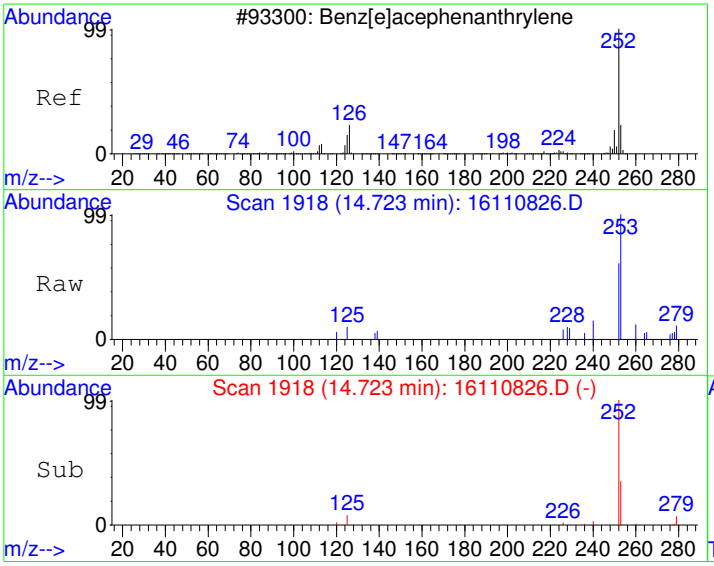


#19
Chrysene
Concen: 5.34 ug/kg
RT: 13.33 min Scan# 1732
Delta R.T. -0.02 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:228 Resp: 1442

Ion	Ratio	Lower	Upper
228	100		
226	25.9	0.0	58.8
229	16.5	0.0	50.2

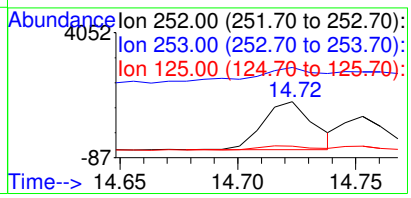


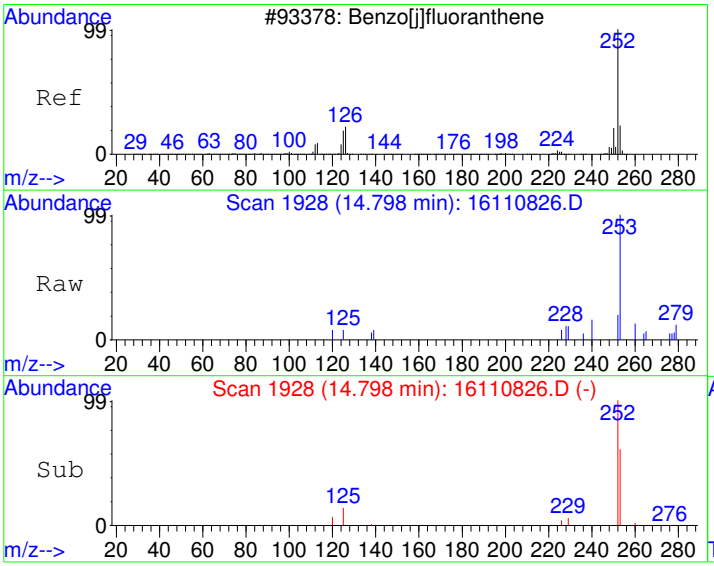


#21
Benzo[b]fluoranthene
Concen: 6.65 ug/kg
RT: 14.72 min Scan# 1918
Delta R.T. -0.01 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:252 Resp: 2344

Ion	Ratio	Lower	Upper
252	100		
253	28.3	0.0	52.1
125	8.4	0.0	40.5

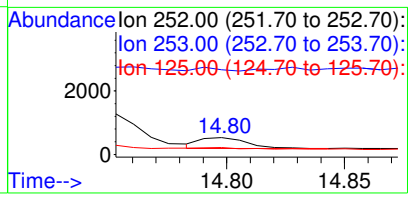


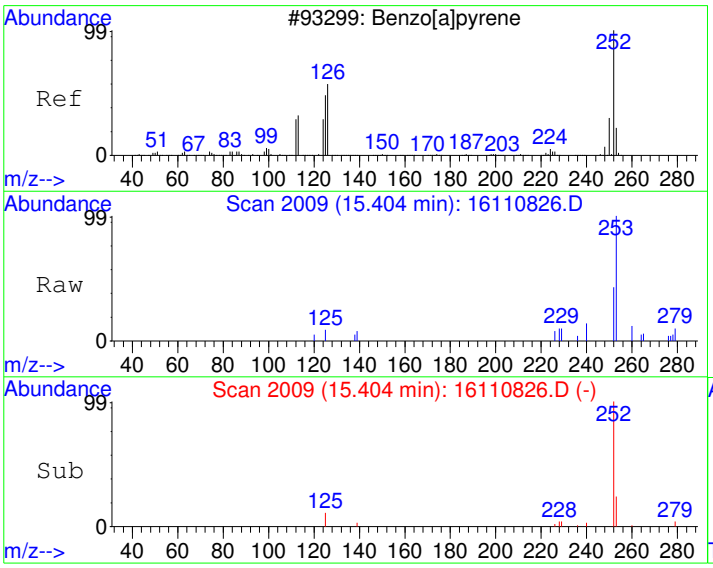


#23
Benzo(j)fluoranthene
Concen: 1.52 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.02 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:252 Resp: 477

Ion	Ratio	Lower	Upper
252	100		
253	7.1	2.3	42.3
125	16.8	0.0	32.6

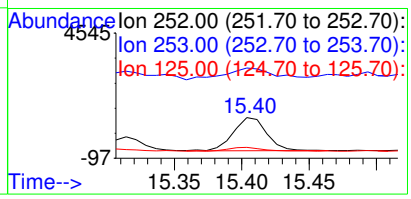


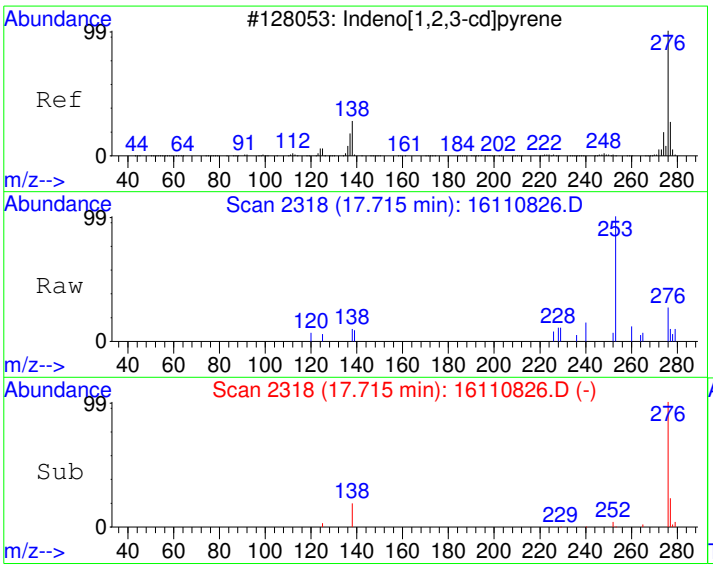


#25
Benzo[a]pyrene
Concen: 6.63 ug/kg
RT: 15.40 min Scan# 2009
Delta R.T. -0.03 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:252 Resp: 2132

Ion	Ratio	Lower	Upper
252	100		
253	35.1	2.2	42.2
125	11.9	0.0	30.8

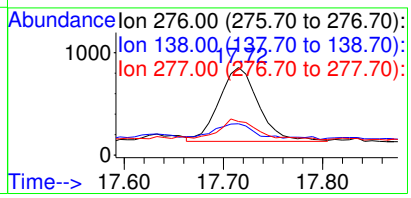




#27
Indeno[1,2,3-cd]pyrene
Concen: 6.11 ug/kg
RT: 17.72 min Scan# 2318
Delta R.T. -0.04 min
Lab File: 16110826.D
Acq: 8 Nov 2016 8:34 pm

Tgt Ion:276 Resp: 1993

Ion	Ratio	Lower	Upper
276	100		
138	19.8	0.0	39.3
277	24.6	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110827.D Vial: 15
Acq On : 8 Nov 2016 9:01 pm Operator:
Sample : 1611022-11A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

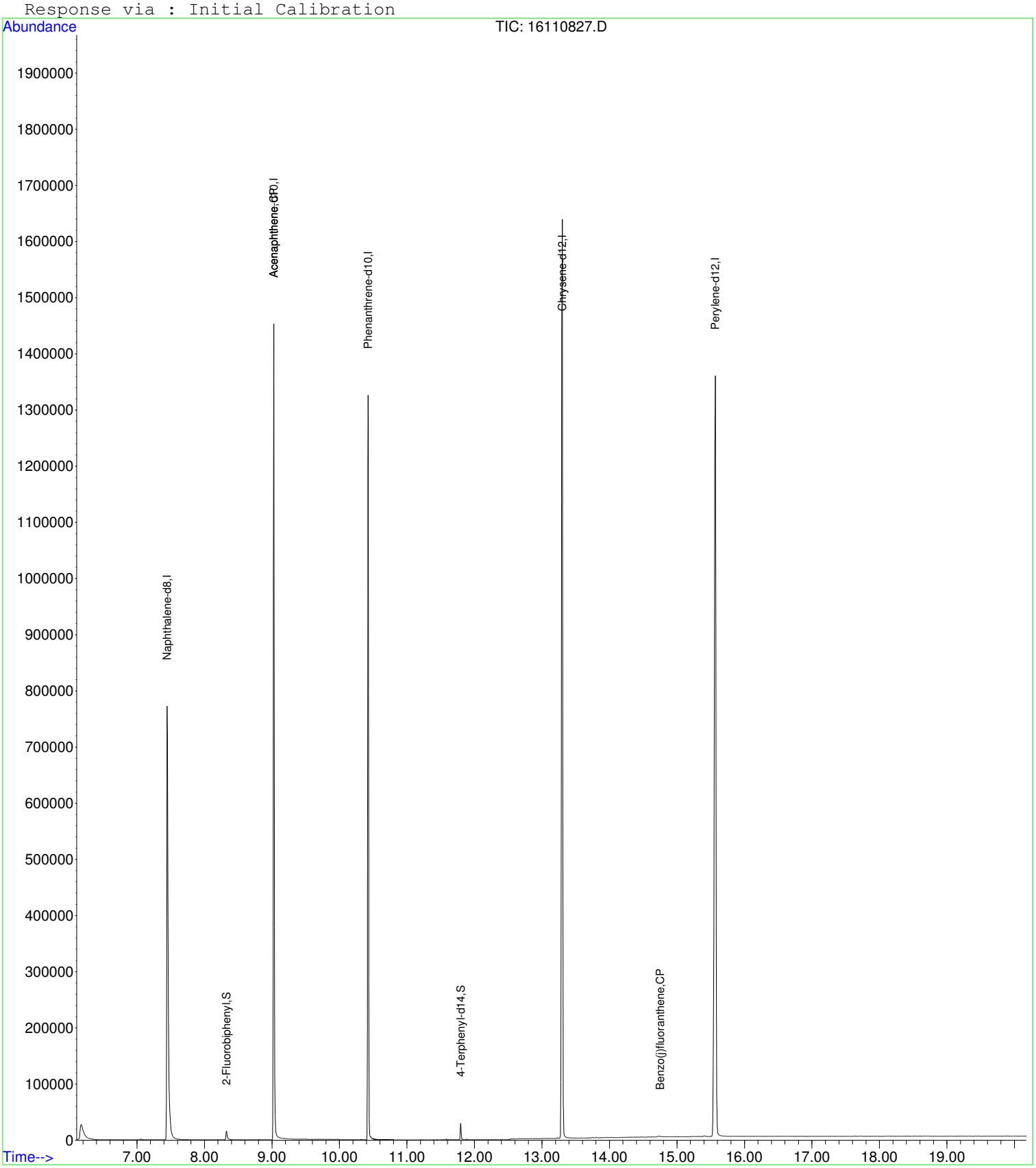
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1059456	4000.00	ug/kg	97
5) Acenaphthene-d10	9.03	164	591473	4000.00	ug/kg	93
11) Phenanthrene-d10	10.42	188	1102030	4000.00	ug/kg	92
17) Chrysene-d12	13.30	240	1483777	4000.00	ug/kg	96
20) Perylene-d12	15.57	264	1577226	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17398	100.72	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.52%#		
16) 4-Terphenyl-d14	11.80	244	23643	106.82	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.67%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1928	~~15.42~~	~~ug/kg#~~	~~11~~
23) Benzo(j)fluoranthene	14.75	252	1204	3.86	ug/kg	94

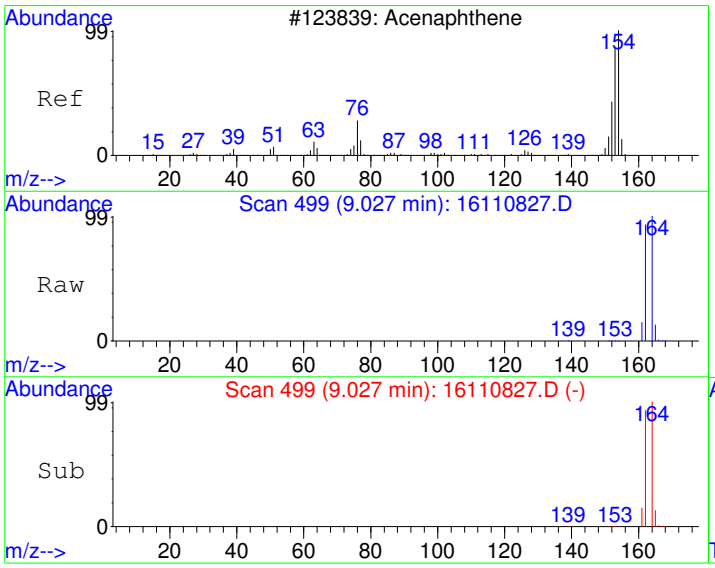
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110827.D Vial: 15
Acq On : 8 Nov 2016 9:01 pm Operator:
Sample : 1611022-11A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

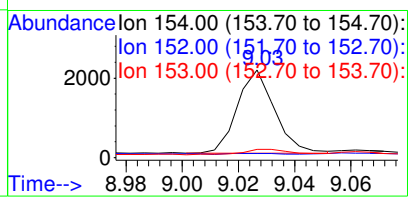


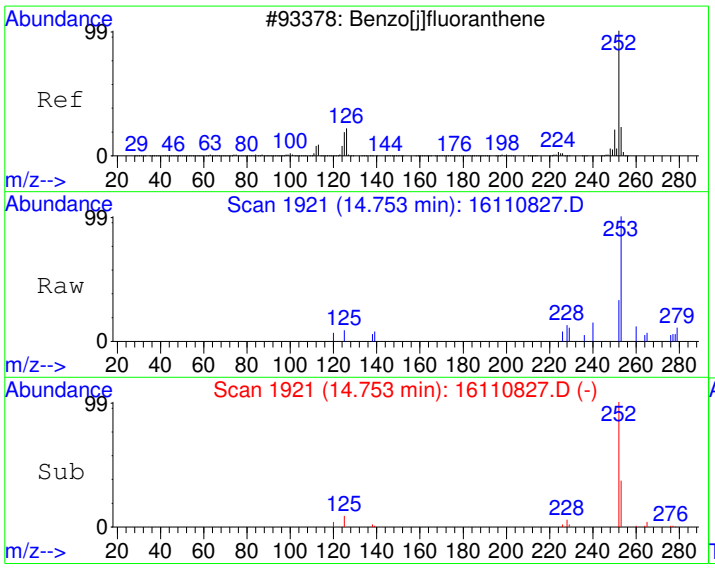


#9
Acenaphthene
Concen: 15.42 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110827.D
Acq: 8 Nov 2016 9:01 pm

Tgt Ion:154 Resp: 1928

Ion	Ratio	Lower	Upper
154	100		
152	0.5	19.8	79.8#
153	6.3	77.1	137.1#

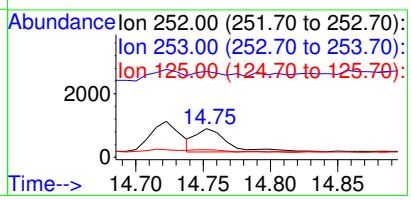




#23
Benzo(j)fluoranthene
Concen: 3.86 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.07 min
Lab File: 16110827.D
Acq: 8 Nov 2016 9:01 pm

Tgt Ion:252 Resp: 1204

Ion	Ratio	Lower	Upper
252	100		
253	19.4	2.3	42.3
125	10.6	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110828.D Vial: 16
Acq On : 8 Nov 2016 9:29 pm Operator:
Sample : 1611022-12A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

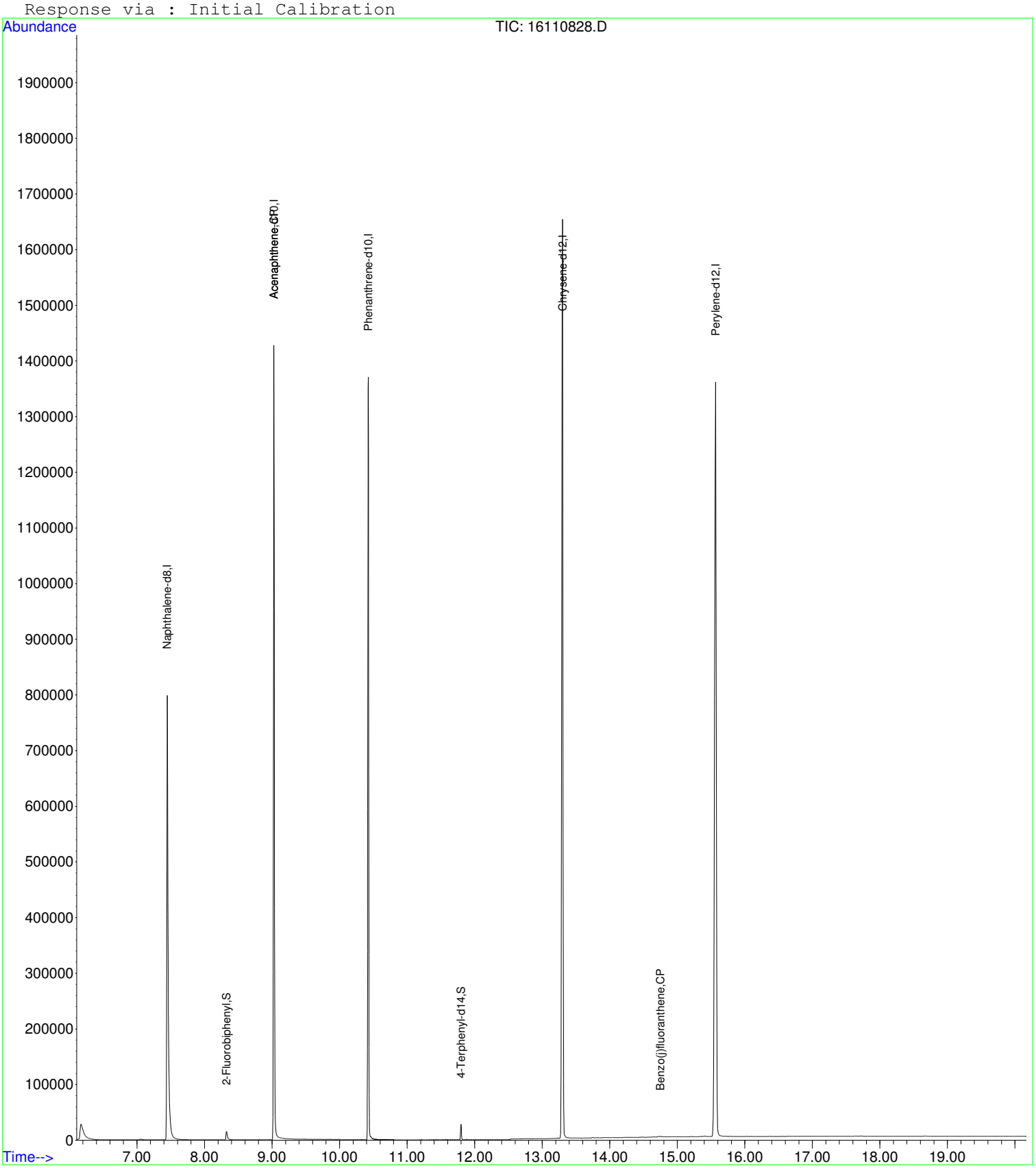
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1069796	4000.00	ug/kg	98
5) Acenaphthene-d10	9.03	164	594145	4000.00	ug/kg	94
11) Phenanthrene-d10	10.43	188	1129498	4000.00	ug/kg	94
17) Chrysene-d12	13.30	240	1525095	4000.00	ug/kg	99
20) Perylene-d12	15.57	264	1606097	4000.00	ug/kg	106
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17139	98.77	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.47%#		
16) 4-Terphenyl-d14	11.80	244	23591	103.99	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.60%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1926	~~15.33 ug/kg#~~		~~10~~
23) Benzo(j)fluoranthene	14.75	252	901	2.83	ug/kg	90

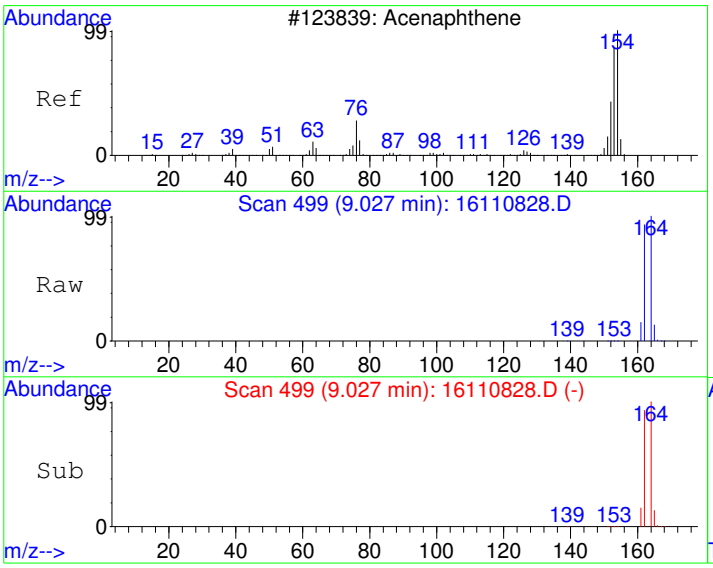
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110828.D Vial: 16
Acq On : 8 Nov 2016 9:29 pm Operator:
Sample : 1611022-12A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:21 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

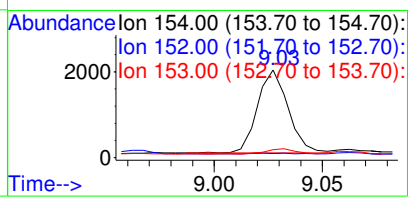


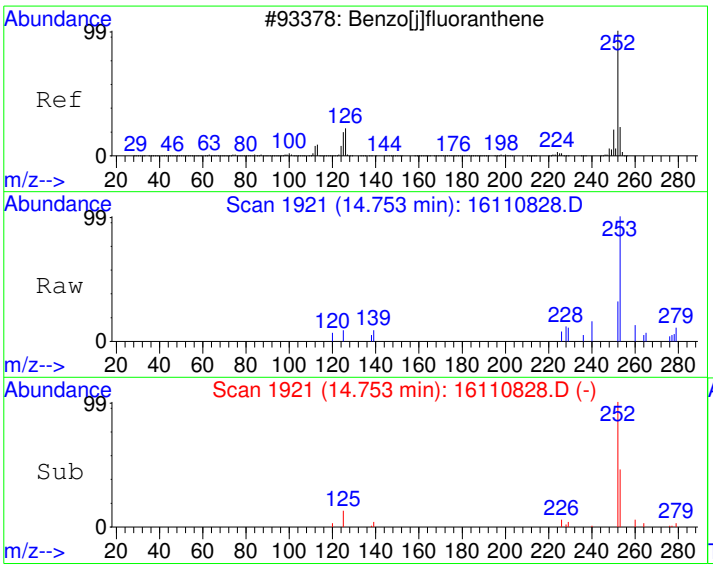


#9
Acenaphthene
Concen: 15.33 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110828.D
Acq: 8 Nov 2016 9:29 pm

Tgt Ion:154 Resp: 1926

Ion	Ratio	Lower	Upper
154	100		
152	0.3	19.8	79.8#
153	5.3	77.1	137.1#

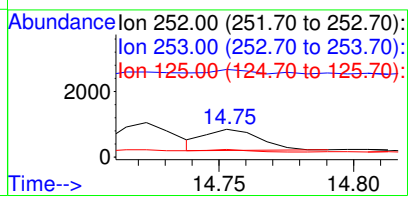




#23
Benzo(j)fluoranthene
Concen: 2.83 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.07 min
Lab File: 16110828.D
Acq: 8 Nov 2016 9:29 pm

Tgt Ion:252 Resp: 901

Ion	Ratio	Lower	Upper
252	100		
253	16.4	2.3	42.3
125	10.6	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110829.D Vial: 17
Acq On : 8 Nov 2016 9:57 pm Operator:
Sample : 1611022-14A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

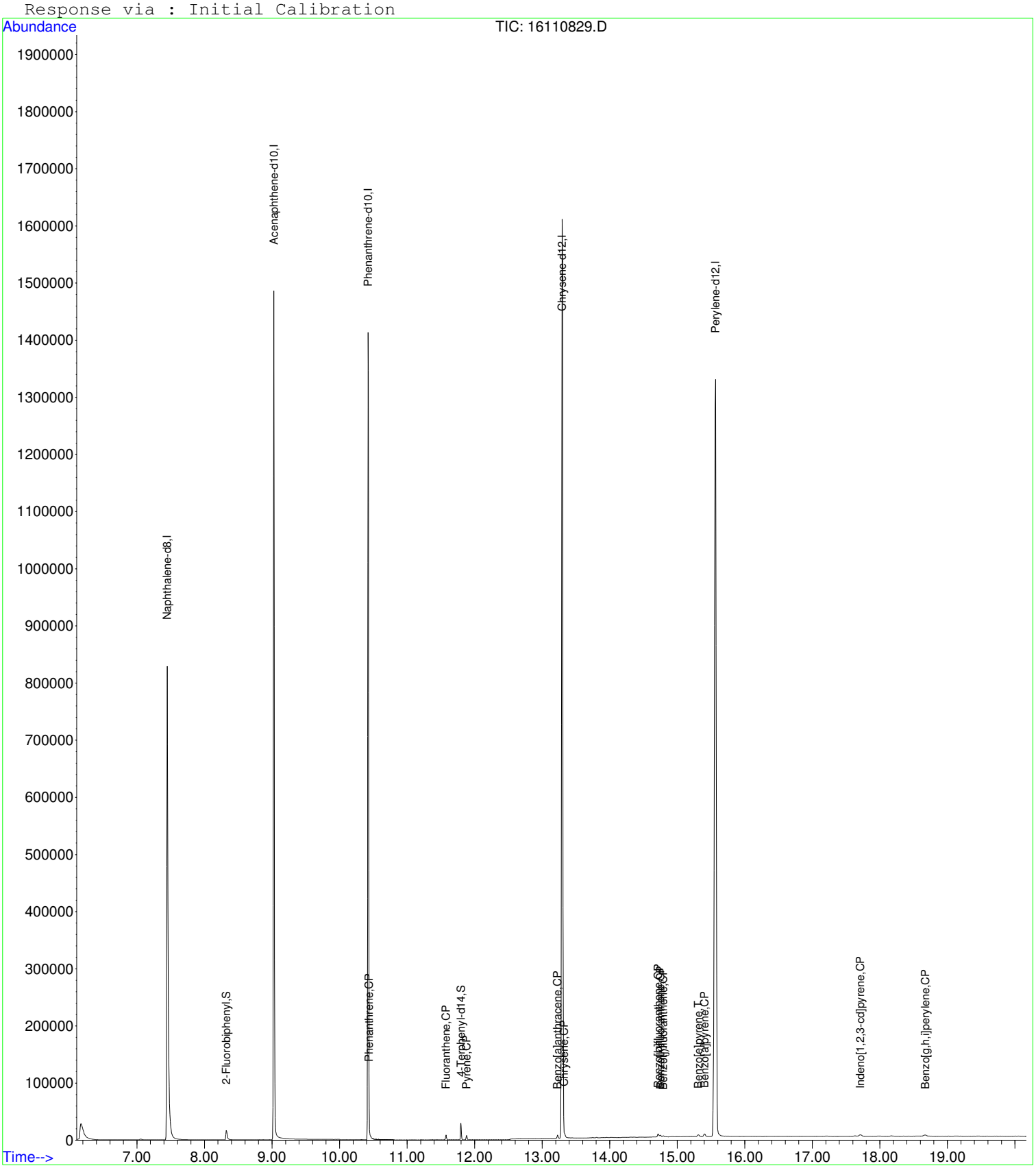
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1088610	4000.00	ug/kg	100
5) Acenaphthene-d10	9.03	164	608736	4000.00	ug/kg	96
11) Phenanthrene-d10	10.42	188	1126740	4000.00	ug/kg	94
17) Chrysene-d12	13.30	240	1493349	4000.00	ug/kg	97
20) Perylene-d12	15.57	264	1641613	4000.00	ug/kg	108
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	17781	100.01	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.50%#		
16) 4-Terphenyl-d14	11.80	244	23705	104.75	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.62%#		
Target Compounds						Qvalue
12) Phenanthrene	10.45	178	2221	10.12	ug/kg	98
14) Fluoranthene	11.58	202	6311	24.35	ug/kg	98
15) Pyrene	11.88	202	5414	20.12	ug/kg	100
18) Benzo[a]anthracene	13.23	228	4591	15.73	ug/kg	98
19) Chrysene	13.33	228	3942	14.57	ug/kg	100
21) Benzo[b]fluoranthene	14.72	252	6247	17.14	ug/kg	96
22) Benzo[k]fluoranthene	14.75	252	2915	8.68	ug/kg	90
23) Benzo(j)fluoranthene	14.80	252	2121	6.53	ug/kg	95
24) Benzo[e]pyrene	15.31	252	3638	11.17	ug/kg	93
25) Benzo[a]pyrene	15.40	252	5594	16.83	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.71	276	4777	14.16	ug/kg	96
28) Benzo[g,h,i]perylene	18.67	276	4616	12.95	ug/kg	97

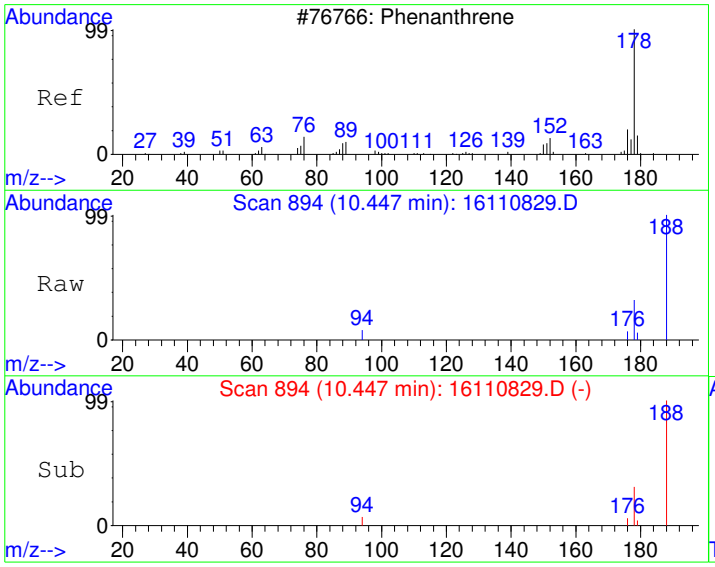
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110829.D Vial: 17
Acq On : 8 Nov 2016 9:57 pm Operator:
Sample : 1611022-14A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

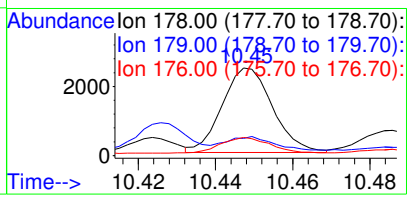


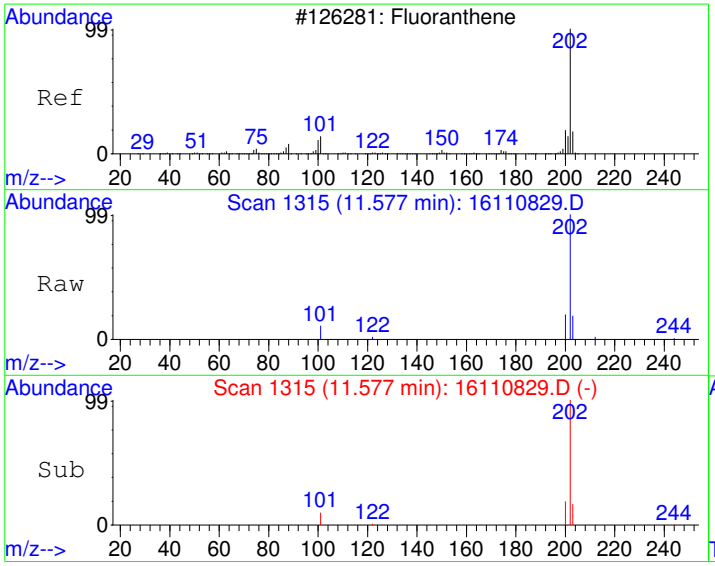


#12
Phenanthrene
Concen: 10.12 ug/kg
RT: 10.45 min Scan# 894
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:178 Resp: 2221

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	45.8
176	18.9	0.0	48.3

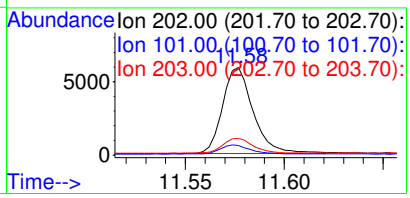


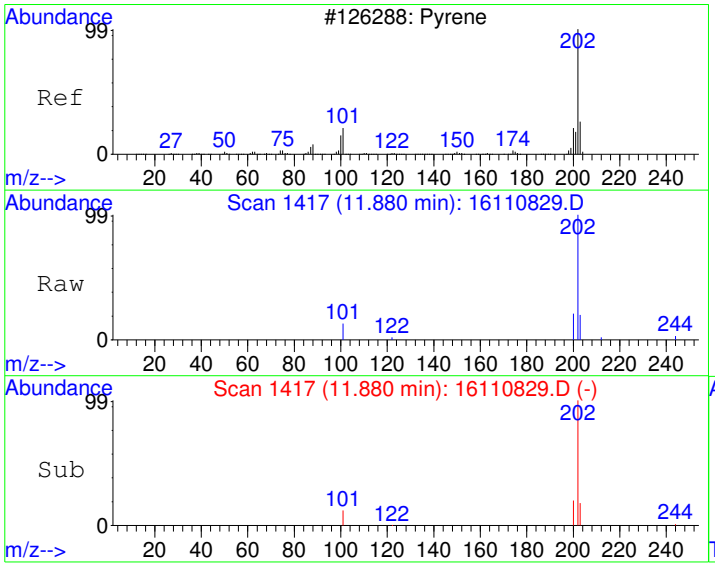


#14
Fluoranthene
Concen: 24.35 ug/kg
RT: 11.58 min Scan# 1315
Delta R.T. -0.01 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:202 Resp: 6311

Ion	Ratio	Lower	Upper
202	100		
101	9.9	0.0	40.6
203	16.7	0.0	48.0

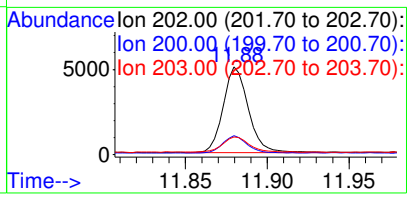


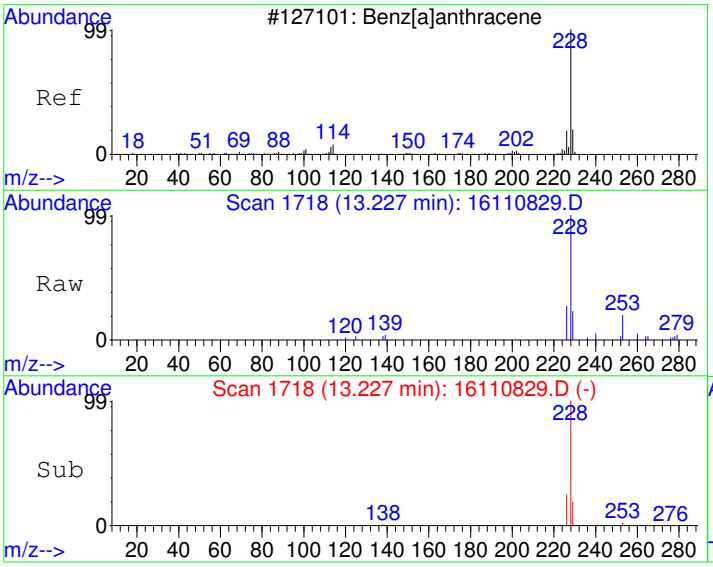


#15
Pyrene
Concen: 20.12 ug/kg
RT: 11.88 min Scan# 1417
Delta R.T. -0.01 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:202 Resp: 5414

Ion	Ratio	Lower	Upper
202	100		
200	20.0	0.0	50.1
203	17.7	0.0	47.8

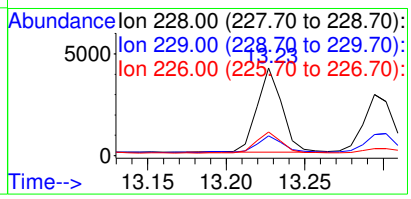


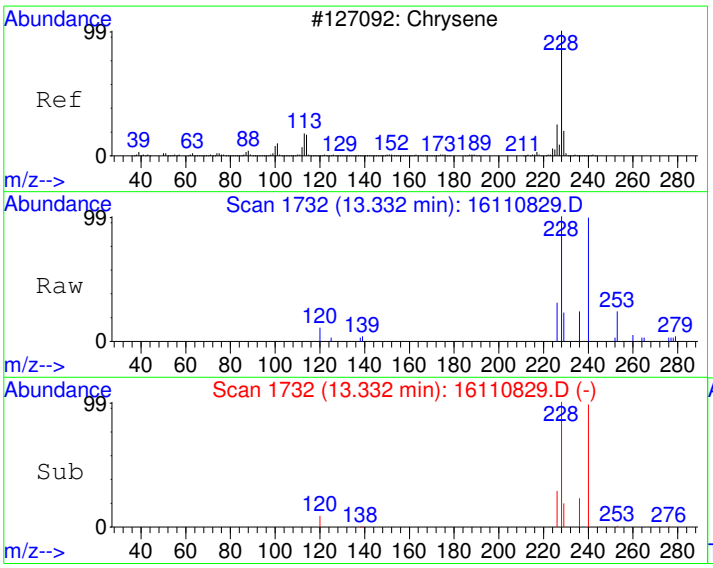


#18
Benzo[a]anthracene
Concen: 15.73 ug/kg
RT: 13.23 min Scan# 1718
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:228 Resp: 4591

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.4
226	24.9	0.0	55.6

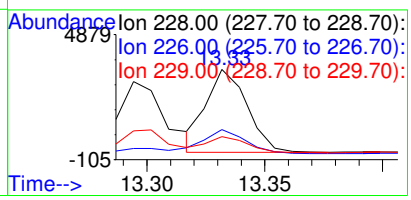


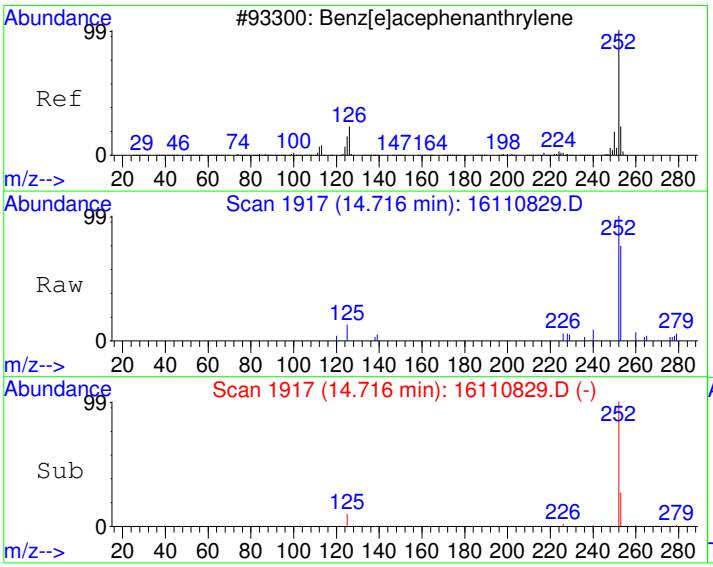


#19
Chrysene
Concen: 14.57 ug/kg
RT: 13.33 min Scan# 1732
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:228 Resp: 3942

Ion	Ratio	Lower	Upper
228	100		
226	28.8	0.0	58.8
229	19.8	0.0	50.2

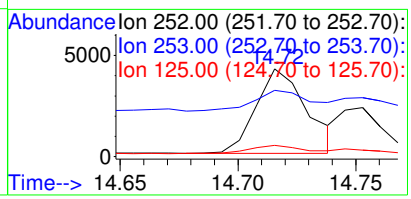


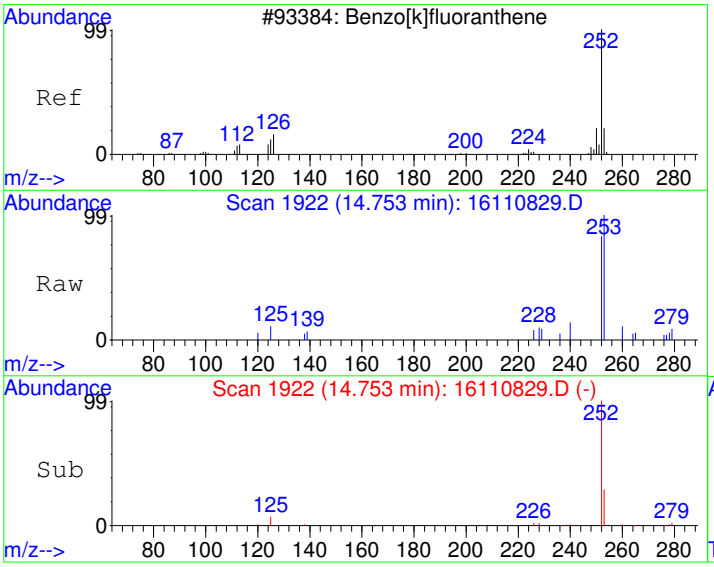


#21
Benzo[b]fluoranthene
Concen: 17.14 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:252 Resp: 6247

Ion	Ratio	Lower	Upper
252	100		
253	24.4	0.0	52.1
125	9.4	0.0	40.5

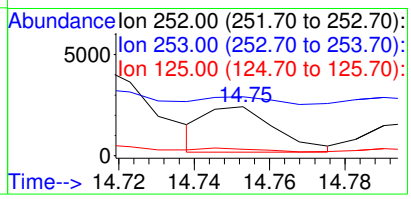


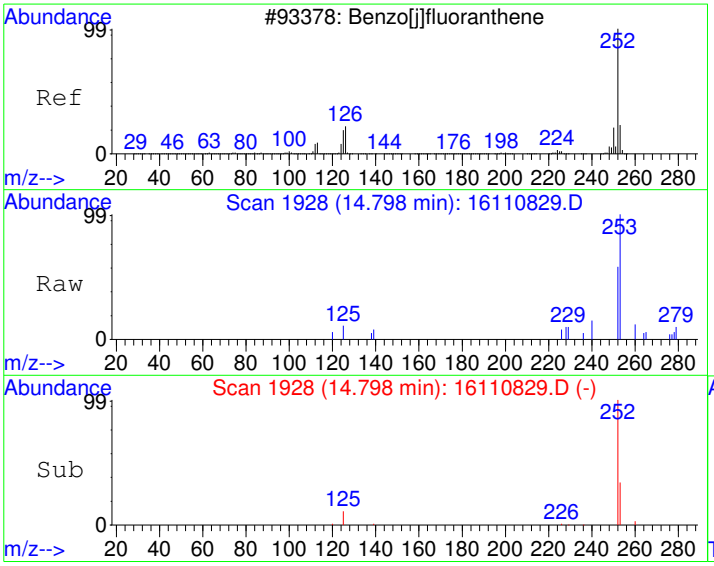


#22
Benzo[k]fluoranthene
Concen: 8.68 ug/kg
RT: 14.75 min Scan# 1922
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:252 Resp: 2915

Ion	Ratio	Lower	Upper
252	100		
253	16.9	2.4	42.4
125	5.8	0.0	28.2

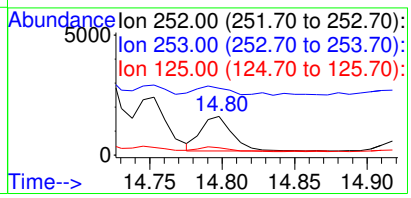


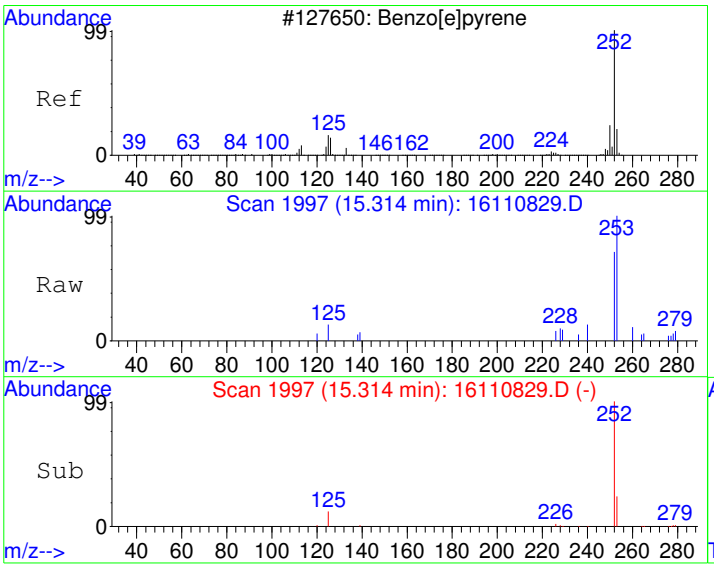


#23
Benzo(j)fluoranthene
Concen: 6.53 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:252 Resp: 2121

Ion	Ratio	Lower	Upper
252	100		
253	19.9	2.3	42.3
125	11.1	0.0	32.6

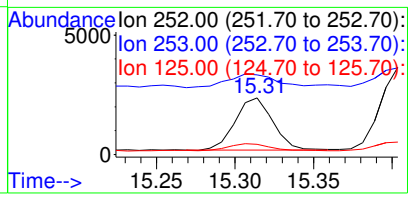


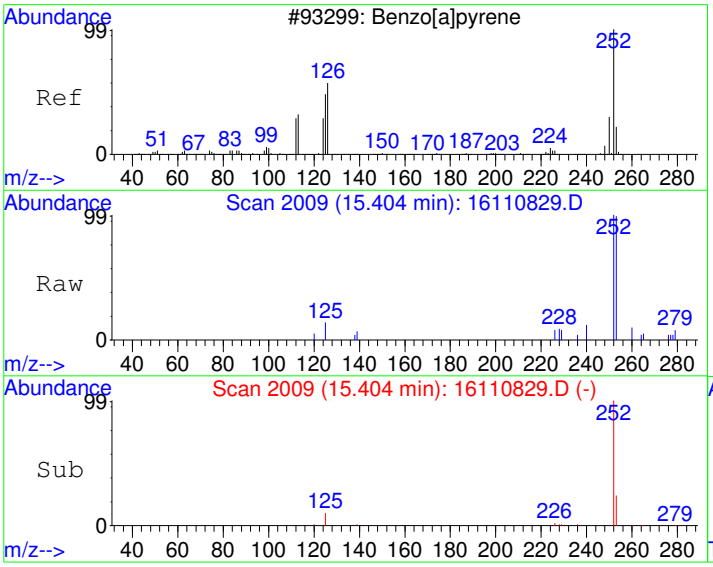


#24
Benzo[e]pyrene
Concen: 11.17 ug/kg
RT: 15.31 min Scan# 1997
Delta R.T. -0.02 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:252 Resp: 3638

Ion	Ratio	Lower	Upper
252	100		
253	24.8	1.8	41.8
125	11.9	0.0	35.7

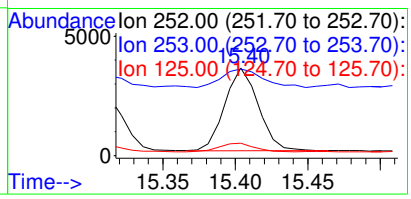


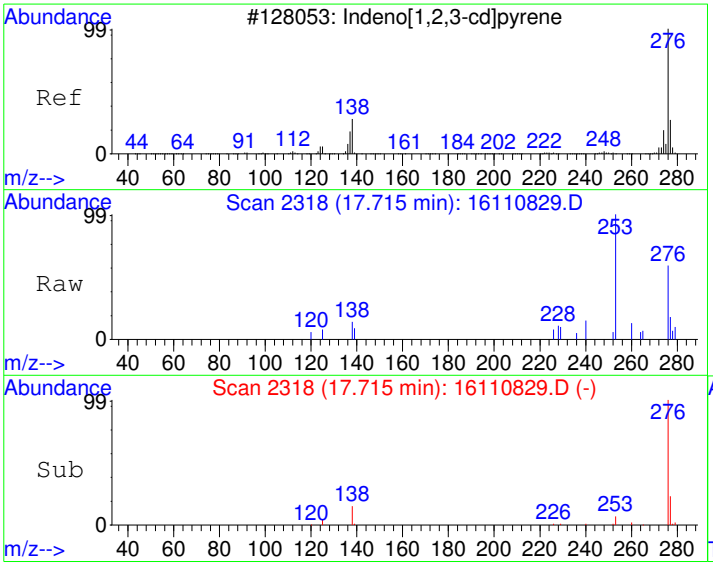


#25
Benzo[a]pyrene
Concen: 16.83 ug/kg
RT: 15.40 min Scan# 2009
Delta R.T. -0.03 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:252 Resp: 5594

Ion	Ratio	Lower	Upper
252	100		
253	21.4	2.2	42.2
125	10.4	0.0	30.8

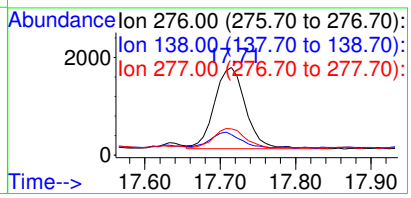


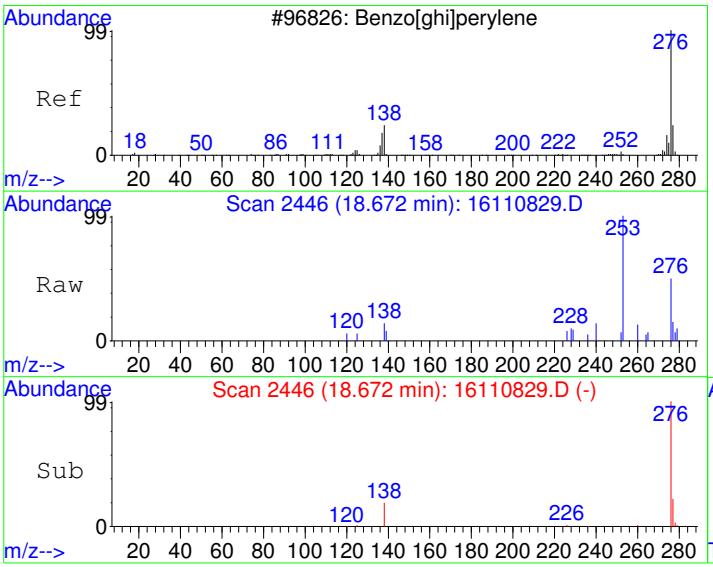


#27
Indeno[1,2,3-cd]pyrene
Concen: 14.16 ug/kg
RT: 17.71 min Scan# 2318
Delta R.T. -0.04 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:276 Resp: 4777

Ion	Ratio	Lower	Upper
276	100		
138	15.9	0.0	39.3
277	23.6	4.0	44.0

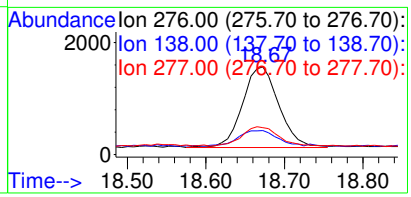




#28
Benzo[g,h,i]perylene
Concen: 12.95 ug/kg
RT: 18.67 min Scan# 2446
Delta R.T. -0.04 min
Lab File: 16110829.D
Acq: 8 Nov 2016 9:57 pm

Tgt Ion:276 Resp: 4616

Ion	Ratio	Lower	Upper
276	100		
138	19.0	0.8	40.8
277	22.6	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110830.D Vial: 18
Acq On : 8 Nov 2016 10:25 pm Operator:
Sample : 1611022-15A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

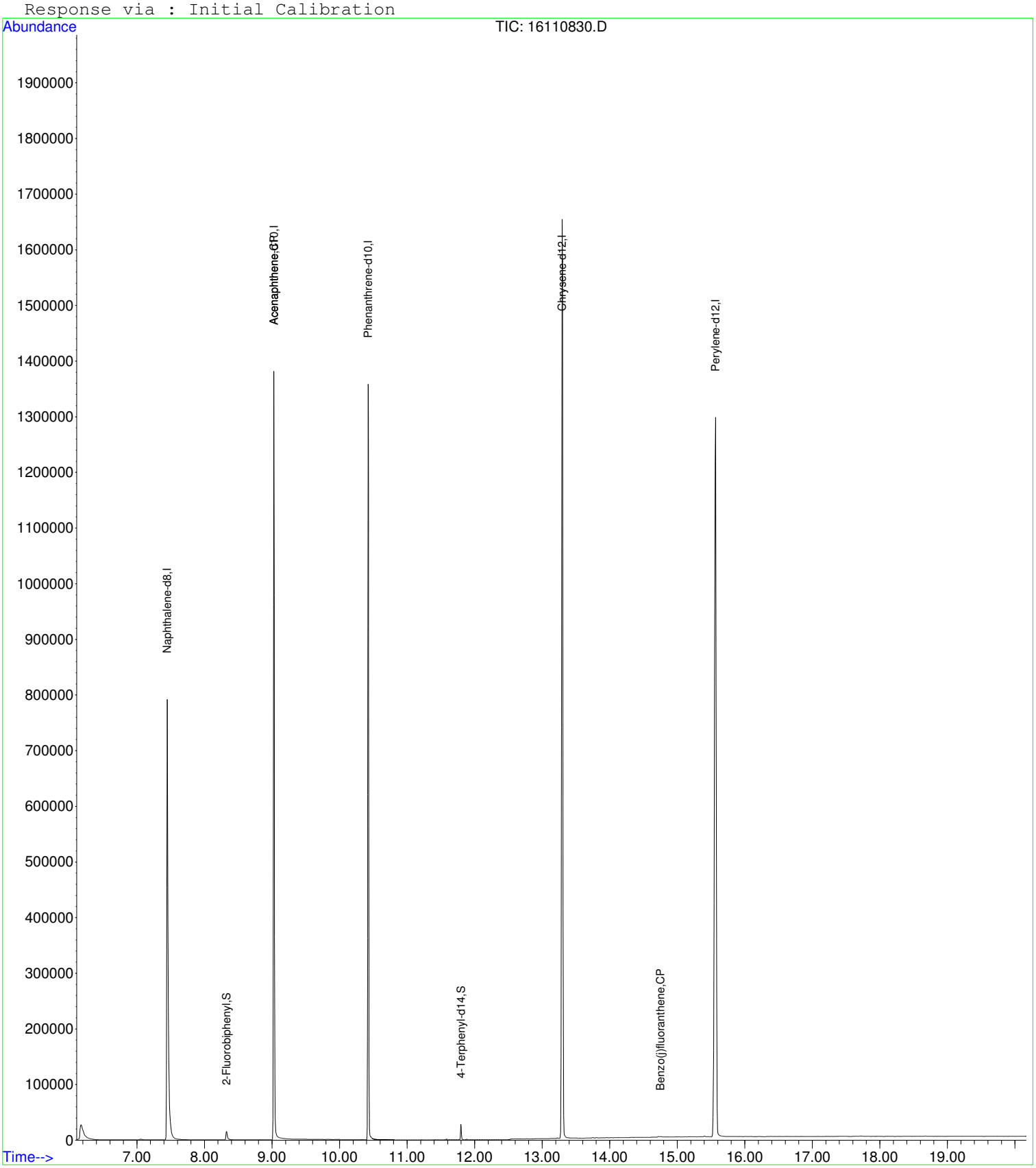
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1050622	4000.00	ug/kg	96
5) Acenaphthene-d10	9.03	164	566650	4000.00	ug/kg	89
11) Phenanthrene-d10	10.43	188	1119428	4000.00	ug/kg	93
17) Chrysene-d12	13.29	240	1523210	4000.00	ug/kg	99
20) Perylene-d12	15.57	264	1548780	4000.00	ug/kg	102
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17264	104.32	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.61%#		
16) 4-Terphenyl-d14	11.80	244	23532	104.67	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.62%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1899	15.85	ug/kg#	10
23) Benzo(j)fluoranthene	14.75	252	912	2.97	ug/kg	76

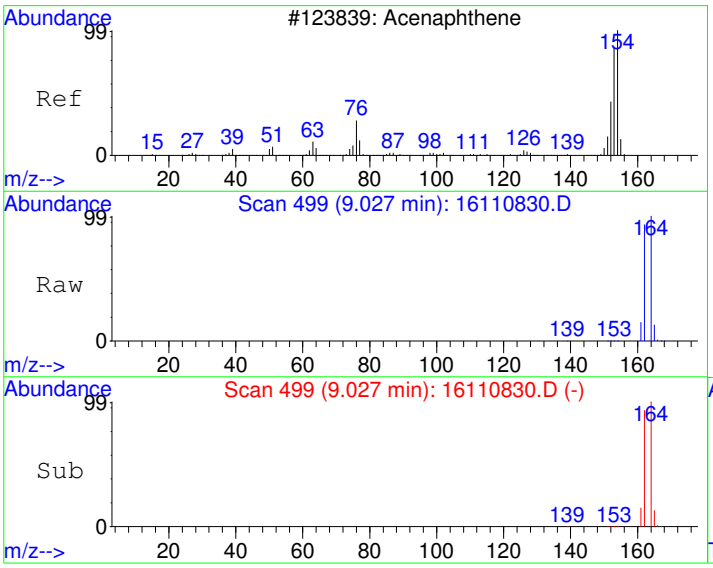
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110830.D Vial: 18
Acq On : 8 Nov 2016 10:25 pm Operator:
Sample : 1611022-15A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

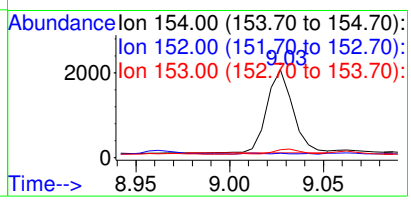


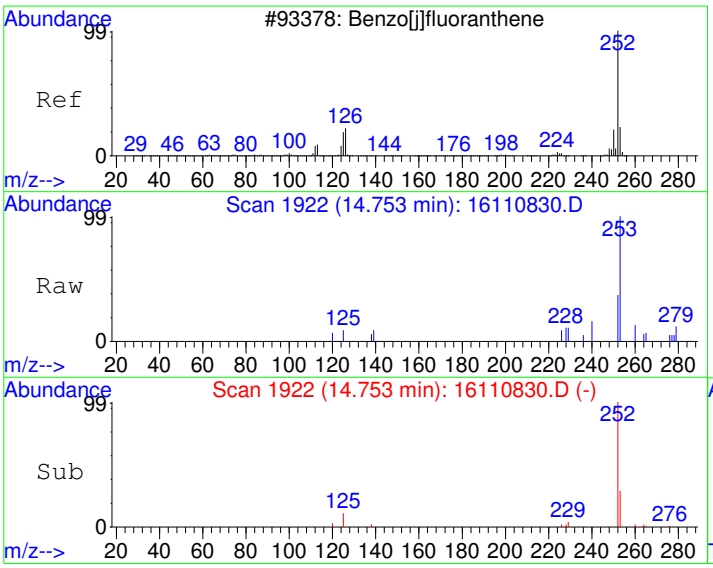


#9
Acenaphthene
Concen: 15.85 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110830.D
Acq: 8 Nov 2016 10:25 pm

Tgt Ion:154 Resp: 1899

Ion	Ratio	Lower	Upper
154	100		
152	0.4	19.8	79.8#
153	5.0	77.1	137.1#

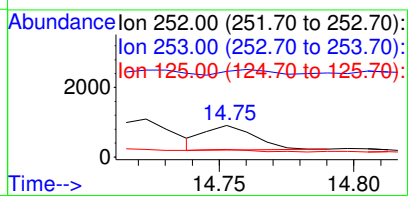




#23
Benzo(j)fluoranthene
Concen: 2.97 ug/kg
RT: 14.75 min Scan# 1922
Delta R.T. -0.07 min
Lab File: 16110830.D
Acq: 8 Nov 2016 10:25 pm

Tgt Ion:252 Resp: 912

Ion	Ratio	Lower	Upper
252	100		
253	7.3	2.3	42.3
125	8.5	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110831.D Vial: 19
Acq On : 8 Nov 2016 10:53 pm Operator:
Sample : 1611022-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

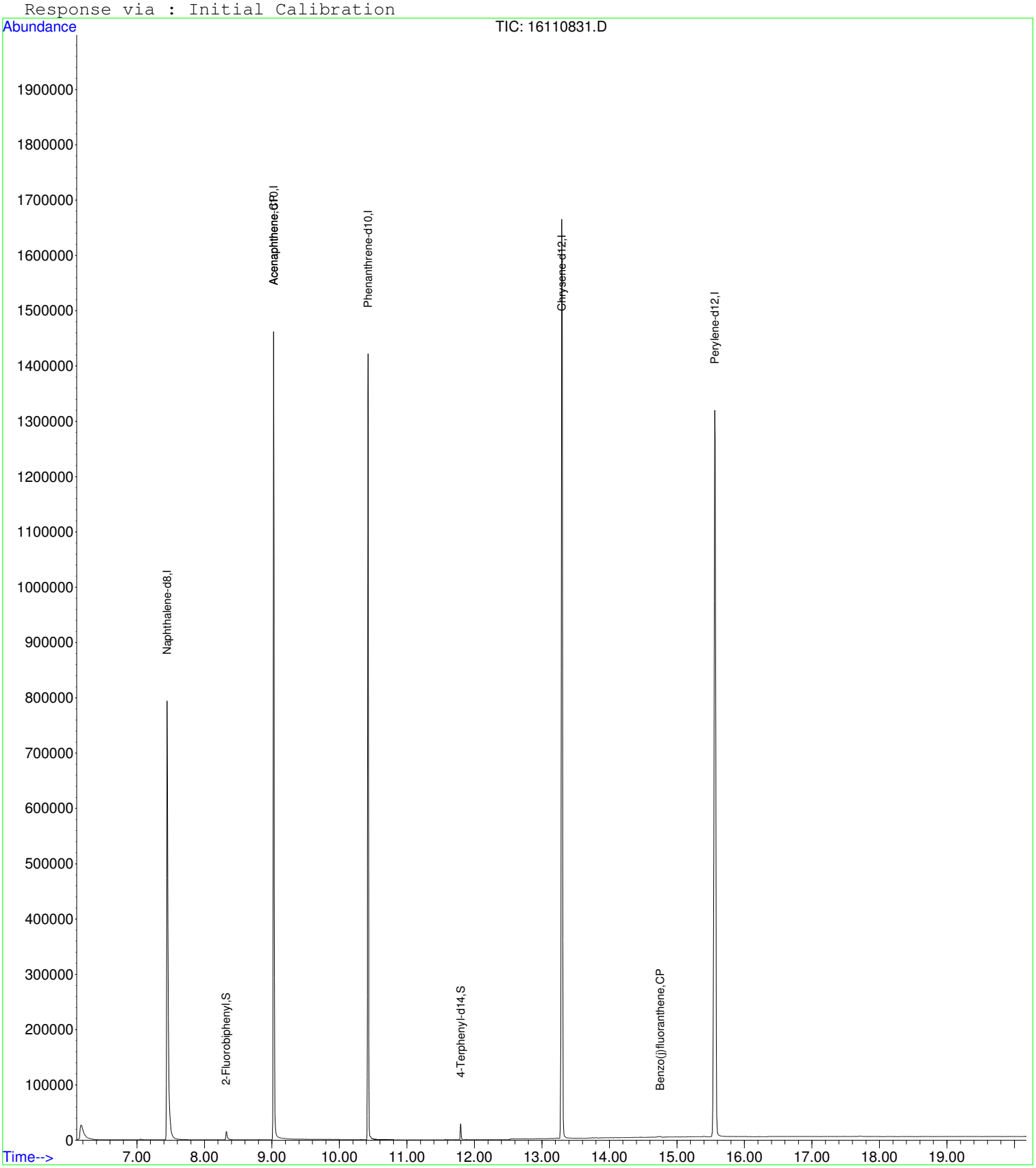
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1049614	4000.00	ug/kg	96
5) Acenaphthene-d10	9.03	164	611228	4000.00	ug/kg	96
11) Phenanthrene-d10	10.42	188	1100140	4000.00	ug/kg	92
17) Chrysene-d12	13.29	240	1519668	4000.00	ug/kg	99
20) Perylene-d12	15.56	264	1616647	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	17107	95.83	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.40%#		
16) 4-Terphenyl-d14	11.80	244	23406	105.93	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.65%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	2080	16.10	ug/kg#	10
23) Benzo(j)fluoranthene	14.75	252	980	3.06	ug/kg	90

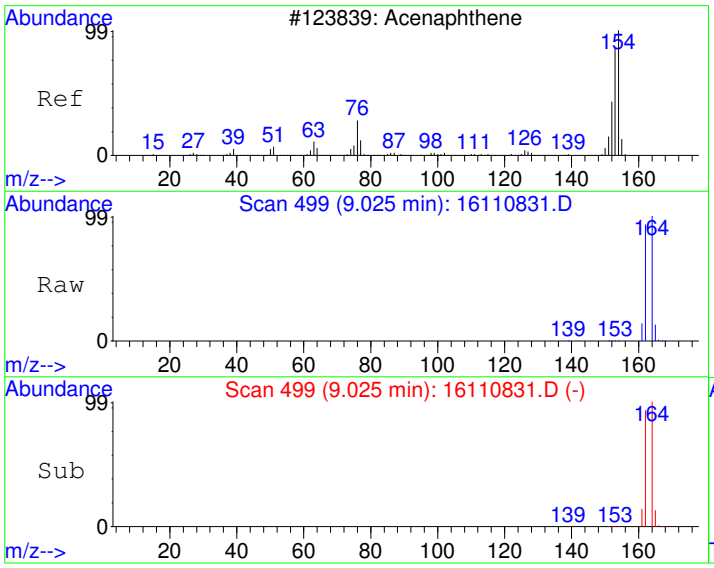
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110831.D Vial: 19
Acq On : 8 Nov 2016 10:53 pm Operator:
Sample : 1611022-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

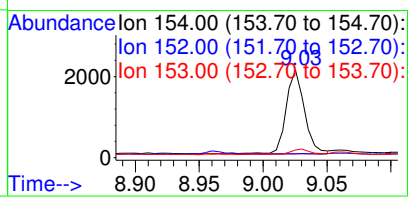


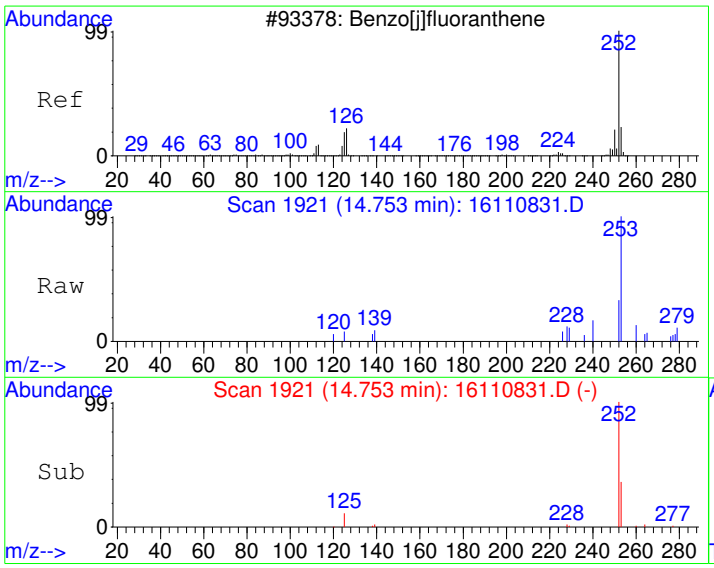


#9
Acenaphthene
Concen: 16.10 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.05 min
Lab File: 16110831.D
Acq: 8 Nov 2016 10:53 pm

Tgt Ion:154 Resp: 2080

Ion	Ratio	Lower	Upper
154	100		
152	0.2	19.8	79.8#
153	5.4	77.1	137.1#

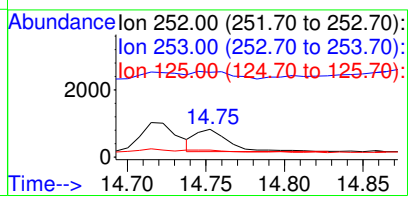




#23
Benzo(j)fluoranthene
Concen: 3.06 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.07 min
Lab File: 16110831.D
Acq: 8 Nov 2016 10:53 pm

Tgt Ion:252 Resp: 980

Ion	Ratio	Lower	Upper
252	100		
253	15.9	2.3	42.3
125	11.1	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110832.D Vial: 20
Acq On : 8 Nov 2016 11:21 pm Operator:
Sample : 1611022-17A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

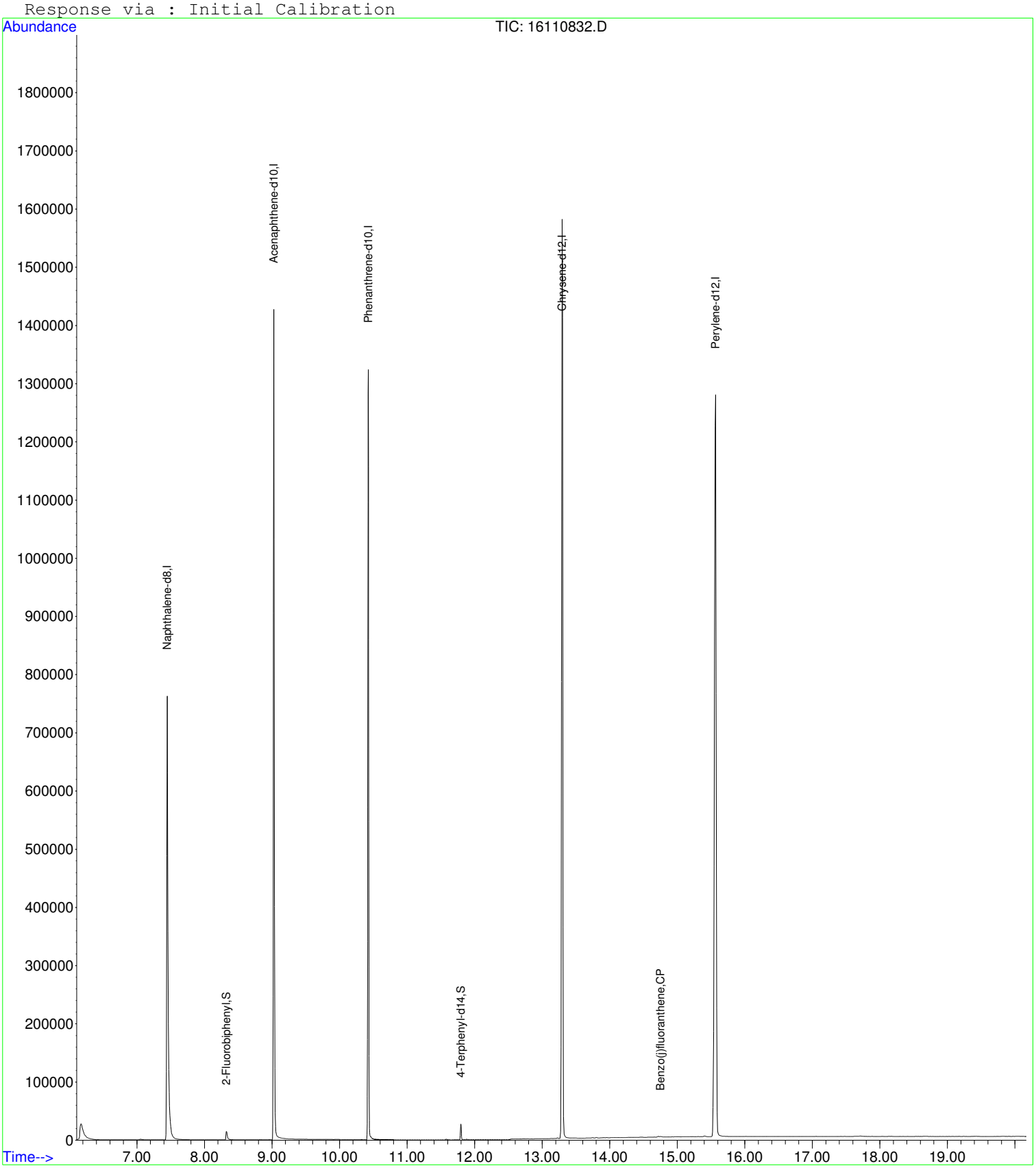
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1011723	4000.00	ug/kg	93
5) Acenaphthene-d10	9.03	164	573729	4000.00	ug/kg	91
11) Phenanthrene-d10	10.43	188	1068824	4000.00	ug/kg	89
17) Chrysene-d12	13.29	240	1453333	4000.00	ug/kg	94
20) Perylene-d12	15.57	264	1549688	4000.00	ug/kg	102
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	16402	97.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.45%#			
16) 4-Terphenyl-d14	11.80	244	22414	104.41	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.61%#			
Target Compounds						Qvalue
23) Benzo(j)fluoranthene	14.75	252	883	2.88	ug/kg	90

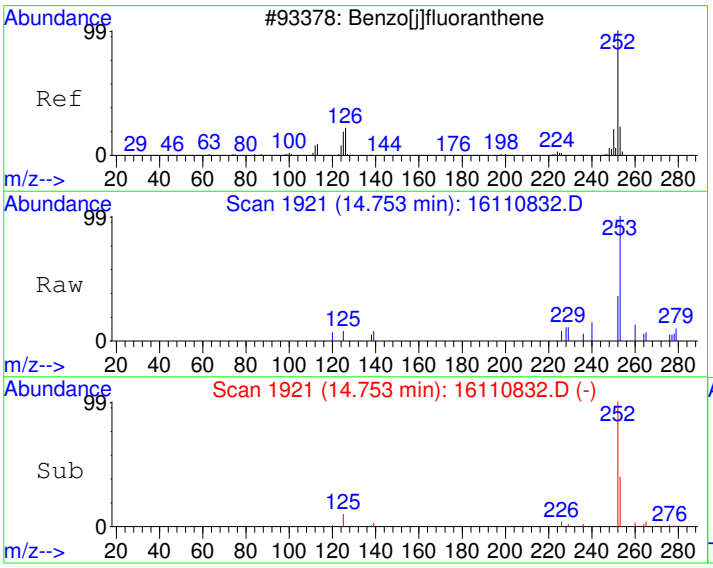
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110832.D Vial: 20
Acq On : 8 Nov 2016 11:21 pm Operator:
Sample : 1611022-17A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

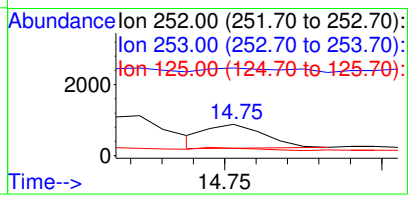




#23
Benzo(j)fluoranthene
Concen: 2.88 ug/kg
RT: 14.75 min Scan# 1921
Delta R.T. -0.07 min
Lab File: 16110832.D
Acq: 8 Nov 2016 11:21 pm

Tgt Ion:252 Resp: 883

Ion	Ratio	Lower	Upper
252	100		
253	18.5	2.3	42.3
125	6.9	0.0	32.6



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110833.D Vial: 21
Acq On : 8 Nov 2016 11:49 pm Operator:
Sample : 1611022-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

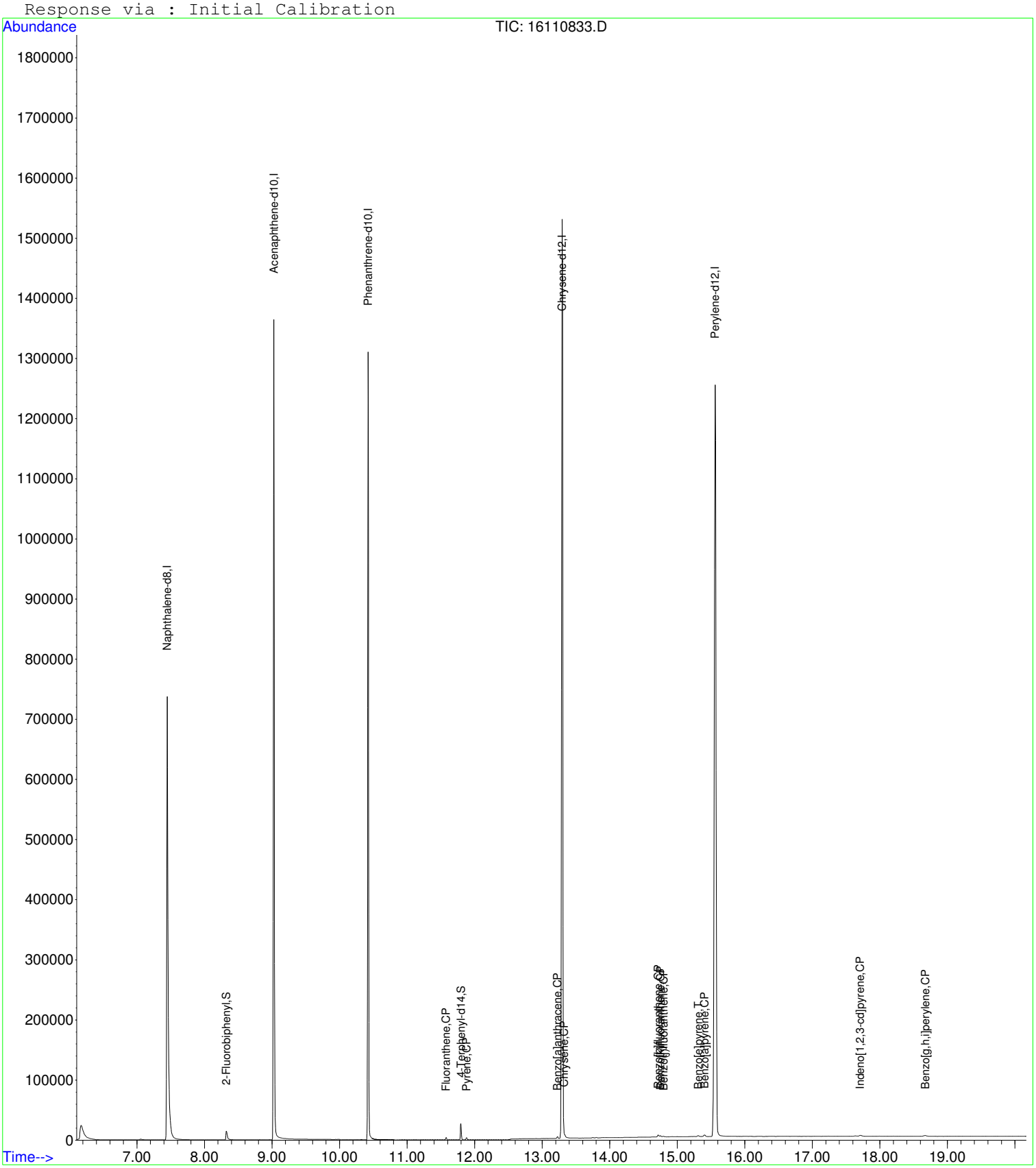
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	990459	4000.00	ug/kg	91
5) Acenaphthene-d10	9.03	164	559859	4000.00	ug/kg	88
11) Phenanthrene-d10	10.42	188	1044878	4000.00	ug/kg	87
17) Chrysene-d12	13.29	240	1422081	4000.00	ug/kg	92
20) Perylene-d12	15.56	264	1532738	4000.00	ug/kg	101
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	16558	101.27	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.53%#			
16) 4-Terphenyl-d14	11.80	244	22874	109.00	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.73%#			
Target Compounds						Qvalue
14) Fluoranthene	11.58	202	3031	12.61	ug/kg	99
15) Pyrene	11.88	202	2799	11.22	ug/kg	99
18) Benzo[a]anthracene	13.23	228	2506	9.01	ug/kg	98
19) Chrysene	13.33	228	2215	8.60	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	3883	11.41	ug/kg	94
22) Benzo[k]fluoranthene	14.75	252	1938	6.18	ug/kg	97
23) Benzo(j)fluoranthene	14.80	252	1195	3.94	ug/kg	91
24) Benzo[e]pyrene	15.31	252	2018	6.64	ug/kg	86
25) Benzo[a]pyrene	15.40	252	3431	11.06	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.71	276	3019	9.59	ug/kg	98
28) Benzo[g,h,i]perylene	18.67	276	2733	8.21	ug/kg	99

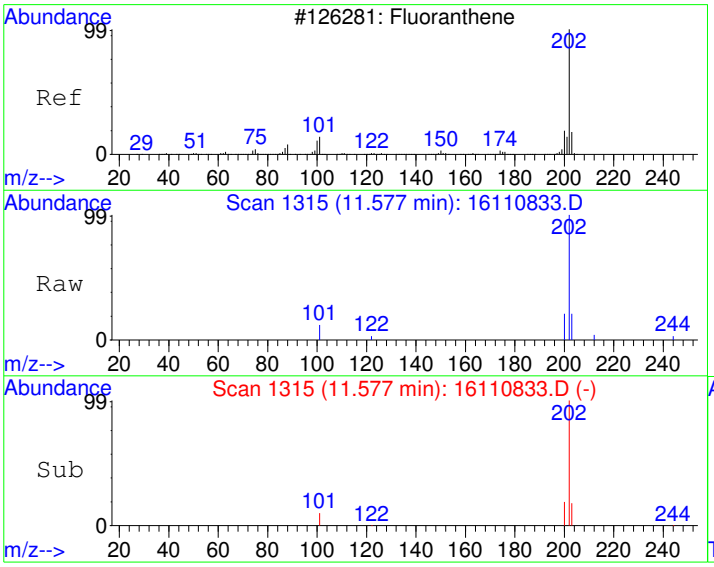
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110833.D Vial: 21
Acq On : 8 Nov 2016 11:49 pm Operator:
Sample : 1611022-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

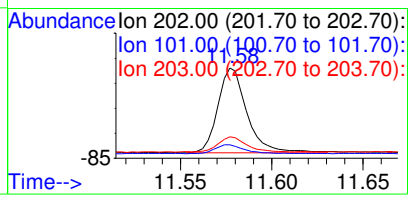


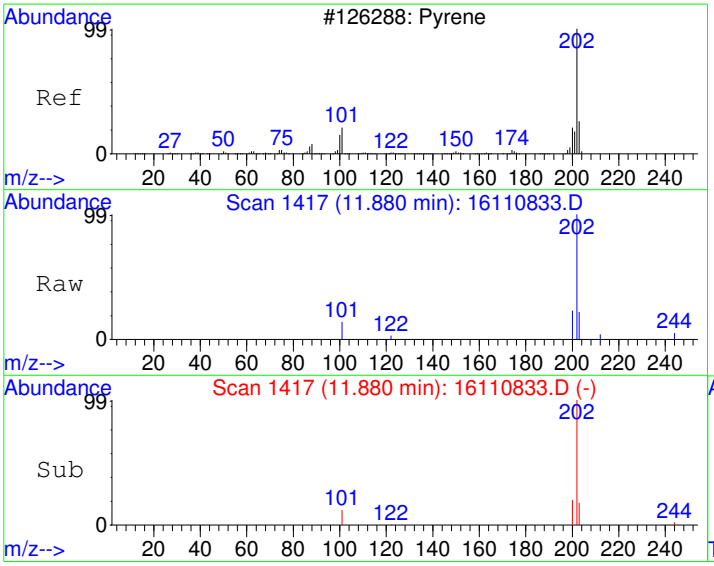


#14
Fluoranthene
Concen: 12.61 ug/kg
RT: 11.58 min Scan# 1315
Delta R.T. -0.01 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:202 Resp: 3031

Ion	Ratio	Lower	Upper
202	100		
101	10.5	0.0	40.6
203	17.6	0.0	48.0

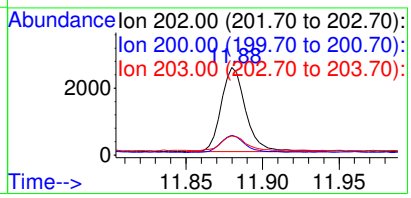


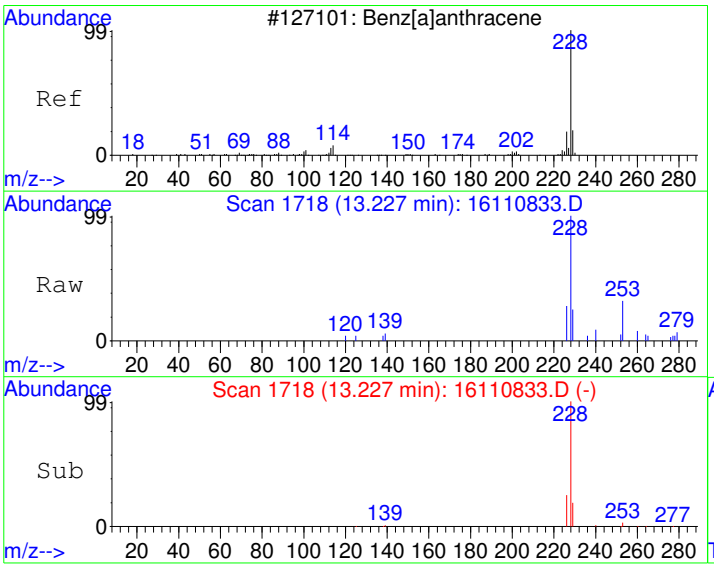


#15
Pyrene
Concen: 11.22 ug/kg
RT: 11.88 min Scan# 1417
Delta R.T. -0.01 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:202 Resp: 2799

Ion	Ratio	Lower	Upper
202	100		
200	20.6	0.0	50.1
203	17.8	0.0	47.8

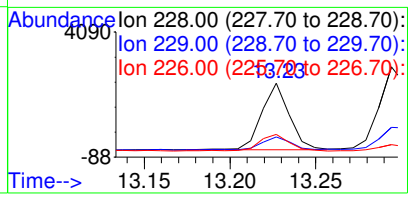


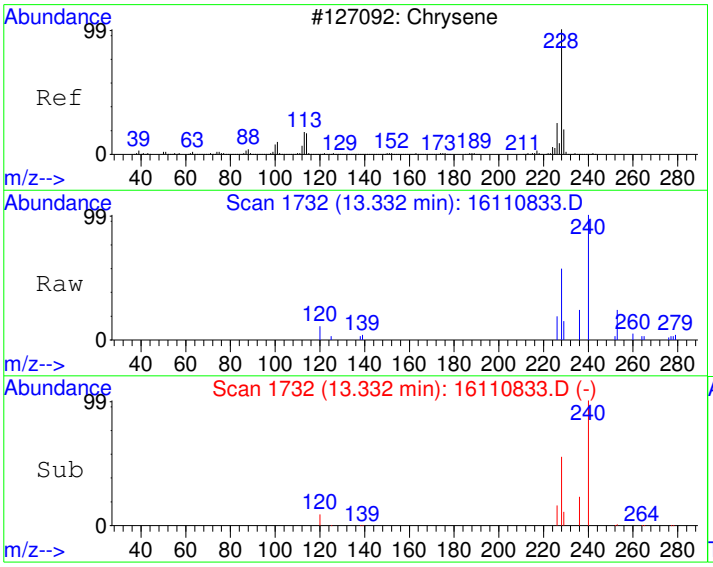


#18
Benzo[a]anthracene
Concen: 9.01 ug/kg
RT: 13.23 min Scan# 1718
Delta R.T. -0.02 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:228 Resp: 2506

Ion	Ratio	Lower	Upper
228	100		
229	19.2	0.0	50.4
226	24.9	0.0	55.6

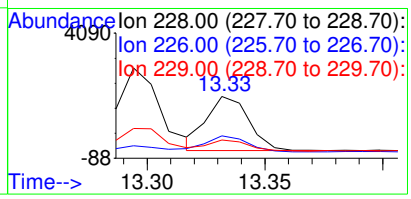


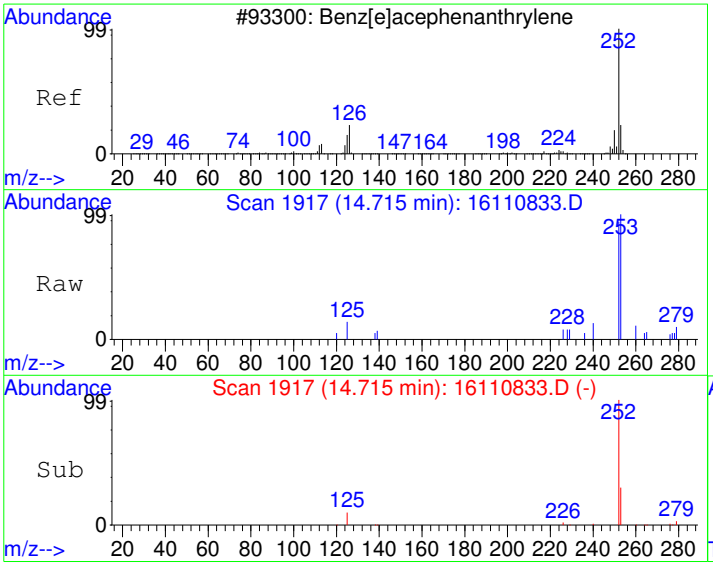


#19
Chrysene
Concen: 8.60 ug/kg
RT: 13.33 min Scan# 1732
Delta R.T. -0.02 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:228 Resp: 2215

Ion	Ratio	Lower	Upper
228	100		
226	29.4	0.0	58.8
229	19.5	0.0	50.2

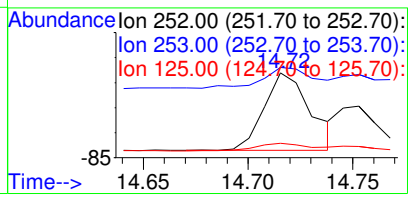


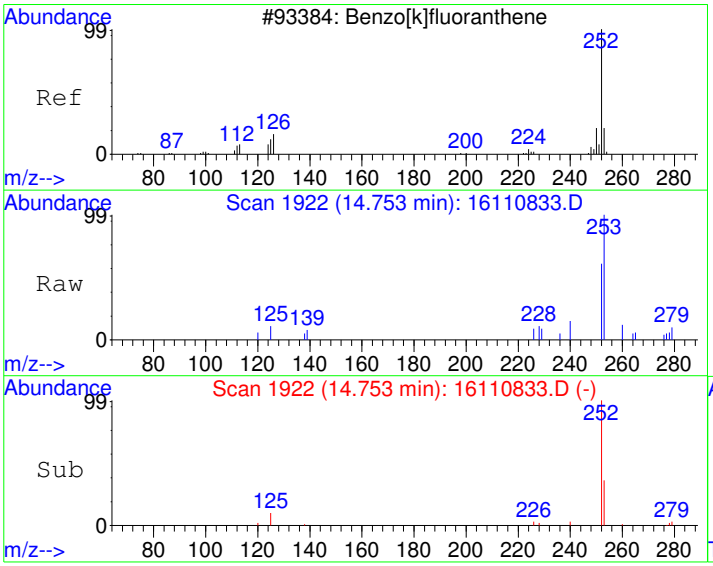


#21
Benzo[b]fluoranthene
Concen: 11.41 ug/kg
RT: 14.72 min Scan# 1917
Delta R.T. -0.02 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:252 Resp: 3883

Ion	Ratio	Lower	Upper
252	100		
253	26.1	0.0	52.1
125	9.8	0.0	40.5

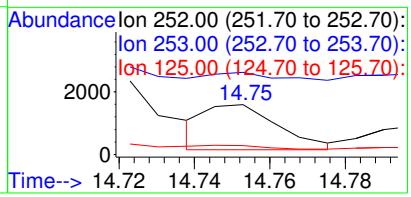


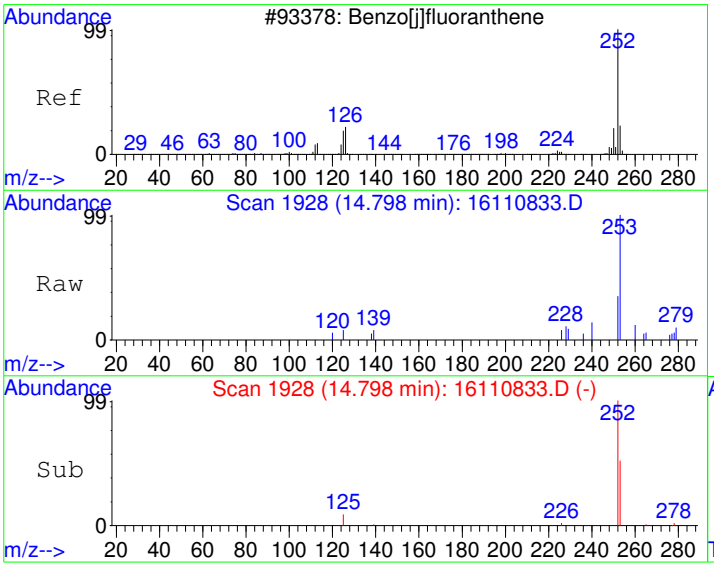


#22
Benzo[k]fluoranthene
Concen: 6.18 ug/kg
RT: 14.75 min Scan# 1922
Delta R.T. -0.02 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:252 Resp: 1938

Ion	Ratio	Lower	Upper
252	100		
253	20.9	2.4	42.4
125	9.0	0.0	28.2

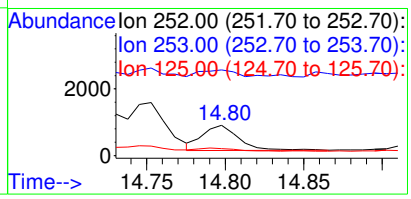


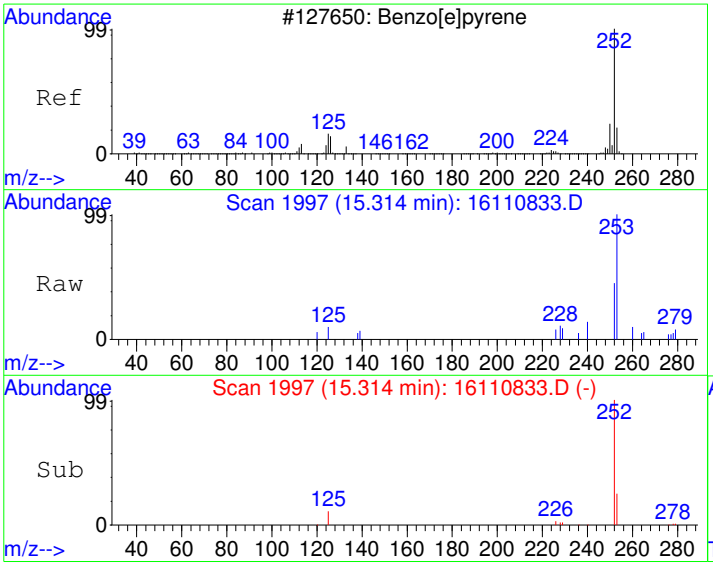


#23
Benzo(j)fluoranthene
Concen: 3.94 ug/kg
RT: 14.80 min Scan# 1928
Delta R.T. -0.02 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:252 Resp: 1195

Ion	Ratio	Lower	Upper
252	100		
253	27.3	2.3	42.3
125	10.1	0.0	32.6

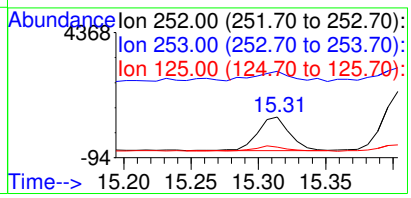


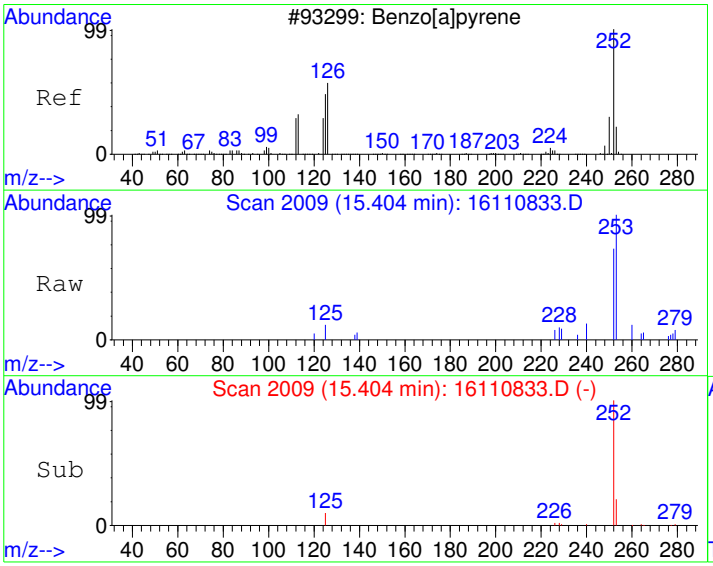


#24
Benzo[e]pyrene
Concen: 6.64 ug/kg
RT: 15.31 min Scan# 1997
Delta R.T. -0.02 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:252 Resp: 2018

Ion	Ratio	Lower	Upper
252	100		
253	29.6	1.8	41.8
125	11.5	0.0	35.7

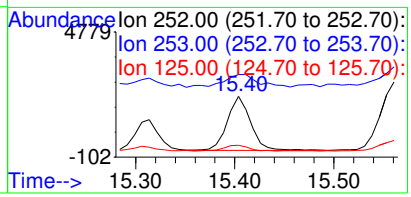


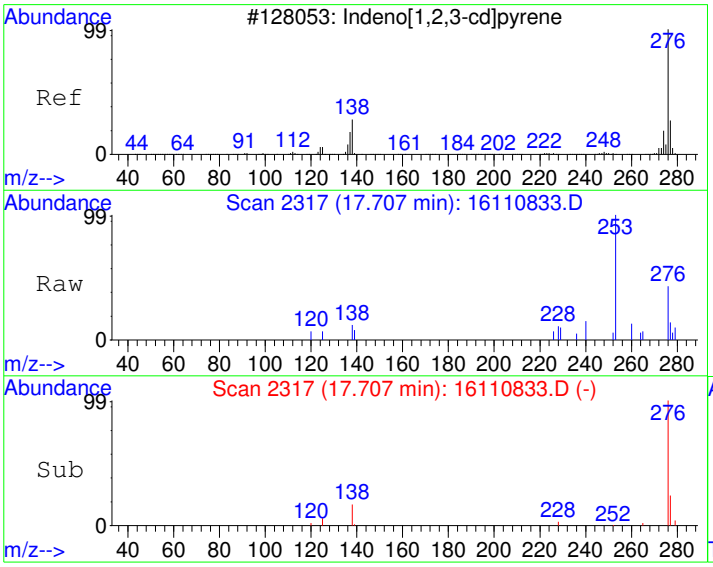


#25
Benzo[a]pyrene
Concen: 11.06 ug/kg
RT: 15.40 min Scan# 2009
Delta R.T. -0.03 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:252 Resp: 3431

Ion	Ratio	Lower	Upper
252	100		
253	23.5	2.2	42.2
125	10.0	0.0	30.8

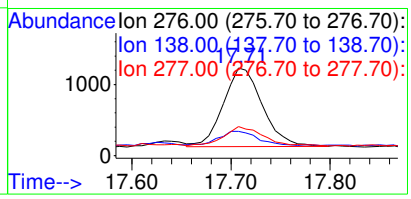


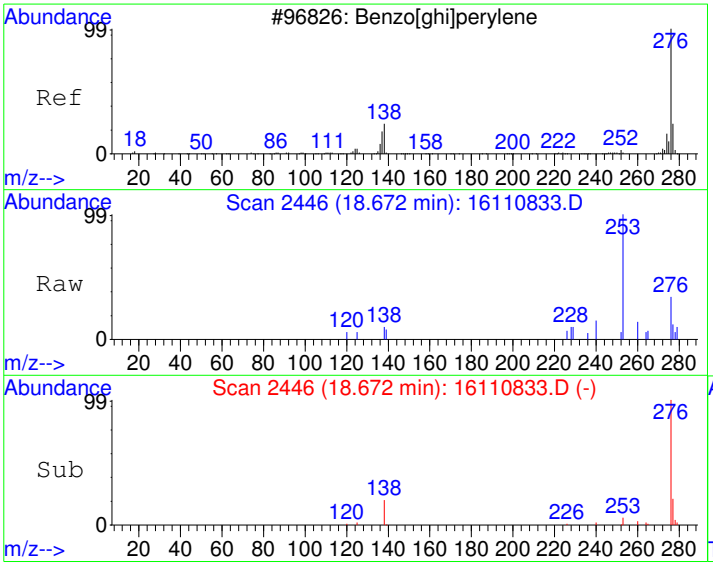


#27
Indeno[1,2,3-cd]pyrene
Concen: 9.59 ug/kg
RT: 17.71 min Scan# 2317
Delta R.T. -0.04 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:276 Resp: 3019

Ion	Ratio	Lower	Upper
276	100		
138	17.7	0.0	39.3
277	24.7	4.0	44.0

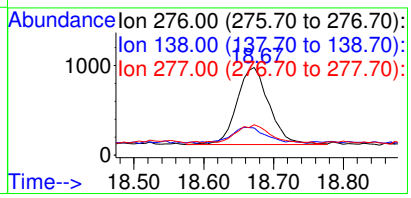




#28
Benzo[g,h,i]perylene
Concen: 8.21 ug/kg
RT: 18.67 min Scan# 2446
Delta R.T. -0.04 min
Lab File: 16110833.D
Acq: 8 Nov 2016 11:49 pm

Tgt Ion:276 Resp: 2733

Ion	Ratio	Lower	Upper
276	100		
138	19.3	0.8	40.8
277	24.0	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110834.D Vial: 22
Acq On : 9 Nov 2016 12:17 am Operator:
Sample : 1611022-19A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

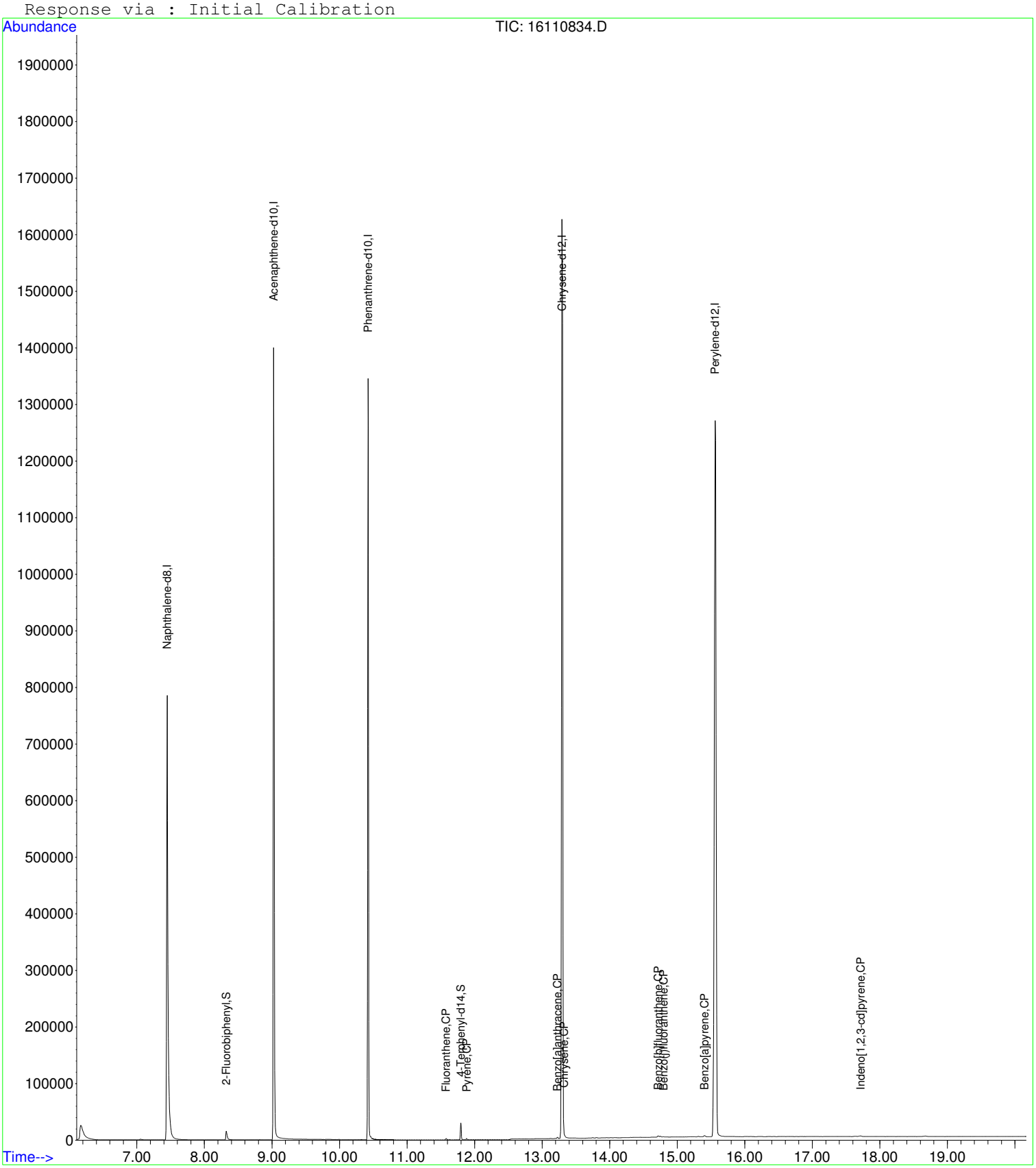
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1019803	4000.00	ug/kg	93
5) Acenaphthene-d10	9.03	164	572328	4000.00	ug/kg	90
11) Phenanthrene-d10	10.42	188	1095800	4000.00	ug/kg	91
17) Chrysene-d12	13.29	240	1466618	4000.00	ug/kg	95
20) Perylene-d12	15.56	264	1572406	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	16502	98.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.47%#			
16) 4-Terphenyl-d14	11.80	244	24514	111.38	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.78%#			
Target Compounds						Qvalue
14) Fluoranthene	11.58	202	2033	8.07	ug/kg	98
15) Pyrene	11.88	202	1837	7.02	ug/kg	99
18) Benzo[a]anthracene	13.23	228	1921	6.70	ug/kg	99
19) Chrysene	13.33	228	1469	5.53	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	2738	7.84	ug/kg	99
23) Benzo(j)fluoranthene	14.80	252	627	2.01	ug/kg	85
25) Benzo[a]pyrene	15.40	252	2310	7.26	ug/kg	95
27) Indeno[1,2,3-cd]pyrene	17.72	276	1942	6.01	ug/kg	99

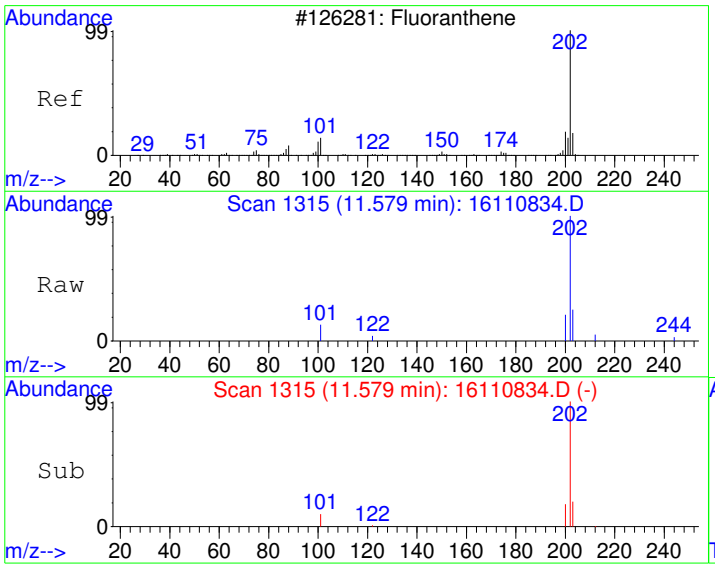
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110834.D Vial: 22
Acq On : 9 Nov 2016 12:17 am Operator:
Sample : 1611022-19A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:22 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

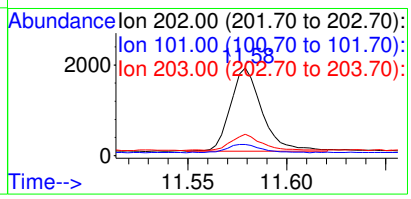


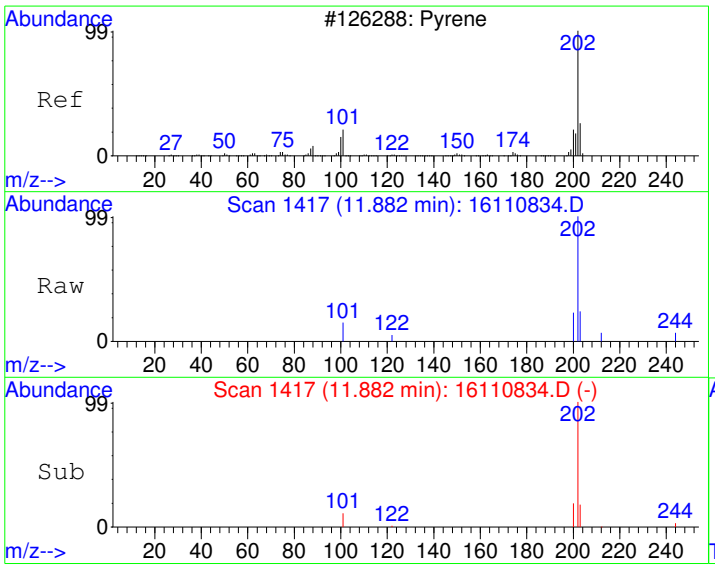


#14
Fluoranthene
Concen: 8.07 ug/kg
RT: 11.58 min Scan# 1315
Delta R.T. -0.01 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:202 Resp: 2033

Ion	Ratio	Lower	Upper
202	100		
101	10.3	0.0	40.6
203	19.4	0.0	48.0

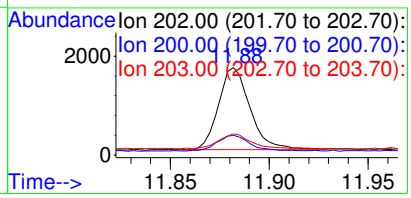


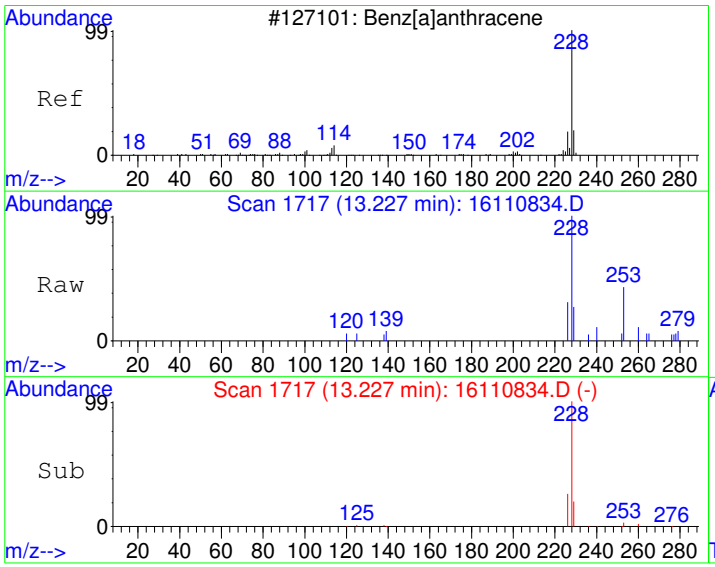


#15
Pyrene
Concen: 7.02 ug/kg
RT: 11.88 min Scan# 1417
Delta R.T. -0.01 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:202 Resp: 1837

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	17.6	0.0	47.8

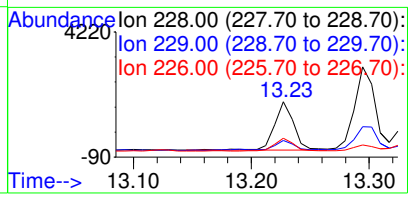


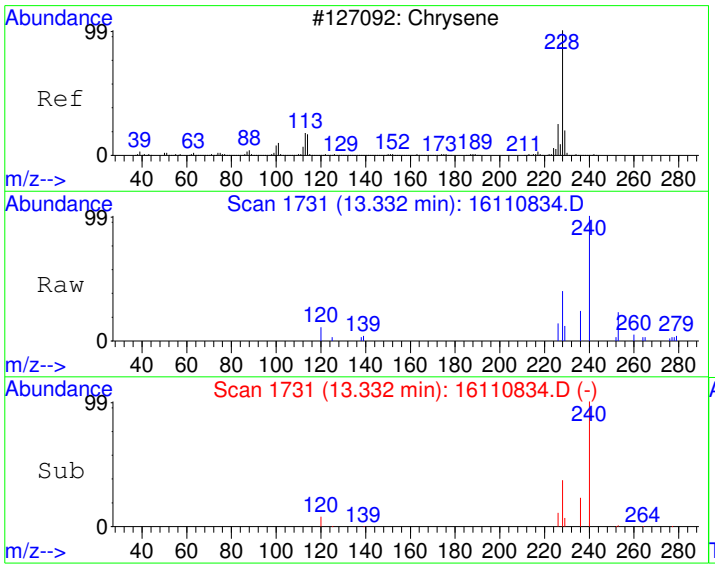


#18
Benzo[a]anthracene
Concen: 6.70 ug/kg
RT: 13.23 min Scan# 1717
Delta R.T. -0.02 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:228 Resp: 1921

Ion	Ratio	Lower	Upper
228	100		
229	20.3	0.0	50.4
226	26.3	0.0	55.6

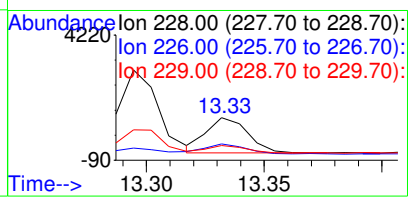


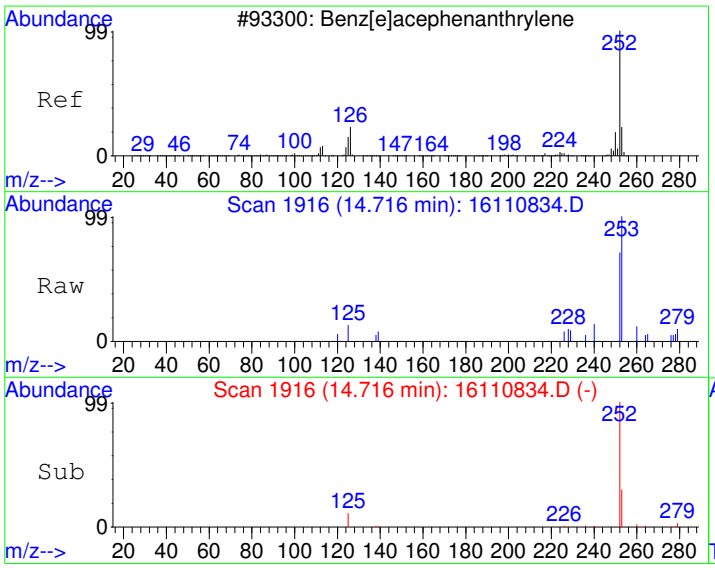


#19
Chrysene
Concen: 5.53 ug/kg
RT: 13.33 min Scan# 1731
Delta R.T. -0.02 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:228 Resp: 1469

Ion	Ratio	Lower	Upper
228	100		
226	28.2	0.0	58.8
229	21.0	0.0	50.2

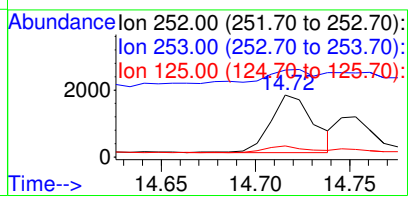


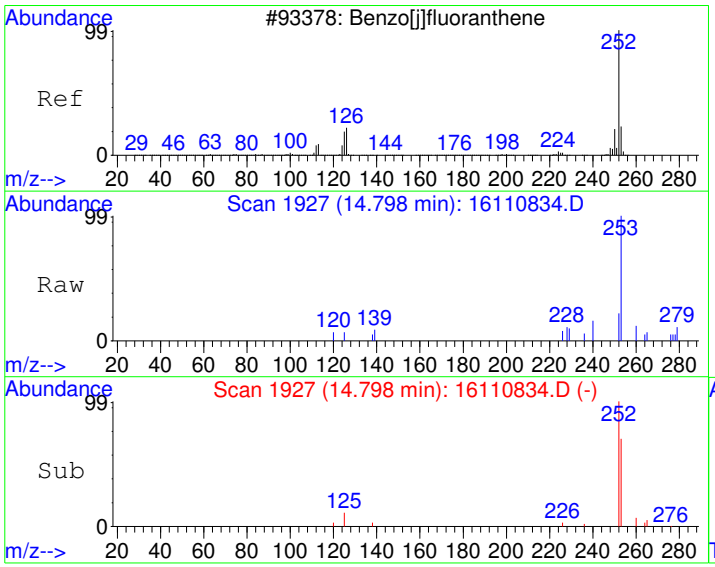


#21
Benzo[b]fluoranthene
Concen: 7.84 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.02 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:252 Resp: 2738

Ion	Ratio	Lower	Upper
252	100		
253	22.8	0.0	52.1
125	10.9	0.0	40.5

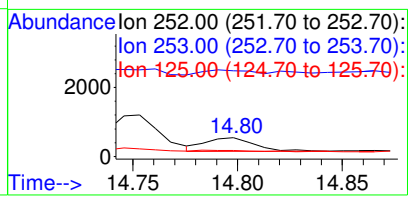


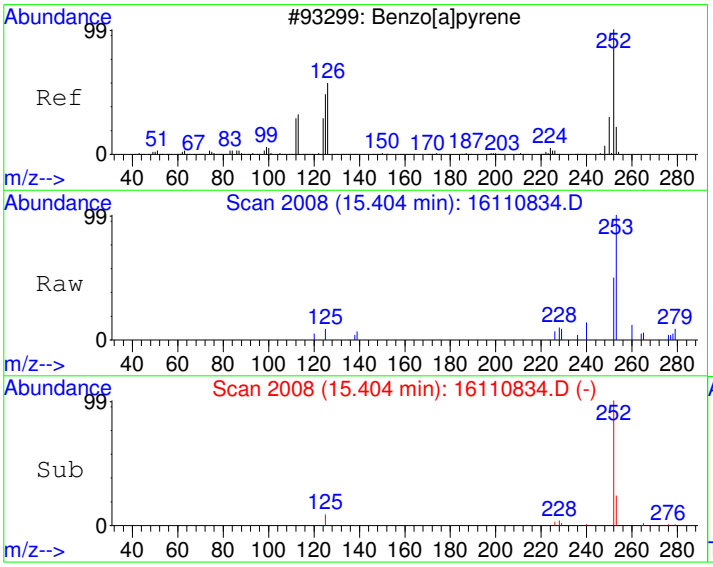


#23
Benzo(j)fluoranthene
Concen: 2.01 ug/kg
RT: 14.80 min Scan# 1927
Delta R.T. -0.02 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:252 Resp: 627

Ion	Ratio	Lower	Upper
252	100		
253	29.8	2.3	42.3
125	7.0	0.0	32.6

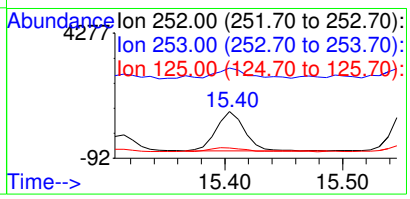


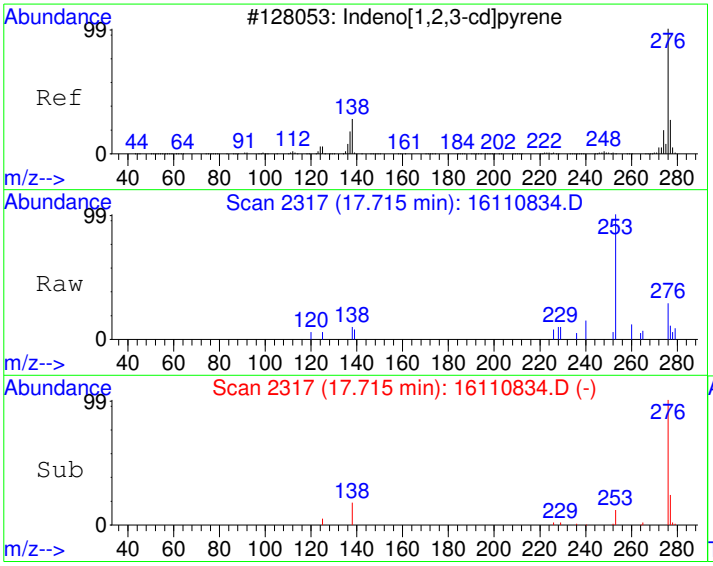


#25
Benzo[a]pyrene
Concen: 7.26 ug/kg
RT: 15.40 min Scan# 2008
Delta R.T. -0.03 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:252 Resp: 2310

Ion	Ratio	Lower	Upper
252	100		
253	24.3	2.2	42.2
125	8.5	0.0	30.8

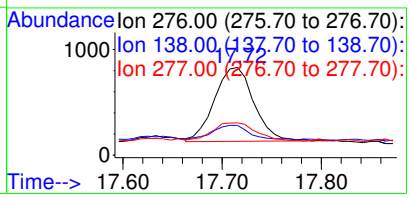




#27
Indeno[1,2,3-cd]pyrene
Concen: 6.01 ug/kg
RT: 17.72 min Scan# 2317
Delta R.T. -0.04 min
Lab File: 16110834.D
Acq: 9 Nov 2016 12:17 am

Tgt Ion:276 Resp: 1942

Ion	Ratio	Lower	Upper
276	100		
138	19.5	0.0	39.3
277	24.4	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110835.D Vial: 23
Acq On : 9 Nov 2016 12:45 am Operator:
Sample : 1611022-20A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:23 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	1024671	4000.00	ug/kg	94
5) Acenaphthene-d10	9.03	164	583800	4000.00	ug/kg	92
11) Phenanthrene-d10	10.42	188	1076880	4000.00	ug/kg	90
17) Chrysene-d12	13.29	240	1477346	4000.00	ug/kg	96
20) Perylene-d12	15.56	264	1575499	4000.00	ug/kg	104
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	16366	95.99	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.40%#		
16) 4-Terphenyl-d14	11.80	244	23799	110.03	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.75%#		
Target Compounds						Qvalue
12) Phenanthrene	10.45	178	1449	6.91	ug/kg	99
14) Fluoranthene	11.58	202	8873	35.83	ug/kg	99
15) Pyrene	11.88	202	8843	34.38	ug/kg	99
18) Benzo[a]anthracene	13.23	228	7532	26.08	ug/kg	98
19) Chrysene	13.33	228	8051	30.09	ug/kg	98
21) Benzo[b]fluoranthene	14.72	252	12536	35.83	ug/kg	98
22) Benzo[k]fluoranthene	14.72	252	12560	~~38.95~~	~~ug/kg~~	~~99~~
23) Benzo(j)fluoranthene	14.79	252	4543	14.57	ug/kg	98
24) Benzo[e]pyrene	15.31	252	7615	24.37	ug/kg	97
25) Benzo[a]pyrene	15.40	252	11423	35.81	ug/kg	98
26) Dibenz[a,h]anthracene	17.63	278	1891	5.64	ug/kg	92
27) Indeno[1,2,3-cd]pyrene	17.71	276	8692	26.85	ug/kg	98
28) Benzo[g,h,i]perylene	18.67	276	8672	25.35	ug/kg	97

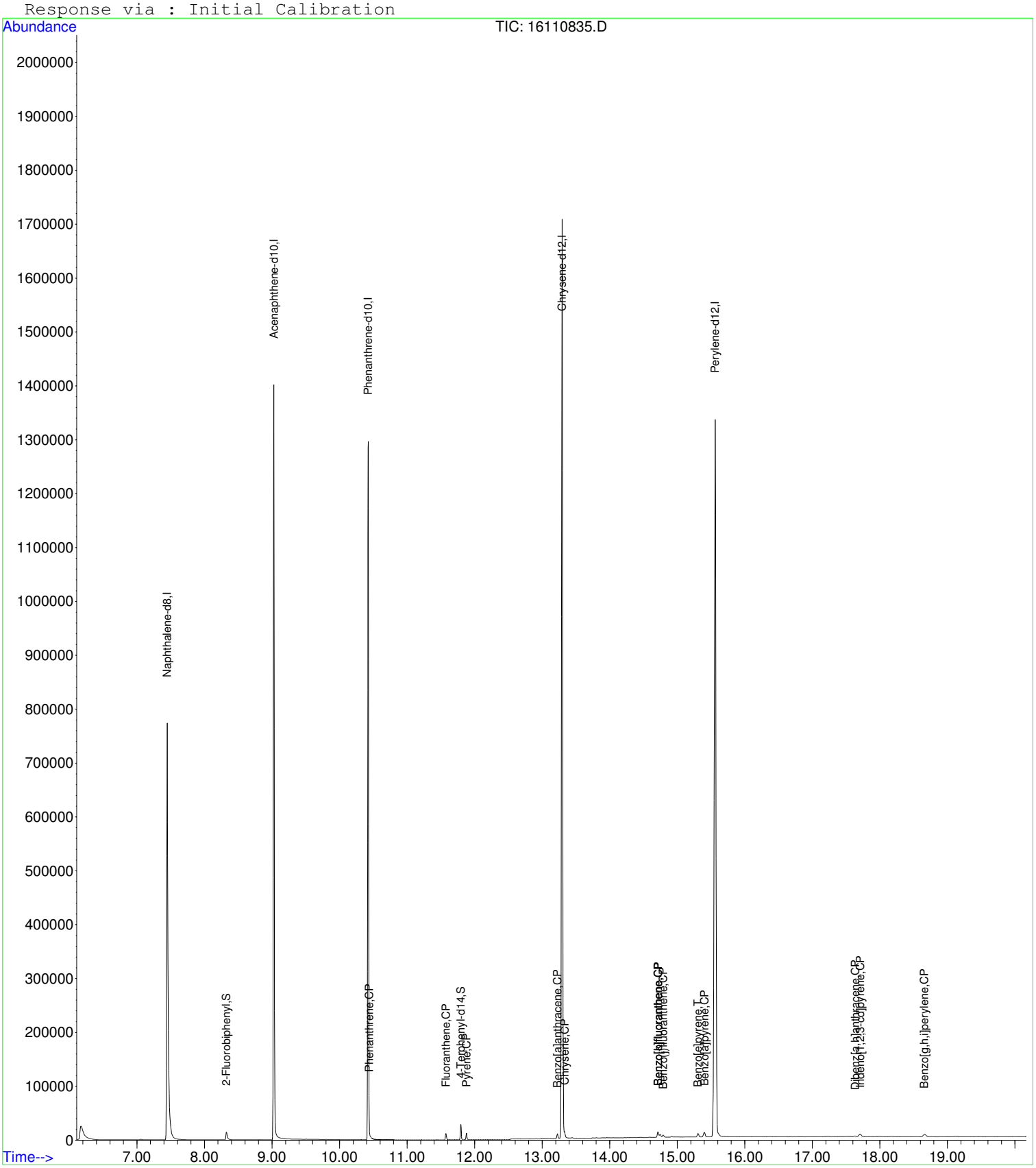
Wrong RT See MI

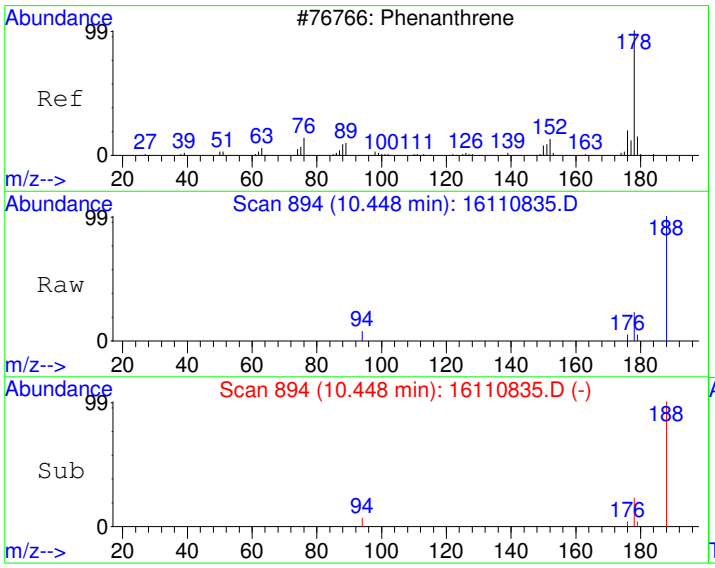
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110835.D Vial: 23
Acq On : 9 Nov 2016 12:45 am Operator:
Sample : 1611022-20A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:23 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

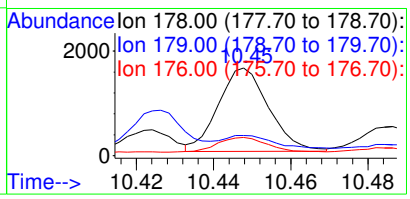


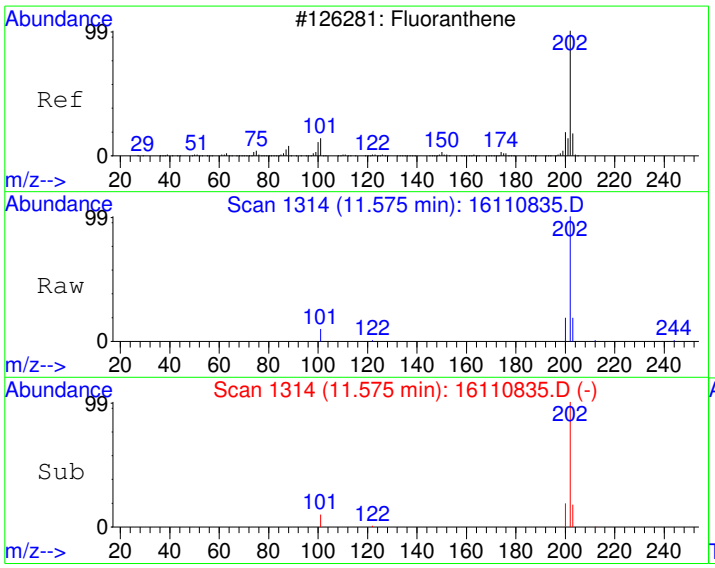


#12
Phenanthrene
Concen: 6.91 ug/kg
RT: 10.45 min Scan# 894
Delta R.T. -0.02 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:178 Resp: 1449

Ion	Ratio	Lower	Upper
178	100		
179	15.6	0.0	45.8
176	17.6	0.0	48.3

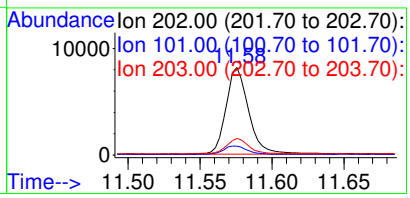


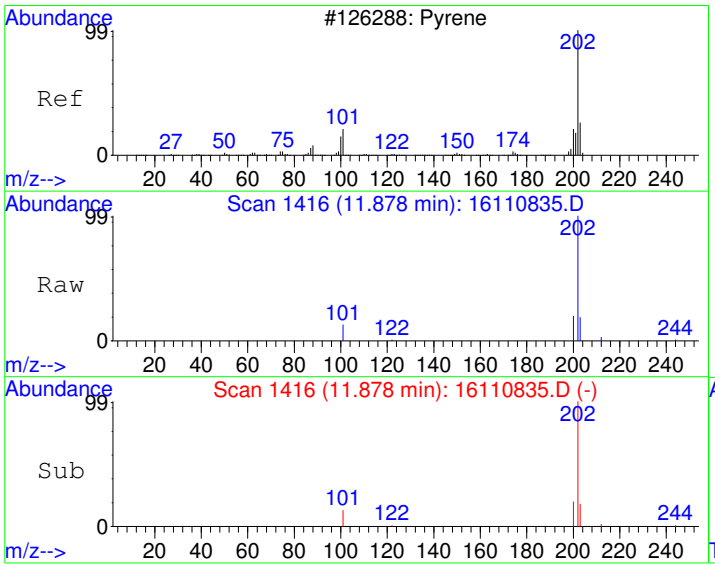


#14
Fluoranthene
Concen: 35.83 ug/kg
RT: 11.58 min Scan# 1314
Delta R.T. -0.01 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:202 Resp: 8873

Ion	Ratio	Lower	Upper
202	100		
101	9.7	0.0	40.6
203	17.8	0.0	48.0

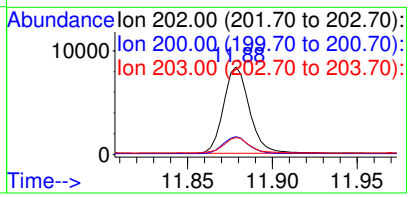


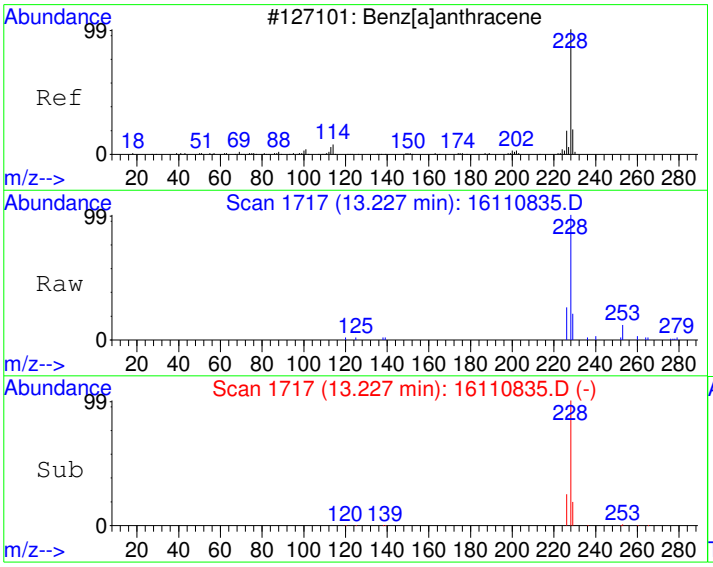


#15
Pyrene
Concen: 34.38 ug/kg
RT: 11.88 min Scan# 1416
Delta R.T. -0.01 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:202 Resp: 8843

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.1
203	18.0	0.0	47.8

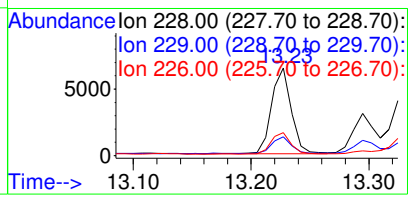


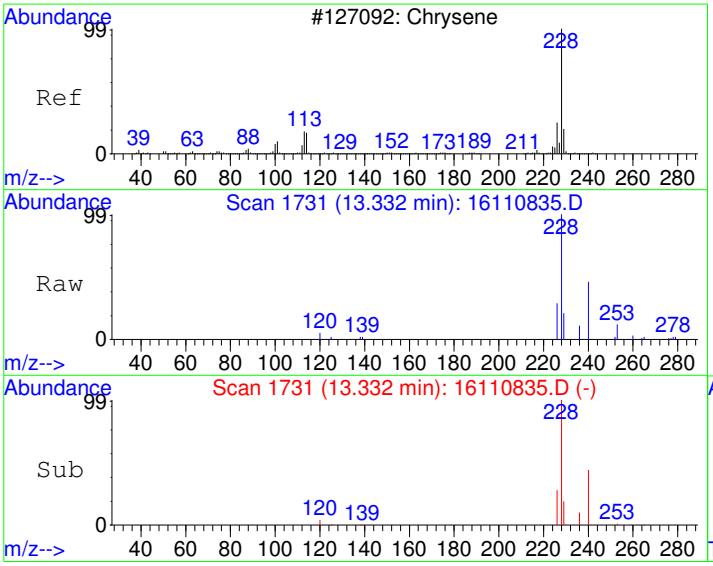


#18
Benzo[a]anthracene
Concen: 26.08 ug/kg
RT: 13.23 min Scan# 1717
Delta R.T. -0.02 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:228 Resp: 7532

Ion	Ratio	Lower	Upper
228	100		
229	19.6	0.0	50.4
226	24.8	0.0	55.6

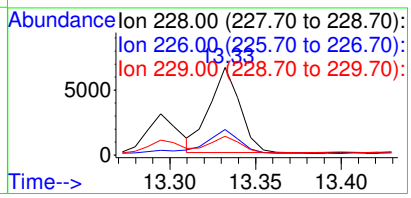


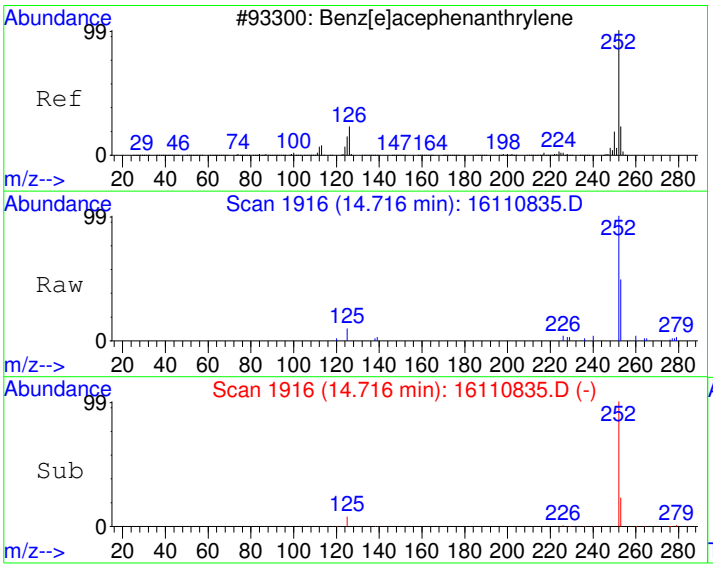


#19
Chrysene
Concen: 30.09 ug/kg
RT: 13.33 min Scan# 1731
Delta R.T. -0.02 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:228 Resp: 8051

Ion	Ratio	Lower	Upper
228	100		
226	28.0	0.0	58.8
229	18.7	0.0	50.2

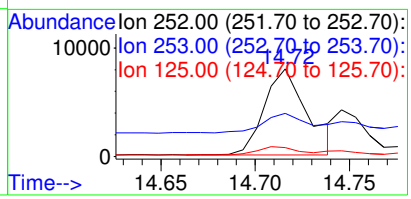


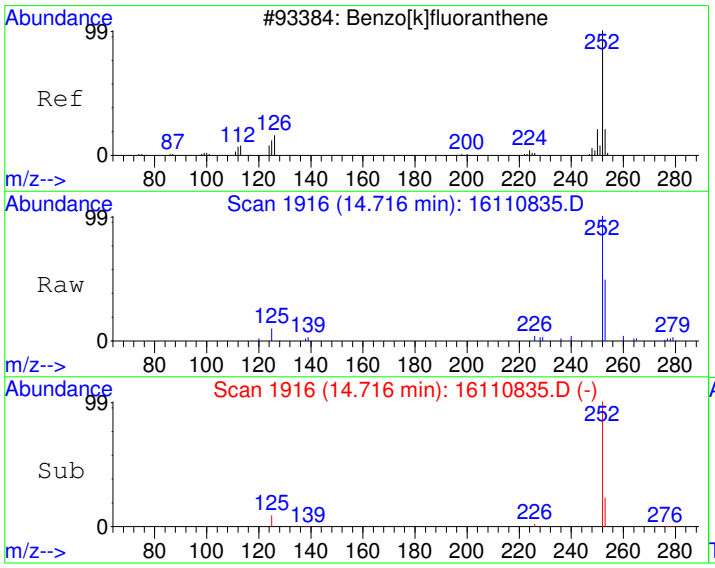


#21
Benzo[b]fluoranthene
Concen: 35.83 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.02 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:252 Resp: 12536

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	52.1
125	8.6	0.0	40.5

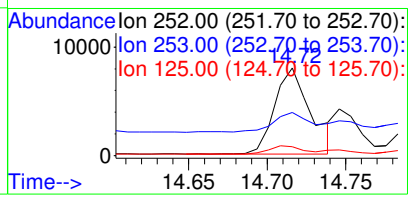




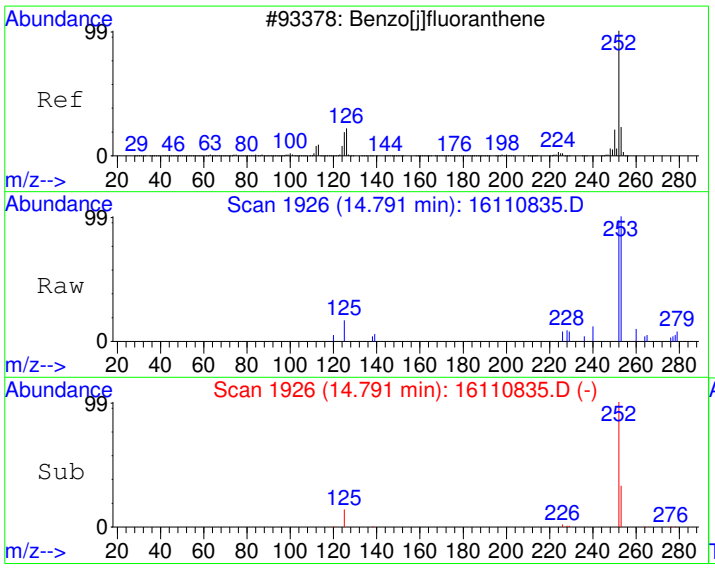
#22
Benzo[k]fluoranthene
Concen: 38.95 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.06 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:252 Resp: 12560

Ion	Ratio	Lower	Upper
252	100		
253	22.9	2.4	42.4
125	8.4	0.0	28.2



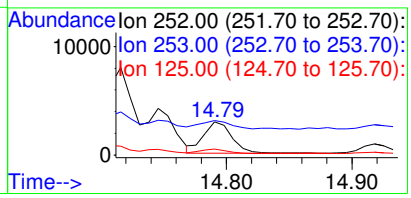
BEFORE MANUAL INTEGRATION
By Don Winston at 9:29:37 AM, 11/11/2016

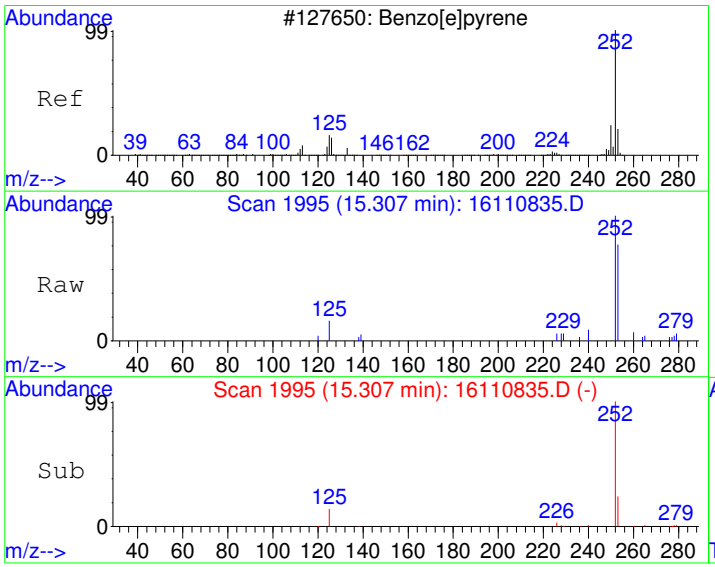


#23
Benzo(j)fluoranthene
Concen: 14.57 ug/kg
RT: 14.79 min Scan# 1926
Delta R.T. -0.03 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:252 Resp: 4543

Ion	Ratio	Lower	Upper
252	100		
253	22.0	2.3	42.3
125	14.2	0.0	32.6

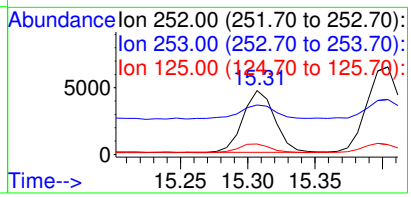




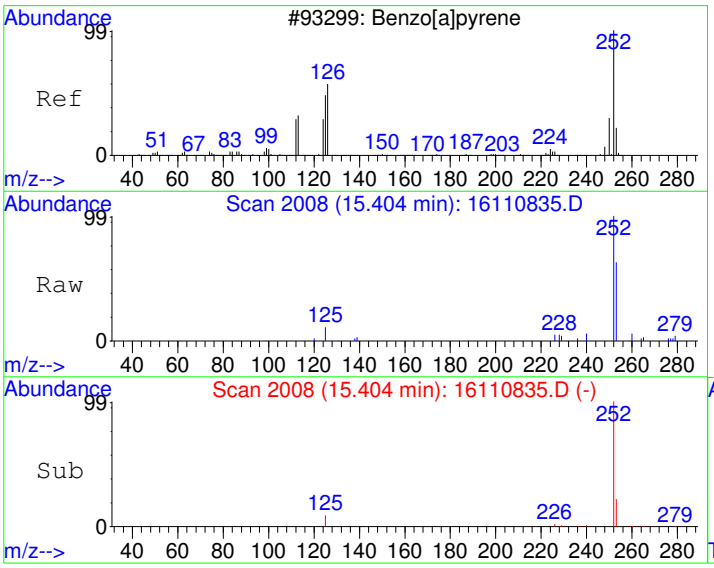
#24
Benzo[e]pyrene
Concen: 24.37 ug/kg
RT: 15.31 min Scan# 1995
Delta R.T. -0.03 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:252 Resp: 7615

Ion	Ratio	Lower	Upper
252	100		
253	22.6	1.8	41.8
125	13.6	0.0	35.7



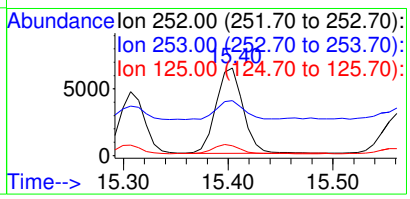
REVIEWED
By Angie O'Donnell at 1:51:51 PM, 11/16/2016

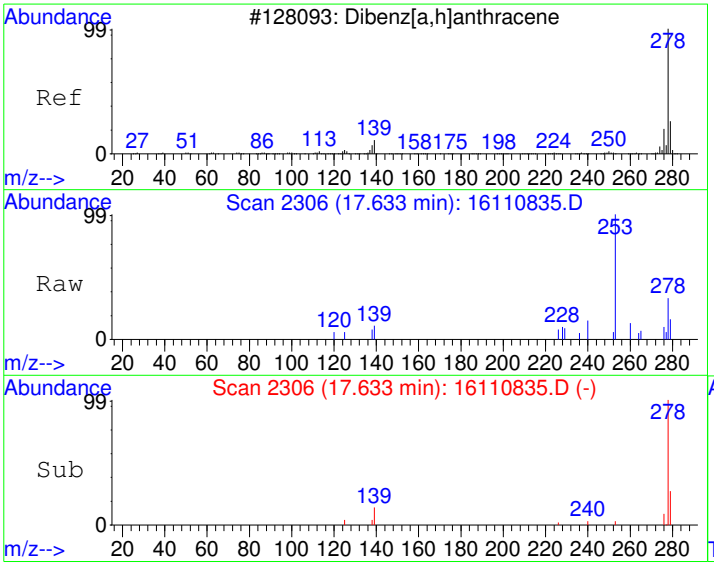


#25
Benzo[a]pyrene
Concen: 35.81 ug/kg
RT: 15.40 min Scan# 2008
Delta R.T. -0.03 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:252 Resp: 11423

Ion	Ratio	Lower	Upper
252	100		
253	22.0	2.2	42.2
125	9.1	0.0	30.8

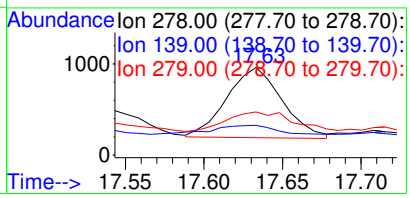


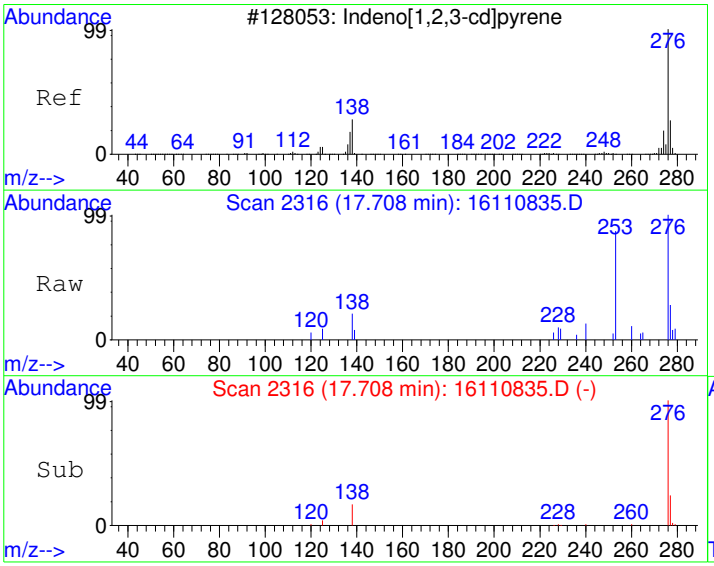


#26
Dibenz[a,h]anthracene
Concen: 5.64 ug/kg
RT: 17.63 min Scan# 2306
Delta R.T. -0.04 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:278 Resp: 1891

Ion	Ratio	Lower	Upper
278	100		
139	13.0	0.0	35.8
279	28.9	4.2	44.2

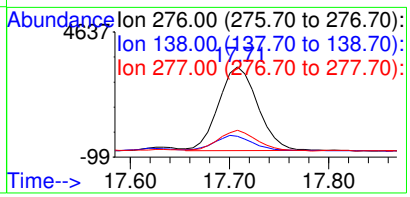


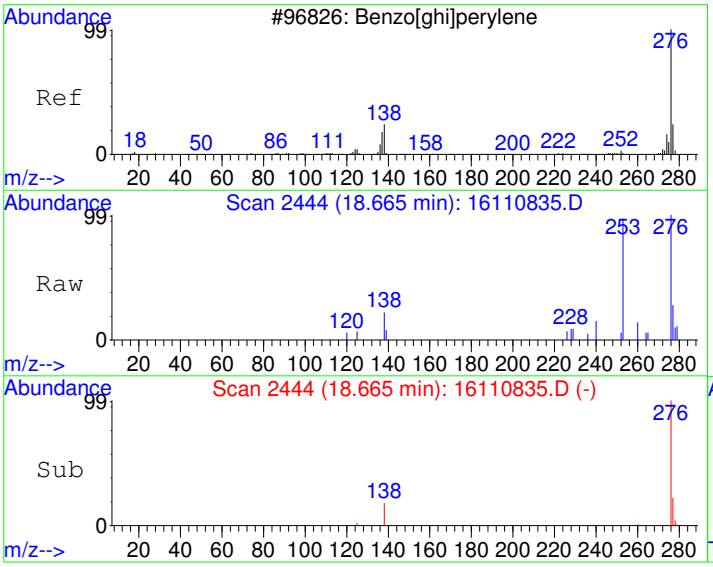


#27
Indeno[1,2,3-cd]pyrene
Concen: 26.85 ug/kg
RT: 17.71 min Scan# 2316
Delta R.T. -0.04 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:276 Resp: 8692

Ion	Ratio	Lower	Upper
276	100		
138	17.3	0.0	39.3
277	24.3	4.0	44.0

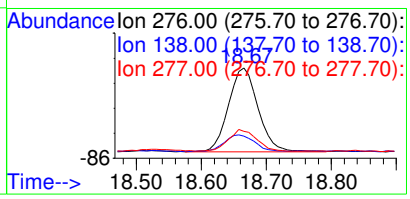




#28
Benzo[g,h,i]perylene
Concen: 25.35 ug/kg
RT: 18.67 min Scan# 2444
Delta R.T. -0.05 min
Lab File: 16110835.D
Acq: 9 Nov 2016 12:45 am

Tgt Ion:276 Resp: 8672

Ion	Ratio	Lower	Upper
276	100		
138	18.1	0.8	40.8
277	23.9	4.0	44.0

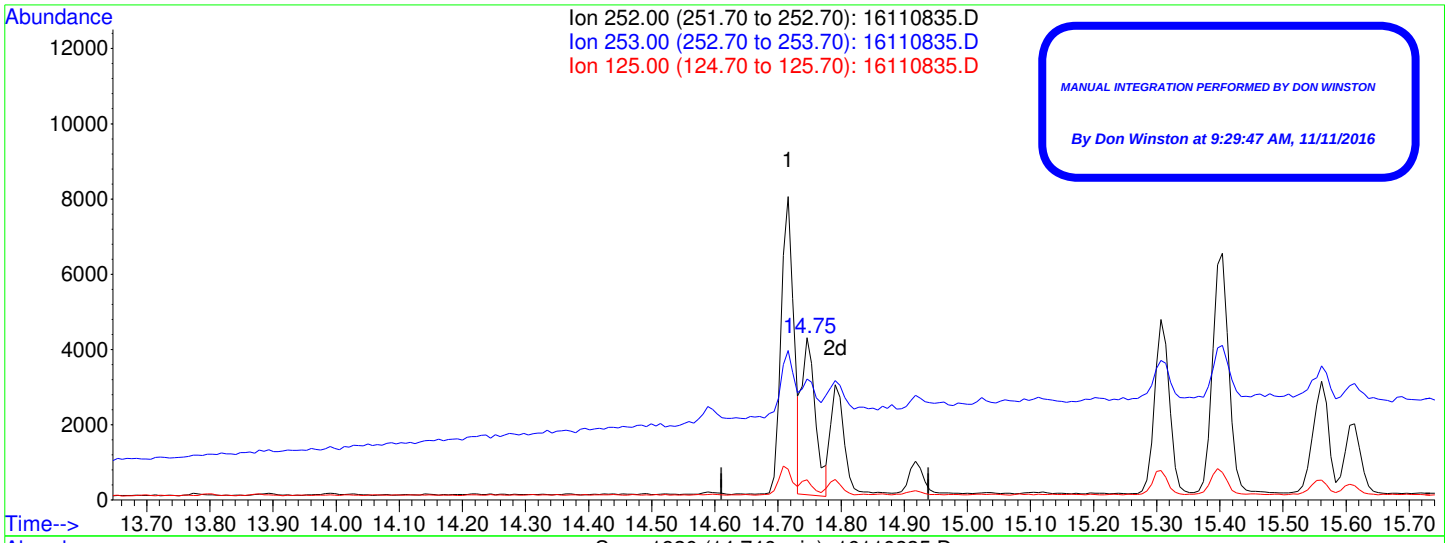


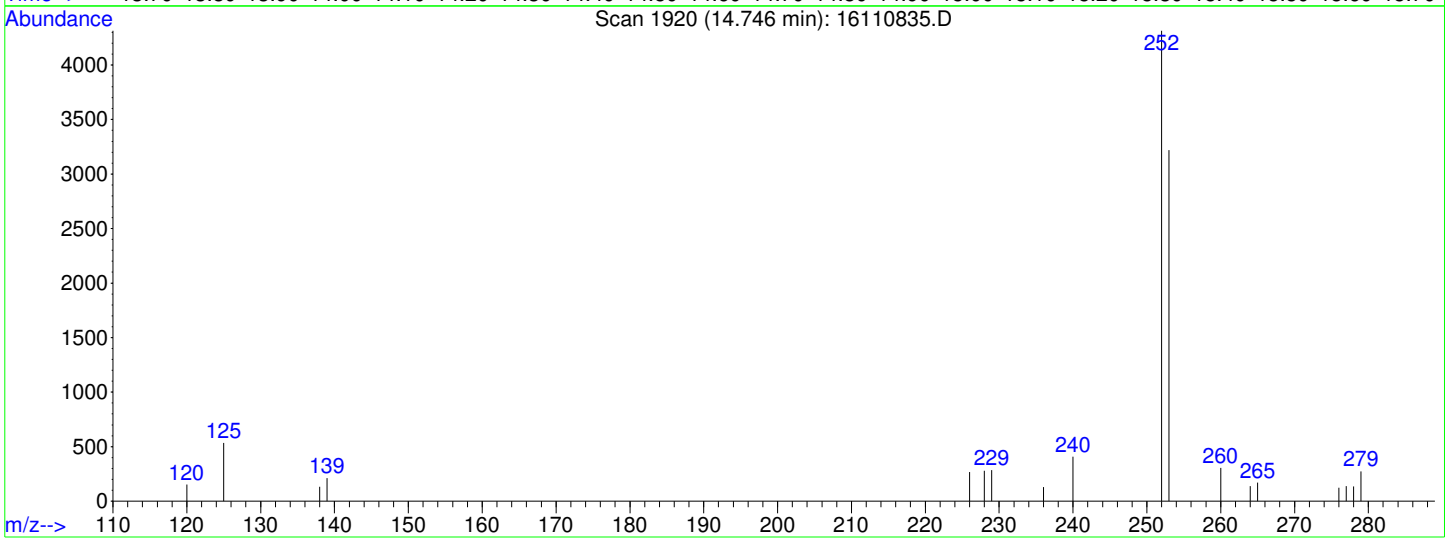
Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\161108\16110835.D Vial: 23
Acq On : 9 Nov 2016 12:45 am Operator:
Sample : 1611022-20A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 11 9:26 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Nov 11 09:15:54 2016
Response via : Multiple Level Calibration

Integated Benzo(k)fluoranthene peak.





TIC: 16110835.D

(22) Benzo[k]fluoranthene (CP)

14.75min 19.35ug/kg m

response 6241

Ion	Exp%	Act%
252.00	100	100
253.00	22.40	74.64#
125.00	8.20	12.38
0.00	0.00	0.00

REVIEWED
By Angie O'Donnell at 1:51:56 PM, 11/16/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110836.D Vial: 24
Acq On : 9 Nov 2016 1:13 am Operator:
Sample : 1611022-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:23 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

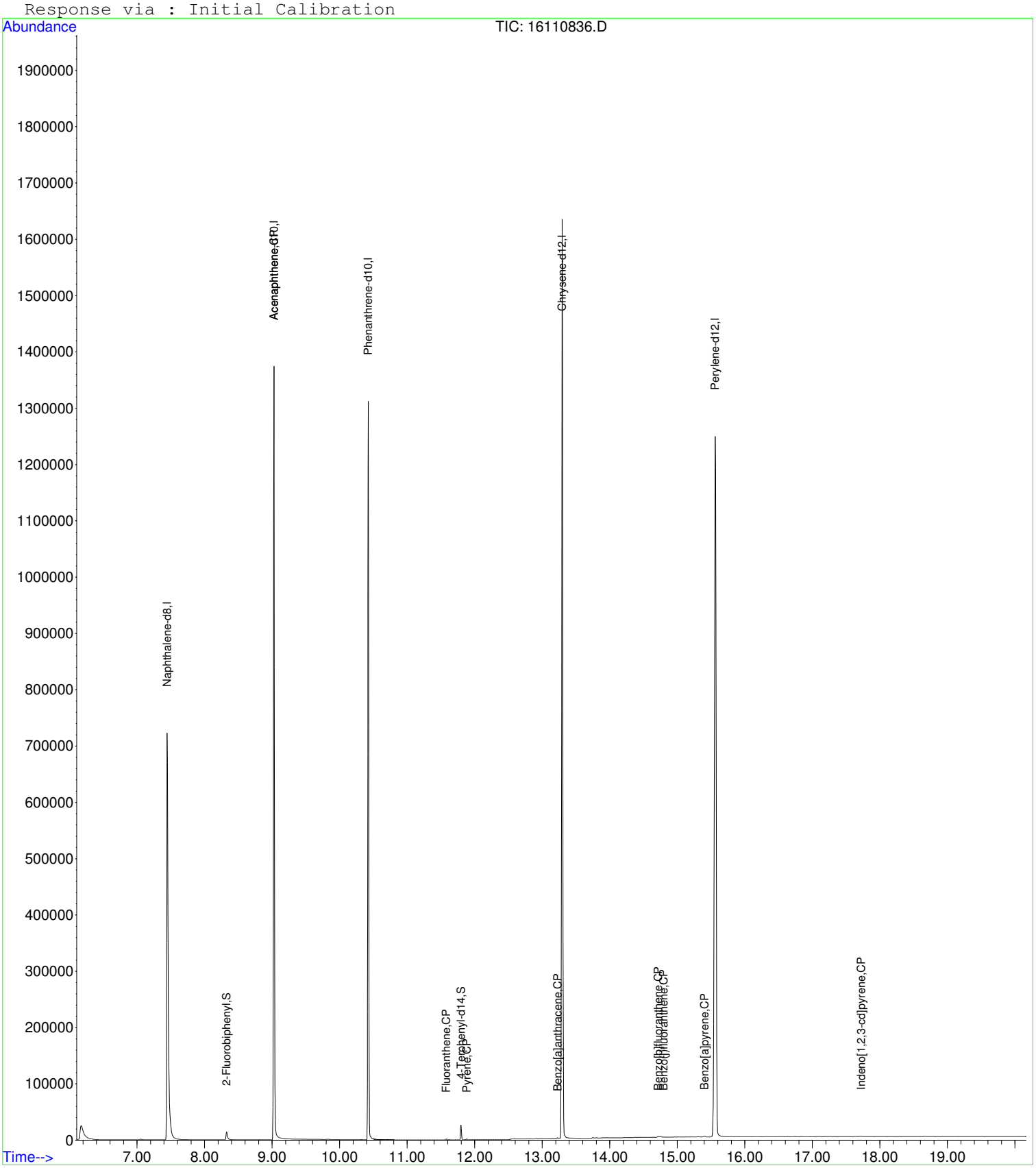
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	994004	4000.00	ug/kg	91
5) Acenaphthene-d10	9.03	164	571912	4000.00	ug/kg	90
11) Phenanthrene-d10	10.42	188	1073616	4000.00	ug/kg	89
17) Chrysene-d12	13.29	240	1437267	4000.00	ug/kg	93
20) Perylene-d12	15.56	264	1503295	4000.00	ug/kg	99
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	16184	96.89	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.42%#		
16) 4-Terphenyl-d14	11.80	244	22740	105.46	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.64%#		
Target Compounds						Qvalue
9) Acenaphthene	9.03	154	1911	15.80	ug/kg#	11
14) Fluoranthene	11.58	202	1329	5.38	ug/kg	96
15) Pyrene	11.88	202	1330	5.19	ug/kg	97
18) Benzo[a]anthracene	13.23	228	1486	5.29	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	2177	6.52	ug/kg	92
23) Benzo(j)fluoranthene	14.80	252	442	1.49	ug/kg	77
25) Benzo[a]pyrene	15.40	252	1901	6.25	ug/kg	92
27) Indeno[1,2,3-cd]pyrene	17.71	276	1844	5.97	ug/kg	95

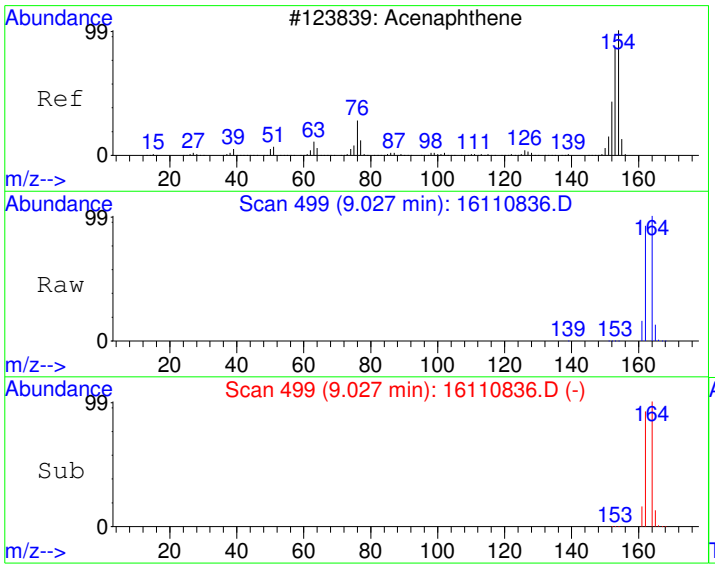
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110836.D Vial: 24
Acq On : 9 Nov 2016 1:13 am Operator:
Sample : 1611022-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:23 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

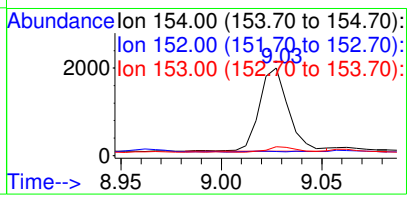


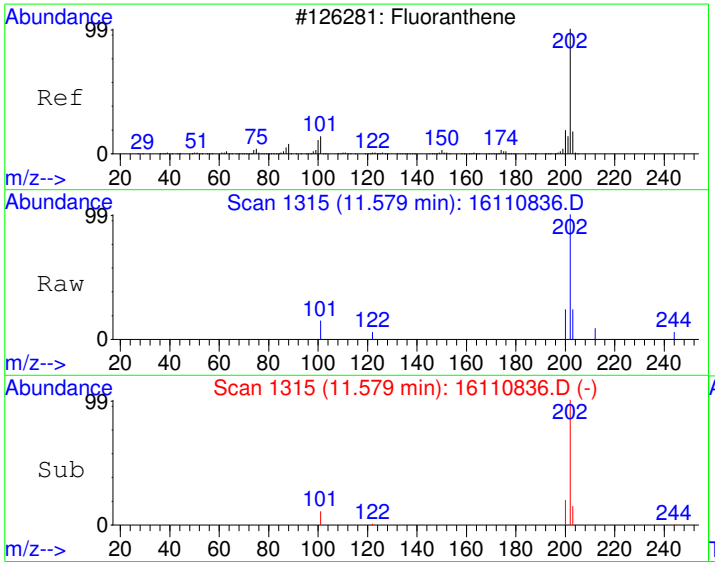


#9
Acenaphthene
Concen: 15.80 ug/kg
RT: 9.03 min Scan# 499
Delta R.T. -0.04 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:154 Resp: 1911

Ion	Ratio	Lower	Upper
154	100		
152	0.4	19.8	79.8#
153	6.3	77.1	137.1#

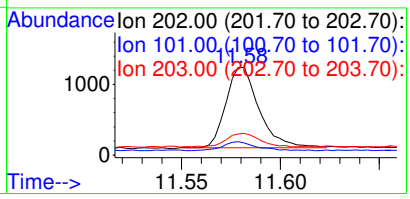


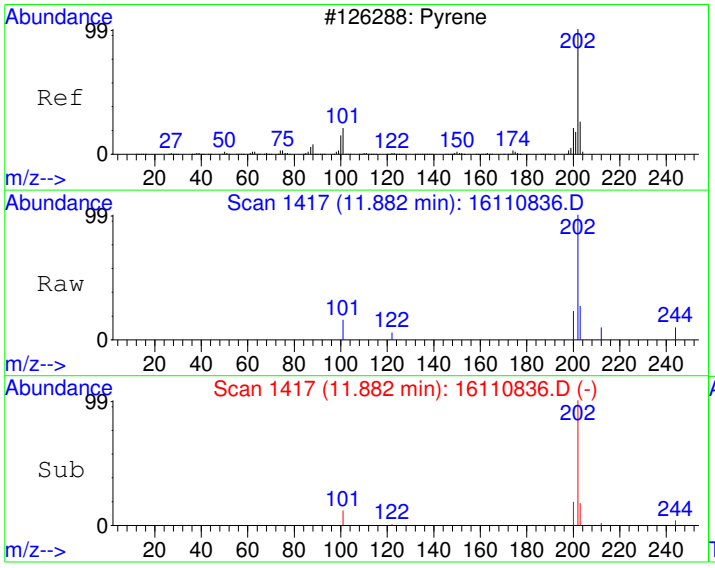


#14
Fluoranthene
Concen: 5.38 ug/kg
RT: 11.58 min Scan# 1315
Delta R.T. -0.01 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:202 Resp: 1329

Ion	Ratio	Lower	Upper
202	100		
101	11.2	0.0	40.6
203	15.7	0.0	48.0

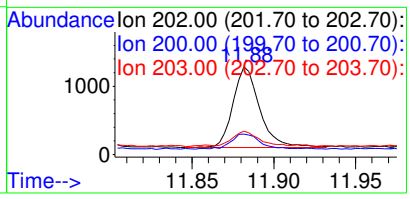


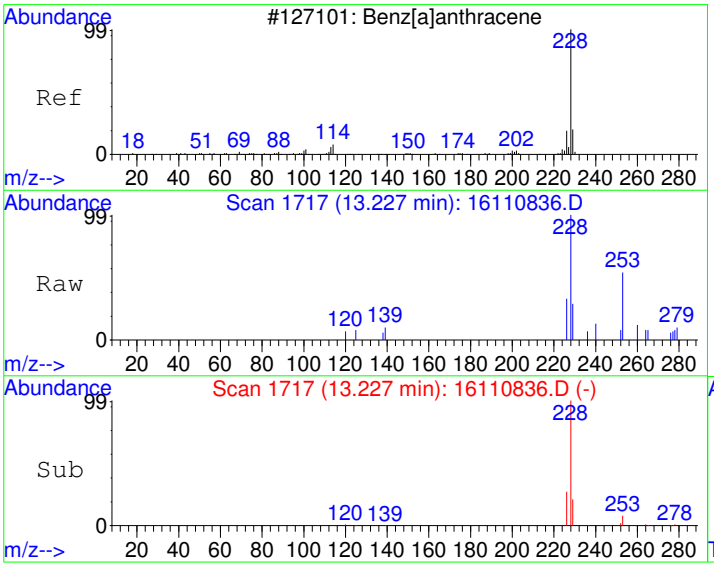


#15
Pyrene
Concen: 5.19 ug/kg
RT: 11.88 min Scan# 1417
Delta R.T. -0.01 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:202 Resp: 1330

Ion	Ratio	Lower	Upper
202	100		
200	18.5	0.0	50.1
203	18.9	0.0	47.8

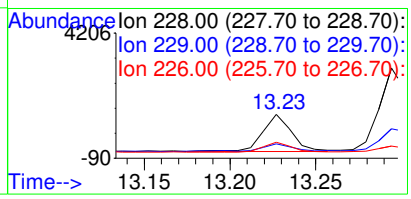


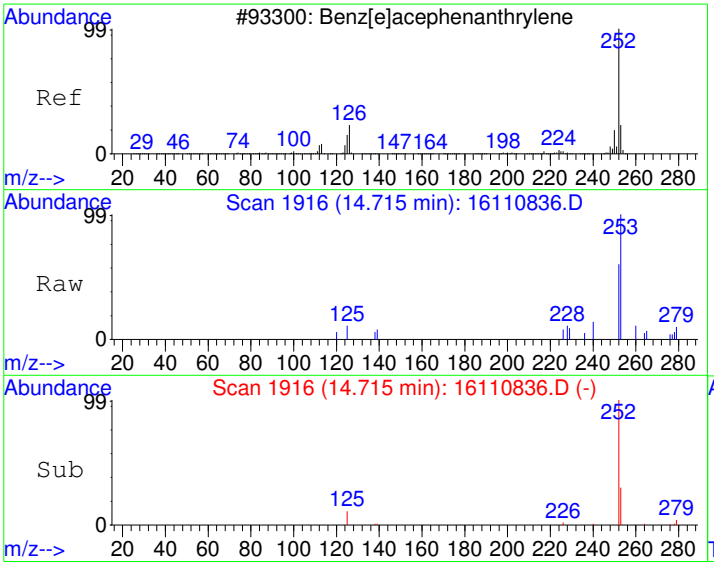


#18
Benzo[a]anthracene
Concen: 5.29 ug/kg
RT: 13.23 min Scan# 1717
Delta R.T. -0.02 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:228 Resp: 1486

Ion	Ratio	Lower	Upper
228	100		
229	20.3	0.0	50.4
226	26.8	0.0	55.6

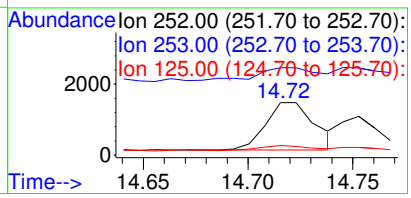


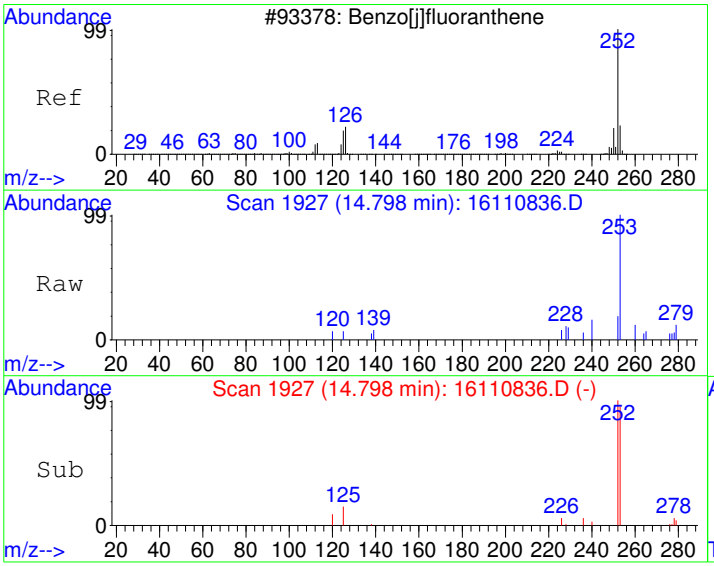


#21
Benzo[b]fluoranthene
Concen: 6.52 ug/kg
RT: 14.72 min Scan# 1916
Delta R.T. -0.02 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:252 Resp: 2177

Ion	Ratio	Lower	Upper
252	100		
253	26.7	0.0	52.1
125	8.8	0.0	40.5

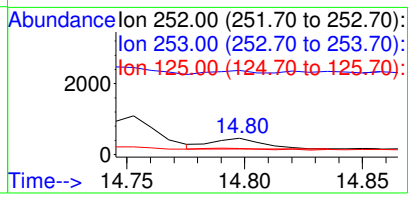


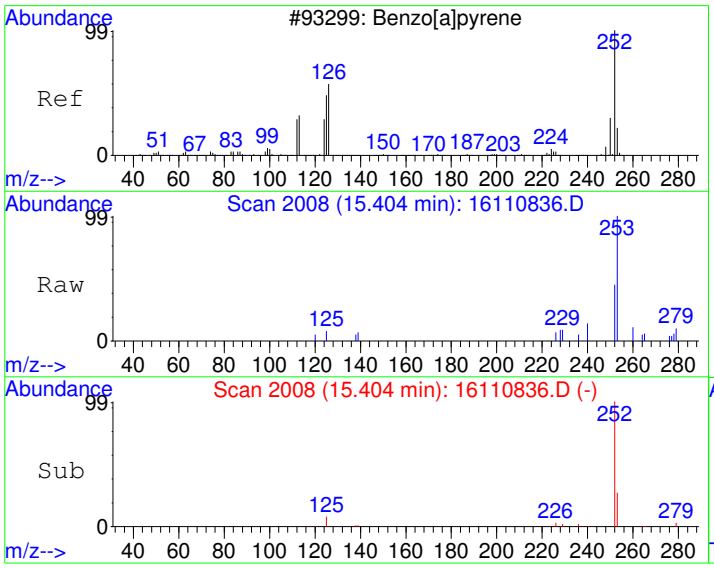


#23
Benzo(j)fluoranthene
Concen: 1.49 ug/kg
RT: 14.80 min Scan# 1927
Delta R.T. -0.02 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:252 Resp: 442

Ion	Ratio	Lower	Upper
252	100		
253	37.3	2.3	42.3
125	9.3	0.0	32.6

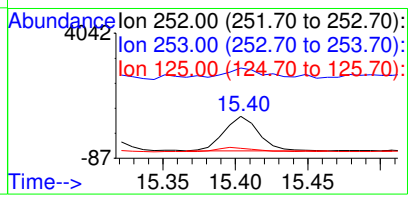


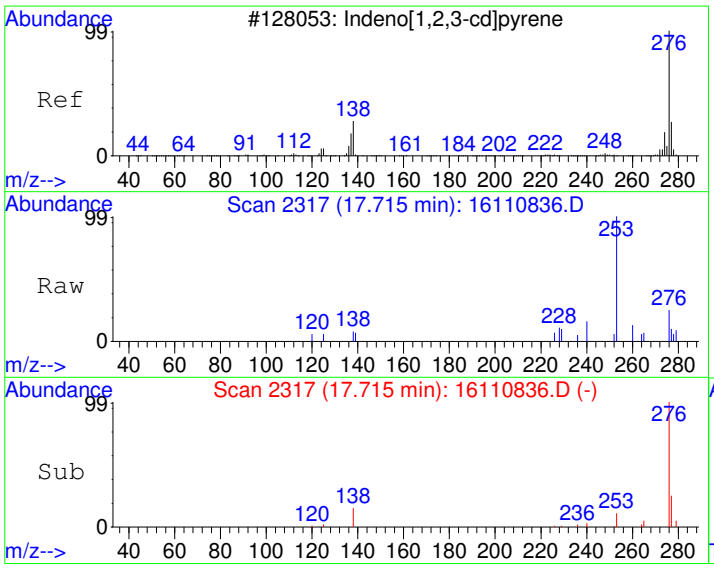


#25
Benzo[a]pyrene
Concen: 6.25 ug/kg
RT: 15.40 min Scan# 2008
Delta R.T. -0.03 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:252 Resp: 1901

Ion	Ratio	Lower	Upper
252	100		
253	26.6	2.2	42.2
125	9.0	0.0	30.8

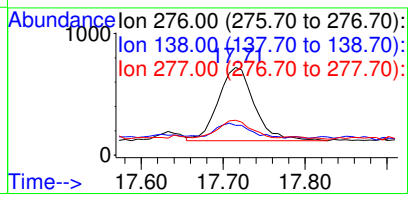




#27
Indeno[1,2,3-cd]pyrene
Concen: 5.97 ug/kg
RT: 17.71 min Scan# 2317
Delta R.T. -0.04 min
Lab File: 16110836.D
Acq: 9 Nov 2016 1:13 am

Tgt Ion:276 Resp: 1844

Ion	Ratio	Lower	Upper
276	100		
138	16.0	0.0	39.3
277	25.8	4.0	44.0



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110837.D Vial: 25
Acq On : 9 Nov 2016 1:41 am Operator:
Sample : 1611022-09AMS Inst : GC/MS #6
Misc : MS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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

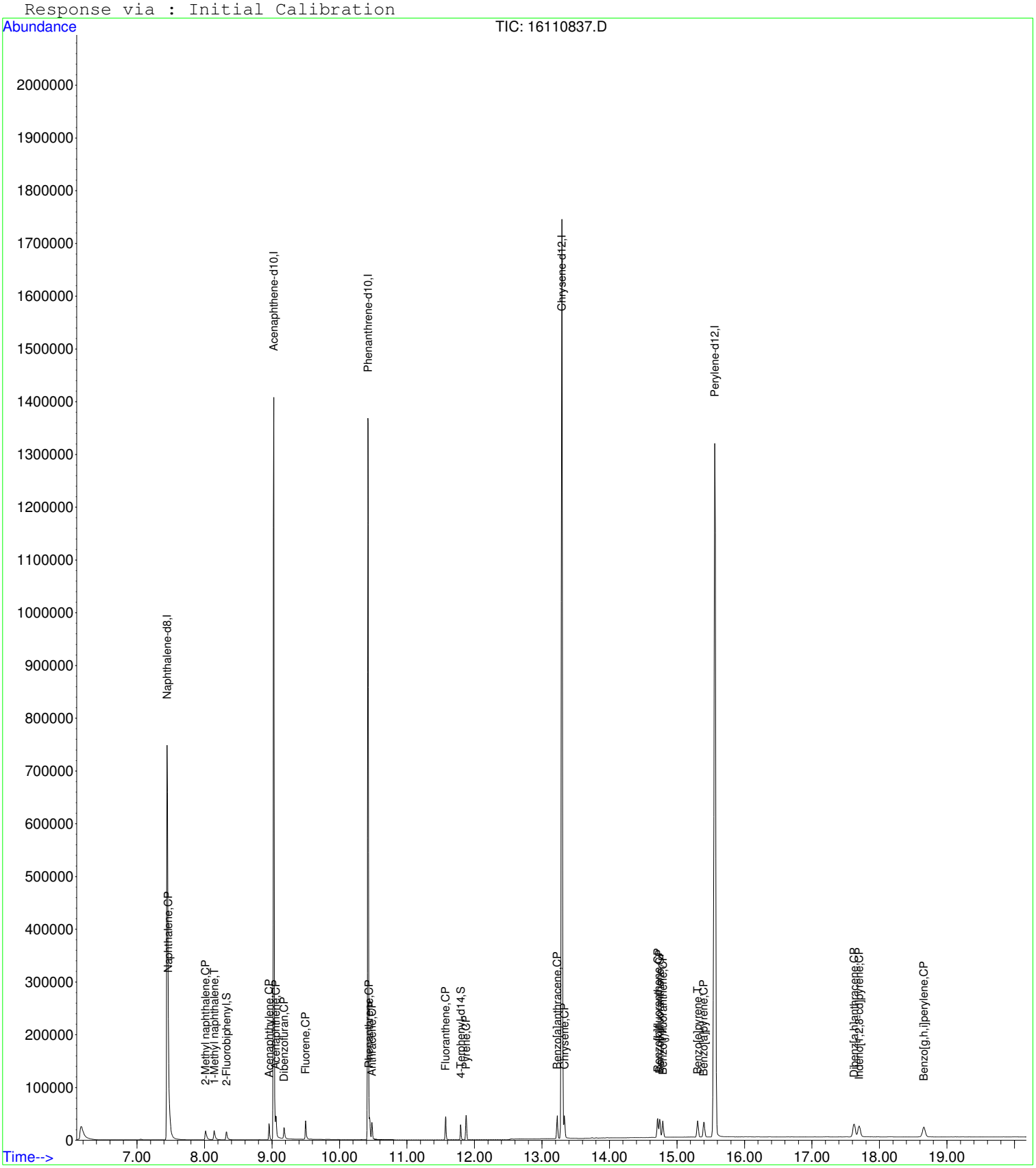
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1011647	4000.00	ug/kg	93
5) Acenaphthene-d10	9.03	164	575549	4000.00	ug/kg	91
11) Phenanthrene-d10	10.42	188	1079541	4000.00	ug/kg	90
17) Chrysene-d12	13.29	240	1467463	4000.00	ug/kg	95
20) Perylene-d12	15.56	264	1559071	4000.00	ug/kg	103
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.33	172	17199	102.32	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.56%#			
16) 4-Terphenyl-d14	11.80	244	23302	107.47	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.69%#			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	19205	105.45	ug/kg	99
3) 2-Methyl naphthalene	8.02	142	14267	105.26	ug/kg	93
4) 1-Methyl naphthalene	8.14	142	13251	104.65	ug/kg	94
6) Dibenzofuran	9.18	168	20646	112.75	ug/kg	100
8) Acenaphthylene	8.96	152	22886	112.56	ug/kg	99
9) Acenaphthene	9.06	154	13507	111.00	ug/kg	97
10) Fluorene	9.50	166	16930	113.68	ug/kg	97
12) Phenanthrene	10.45	178	23586	112.21	ug/kg	99
13) Anthracene	10.48	178	22904	105.86	ug/kg	99
14) Fluoranthene	11.57	202	30224	121.74	ug/kg	99
15) Pyrene	11.88	202	32074	124.40	ug/kg	99
18) Benzo[a]anthracene	13.23	228	33989	118.47	ug/kg	99
19) Chrysene	13.33	228	31188	117.34	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	41415	119.62	ug/kg	98
22) Benzo[k]fluoranthene	14.75	252	33496	104.96	ug/kg	99
23) Benzo(j)fluoranthene	14.79	252	32525	105.38	ug/kg	98
24) Benzo[e]pyrene	15.31	252	34803	112.55	ug/kg	97
25) Benzo[a]pyrene	15.40	252	35956	113.90	ug/kg	99
26) Dibenz[a,h]anthracene	17.63	278	36217	109.22	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.70	276	36964	115.39	ug/kg	98
28) Benzo[g,h,i]perylene	18.66	276	37515	110.83	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110837.D Vial: 25
Acq On : 9 Nov 2016 1:41 am Operator:
Sample : 1611022-09AMS Inst : GC/MS #6
Misc : MS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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\16110838.D Vial: 26
Acq On : 9 Nov 2016 2:09 am Operator:
Sample : 1611022-09AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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

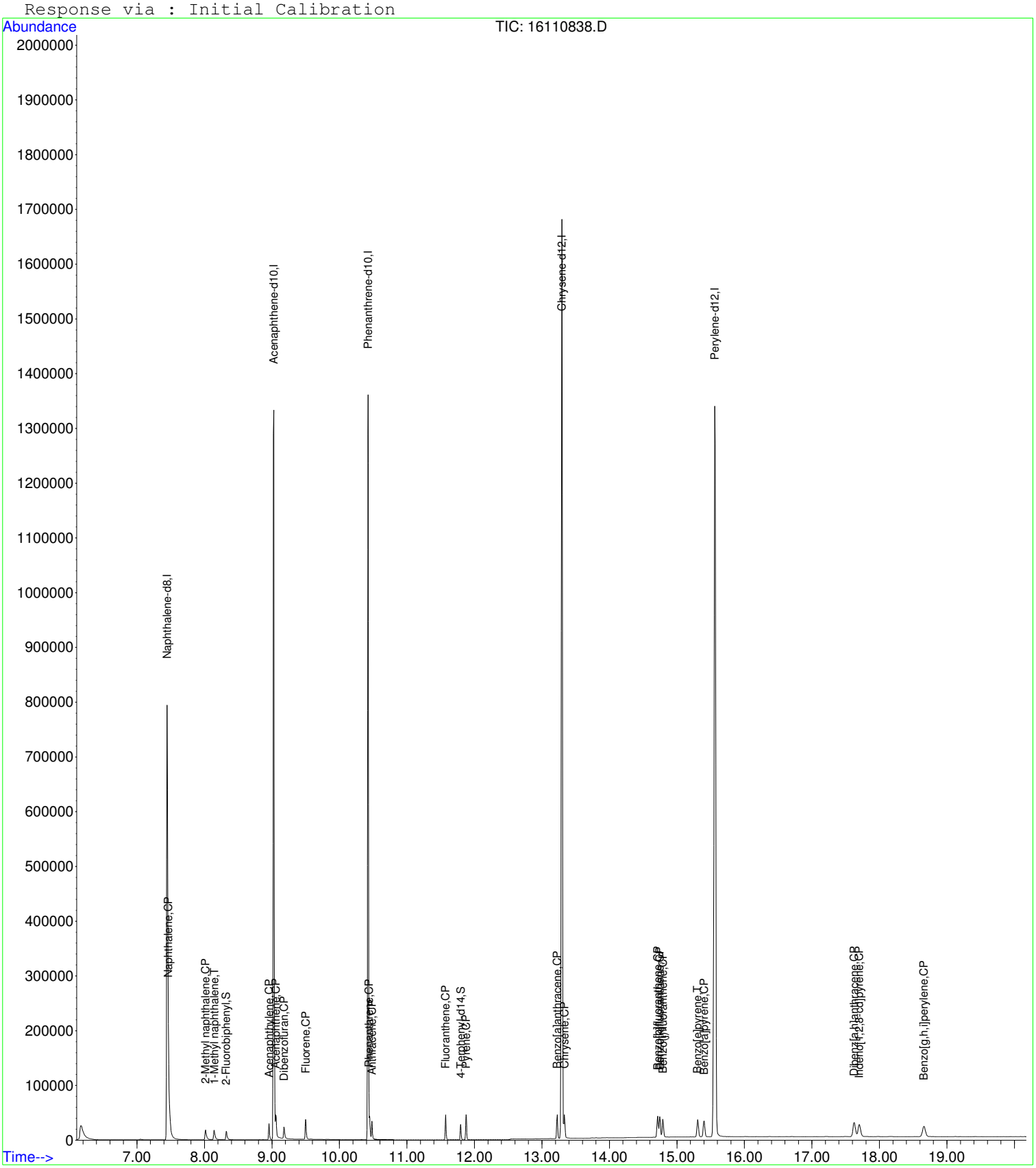
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1032116	4000.00	ug/kg	95
5) Acenaphthene-d10	9.03	164	578376	4000.00	ug/kg	91
11) Phenanthrene-d10	10.42	188	1067571	4000.00	ug/kg	89
17) Chrysene-d12	13.29	240	1439957	4000.00	ug/kg	93
20) Perylene-d12	15.56	264	1597642	4000.00	ug/kg	105
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	16659	98.62	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.47%#		
16) 4-Terphenyl-d14	11.80	244	22339	104.19	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.60%#		
Target Compounds						Qvalue
2) Naphthalene	7.47	128	19502	104.96	ug/kg	99
3) 2-Methyl naphthalene	8.02	142	14604	105.61	ug/kg	95
4) 1-Methyl naphthalene	8.15	142	13442	104.05	ug/kg	92
6) Dibenzofuran	9.18	168	20561	111.73	ug/kg	100
8) Acenaphthylene	8.96	152	22439	109.82	ug/kg	100
9) Acenaphthene	9.06	154	13482	110.25	ug/kg	99
10) Fluorene	9.50	166	16969	113.38	ug/kg	98
12) Phenanthrene	10.45	178	23906	115.00	ug/kg	98
13) Anthracene	10.48	178	23201	108.44	ug/kg	99
14) Fluoranthene	11.57	202	31047	126.45	ug/kg	99
15) Pyrene	11.88	202	32003	125.51	ug/kg	99
18) Benzo[a]anthracene	13.23	228	33897	120.41	ug/kg	98
19) Chrysene	13.33	228	31470	120.66	ug/kg	99
21) Benzo[b]fluoranthene	14.72	252	42657	120.23	ug/kg	98
22) Benzo[k]fluoranthene	14.75	252	36265	110.89	ug/kg	99
23) Benzo(j)fluoranthene	14.79	252	34769	109.93	ug/kg	98
24) Benzo[e]pyrene	15.31	252	36899	116.45	ug/kg	98
25) Benzo[a]pyrene	15.40	252	38080	117.71	ug/kg	99
26) Dibenz[a,h]anthracene	17.63	278	38494	113.28	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.70	276	39384	119.97	ug/kg	99
28) Benzo[g,h,i]perylene	18.66	276	39809	114.76	ug/kg	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110838.D Vial: 26
Acq On : 9 Nov 2016 2:09 am Operator:
Sample : 1611022-09AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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\16110839.D Vial: 27
Acq On : 9 Nov 2016 2:36 am Operator:
Sample : CCV1-161108 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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

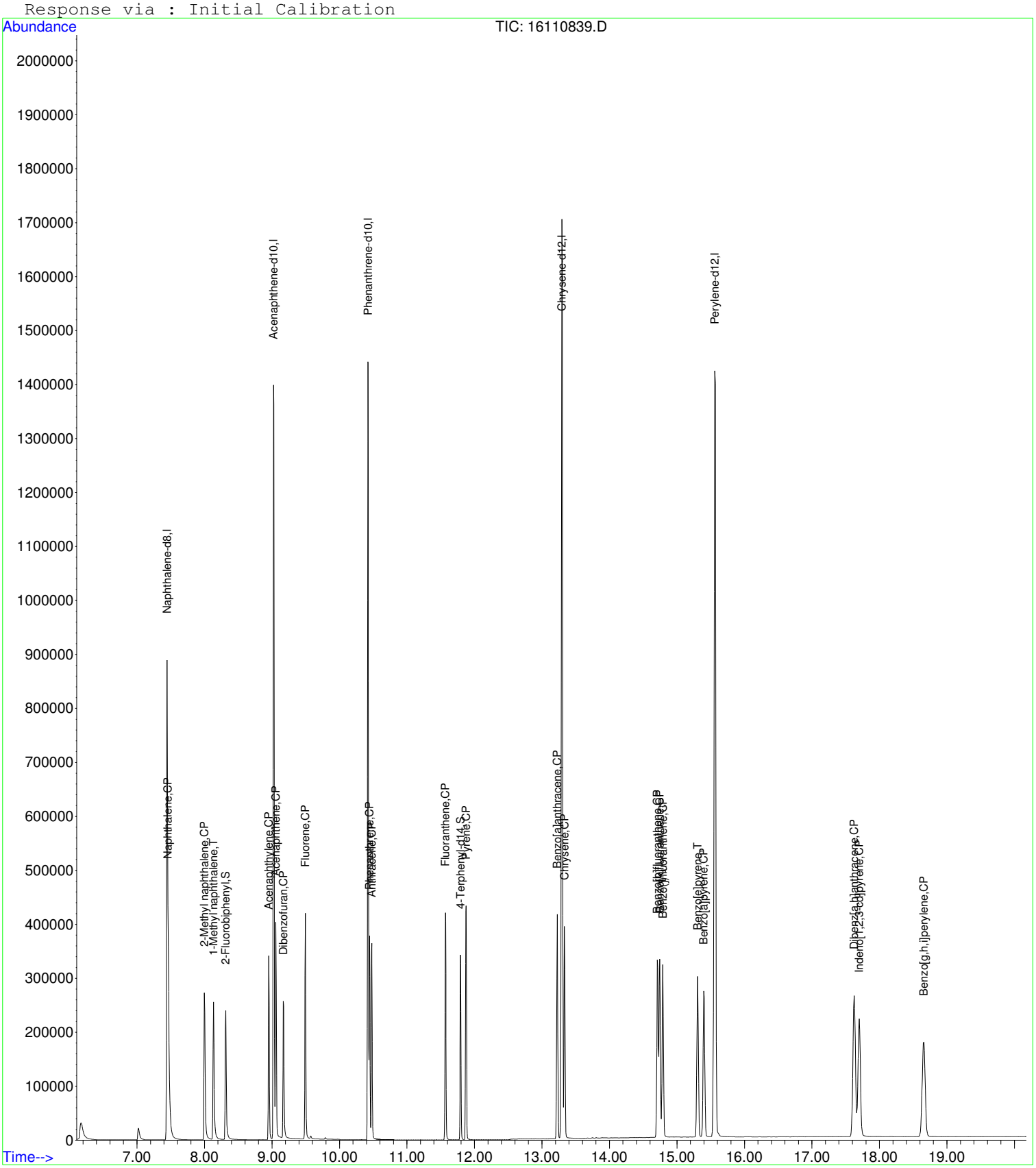
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1113166	4000.00	ug/kg	102
5) Acenaphthene-d10	9.02	164	608714	4000.00	ug/kg	96
11) Phenanthrene-d10	10.42	188	1151589	4000.00	ug/kg	96
17) Chrysene-d12	13.29	240	1599135	4000.00	ug/kg	104
20) Perylene-d12	15.56	264	1709401	4000.00	ug/kg	113
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.31	172	200719	1129.05	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 28.23%#			
16) 4-Terphenyl-d14	11.79	244	261286	1129.69	ug/kg	-0.02
Spiked Amount 4000.000	Range 40 - 140		Recovery = 28.24%#			
Target Compounds						Qvalue
2) Naphthalene	7.46	128	204149	1018.69	ug/kg	100
3) 2-Methyl naphthalene	8.00	142	153465	1029.02	ug/kg	89
4) 1-Methyl naphthalene	8.13	142	140323	1007.15	ug/kg	94
6) Dibenzofuran	9.17	168	210194	1085.32	ug/kg	100
8) Acenaphthylene	8.95	152	232626	1081.75	ug/kg	99
9) Acenaphthene	9.06	154	132364	1028.49	ug/kg	99
10) Fluorene	9.49	166	169285	1074.73	ug/kg	99
12) Phenanthrene	10.45	178	234483	1045.72	ug/kg	100
13) Anthracene	10.48	178	240338	1041.34	ug/kg	99
14) Fluoranthene	11.57	202	277003	1045.91	ug/kg	99
15) Pyrene	11.88	202	283294	1030.00	ug/kg	99
18) Benzo[a]anthracene	13.23	228	314661	1006.49	ug/kg	99
19) Chrysene	13.33	228	300361	1037.03	ug/kg	99
21) Benzo[b]fluoranthene	14.71	252	392141	1033.00	ug/kg	99
22) Benzo[k]fluoranthene	14.75	252	310607	887.71	ug/kg	99
23) Benzo(j)fluoranthene	14.79	252	325221	961.05	ug/kg	99
24) Benzo[e]pyrene	15.31	252	337484	995.43	ug/kg	97
25) Benzo[a]pyrene	15.40	252	339552	981.01	ug/kg	99
26) Dibenz[a,h]anthracene	17.63	278	365883	1006.33	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.70	276	360501	1026.36	ug/kg	99
28) Benzo[g,h,i]perylene	18.66	276	371412	1000.72	ug/kg	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110839.D Vial: 27
Acq On : 9 Nov 2016 2:36 am Operator:
Sample : CCV1-161108 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Nov 9 8:17 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
Calibration Curve
For

DHL Work Order
1611022

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			

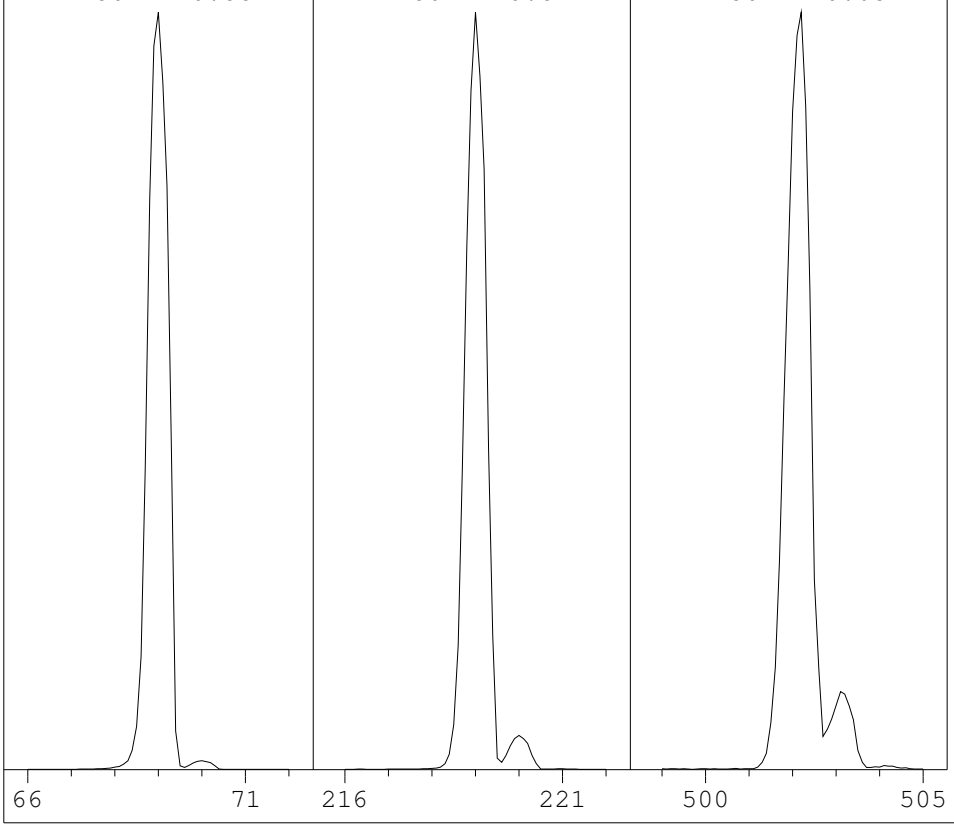
Analyst: Don Winston Date: 10/21/2016

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



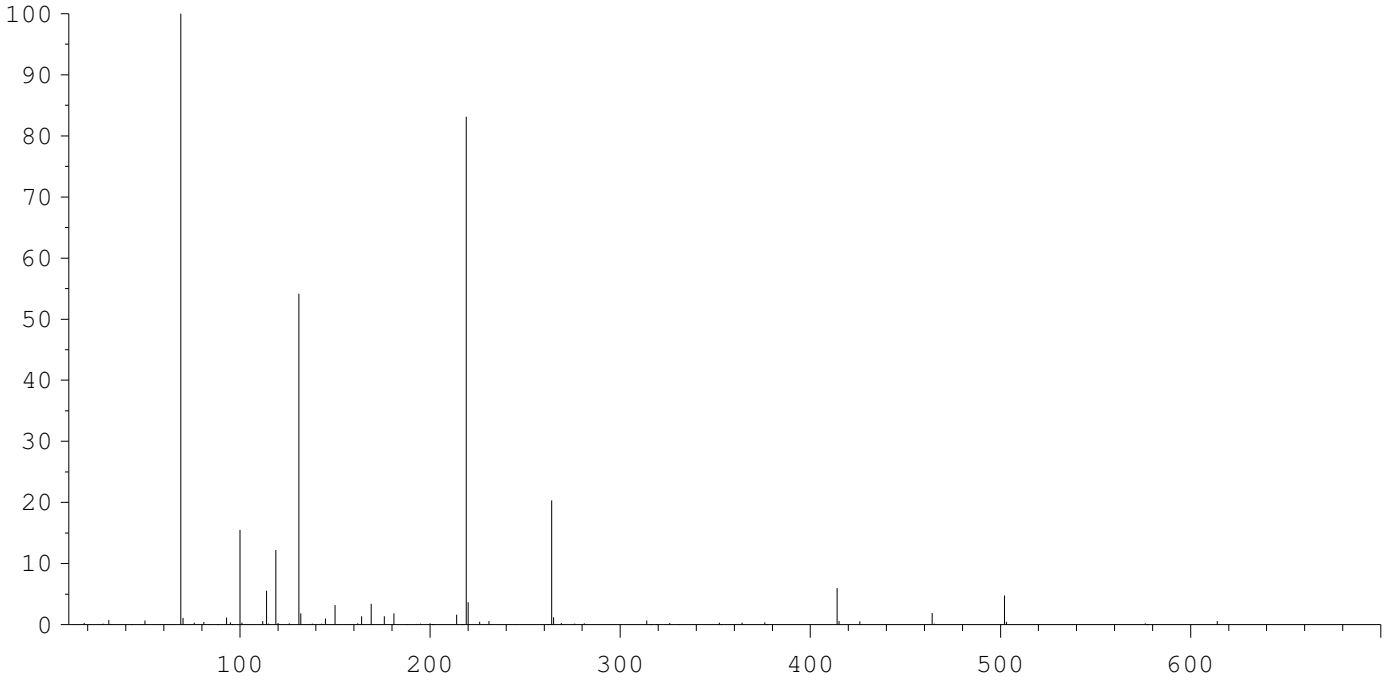
Ion Pol	POS	MassGain	22
		MassOffs	-14
Emission	34.6	AmuGain	2185
EleEnergy	69.9	AmuOffs	128
Filament	2	Wid219	0.011
		DC Pol	POS
Repeller	26.77		
IonFocus	68.3	HED	ON
EntLens	11.5	EMVolts	1365
EntOffs	17.32		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

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	85.1	6.0	4.8

Response Factor Report GC/MS #6

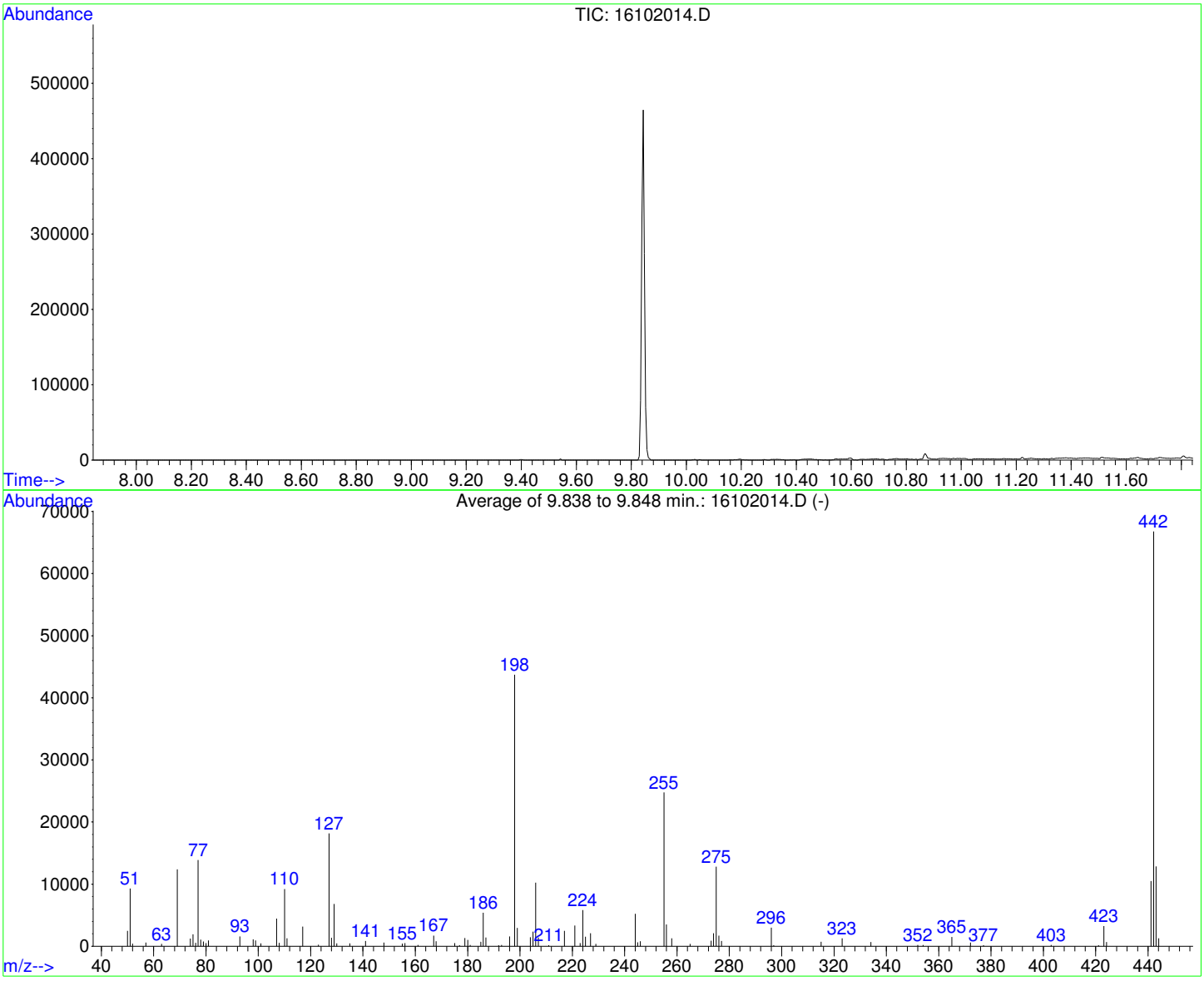
Method Path : F:\IC\GCMS#10\
Method File : PP161020.M
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response Via : Initial Calibration

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

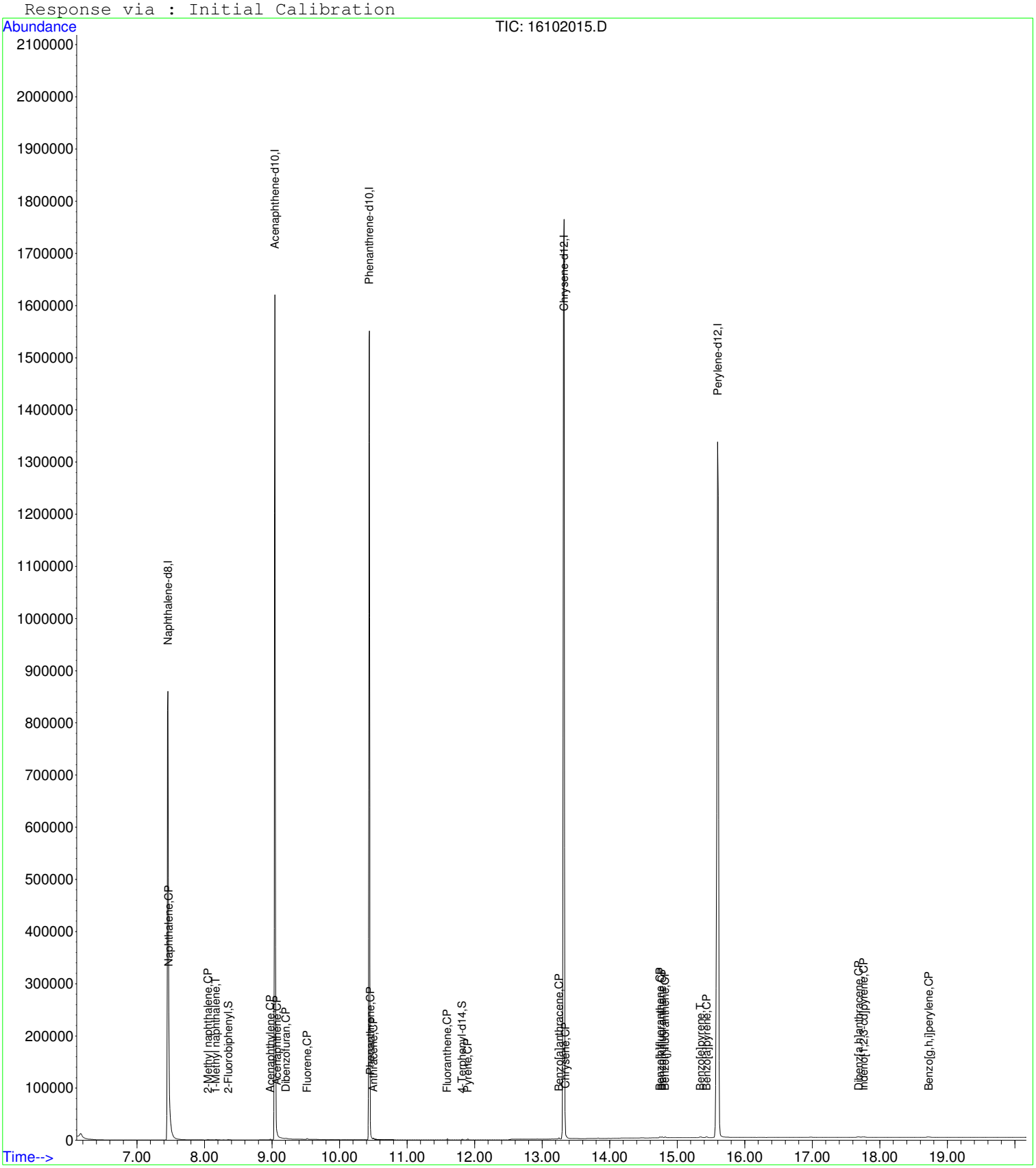
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1104031	4000.00	ug/kg	101
5) Acenaphthene-d10	9.04	164	663810	4000.00	ug/kg	105
11) Phenanthrene-d10	10.44	188	1243895	4000.00	ug/kg	104
17) Chrysene-d12	13.32	240	1645676	4000.00	ug/kg	107
20) Perylene-d12	15.60	264	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

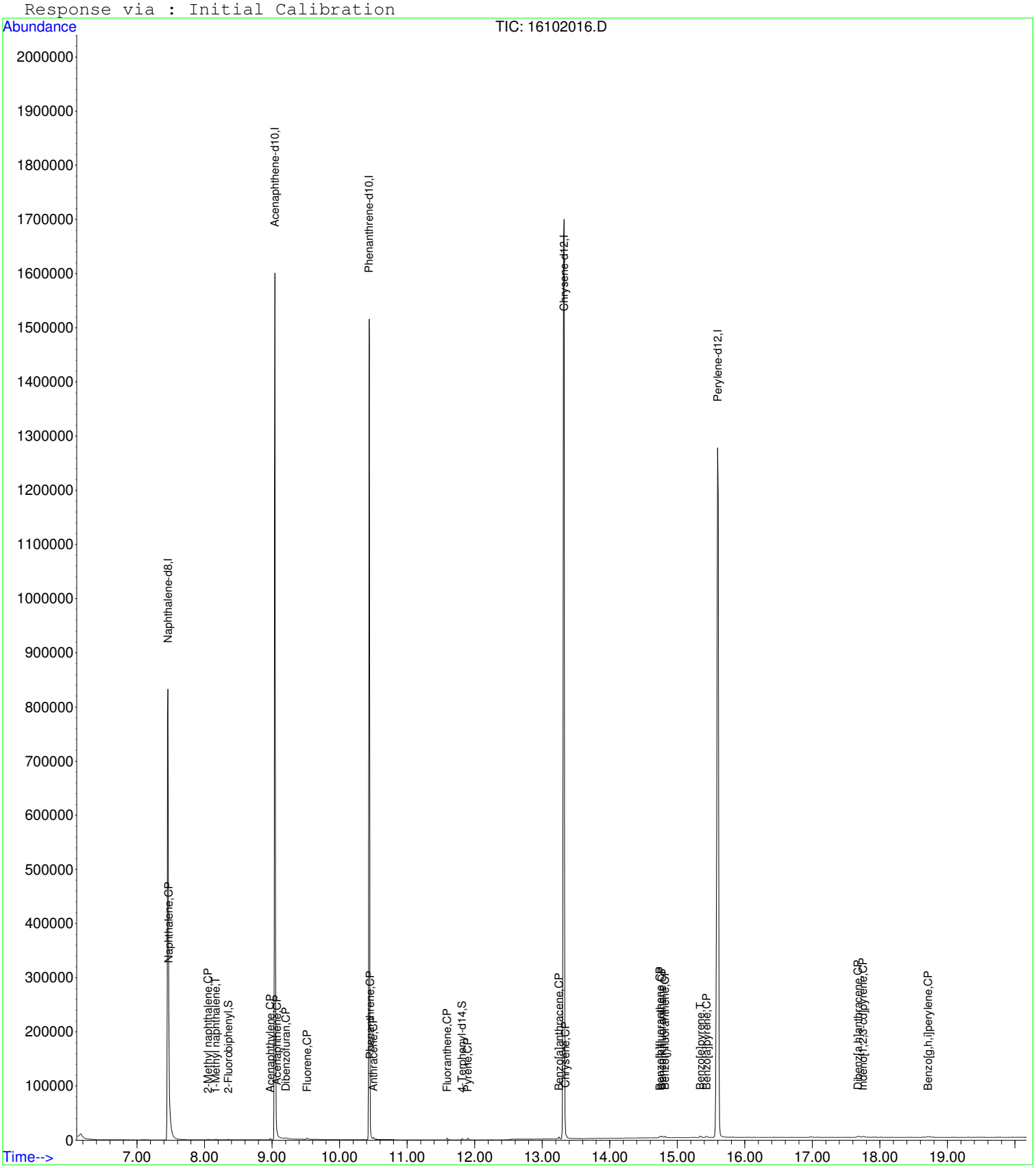
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1059596	4000.00	ug/kg	97
5) Acenaphthene-d10	9.04	164	650945	4000.00	ug/kg	103
11) Phenanthrene-d10	10.44	188	1218263	4000.00	ug/kg	102
17) Chrysene-d12	13.32	240	1574859	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	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

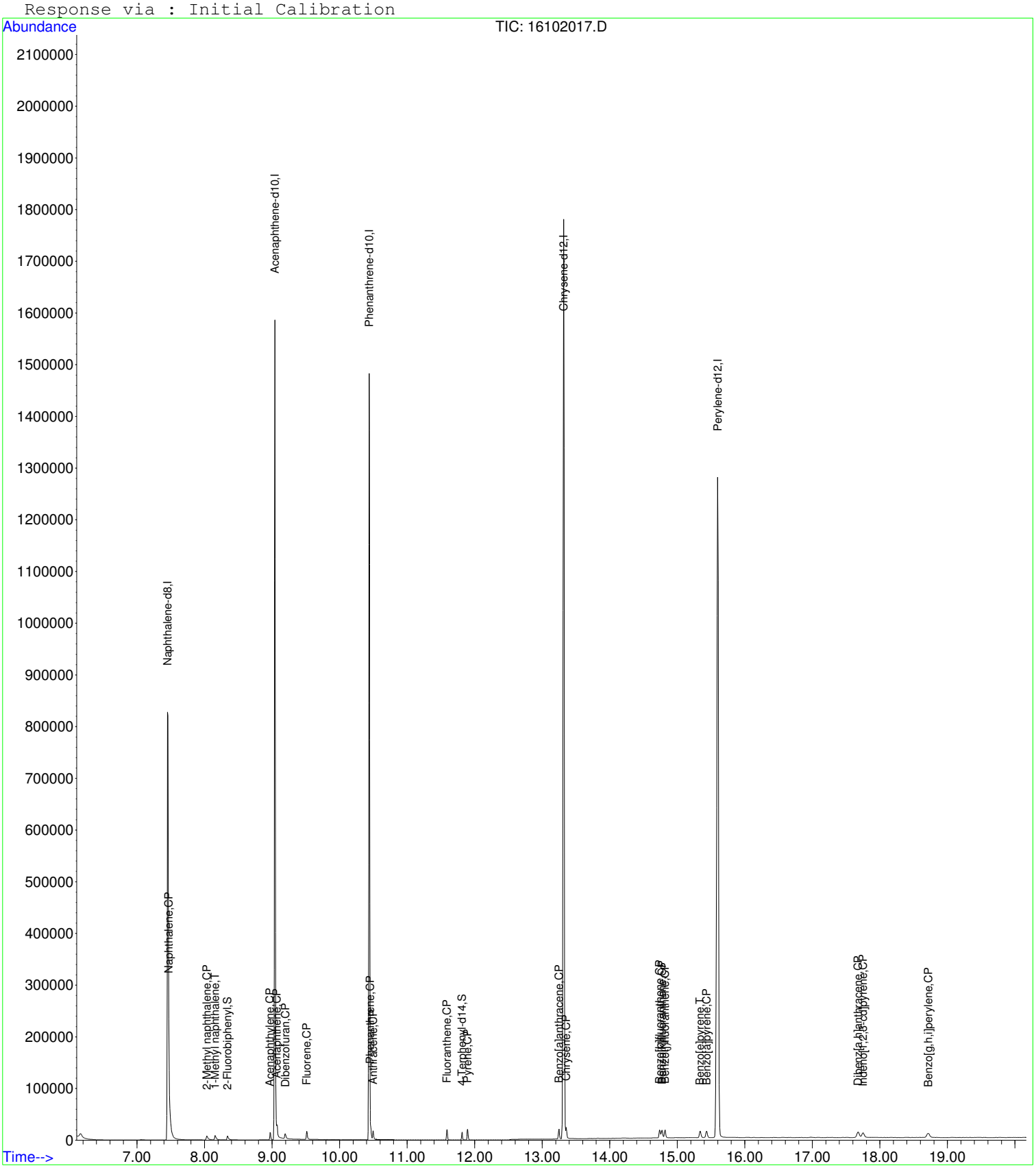
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1069876	4000.00	ug/kg	98
5) Acenaphthene-d10	9.04	164	639900	4000.00	ug/kg	101
11) Phenanthrene-d10	10.44	188	1199553	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1556495	4000.00	ug/kg	101
20) Perylene-d12	15.60	264	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

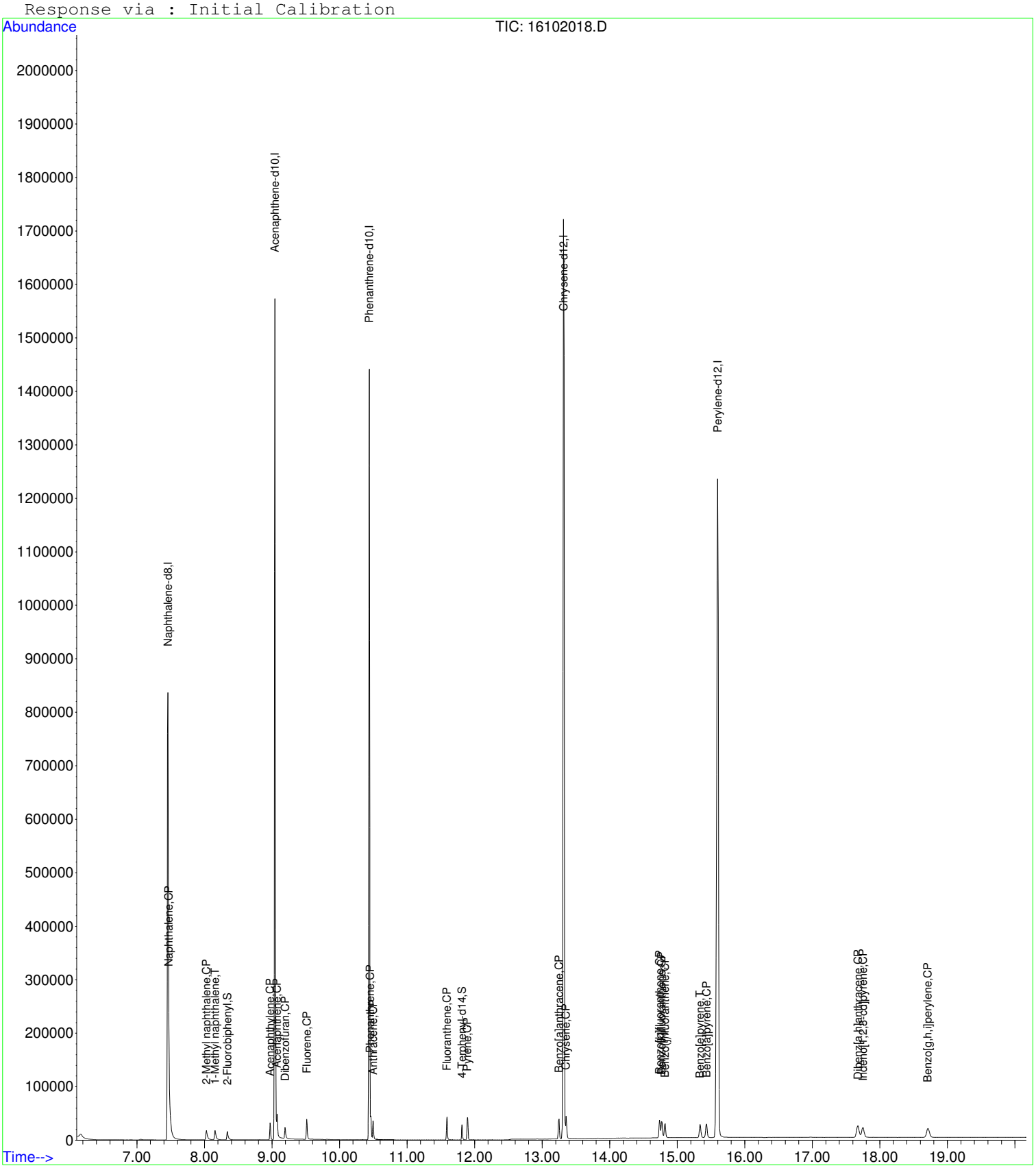
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040067	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	629544	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1179032	4000.00	ug/kg	98
17) Chrysene-d12	13.32	240	1524929	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1486769	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

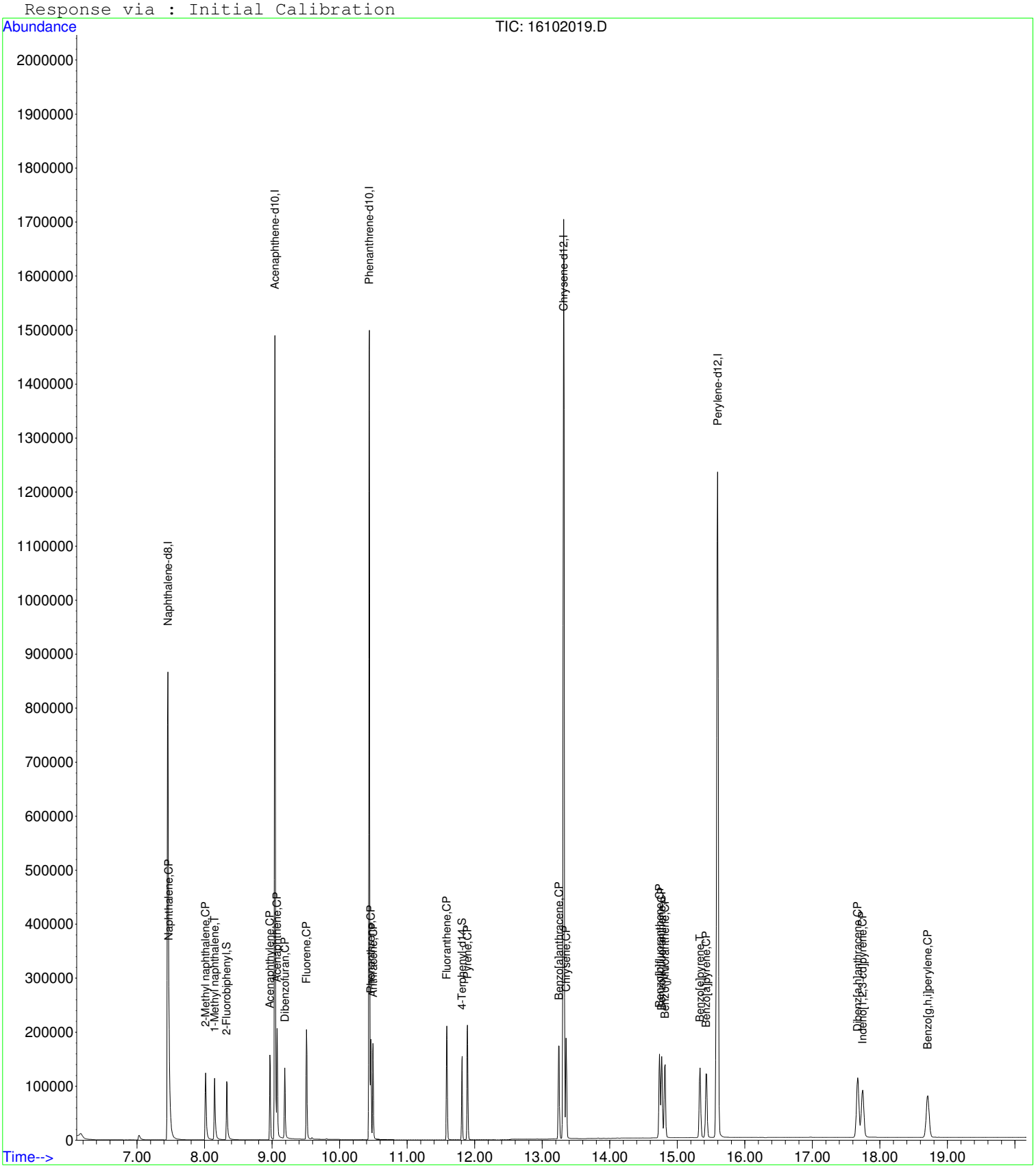
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040959	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	616557	4000.00	ug/kg	97
11) Phenanthrene-d10	10.44	188	1169580	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1497950	4000.00	ug/kg	97
20) Perylene-d12	15.60	264	1474044	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

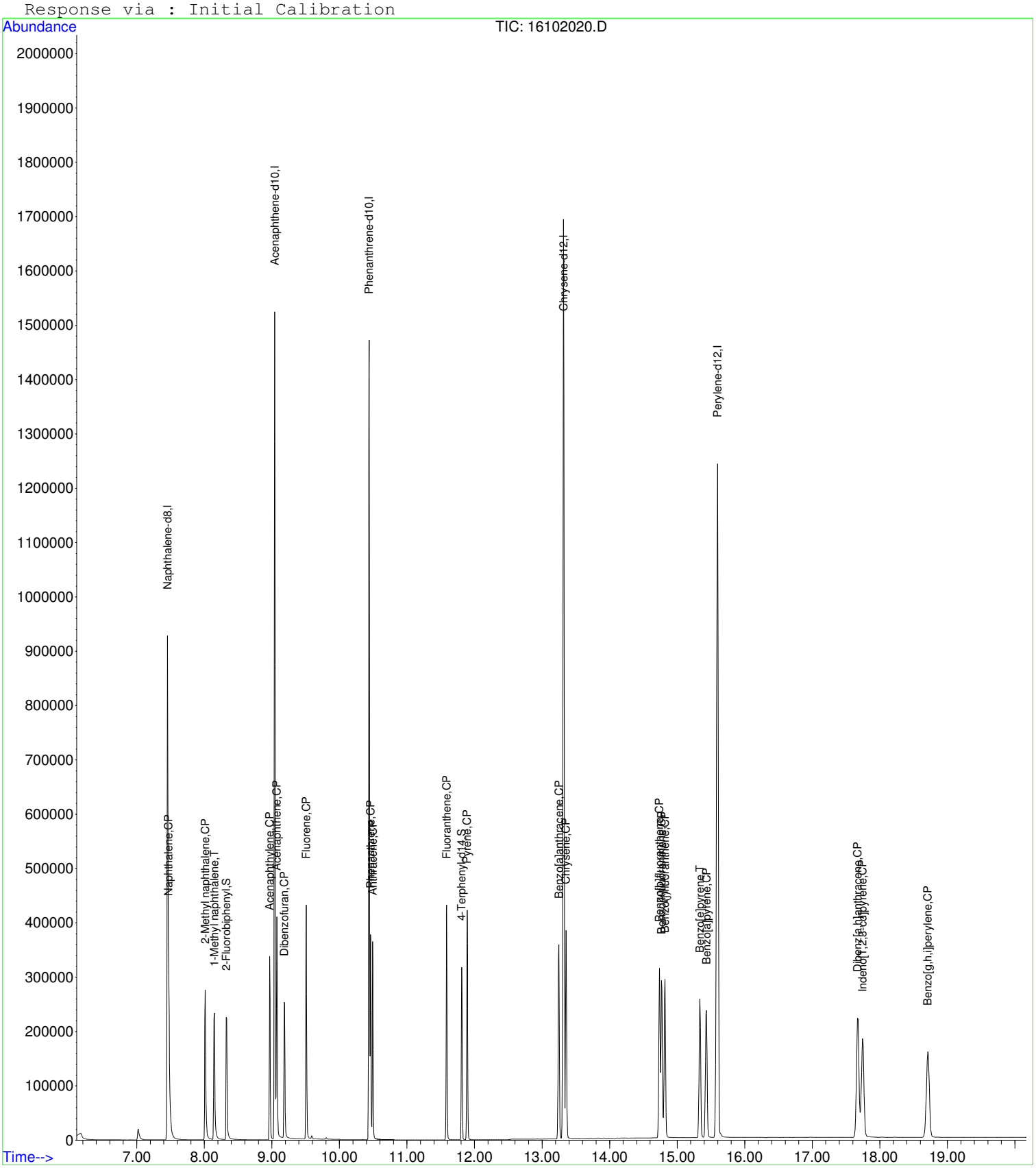
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1048894	4000.00	ug/kg	96
5) Acenaphthene-d10	9.04	164	626534	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1187118	4000.00	ug/kg	99
17) Chrysene-d12	13.32	240	1520400	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1497511	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

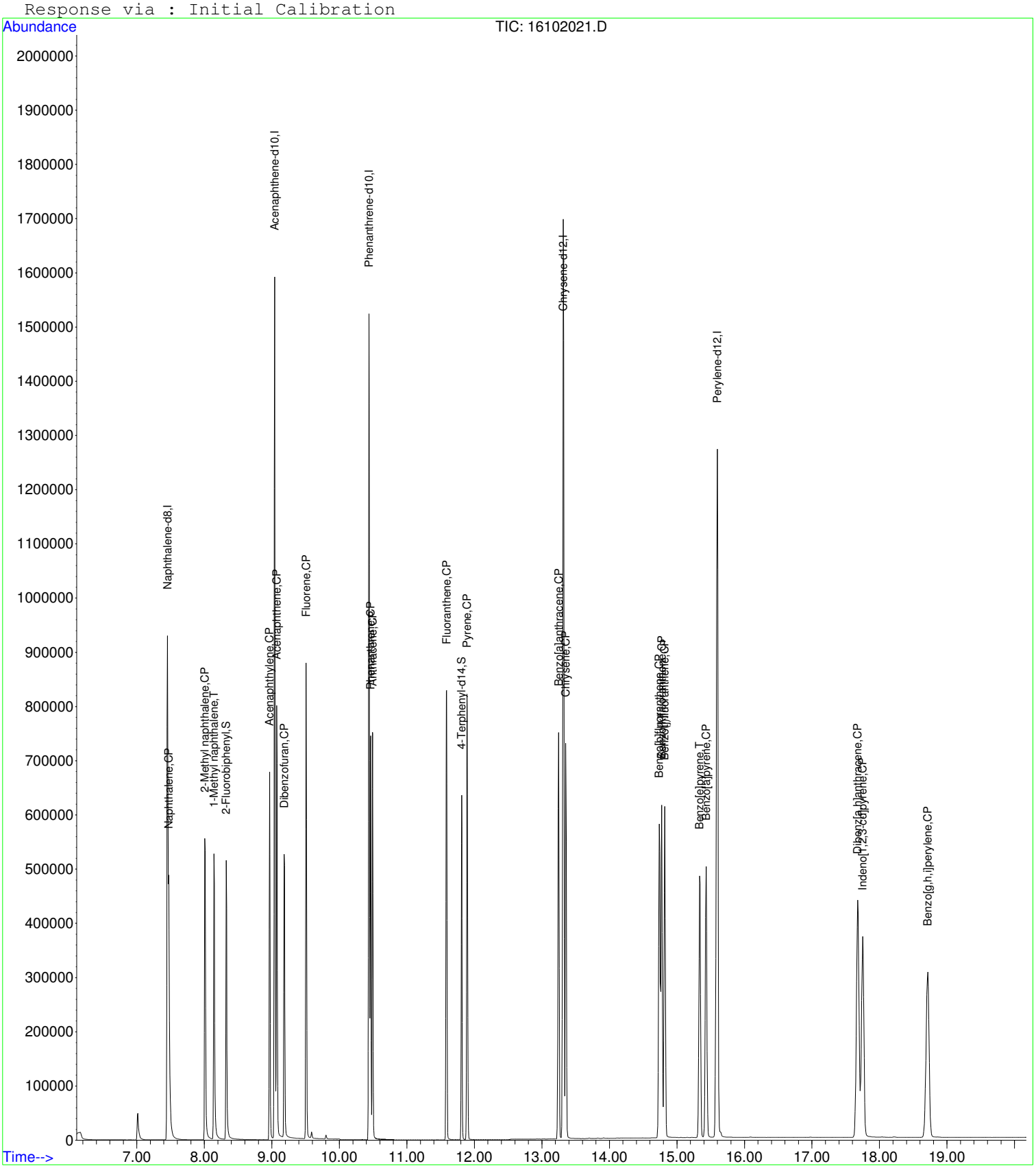
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1091786	4000.00	ug/kg	100
5) Acenaphthene-d10	9.04	164	633848	4000.00	ug/kg	100
11) Phenanthrene-d10	10.44	188	1200220	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1541952	4000.00	ug/kg	100
20) Perylene-d12	15.60	264	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

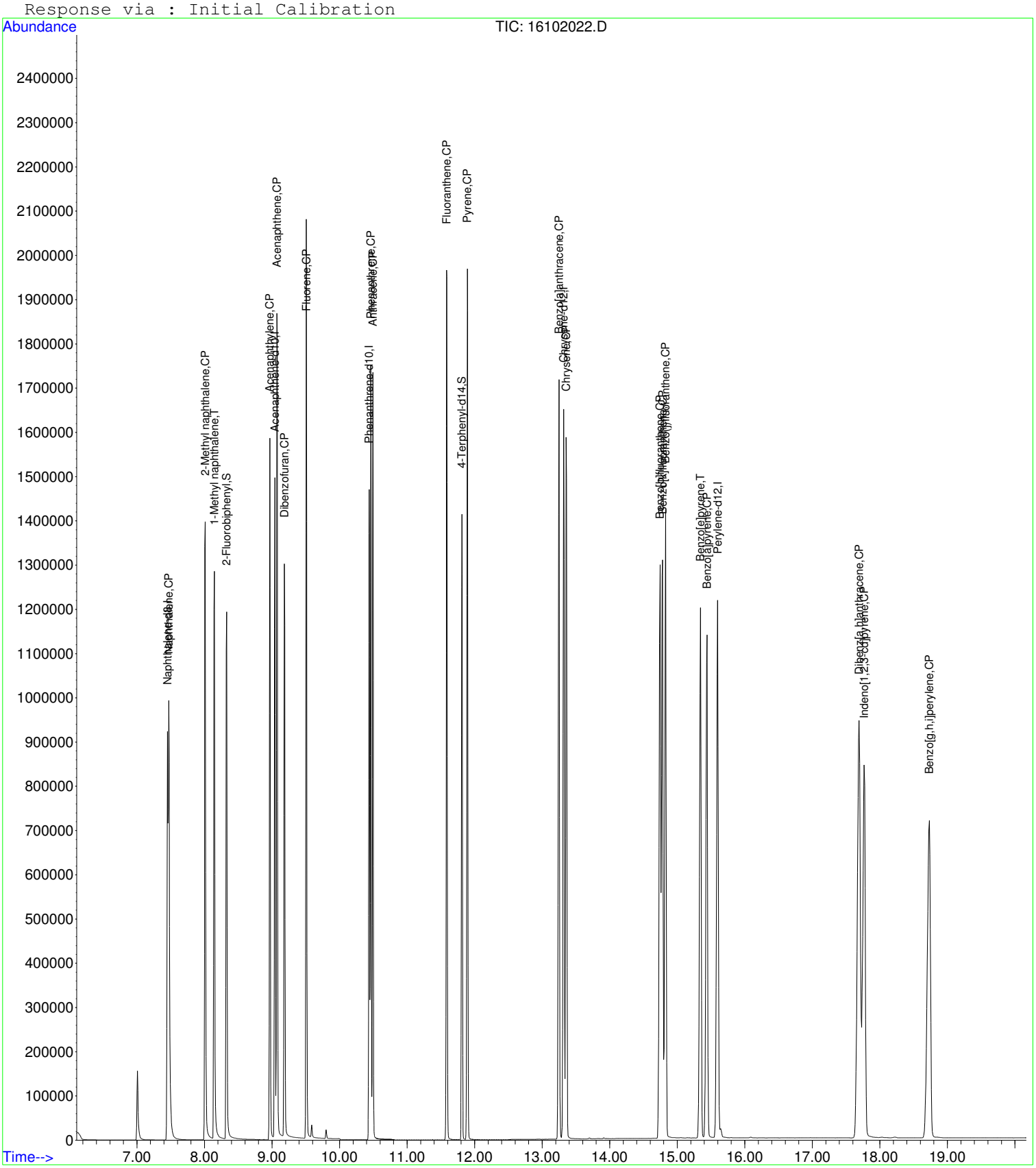
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1041865	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	606729	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1156115	4000.00	ug/kg	96
17) Chrysene-d12	13.32	240	1468571	4000.00	ug/kg	95
20) Perylene-d12	15.60	264	1438518	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

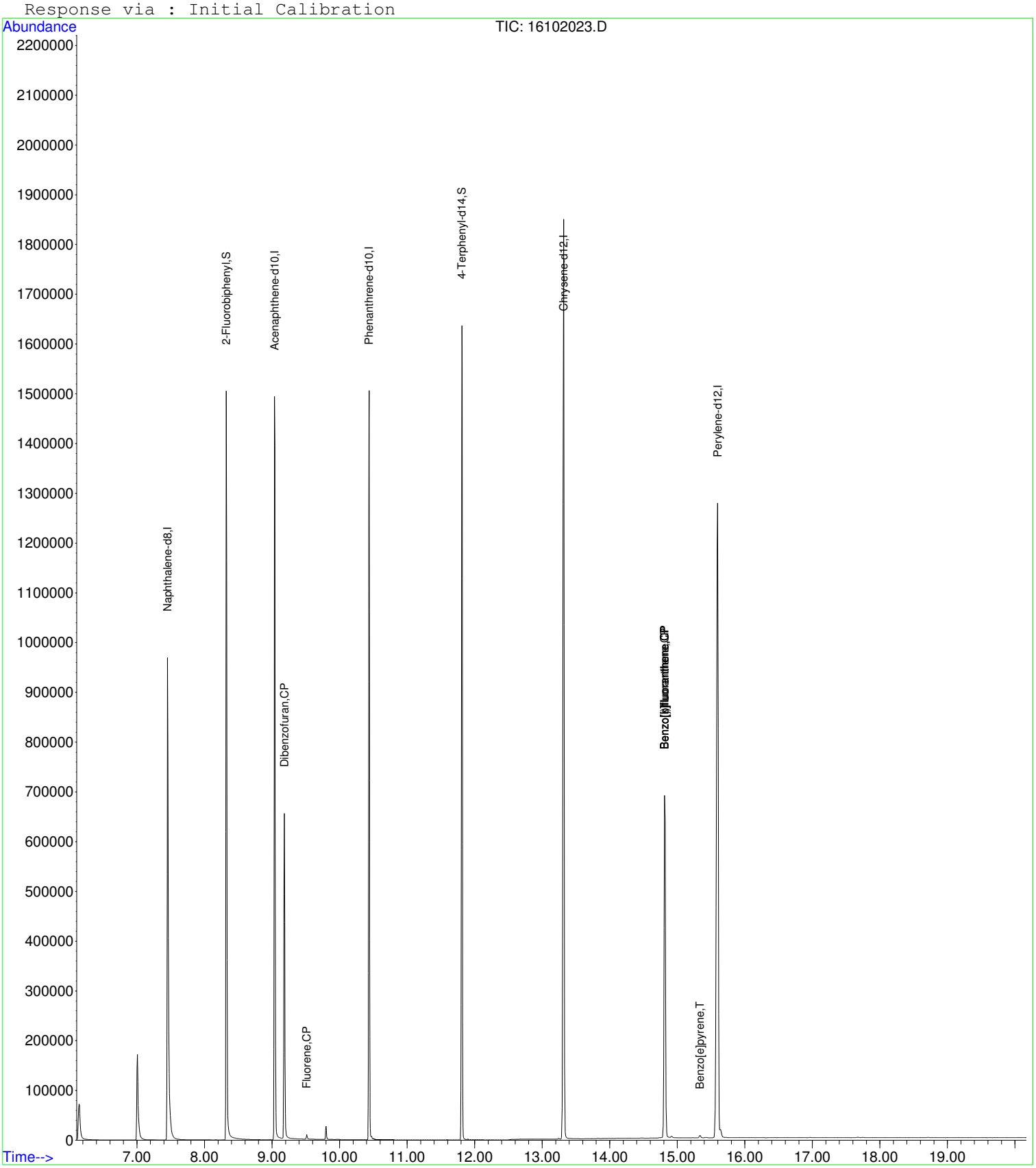
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1171217	4000.00	ug/kg	107
5) Acenaphthene-d10	9.04	164	648893	4000.00	ug/kg	102
11) Phenanthrene-d10	10.44	188	1210829	4000.00	ug/kg	101
17) Chrysene-d12	13.32	240	1579392	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	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

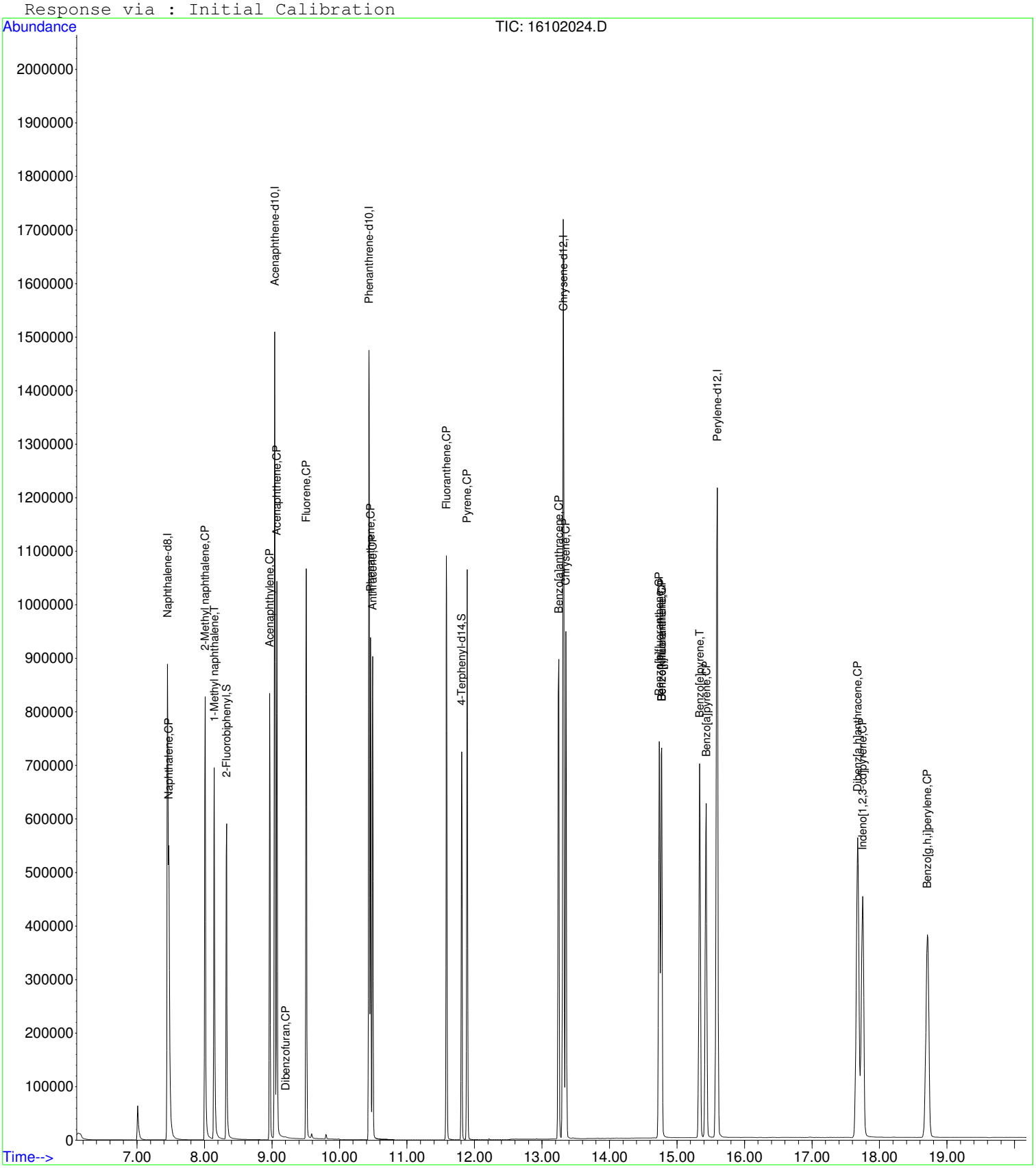
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1036180	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	609450	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1158659	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1508270	4000.00	ug/kg	98
20) Perylene-d12	15.60	264	1454395	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
1611022

GCMS8_161110A
For

DHL Work Order
1611022

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_161110A
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: 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: Angie O'Donnell Date: 11/18/2016

DHL Analytical, Inc.

Run ID: GCMS8_161110A **Run No.:** 88950

Analytical Run Date: 11/10/2016 **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-161110	1	PAH_LL_SDOD1	TUNE	R88950	11/10/2016 9:51:00 AM		All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers.
ICV-161110	1	PAH_LL_SDOD1	ICV	R88950	11/10/2016 10:20:00 AM		
LCS-77830	1	PAH_LL_SDOD1	LCS	77830	11/10/2016 10:49:00 AM		
MB-77830	1	PAH_LL_SDOD1	MBLK	77830	11/10/2016 11:17:00 AM		
1611022-22A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 11:46:00 AM		
1611022-23A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 12:15:00 PM		
1611022-24A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 12:44:00 PM		
1611022-25A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 1:12:00 PM		
1611028-01A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 1:42:00 PM		
1611028-02A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 2:10:00 PM		
1611028-03A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 2:39:00 PM		
DFTPP2-161110	1	PAH_LL_SDOD1	TUNE	R88950	11/10/2016 3:08:00 PM		
ICV2-161110	1	PAH_LL_SDOD1	ICV	R88950	11/10/2016 3:37:00 PM		
SB-161110	1	PAH_LL_SDOD1	SBLK	77830	11/10/2016 4:05:00 PM		
1611028-04A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 4:34:00 PM		
1611028-05A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 5:03:00 PM		
1611028-06A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 5:31:00 PM		
1611028-07A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 6:00:00 PM		
1611028-08A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 6:29:00 PM		
1611028-09A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 6:57:00 PM		
1611028-10A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 7:27:00 PM		
1611028-11A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 7:55:00 PM		
1611028-12A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 8:24:00 PM		
1611028-14A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 8:52:00 PM		
1611028-15A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 9:21:00 PM		
1611028-16A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 9:50:00 PM		
1611028-17A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 10:19:00 PM		
1611028-10AMS	10	PAH_LL_SDOD1	MS	77830	11/10/2016 10:48:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161020	1 PPM PAH CCV STANDARD	CCV	01/18/2017
PAHICV161020	2 PPM PAH ICV	ICV	01/18/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

DHL Analytical, Inc.

Run ID: GCMS8_161110A **Run No.:** 88950

1611028-10AMSD	10	PAH_LL_SDOD1	MSD	77830	11/10/2016 11:16:00 PM		
CCV1-161110	1	PAH_LL_SDOD1	CCV	R88950	11/10/2016 11:45:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161020	1 PPM PAH CCV STANDARD	CCV	01/18/2017
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\161110.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	1	16111001 DFTPPPAH	DFTPP-161110
2)	Sample	2	16111002 PP161021	ICV-161110
3)	Sample	3	16111003 PP161021	LCS-77830
4)	Sample	4	16111004 PP161021	MB-77830
5)	Sample	5	16111005 PP161021	1611022-22A
6)	Sample	6	16111006 PP161021	1611022-23A
7)	Sample	7	16111007 PP161021	1611022-24A
8)	Sample	8	16111008 PP161021	1611022-25A
9)	Sample	9	16111009 PP161021	1611028-01A
10)	Sample	10	16111010 PP161021	1611028-02A
11)	Sample	11	16111011 PP161021	1611028-03A
12)	Sample	12	16111012 DFTPPPAH	DFTPP2-161110
13)	Sample	13	16111013 PP161021	ICV2-161110
14)	Sample	14	16111014 PP161021	SB-161110
15)	Sample	15	16111015 PP161021	1611028-04A
16)	Sample	16	16111016 PP161021	1611028-05A
17)	Sample	17	16111017 PP161021	1611028-06A
18)	Sample	18	16111018 PP161021	1611028-07A
19)	Sample	19	16111019 PP161021	1611028-08A
20)	Sample	20	16111020 PP161021	1611028-09A
21)	Sample	21	16111021 PP161021	1611028-10A
22)	Sample	22	16111022 PP161021	1611028-11A
23)	Sample	23	16111023 PP161021	1611028-12A
24)	Sample	24	16111024 PP161021	1611028-14A
25)	Sample	25	16111025 PP161021	1611028-15A
26)	Sample	26	16111026 PP161021	1611028-16A
27)	Sample	27	16111027 PP161021	1611028-17A
28)	Sample	28	16111028 PP161021	1611028-10AMS
29)	Sample	29	16111029 PP161021	1611028-10AMSD
30)	Sample	30	16111030 PP161021	CCV1-161110

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 1:00:00 PM**
Digestion:
Prep End Date: **11/9/2016 3:04:00 PM**

Prep Batch **77830** 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
1611022-22A	Soil		10.17	10	0.983	1 of 1	
1611022-23A	Soil		10.4	10	0.962	1 of 1	
1611022-24A	Soil		10.18	10	0.982	1 of 1	
1611022-25A	Soil		10.55	10	0.948	1 of 1	
1611028-01A	Soil		10.38	10	0.963	1 of 1	
1611028-02A	Soil		10.88	10	0.919	1 of 1	
1611028-03A	Soil		10.21	10	0.979	1 of 1	
1611028-04A	Soil		10.15	10	0.985	1 of 1	
1611028-05A	Soil		10.37	10	0.964	1 of 1	
1611028-06A	Soil		10.32	10	0.969	1 of 1	
1611028-07A	Soil		10.45	10	0.957	1 of 1	
1611028-08A	Soil		10.19	10	0.981	1 of 1	
1611028-09A	Soil		10.45	10	0.957	1 of 1	
1611028-10A	Soil		10.05	10	0.995	1 of 3	
1611028-10AMS	Soil		10.13	10	0.987	1 of	
1611028-10AMSD	Soil		10.21	10	0.979	1 of	
1611028-11A	Soil		10.53	10	0.950	1 of 1	
1611028-12A	Soil		10.24	10	0.977	1 of 1	
1611028-14A	Soil		10.42	10	0.960	1 of 1	
1611028-15A	Soil		10.3	10	0.971	1 of 1	
1611028-16A	Soil		10.5	10	0.952	1 of 1	
1611028-17A	Soil	10.28	~~10.25~~	10	0.976	1 of 1	afo 11/18/2016
LCS-77830	Soil		10	10	1.000	of	
MB-77830	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 Angie O'Donnell at 2:25:24 PM, 11/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 1:00:00 PM**
Digestion:
Prep End Date: 11/9/16 3:04PM

Prep Batch **77830** 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
1611022-22A	Soil		10.17	10	1.000	1 of 1	
1611022-23A	Soil		10.40	10	1.000	1 of 1	
1611022-24A	Soil		10.18	10	1.000	1 of 1	
1611022-25A	Soil		10.55	10	1.000	1 of 1	
1611028-01A	Soil		10.38	10	1.000	1 of 1	
1611028-02A	Soil		10.88	10	1.000	1 of 1	
1611028-03A	Soil		10.21	10	1.000	1 of 1	
1611028-04A	Soil		10.15	10	1.000	1 of 1	
1611028-05A	Soil		10.37	10	1.000	1 of 1	
1611028-06A	Soil		10.32	10	1.000	1 of 1	
1611028-07A	Soil		10.45	10	1.000	1 of 1	
1611028-08A	Soil		10.19	10	1.000	1 of 1	
1611028-09A	Soil		10.45	10	1.000	1 of 1	
1611028-10A	Soil		10.05	10	1.000	1 of 3	
1611028-10AMS	Soil		10.13	10	1.000	↓ of ↓	
1611028-10AMSD	Soil		10.21	10	1.000	of	
1611028-11A	Soil		10.53	10	1.000	1 of 1	
1611028-12A	Soil		10.24	10	1.000	1 of 1	
1611028-14A	Soil		10.42	10	1.000	1 of 1	
1611028-15A	Soil		10.30	10	1.000	1 of 1	
1611028-16A	Soil		10.50	10	1.000	1 of 1	
1611028-17A	Soil		10.28	10	1.000	1 of 1	
LCS-77830	Soil		10	10	1.000	of	
MB-77830	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

11/9/16

11/9/16

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							

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**

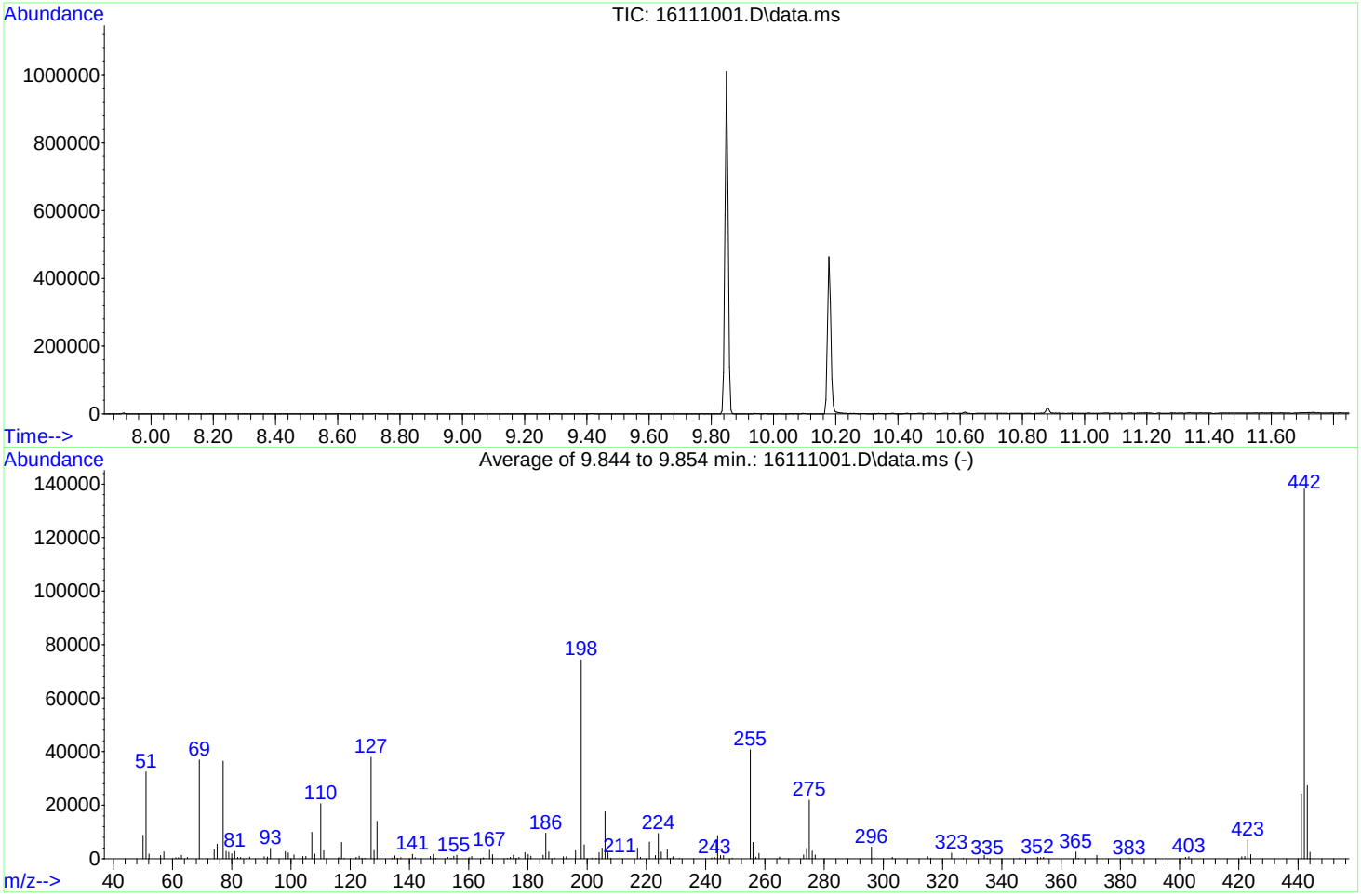
Prep Batch **77789** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker** Prep Factor Units: **mL/**

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							

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111001.D
Acq On : 10 Nov 2016 9:51 am
Operator :
Sample : DFTPP-161110
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



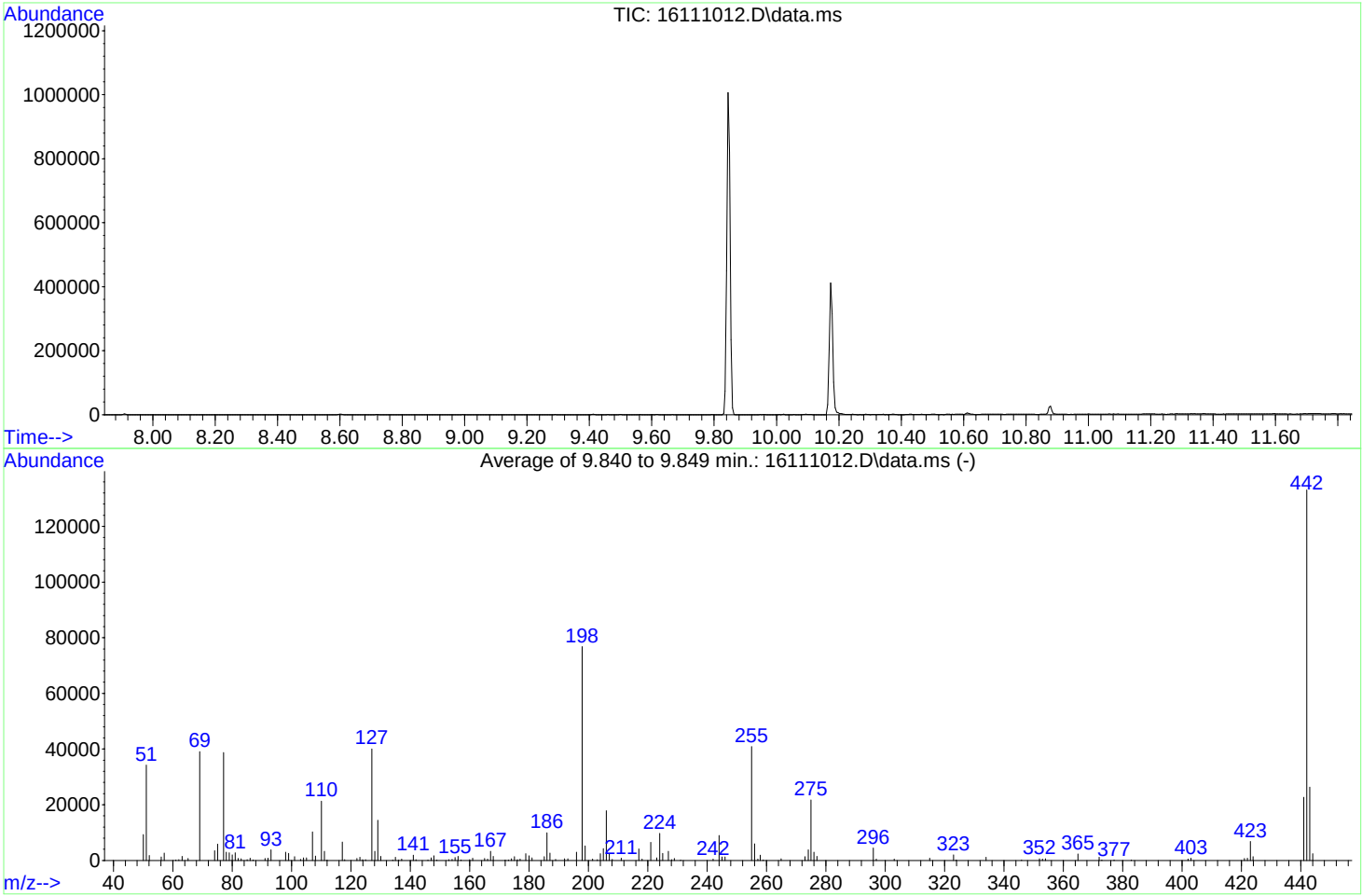
AutoFind: Scans 799, 800, 801; Background Corrected with Scan 794

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	43.6	32434	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	49.6	36861	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	51.0	37898	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	74341	PASS
199	198	5	9	7.0	5170	PASS
275	198	10	60	29.4	21832	PASS
365	198	1	200	3.4	2549	PASS
441	442	0.01	24	17.5	24195	PASS
442	198	50	400	185.9	138210	PASS
443	442	15	24	19.7	27288	PASS

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111012.D
Acq On : 10 Nov 2016 3:08 pm
Operator :
Sample : DFTPP2-161110
Misc : TUNE
ALS Vial : 12 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	44.5	34205	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	50.9	39050	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	52.2	40048	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	76786	PASS
199	198	5	9	6.8	5189	PASS
275	198	10	60	28.2	21670	PASS
365	198	1	200	3.0	2323	PASS
441	442	0.01	24	17.0	22674	PASS
442	198	50	400	173.4	133122	PASS
443	442	15	24	19.8	26356	PASS

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111002.D
Acq On : 10 Nov 2016 10:20 am
Operator :
Sample : ICV-161110
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 11:37:31 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

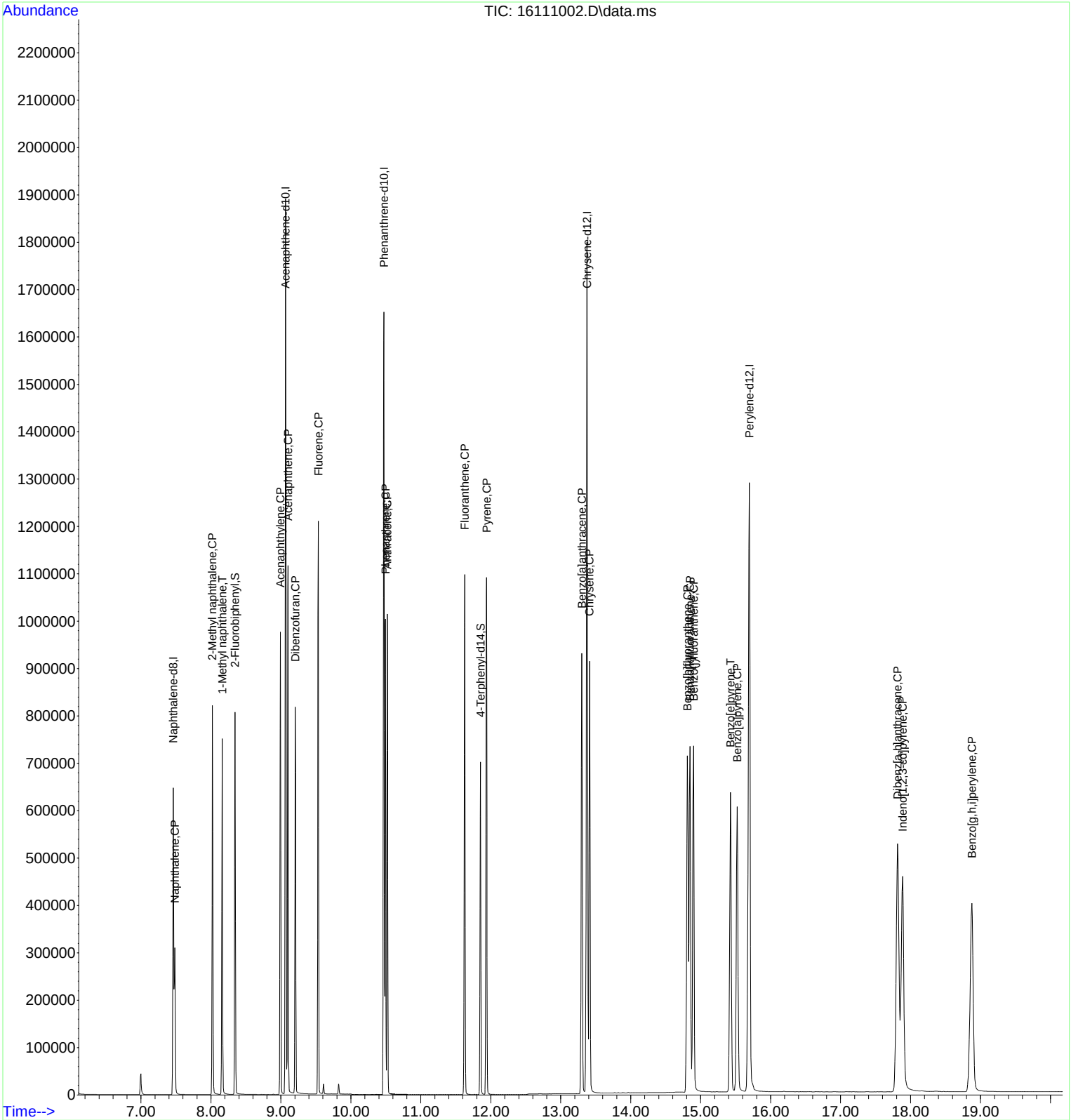
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	564627	4000.00	ug/kg	64
5) Acenaphthene-d10	9.067	164	682782	4000.00	ug/kg	86
11) Phenanthrene-d10	10.471	188	1249213	4000.00	ug/kg	88
17) Chrysene-d12	13.375	240	1457285	4000.00	ug/kg	87
20) Perylene-d12	15.697	264	1564035	4000.00	ug/kg	89
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	459531	2072.08	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.80%			
16) 4-Terphenyl-d14	11.851	244	497688	2072.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.82%			
Target Compounds						Qvalue
2) Naphthalene	7.483	128	218925	1996.56	ug/kg	100
3) 2-Methyl naphthalene	8.021	142	323490	2665.94	ug/kg	94
4) 1-Methyl naphthalene	8.159	142	285547	2606.53	ug/kg	94
6) Dibenzofuran	9.205	168	513882	2070.80	ug/kg	100
8) Acenaphthylene	8.994	152	586917	2061.78	ug/kg	99
9) Acenaphthene	9.102	154	341755	2072.45	ug/kg	95
10) Fluorene	9.534	166	418611	2026.71	ug/kg	98
12) Phenanthrene	10.494	178	569738	1941.36	ug/kg	100
13) Anthracene	10.522	178	581414	1946.05	ug/kg	100
14) Fluoranthene	11.627	202	655205	1888.39	ug/kg	100
15) Pyrene	11.938	202	665904	1869.32	ug/kg	100
18) Benzo[a]anthracene	13.301	228	703190	2049.13	ug/kg	100
19) Chrysene	13.411	228	652215	2096.35	ug/kg	100
21) Benzo[b]fluoranthene	14.810	252	744711	1908.43	ug/kg	100
22) Benzo[k]fluoranthene	14.847	252	740744	2100.11	ug/kg	99
23) Benzo(j)fluoranthene	14.898	252	716025	2063.78	ug/kg	100
24) Benzo[e]pyrene	15.426	252	710182	2030.38	ug/kg	99
25) Benzo[a]pyrene	15.521	252	719678	2013.80	ug/kg	99
26) Dibenz[a,h]anthracene	17.814	278	753472	2050.19	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.887	276	724282	2020.65	ug/kg	100
28) Benzo[g,h,i]perylene	18.876	276	776784	2046.26	ug/kg	99

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111002.D
Acq On : 10 Nov 2016 10:20 am
Operator :
Sample : ICV-161110
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

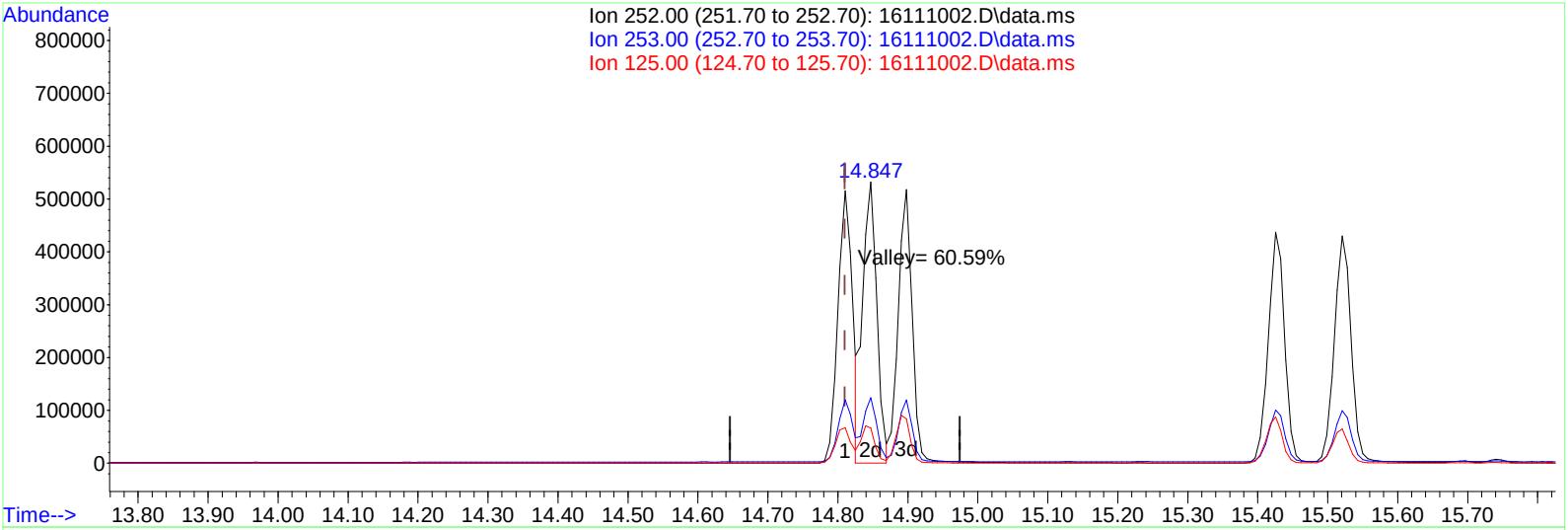
Quant Time: Nov 14 11:37:31 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

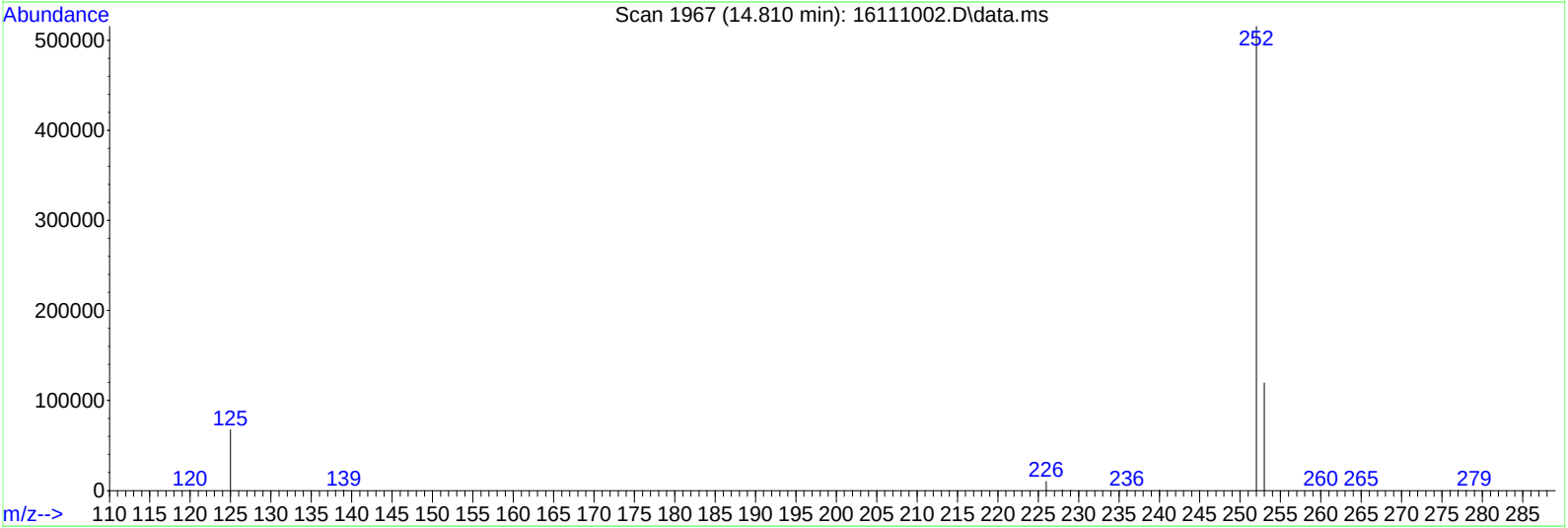


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111002.D
Acq On : 10 Nov 2016 10:20 am
Operator :
Sample : ICV-161110
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 11:37:31 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





TIC: 16111002.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.810min (+0.000) 1908.43ug/kg

response 744711

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.71
125.00	12.90	13.04
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111003.D
Acq On : 10 Nov 2016 10:49 am
Operator :
Sample : LCS-77830
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 11:37:35 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	7.465	136	976166	4000.00	ug/kg	111
5) Acenaphthene-d10	9.067	164	633785	4000.00	ug/kg	80
11) Phenanthrene-d10	10.468	188	1161520	4000.00	ug/kg	82
17) Chrysene-d12	13.374	240	1360060	4000.00	ug/kg	81
20) Perylene-d12	15.689	264	1449494	4000.00	ug/kg	82

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	185849	902.80	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.57%#			
16) 4-Terphenyl-d14	11.852	244	216703	970.61	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 24.27%#			

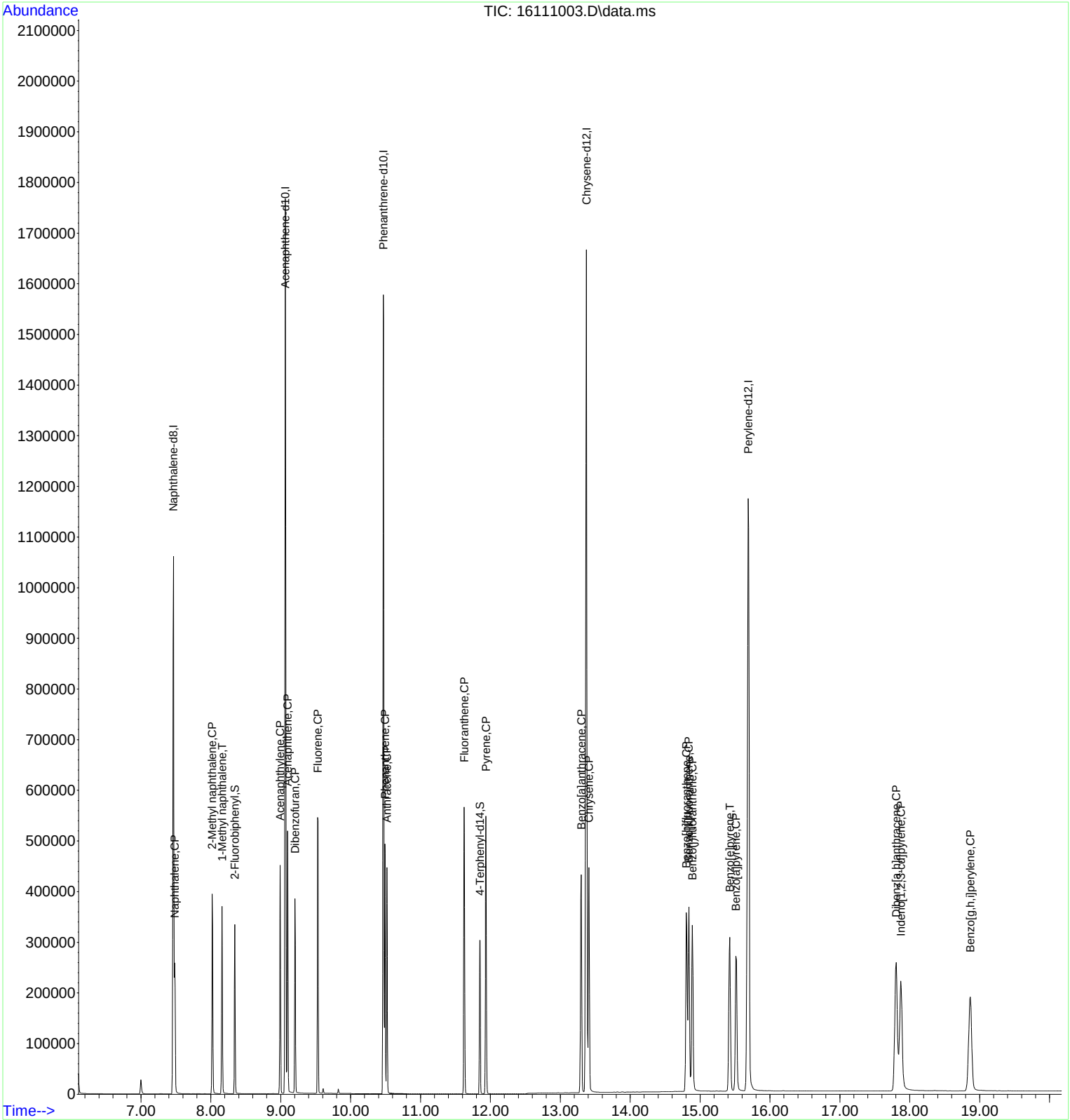
Target Compounds						Qvalue
2) Naphthalene	7.483	128	181633	958.12	ug/kg	99
3) 2-Methyl naphthalene	8.020	142	162461	774.42	ug/kg	90
4) 1-Methyl naphthalene	8.159	142	146173	771.77	ug/kg	90
6) Dibenzofuran	9.204	168	235486	1022.30	ug/kg	98
8) Acenaphthylene	8.993	152	271339	1026.88	ug/kg	99
9) Acenaphthene	9.096	154	155788	1017.75	ug/kg	97
10) Fluorene	9.533	166	201719	1052.13	ug/kg	97
12) Phenanthrene	10.492	178	277971	1018.68	ug/kg	99
13) Anthracene	10.521	178	261754	942.26	ug/kg	99
14) Fluoranthene	11.624	202	323138	1001.64	ug/kg	98
15) Pyrene	11.936	202	324201	978.81	ug/kg	99
18) Benzo[a]anthracene	13.301	228	344035	1074.20	ug/kg	99
19) Chrysene	13.410	228	319852	1101.56	ug/kg	99
21) Benzo[b]fluoranthene	14.802	252	397018	1097.82	ug/kg	98
22) Benzo[k]fluoranthene	14.839	252	332681	1017.73	ug/kg	99
23) Benzo(j)fluoranthene	14.890	252	321630	1000.28	ug/kg	99
24) Benzo[e]pyrene	15.425	252	347262	1071.26	ug/kg	96
25) Benzo[a]pyrene	15.513	252	328504	991.85	ug/kg	98
26) Dibenz[a,h]anthracene	17.805	278	360063	1057.15	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.871	276	351639	1058.55	ug/kg	99
28) Benzo[g,h,i]perylene	18.868	276	369980	1051.64	ug/kg	98

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111003.D
Acq On : 10 Nov 2016 10:49 am
Operator :
Sample : LCS-77830
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 11:37:35 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



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111004.D
Acq On : 10 Nov 2016 11:17 am
Operator :
Sample : MB-77830
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 11:37:38 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	7.466	136	945414	4000.00	ug/kg	107
5) Acenaphthene-d10	9.067	164	644118	4000.00	ug/kg	81
11) Phenanthrene-d10	10.469	188	1175015	4000.00	ug/kg	83
17) Chrysene-d12	13.374	240	1393166	4000.00	ug/kg	83
20) Perylene-d12	15.689	264	1471794	4000.00	ug/kg	84

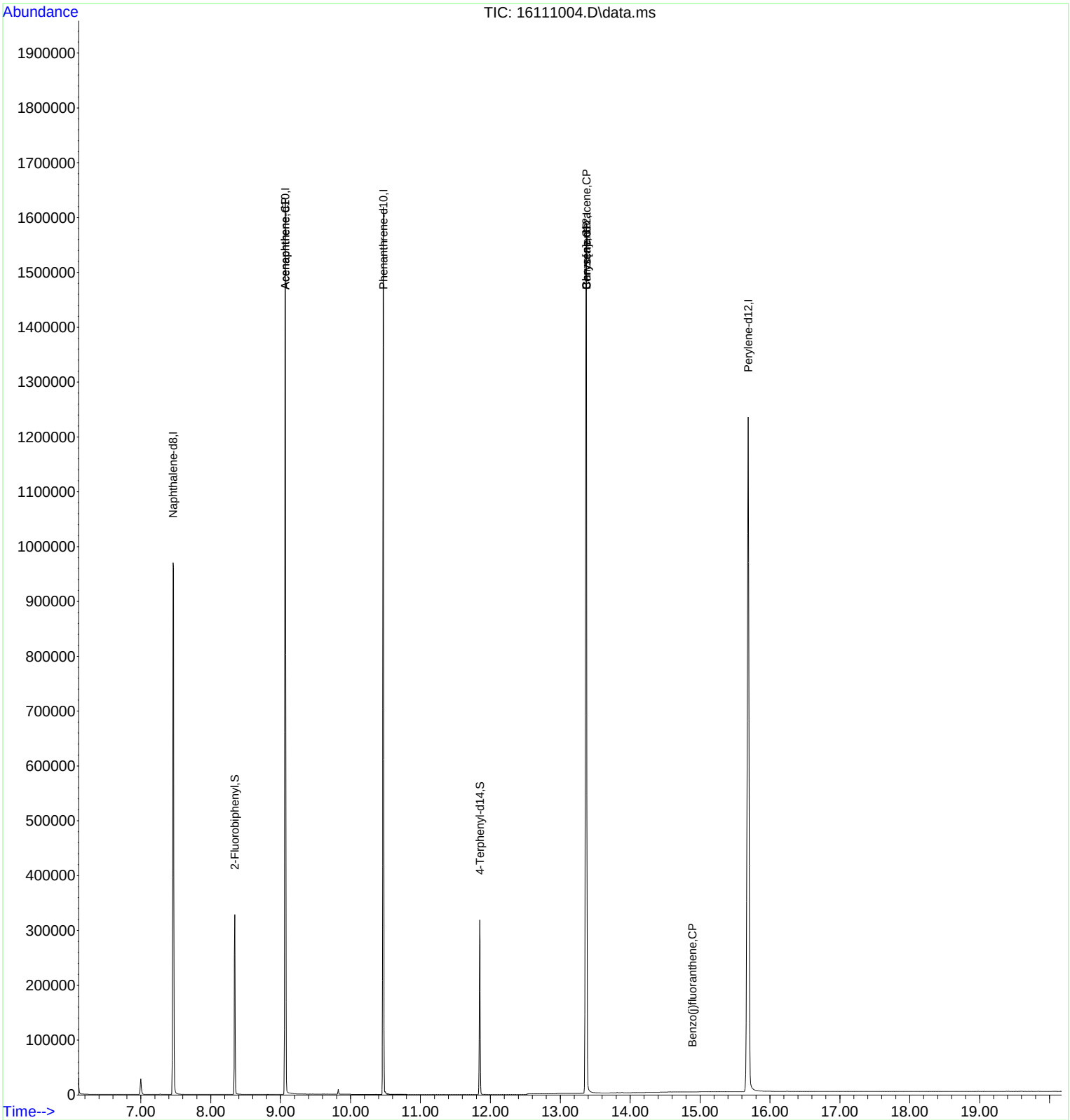
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	191680	916.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.90%#			
16) 4-Terphenyl-d14	11.848	244	225739	999.47	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 24.99%#			

Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2374	15.26	ug/kg#	10
18) Benzo[a]anthracene	13.374	228	3637	11.09	ug/kg	70
19) Chrysene	13.374	228	3644	12.25	ug/kg	66
23) Benzo(j)fluoranthene	14.883	252	76	0.23	ug/kg#	1

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

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111004.D
Acq On : 10 Nov 2016 11:17 am
Operator :
Sample : MB-77830
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 11:37:38 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\161110\
Data File : 16111005.D
Acq On : 10 Nov 2016 11:46 am
Operator :
Sample : 1611022-22A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: 10

Quant Time: Nov 14 11:38:38 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	565715	4000.00	ug/kg	64
5) Acenaphthene-d10	9.067	164	628663	4000.00	ug/kg	79
11) Phenanthrene-d10	10.467	188	1136566	4000.00	ug/kg	81
17) Chrysene-d12	13.373	240	1359177	4000.00	ug/kg	81
20) Perylene-d12	15.688	264	1467276	4000.00	ug/kg	83

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	19517	95.58	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.39%#			
16) 4-Terphenyl-d14	11.847	244	22305	102.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.55%#			

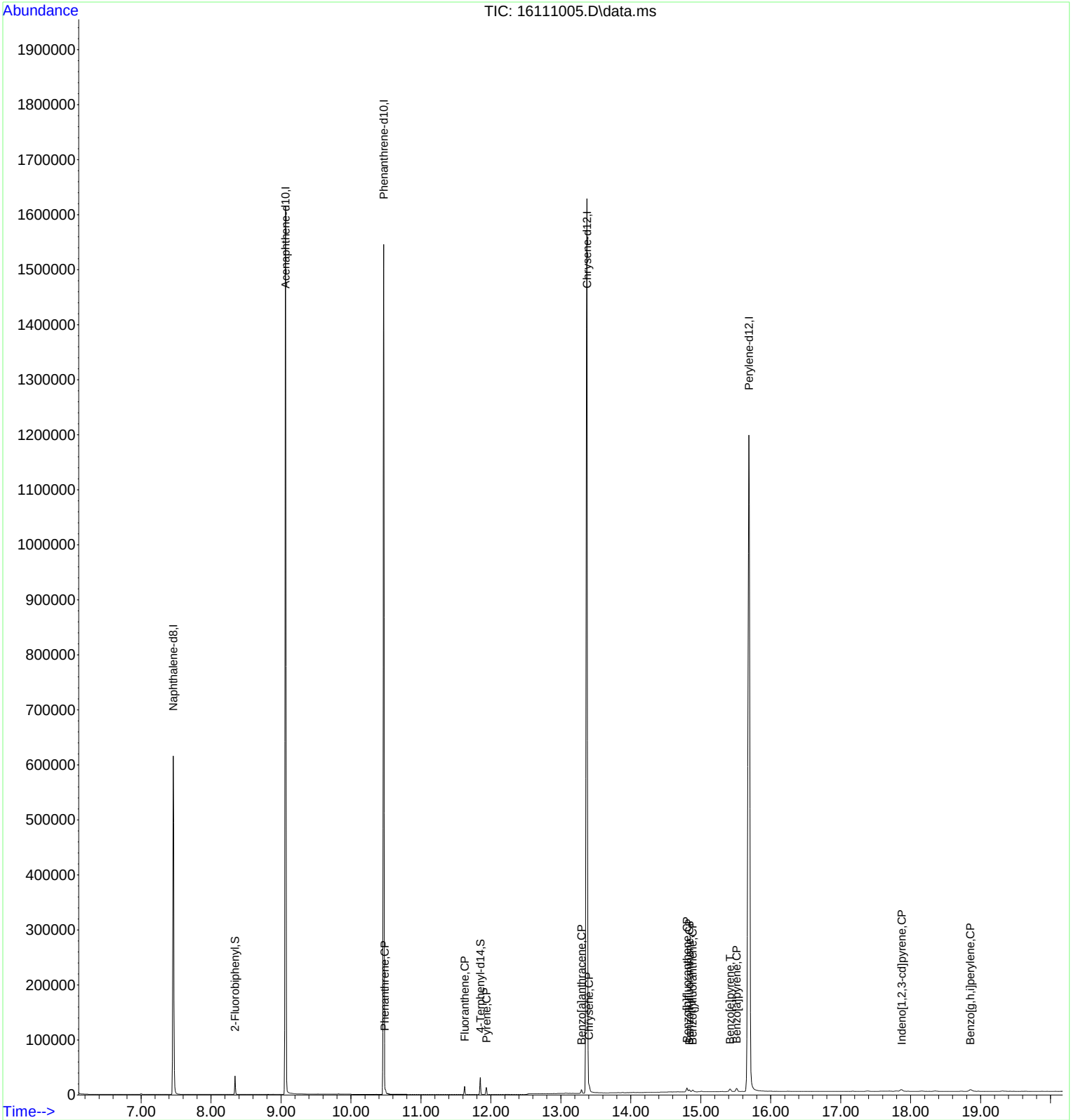
Target Compounds						Qvalue
12) Phenanthrene	10.491	178	2938	11.00	ug/kg	98
14) Fluoranthene	11.623	202	8874	28.11	ug/kg	97
15) Pyrene	11.935	202	8025	24.76	ug/kg	98
18) Benzo[a]anthracene	13.293	228	5570	17.40	ug/kg	98
19) Chrysene	13.410	228	5884	20.28	ug/kg	99
21) Benzo[b]fluoranthene	14.802	252	8059	22.01	ug/kg	99
22) Benzo[k]fluoranthene	14.838	252	3472	10.49	ug/kg	88
23) Benzo(j)fluoranthene	14.890	252	3345	10.28	ug/kg	96
24) Benzo[e]pyrene	15.417	252	5563	16.95	ug/kg	98
25) Benzo[a]pyrene	15.512	252	7190	21.45	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.871	276	5742	17.08	ug/kg	97
28) Benzo[g,h,i]perylene	18.860	276	6225	17.48	ug/kg	96

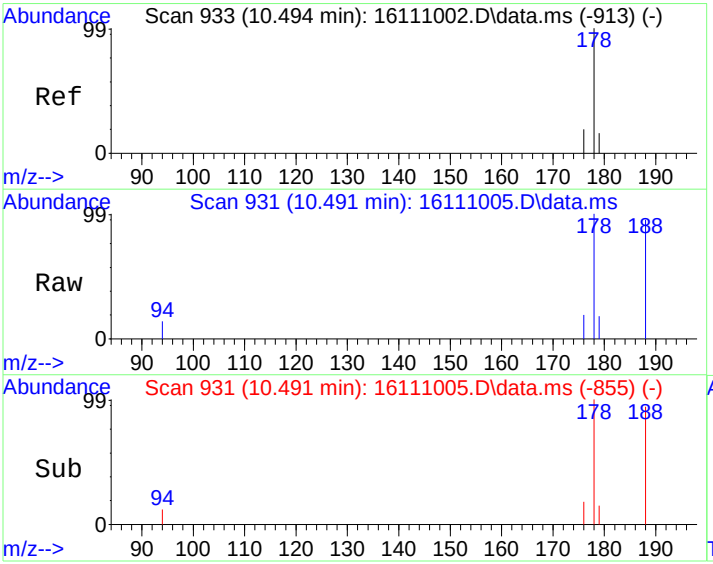
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111005.D
Acq On : 10 Nov 2016 11:46 am
Operator :
Sample : 1611022-22A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: 10

Quant Time: Nov 14 11:38:38 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

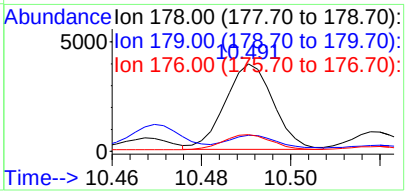


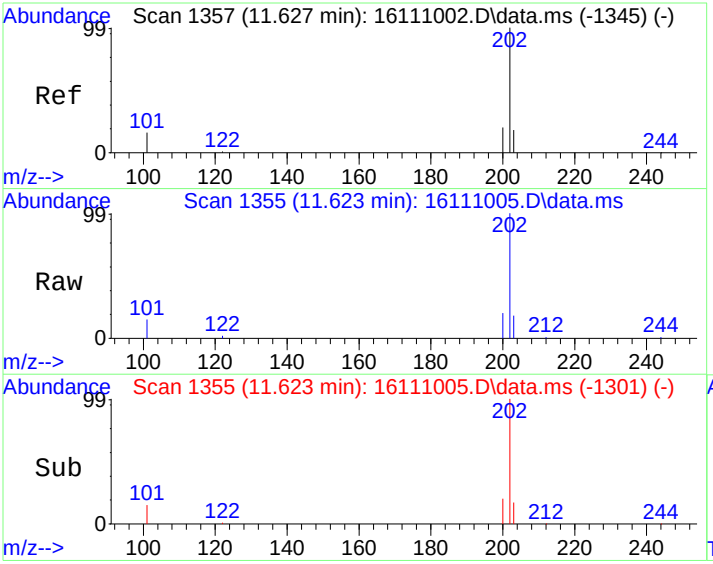


#12
Phenanthrene
Concen: 11.00 ug/kg
RT: 10.491 min Scan# 931
Delta R.T. -0.003 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:178 Resp: 2938

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	46.2
176	17.8	0.0	48.4

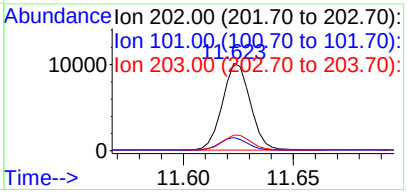


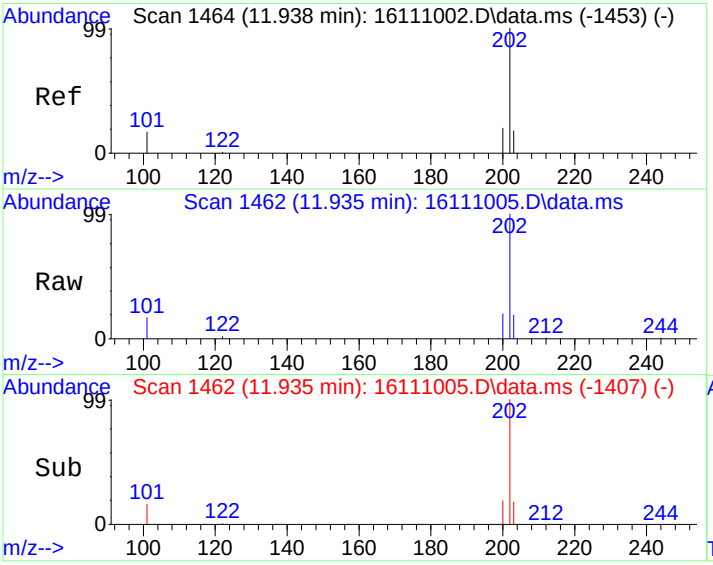


#14
Fluoranthene
Concen: 28.11 ug/kg
RT: 11.623 min Scan# 1355
Delta R.T. -0.003 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:202 Resp: 8874

Ion	Ratio	Lower	Upper
202	100		
101	14.7	0.0	45.8
203	17.0	0.0	48.2

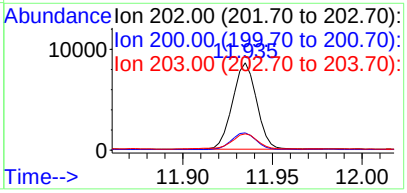


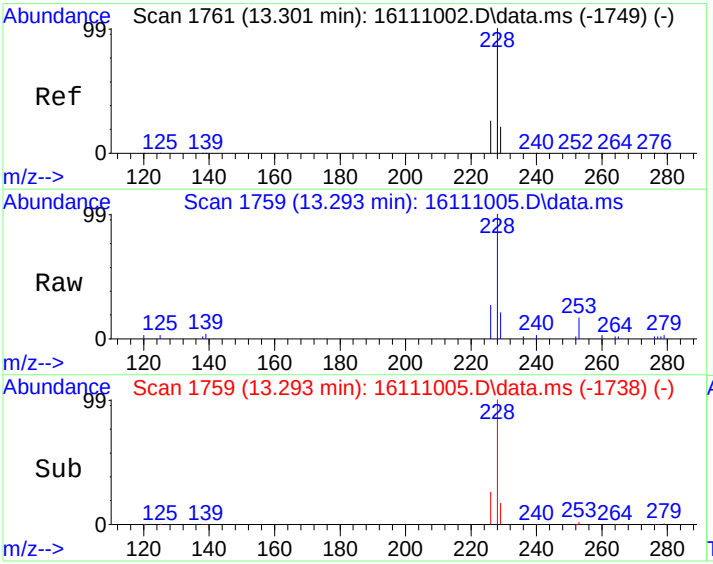


#15
Pyrene
Concen: 24.76 ug/kg
RT: 11.935 min Scan# 1462
Delta R.T. -0.003 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:202 Resp: 8025

Ion	Ratio	Lower	Upper
202	100		
200	19.3	0.0	50.3
203	17.6	0.0	48.2

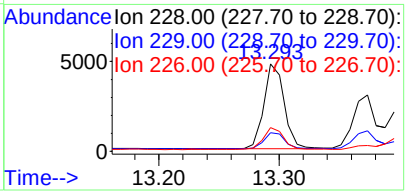


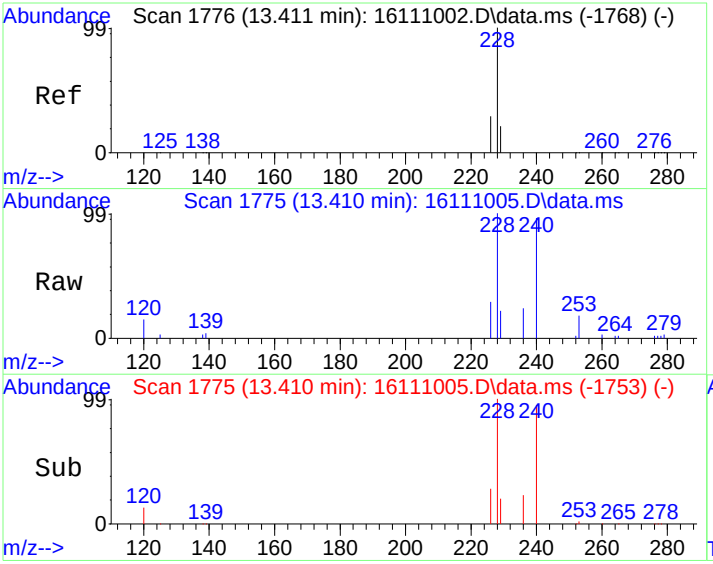


#18
Benzo[a]anthracene
Concen: 17.40 ug/kg
RT: 13.293 min Scan# 1759
Delta R.T. -0.008 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:228 Resp: 5570

Ion	Ratio	Lower	Upper
228	100		
229	19.0	0.0	50.8
226	26.0	0.0	55.5

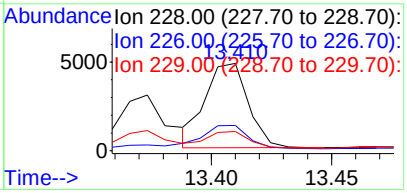


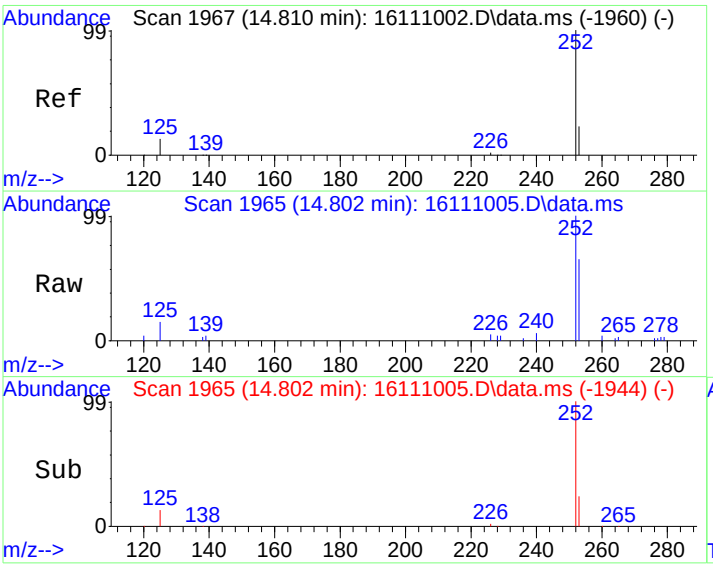


#19
Chrysene
Concen: 20.28 ug/kg
RT: 13.410 min Scan# 1775
Delta R.T. -0.001 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:228 Resp: 5884

Ion	Ratio	Lower	Upper
228	100		
226	27.8	0.0	58.7
229	19.9	0.0	50.4

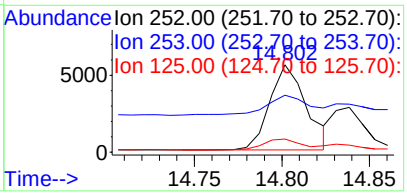


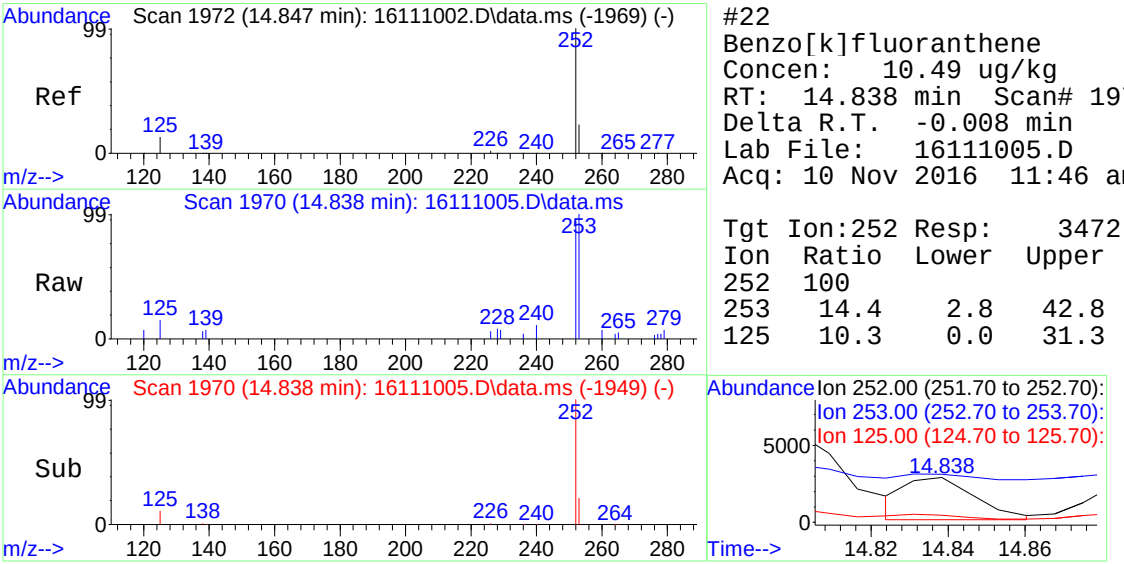


#21
Benzo[b]fluoranthene
Concen: 22.01 ug/kg
RT: 14.802 min Scan# 1965
Delta R.T. -0.008 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:252 Resp: 8059

Ion	Ratio	Lower	Upper
252	100		
253	23.2	0.0	52.7
125	12.6	0.0	42.9

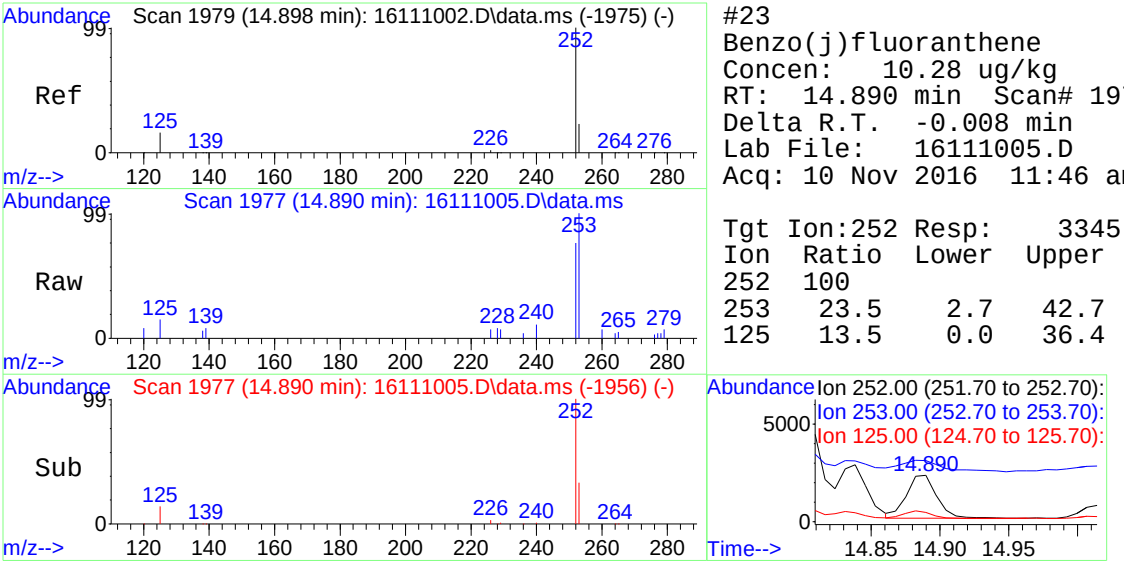




#22
Benzo[k]fluoranthene
Concen: 10.49 ug/kg
RT: 14.838 min Scan# 1970
Delta R.T. -0.008 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:252 Resp: 3472

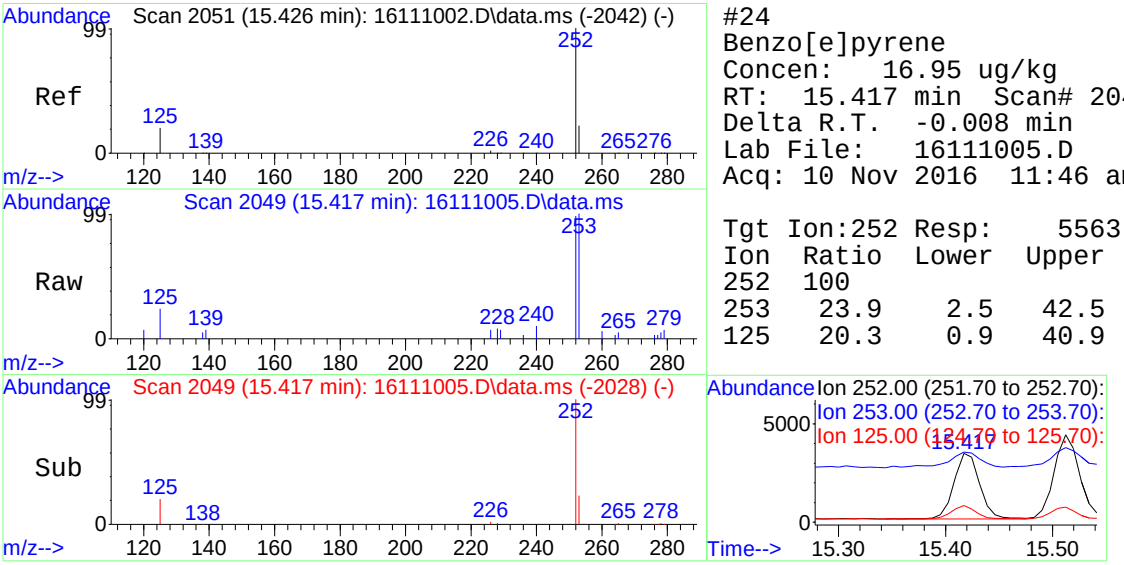
Ion	Ratio	Lower	Upper
252	100		
253	14.4	2.8	42.8
125	10.3	0.0	31.3



#23
Benzo(j)fluoranthene
Concen: 10.28 ug/kg
RT: 14.890 min Scan# 1977
Delta R.T. -0.008 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:252 Resp: 3345

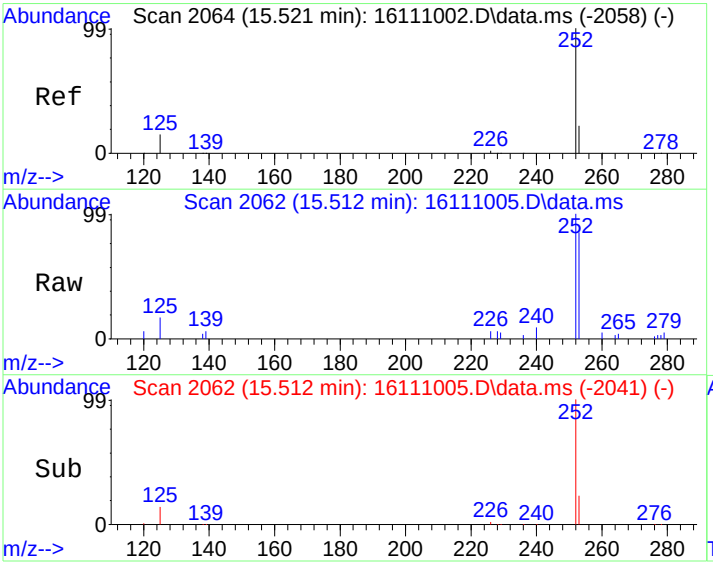
Ion	Ratio	Lower	Upper
252	100		
253	23.5	2.7	42.7
125	13.5	0.0	36.4



#24
Benzo[e]pyrene
Concen: 16.95 ug/kg
RT: 15.417 min Scan# 2049
Delta R.T. -0.008 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:252 Resp: 5563

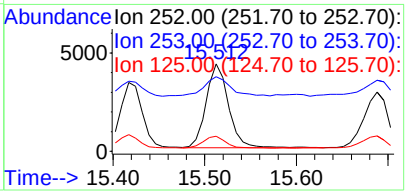
Ion	Ratio	Lower	Upper
252	100		
253	23.9	2.5	42.5
125	20.3	0.9	40.9

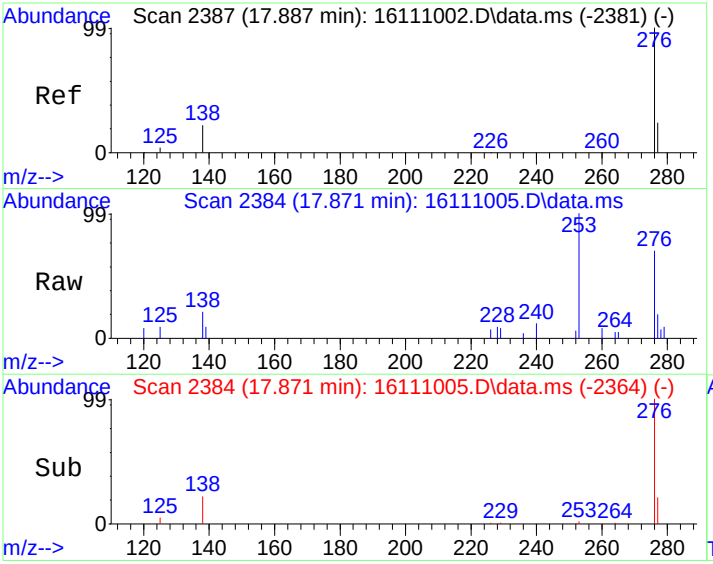


#25
Benzo[a]pyrene
Concen: 21.45 ug/kg
RT: 15.512 min Scan# 2062
Delta R.T. -0.008 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:252 Resp: 7190

Ion	Ratio	Lower	Upper
252	100		
253	22.1	2.7	42.7
125	13.9	0.0	33.9

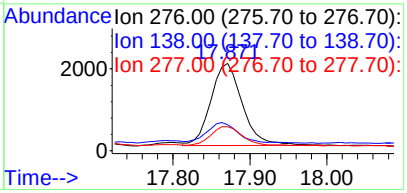


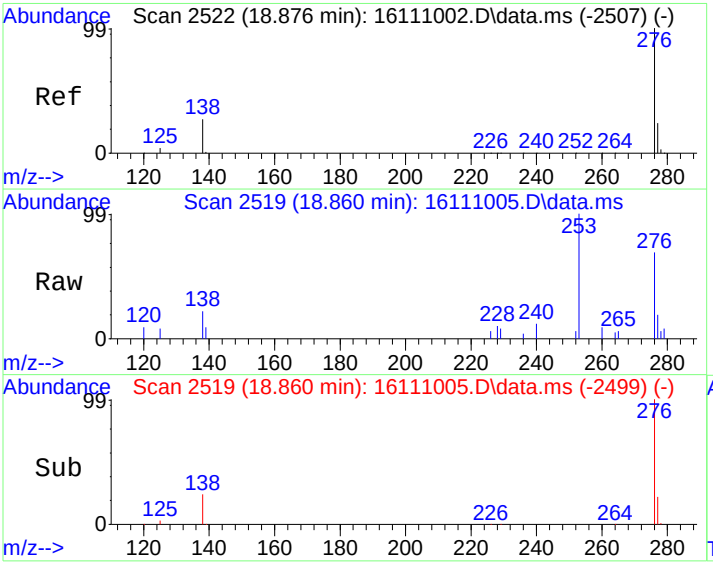


#27
Indeno[1,2,3-cd]pyrene
Concen: 17.08 ug/kg
RT: 17.871 min Scan# 2384
Delta R.T. -0.015 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:276 Resp: 5742

Ion	Ratio	Lower	Upper
276	100		
138	22.3	4.4	44.4
277	23.4	4.4	44.4

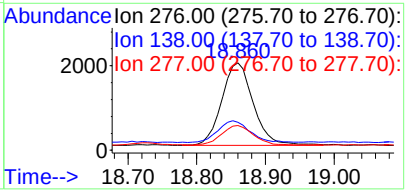




#28
Benzo[g,h,i]perylene
Concen: 17.48 ug/kg
RT: 18.860 min Scan# 2519
Delta R.T. -0.015 min
Lab File: 16111005.D
Acq: 10 Nov 2016 11:46 am

Tgt Ion:276 Resp: 6225

Ion	Ratio	Lower	Upper
276	100		
138	24.0	7.7	47.7
277	23.4	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111006.D
Acq On : 10 Nov 2016 12:15 pm
Operator :
Sample : 1611022-23A
Misc : SAMP
ALS Vial : 6 Sample Multiplier: 10

Quant Time: Nov 14 11:38:45 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	7.462	136	539134	4000.00	ug/kg	61
5) Acenaphthene-d10	9.067	164	612590	4000.00	ug/kg	77
11) Phenanthrene-d10	10.468	188	1117183	4000.00	ug/kg	79
17) Chrysene-d12	13.373	240	1331542	4000.00	ug/kg	80
20) Perylene-d12	15.688	264	1404938	4000.00	ug/kg	80

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.346	172	19359	97.29	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.43%#			
16) 4-Terphenyl-d14	11.848	244	22088	102.86	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.57%#			

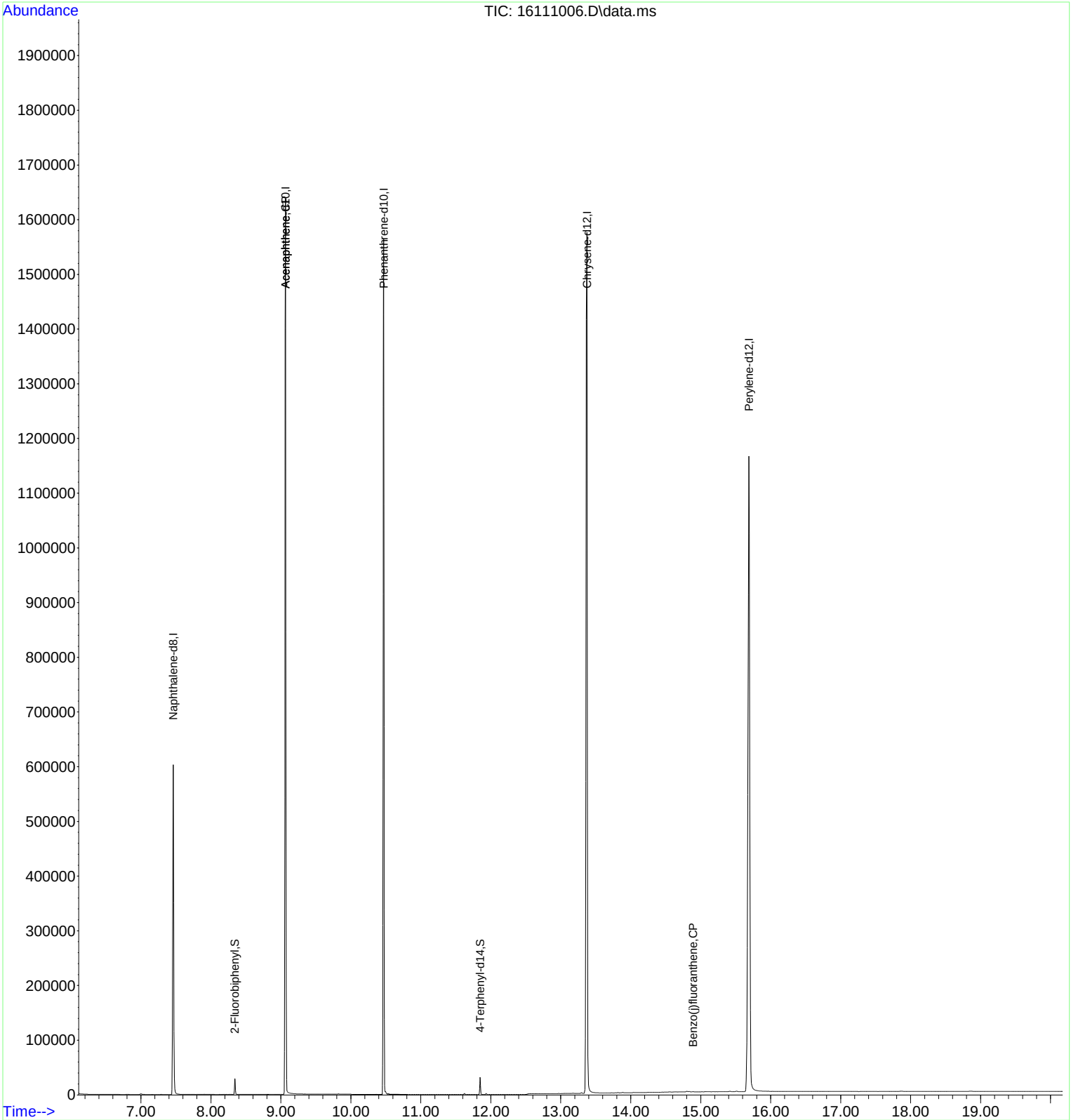
Target Compounds						Qvalue
9) Acenaphthene	9.067	154	2268	15.33	ug/kg#	12
23) Benzo(j)fluoranthene	14.889	252	467	1.50	ug/kg	85

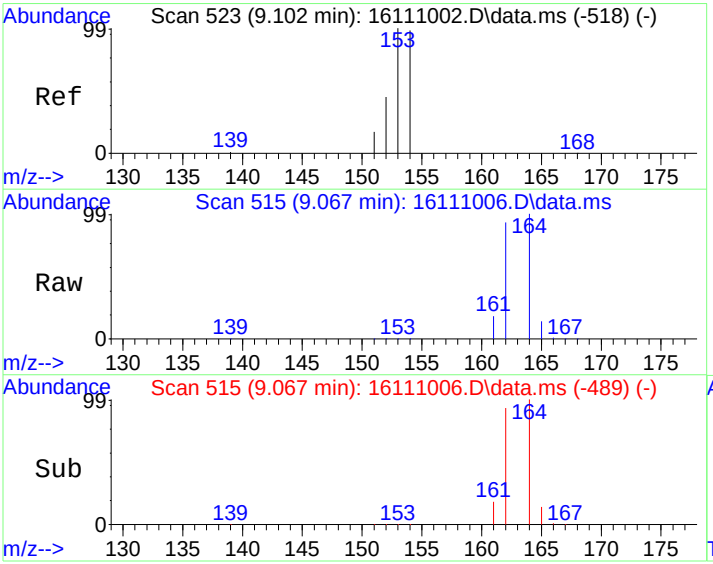
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111006.D
Acq On : 10 Nov 2016 12:15 pm
Operator :
Sample : 1611022-23A
Misc : SAMP
ALS Vial : 6 Sample Multiplier: 10

Quant Time: Nov 14 11:38:45 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

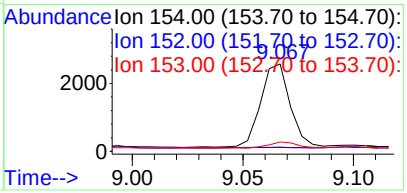


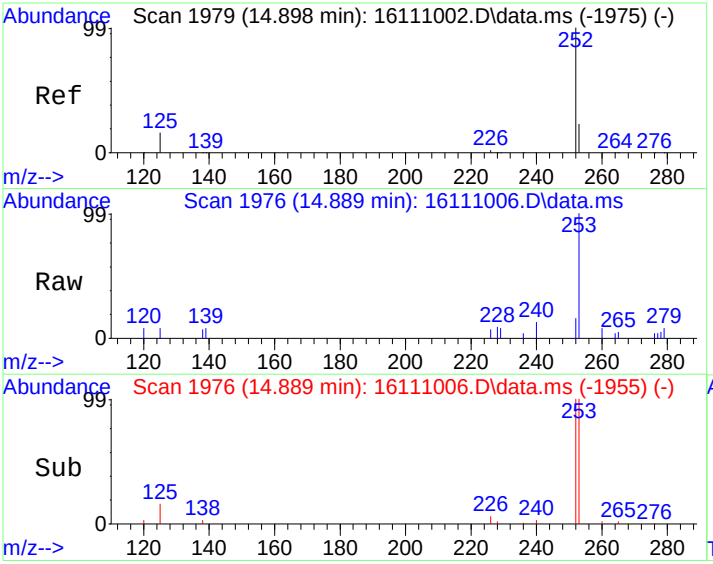


#9
Acenaphthene
Concen: 15.33 ug/kg
RT: 9.067 min Scan# 515
Delta R.T. -0.034 min
Lab File: 16111006.D
Acq: 10 Nov 2016 12:15 pm

Tgt Ion:154 Resp: 2268

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	7.3	76.8	136.8#

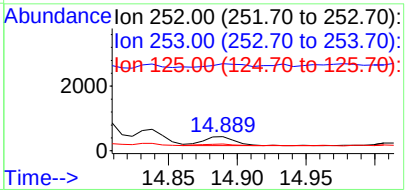




#23
Benzo(j)fluoranthene
Concen: 1.50 ug/kg
RT: 14.889 min Scan# 1976
Delta R.T. -0.009 min
Lab File: 16111006.D
Acq: 10 Nov 2016 12:15 pm

Tgt Ion:252 Resp: 467

Ion	Ratio	Lower	Upper
252	100		
253	33.4	2.7	42.7
125	18.1	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111007.D
Acq On : 10 Nov 2016 12:44 pm
Operator :
Sample : 1611022-24A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: Nov 14 11:38:49 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	7.459	136	667147	4000.00	ug/kg	76
5) Acenaphthene-d10	9.067	164	626656	4000.00	ug/kg	79
11) Phenanthrene-d10	10.467	188	1139455	4000.00	ug/kg	81
17) Chrysene-d12	13.373	240	1372962	4000.00	ug/kg	82
20) Perylene-d12	15.688	264	1455901	4000.00	ug/kg	83

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	19496	95.78	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.39%#			
16) 4-Terphenyl-d14	11.850	244	22581	103.10	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.58%#			

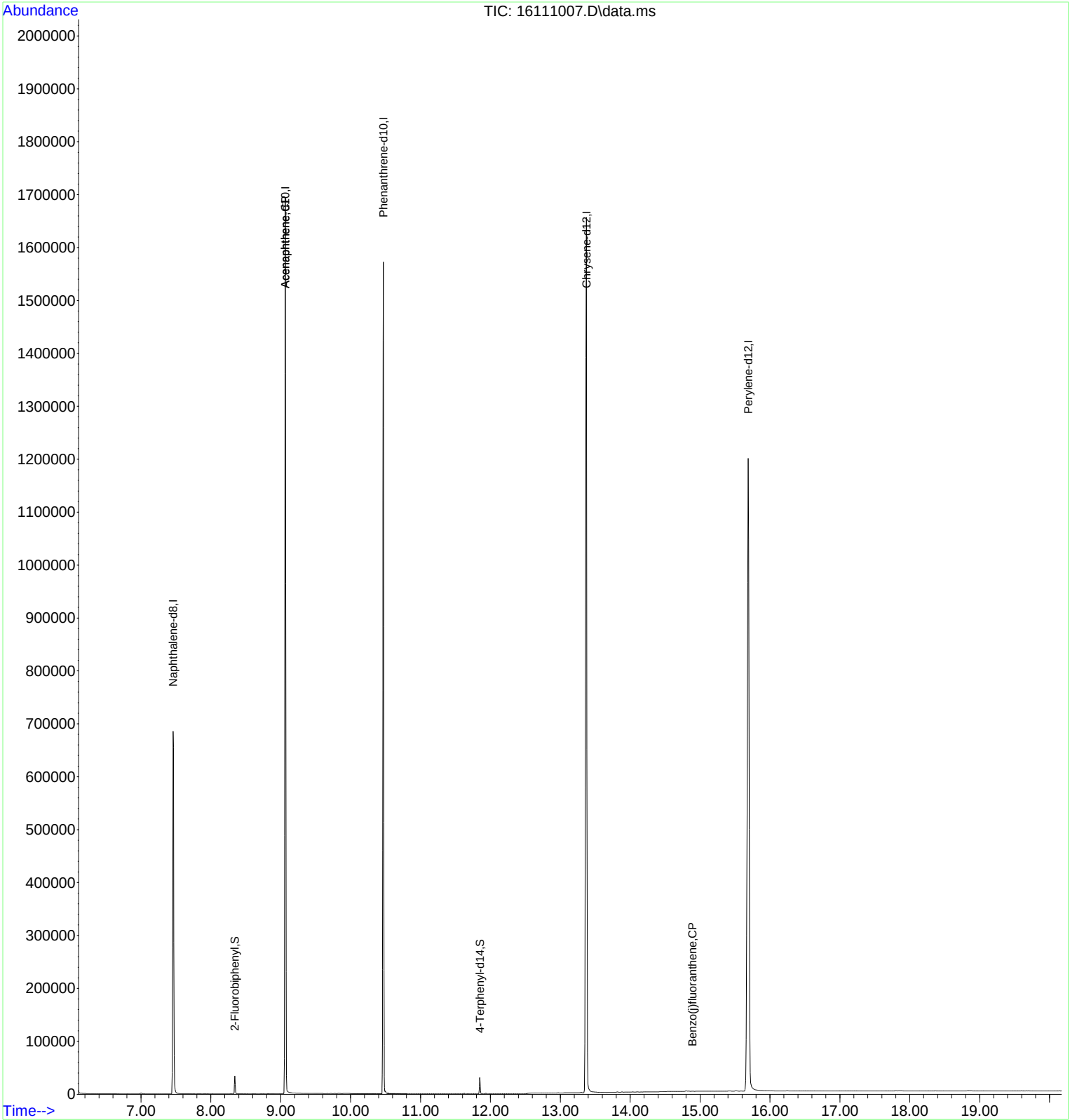
Target Compounds						Qvalue
9) Acenaphthene	9.067	154	2304	15.22	ug/kg#	12
23) Benzo(j)fluoranthene	14.890	252	300	0.93	ug/kg	92

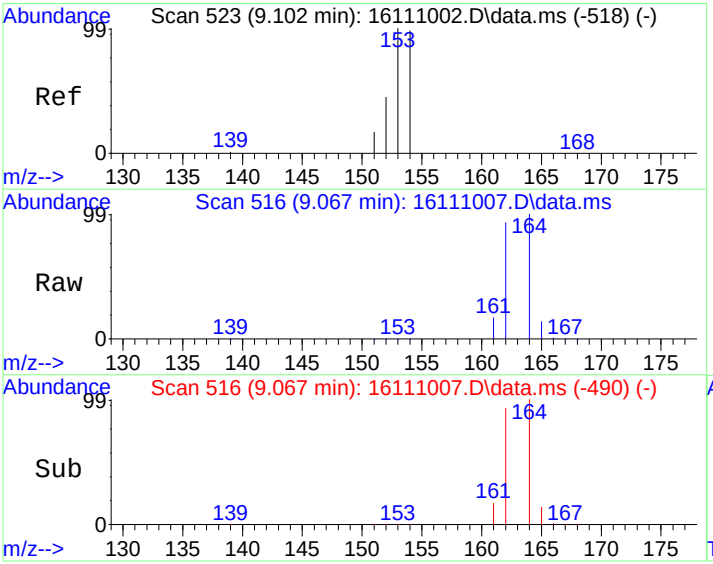
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111007.D
Acq On : 10 Nov 2016 12:44 pm
Operator :
Sample : 1611022-24A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: Nov 14 11:38:49 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

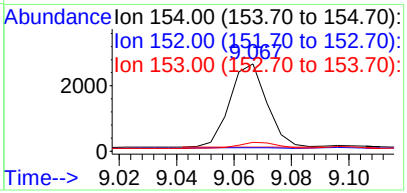


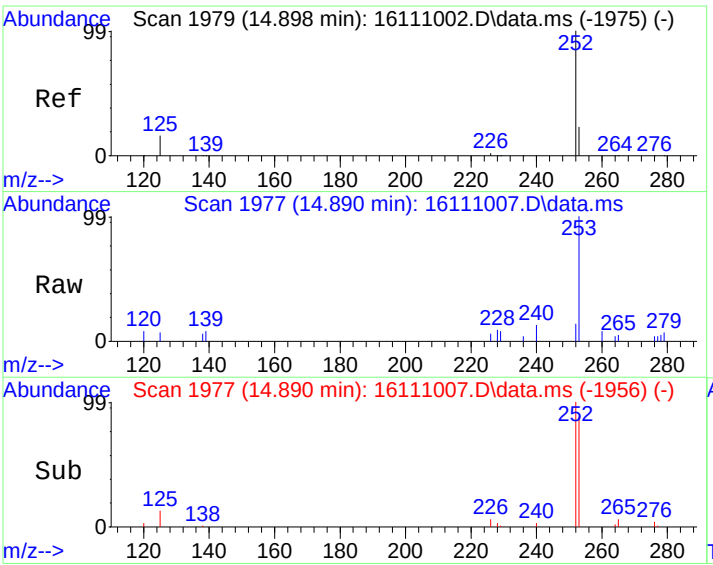


#9
Acenaphthene
Concen: 15.22 ug/kg
RT: 9.067 min Scan# 516
Delta R.T. -0.034 min
Lab File: 16111007.D
Acq: 10 Nov 2016 12:44 pm

Tgt Ion:154 Resp: 2304

Ion	Ratio	Lower	Upper
154	100		
152	0.9	20.7	80.7#
153	7.4	76.8	136.8#

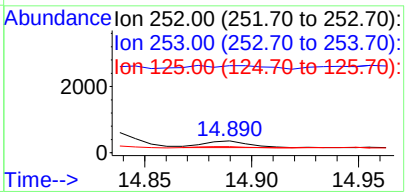




#23
Benzo(j)fluoranthene
Concen: 0.93 ug/kg
RT: 14.890 min Scan# 1977
Delta R.T. -0.008 min
Lab File: 16111007.D
Acq: 10 Nov 2016 12:44 pm

Tgt Ion:252 Resp: 300

Ion	Ratio	Lower	Upper
252	100		
253	28.0	2.7	42.7
125	14.5	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111008.D
Acq On : 10 Nov 2016 1:12 pm
Operator :
Sample : 1611022-25A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: Nov 14 11:38:53 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	7.460	136	623624	4000.00	ug/kg	71
5) Acenaphthene-d10	9.068	164	637574	4000.00	ug/kg	81
11) Phenanthrene-d10	10.470	188	1162740	4000.00	ug/kg	82
17) Chrysene-d12	13.374	240	1379199	4000.00	ug/kg	82
20) Perylene-d12	15.689	264	1471095	4000.00	ug/kg	84

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	20152	97.31	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.43%#			
16) 4-Terphenyl-d14	11.848	244	22827	102.13	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.55%#			

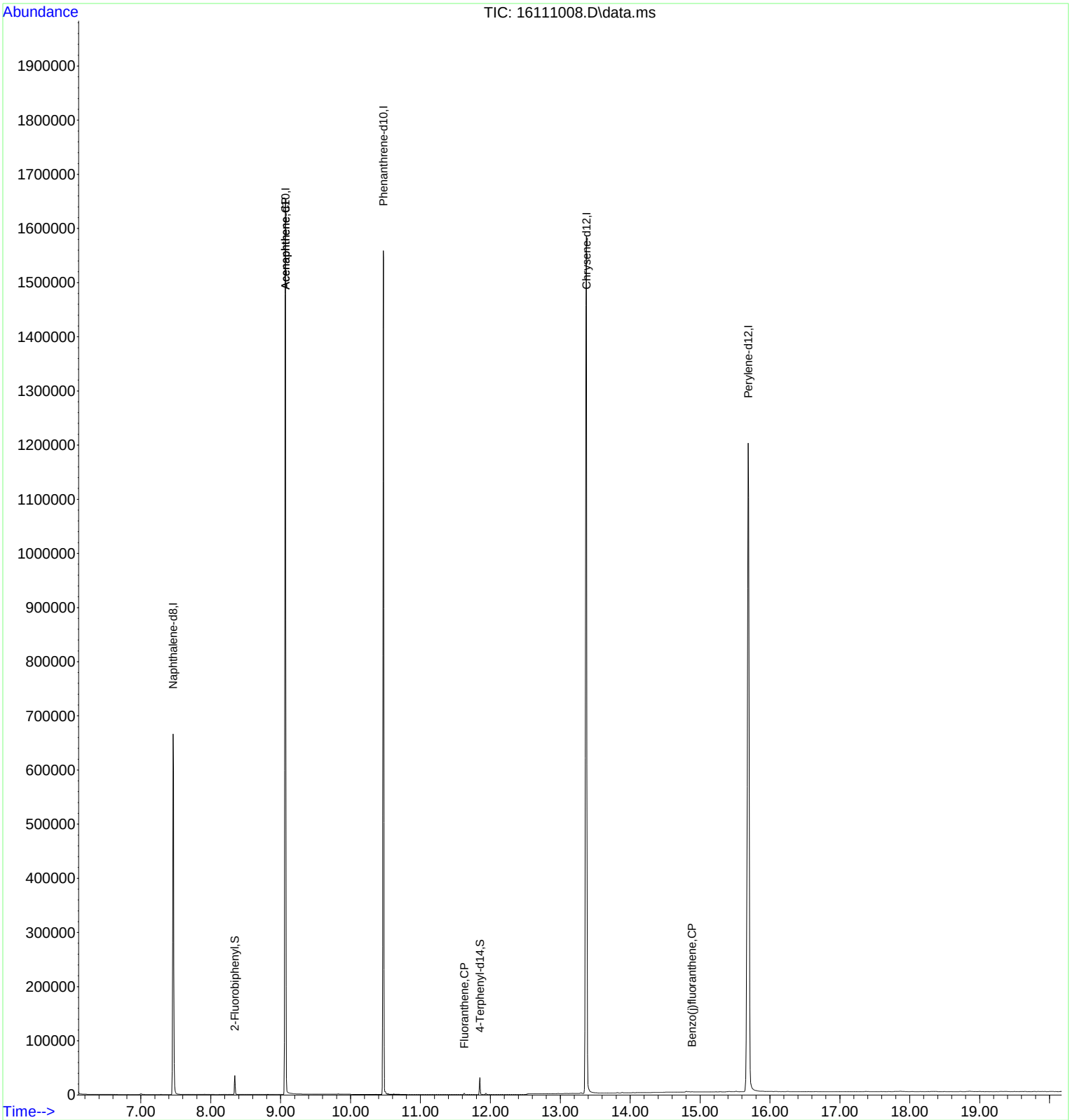
Target Compounds						Qvalue
9) Acenaphthene	9.068	154	2351	15.27	ug/kg#	12
14) Fluoranthene	11.624	202	1625	5.03	ug/kg	98
23) Benzo(j)fluoranthene	14.890	252	491	1.50	ug/kg	92

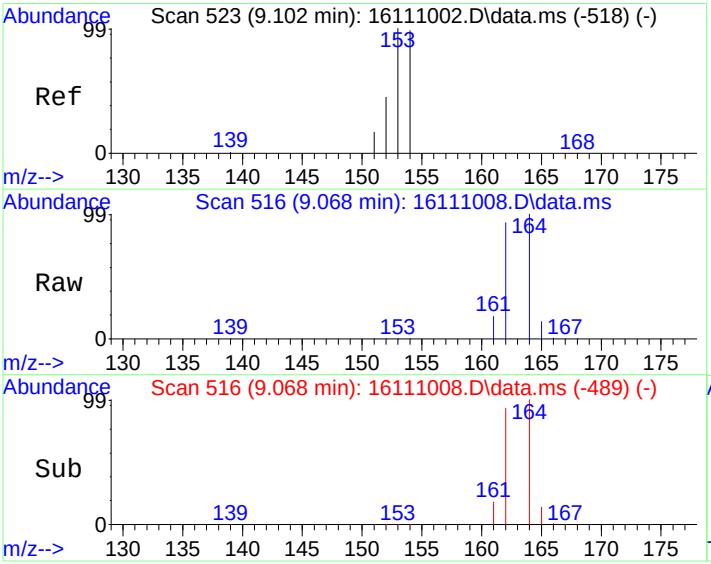
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111008.D
Acq On : 10 Nov 2016 1:12 pm
Operator :
Sample : 1611022-25A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: Nov 14 11:38:53 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

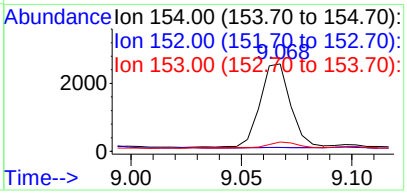


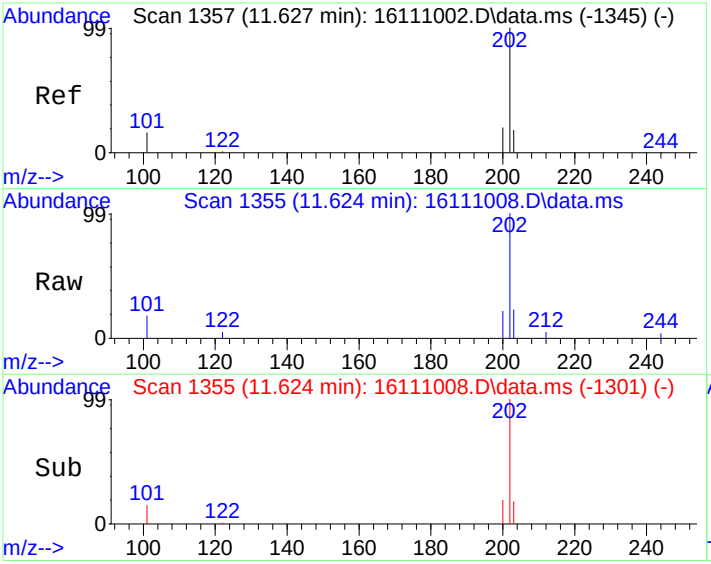


#9
Acenaphthene
Concen: 15.27 ug/kg
RT: 9.068 min Scan# 516
Delta R.T. -0.033 min
Lab File: 16111008.D
Acq: 10 Nov 2016 1:12 pm

Tgt Ion:154 Resp: 2351

Ion	Ratio	Lower	Upper
154	100		
152	0.6	20.7	80.7#
153	7.7	76.8	136.8#

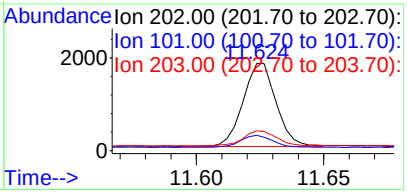


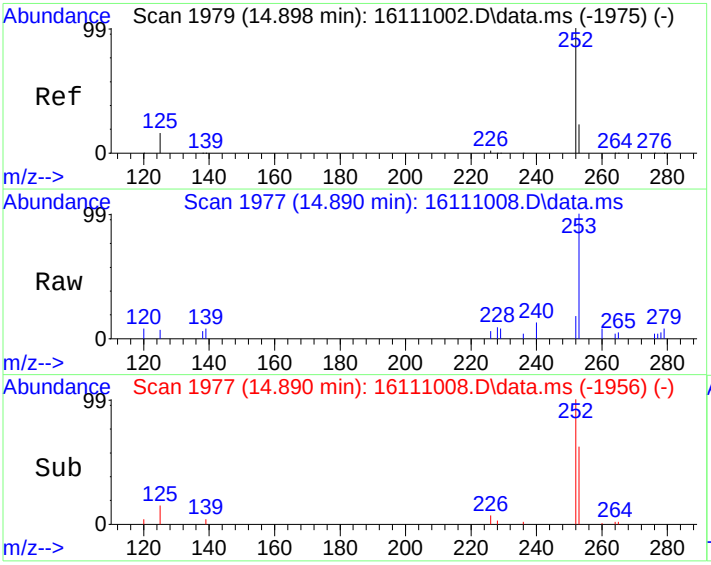


#14
Fluoranthene
Concen: 5.03 ug/kg
RT: 11.624 min Scan# 1355
Delta R.T. -0.002 min
Lab File: 16111008.D
Acq: 10 Nov 2016 1:12 pm

Tgt Ion:202 Resp: 1625

Ion	Ratio	Lower	Upper
202	100		
101	14.3	0.0	45.8
203	17.9	0.0	48.2

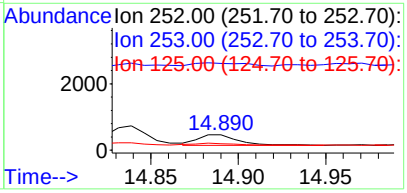




#23
Benzo(j)fluoranthene
Concen: 1.50 ug/kg
RT: 14.890 min Scan# 1977
Delta R.T. -0.008 min
Lab File: 16111008.D
Acq: 10 Nov 2016 1:12 pm

Tgt Ion:252 Resp: 491

Ion	Ratio	Lower	Upper
252	100		
253	20.3	2.7	42.7
125	10.8	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111013.D
Acq On : 10 Nov 2016 3:37 pm
Operator :
Sample : ICV2-161110
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 14 11:37:41 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

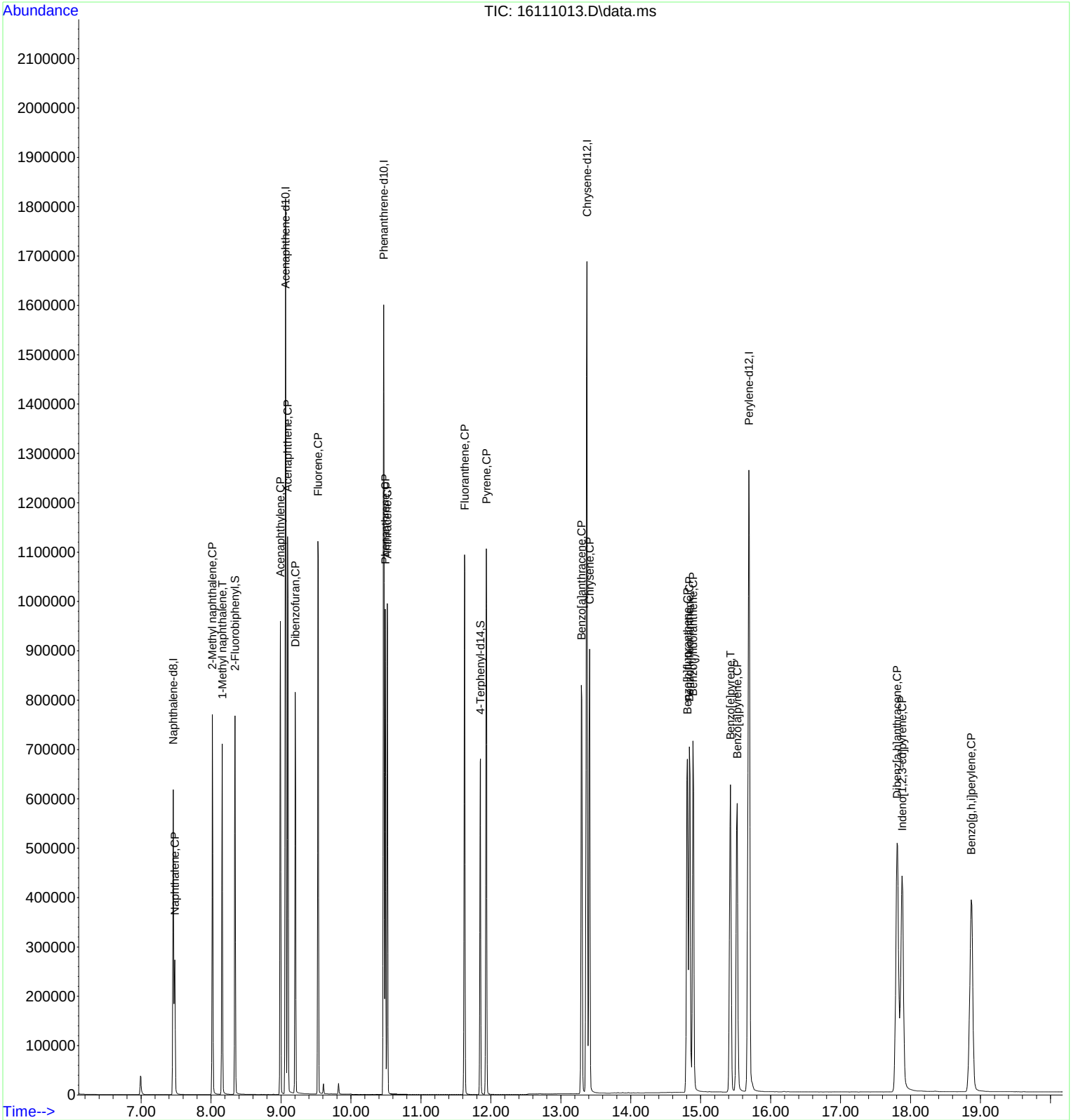
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	520081	4000.00	ug/kg	59
5) Acenaphthene-d10	9.067	164	668777	4000.00	ug/kg	85
11) Phenanthrene-d10	10.469	188	1228928	4000.00	ug/kg	87
17) Chrysene-d12	13.374	240	1439944	4000.00	ug/kg	86
20) Perylene-d12	15.689	264	1548387	4000.00	ug/kg	88
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	448876	2066.42	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.66%			
16) 4-Terphenyl-d14	11.850	244	495001	2095.49	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 52.39%			
Target Compounds						Qvalue
2) Naphthalene	7.482	128	198300	1963.36	ug/kg	100
3) 2-Methyl naphthalene	8.020	142	300762	2690.93	ug/kg	94
4) 1-Methyl naphthalene	8.159	142	272920	2704.65	ug/kg	96
6) Dibenzofuran	9.204	168	507066	2086.12	ug/kg	99
8) Acenaphthylene	8.993	152	578003	2072.99	ug/kg	99
9) Acenaphthene	9.096	154	338509	2095.75	ug/kg	98
10) Fluorene	9.533	166	416212	2057.29	ug/kg	98
12) Phenanthrene	10.492	178	562107	1946.97	ug/kg	99
13) Anthracene	10.520	178	572276	1947.08	ug/kg	100
14) Fluoranthene	11.623	202	653336	1914.09	ug/kg	100
15) Pyrene	11.935	202	661500	1887.61	ug/kg	100
18) Benzo[a]anthracene	13.294	228	699550	2063.07	ug/kg	99
19) Chrysene	13.411	228	653189	2124.76	ug/kg	99
21) Benzo[b]fluoranthene	14.810	252	771735	1997.67	ug/kg	99
22) Benzo[k]fluoranthene	14.839	252	702001	2010.38	ug/kg	98
23) Benzo(j)fluoranthene	14.891	252	696981	2029.20	ug/kg	97
24) Benzo[e]pyrene	15.425	252	703193	2030.72	ug/kg	97
25) Benzo[a]pyrene	15.521	252	696751	1969.35	ug/kg	100
26) Dibenz[a,h]anthracene	17.813	278	738683	2030.26	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.879	276	715606	2016.63	ug/kg	99
28) Benzo[g,h,i]perylene	18.868	276	764732	2034.87	ug/kg	100

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111013.D
Acq On : 10 Nov 2016 3:37 pm
Operator :
Sample : ICV2-161110
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

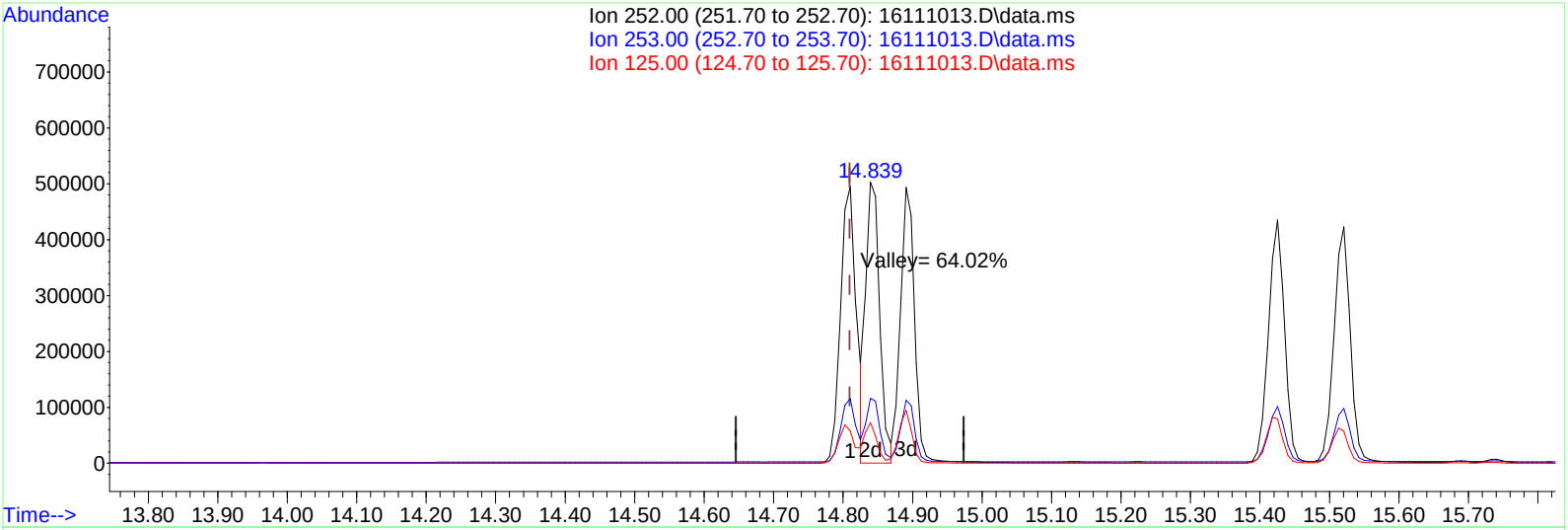
Quant Time: Nov 14 11:37:41 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

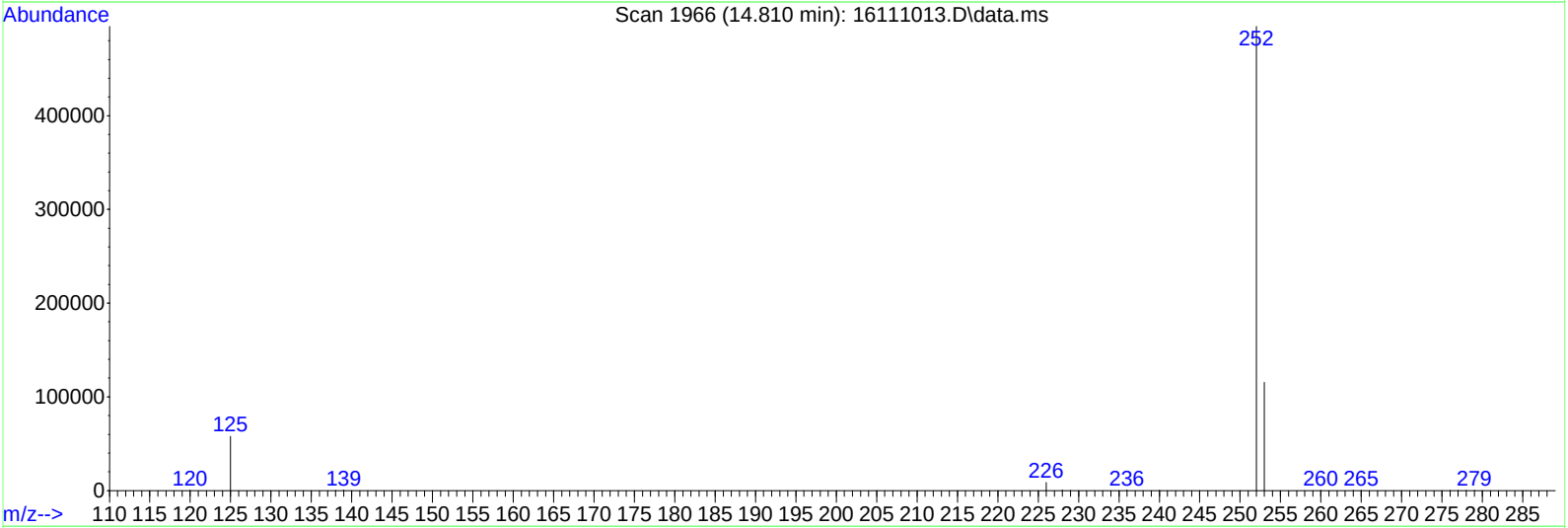


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111013.D
Acq On : 10 Nov 2016 3:37 pm
Operator :
Sample : ICV2-161110
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 14 11:37:41 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





TIC: 16111013.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.810min (+0.000) 1997.67ug/kg

response 771735

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.83
125.00	12.90	11.63
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111014.D
Acq On : 10 Nov 2016 4:05 pm
Operator :
Sample : SB-161110
Misc : SBLK
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 14 11:37:44 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	7.460	136	555740	4000.00	ug/kg	63
5) Acenaphthene-d10	9.063	164	610235	4000.00	ug/kg	77
11) Phenanthrene-d10	10.467	188	1097627	4000.00	ug/kg	78
17) Chrysene-d12	13.367	240	1313161	4000.00	ug/kg	79
20) Perylene-d12	15.689	264	1407232	4000.00	ug/kg	80

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.345	172	16	0.08	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.00%#			
16) 4-Terphenyl-d14	11.850	244	74	0.35	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 0.01%#			

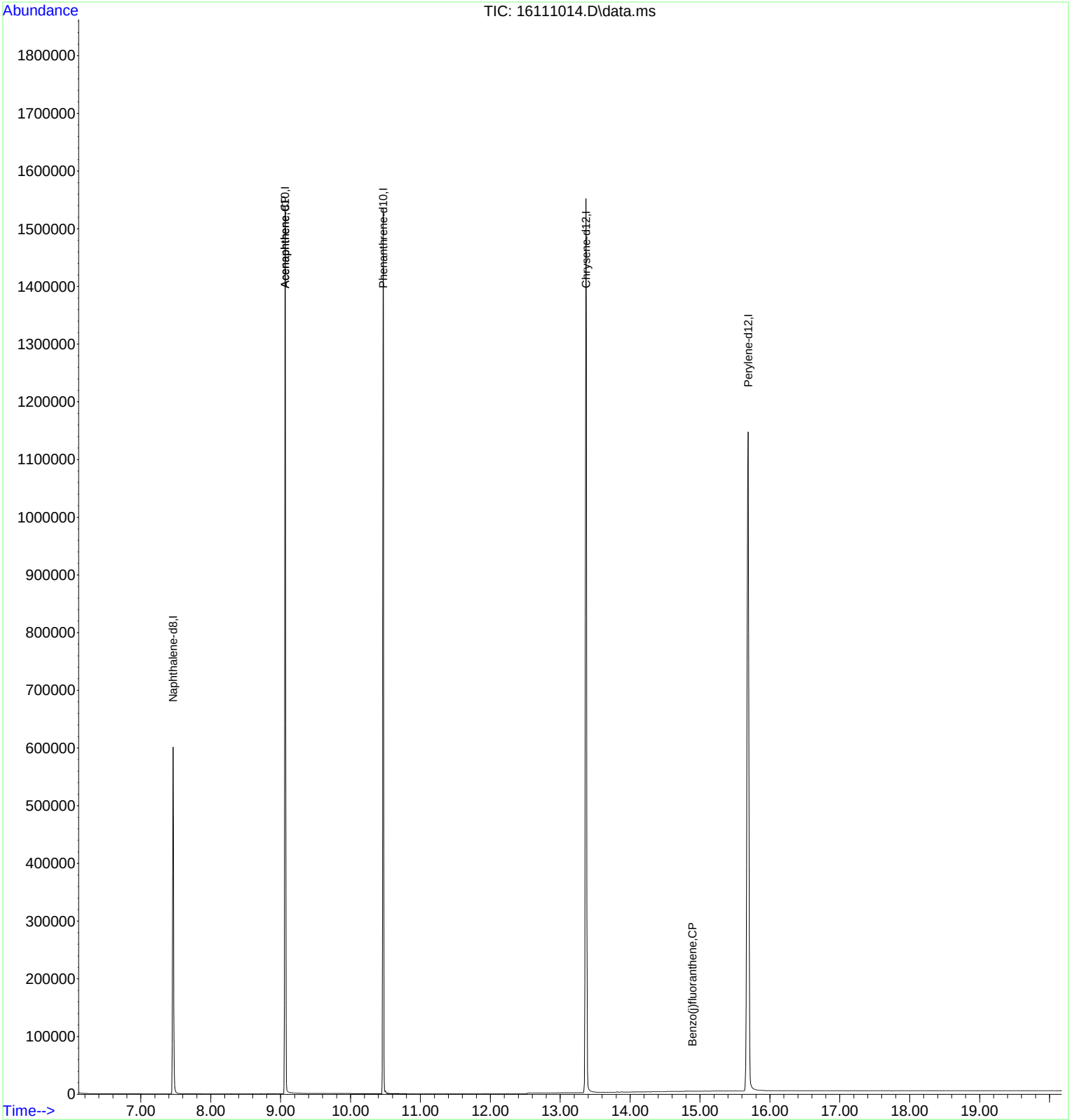
Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2260	15.33	ug/kg#	10
23) Benzo(j)fluoranthene	14.890	252	78	0.25	ug/kg#	21

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111014.D
Acq On : 10 Nov 2016 4:05 pm
Operator :
Sample : SB-161110
Misc : SBLK
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 14 11:37:44 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



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111028.D
Acq On : 10 Nov 2016 10:48 pm
Operator :
Sample : 1611028-10AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 11:37:47 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

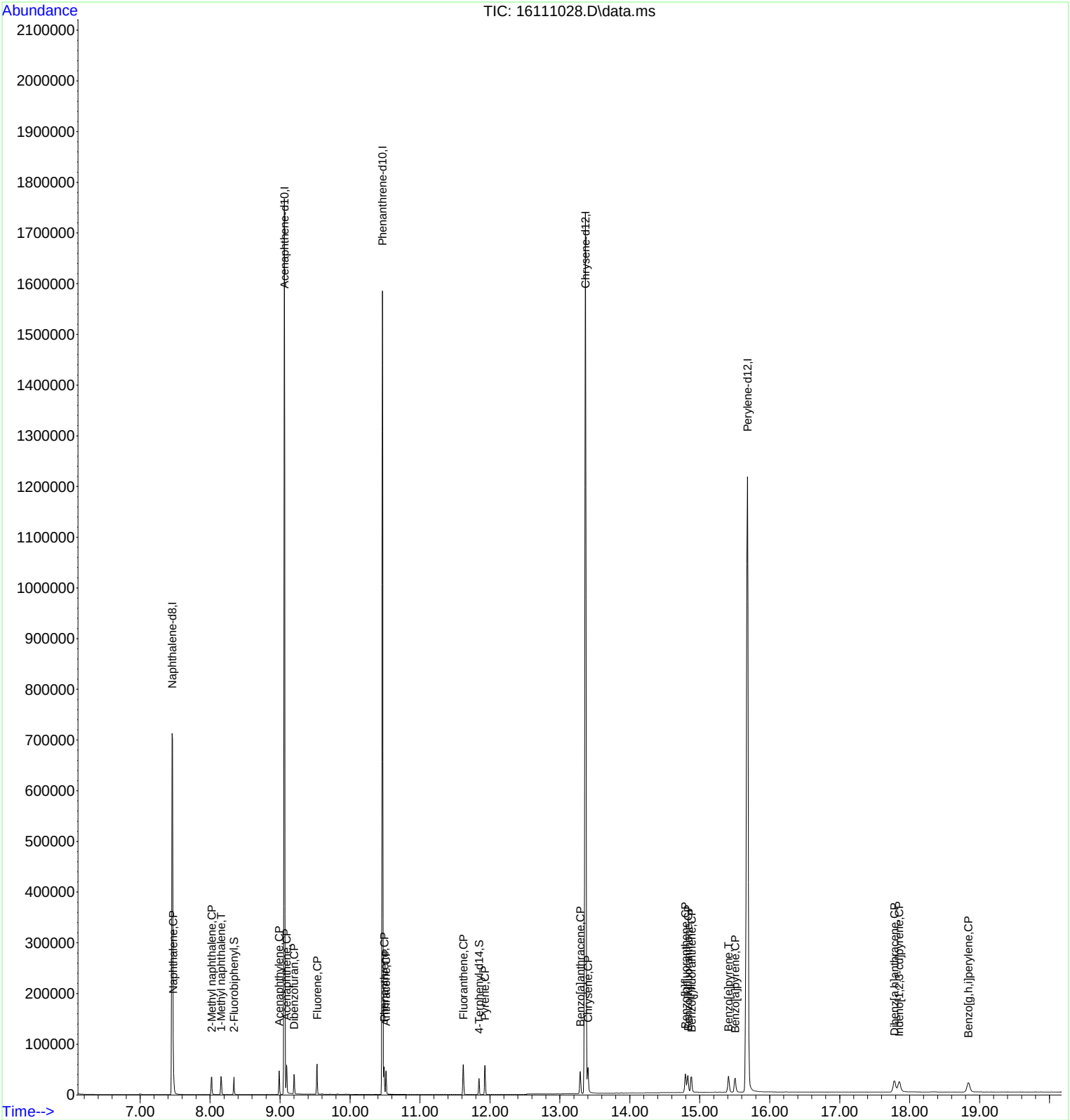
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.462	136	738706	4000.00	ug/kg	84
5) Acenaphthene-d10	9.062	164	651729	4000.00	ug/kg	82
11) Phenanthrene-d10	10.465	188	1164289	4000.00	ug/kg	82
17) Chrysene-d12	13.366	240	1404661	4000.00	ug/kg	84
20) Perylene-d12	15.681	264	1487069	4000.00	ug/kg	84
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.341	172	19802	93.54	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.34%#			
16) 4-Terphenyl-d14	11.844	244	22237	99.36	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.48%#			
Target Compounds						Qvalue
2) Naphthalene	7.480	128	13670	95.29	ug/kg	99
3) 2-Methyl naphthalene	8.023	142	16083	101.31	ug/kg	98
4) 1-Methyl naphthalene	8.156	142	14726	102.74	ug/kg	89
6) Dibenzofuran	9.205	168	24595	103.83	ug/kg	98
8) Acenaphthylene	8.989	152	27089	99.70	ug/kg	98
9) Acenaphthene	9.092	154	16199	102.91	ug/kg	96
10) Fluorene	9.529	166	20593	104.45	ug/kg	99
12) Phenanthrene	10.488	178	28482	104.13	ug/kg	98
13) Anthracene	10.515	178	27344	98.20	ug/kg	98
14) Fluoranthene	11.619	202	33862	104.71	ug/kg	98
15) Pyrene	11.928	202	34411	103.64	ug/kg	98
18) Benzo[a]anthracene	13.293	228	34115	103.14	ug/kg	99
19) Chrysene	13.403	228	32280	107.64	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	36855	99.33	ug/kg	99
22) Benzo[k]fluoranthene	14.831	252	36592	109.11	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	34047	103.21	ug/kg	96
24) Benzo[e]pyrene	15.410	252	35434	106.55	ug/kg	96
25) Benzo[a]pyrene	15.505	252	33864	99.66	ug/kg	98
26) Dibenz[a,h]anthracene	17.783	278	34673	99.23	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.857	276	35319	103.64	ug/kg	97
28) Benzo[g,h,i]perylene	18.845	276	36999	102.51	ug/kg	96

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111028.D
Acq On : 10 Nov 2016 10:48 pm
Operator :
Sample : 1611028-10AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 11:37:47 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\161110\
Data File : 16111029.D
Acq On : 10 Nov 2016 11:16 pm
Operator :
Sample : 1611028-10AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 11:37:50 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

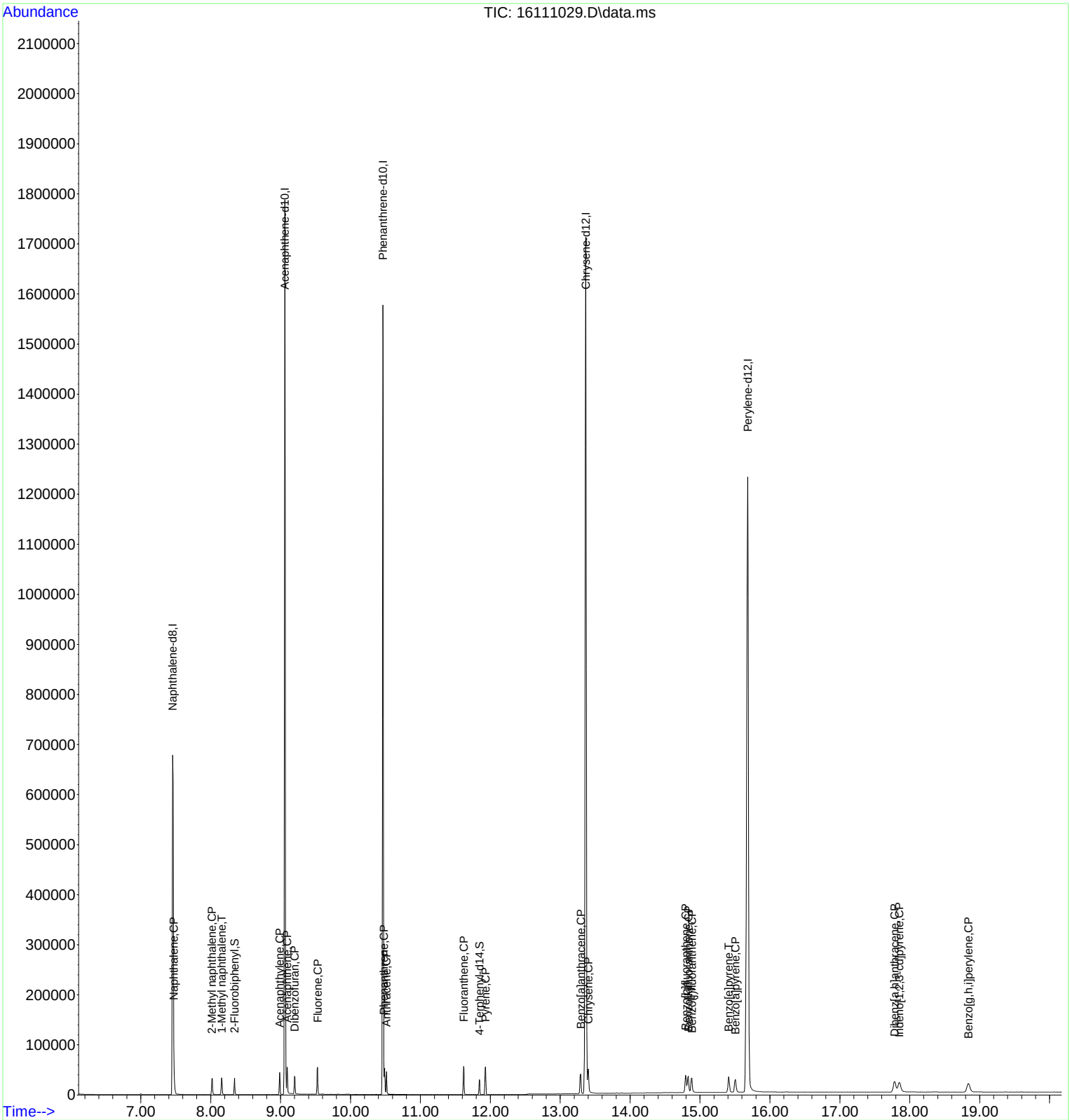
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.456	136	682314	4000.00	ug/kg	78
5) Acenaphthene-d10	9.062	164	646737	4000.00	ug/kg	82
11) Phenanthrene-d10	10.465	188	1152487	4000.00	ug/kg	82
17) Chrysene-d12	13.366	240	1397848	4000.00	ug/kg	84
20) Perylene-d12	15.681	264	1488432	4000.00	ug/kg	84
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	18996	90.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.26%#			
16) 4-Terphenyl-d14	11.846	244	21778	98.31	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.46%#			
Target Compounds						Qvalue
2) Naphthalene	7.479	128	12022	90.73	ug/kg	99
3) 2-Methyl naphthalene	8.022	142	15310	104.41	ug/kg	98
4) 1-Methyl naphthalene	8.155	142	13931	105.23	ug/kg	88
6) Dibenzofuran	9.204	168	23595	100.38	ug/kg	97
8) Acenaphthylene	8.988	152	25919	96.13	ug/kg	98
9) Acenaphthene	9.096	154	15400	98.59	ug/kg	96
10) Fluorene	9.529	166	19639	100.38	ug/kg	99
12) Phenanthrene	10.486	178	26980	99.65	ug/kg	98
13) Anthracene	10.515	178	25886	93.91	ug/kg	98
14) Fluoranthene	11.618	202	32492	101.51	ug/kg	97
15) Pyrene	11.930	202	33109	100.74	ug/kg	98
18) Benzo[a]anthracene	13.293	228	32739	99.46	ug/kg	98
19) Chrysene	13.403	228	30994	103.86	ug/kg	98
21) Benzo[b]fluoranthene	14.795	252	34565	93.08	ug/kg	98
22) Benzo[k]fluoranthene	14.831	252	34808	103.70	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	32329	97.91	ug/kg	96
24) Benzo[e]pyrene	15.410	252	33537	100.75	ug/kg	96
25) Benzo[a]pyrene	15.505	252	32288	94.94	ug/kg	99
26) Dibenz[a,h]anthracene	17.783	278	33363	95.39	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	33850	99.23	ug/kg	99
28) Benzo[g,h,i]perylene	18.838	276	35395	97.98	ug/kg	98

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111029.D
Acq On : 10 Nov 2016 11:16 pm
Operator :
Sample : 1611028-10AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 11:37:50 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 (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111030.D
Acq On : 10 Nov 2016 11:45 pm
Operator :
Sample : CCV1-161110
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 11:37:53 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

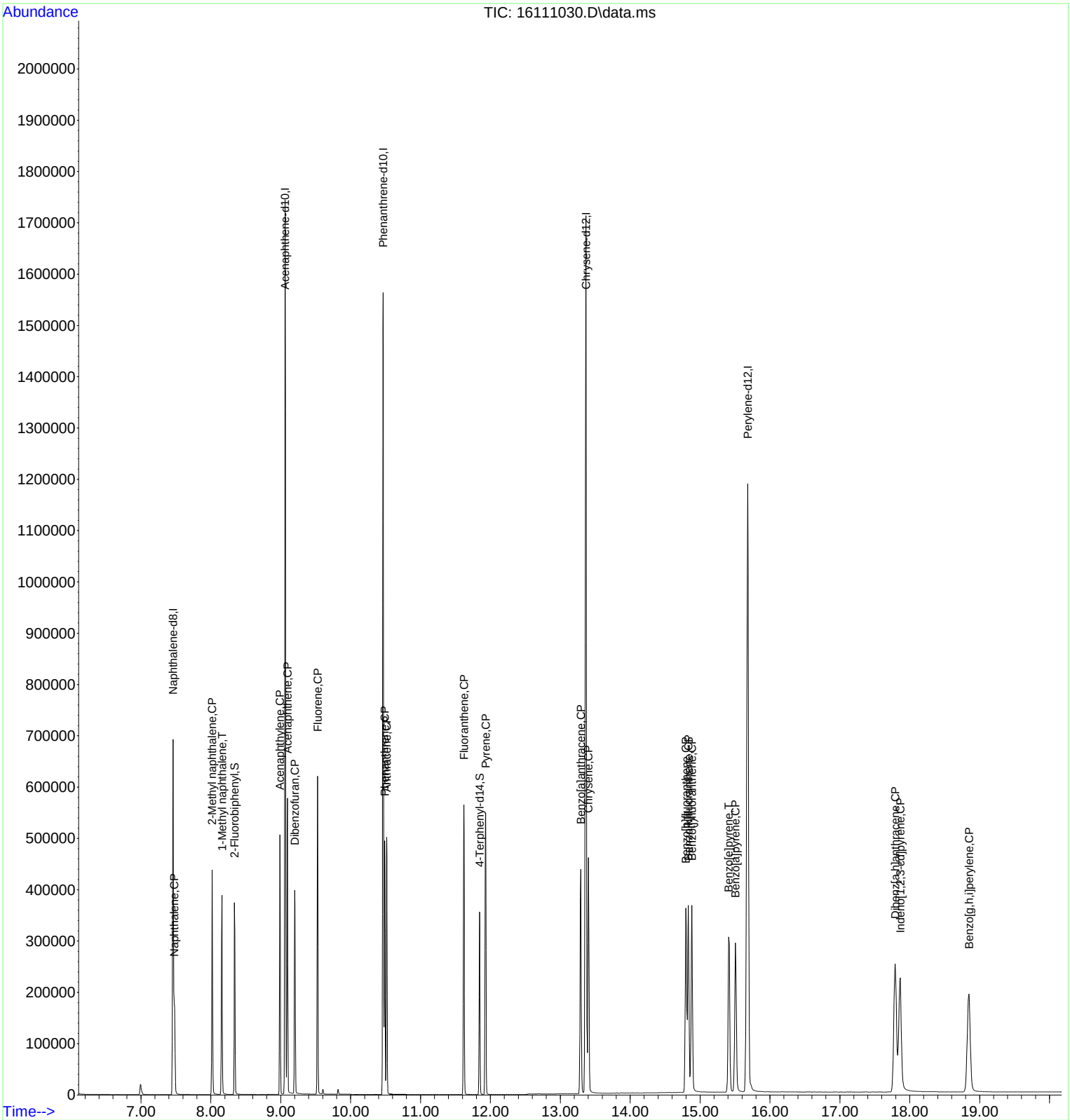
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	625093	4000.00	ug/kg	71
5) Acenaphthene-d10	9.062	164	637997	4000.00	ug/kg	81
11) Phenanthrene-d10	10.465	188	1156026	4000.00	ug/kg	82
17) Chrysene-d12	13.367	240	1389892	4000.00	ug/kg	83
20) Perylene-d12	15.681	264	1469645	4000.00	ug/kg	83
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.337	172	230491	1112.27	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.81%#			
16) 4-Terphenyl-d14	11.844	244	251058	1129.83	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 28.25%#			
Target Compounds						Qvalue
2) Naphthalene	7.482	128	128925	1062.04	ug/kg	99
3) 2-Methyl naphthalene	8.020	142	171422	1276.07	ug/kg	98
4) 1-Methyl naphthalene	8.158	142	153271	1263.75	ug/kg	99
6) Dibenzofuran	9.204	168	257600	1110.92	ug/kg	98
8) Acenaphthylene	8.988	152	292903	1101.17	ug/kg	99
9) Acenaphthene	9.096	154	169863	1102.38	ug/kg	96
10) Fluorene	9.529	166	212312	1100.07	ug/kg	98
12) Phenanthrene	10.488	178	284674	1048.21	ug/kg	99
13) Anthracene	10.516	178	290324	1050.08	ug/kg	99
14) Fluoranthene	11.620	202	330727	1030.04	ug/kg	99
15) Pyrene	11.931	202	337280	1023.13	ug/kg	99
18) Benzo[a]anthracene	13.293	228	353431	1079.85	ug/kg	99
19) Chrysene	13.403	228	329232	1109.53	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	405062	1104.70	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	331731	1000.91	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	361538	1108.98	ug/kg	98
24) Benzo[e]pyrene	15.410	252	351715	1070.12	ug/kg	99
25) Benzo[a]pyrene	15.506	252	349285	1040.14	ug/kg	98
26) Dibenz[a,h]anthracene	17.791	278	366350	1060.86	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.864	276	352285	1045.95	ug/kg	98
28) Benzo[g,h,i]perylene	18.846	276	376022	1054.16	ug/kg	98

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111030.D
Acq On : 10 Nov 2016 11:45 pm
Operator :
Sample : CCV1-161110
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 11:37:53 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



GCMS8
Calibration Curve
For

DHL Work Order
1611022

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

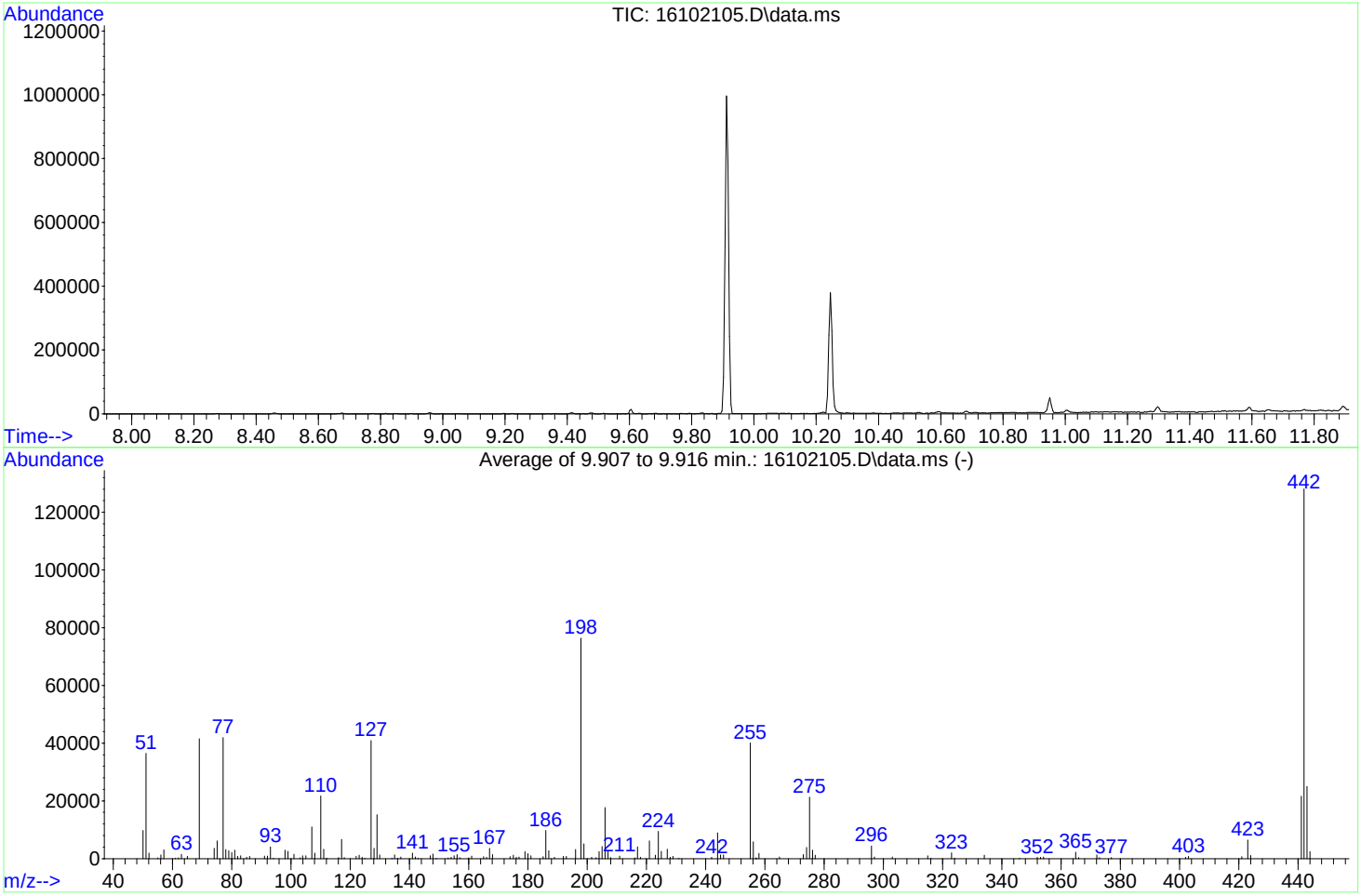
	Compound	1	2	3	4	5	6	7	8	Avg	%RSD	Fit	RSD/CF	Constant	Linear	Quad
1) I	Naphthalene-d8	----------ISTD----------														
2) CP	Naphthalene	0.915	0.744	0.777	0.767	0.765	0.755	0.751	0.740	0.777	7.38	A	0.0738	0.0000	0.7768	0.0000
3) CP	2-Methyl napht...	0.837	0.783	0.874	0.922	0.909	0.878	0.874	0.801	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%#			

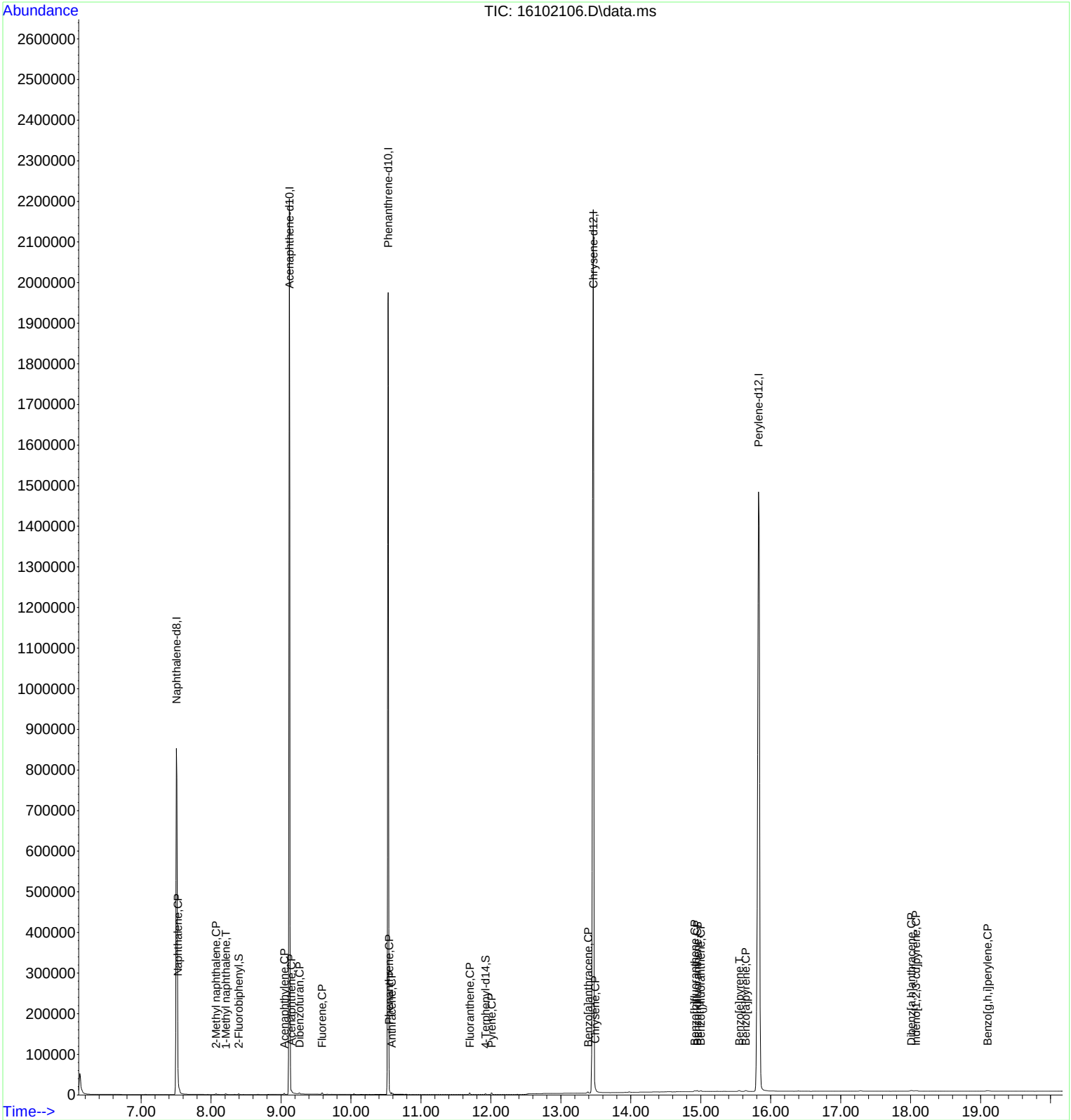
Target Compounds						Qvalue
2) Naphthalene	7.529	128	1153	5.89	ug/kg	100
3) 2-Methyl naphthalene	8.072	142	1054	4.87	ug/kg	94
4) 1-Methyl naphthalene	8.211	142	946	4.84	ug/kg	99
6) Dibenzofuran	9.263	168	1678	5.52	ug/kg	88
8) Acenaphthylene	9.047	152	1865	5.35	ug/kg	97
9) Acenaphthene	9.155	154	1059	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

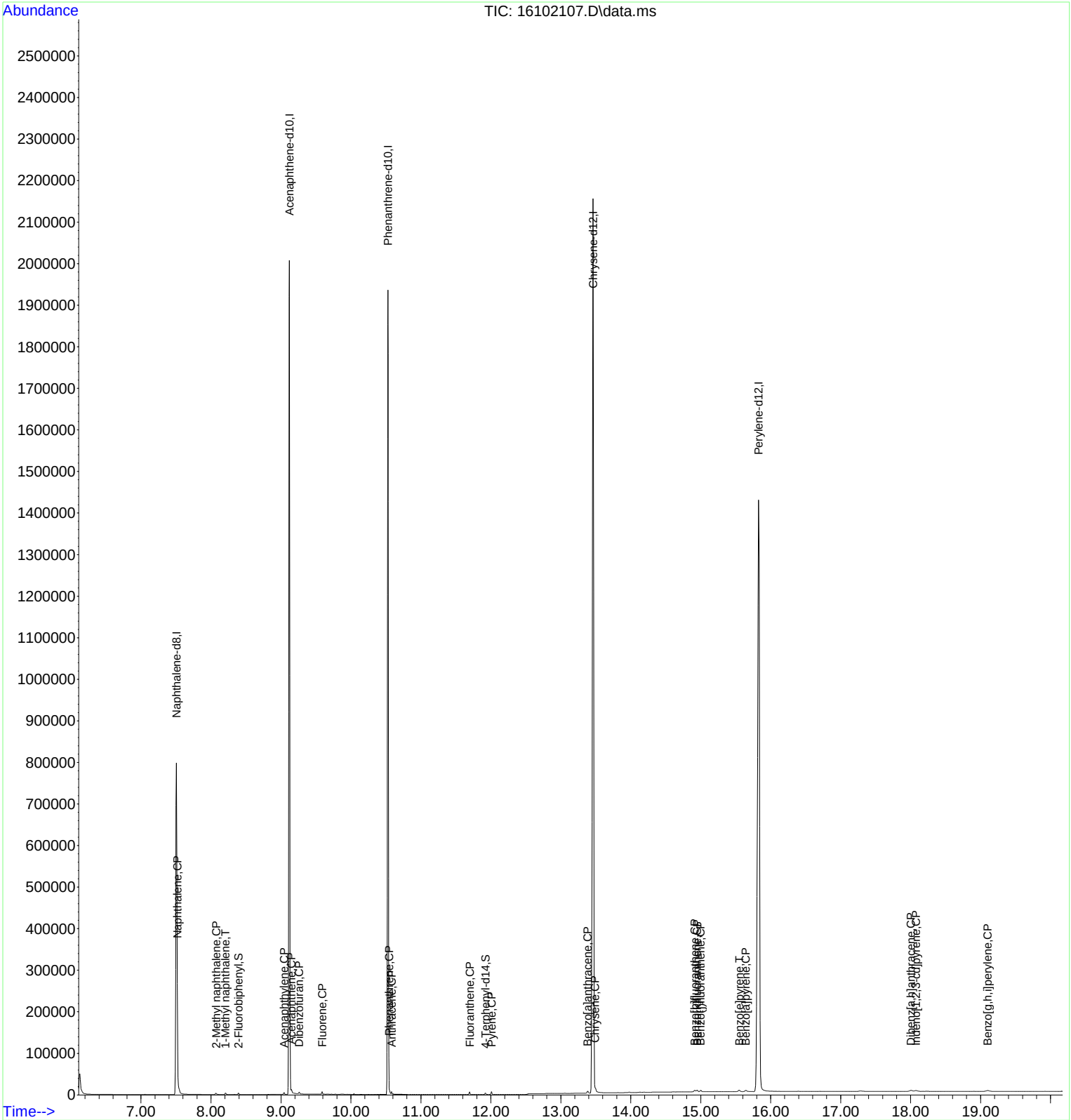
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.506	136	937897	4000.00	ug/kg	107
5) Acenaphthene-d10	9.121	164	819436	4000.00	ug/kg	104
11) Phenanthrene-d10	10.530	188	1470089	4000.00	ug/kg	104
17) Chrysene-d12	13.462	240	1782452	4000.00	ug/kg	107
20) Perylene-d12	15.828	264	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

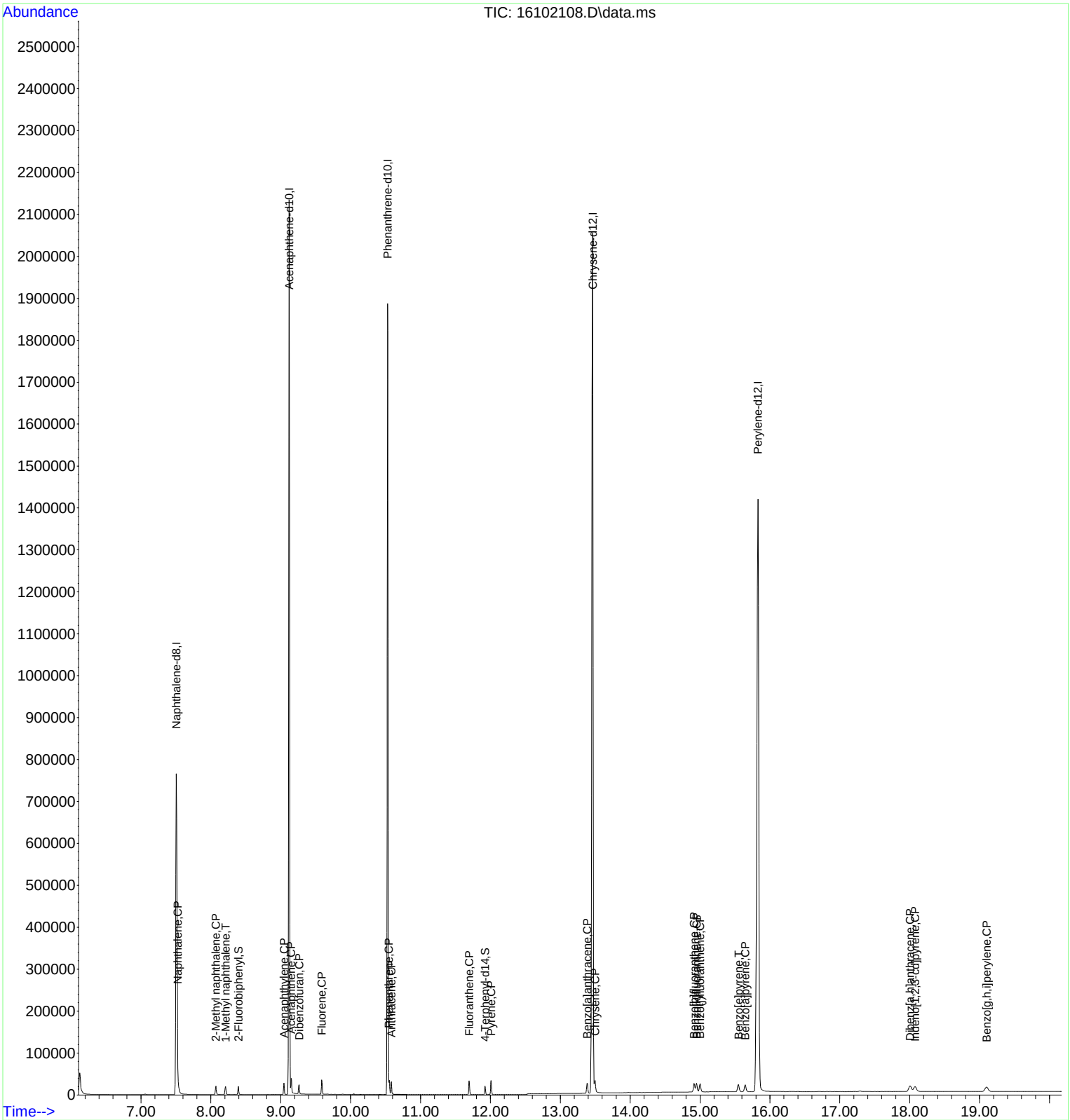
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.505	136	907873	4000.00	ug/kg	103
5) Acenaphthene-d10	9.120	164	805692	4000.00	ug/kg	102
11) Phenanthrene-d10	10.530	188	1436293	4000.00	ug/kg	102
17) Chrysene-d12	13.462	240	1731298	4000.00	ug/kg	104
20) Perylene-d12	15.828	264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

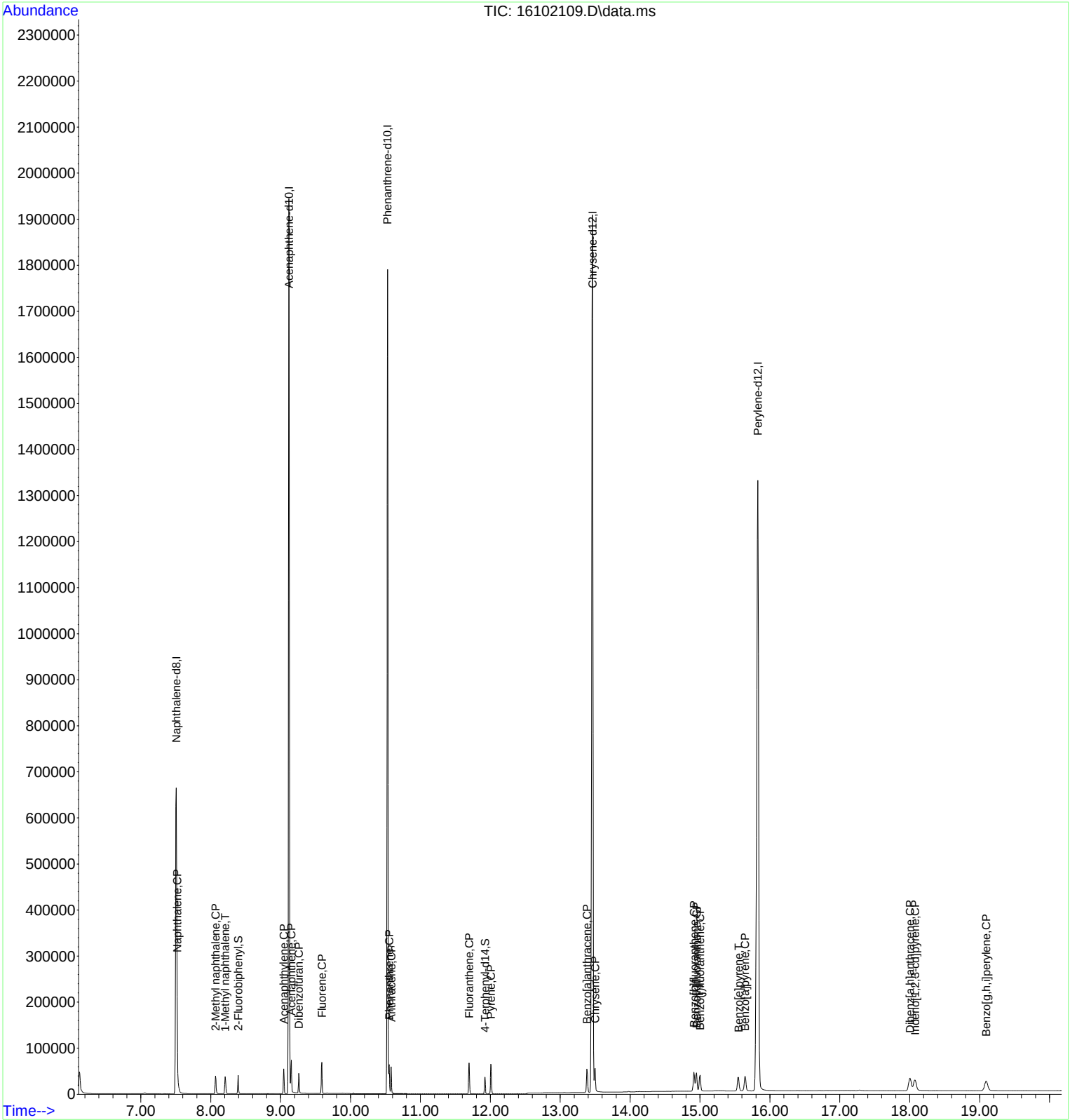
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.507	136	814464	4000.00	ug/kg	93
5) Acenaphthene-d10	9.117	164	764275	4000.00	ug/kg	97
11) Phenanthrene-d10	10.530	188	1364880	4000.00	ug/kg	97
17) Chrysene-d12	13.462	240	1647563	4000.00	ug/kg	99
20) Perylene-d12	15.828	264	1699180	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

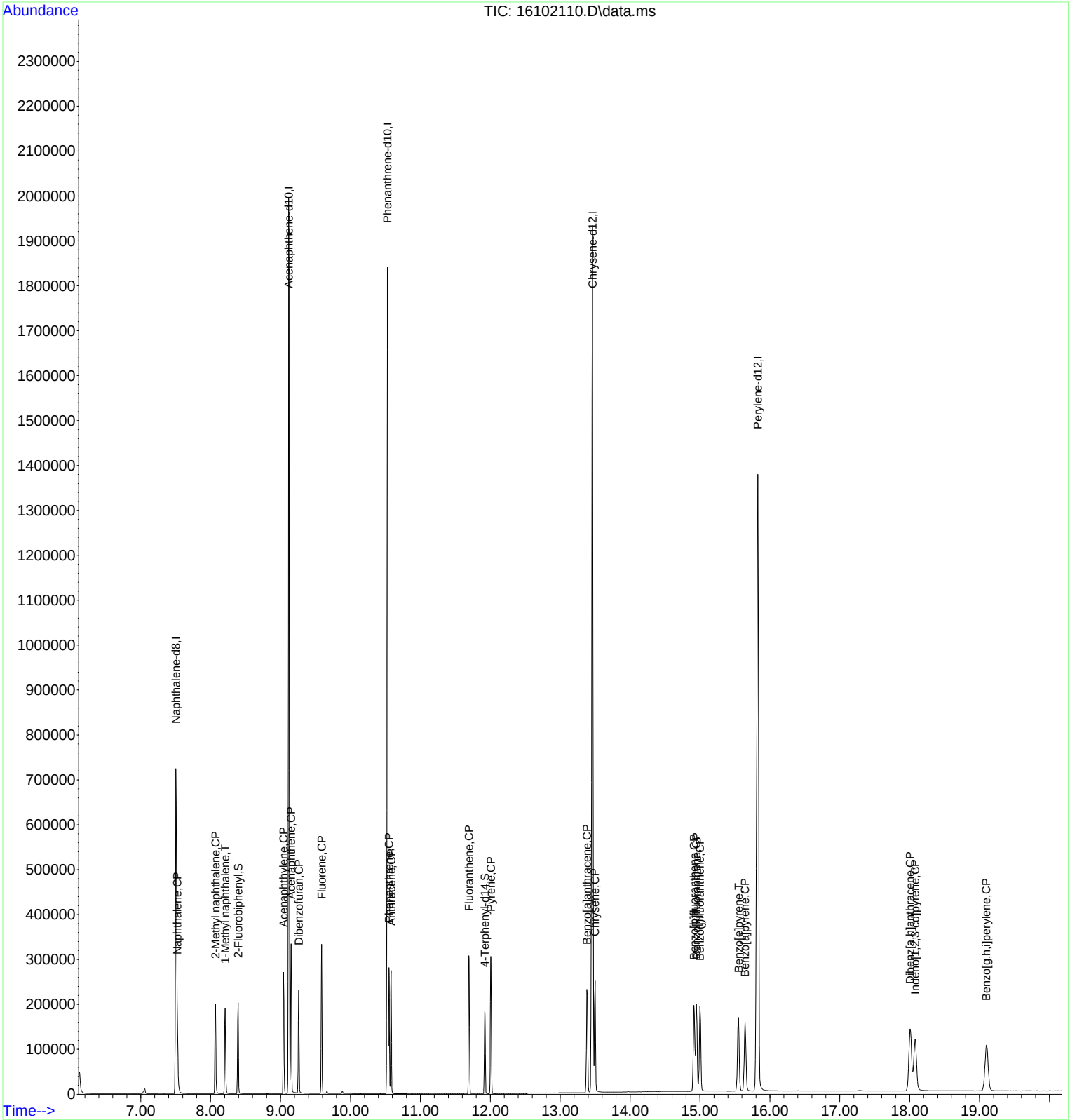
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.502	136	831350	4000.00	ug/kg	94
5) Acenaphthene-d10	9.117	164	772407	4000.00	ug/kg	98
11) Phenanthrene-d10	10.528	188	1391715	4000.00	ug/kg	99
17) Chrysene-d12	13.462	240	1670934	4000.00	ug/kg	100
20) Perylene-d12	15.828	264	1723109	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%#			

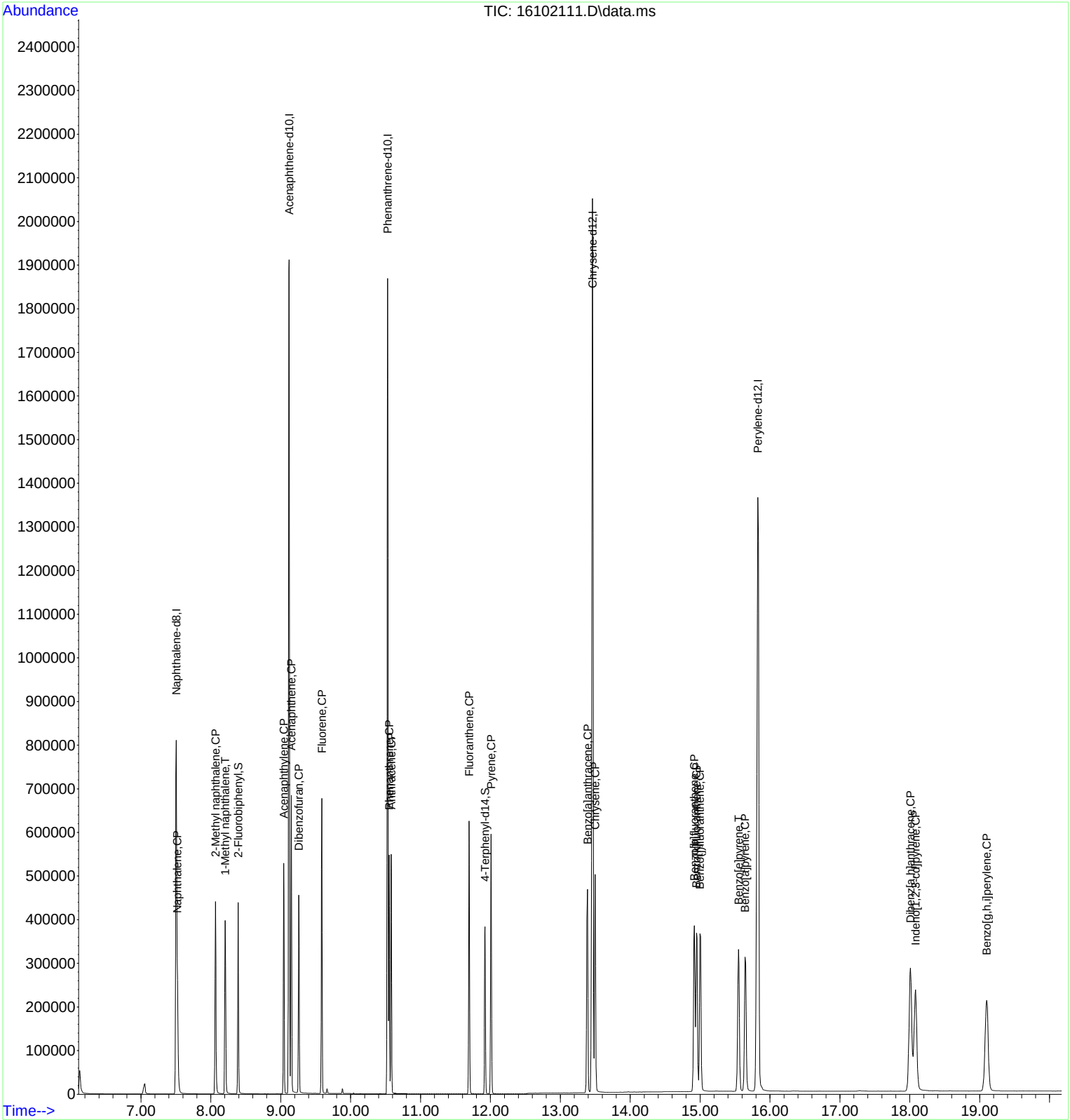
Target Compounds						Qvalue
2) Naphthalene	7.523	128	170246	972.31	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	197841	1021.05	ug/kg	95
4) 1-Methyl naphthalene	8.205	142	178787	1022.03	ug/kg	94
6) Dibenzofuran	9.258	168	288201	997.96	ug/kg	99
8) Acenaphthylene	9.042	152	332310	1003.12	ug/kg	99
9) Acenaphthene	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%			

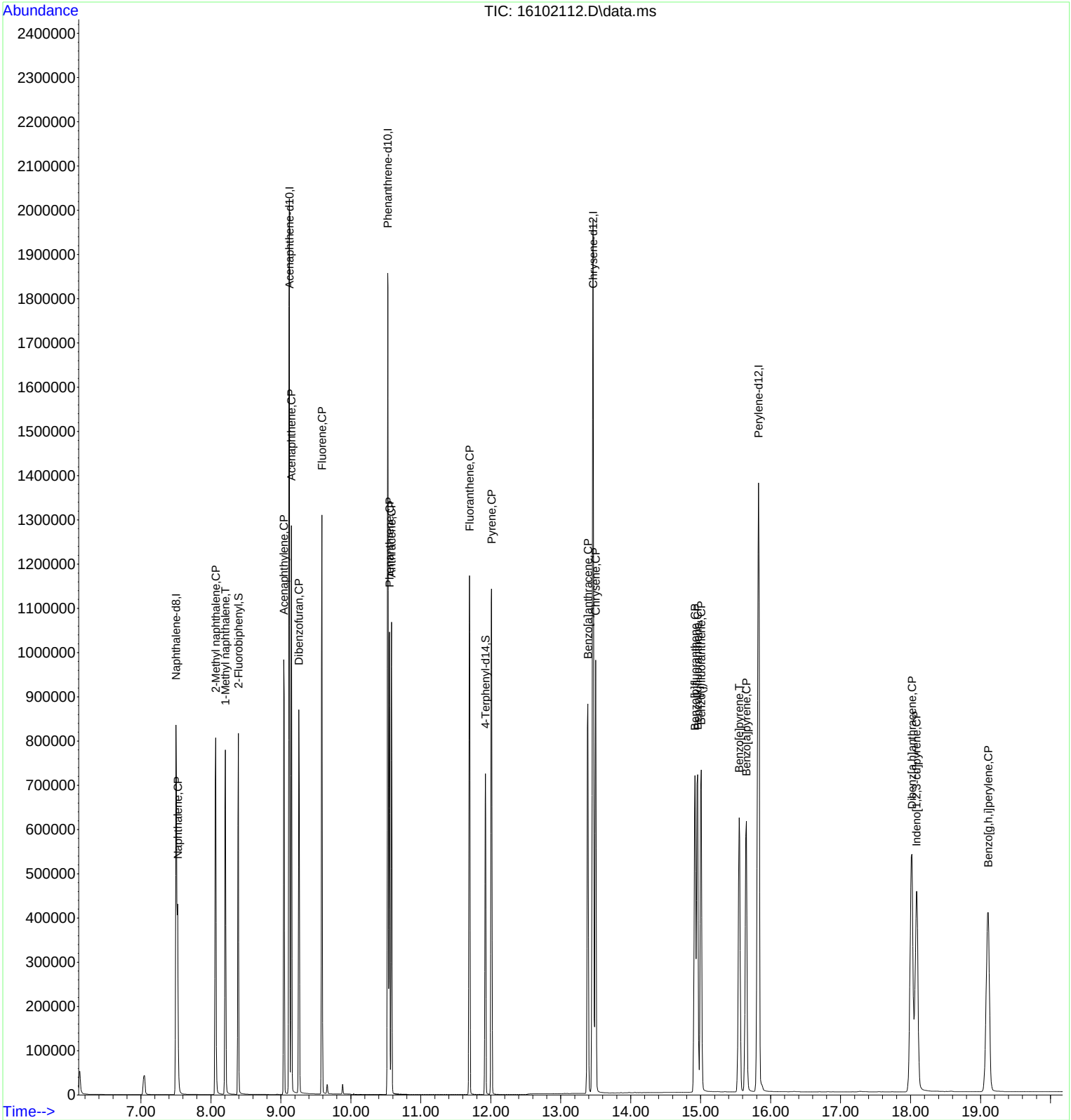
Target Compounds						Qvalue
2) Naphthalene	7.524	128	330707	1934.55	ug/kg	100
3) 2-Methyl naphthalene	8.068	142	384466	2032.34	ug/kg	100
4) 1-Methyl naphthalene	8.206	142	349288	2045.12	ug/kg	100
6) Dibenzofuran	9.258	168	555424	1931.14	ug/kg	100
8) Acenaphthylene	9.041	152	641652	1944.82	ug/kg	100
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

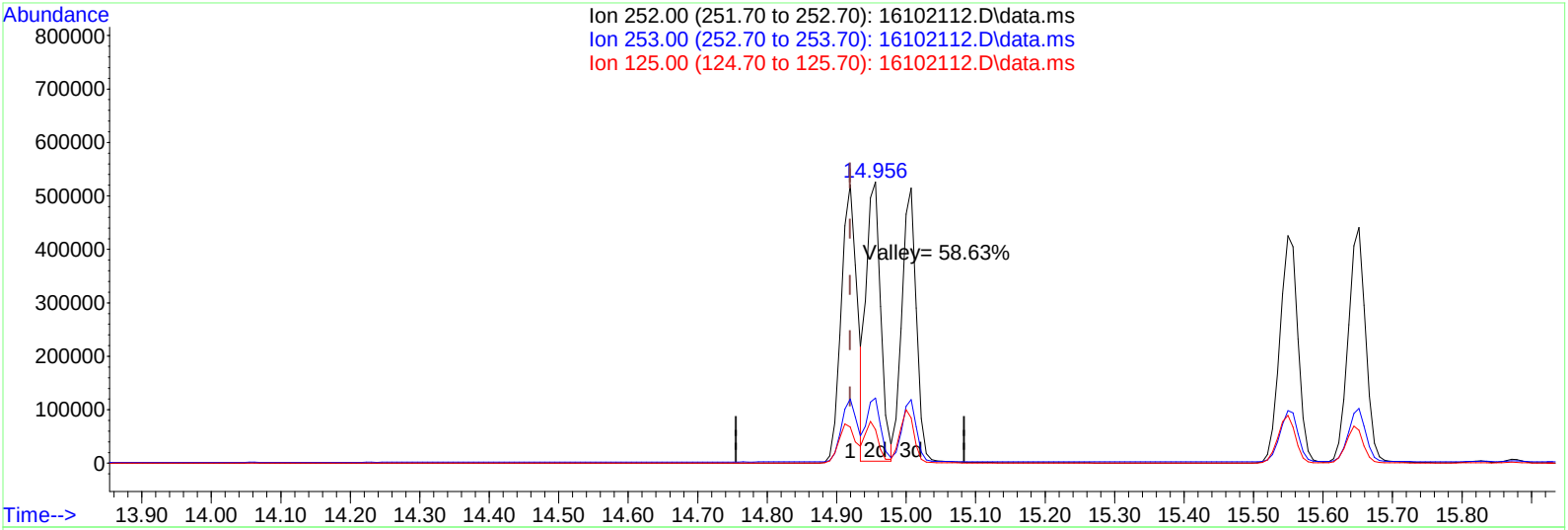
Quant Time: Nov 01 15:57:04 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Tue Nov 01 15:45:22 2016
Response via : Initial Calibration

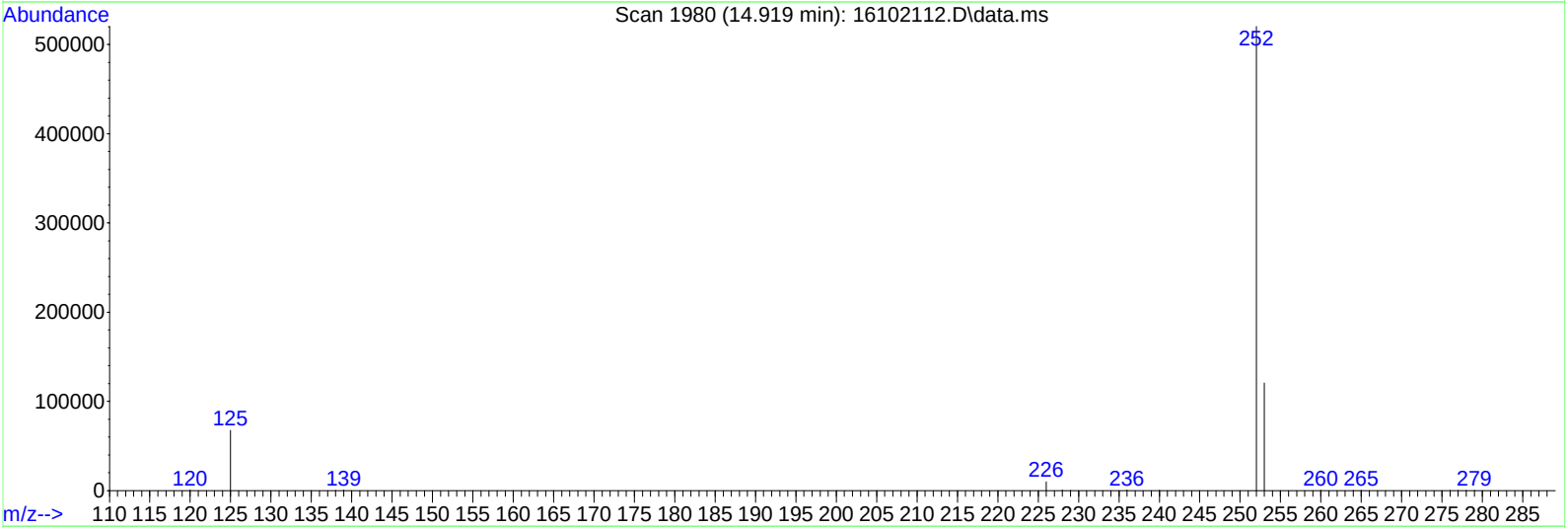


Quantitation Report (Qedit)

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%			

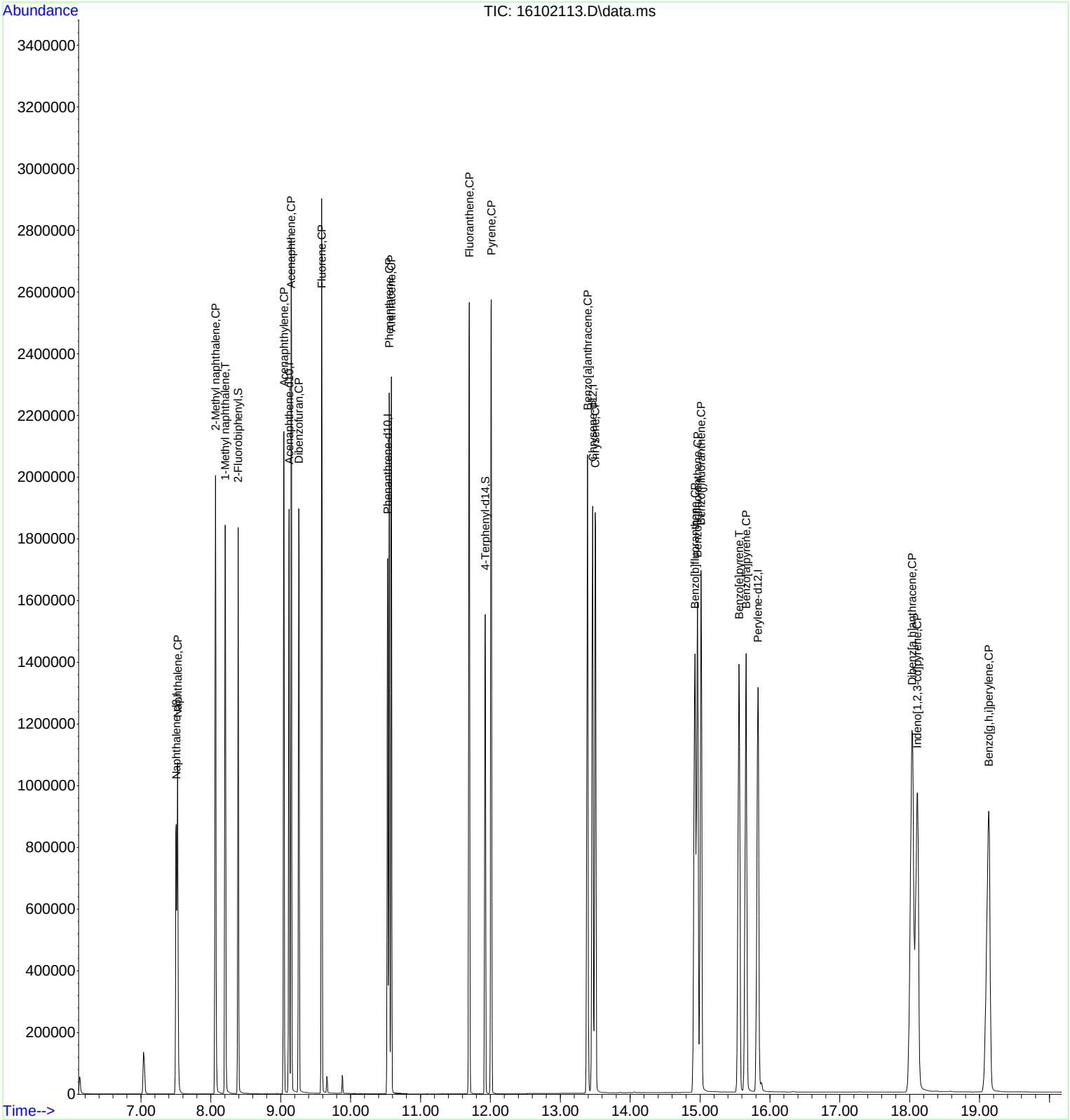
Target Compounds						Qvalue
2) Naphthalene	7.522	128	849321	4761.45	ug/kg	99
3) 2-Methyl naphthalene	8.066	142	919664	4659.07	ug/kg	95
4) 1-Methyl naphthalene	8.204	142	837317	4698.46	ug/kg	93
6) Dibenzofuran	9.263	168	1261471	4560.05	ug/kg	97
8) Acenaphthylene	9.047	152	1465458	4618.04	ug/kg	99
9) 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%			

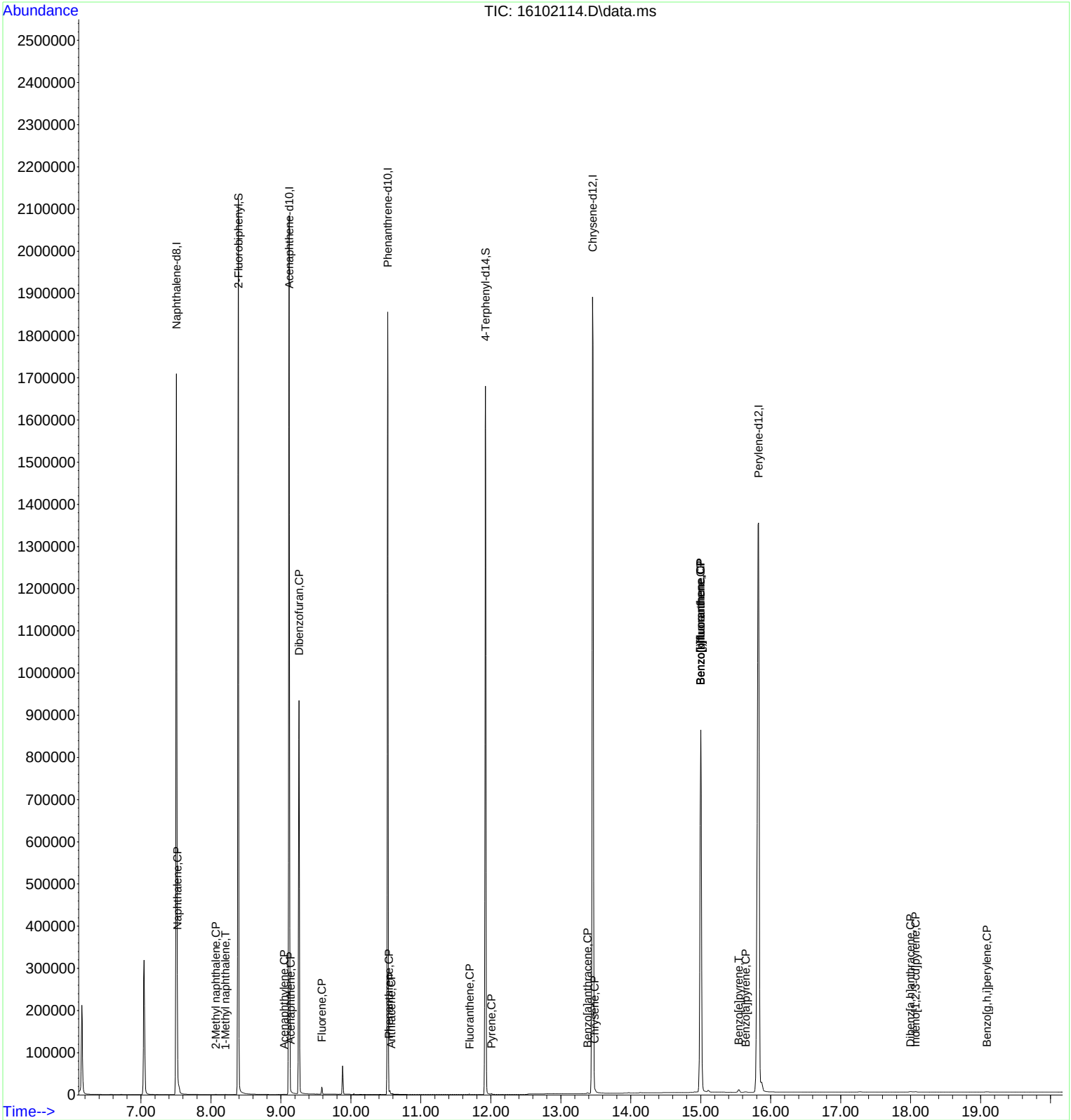
Target Compounds						Qvalue
2) Naphthalene	7.524	128	965	3.18	ug/kg#	1
3) 2-Methyl naphthalene	8.067	142	275	0.82	ug/kg	89
4) 1-Methyl naphthalene	8.206	142	169	0.56	ug/kg	93
6) Dibenzofuran	9.259	168	624874	2164.32	ug/kg	100
8) Acenaphthylene	9.043	152	414	1.25	ug/kg	95
9) Acenaphthene	9.146	154	322	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

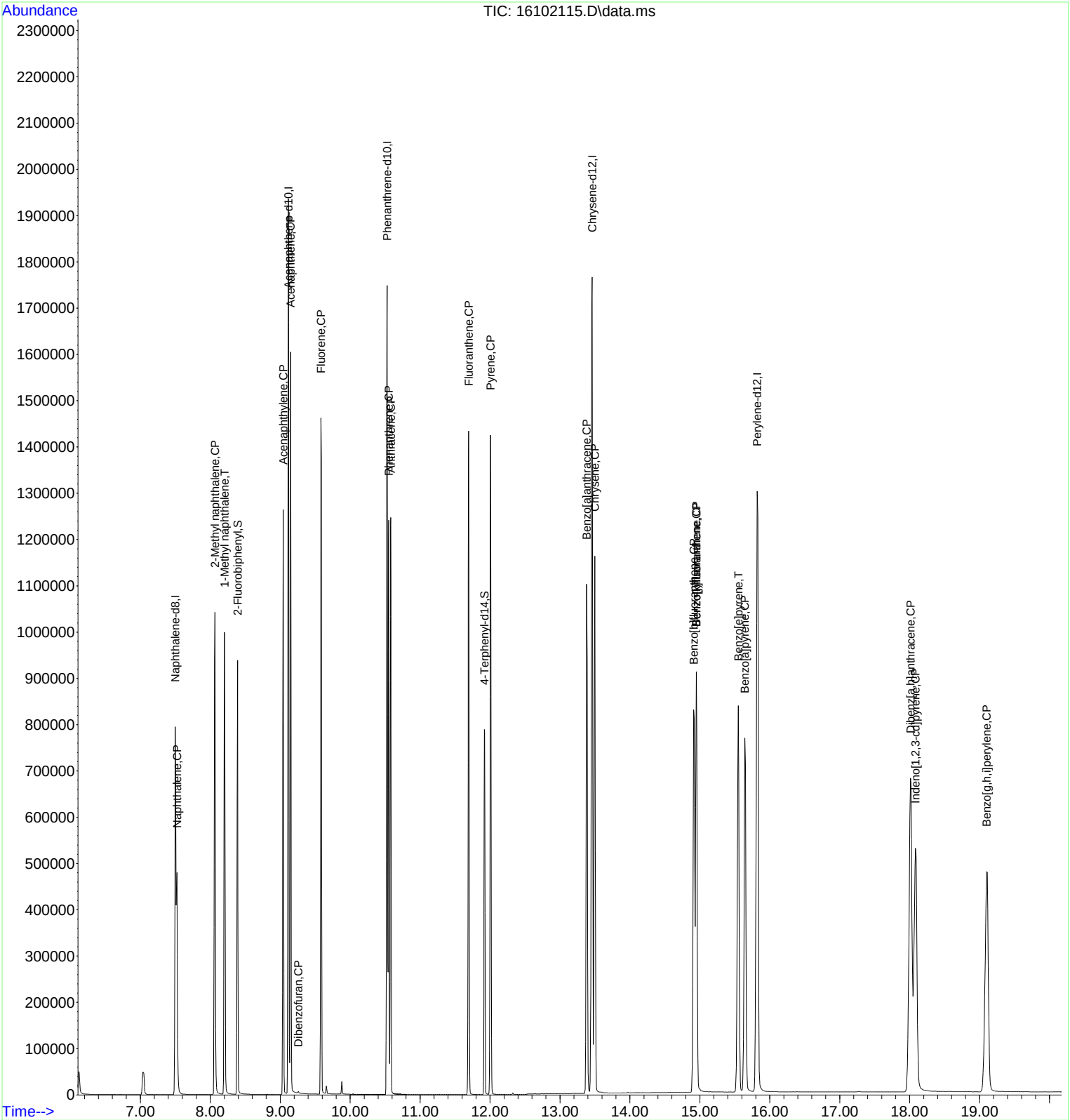
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.500	136	807543	4000.00	ug/kg	92
5) Acenaphthene-d10	9.116	164	750573	4000.00	ug/kg	95
11) Phenanthrene-d10	10.528	188	1351727	4000.00	ug/kg	96
17) Chrysene-d12	13.462	240	1612314	4000.00	ug/kg	96
20) Perylene-d12	15.820	264	1670522	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
1611022

ICP-MS3_161116A
For

DHL Work Order
1611022

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			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: 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]

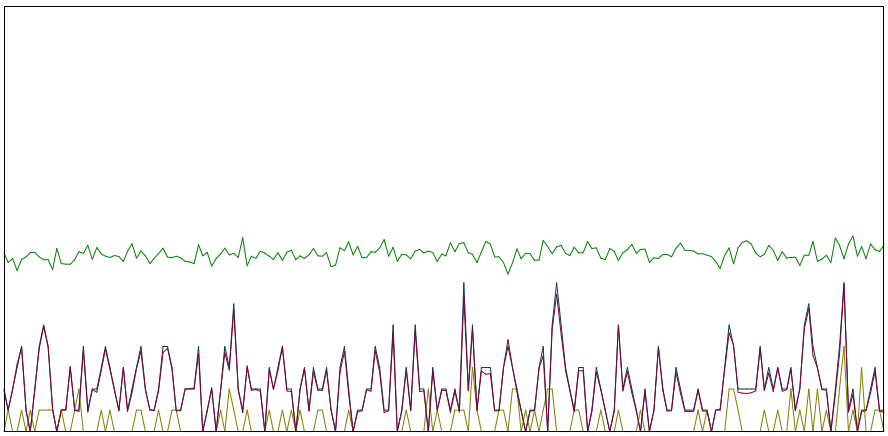
Standard	Date Acquired	File
BLANK STD 1	Nov 16 2016 10:40 am	c:\icpchem\1\data\16k16k01.b\004calb.d\
L2-161116	Nov 16 2016 10:46 am	c:\icpchem\1\data\16k16k01.b\005cals.d\
L-161116	Nov 16 2016 10:52 am	c:\icpchem\1\data\16k16k01.b\006cals.d\
10X-161116	Nov 16 2016 10:58 am	c:\icpchem\1\data\16k16k01.b\007cals.d\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

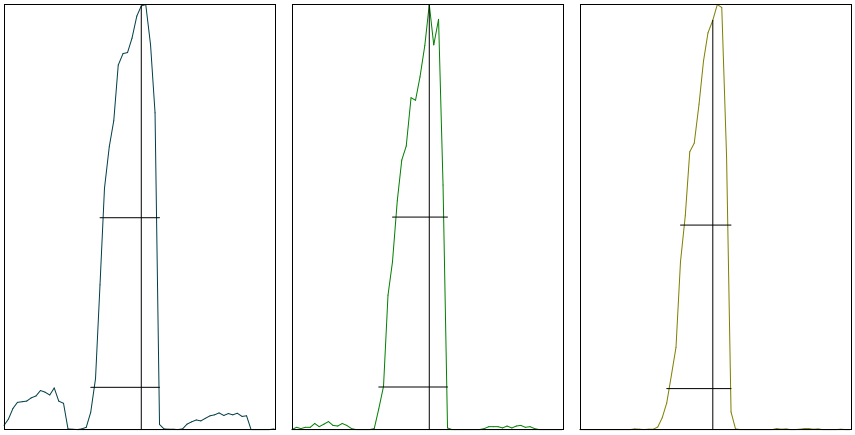
Tune Report

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				

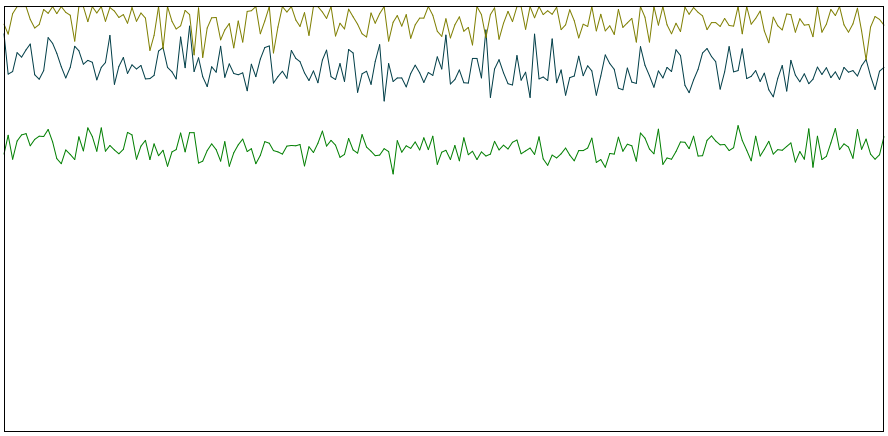
===Reaction Cell===

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

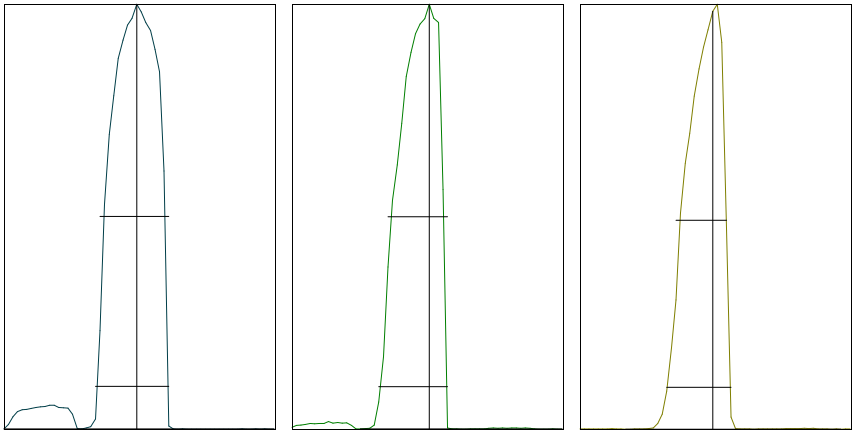
Tune Report

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	:	--- %

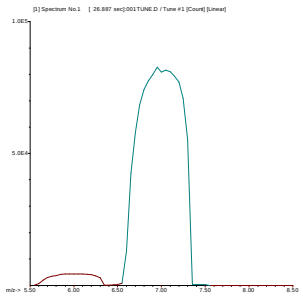
Generated : Nov 16, 2016 09:47:34
Printed : Nov 16, 2016 09:47:38

6020 QC Tune Report

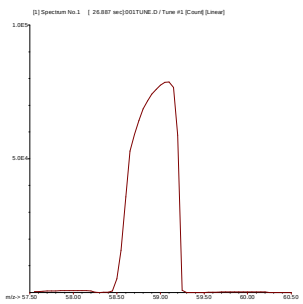
Data File: C:\ICPCHEM\1\DATA\16K16k00.B\001TUNE.D
Date Acquired: Nov 16 2016 10:02 am
Acq. Method: TN6020.M
Operator: CVD
Sample Name: TUNE CHECK
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020.M

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	

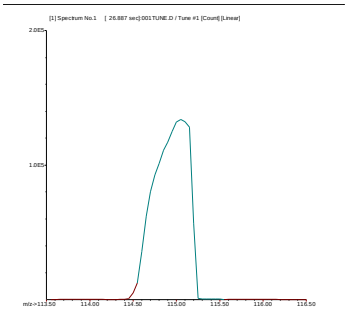


7 Li
Mass Calib.
Actual: 7.00
Required: 6.90 - 7.10
Flag:
Peak Width
Actual: 0.70
Required: 0.90
Flag:



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



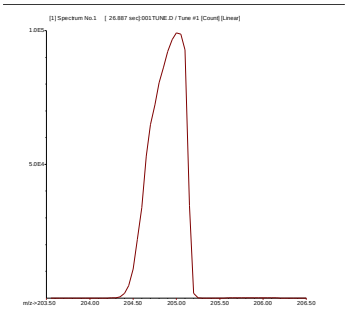
115 In

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	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\042SMPL.D\042SMPL.D#

Date Acquired:	Nov 16 2016 02:30 pm	Sample Name:	**1611022-13A**
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	0.059	ppb	#REF!	6.01	2000.00	ND
9	Be	2	45	0.009	ppb	#REF!	27.16	2000.00	ND
11	B	2	45	23.050	ppb	#REF!	1.08	2000.00	J
23	Na	1	45	87.150	ppb	#REF!	1.07	25000.00	ND
24	Mg	1	45	6.160	ppb	#REF!	11.36	25000.00	ND
27	Al	1	45	13.640	ppb	#REF!	6.49	10000.00	J
39	K	1	45	9.202	ppb	#REF!	1.32	25000.00	ND
44	Ca	2	45	53.620	ppb	#REF!	1.63	25000.00	ND
47	Ti	1	45	0.239	ppb	#REF!	33.32	2000.00	ND
51	V	1	45	0.030	ppb	#REF!	10.02	2000.00	ND
52	Cr	1	45	0.239	ppb	#REF!	9.83	2000.00	ND
55	Mn	1	45	0.923	ppb	#REF!	7.06	2000.00	ND
56	Fe	1	72	43.010	ppb	#REF!	0.64	10000.00	J
59	Co	1	72	0.020	ppb	#REF!	32.59	2000.00	ND
60	Ni	1	72	0.023	ppb	#REF!	17.58	2000.00	ND
63	Cu	1	72	0.517	ppb	#REF!	6.75	2000.00	ND
66	Zn	1	72	0.378	ppb	#REF!	8.70	2000.00	ND
75	As	1	72	0.040	ppb	#REF!	5.16	2000.00	ND
78	Se	1	72	0.303	ppb	#REF!	28.64	2000.00	ND
88	Sr	2	115	0.358	ppb	#REF!	7.73	2000.00	ND
95	Mo	2	115	0.315	ppb	#REF!	8.18	2000.00	ND
107	Ag	2	115	0.018	ppb	#REF!	30.69	500.00	ND
111	Cd	2	115	0.013	ppb	#REF!	30.47	2000.00	ND
118	Sn	2	115	0.027	ppb	#REF!	8.58	2000.00	ND
121	Sb	2	115	0.088	ppb	#REF!	8.33	500.00	ND
137	Ba	2	115	0.116	ppb	#REF!	13.48	2000.00	ND
205	Tl	2	209	0.044	ppb	#REF!	8.36	2000.00	ND
208	Pb	2	209	0.029	ppb	#REF!	14.88	2000.00	ND

ISTD Elements

Element			CPS Mean	RSD(%)		Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-6.24	320.86	RHigh	23.38	-26.7	70 - 120	ISFail
45	Sc	1	83605.95	1.16		90770.48	92.1	70 - 120	
45	Sc	2	3120923.00	0.73		4095698.00	76.2	70 - 120	
72	Ge	1	44816.59	0.64		47835.73	93.7	70 - 120	
115	In	2	4937331.00	1.22		6191712.50	79.7	70 - 120	
209	Bi	2	4633582.00	0.94		5622254.50	82.4	70 - 120	

Sample QC Report

C:\ICPCHEM\1\DATA\16K16k01.B\043SMPL.D\043SMPL.D#

Date Acquired:	Nov 16 2016 02:36 pm	Sample Name:	**1611022-26A**
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	0.033	ppb	#REF!	4.99	2000.00	ND
9	Be	2	45	0.006	ppb	#REF!	21.31	2000.00	ND
11	B	2	45	16.420	ppb	#REF!	3.29	2000.00	J
23	Na	1	45	92.400	ppb	#REF!	0.52	25000.00	ND
24	Mg	1	45	3.807	ppb	#REF!	9.63	25000.00	ND
27	Al	1	45	-0.683	ppb	#REF!	6.01	10000.00	ND
39	K	1	45	18.660	ppb	#REF!	3.15	25000.00	ND
44	Ca	2	45	11.880	ppb	#REF!	1.96	25000.00	ND
47	Ti	1	45	0.006	ppb	#REF!	86.60	2000.00	ND
51	V	1	45	0.031	ppb	#REF!	15.47	2000.00	ND
52	Cr	1	45	0.039	ppb	#REF!	18.47	2000.00	ND
55	Mn	1	45	0.105	ppb	#REF!	38.59	2000.00	ND
56	Fe	1	72	2.168	ppb	#REF!	2.67	10000.00	ND
59	Co	1	72	0.010	ppb	#REF!	24.76	2000.00	ND
60	Ni	1	72	-0.073	ppb	#REF!	17.64	2000.00	ND
63	Cu	1	72	0.080	ppb	#REF!	6.34	2000.00	ND
66	Zn	1	72	1.920	ppb	#REF!	8.75	2000.00	ND
75	As	1	72	0.015	ppb	#REF!	16.79	2000.00	ND
78	Se	1	72	0.229	ppb	#REF!	29.40	2000.00	ND
88	Sr	2	115	0.041	ppb	#REF!	4.65	2000.00	ND
95	Mo	2	115	0.082	ppb	#REF!	13.01	2000.00	ND
107	Ag	2	115	0.021	ppb	#REF!	34.79	500.00	ND
111	Cd	2	115	0.010	ppb	#REF!	84.50	2000.00	ND
118	Sn	2	115	-0.039	ppb	#REF!	5.99	2000.00	ND
121	Sb	2	115	0.068	ppb	#REF!	4.43	500.00	ND
137	Ba	2	115	0.023	ppb	#REF!	9.52	2000.00	ND
205	Tl	2	209	0.031	ppb	#REF!	9.15	2000.00	ND
208	Pb	2	209	0.022	ppb	#REF!	11.58	2000.00	ND

ISTD Elements

Element			CPS Mean	RSD(%)		Ref Value	Rec(%)	QC Range(%)	Flag
6	Li	2	-4.81	323.57	RHigh	23.38	-20.6	70 - 120	ISFail
45	Sc	1	82737.27	0.68		90770.48	91.1	70 - 120	
45	Sc	2	3205237.30	1.21		4095698.00	78.3	70 - 120	
72	Ge	1	43882.78	0.52		47835.73	91.7	70 - 120	
115	In	2	5003477.00	0.81		6191712.50	80.8	70 - 120	
209	Bi	2	4604316.00	0.94		5622254.50	81.9	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
1611022

ICP-MS4_161110A
For

DHL Work Order
1611022

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_161110A 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: 11/10/2016

Second-Level Review: _____ Date Stamp: 11/16/2016

DHL Analytical, Inc.

Run ID: ICP-MS4_161110A **Run No.:** 88926

Analytical Run Date: 11/10/2016 **InstrumentID:** ICP-MS4

Analyst: Ryan Oliver

SampID	DF	TestCode	SampType	Batch ID	Analysis Date/Time	Q	Comments
BLANK STD 1	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:03:00 AM		
L2-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:05:00 AM		
L-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:07:00 AM		
10X-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:09:00 AM		
5X-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:11:00 AM		
2X-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:13:00 AM		
H-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:15:00 AM		
H2-161110	1	ICPMS_TWDOD	CAL	R88926	11/10/2016 11:17:00 AM		
ICSA-161110	1	ICPMS_TWDOD	ICSA	R88926	11/10/2016 11:23:00 AM		
ICSAB-161110	1	ICPMS_TWDOD	ICSB	R88926	11/10/2016 11:25:00 AM		
ICV-161110	1	ICPMS_TWDOD	ICV	R88926	11/10/2016 11:31:00 AM		
LCVL-161110	1	ICPMS_TWDOD	LCVL	R88926	11/10/2016 11:42:00 AM		
ICB-161110	1	ICPMS_TWDOD	ICB	R88926	11/10/2016 11:47:00 AM		
MB-77808	5	ICPMS_TSDOD1	MBLK	77808	11/10/2016 11:49:00 AM		
LCS-77808	5	ICPMS_TSDOD1	LCS	77808	11/10/2016 11:51:00 AM		
LCSD-77808	5	ICPMS_TSDOD1	LCSD	77808	11/10/2016 11:53:00 AM		
1611022-09A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 11:57:00 AM		
1611022-09A SD	25	ICPMS_TSDOD1	SD	77808	11/10/2016 11:59:00 AM		
1611022-01A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:01:00 PM		
1611022-02A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:03:00 PM		
1611022-03A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:05:00 PM		
1611022-04A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:07:00 PM		
1611022-05A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:09:00 PM		
1611022-06A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:11:00 PM		
1611022-07A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:13:00 PM		
1611022-08A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:14:00 PM		
1611022-10A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:16:00 PM		
1611022-09A PDS	5	ICPMS_TSDOD1	PDS	77808	11/10/2016 12:18:00 PM		
1611022-09A MS	5	ICPMS_TSDOD1	MS	77808	11/10/2016 12:20:00 PM		
1611022-09A MSD	5	ICPMS_TSDOD1	MSD	77808	11/10/2016 12:22:00 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_161110A **Run No.:** 88926

CCV1-161110	1	ICPMS_TWDOD	CCV	R88926	11/10/2016 12:24:00 PM		
LCVL1-161110	1	ICPMS_TWDOD	LCVL	R88926	11/10/2016 12:30:00 PM		
CCB1-161110	1	ICPMS_TWDOD	CCB	R88926	11/10/2016 12:32:00 PM		
1611022-11A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:34:00 PM		
1611022-12A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:36:00 PM		
1611022-14A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:38:00 PM		
1611022-15A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:40:00 PM		
1611022-16A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:42:00 PM		
1611022-17A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:44:00 PM		
1611022-18A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:46:00 PM		
1611022-19A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:48:00 PM		
1611022-20A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:50:00 PM		
1611022-21A	5	ICPMS_TSDOD1	SAMP	77808	11/10/2016 12:52:00 PM		
CCV2-161110	1	ICPMS_TWDOD	CCV	R88926	11/10/2016 12:54:00 PM		
LCVL2-161110	1	ICPMS_TWDOD	LCVL	R88926	11/10/2016 1:00:00 PM		
CCB2-161110	1	ICPMS_TWDOD	CCB	R88926	11/10/2016 1:02:00 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\161110.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	L2-161110	CAL ICPMS_TW	2	2102	
14	CalStd	L-161110	CAL ICPMS_TW	3	2103	
15	CalStd	10X-161110	CAL ICPMS_TW	4	2104	
16	CalStd	5X-161110	CAL ICPMS_TW	5	2105	
17	CalStd	2X-161110	CAL ICPMS_TW	6	2106	
18	CalStd	H-161110	CAL ICPMS_TW	7	2107	
19	CalStd	H2-161110	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-161110	ICSAICPMS_TW		2109	
23	ICSB	ICSAB-161110	ICSBICPMS_TW		2110	
24	ICB	BLANK	CCB ICPMS_TW		1101	
25	ICB	BLANK	CCB ICPMS_TW		1102	
26	ICV	ICV-161110	ICV ICPMS_TW		2111	
27	ICB	ICB-161110	ICB ICPMS_TW		1101	
28	LLICV	LCVL-161110	LCVLICPMS_TW		2112	
29	ICB	ICB-161110	ICB ICPMS_TW		1102	
30	ICB	ICB-161110	ICB ICPMS_TW		1103	
31	PB	MB-77808	MBLKICPMS_TSDOD1		3101	5
32	LCS_S	LCS-77808	LCS ICPMS_TSDOD1		3102	5
33	LCS_S	LCSD-77808	LCSDICPMS_TSDOD1		3103	5
34	CCB	RINSE	CCB ICPMS_TW		1101	
35	AllRef	1611022-09A	SAMPICPMS_TSDOD1		3104	5
36	SD	1611022-09A SD	SD ICPMS_TSDOD1		3105	25
37	Sample	1611022-01A	SAMPICPMS_TSDOD1		3106	5
38	Sample	1611022-02A	SAMPICPMS_TSDOD1		3107	5
39	Sample	1611022-03A	SAMPICPMS_TSDOD1		3108	5
40	Sample	1611022-04A	SAMPICPMS_TSDOD1		3109	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
41	Sample	1611022-05A	SAMPICPMS_TSDOD1		3110	5
42	Sample	1611022-06A	SAMPICPMS_TSDOD1		3111	5
43	Sample	1611022-07A	SAMPICPMS_TSDOD1		3112	5
44	Sample	1611022-08A	SAMPICPMS_TSDOD1		3201	5
45	Sample	1611022-10A	SAMPICPMS_TSDOD1		3202	5
46	PDS	1611022-09A PDS	PDS ICPMS_TSDOD1		3203	5
47	MS_S	1611022-09A MS	MS ICPMS_TSDOD1		3204	5

Sample List

48	MS_S	1611022-09A MSD	MSD ICPMS_TSDOD1		3205	5
49	CCV	CCV1-161110	CCV ICPMS_TW		1207	
50	CCB	CCB1-161110	CCB ICPMS_TW		1102	
51	LLCCV	LCVL1-161110	LCVLICPMS_TW		2112	
52	CCB	CCB1-161110	CCB ICPMS_TW		1103	
53	Sample	1611022-11A	SAMPICPMS_TSDOD1		3206	5
54	Sample	1611022-12A	SAMPICPMS_TSDOD1		3207	5
55	Sample	1611022-14A	SAMPICPMS_TSDOD1		3208	5
56	Sample	1611022-15A	SAMPICPMS_TSDOD1		3209	5
57	Sample	1611022-16A	SAMPICPMS_TSDOD1		3210	5
58	Sample	1611022-17A	SAMPICPMS_TSDOD1		3211	5
59	Sample	1611022-18A	SAMPICPMS_TSDOD1		3212	5
60	Sample	1611022-19A	SAMPICPMS_TSDOD1		3301	5

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
61	Sample	1611022-20A	SAMPICPMS_TSDOD1		3302	5
62	Sample	1611022-21A	SAMPICPMS_TSDOD1		3303	5
63	CCV	CCV2-161110	CCV ICPMS_TW		1207	
64	CCB	CCB2-161110	CCB ICPMS_TW		1102	
65	LLCCV	LCVL2-161110	LCVLICPMS_TW		2112	
66	CCB	CCB2-161110	CCB ICPMS_TW		1103	
67	PB_W	MB-77848	MBLKICPMS_DW		2201	1
68	PB_W	FB1-77848	MBLKICPMS_DW		2202	1
69	PB_W	FB2-77848	MBLKICPMS_DW		2203	1
70	LCS_W	LCS-77848	LCS ICPMS_DW		2204	1
71	LCS_W	LCSD-77848	LCSDICPMS_DW		2205	1
72	CCB	RINSE	CCB ICPMS_TW		1101	
73	AllRef	1611067-01B	SAMPICPMS_DW		2206	1
74	SD	1611067-01B SD	SD ICPMS_DW		2207	5
75	SAMP_W	1611046-01E	SAMPICPMS_DW		2208	1
76	SAMP_W	1611067-02B	SAMPICPMS_DW		2209	1

Sample List

77	SAMP_W	1611067-03F	SAMPICPMS_DW		2210	1
78	PDS	1611067-01B PDS	PDS ICPMS_DW		2211	1
79	MS_W	1611067-01B MS	MS ICPMS_DW		2212	1
80	MS_W	1611067-01B MSD	MSD ICPMS_DW		2301	1

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#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
81	CCV	CCV3-161110	CCV ICPMS_TW		1207	
82	CCB	CCB3-161110	CCB ICPMS_TW		1102	
83	CCB	CCB3-161110	CCB ICPMS_TW		1102	
84	CCB	CCB3-161110	CCB ICPMS_TW		1103	
85	CCB	CCB3-161110	CCB ICPMS_TW		1103	
86	LLCCV	LCVL3-161110	LCVLICPMS_TW		2512	
87	CCB	CCB3-161110	CCB ICPMS_TW		1102	
88	AllRef	1611067-01B	SAMPICPMS_DW		4101	10
89	SD	1611067-01B SD	SD ICPMS_DW		4102	50
90	SAMP_W	1611046-01E	SAMPICPMS_DW		4103	500
91	SAMP_W	1611067-02B	SAMPICPMS_DW		4104	100
92	SAMP_W	1611067-03F	SAMPICPMS_DW		4105	10
93	PDS	1611067-01B PDS	PDS ICPMS_DW		4106	10
94	CCV	CCV4-161110	CCV ICPMS_TW		1207	
95	CCB	CCB4-161110	CCB ICPMS_TW		1102	
96	LLCCV	LCVL4-161110	LCVLICPMS_TW		2512	
97	CCB	CCB4-161110	CCB ICPMS_TW		1102	
98	CCB	CCB4-161110	CCB ICPMS_TW		1102	
99	CCB	CCB4-161110	CCB ICPMS_TW		1102	
100	CCB	CCB4-161110	CCB ICPMS_TW		1102	

#	Skip
81	
82	
83	

Sample List

84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

#	Sample Type	Sample Name	Comment	Level	Vial#	Dilution
101	CCB	CCB4-161110	CCB ICPMS_TW		1103	
102	CCB	CCB4-161110	CCB ICPMS_TW		1103	
103	CCB	CCB4-161110	CCB ICPMS_TW		1103	
104	CCB	CCB4-161110	CCB ICPMS_TW		1103	

#	Skip
101	
102	
103	
104	

Unknown Samples:

Blank Samples:

Periodic Block

#	Block Name	Period	Unit	Reset By

Sublist

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/7/2016 9:27:40 AM**
Digestion: **Start: 11/7/2016 10:20:00 AM / Stop: 11/7/2016 3:15:00 PM**
Prep End Date: **11/7/2016 4:03:07 PM**

Prep Batch **77808** 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
1611022-01A	Soil		1.08	50	46.296	1 of 1	
1611022-02A	Soil		1.02	50	49.020	1 of 1	
1611022-03A	Soil		1.07	50	46.729	1 of 1	
1611022-04A	Soil		1.09	50	45.872	1 of 1	
1611022-05A	Soil		1.04	50	48.077	1 of 1	
1611022-06A	Soil		1.05	50	47.619	1 of 1	
1611022-07A	Soil		1.06	50	47.170	1 of 1	
1611022-08A	Soil		1.03	50	48.544	1 of 1	
1611022-09A	Soil		1.06	50	47.170	of 3	
1611022-09A MS	Soil		1.05	50	47.619	of	
1611022-09A MSD	Soil		1.08	50	46.296	of	
1611022-09A PDS	Soil		1.06	50	47.170	of	
1611022-09A SD	Soil		1.06	50	47.170	of	
1611022-10A	Soil		1.04	50	48.077	1 of 1	
1611022-11A	Soil		1.02	50	49.020	1 of 1	
1611022-12A	Soil		1.02	50	49.020	1 of 1	
1611022-14A	Soil		1.03	50	48.544	1 of 1	
1611022-15A	Soil		1.05	50	47.619	1 of 1	
1611022-16A	Soil		1.03	50	48.544	1 of 1	
1611022-17A	Soil		1.04	50	48.077	1 of 1	
1611022-18A	Soil		1.06	50	47.170	1 of 1	
1611022-19A	Soil		1.1	50	45.455	1 of 1	
1611022-20A	Soil		1.09	50	45.872	1 of 1	
1611022-21A	Soil		1.04	50	48.077	1 of 1	
LCS-77808	Soil		1	50	50.000	of	
LCSD-77808	Soil		1	50	50.000	of	
MB-77808	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 Angie O'Donnell at 1:16:19 PM, 11/16/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/7/2016 9:27:40 AM**
Digestion:
Prep End Date:

Prep Batch **77808** 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
1611022-01A	Soil		1.08	50	50.000	1 of 1	
1611022-02A	Soil		1.02	50	50.000	1 of 1	
1611022-03A	Soil		1.07	50	50.000	1 of 1	
1611022-04A	Soil		1.09	50	50.000	1 of 1	
1611022-05A	Soil		1.04	50	50.000	1 of 1	
1611022-06A	Soil		1.05	50	50.000	1 of 1	
1611022-07A	Soil		1.06	50	50.000	1 of 1	
1611022-08A	Soil		1.03	50	50.000	1 of 1	
1611022-09A	Soil		1.06	50	50.000	1 of 3	
1611022-09A MS	Soil		1.05	50	50.000	1 of 3	
1611022-09A MSD	Soil		1.08	50	50.000	1 of 3	
1611022-10A	Soil		1.04	50	50.000	1 of 1	
1611022-11A	Soil		1.02	50	50.000	1 of 1	
1611022-12A	Soil		1.02	50	50.000	1 of 1	
1611022-14A	Soil		1.03	50	50.000	1 of 1	
1611022-15A	Soil		1.05	50	50.000	1 of 1	
1611022-16A	Soil		1.03	50	50.000	1 of 1	
1611022-17A	Soil		1.04	50	50.000	1 of 1	
1611022-18A	Soil		1.06	50	50.000	1 of 1	
1611022-19A	Soil		1.10	50	50.000	1 of 1	
1611022-20A	Soil		1.09	50	50.000	1 of 1	
1611022-21A	Soil		1.04	50	50.000	1 of 1	
LCS-77808	Soil		1	50	50.000	of	
LCSD-77808	Soil		1	50	50.000	of	
MB-77808	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

10:20 - 10:30
10:35 - 12:35
12:50 - 14:50
15:00 - 15:15

11/7/16

REVIEWED
By Angie O'Donnell at 1:16:30 PM, 11/16/2016

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							

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)		**0.201**	**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)						

Analyst / Date

Review and Approved / Date

see next

MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

ANALYST:	RO	**BALANCE #:**	30	
TEST DATE:	11/10/2016	**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	5.0161	5.0061	100.12	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		5.0033	4.9933	99.87		
3		5.0028	4.9928	99.86		
AVERAGE (MEAN)		5.007	4.997	99.95		0.151
						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	1.0041	1.0021	100.21	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		1.0043	1.0023	100.23		
3		1.0053	1.0033	100.33		
AVERAGE (MEAN)		1.005	1.003	100.26		0.064
						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	0.5025	0.5015	100.30	PASS	RSD MUST BE ≤ 1% OF TEST VOLUME VALUE
2		0.5043	0.5033	100.66		
3		0.5039	0.5029	100.58		
AVERAGE (MEAN)		0.504	0.503	100.51		0.188
						PASS

11/10/16
Analyst / Date

11/16/2016
Review and Approved / Date

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)						

Analyst / Date 11/7/16

Review and Approved / Date 11/17/2016

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

Calibration Summary Report

Date Acquired 11/10/2016 11:03
Data Batch 161110.b

Level	Calibration File Name
1	012CALB.d
2	
3	
4	
5	
6	
7	
8	

Calibration Table

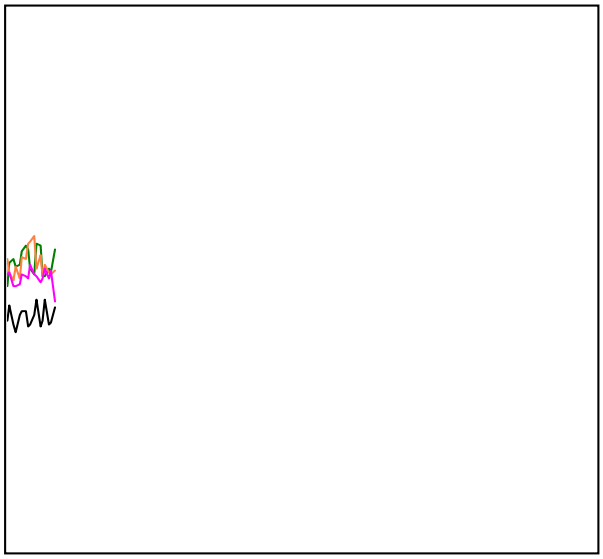
Ele	Corr Coef	Curve Equation
As	0.9999	y = 0.0011 * x + 1.8441E-004
Be	0.9999	y = 5.3718E-005 * x + 2.0986E-006
B	1.0000	y = 2.0250E-005 * x + 1.2755E-004
Na	0.9999	y = 7.5531E-004 * x + 0.0645
Mg	0.9998	y = 3.8247E-004 * x + 7.1070E-004
Al	1.0000	y = 1.5491E-004 * x + 4.7995E-004
K	0.9999	y = 3.9226E-004 * x + 0.0509
Ca	0.9998	y = 2.3386E-005 * x + 6.1119E-004
Ti	1.0000	y = 1.3569E-004 * x + 3.8925E-006
V	0.9999	y = 0.0041 * x + 0.0015
Cr	0.9999	y = 0.0048 * x + 0.0010
Mn	0.9999	y = 0.0029 * x + 6.2400E-004
Fe	0.9999	y = 0.0041 * x + 0.0056
Co	0.9999	y = 0.0114 * x + 1.1038E-004
Ni	0.9998	y = 0.0030 * x + 7.1850E-004
Cu	0.9998	y = 0.0083 * x + 0.0025
Zn	0.9999	y = 0.0013 * x + 3.2062E-004
Se	0.9999	y = 7.1503E-005 * x + 1.5787E-004
Sr	1.0000	y = 6.4572E-004 * x + 3.2167E-005
Mo	1.0000	y = 5.0685E-004 * x + 1.3875E-005
Ag	1.0000	y = 0.0015 * x + 6.3574E-006
Cd	1.0000	y = 2.2201E-004 * x + 1.2984E-006
Sn	1.0000	y = 4.9469E-004 * x + 6.9005E-005
Sb	1.0000	y = 7.2611E-004 * x + 5.3837E-005
Tl	0.9999	y = 0.0015 * x + 4.5998E-006
Ba	0.9999	y = 2.3868E-004 * x + 0.0016
Pb	0.9999	y = 0.0011 * x + 9.3949E-005
Li	0.9999	y = 4.5498E-005 * x + 6.9761E-006

REVIEWED
By Carlos Castro ↓ at 12:40:44 PM, 11/11/2016

Level 8 Cal

Ele	Conc	Calc	%Rec
As	2000		#DIV/0!
Be	2000		#DIV/0!
B	2000		#DIV/0!
Na	25000		#DIV/0!
Mg	25000		#DIV/0!
K	25000		#DIV/0!
Ca	25000		#DIV/0!
Ti	2000		#DIV/0!
V	2000		#DIV/0!
Cr	2000		#DIV/0!
Mn	2000		#DIV/0!
Co	2000		#DIV/0!
Ni	2000		#DIV/0!
Cu	2000		#DIV/0!
Zn	2000		#DIV/0!
Se	2000		#DIV/0!
Sr	2000		#DIV/0!
Mo	2000		#DIV/0!
Cd	2000		#DIV/0!
Sn	2000		#DIV/0!
Tl	2000		#DIV/0!
Ba	2000		#DIV/0!
Pb	2000		#DIV/0!
Li	2000		#DIV/0!

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	500	307	304.8	7.63
59	2000	1109	1061.5	4.40
89	2000	1035	1058.1	4.56
140	5000	2290	2511.2	3.07
205	5000	2246	2155.7	4.16
156/140	1	0.306 %	0.357 %	37.28
51	200	91	102.2	12.01
56	2000	1888	1865.2	2.70
75	20	11	9.4	28.87
78	50	21	16.2	29.91

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.55
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	7.3
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-90	Cell Exit	-60
Deflect	1.2		

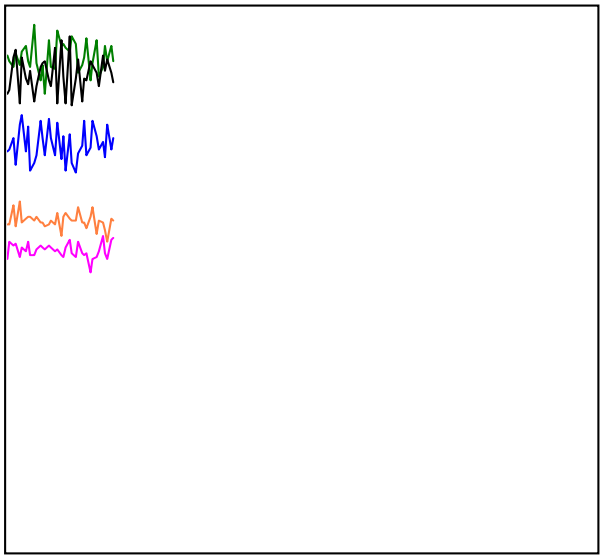
Cell Parameters

Use Gas	true	3rd Gas Flow	0
He Flow	4.5	OctP Bias	-18.0
H2 Flow	0.0	OctP RF	190
Energy Discrimination	3.0		

Meters

IF/BK Press	2.45E+2	Pa	Carrier Gas(BP)	1.17E+2	kPa
Analyzer Press	1.47E-4	Pa	Reflected Power	4	W
Forward Power	1550	W			

Current Signal



Mass	Range	Count	Avg. Count	RSD [%]
63	1000	760	748.5	4.02
59	2000	1801	1818.0	3.04
89	5000	3033	3037.8	2.43
140	5000	2874	2765.2	2.46
205	2000	1725	1752.3	3.87
156/140	2	1.044 %	0.980 %	21.45
51	50000	20946	20758.1	2.28
56	500000	202239	195724.9	2.19
75	10000	5703	5596.4	1.95
78	5000	2731	2749.1	2.46

Integration Time [sec] 0.10

Plasma Parameters

RF Power	1550	Carrier Gas	0.55
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	7.3
Extract 2	-200.0	Cell Entrance	-40
Omega Bias	-90	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	190
Energy Discrimination	3.0		

Meters

IF/BK Press	2.44E+2	Pa	Carrier Gas(BP)	1.17E+2	kPa
Analyzer Press	9.12E-5	Pa	Reflected Power	4	W
Forward Power	1550	W			

US EPA Tune Check Sample Report

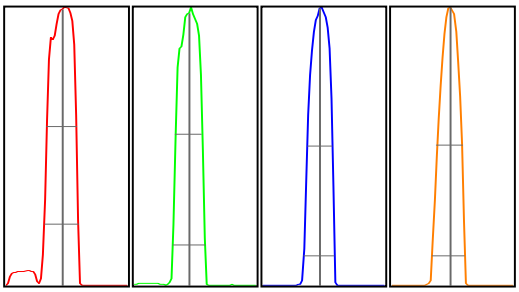
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[No gas]

Mass	Count (Mean)	RSD% (Actual)	RSD% (Required)	RSD% (Flag)
7	751805	0.36	5.00	
59	1397199	0.28	5.00	
115	1865682	0.72	5.00	
205	1263662	0.92	5.00	

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
7	750435	751615	750385	756552	750036
59	1394258	1395278	1400448	1402430	1393583
115	1862535	1847746	1872234	1883741	1862152
205	1276411	1246934	1267588	1270255	1257121

Integration Time [sec] = 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	Width-X% (Actual)	Width-X% (Required)	Width-X% (Flag)
7	108655	6.95	6.9 - 7.1		0.825	0.850	
59	223454	58.90	58.9 - 59.1		0.775	0.850	
115	325307	114.95	114.9 - 115.1		0.747	0.850	
205	227619	205.00	204.9 - 205.1		0.795	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	0.55	L/min	Makeup/Dilution Gas	0.50	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	-90	V	Deflect	7.0	V
Omega Lens	7.3	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	190	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: 11/10/2016 11:03:34

Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1933 V
PulseHV: 1011 V

Acquired: 11/10/2016 10:01:17

Mass[u]	Element	P/A Factor
6	Li	0.099847
9	Be	0.112645
23	Na	0.118670
24	Mg	0.123427
27	Al	0.127315
39	K	0.129600
45	Sc	0.131184
48		0.131837
51	V	0.134083
52	Cr	0.136806
55	Mn	0.138685
59	Co	0.142017
60	Ni	0.141865
63	Cu	0.145276
66	Zn	0.144931
72		0.143719
74	Ge	0.144670
75	As	0.143593
88	Sr	0.144892
89		0.143595
95		0.143570
97	Mo	0.143565
98	Mo	0.144361
99	[Mo]	0.145726
101		0.145923
105		0.149664
111	Cd	0.150335
114	Cd	0.150221
115	In	0.150783
118	Sn	0.150304
121		0.150015
123	Sb	0.150211
135	Ba	0.149022
138		0.150896
175		0.155452
193		0.156421
205	Tl	0.157632
206	[Pb]	0.157693
207	[Pb]	0.158138
208	Pb	0.158278
209	Bi	0.158819
232		0.158813
238	U	0.159044
44	Ca	Signal too low
78	Se	Signal too low
107	Ag	Signal too low
172		Signal too low

Calibration Blank Report

Date Acquired	11/10/2016 11:03	Sample Name	BLANK STD 1
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	012CALB.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	10	81.85
9	Be	45	3	33.33
11	B	45	182	10.07
23	Na	45	92094	1.07
24	Mg	45	1016	10.44
27	Al	45	686	5.20
39	K	45	72704	0.72
44	Ca	45	873	9.38
47	Ti	45	6	124.93
51	V	45	2076	2.81
52	Cr	45	1479	6.91
55	Mn	45	891	12.30
56	Fe	45	8058	1.74
59	Co	72	103	17.07
60	Ni	72	672	6.20
63	Cu	72	2320	2.80
66	Zn	72	300	3.85
75	As	72	173	4.10
78	Se	72	148	3.89
88	Sr	115	276	3.04
95	Mo	115	119	18.03
107	Ag	115	54	25.49
111	Cd	115	11	96.43
118	Sn	115	591	3.75
121	Sb	115	461	15.00
137	Ba	115	13970	172.71
205	Tl	209	80	12.50
208	Pb	209	1635	4.53

QC ISTD Table

Mass	Name	CPS	%RSD
45	Sc	1428455	0.66
72	Ge	935581	0.74
115	In	8566548	0.22
209	Bi	17397529	0.40

Calibration Standard Report

Date Acquired	11/10/2016 11:05	Sample Name	L2-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	013CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	80	11.83
9	Be	45	78	3.90
11	B	45	180	16.46
23	Na	45	117592	0.23
24	Mg	45	13109	1.23
27	Al	45	5482	1.75
39	K	45	87152	0.31
44	Ca	45	1642	7.85
47	Ti	45	253	8.63
51	V	45	8419	2.34
52	Cr	45	8990	2.90
55	Mn	45	5422	1.08
56	Fe	45	130255	0.80
59	Co	72	11933	1.38
60	Ni	72	3848	5.47
63	Cu	72	11093	0.36
66	Zn	72	1780	0.75
75	As	72	1286	3.69
78	Se	72	220	9.34
88	Sr	115	6025	0.49
95	Mo	115	4652	3.83
107	Ag	115	13521	0.54
111	Cd	115	2009	5.66
118	Sn	115	5063	5.63
121	Sb	115	6762	0.61
137	Ba	115	2252	4.25
205	Tl	209	28207	1.88
208	Pb	209	21545	0.23

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1422373	0.87	1428455	99.57	70	120	
72	Ge	931174	0.63	935581	99.53	70	120	
115	In	8436494	1.28	8566548	98.48	70	120	
209	Bi	17455582	1.44	17397529	100.33	70	120	

Calibration Standard Report

Date Acquired	11/10/2016 11:07	Sample Name	L-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	014CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	709	2.17
9	Be	45	775	3.39
11	B	45	442	8.34
23	Na	45	316471	0.75
24	Mg	45	117634	1.37
27	Al	45	46057	0.41
39	K	45	190844	0.84
44	Ca	45	7594	1.03
47	Ti	45	2080	2.54
51	V	45	64869	0.54
52	Cr	45	75768	0.65
55	Mn	45	45072	0.59
56	Fe	45	1212469	0.58
59	Co	72	115635	0.73
60	Ni	72	31514	0.78
63	Cu	72	87105	1.75
66	Zn	72	13985	1.09
75	As	72	10845	1.99
78	Se	72	885	1.74
88	Sr	115	57998	0.92
95	Mo	115	44205	0.45
107	Ag	115	134237	0.67
111	Cd	115	19800	0.99
118	Sn	115	44458	0.62
121	Sb	115	63840	1.55
137	Ba	115	21629	1.03
205	Tl	209	281211	1.02
208	Pb	209	201244	1.07

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1427235	0.57	1428455	99.91	70	120	
72	Ge	923105	0.16	935581	98.67	70	120	
115	In	8585754	1.19	8566548	100.22	70	120	
209	Bi	17490883	2.25	17397529	100.54	70	120	

Calibration Standard Report

Date Acquired	11/10/2016 11:09	Sample Name	10X-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	015CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	3219	2.23
9	Be	45	3986	1.43
11	B	45	1616	7.57
23	Na	45	1189828	0.54
24	Mg	45	565939	1.14
27	Al	45	222653	0.50
39	K	45	646022	0.20
44	Ca	45	33637	0.35
47	Ti	45	9925	1.99
51	V	45	307264	0.72
52	Cr	45	361003	0.60
55	Mn	45	213211	0.21
56	Fe	45	5993229	0.45
59	Co	72	559911	1.17
60	Ni	72	150767	0.53
63	Cu	72	422346	0.51
66	Zn	72	68137	0.73
75	As	72	51376	0.33
78	Se	72	3593	2.26
88	Sr	115	282903	0.36
95	Mo	115	218000	0.26
107	Ag	115	656591	0.78
111	Cd	115	99311	0.98
118	Sn	115	218871	0.64
121	Sb	115	312596	0.33
137	Ba	115	109324	0.55
205	Tl	209	1394490	1.75
208	Pb	209	1003939	0.22

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1414728	1.00	1428455	99.04	70	120	
72	Ge	915043	1.03	935581	97.80	70	120	
115	In	8524074	2.28	8566548	99.50	70	120	
209	Bi	17579969	1.56	17397529	101.05	70	120	

Calibration Standard Report

Date Acquired	11/10/2016 11:11	Sample Name	5X-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	016CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	6564	2.36
9	Be	45	7767	1.50
11	B	45	2958	3.80
23	Na	45	2264415	0.85
24	Mg	45	1106134	0.46
27	Al	45	432024	0.33
39	K	45	1189041	1.05
44	Ca	45	64844	0.48
47	Ti	45	19382	1.81
51	V	45	602693	0.69
52	Cr	45	715567	0.65
55	Mn	45	426939	1.58
56	Fe	45	11750736	0.49
59	Co	72	1106837	1.03
60	Ni	72	294834	0.57
63	Cu	72	824618	0.51
66	Zn	72	131956	0.30
75	As	72	102085	0.62
78	Se	72	7114	0.57
88	Sr	115	552607	0.80
95	Mo	115	433078	1.39
107	Ag	115	1290023	0.67
111	Cd	115	195122	0.23
118	Sn	115	434309	0.78
121	Sb	115	615820	0.81
137	Ba	115	210901	1.92
205	Tl	209	2750953	1.20
208	Pb	209	1949234	0.33

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1400088	0.95	1428455	98.01	70	120	
72	Ge	911301	0.30	935581	97.40	70	120	
115	In	8480747	1.67	8566548	99.00	70	120	
209	Bi	17345108	0.86	17397529	99.70	70	120	

Calibration Standard Report

Date Acquired	11/10/2016 11:13	Sample Name	2X-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	017CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	16591	0.60
9	Be	45	19637	0.47
11	B	45	7349	3.36
23	Na	45	5556768	1.56
24	Mg	45	2773092	0.56
27	Al	45	1082702	0.18
39	K	45	2868605	0.64
44	Ca	45	159271	0.69
47	Ti	45	47552	0.57
51	V	45	1491014	1.74
52	Cr	45	1762004	1.60
55	Mn	45	1040490	0.28
56	Fe	45	29107863	1.34
59	Co	72	2736551	0.61
60	Ni	72	728688	0.66
63	Cu	72	2003972	1.00
66	Zn	72	323517	0.54
75	As	72	250367	0.16
78	Se	72	17070	1.12
88	Sr	115	1365163	0.82
95	Mo	115	1071777	1.14
107	Ag	115	3179381	0.74
111	Cd	115	482798	0.15
118	Sn	115	1071076	0.91
121	Sb	115	1525979	0.35
137	Ba	115	526906	0.60
205	Tl	209	7024791	1.70
208	Pb	209	4853692	0.50

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1390418	0.35	1428455	97.34	70	120	
72	Ge	900162	0.39	935581	96.21	70	120	
115	In	8422156	0.70	8566548	98.31	70	120	
209	Bi	17051887	2.01	17397529	98.01	70	120	

Calibration Standard Report

Date Acquired	11/10/2016 11:15	Sample Name	H-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	018CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	32843	1.22
9	Be	45	38828	0.84
11	B	45	14688	3.79
23	Na	45	10737091	1.39
24	Mg	45	5489650	1.37
27	Al	45	2148247	0.81
39	K	45	5638475	1.67
44	Ca	45	313186	0.48
47	Ti	45	96382	0.87
51	V	45	2981444	0.50
52	Cr	45	3542044	0.73
55	Mn	45	2076534	0.49
56	Fe	45	56741962	0.85
59	Co	72	5390490	0.24
60	Ni	72	1444836	0.34
63	Cu	72	3989239	0.76
66	Zn	72	644491	1.21
75	As	72	504824	0.42
78	Se	72	33967	1.23
88	Sr	115	2751305	0.20
95	Mo	115	2159170	0.42
107	Ag	115	6413219	2.69
111	Cd	115	956188	0.21
118	Sn	115	2130601	0.44
121	Sb	115	3032545	0.19
137	Ba	115	1043336	0.55
205	Tl	209	13633241	0.02
208	Pb	209	9618040	0.35

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1387804	0.31	1428455	97.15	70	120	
72	Ge	901995	0.78	935581	96.41	70	120	
115	In	8348247	1.02	8566548	97.45	70	120	
209	Bi	16841473	0.39	17397529	96.80	70	120	

Calibration Standard Report

Date Acquired	11/10/2016 11:17	Sample Name	H2-161110
Data Batch	161110.b	Comment	CAL ICPMS_TW
Data File Name	019CALS.d	Dilution	1

Mass	Name	IS	CPS	%RSD
7	Li	45	125918	0.68
9	Be	45	148616	0.92
11	B	45	56276	1.60
23	Na	45	26187336	1.22
24	Mg	45	13175858	0.97
27	Al	45	2442	8.08
39	K	45	13617510	0.77
44	Ca	45	818346	0.72
47	Ti	45	376094	0.48
51	V	45	11297985	0.25
52	Cr	45	13279114	0.25
55	Mn	45	7931928	0.80
56	Fe	45	1566829	0.81
59	Co	72	20394029	0.42
60	Ni	72	5418965	0.71
63	Cu	72	14795733	1.40
66	Zn	72	2420269	1.14
75	As	72	1939821	0.69
78	Se	72	128567	0.65
88	Sr	115	10593628	1.83
95	Mo	115	8315356	0.23
107	Ag	115	3284	15.97
111	Cd	115	3637837	0.28
118	Sn	115	8107089	0.73
121	Sb	115	7068	11.14
137	Ba	115	3984278	1.25
205	Tl	209	51810845	0.83
208	Pb	209	36695276	0.89

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	Flag
45	Sc	1388302	0.91	1428455	97.19	70	120	
72	Ge	901733	0.77	935581	96.38	70	120	
115	In	8216018	1.76	8566548	95.91	70	120	
209	Bi	16864724	2.36	17397529	96.94	70	120	

Interference Check Solution A (ICS-A) Report

Date Acquired	11/10/2016 11:23	Sample Name	ICSA-161110
Data Batch	161110.b	Comment	ICSAICPMS_TW
Data File Name	022ICSA.d	Dilution	1

Mass	Name	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
9	Be	0.225	20	38.5	1.2	0.8	
11	B	18.723	703	10.5	30	30	
51	V	0.057	2338	2.0	10	10	
52	Cr	0.918	7558	5.1	8	5	
55	Mn	0.546	3039	2.3	8	10	
59	Co	1.320	13546	2.8	8	10	
60	Ni	0.447	1853	3.6	8	10	
63	Cu	2.406	20021	0.6	8	10	
66	Zn	2.737	3596	3.4	10	5	
75	As	0.539	686	8.6	4	5	
78	Se	0.111	149	9.9	2	5	
88	Sr	1.191	6437	1.3	10	10	
107	Ag	0.121	1550	0.4	0.8	2	
111	Cd	0.665	1196	5.8	1.2	1	
118	Sn	1.106	4955	2.3	10	10	
121	Sb	0.173	1457	8.5	4	2.5	
137	Ba	-6.276	1088	6.4	8	10	
205	Tl	0.130	3310	8.6	4	1.5	
208	Pb	0.624	12534	1.5	1.2	1	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1388002	0.27	1428455	97.17	70	120	
72	Ge	896566	0.60	935581	95.83	70	120	
115	In	8143512	1.94	8566548	95.06	70	120	
209	Bi	16163485	0.95	17397529	92.91	70	120	

Interference Check Solution AB (ICS-AB) Report

Date Acquired	11/10/2016 11:25	Sample Name	ICSAB-161110
Data Batch	161110.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	40.195	229643	1.20	40	100.5	80	120	
52	Cr	45	21.124	142164	0.68	20	105.6	80	120	
55	Mn	45	19.667	79015	0.48	20	98.3	80	120	
59	Co	72	39.662	403374	1.00	40	99.2	80	120	
60	Ni	72	37.984	103309	0.88	40	95.0	80	120	
63	Cu	72	21.464	160751	0.86	20	107.3	80	120	
66	Zn	72	21.912	26733	0.69	20	109.6	80	120	
75	As	72	19.926	19402	0.86	20	99.6	80	120	
78	Se	72	19.778	1407	4.36	20	98.9	80	120	
107	Ag	115	18.659	231378	0.37	20	93.3	80	120	
111	Cd	115	9.953	17717	1.79	10	99.5	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1386229	0.61	1428455	97.04	70	120	
72	Ge	895012	0.51	935581	95.66	70	120	
115	In	8125382	1.24	8566548	94.85	70	120	
209	Bi	16112674	0.53	17397529	92.61	70	120	

Initial Calibration Verification (ICV) Report

Date Acquired	11/10/2016 11:31	Sample Name	ICV-161110
Data Batch	161110.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	99.672	6484	2.99	100	99.7	90	110	
9	Be	45	103.488	7940	1.44	100	103.5	90	110	
11	B	45	113.227	3456	8.09	100	113.2	90	110	Fail
23	Na	45	2565.652	2858788	0.32	2500	102.6	90	110	
24	Mg	45	2583.487	1411753	0.87	2500	103.3	90	110	
27	Al	45	2545.909	563776	1.40	2500	101.8	90	110	
39	K	45	2495.475	1470224	0.53	2500	99.8	90	110	
44	Ca	45	2313.467	78115	0.71	2500	92.5	90	110	
47	Ti	45	99.141	19210	3.35	100	99.1	90	110	
51	V	45	106.061	620685	0.42	100	106.1	90	110	
52	Cr	45	108.474	745760	0.37	100	108.5	90	110	
55	Mn	45	103.085	422800	0.23	100	103.1	90	110	
56	Fe	45	2607.113	15311887	2.31	2500	104.3	90	110	
59	Co	72	107.378	1120499	1.27	100	107.4	90	110	
60	Ni	72	106.921	297212	0.95	100	106.9	90	110	
63	Cu	72	106.182	807029	0.73	100	106.2	90	110	
66	Zn	72	107.172	133022	0.39	100	107.2	90	110	
75	As	72	102.859	102061	0.62	100	102.9	90	110	
78	Se	72	106.219	7120	0.28	100	106.2	90	110	
88	Sr	115	102.335	556485	0.53	100	102.3	90	110	
95	Mo	115	100.411	428496	0.56	100	100.4	90	110	
107	Ag	115	101.787	1325574	1.22	100	101.8	90	110	
111	Cd	115	104.057	194472	0.50	100	104.1	90	110	
118	Sn	115	104.868	437271	0.36	100	104.9	90	110	
121	Sb	115	100.632	621943	0.59	100	100.6	90	110	
137	Ba	115	98.368	214268	1.21	100	98.4	90	110	
205	Tl	209	100.539	2715614	0.20	100	100.5	90	110	
208	Pb	209	102.356	1958276	0.61	100	102.4	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1427727	0.27	1428455	99.95	70	120	
72	Ge	918474	1.30	935581	98.17	70	120	
115	In	8527618	0.82	8566548	99.55	70	120	
209	Bi	17501661	0.14	17397529	100.60	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/10/2016 11:42	Sample Name	LCVL-161110
Data Batch	161110.b	Comment	LCVLICPMS_TW
Data File Name	028LICV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.359	677	5.55	1	1035.9	70	130	Fail
9	Be	45	1.110	87	10.26	1	111.0	70	130	
11	B	45	23.213	846	4.57	20	116.1	70	130	
23	Na	45	105.342	203785	1.09	100	105.3	70	130	
24	Mg	45	105.251	57958	1.15	100	105.3	70	130	
27	Al	45	103.637	23393	0.72	100	103.6	70	130	
39	K	45	103.653	129540	0.82	100	103.7	70	130	
44	Ca	45	97.230	4082	0.09	100	97.2	70	130	
47	Ti	45	5.429	1048	5.73	5	108.6	70	130	
51	V	45	1.079	8293	3.05	1	107.9	70	130	
52	Cr	45	5.359	37899	0.42	5	107.2	70	130	
55	Mn	45	5.590	23553	0.30	5	111.8	70	130	
56	Fe	45	103.364	609192	1.18	100	103.4	70	130	
59	Co	72	5.300	56114	0.55	5	106.0	70	130	
60	Ni	72	5.338	15661	2.78	5	106.8	70	130	
63	Cu	72	5.374	43561	1.03	5	107.5	70	130	
66	Zn	72	5.433	7115	3.83	5	108.7	70	130	
75	As	72	5.209	5399	2.16	5	104.2	70	130	
78	Se	72	5.355	503	7.82	5	107.1	70	130	
88	Sr	115	5.161	28425	1.37	5	103.2	70	130	
95	Mo	115	5.238	22546	1.50	5	104.8	70	130	
107	Ag	115	2.021	26465	0.54	2	101.0	70	130	
111	Cd	115	1.046	1972	7.49	1	104.6	70	130	
118	Sn	115	5.609	24031	0.68	5	112.2	70	130	
121	Sb	115	1.979	12726	1.43	2	99.0	70	130	
137	Ba	115	-1.493	10920	0.84	5	-29.9	70	130	Fail
205	Tl	209	1.040	27859	1.33	1	104.0	70	130	
208	Pb	209	1.097	22362	1.92	1	109.7	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1414810	0.49	1428455	99.04	70	120	
72	Ge	930311	0.76	935581	99.44	70	120	
115	In	8563690	1.03	8566548	99.97	70	120	
209	Bi	17309448	1.53	17397529	99.49	70	120	

Initial Calibration Blank (ICB) Report

Date Acquired	11/10/2016 11:47	Sample Name	ICB-161110
Data Batch	161110.b	Comment	ICB ICPMS_TW
Data File Name	030_ICB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.082	15	32.8	2	5	
9	Be	45	-0.017	2	124.9	0.4	0.3	
11	B	45	1.774	234	30.5	10	10	
23	Na	45	1.294	93779	0.6	50	100	
24	Mg	45	-0.727	620	9.7	50	100	
27	Al	45	-0.334	613	8.0	50	10	
39	K	45	1.187	73602	0.9	50	100	
44	Ca	45	-2.749	783	11.8	50	100	
47	Ti	45	0.011	8	65.5	4	3	
51	V	45	-0.011	2020	3.5	4	3	
52	Cr	45	0.002	1497	7.5	2	2	
55	Mn	45	-0.012	843	8.2	2	3	
56	Fe	45	0.341	10092	0.7	50	50	
59	Co	72	0.002	124	14.7	2	3	
60	Ni	72	-0.076	461	10.5	2	3	
63	Cu	72	-0.032	2095	2.0	2	2	
66	Zn	72	0.025	334	5.1	4	2	
75	As	72	-0.001	174	7.4	2	2	
78	Se	72	-0.050	146	4.1	1	2	
88	Sr	115	-0.005	249	10.1	4	3	
95	Mo	115	0.104	566	20.6	2	2	
107	Ag	115	0.011	196	20.2	0.4	1	
111	Cd	115	0.004	18	39.0	0.4	0.3	
118	Sn	115	0.219	1503	6.4	4	3	
121	Sb	115	-0.011	393	3.1	2	0.8	
137	Ba	115	-6.815	42	39.7	2	3	
205	Tl	209	0.003	154	16.3	2	0.5	
208	Pb	209	0.038	2426	4.0	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1432897	0.47	1428455	100.31	70	120	
72	Ge	944424	0.39	935581	100.95	70	120	
115	In	8558493	1.39	8566548	99.91	70	120	
209	Bi	17859554	1.46	17397529	102.66	70	120	

Method Blank Report

Date Acquired	11/10/16 11:49 AM	Sample Name	MB-77808
Data Batch	161110.b	Comment	MBLKICPMS_TSDOD1
Data File Name	031_PB.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	0.096	16	35.87		
9	Be	45	0.038	6	60.09		
11	B	45	3.293	280	24.77		
23	Na	45	5.851	99191	0.95		
24	Mg	45	4.627	3572	4.44		
27	Al	45	4.603	1718	5.91		
39	K	45	4.844	76027	0.27		
44	Ca	45	20.958	1586	1.49		
47	Ti	45	0.114	28	27.73		
51	V	45	0.040	2325	4.43		
52	Cr	45	0.387	4168	4.98		
55	Mn	45	0.204	1740	4.82		
56	Fe	45	3.388	28186	2.44		
59	Co	72	0.008	186	3.74		
60	Ni	72	0.282	1488	2.33		
63	Cu	72	0.112	3221	2.04		
66	Zn	72	1.110	1721	6.13		
75	As	72	0.028	204	6.47		
78	Se	72	-0.163	139	15.92		
88	Sr	115	0.080	732	11.85		
95	Mo	115	0.141	743	12.19		
107	Ag	115	0.011	198	24.44		
111	Cd	115	0.001	13	49.99		
118	Sn	115	4.133	18361	1.70		J
121	Sb	115	-0.026	306	15.13		
137	Ba	115	-6.779	120	15.47		
205	Tl	209	0.005	213	4.69		
208	Pb	209	0.121	4064	8.11		

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1439942	0.78	1428455	100.80	70	120	
72	Ge	946944	0.98	935581	101.21	70	120	
115	In	8803208	0.79	8566548	102.76	70	120	
209	Bi	17947508	0.48	17397529	103.16	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/10/2016 11:51	Sample Name	LCS-77808
Data Batch	161110.b	Comment	LCS ICPMS_TSDOD1
Data File Name	032_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	202.647	13241	1.26	200	101.3	80	120	
9	Be	45	202.842	15639	2.06	200	101.4	80	120	
11	B	45	204.057	6113	3.63	200	102.0	80	120	
23	Na	45	5141.186	5664580	1.18	1000	514.1	80	120	Fail
24	Mg	45	5212.166	2861623	0.23	1000	521.2	80	120	Fail
27	Al	45	1004.069	223899	0.87	1000	100.4	80	120	
39	K	45	5133.799	2962743	0.31	1000	513.4	80	120	Fail
44	Ca	45	4768.260	160888	0.43	1000	476.8	80	120	Fail
47	Ti	45	203.314	39593	1.53	200	101.7	80	120	
51	V	45	208.024	1221625	1.39	200	104.0	80	120	
52	Cr	45	209.765	1448087	0.48	200	104.9	80	120	
55	Mn	45	207.402	854057	0.54	200	103.7	80	120	
56	Fe	45	1055.553	6235674	1.59	1000	105.6	80	120	
59	Co	72	208.017	2223818	0.54	200	104.0	80	120	
60	Ni	72	210.516	598889	0.37	200	105.3	80	120	
63	Cu	72	211.036	1641071	0.69	200	105.5	80	120	
66	Zn	72	205.292	260803	0.52	200	102.6	80	120	
75	As	72	201.497	204699	0.27	200	100.7	80	120	
78	Se	72	199.545	13575	0.80	200	99.8	80	120	
88	Sr	115	200.475	1123853	0.70	200	100.2	80	120	
95	Mo	115	201.670	887202	0.72	200	100.8	80	120	
107	Ag	115	193.945	2603725	0.62	200	97.0	80	120	
111	Cd	115	201.829	388839	0.64	200	100.9	80	120	
118	Sn	115	208.808	897329	1.47	200	104.4	80	120	
121	Sb	115	196.123	1249585	1.19	200	98.1	80	120	
137	Ba	115	197.207	428557	1.06	200	98.6	80	120	
205	Tl	209	202.185	5517775	1.19	200	101.1	80	120	
208	Pb	209	201.965	3902465	0.45	200	101.0	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1435002	0.55	1428455	100.46	70	120	
72	Ge	940989	0.29	935581	100.58	70	120	
115	In	8791909	3.52	8566548	102.63	70	120	
209	Bi	17683922	0.65	17397529	101.65	70	120	

Laboratory Control Sample (LCS) Report

Date Acquired	11/10/2016 11:53	Sample Name	LCSD-77808
Data Batch	161110.b	Comment	LCSDICPMS_TSDOD1
Data File Name	033_LS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	201.005	13117	1.21	200	100.5	80	120	
9	Be	45	199.882	15390	0.42	200	99.9	80	120	
11	B	45	203.482	6088	4.09	200	101.7	80	120	
23	Na	45	5024.933	5531589	1.46	1000	502.5	80	120	Fail
24	Mg	45	5184.094	2842573	0.75	1000	518.4	80	120	Fail
27	Al	45	989.168	220285	1.04	1000	98.9	80	120	
39	K	45	5087.198	2932721	0.68	1000	508.7	80	120	Fail
44	Ca	45	4720.312	159072	0.66	1000	472.0	80	120	Fail
47	Ti	45	197.577	38426	1.14	200	98.8	80	120	
51	V	45	205.574	1205602	0.49	200	102.8	80	120	
52	Cr	45	208.048	1434369	0.65	200	104.0	80	120	
55	Mn	45	202.442	832580	0.33	200	101.2	80	120	
56	Fe	45	1007.362	5943420	0.57	1000	100.7	80	120	
59	Co	72	205.095	2189090	0.42	200	102.5	80	120	
60	Ni	72	205.950	584982	0.31	200	103.0	80	120	
63	Cu	72	209.181	1624081	0.35	200	104.6	80	120	
66	Zn	72	204.144	258953	0.79	200	102.1	80	120	
75	As	72	198.558	201406	0.72	200	99.3	80	120	
78	Se	72	197.915	13443	1.99	200	99.0	80	120	
88	Sr	115	200.468	1098713	0.53	200	100.2	80	120	
95	Mo	115	203.343	874637	0.17	200	101.7	80	120	
107	Ag	115	199.235	2615813	1.28	200	99.6	80	120	
111	Cd	115	203.856	384066	0.70	200	101.9	80	120	
118	Sn	115	210.186	883008	1.36	200	105.1	80	120	
121	Sb	115	200.368	1248010	0.84	200	100.2	80	120	
137	Ba	115	199.352	423410	1.17	200	99.7	80	120	
205	Tl	209	202.842	5444922	1.37	200	101.4	80	120	
208	Pb	209	204.551	3887448	0.22	200	102.3	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1433125	0.58	1428455	100.33	70	120	
72	Ge	939577	1.12	935581	100.43	70	120	
115	In	8591736	2.10	8566548	100.29	70	120	
209	Bi	17395348	1.52	17397529	99.99	70	120	

Sample Report

Date Acquired	11/10/16 11:57 AM	Sample Name	1611022-09A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	035_ARF.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	65.649	4253	1.62	2000	>RL
9	Be	45	3.020	233	14.36	2000	>RL
11	B	45	84.574	2614	6.35	2000	>RL
23	Na	45	2842.024	3140736	0.66	25000	>RL
24	Mg	45	17084.860	9282859	0.91	25000	>RL
27	Al	45	80146.306	17636773	1.19	10000	OUTCAL
39	K	45	17347.402	9737771	1.63	25000	>RL
44	Ca	45	81935.288	2722603	0.37	25000	OUTCAL
47	Ti	45	200.227	38596	1.09	2000	>RL
51	V	45	120.843	703296	1.05	2000	>RL
52	Cr	45	69.243	474148	0.33	2000	>RL
55	Mn	45	729.460	2971233	0.58	2000	>RL
56	Fe	45	77461.511	452375609	0.62	10000	OUTCAL
59	Co	72	29.369	302805	0.50	2000	>RL
60	Ni	72	53.813	148096	0.93	2000	>RL
63	Cu	72	31.905	241121	1.17	2000	>RL
66	Zn	72	253.415	310346	0.26	2000	>RL
75	As	72	27.241	26827	1.10	2000	>RL
78	Se	72	5.580	505	4.66	2000	>RL
88	Sr	115	413.703	2209817	0.92	2000	>RL
95	Mo	115	2.761	11689	0.72	2000	>RL
107	Ag	115	0.184	2408	9.56	500	
111	Cd	115	0.576	1068	11.19	2000	>RL
118	Sn	115	6.406	26791	1.74	2000	>RL
121	Sb	115	2.197	13787	3.44	500	>RL
137	Ba	115	487.935	990216	0.54	2000	>RL
205	Tl	209	0.710	18534	3.65	2000	
208	Pb	209	49.609	913759	0.68	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1420440	0.31	1428455	99.44	70	120	
72	Ge	907299	0.39	935581	96.98	70	120	
115	In	8385126	0.72	8566548	97.88	70	120	
209	Bi	16834517	0.63	17397529	96.76	70	120	

Dilution Sample (Dil) Report

Date Acquired	11/10/2016 11:59	Sample Name	1611022-09A SD
Data Batch	161110.b	Comment	SD ICPMS_TSDOD1
Data File Name	036_SD.d	Dilution	25

Mass	Name	IS	Conc	CPS	%RSD	Ref Value	%Rec	Low	High	Flag
7	Li	45	13.481	876	3.62	65.6	102.7	110	90	Good
9	Be	45	0.554	45	3.85	3.0	91.7	110	90	Good
11	B	45	18.056	697	2.09	84.6	106.7	110	90	Good
23	Na	45	589.757	720251	0.31	2842.0	103.8	110	90	Good
24	Mg	45	3607.401	1949685	1.01	17084.9	105.6	110	90	Good
27	Al	45	16749.569	3665616	0.42	80146.3	104.5	110	90	Good
39	K	45	3564.263	2046682	0.20	17347.4	102.7	110	90	Good
44	Ca	45	17272.619	571382	0.94	81935.3	105.4	110	90	Good
47	Ti	45	39.910	7654	2.39	200.2	99.7	110	90	Good
51	V	45	24.869	145553	0.23	120.8	102.9	110	90	Good
52	Cr	45	14.679	101104	0.80	69.2	106.0	110	90	Good
55	Mn	45	153.942	624211	0.42	729.5	105.5	110	90	Good
56	Fe	45	16427.911	95408161	0.78	77461.5	106.0	110	90	Good
59	Co	72	6.158	64038	0.31	29.4	104.8	110	90	Good
60	Ni	72	11.179	31508	0.17	53.8	103.9	110	90	Good
63	Cu	72	6.709	52865	0.25	31.9	105.1	110	90	Good
66	Zn	72	54.382	67311	0.62	253.4	107.3	110	90	Good
75	As	72	5.602	5692	2.04	27.2	102.8	110	90	Good
78	Se	72	1.253	226	3.63	5.6	112.3	110	90	
88	Sr	115	84.617	462450	0.53	413.7	102.3	110	90	Good
95	Mo	115	0.605	2712	0.82	2.8	109.6	110	90	Good
107	Ag	115	0.058	813	5.95	0.2	157.5	110	90	
111	Cd	115	0.152	297	12.36	0.6	132.0	110	90	
118	Sn	115	1.393	6424	2.66	6.4	108.8	110	90	Good
121	Sb	115	0.455	3286	5.85	2.2	103.6	110	90	Good
137	Ba	115	94.425	207251	0.87	487.9	96.8	110	90	Good
205	Tl	209	0.153	4243	4.11	0.7	107.9	110	90	Good
208	Pb	209	10.038	194515	0.44	49.6	101.2	110	90	Good

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1412518	0.89	1428455	98.88	70	120	
72	Ge	913885	0.57	935581	97.68	70	120	
115	In	8576188	1.01	8566548	100.11	70	120	
209	Bi	17592675	1.24	17397529	101.12	70	120	

Sample Report

Date Acquired	11/10/16 12:01 PM	Sample Name	1611022-01A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	037SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	83.915	5442	0.47	2000	>RL
9	Be	45	3.027	234	1.92	2000	>RL
11	B	45	83.956	2600	2.56	2000	>RL
23	Na	45	3954.567	4341397	0.84	25000	>RL
24	Mg	45	16966.388	9233365	0.50	25000	>RL
27	Al	45	76464.991	16853955	0.42	10000	OUTCAL
39	K	45	15250.736	8584542	3.21	25000	>RL
44	Ca	45	153064.933	5093445	1.16	25000	OUTCAL
47	Ti	45	192.156	37100	0.70	2000	>RL
51	V	45	122.379	713364	0.17	2000	>RL
52	Cr	45	64.948	445550	0.26	2000	>RL
55	Mn	45	1720.163	7016717	0.93	2000	>RL
56	Fe	45	73729.031	431275530	0.41	10000	OUTCAL
59	Co	72	261.815	2667757	0.58	2000	>RL
60	Ni	72	84.039	228266	0.56	2000	>RL
63	Cu	72	26.761	200285	0.09	2000	>RL
66	Zn	72	259.034	313589	1.10	2000	>RL
75	As	72	27.031	26318	2.47	2000	>RL
78	Se	72	6.281	544	6.45	2000	>RL
88	Sr	115	517.204	2739517	1.26	2000	>RL
95	Mo	115	3.140	13170	1.04	2000	>RL
107	Ag	115	0.151	1965	3.65	500	
111	Cd	115	0.685	1259	5.20	2000	>RL
118	Sn	115	6.071	25206	1.62	2000	>RL
121	Sb	115	1.366	8667	1.64	500	
137	Ba	115	836.594	1673958	0.55	2000	>RL
205	Tl	209	0.765	19580	2.68	2000	
208	Pb	209	46.942	848471	0.53	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1422763	0.51	1428455	99.60	70	120	
72	Ge	896897	0.44	935581	95.87	70	120	
115	In	8315599	1.06	8566548	97.07	70	120	
209	Bi	16521198	1.50	17397529	94.96	70	120	

Sample Report

Date Acquired	11/10/16 12:03 PM	Sample Name	1611022-02A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	038SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	52.078	3345	2.41	2000	>RL
9	Be	45	1.734	134	6.46	2000	>RL
11	B	45	95.186	2891	4.55	2000	>RL
23	Na	45	7321.067	7872984	0.89	25000	>RL
24	Mg	45	13802.582	7431314	1.21	25000	>RL
27	Al	45	49523.067	10797924	0.63	10000	OUTCAL
39	K	45	6506.358	3664003	1.14	25000	>RL
44	Ca	45	553937.701	18234717	1.53	25000	OUTCAL
47	Ti	45	145.469	27788	1.35	2000	>RL
51	V	45	83.612	482809	0.51	2000	>RL
52	Cr	45	40.792	277394	1.23	2000	>RL
55	Mn	45	1186.111	4786699	0.80	2000	>RL
56	Fe	45	42740.401	247326728	0.93	10000	OUTCAL
59	Co	72	27.958	281282	0.51	2000	>RL
60	Ni	72	46.236	124239	1.19	2000	>RL
63	Cu	72	11.664	87405	1.28	2000	>RL
66	Zn	72	132.738	158751	0.84	2000	>RL
75	As	72	14.895	14387	0.34	2000	>RL
78	Se	72	4.499	425	2.57	2000	>RL
88	Sr	115	1347.246	6953854	1.77	2000	>RL
95	Mo	115	2.919	11939	3.38	2000	>RL
107	Ag	115	0.101	1296	7.46	500	
111	Cd	115	0.498	894	2.85	2000	>RL
118	Sn	115	5.147	20910	1.49	2000	>RL
121	Sb	115	0.200	1611	8.84	500	
137	Ba	115	451.879	887224	0.67	2000	>RL
205	Tl	209	0.550	13454	5.10	2000	
208	Pb	209	24.158	417197	0.78	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1407563	1.17	1428455	98.54	70	120	
72	Ge	885340	0.89	935581	94.63	70	120	
115	In	8103590	0.54	8566548	94.60	70	120	
209	Bi	15754909	0.59	17397529	90.56	70	120	

Sample Report

Date Acquired	11/10/16 12:05 PM	Sample Name	1611022-03A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	039SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	61.263	3945	2.08	2000	>RL
9	Be	45	2.823	217	10.42	2000	>RL
11	B	45	104.222	3159	6.59	2000	>RL
23	Na	45	6520.140	7044117	1.18	25000	>RL
24	Mg	45	13055.733	7050517	1.69	25000	>RL
27	Al	45	56773.594	12417958	0.74	10000	OUTCAL
39	K	45	7425.255	4184160	0.90	25000	>RL
44	Ca	45	402657.172	13295278	0.70	25000	OUTCAL
47	Ti	45	134.348	25745	4.30	2000	>RL
51	V	45	83.499	483649	0.18	2000	>RL
52	Cr	45	47.777	325636	0.95	2000	>RL
55	Mn	45	985.243	3988436	0.17	2000	>RL
56	Fe	45	62516.080	362890528	0.96	10000	OUTCAL
59	Co	72	37.625	381044	0.81	2000	>RL
60	Ni	72	43.896	118785	0.34	2000	>RL
63	Cu	72	13.499	101493	0.68	2000	>RL
66	Zn	72	214.823	258480	0.13	2000	>RL
75	As	72	19.239	18661	1.56	2000	>RL
78	Se	72	4.601	434	12.29	2000	>RL
88	Sr	115	2741.187	14192741	0.72	2000	OUTCAL
95	Mo	115	4.854	19841	1.03	2000	>RL
107	Ag	115	0.105	1349	26.44	500	
111	Cd	115	0.241	440	1.52	2000	
118	Sn	115	5.646	22958	1.79	2000	>RL
121	Sb	115	0.221	1737	4.32	500	
137	Ba	115	274.899	546647	1.04	2000	>RL
205	Tl	209	0.520	12958	1.87	2000	
208	Pb	209	33.321	586291	0.91	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1411864	0.58	1428455	98.84	70	120	
72	Ge	891306	0.79	935581	95.27	70	120	
115	In	8128877	0.39	8566548	94.89	70	120	
209	Bi	16067803	0.73	17397529	92.36	70	120	

Sample Report

Date Acquired	11/10/16 12:07 PM	Sample Name	1611022-04A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	040SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	47.575	3108	1.16	2000	>RL
9	Be	45	2.315	181	11.09	2000	>RL
11	B	45	111.373	3410	2.78	2000	>RL
23	Na	45	7915.759	8648569	1.62	25000	>RL
24	Mg	45	13552.693	7418868	1.35	25000	>RL
27	Al	45	48861.585	10832936	1.11	10000	OUTCAL
39	K	45	7162.347	4093532	1.02	25000	>RL
44	Ca	45	569177.598	19050082	1.72	25000	OUTCAL
47	Ti	45	110.255	21415	1.52	2000	>RL
51	V	45	70.268	412892	0.87	2000	>RL
52	Cr	45	40.907	282822	0.91	2000	>RL
55	Mn	45	2077.633	8524625	1.16	2000	OUTCAL
56	Fe	45	56282.469	331145551	1.43	10000	OUTCAL
59	Co	72	27.164	276529	0.73	2000	>RL
60	Ni	72	37.703	102638	1.44	2000	>RL
63	Cu	72	12.945	97912	0.65	2000	>RL
66	Zn	72	151.803	183651	0.82	2000	>RL
75	As	72	17.819	17381	1.55	2000	>RL
78	Se	72	4.282	416	1.43	2000	>RL
88	Sr	115	1807.111	9305073	1.50	2000	>RL
95	Mo	115	5.137	20873	0.76	2000	>RL
107	Ag	115	0.080	1042	14.15	500	
111	Cd	115	0.482	863	10.15	2000	>RL
118	Sn	115	5.404	21873	1.37	2000	>RL
121	Sb	115	0.141	1262	7.95	500	
137	Ba	115	123.806	252059	0.90	2000	>RL
205	Tl	209	0.814	19869	1.70	2000	
208	Pb	209	28.703	495948	1.30	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1431120	0.41	1428455	100.19	70	120	
72	Ge	895824	1.08	935581	95.75	70	120	
115	In	8083778	1.04	8566548	94.36	70	120	
209	Bi	15773945	1.92	17397529	90.67	70	120	

Sample Report

Date Acquired	11/10/16 12:09 PM	Sample Name	1611022-05A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	041SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	73.523	4968	0.89	2000	>RL
9	Be	45	3.219	259	6.03	2000	>RL
11	B	45	114.228	3617	4.47	2000	>RL
23	Na	45	10148.712	11455406	1.14	25000	>RL
24	Mg	45	17996.419	10201430	1.26	25000	>RL
27	Al	45	80453.359	18471340	1.28	10000	OUTCAL
39	K	45	15756.933	9235322	1.41	25000	>RL
44	Ca	45	116833.431	4050014	0.79	25000	OUTCAL
47	Ti	45	233.970	47053	0.90	2000	>RL
51	V	45	128.098	777693	0.70	2000	>RL
52	Cr	45	66.988	478628	0.54	2000	>RL
55	Mn	45	633.676	2693011	0.35	2000	>RL
56	Fe	45	72803.133	443591227	0.88	10000	OUTCAL
59	Co	72	27.185	288743	0.58	2000	>RL
60	Ni	72	48.653	137990	0.37	2000	>RL
63	Cu	72	25.360	197911	0.99	2000	>RL
66	Zn	72	213.374	269227	0.39	2000	>RL
75	As	72	26.071	26457	0.85	2000	>RL
78	Se	72	4.639	458	5.18	2000	>RL
88	Sr	115	490.684	2642659	0.52	2000	>RL
95	Mo	115	2.503	10699	2.25	2000	>RL
107	Ag	115	0.136	1809	7.42	500	
111	Cd	115	0.581	1086	8.65	2000	>RL
118	Sn	115	6.098	25740	1.63	2000	>RL
121	Sb	115	0.938	6198	1.59	500	
137	Ba	115	621.031	1267051	0.41	2000	>RL
205	Tl	209	0.662	17182	1.71	2000	
208	Pb	209	40.107	735244	0.22	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1481973	0.18	1428455	103.75	70	120	
72	Ge	934626	0.41	935581	99.90	70	120	
115	In	8455805	1.30	8566548	98.71	70	120	
209	Bi	16748923	0.92	17397529	96.27	70	120	

Sample Report

Date Acquired	11/10/16 12:11 PM	Sample Name	1611022-06A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	042SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	57.461	3807	0.63	2000	>RL
9	Be	45	1.829	146	5.84	2000	>RL
11	B	45	132.062	4069	2.16	2000	>RL
23	Na	45	11292.038	12480387	1.32	25000	>RL
24	Mg	45	13586.953	7547956	2.52	25000	>RL
27	Al	45	53548.821	12048651	0.40	10000	OUTCAL
39	K	45	7912.010	4581525	0.68	25000	>RL
44	Ca	45	413204.966	14036209	1.51	25000	OUTCAL
47	Ti	45	168.068	33128	1.18	2000	>RL
51	V	45	89.932	535722	0.83	2000	>RL
52	Cr	45	72.109	504800	0.35	2000	>RL
55	Mn	45	307.620	1281696	1.02	2000	>RL
56	Fe	45	45171.042	269736416	1.50	10000	OUTCAL
59	Co	72	16.450	170026	0.87	2000	>RL
60	Ni	72	26.955	74672	1.57	2000	>RL
63	Cu	72	15.297	117035	1.09	2000	>RL
66	Zn	72	130.182	159912	0.57	2000	>RL
75	As	72	16.570	16420	0.58	2000	>RL
78	Se	72	3.340	360	10.09	2000	>RL
88	Sr	115	1606.968	8364446	1.94	2000	>RL
95	Mo	115	12.860	52645	1.40	2000	>RL
107	Ag	115	0.120	1546	8.97	500	
111	Cd	115	0.290	530	8.92	2000	
118	Sn	115	5.481	22425	2.80	2000	>RL
121	Sb	115	0.591	3935	1.49	500	
137	Ba	115	690.724	1360561	0.51	2000	>RL
205	Tl	209	0.372	9266	2.72	2000	
208	Pb	209	27.019	474844	0.39	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1452422	0.84	1428455	101.68	70	120	
72	Ge	909284	0.92	935581	97.19	70	120	
115	In	8172576	1.62	8566548	95.40	70	120	
209	Bi	16043482	2.24	17397529	92.22	70	120	

Sample Report

Date Acquired	11/10/16 12:13 PM	Sample Name	1611022-07A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	043SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	58.800	3865	1.39	2000	>RL
9	Be	45	3.040	238	1.59	2000	>RL
11	B	45	115.391	3552	3.15	2000	>RL
23	Na	45	7417.382	8167570	1.02	25000	>RL
24	Mg	45	13983.695	7709933	0.95	25000	>RL
27	Al	45	55236.383	12334057	0.48	10000	OUTCAL
39	K	45	7243.404	4168568	0.48	25000	>RL
44	Ca	45	433431.542	14610995	0.96	25000	OUTCAL
47	Ti	45	127.501	24941	0.85	2000	>RL
51	V	45	81.591	482516	1.13	2000	>RL
52	Cr	45	47.786	332488	0.56	2000	>RL
55	Mn	45	1231.395	5088614	0.35	2000	>RL
56	Fe	45	61147.687	362342252	0.16	10000	OUTCAL
59	Co	72	45.160	462604	0.64	2000	>RL
60	Ni	72	59.687	163149	1.38	2000	>RL
63	Cu	72	13.573	103212	1.65	2000	>RL
66	Zn	72	225.772	274757	0.47	2000	>RL
75	As	72	21.985	21546	1.03	2000	>RL
78	Se	72	7.098	600	6.56	2000	>RL
88	Sr	115	1519.762	7944154	1.57	2000	>RL
95	Mo	115	6.427	26486	1.43	2000	>RL
107	Ag	115	0.068	898	14.44	500	
111	Cd	115	0.352	643	7.84	2000	
118	Sn	115	5.574	22890	2.19	2000	>RL
121	Sb	115	0.323	2364	3.96	500	
137	Ba	115	279.625	561132	0.98	2000	>RL
205	Tl	209	0.687	16937	1.68	2000	
208	Pb	209	33.342	580765	1.12	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1441432	1.29	1428455	100.91	70	120	
72	Ge	901512	0.68	935581	96.36	70	120	
115	In	8207451	0.75	8566548	95.81	70	120	
209	Bi	15907025	1.42	17397529	91.43	70	120	

Sample Report

Date Acquired	11/10/16 12:14 PM	Sample Name	1611022-08A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	044SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	44.079	2867	3.35	2000	>RL
9	Be	45	1.912	149	12.57	2000	>RL
11	B	45	106.482	3254	1.36	2000	>RL
23	Na	45	5971.949	6518376	3.59	25000	>RL
24	Mg	45	11913.901	6492788	1.65	25000	>RL
27	Al	45	47346.670	10450065	1.14	10000	OUTCAL
39	K	45	7194.814	4093198	0.29	25000	>RL
44	Ca	45	467430.213	15573554	1.01	25000	OUTCAL
47	Ti	45	127.691	24689	0.92	2000	>RL
51	V	45	70.765	413927	0.57	2000	>RL
52	Cr	45	40.470	278550	0.60	2000	>RL
55	Mn	45	1207.232	4931180	0.39	2000	>RL
56	Fe	45	50786.563	297466477	1.01	10000	OUTCAL
59	Co	72	28.194	288242	0.59	2000	>RL
60	Ni	72	30.756	84197	0.99	2000	>RL
63	Cu	72	10.981	83752	0.46	2000	>RL
66	Zn	72	132.154	160616	0.33	2000	>RL
75	As	72	16.816	16487	2.21	2000	>RL
78	Se	72	3.745	383	3.29	2000	>RL
88	Sr	115	1769.681	9299422	0.73	2000	>RL
95	Mo	115	3.737	15530	1.76	2000	>RL
107	Ag	115	0.048	653	7.14	500	
111	Cd	115	0.237	439	9.77	2000	
118	Sn	115	5.442	22477	0.39	2000	>RL
121	Sb	115	0.104	1062	7.65	500	
137	Ba	115	183.304	374408	1.34	2000	>RL
205	Tl	209	0.482	11781	3.43	2000	
208	Pb	209	25.677	443307	0.32	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1424643	0.29	1428455	99.73	70	120	
72	Ge	899701	1.09	935581	96.16	70	120	
115	In	8250995	1.14	8566548	96.32	70	120	
209	Bi	15754389	0.88	17397529	90.56	70	120	

Sample Report

Date Acquired	11/10/16 12:16 PM	Sample Name	1611022-10A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	045SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	61.152	4087	3.29	2000	>RL
9	Be	45	2.697	215	4.56	2000	>RL
11	B	45	100.190	3160	5.23	2000	>RL
23	Na	45	7339.835	8217672	1.16	25000	>RL
24	Mg	45	16462.196	9227070	2.14	25000	>RL
27	Al	45	62924.027	14283234	1.89	10000	OUTCAL
39	K	45	10829.086	6299099	1.74	25000	>RL
44	Ca	45	386947.309	13260219	1.07	25000	OUTCAL
47	Ti	45	169.673	33736	1.90	2000	>RL
51	V	45	133.153	799162	0.04	2000	>RL
52	Cr	45	59.487	420387	1.05	2000	>RL
55	Mn	45	1314.884	5524134	1.18	2000	>RL
56	Fe	45	76038.983	458063751	0.56	10000	OUTCAL
59	Co	72	29.064	303134	1.50	2000	>RL
60	Ni	72	57.851	160995	0.74	2000	>RL
63	Cu	72	24.180	185399	0.34	2000	>RL
66	Zn	72	210.096	260313	0.50	2000	>RL
75	As	72	29.022	28901	0.42	2000	>RL
78	Se	72	5.159	483	5.65	2000	>RL
88	Sr	115	5373.872	28190371	0.18	2000	OUTCAL
95	Mo	115	4.894	20267	2.34	2000	>RL
107	Ag	115	0.104	1360	4.12	500	
111	Cd	115	0.602	1094	11.11	2000	>RL
118	Sn	115	6.420	26368	0.71	2000	>RL
121	Sb	115	1.080	6876	3.64	500	
137	Ba	115	1132.413	2239564	0.17	2000	>RL
205	Tl	209	0.629	15810	1.88	2000	
208	Pb	209	47.559	843024	0.94	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1465273	0.64	1428455	102.58	70	120	
72	Ge	917760	0.35	935581	98.10	70	120	
115	In	8238814	2.35	8566548	96.17	70	120	
209	Bi	16203847	1.56	17397529	93.14	70	120	

Post Digestion Spike Sample (PDS) Report

Date Acquired	11/10/2016 12:18	Sample Name	1611022-09A PDS
Data Batch	161110.b	Comment	PDS ICPMS_TSDOD1
Data File Name	046_PDS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	254.106	17460	0.85	65.6	200	94.2	75	125	
9	Be	45	202.090	16389	2.53	3.0	200	99.5	75	125	
11	B	45	275.550	8614	1.03	84.6	200	95.5	75	125	
23	Na	45	7751.217	8933630	0.67	2842.0	5000	98.2	75	125	
24	Mg	45	22246.932	12842801	1.07	17084.9	5000	103.2	75	125	
27	Al	45	86857.859	20308523	1.36	80146.3	5000	134.2	75	125	Fail
39	K	45	22463.308	13374994	2.08	17347.4	5000	102.3	75	125	
44	Ca	45	87773.633	3099001	0.51	81935.3	5000	116.8	75	125	
47	Ti	45	395.168	80933	1.20	200.2	200	97.5	75	125	
51	V	45	323.800	1998731	0.82	120.8	200	101.5	75	125	
52	Cr	45	272.418	1977579	1.47	69.2	200	101.6	75	125	
55	Mn	45	925.808	4006714	1.08	729.5	200	98.2	75	125	
56	Fe	45	81415.827	505219607	1.13	77461.5	5000	79.1	75	125	
59	Co	72	234.369	2511125	0.14	29.4	200	102.5	75	125	
60	Ni	72	257.079	732858	0.63	53.8	200	101.6	75	125	
63	Cu	72	230.780	1798409	0.42	31.9	200	99.4	75	125	
66	Zn	72	461.043	586652	0.96	253.4	200	103.8	75	125	
75	As	72	231.154	235329	0.33	27.2	200	102.0	75	125	
78	Se	72	204.965	13971	1.21	5.6	200	99.7	75	125	
88	Sr	115	638.252	3457664	1.19	413.7	200	112.3	75	125	
95	Mo	115	201.497	856873	0.50	2.8	200	99.4	75	125	
107	Ag	115	183.577	2382519	0.54	0.2	200	91.7	75	125	
111	Cd	115	201.179	374693	0.70	0.6	200	100.3	75	125	
118	Sn	115	217.116	901616	0.92	6.4	200	105.4	75	125	
121	Sb	115	207.764	1279258	0.43	2.2	200	102.8	75	125	
137	Ba	115	708.652	1452382	0.22	487.9	200	110.4	75	125	
205	Tl	209	201.899	5189544	0.60	0.7	200	100.6	75	125	
208	Pb	209	252.134	4588190	0.55	49.6	200	101.3	75	125	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1509307	0.48	1428455	105.66	70	120	
72	Ge	943112	0.58	935581	100.81	70	120	
115	In	8491465	0.21	8566548	99.12	70	120	
209	Bi	16655136	0.56	17397529	95.73	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/10/2016 12:20	Sample Name	1611022-09A MS
Data Batch	161110.b	Comment	MS ICPMS_TSDOD1
Data File Name	047_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	260.208	17756	1.12	65.6	200	97.3	80	120	
9	Be	45	202.206	16285	2.40	3.0	200	99.6	80	120	
11	B	45	282.775	8775	0.67	84.6	200	99.1	80	120	
23	Na	45	7993.586	9146919	1.12	2842.0	1000	515.2	80	120	Fail
24	Mg	45	23345.470	13384960	0.64	17084.9	1000	626.1	80	120	Fail
27	Al	45	92172.590	21404443	1.36	80146.3	1000	1202.6	80	120	Fail
39	K	45	24056.354	14220459	1.66	17347.4	1000	670.9	80	120	Fail
44	Ca	45	85103.295	2984118	0.37	81935.3	1000	316.8	80	120	Fail
47	Ti	45	514.404	104626	0.57	200.2	200	157.1	80	120	Fail
51	V	45	335.796	2058438	0.77	120.8	200	107.5	80	120	
52	Cr	45	273.685	1973100	1.08	69.2	200	102.2	80	120	
55	Mn	45	880.829	3785834	0.93	729.5	200	75.7	80	120	Fail
56	Fe	45	80586.677	496627554	1.44	77461.5	1000	312.5	80	120	Fail
59	Co	72	232.787	2477099	0.50	29.4	200	101.7	80	120	
60	Ni	72	258.124	730749	0.66	53.8	200	102.2	80	120	
63	Cu	72	234.448	1814370	0.07	31.9	200	101.3	80	120	
66	Zn	72	453.402	572990	1.05	253.4	200	100.0	80	120	
75	As	72	228.674	231211	0.56	27.2	200	100.7	80	120	
78	Se	72	204.815	13864	1.71	5.6	200	99.6	80	120	
88	Sr	115	644.684	3419450	1.09	413.7	200	115.5	80	120	
95	Mo	115	196.086	816412	0.40	2.8	200	96.7	80	120	
107	Ag	115	197.452	2508781	1.03	0.2	200	98.6	80	120	
111	Cd	115	206.369	376284	0.98	0.6	200	102.9	80	120	
118	Sn	115	217.020	882324	1.11	6.4	200	105.3	80	120	
121	Sb	115	76.959	464195	0.94	2.2	200	37.4	80	120	Fail
137	Ba	115	798.024	1599532	0.96	487.9	200	155.0	80	120	Fail
205	Tl	209	200.754	5147959	0.07	0.7	200	100.0	80	120	
208	Pb	209	249.139	4522965	0.38	49.6	200	99.8	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1498944	0.31	1428455	104.93	70	120	
72	Ge	936648	0.75	935581	100.11	70	120	
115	In	8314112	0.96	8566548	97.05	70	120	
209	Bi	16617792	1.30	17397529	95.52	70	120	

Matrix Spike Sample (MS) Report

Date Acquired	11/10/2016 12:22	Sample Name	1611022-09A MSD
Data Batch	161110.b	Comment	MSD ICPMS_TSDOD1
Data File Name	048_MSS.d	Dilution	5

Mass	Name	IS	Conc	CPS	%RSD	Ref Conc	Spk Amt	%Rec	Low	High	Flag
7	Li	45	259.722	17462	0.88	65.6	200	97.0	80	120	
9	Be	45	200.450	15905	0.47	3.0	200	98.7	80	120	
11	B	45	282.906	8649	2.04	84.6	200	99.2	80	120	
23	Na	45	7734.608	8723339	1.55	2842.0	1000	489.3	80	120	Fail
24	Mg	45	21944.604	12395904	0.57	17084.9	1000	486.0	80	120	Fail
27	Al	45	86554.148	19802599	0.25	80146.3	1000	640.8	80	120	Fail
39	K	45	22575.010	13152186	1.79	17347.4	1000	522.8	80	120	Fail
44	Ca	45	91422.617	3158365	1.28	81935.3	1000	948.7	80	120	Fail
47	Ti	45	475.482	95284	0.72	200.2	200	137.6	80	120	Fail
51	V	45	337.473	2038163	1.36	120.8	200	108.3	80	120	
52	Cr	45	271.183	1926191	0.67	69.2	200	101.0	80	120	
55	Mn	45	952.100	4031718	0.39	729.5	200	111.3	80	120	
56	Fe	45	85046.917	516370842	0.86	77461.5	1000	758.5	80	120	Fail
59	Co	72	234.641	2483766	0.62	29.4	200	102.6	80	120	
60	Ni	72	258.202	727170	0.51	53.8	200	102.2	80	120	
63	Cu	72	233.807	1799944	0.50	31.9	200	101.0	80	120	
66	Zn	72	465.431	585087	0.19	253.4	200	106.0	80	120	
75	As	72	228.678	230002	0.27	27.2	200	100.7	80	120	
78	Se	72	204.753	13788	0.31	5.6	200	99.6	80	120	
88	Sr	115	655.330	3463364	0.42	413.7	200	120.8	80	120	Fail
95	Mo	115	193.218	801540	0.41	2.8	200	95.2	80	120	
107	Ag	115	195.051	2469518	0.27	0.2	200	97.4	80	120	
111	Cd	115	201.206	365598	1.05	0.6	200	100.3	80	120	
118	Sn	115	213.257	863976	0.85	6.4	200	103.4	80	120	
121	Sb	115	73.751	443345	1.74	2.2	200	35.8	80	120	Fail
137	Ba	115	949.006	1892868	0.52	487.9	200	230.5	80	120	Fail
205	Tl	209	202.253	5050016	0.78	0.7	200	100.8	80	120	
208	Pb	209	254.920	4506654	0.44	49.6	200	102.7	80	120	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1476875	0.73	1428455	103.39	70	120	
72	Ge	931739	0.61	935581	99.59	70	120	
115	In	8284699	1.19	8566548	96.71	70	120	
209	Bi	16183338	1.68	17397529	93.02	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/10/2016 12:24	Sample Name	CCV1-161110
Data Batch	161110.b	Comment	CCV ICPMS_TW
Data File Name	049_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	197.553	13295	0.32	200	98.8	90	110	
9	Be	45	203.701	16175	2.11	200	101.9	90	110	
11	B	45	208.274	6422	1.35	200	104.1	90	110	
23	Na	45	5142.158	5836059	2.28	5000	102.8	90	110	
24	Mg	45	5175.572	2926883	1.21	5000	103.5	90	110	
27	Al	45	5039.676	1154635	0.22	5000	100.8	90	110	
39	K	45	5160.900	3067341	0.56	5000	103.2	90	110	
44	Ca	45	4806.901	167053	0.16	5000	96.1	90	110	
47	Ti	45	202.695	40656	0.48	200	101.3	90	110	
51	V	45	204.596	1237503	0.64	200	102.3	90	110	
52	Cr	45	204.103	1451291	0.50	200	102.1	90	110	
55	Mn	45	202.118	857297	0.52	200	101.1	90	110	
56	Fe	45	4957.009	30129783	0.81	5000	99.1	90	110	
59	Co	72	206.175	2231913	0.81	200	103.1	90	110	
60	Ni	72	207.220	596954	0.74	200	103.6	90	110	
63	Cu	72	209.854	1652401	0.42	200	104.9	90	110	
66	Zn	72	207.300	266662	0.30	200	103.6	90	110	
75	As	72	205.941	211847	1.29	200	103.0	90	110	
78	Se	72	207.685	14299	2.07	200	103.8	90	110	
88	Sr	115	208.327	1138586	0.73	200	104.2	90	110	
95	Mo	115	204.521	877328	0.27	200	102.3	90	110	
107	Ag	115	198.731	2602209	1.47	200	99.4	90	110	
111	Cd	115	206.493	387973	0.78	200	103.2	90	110	
118	Sn	115	206.523	865187	0.68	200	103.3	90	110	
121	Sb	115	202.851	1259856	0.79	200	101.4	90	110	
137	Ba	115	200.563	424692	0.59	200	100.3	90	110	
205	Tl	209	202.123	5299878	0.57	200	101.1	90	110	
208	Pb	209	201.761	3745556	0.79	200	100.9	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1478038	0.36	1428455	103.47	70	120	
72	Ge	952856	0.87	935581	101.85	70	120	
115	In	8568039	1.62	8566548	100.02	70	120	
209	Bi	16991048	0.91	17397529	97.66	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/10/2016 12:30	Sample Name	LCVL1-161110
Data Batch	161110.b	Comment	LCVLICPMS_TW
Data File Name	051LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.479	717	5.41	1	1047.9	70	130	Fail
9	Be	45	1.314	108	6.59	1	131.4	70	130	Fail
11	B	45	22.294	858	5.22	20	111.5	70	130	
23	Na	45	100.763	208286	0.61	100	100.8	70	130	
24	Mg	45	102.383	59071	1.29	100	102.4	70	130	
27	Al	45	102.403	24215	1.78	100	102.4	70	130	
39	K	45	109.126	138839	0.59	100	109.1	70	130	
44	Ca	45	103.916	4506	0.79	100	103.9	70	130	
47	Ti	45	5.516	1114	11.98	5	110.3	70	130	
51	V	45	1.098	8799	4.20	1	109.8	70	130	
52	Cr	45	5.337	39537	1.24	5	106.7	70	130	
55	Mn	45	5.395	23840	2.65	5	107.9	70	130	
56	Fe	45	103.691	639990	0.29	100	103.7	70	130	
59	Co	72	5.305	58011	0.99	5	106.1	70	130	
60	Ni	72	5.550	16793	5.55	5	111.0	70	130	
63	Cu	72	5.476	45803	0.99	5	109.5	70	130	
66	Zn	72	5.486	7416	1.43	5	109.7	70	130	
75	As	72	5.382	5756	2.43	5	107.6	70	130	
78	Se	72	5.288	515	4.97	5	105.8	70	130	
88	Sr	115	5.366	29830	2.11	5	107.3	70	130	
95	Mo	115	5.225	22705	0.82	5	104.5	70	130	
107	Ag	115	2.076	27453	2.14	2	103.8	70	130	
111	Cd	115	1.049	1998	2.44	1	104.9	70	130	
118	Sn	115	5.542	23981	0.22	5	110.8	70	130	
121	Sb	115	2.059	13352	2.88	2	103.0	70	130	
137	Ba	115	-1.424	11167	2.59	5	-28.5	70	130	Fail
205	Tl	209	1.073	28335	1.07	1	107.3	70	130	
208	Pb	209	1.104	22182	3.18	1	110.4	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1481639	0.24	1428455	103.72	70	120	
72	Ge	960882	0.38	935581	102.70	70	120	
115	In	8646900	0.57	8566548	100.94	70	120	
209	Bi	17069060	0.39	17397529	98.11	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/10/2016 12:32	Sample Name	CCB1-161110
Data Batch	161110.b	Comment	CCB ICPMS_TW
Data File Name	052_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.130	19	24.1	2	5	
9	Be	45	0.007	4	15.7	0.4	0.3	
11	B	45	6.447	381	1.8	10	10	
23	Na	45	-2.309	92630	1.1	50	100	
24	Mg	45	-0.430	807	11.4	50	100	
27	Al	45	0.816	896	7.6	50	10	
39	K	45	3.276	77064	1.0	50	100	
44	Ca	45	3.637	1028	4.5	50	100	
47	Ti	45	0.033	12	128.9	4	3	
51	V	45	-0.008	2099	6.2	4	3	
52	Cr	45	-0.012	1445	4.4	2	2	
55	Mn	45	-0.081	577	5.5	2	3	
56	Fe	45	1.480	17316	2.3	50	50	
59	Co	72	0.005	166	29.3	2	3	
60	Ni	72	-0.061	512	14.4	2	3	
63	Cu	72	-0.031	2136	4.0	2	2	
66	Zn	72	0.072	400	9.6	4	2	
75	As	72	0.033	210	7.0	2	2	
78	Se	72	0.137	161	7.4	1	2	
88	Sr	115	0.025	420	14.7	4	3	
95	Mo	115	0.072	439	16.4	2	2	
107	Ag	115	0.029	444	12.8	0.4	1	
111	Cd	115	0.002	14	58.1	0.4	0.3	
118	Sn	115	0.128	1152	8.0	4	3	
121	Sb	115	0.014	561	25.6	2	0.8	
137	Ba	115	-6.795	84	28.6	2	3	
205	Tl	209	0.009	326	14.7	2	0.5	
208	Pb	209	0.027	2160	4.8	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1476810	0.65	1428455	103.39	70	120	
72	Ge	958873	0.42	935581	102.49	70	120	
115	In	8765019	1.85	8566548	102.32	70	120	
209	Bi	17518570	1.55	17397529	100.70	70	120	

Sample Report

Date Acquired	11/10/16 12:34 PM	Sample Name	1611022-11A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	053SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	78.645	5220	2.01	2000	>RL
9	Be	45	2.744	218	7.12	2000	>RL
11	B	45	116.445	3619	2.51	2000	>RL
23	Na	45	7756.124	8622937	0.51	25000	>RL
24	Mg	45	13911.496	7747694	0.05	25000	>RL
27	Al	45	60731.327	13699843	1.59	10000	OUTCAL
39	K	45	7333.910	4262673	0.38	25000	>RL
44	Ca	45	390348.177	13290486	1.59	25000	OUTCAL
47	Ti	45	154.088	30444	1.17	2000	>RL
51	V	45	95.330	569136	0.29	2000	>RL
52	Cr	45	51.866	364409	0.80	2000	>RL
55	Mn	45	1005.607	4197906	0.55	2000	>RL
56	Fe	45	62421.883	373659274	0.33	10000	OUTCAL
59	Co	72	66.061	688319	0.77	2000	>RL
60	Ni	72	54.302	151037	0.53	2000	>RL
63	Cu	72	12.882	99757	0.27	2000	>RL
66	Zn	72	246.690	305355	0.15	2000	>RL
75	As	72	20.247	20197	0.80	2000	>RL
78	Se	72	5.159	483	2.11	2000	>RL
88	Sr	115	1416.488	7557496	1.64	2000	>RL
95	Mo	115	4.427	18655	1.08	2000	>RL
107	Ag	115	0.075	1010	5.08	500	
111	Cd	115	0.275	514	11.41	2000	
118	Sn	115	5.469	22929	1.31	2000	>RL
121	Sb	115	0.289	2201	3.95	500	
137	Ba	115	340.112	693587	0.33	2000	>RL
205	Tl	209	0.569	14340	1.68	2000	
208	Pb	209	29.261	520513	0.56	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1456036	0.99	1428455	101.93	70	120	
72	Ge	917021	0.25	935581	98.02	70	120	
115	In	8376137	0.98	8566548	97.78	70	120	
209	Bi	16238914	0.74	17397529	93.34	70	120	

Sample Report

Date Acquired	11/10/16 12:36 PM	Sample Name	1611022-12A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	054SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	47.739	3154	2.61	2000	>RL
9	Be	45	1.774	141	11.15	2000	>RL
11	B	45	87.784	2759	9.90	2000	>RL
23	Na	45	5320.492	5911710	2.95	25000	>RL
24	Mg	45	10875.009	6022589	0.77	25000	>RL
27	Al	45	44191.458	9911879	1.72	10000	OUTCAL
39	K	45	6312.715	3658557	0.45	25000	>RL
44	Ca	45	421368.722	14266529	0.29	25000	OUTCAL
47	Ti	45	121.986	23969	1.73	2000	>RL
51	V	45	67.503	401333	1.32	2000	>RL
52	Cr	45	37.066	259375	0.80	2000	>RL
55	Mn	45	1183.113	4910783	0.67	2000	>RL
56	Fe	45	47533.230	282902398	1.73	10000	OUTCAL
59	Co	72	22.678	234197	0.50	2000	>RL
60	Ni	72	37.955	104796	1.75	2000	>RL
63	Cu	72	10.922	84147	0.61	2000	>RL
66	Zn	72	135.577	166419	0.79	2000	>RL
75	As	72	16.397	16239	1.63	2000	>RL
78	Se	72	3.592	377	1.83	2000	>RL
88	Sr	115	1874.984	9716963	0.59	2000	>RL
95	Mo	115	4.004	16399	0.35	2000	>RL
107	Ag	115	0.061	810	10.34	500	
111	Cd	115	0.261	476	9.97	2000	
118	Sn	115	5.174	21100	1.60	2000	>RL
121	Sb	115	0.144	1288	1.52	500	
137	Ba	115	263.768	525502	0.60	2000	>RL
205	Tl	209	0.581	14705	1.53	2000	
208	Pb	209	22.964	410698	0.23	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1447717	0.56	1428455	101.35	70	120	
72	Ge	908651	0.38	935581	97.12	70	120	
115	In	8136923	1.41	8566548	94.98	70	120	
209	Bi	16316058	1.71	17397529	93.78	70	120	

Sample Report

Date Acquired	11/10/16 12:38 PM	Sample Name	1611022-14A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	055SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	67.501	4589	0.63	2000	>RL
9	Be	45	2.769	225	8.75	2000	>RL
11	B	45	144.754	4560	2.18	2000	>RL
23	Na	45	9277.875	10544071	1.03	25000	>RL
24	Mg	45	15897.820	9068038	2.38	25000	>RL
27	Al	45	70293.369	16235917	0.20	10000	OUTCAL
39	K	45	15501.673	9141337	0.46	25000	>RL
44	Ca	45	94095.435	3281821	0.82	25000	OUTCAL
47	Ti	45	227.988	46138	3.14	2000	>RL
51	V	45	114.632	700397	0.82	2000	>RL
52	Cr	45	61.660	443365	1.21	2000	>RL
55	Mn	45	502.494	2148680	0.77	2000	>RL
56	Fe	45	69171.137	423985290	0.47	10000	OUTCAL
59	Co	72	21.436	229887	0.86	2000	>RL
60	Ni	72	40.150	115085	0.62	2000	>RL
63	Cu	72	21.817	172214	0.56	2000	>RL
66	Zn	72	184.243	234738	0.64	2000	>RL
75	As	72	26.344	26986	1.31	2000	>RL
78	Se	72	4.374	444	3.27	2000	>RL
88	Sr	115	531.695	2850336	0.23	2000	>RL
95	Mo	115	1.888	8063	3.52	2000	
107	Ag	115	0.123	1629	3.87	500	
111	Cd	115	0.415	776	8.60	2000	>RL
118	Sn	115	5.795	24381	1.70	2000	>RL
121	Sb	115	5.712	35248	1.51	500	>RL
137	Ba	115	515.500	1049253	0.34	2000	>RL
205	Tl	209	0.552	14378	1.30	2000	
208	Pb	209	493.090	9037204	2.34	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1491048	1.28	1428455	104.38	70	120	
72	Ge	943592	0.65	935581	100.86	70	120	
115	In	8416285	1.00	8566548	98.25	70	120	
209	Bi	16782074	1.91	17397529	96.46	70	120	

Sample Report

Date Acquired	11/10/16 12:40 PM	Sample Name	1611022-15A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	056SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	74.697	4924	1.53	2000	>RL
9	Be	45	1.768	140	10.79	2000	>RL
11	B	45	121.040	3728	4.22	2000	>RL
23	Na	45	7388.071	8162404	1.21	25000	>RL
24	Mg	45	11949.804	6610131	0.64	25000	>RL
27	Al	45	49095.571	10999320	1.99	10000	OUTCAL
39	K	45	9831.273	5650465	1.31	25000	>RL
44	Ca	45	251480.594	8505824	1.09	25000	OUTCAL
47	Ti	45	134.820	26460	1.12	2000	>RL
51	V	45	73.658	437257	0.64	2000	>RL
52	Cr	45	44.759	312558	0.10	2000	>RL
55	Mn	45	169.717	704468	0.44	2000	>RL
56	Fe	45	46042.943	273764682	1.38	10000	OUTCAL
59	Co	72	9.083	94122	0.96	2000	>RL
60	Ni	72	19.531	54393	0.37	2000	>RL
63	Cu	72	10.145	78543	1.65	2000	>RL
66	Zn	72	91.271	112439	0.86	2000	>RL
75	As	72	14.866	14780	1.76	2000	>RL
78	Se	72	3.638	381	5.79	2000	>RL
88	Sr	115	1286.993	6895505	1.62	2000	>RL
95	Mo	115	1.471	6302	2.07	2000	
107	Ag	115	0.056	767	5.85	500	
111	Cd	115	0.136	261	28.47	2000	
118	Sn	115	5.306	22361	0.40	2000	>RL
121	Sb	115	0.403	2909	9.64	500	
137	Ba	115	308.280	632754	0.48	2000	>RL
205	Tl	209	0.283	7221	6.04	2000	
208	Pb	209	41.329	739461	0.90	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1446129	0.68	1428455	101.24	70	120	
72	Ge	911206	1.06	935581	97.39	70	120	
115	In	8414819	2.16	8566548	98.23	70	120	
209	Bi	16346826	0.16	17397529	93.96	70	120	

Sample Report

Date Acquired	11/10/16 12:42 PM	Sample Name	1611022-16A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	057SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	59.825	3916	0.40	2000	>RL
9	Be	45	1.834	144	11.05	2000	>RL
11	B	45	145.474	4411	6.10	2000	>RL
23	Na	45	9140.973	10000446	1.54	25000	>RL
24	Mg	45	10782.212	5918501	0.54	25000	>RL
27	Al	45	45051.920	10015641	2.30	10000	OUTCAL
39	K	45	12147.118	6911122	2.19	25000	>RL
44	Ca	45	209733.857	7038977	0.30	25000	OUTCAL
47	Ti	45	118.028	22985	1.69	2000	>RL
51	V	45	75.975	447486	1.02	2000	>RL
52	Cr	45	49.867	345379	0.42	2000	>RL
55	Mn	45	138.457	570457	0.19	2000	>RL
56	Fe	45	93688.197	552780102	2.23	10000	OUTCAL
59	Co	72	7.894	81474	1.02	2000	>RL
60	Ni	72	16.286	45278	1.01	2000	>RL
63	Cu	72	11.920	91506	0.72	2000	>RL
66	Zn	72	106.148	130177	0.81	2000	>RL
75	As	72	18.762	18531	0.87	2000	>RL
78	Se	72	3.640	379	6.97	2000	>RL
88	Sr	115	1212.297	6321306	1.32	2000	>RL
95	Mo	115	4.062	16740	1.74	2000	>RL
107	Ag	115	0.040	556	3.41	500	
111	Cd	115	0.125	234	9.68	2000	
118	Sn	115	5.430	22256	0.80	2000	>RL
121	Sb	115	0.227	1786	4.32	500	
137	Ba	115	212.102	427799	0.37	2000	>RL
205	Tl	209	0.268	6823	2.58	2000	
208	Pb	209	43.569	776942	0.40	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1435014	0.72	1428455	100.46	70	120	
72	Ge	907399	0.30	935581	96.99	70	120	
115	In	8186475	0.38	8566548	95.56	70	120	
209	Bi	16296025	1.43	17397529	93.67	70	120	

Sample Report

Date Acquired	11/10/16 12:44 PM	Sample Name	1611022-17A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	058SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	52.976	3488	0.63	2000	>RL
9	Be	45	2.047	162	2.50	2000	>RL
11	B	45	146.922	4476	3.28	2000	>RL
23	Na	45	9900.285	10882865	1.89	25000	>RL
24	Mg	45	10973.505	6057388	2.76	25000	>RL
27	Al	45	49804.342	11133205	0.92	10000	OUTCAL
39	K	45	14273.393	8152673	2.49	25000	>RL
44	Ca	45	208869.124	7048776	0.66	25000	OUTCAL
47	Ti	45	101.835	19944	4.12	2000	>RL
51	V	45	71.410	423040	1.78	2000	>RL
52	Cr	45	44.878	312693	1.11	2000	>RL
55	Mn	45	186.842	773722	1.95	2000	>RL
56	Fe	45	79017.708	468760995	1.96	10000	OUTCAL
59	Co	72	12.836	131590	0.48	2000	>RL
60	Ni	72	23.324	64155	2.46	2000	>RL
63	Cu	72	11.289	86235	0.59	2000	>RL
66	Zn	72	137.991	168083	0.97	2000	>RL
75	As	72	22.395	21951	1.21	2000	>RL
78	Se	72	4.226	415	6.86	2000	>RL
88	Sr	115	1168.781	6046477	1.31	2000	>RL
95	Mo	115	2.267	9315	0.91	2000	>RL
107	Ag	115	0.038	529	13.61	500	
111	Cd	115	0.095	180	14.70	2000	
118	Sn	115	5.621	22839	1.40	2000	>RL
121	Sb	115	0.140	1263	3.45	500	
137	Ba	115	190.929	383326	0.99	2000	>RL
205	Tl	209	0.259	6477	3.14	2000	
208	Pb	209	46.651	818284	0.99	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1442891	0.64	1428455	101.01	70	120	
72	Ge	901799	1.54	935581	96.39	70	120	
115	In	8128283	4.12	8566548	94.88	70	120	
209	Bi	16030544	1.50	17397529	92.14	70	120	

Sample Report

Date Acquired	11/10/16 12:46 PM	Sample Name	1611022-18A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	059SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	70.934	4598	0.88	2000	>RL
9	Be	45	2.969	230	6.65	2000	>RL
11	B	45	149.700	4490	5.07	2000	>RL
23	Na	45	6665.803	7250640	1.37	25000	>RL
24	Mg	45	17306.943	9413141	1.17	25000	>RL
27	Al	45	75663.240	16663984	1.23	10000	OUTCAL
39	K	45	16082.411	9043187	2.23	25000	>RL
44	Ca	45	88033.358	2928062	0.95	25000	OUTCAL
47	Ti	45	312.222	60251	2.48	2000	>RL
51	V	45	121.866	709908	1.08	2000	>RL
52	Cr	45	67.137	460211	0.68	2000	>RL
55	Mn	45	566.397	2309462	0.50	2000	>RL
56	Fe	45	69612.421	406957513	1.66	10000	OUTCAL
59	Co	72	22.288	227171	0.66	2000	>RL
60	Ni	72	44.076	120011	1.29	2000	>RL
63	Cu	72	25.215	188833	0.65	2000	>RL
66	Zn	72	210.480	254834	0.26	2000	>RL
75	As	72	25.440	24776	0.74	2000	>RL
78	Se	72	4.519	431	4.25	2000	>RL
88	Sr	115	495.643	2561949	0.51	2000	>RL
95	Mo	115	2.214	9092	3.64	2000	>RL
107	Ag	115	0.131	1677	8.88	500	
111	Cd	115	0.608	1090	8.45	2000	>RL
118	Sn	115	6.138	24859	2.48	2000	>RL
121	Sb	115	2.872	17302	1.22	500	>RL
137	Ba	115	474.206	931630	0.17	2000	>RL
205	Tl	209	0.625	15278	1.14	2000	
208	Pb	209	226.203	3893699	0.49	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1421944	1.43	1428455	99.54	70	120	
72	Ge	896818	0.39	935581	95.86	70	120	
115	In	8115867	1.89	8566548	94.74	70	120	
209	Bi	15753712	0.48	17397529	90.55	70	120	

Sample Report

Date Acquired	11/10/16 12:48 PM	Sample Name	1611022-19A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	060SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	52.488	3415	1.55	2000	>RL
9	Be	45	2.363	184	18.50	2000	>RL
11	B	45	137.244	4145	3.91	2000	>RL
23	Na	45	6776.013	7390070	0.68	25000	>RL
24	Mg	45	11558.844	6305100	1.90	25000	>RL
27	Al	45	44887.669	9916505	0.29	10000	OUTCAL
39	K	45	11093.495	6277725	1.54	25000	>RL
44	Ca	45	84976.450	2834612	0.74	25000	OUTCAL
47	Ti	45	187.005	36188	1.23	2000	>RL
51	V	45	92.203	539192	0.52	2000	>RL
52	Cr	45	48.986	337175	0.97	2000	>RL
55	Mn	45	255.393	1044887	0.33	2000	>RL
56	Fe	45	77123.757	452153102	0.15	10000	OUTCAL
59	Co	72	13.230	136500	0.16	2000	>RL
60	Ni	72	26.031	71992	0.41	2000	>RL
63	Cu	72	378.730	2838530	0.31	2000	>RL
66	Zn	72	138.797	170151	0.29	2000	>RL
75	As	72	23.337	23013	0.53	2000	>RL
78	Se	72	4.475	434	6.40	2000	>RL
88	Sr	115	436.302	2286725	1.19	2000	>RL
95	Mo	115	2.351	9784	1.56	2000	>RL
107	Ag	115	0.079	1042	11.90	500	
111	Cd	115	0.288	529	2.03	2000	
118	Sn	115	5.326	21953	0.28	2000	>RL
121	Sb	115	0.944	6065	2.39	500	
137	Ba	115	824.238	1632019	0.77	2000	>RL
205	Tl	209	0.313	7813	2.34	2000	
208	Pb	209	112.984	1977295	0.87	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1425966	0.04	1428455	99.83	70	120	
72	Ge	907519	0.09	935581	97.00	70	120	
115	In	8229233	1.54	8566548	96.06	70	120	
209	Bi	16010448	0.51	17397529	92.03	70	120	

Sample Report

Date Acquired	11/10/16 12:50 PM	Sample Name	1611022-20A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	061SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	68.610	4461	1.71	2000	>RL
9	Be	45	1.527	120	5.83	2000	>RL
11	B	45	133.090	4025	7.11	2000	>RL
23	Na	45	8024.151	8734249	1.45	25000	>RL
24	Mg	45	10765.877	5872509	1.87	25000	>RL
27	Al	45	46452.708	10262225	1.65	10000	OUTCAL
39	K	45	10114.142	5729868	1.06	25000	>RL
44	Ca	45	231049.668	7705736	1.03	25000	OUTCAL
47	Ti	45	107.028	20713	2.16	2000	>RL
51	V	45	69.855	409005	0.93	2000	>RL
52	Cr	45	45.252	311582	0.87	2000	>RL
55	Mn	45	101.980	417759	0.60	2000	>RL
56	Fe	45	68713.804	402844224	0.47	10000	OUTCAL
59	Co	72	5.963	61293	0.99	2000	>RL
60	Ni	72	14.111	39140	0.67	2000	>RL
63	Cu	72	9.064	69807	1.50	2000	>RL
66	Zn	72	79.280	96861	0.50	2000	>RL
75	As	72	19.852	19511	1.97	2000	>RL
78	Se	72	4.577	438	2.93	2000	>RL
88	Sr	115	1568.472	7993956	2.24	2000	>RL
95	Mo	115	2.867	11582	2.93	2000	>RL
107	Ag	115	0.037	508	15.84	500	
111	Cd	115	0.087	162	26.82	2000	
118	Sn	115	5.525	22125	2.26	2000	>RL
121	Sb	115	0.326	2319	4.55	500	
137	Ba	115	211.769	417531	0.35	2000	>RL
205	Tl	209	0.235	5856	1.91	2000	
208	Pb	209	45.732	798189	0.33	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1425954	0.11	1428455	99.82	70	120	
72	Ge	903303	0.85	935581	96.55	70	120	
115	In	8002228	0.50	8566548	93.41	70	120	
209	Bi	15950933	1.00	17397529	91.69	70	120	

Sample Report

Date Acquired	11/10/16 12:52 PM	Sample Name	1611022-21A
Data Batch	161110.b	Comment	SAMPICPMS_TSDOD1
Data File Name	062SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	43.346	2846	5.12	2000	>RL
9	Be	45	3.326	260	2.52	2000	>RL
11	B	45	127.178	3889	4.51	2000	>RL
23	Na	45	8001.528	8787120	1.41	25000	>RL
24	Mg	45	8839.303	4864333	0.56	25000	>RL
27	Al	45	41352.590	9216501	0.69	10000	OUTCAL
39	K	45	9899.091	5658996	0.64	25000	>RL
44	Ca	45	204019.934	6864368	0.17	25000	OUTCAL
47	Ti	45	106.128	20720	0.88	2000	>RL
51	V	45	61.571	363948	0.72	2000	>RL
52	Cr	45	37.965	263966	0.63	2000	>RL
55	Mn	45	213.092	879674	0.27	2000	>RL
56	Fe	45	86632.106	512406735	0.97	10000	OUTCAL
59	Co	72	60.698	629855	0.24	2000	>RL
60	Ni	72	52.864	146455	1.27	2000	>RL
63	Cu	72	8.296	64790	0.95	2000	>RL
66	Zn	72	411.189	506689	0.68	2000	>RL
75	As	72	22.322	22158	1.12	2000	>RL
78	Se	72	6.430	564	1.92	2000	>RL
88	Sr	115	2028.178	10531624	1.71	2000	OUTCAL
95	Mo	115	5.801	23756	0.49	2000	>RL
107	Ag	115	0.047	639	1.09	500	
111	Cd	115	0.123	230	17.57	2000	
118	Sn	115	5.129	20962	4.29	2000	>RL
121	Sb	115	0.377	2665	1.78	500	
137	Ba	115	165.885	336109	0.41	2000	>RL
205	Tl	209	0.325	8090	2.87	2000	
208	Pb	209	49.451	864774	0.33	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1438632	0.93	1428455	100.71	70	120	
72	Ge	913285	0.54	935581	97.62	70	120	
115	In	8153080	0.88	8566548	95.17	70	120	
209	Bi	15982803	0.22	17397529	91.87	70	120	

Continuing Calibration Verification (CCV) Report

Date Acquired	11/10/2016 12:54	Sample Name	CCV2-161110
Data Batch	161110.b	Comment	CCV ICPMS_TW
Data File Name	063_CCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	198.328	13064	0.82	200	99.2	90	110	
9	Be	45	206.380	16040	1.36	200	103.2	90	110	
11	B	45	207.583	6266	0.63	200	103.8	90	110	
23	Na	45	5136.007	5704965	1.86	5000	102.7	90	110	
24	Mg	45	5195.295	2875610	0.43	5000	103.9	90	110	
27	Al	45	5033.670	1128770	0.12	5000	100.7	90	110	
39	K	45	5200.076	3024494	0.26	5000	104.0	90	110	
44	Ca	45	4806.279	163484	1.07	5000	96.1	90	110	
47	Ti	45	205.262	40295	1.45	200	102.6	90	110	
51	V	45	207.622	1229138	0.77	200	103.8	90	110	
52	Cr	45	206.809	1439317	0.80	200	103.4	90	110	
55	Mn	45	202.984	842713	0.58	200	101.5	90	110	
56	Fe	45	5033.474	29947310	1.71	5000	100.7	90	110	
59	Co	72	207.012	2198956	1.01	200	103.5	90	110	
60	Ni	72	208.758	590089	0.10	200	104.4	90	110	
63	Cu	72	210.390	1625577	0.75	200	105.2	90	110	
66	Zn	72	208.570	263275	1.02	200	104.3	90	110	
75	As	72	209.359	211313	0.45	200	104.7	90	110	
78	Se	72	207.491	14018	1.36	200	103.7	90	110	
88	Sr	115	208.738	1131956	0.39	200	104.4	90	110	
95	Mo	115	203.186	864791	0.47	200	101.6	90	110	
107	Ag	115	198.133	2573648	0.75	200	99.1	90	110	
111	Cd	115	205.979	383975	1.29	200	103.0	90	110	
118	Sn	115	204.025	848015	0.09	200	102.0	90	110	
121	Sb	115	201.867	1244031	0.12	200	100.9	90	110	
137	Ba	115	199.315	418815	1.13	200	99.7	90	110	
205	Tl	209	201.605	5201401	0.23	200	100.8	90	110	
208	Pb	209	202.395	3697463	0.65	200	101.2	90	110	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1446678	0.59	1428455	101.28	70	120	
72	Ge	934972	0.55	935581	99.93	70	120	
115	In	8499791	0.57	8566548	99.22	70	120	
209	Bi	16720728	1.70	17397529	96.11	70	120	

Low Level Calibration Verification (LLCV) Report

Date Acquired	11/10/2016 13:00	Sample Name	LCVL2-161110
Data Batch	161110.b	Comment	LCVLICPMS_TW
Data File Name	065LCCV.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	Exp	%Rec	Low	High	Flag
7	Li	45	10.514	696	2.85	1	1051.4	70	130	Fail
9	Be	45	0.964	77	7.12	1	96.4	70	130	
11	B	45	26.176	943	5.94	20	130.9	70	130	Fail
23	Na	45	100.450	201409	0.60	100	100.4	70	130	
24	Mg	45	104.432	58343	0.77	100	104.4	70	130	
27	Al	45	104.149	23844	0.77	100	104.1	70	130	
39	K	45	110.661	135342	1.40	100	110.7	70	130	
44	Ca	45	99.155	4205	1.37	100	99.2	70	130	
47	Ti	45	5.606	1097	5.30	5	112.1	70	130	
51	V	45	0.993	7910	2.69	1	99.3	70	130	
52	Cr	45	5.364	38482	0.73	5	107.3	70	130	
55	Mn	45	5.441	23280	1.26	5	108.8	70	130	
56	Fe	45	104.679	625717	0.06	100	104.7	70	130	
59	Co	72	5.354	56833	1.00	5	107.1	70	130	
60	Ni	72	5.413	15916	1.37	5	108.3	70	130	
63	Cu	72	5.420	44025	0.61	5	108.4	70	130	
66	Zn	72	5.473	7182	1.21	5	109.5	70	130	
75	As	72	5.334	5538	1.40	5	106.7	70	130	
78	Se	72	5.800	534	3.05	5	116.0	70	130	
88	Sr	115	5.407	29609	2.26	5	108.1	70	130	
95	Mo	115	5.081	21752	0.39	5	101.6	70	130	
107	Ag	115	2.027	26406	0.34	2	101.4	70	130	
111	Cd	115	1.056	1980	0.73	1	105.6	70	130	
118	Sn	115	5.400	23032	0.43	5	108.0	70	130	
121	Sb	115	2.031	12975	1.88	2	101.5	70	130	
137	Ba	115	-1.528	10791	0.78	5	-30.6	70	130	Fail
205	Tl	209	1.024	26900	0.65	1	102.4	70	130	
208	Pb	209	1.064	21337	2.07	1	106.4	70	130	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1435239	1.20	1428455	100.47	70	120	
72	Ge	932665	0.76	935581	99.69	70	120	
115	In	8517129	0.47	8566548	99.42	70	120	
209	Bi	16979285	0.50	17397529	97.60	70	120	

Continuing Calibration Blank (CCB) Report

Date Acquired	11/10/2016 13:02	Sample Name	CCB2-161110
Data Batch	161110.b	Comment	CCB ICPMS_TW
Data File Name	066_CCB.d	Dilution	1

Mass	Name	IS	Conc	CPS	%RSD	MDL S	MDL Aq	QC Flag
7	Li	45	0.183	22	13.6	2	5	
9	Be	45	-0.009	2	89.2	0.4	0.3	
11	B	45	3.848	296	3.6	10	10	
23	Na	45	-4.194	88175	1.1	50	100	
24	Mg	45	-0.774	597	4.8	50	100	
27	Al	45	0.706	848	6.6	50	10	
39	K	45	4.954	76007	0.4	50	100	
44	Ca	45	1.381	926	3.5	50	100	
47	Ti	45	-0.012	3	0.0	4	3	
51	V	45	-0.009	2035	3.6	4	3	
52	Cr	45	-0.017	1370	5.5	2	2	
55	Mn	45	-0.116	419	9.1	2	3	
56	Fe	45	1.555	17309	2.3	50	50	
59	Co	72	0.001	114	17.8	2	3	
60	Ni	72	-0.079	448	10.5	2	3	
63	Cu	72	-0.033	2053	4.2	2	2	
66	Zn	72	0.026	331	13.6	4	2	
75	As	72	-0.009	162	6.0	2	2	
78	Se	72	0.273	165	6.0	1	2	
88	Sr	115	0.050	543	7.7	4	3	
95	Mo	115	0.056	357	5.7	2	2	
107	Ag	115	0.015	243	9.6	0.4	1	
111	Cd	115	-0.002	7	100.0	0.4	0.3	
118	Sn	115	0.071	878	5.4	4	3	
121	Sb	115	-0.007	414	25.6	2	0.8	
137	Ba	115	-6.796	80	22.0	2	3	
205	Tl	209	0.006	226	16.5	2	0.5	
208	Pb	209	0.008	1756	6.1	0.4	0.3	

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1438351	0.48	1428455	100.69	70	120	
72	Ge	930393	0.27	935581	99.45	70	120	
115	In	8484469	0.34	8566548	99.04	70	120	
209	Bi	17164319	0.60	17397529	98.66	70	120	

ICP-MS4_161116B
For

DHL Work Order
1611022

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

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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

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#	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	

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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: **11/14/2016 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

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

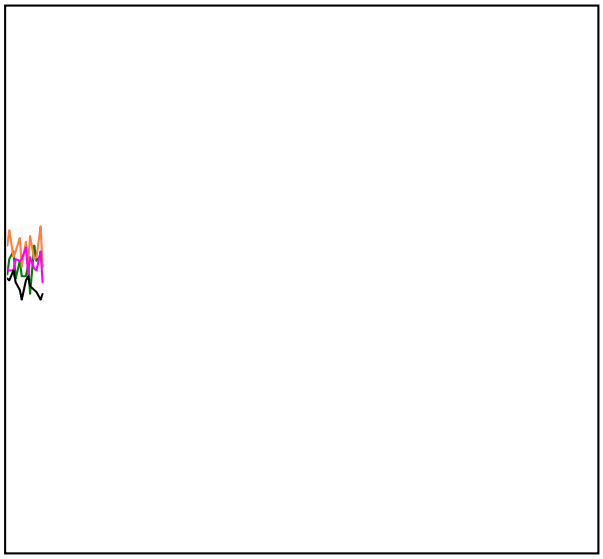
Level 7 Cal

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		

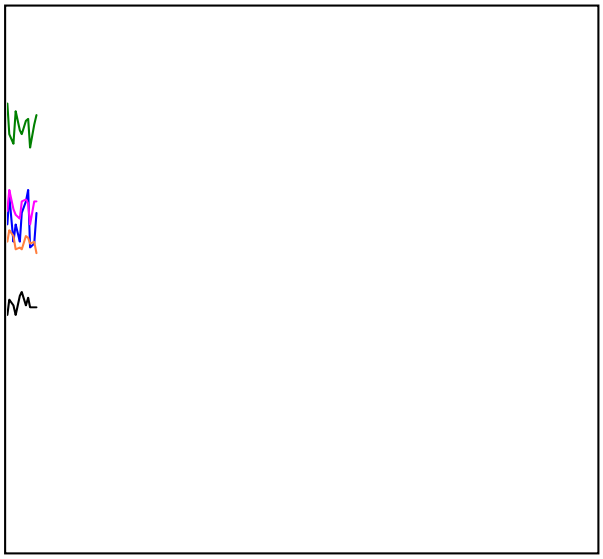
Cell Parameters

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

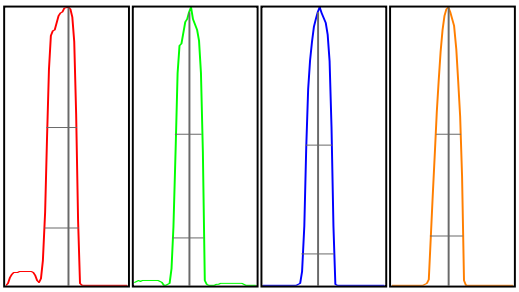
Batch Folder C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
Report Comment
Instrument Name ICPMS4 JP12361998

[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	

Sample Report

Date Acquired	11/16/16 2:31 PM	Sample Name	1611022-22A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	104SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	63.268	2542	3.20	2000	>RL
9	Be	45	2.673	132	15.54	2000	>RL
11	B	45	102.837	2351	3.28	2000	>RL
23	Na	45	5444.331	4714052	0.57	25000	>RL
24	Mg	45	14668.545	6700608	2.46	25000	>RL
27	Al	45	76429.090	14094523	0.51	10000	OUTCAL
39	K	45	15514.797	7067657	1.31	25000	>RL
44	Ca	45	54117.178	1438348	1.21	25000	OUTCAL
47	Ti	45	302.278	45503	1.35	2000	>RL
51	V	45	112.147	497402	0.99	2000	>RL
52	Cr	45	64.357	329839	0.70	2000	>RL
55	Mn	45	587.540	1927830	0.17	2000	>RL
56	Fe	45	69897.924	309967819	0.83	10000	OUTCAL
59	Co	72	22.489	168327	0.54	2000	>RL
60	Ni	72	41.352	81718	1.82	2000	>RL
63	Cu	72	26.542	144403	1.17	2000	>RL
66	Zn	72	213.849	206895	1.14	2000	>RL
75	As	72	23.992	18095	0.37	2000	>RL
78	Se	72	4.821	353	9.38	2000	>RL
88	Sr	115	363.695	1616553	0.84	2000	>RL
95	Mo	115	2.103	6706	2.19	2000	>RL
107	Ag	115	0.173	1711	3.49	500	
111	Cd	115	0.526	781	5.49	2000	>RL
118	Sn	115	5.905	20653	1.13	2000	>RL
121	Sb	115	3.879	19432	1.09	500	>RL
137	Ba	115	384.609	634117	0.88	2000	>RL
205	Tl	209	0.585	12994	1.44	2000	
208	Pb	209	135.444	2095379	0.68	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1079656	0.47	1262119	85.54	70	120	
72	Ge	673107	0.42	801025	84.03	70	120	
115	In	6581505	1.61	7659162	85.93	70	120	
209	Bi	13606184	1.34	15802225	86.10	70	120	

Sample Report

Date Acquired	11/16/16 2:33 PM	Sample Name	1611022-23A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	105SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	76.975	3062	1.50	2000	>RL
9	Be	45	2.782	136	12.15	2000	>RL
11	B	45	144.786	3243	1.58	2000	>RL
23	Na	45	10107.742	8622819	0.61	25000	>RL
24	Mg	45	15406.989	6978918	0.42	25000	>RL
27	Al	45	67561.297	12354084	0.61	10000	OUTCAL
39	K	45	13119.414	5935604	0.97	25000	>RL
44	Ca	45	134875.475	3553737	0.33	25000	OUTCAL
47	Ti	45	249.607	37250	2.65	2000	>RL
51	V	45	123.062	540822	0.14	2000	>RL
52	Cr	45	61.988	315038	0.85	2000	>RL
55	Mn	45	357.923	1164512	0.69	2000	>RL
56	Fe	45	87404.318	384324367	2.12	10000	OUTCAL
59	Co	72	16.900	126038	0.62	2000	>RL
60	Ni	72	32.378	63809	1.35	2000	>RL
63	Cu	72	18.310	99772	1.59	2000	>RL
66	Zn	72	169.736	163759	0.63	2000	>RL
75	As	72	25.790	19360	0.71	2000	>RL
78	Se	72	4.101	313	1.54	2000	>RL
88	Sr	115	660.774	2906392	0.88	2000	>RL
95	Mo	115	2.945	9264	2.53	2000	>RL
107	Ag	115	0.069	711	6.24	500	
111	Cd	115	0.333	492	6.85	2000	
118	Sn	115	5.648	19583	3.35	2000	>RL
121	Sb	115	0.886	4696	4.05	500	
137	Ba	115	2531.494	4130770	0.21	2000	OUTCAL
205	Tl	209	0.461	10297	3.01	2000	
208	Pb	209	40.530	629808	0.52	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1070552	0.94	1262119	84.82	70	120	
72	Ge	670569	0.52	801025	83.71	70	120	
115	In	6512585	0.20	7659162	85.03	70	120	
209	Bi	13651111	0.55	15802225	86.39	70	120	

Sample Report

Date Acquired	11/16/16 2:35 PM	Sample Name	1611022-24A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	106SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	65.396	2574	1.66	2000	>RL
9	Be	45	1.674	81	15.42	2000	>RL
11	B	45	134.863	2993	8.53	2000	>RL
23	Na	45	7241.295	6124171	0.34	25000	>RL
24	Mg	45	9992.452	4474378	0.76	25000	>RL
27	Al	45	45577.417	8238061	1.88	10000	OUTCAL
39	K	45	9240.065	4150537	0.97	25000	>RL
44	Ca	45	269605.787	7021457	1.36	25000	OUTCAL
47	Ti	45	144.918	21385	1.90	2000	>RL
51	V	45	66.284	289671	0.30	2000	>RL
52	Cr	45	41.161	207265	0.87	2000	>RL
55	Mn	45	128.068	412030	0.37	2000	>RL
56	Fe	45	56092.870	243804879	1.43	10000	OUTCAL
59	Co	72	6.774	50158	0.51	2000	>RL
60	Ni	72	14.045	27626	2.38	2000	>RL
63	Cu	72	7.508	41581	1.20	2000	>RL
66	Zn	72	74.485	71717	0.85	2000	>RL
75	As	72	14.198	10677	0.59	2000	>RL
78	Se	72	3.260	267	9.28	2000	>RL
88	Sr	115	2551.580	11061797	0.83	2000	OUTCAL
95	Mo	115	1.939	6037	1.26	2000	
107	Ag	115	0.059	610	1.45	500	
111	Cd	115	0.113	170	31.13	2000	
118	Sn	115	5.213	17874	2.55	2000	>RL
121	Sb	115	0.370	2161	4.13	500	
137	Ba	115	210.201	338158	1.15	2000	>RL
205	Tl	209	0.236	5222	2.68	2000	
208	Pb	209	34.927	532916	0.37	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1058171	0.46	1262119	83.84	70	120	
72	Ge	665081	0.41	801025	83.03	70	120	
115	In	6420050	0.45	7659162	83.82	70	120	
209	Bi	13400618	0.80	15802225	84.80	70	120	

Sample Report

Date Acquired	11/16/16 2:37 PM	Sample Name	1611022-25A
Data Batch	161116.b	Comment	SAMPICPMS_TSDOD1
Data File Name	107SMPL.d	Dilution	5

Mass	Name	IS	Conc (ppb)	CPS	%RSD	High Limit	Flag
7	Li	45	58.904	2419	3.08	2000	>RL
9	Be	45	1.695	86	25.85	2000	>RL
11	B	45	144.169	3327	3.48	2000	>RL
23	Na	45	8123.770	7151629	1.53	25000	>RL
24	Mg	45	10442.265	4873102	1.66	25000	>RL
27	Al	45	49240.947	9275399	1.65	10000	OUTCAL
39	K	45	11237.191	5246526	1.55	25000	>RL
44	Ca	45	228388.514	6198613	1.07	25000	OUTCAL
47	Ti	45	126.554	19462	0.88	2000	>RL
51	V	45	73.059	332335	0.20	2000	>RL
52	Cr	45	43.485	228128	1.26	2000	>RL
55	Mn	45	146.238	490308	0.83	2000	>RL
56	Fe	45	65719.444	297685179	1.25	10000	OUTCAL
59	Co	72	11.269	86007	0.89	2000	>RL
60	Ni	72	17.388	35200	2.32	2000	>RL
63	Cu	72	13.358	74941	0.71	2000	>RL
66	Zn	72	118.598	117304	0.70	2000	>RL
75	As	72	19.364	14931	1.82	2000	>RL
78	Se	72	3.299	277	8.15	2000	>RL
88	Sr	115	1589.228	7206788	2.29	2000	>RL
95	Mo	115	2.001	6517	5.57	2000	>RL
107	Ag	115	0.056	613	12.29	500	
111	Cd	115	0.124	194	13.09	2000	
118	Sn	115	5.346	19152	1.28	2000	>RL
121	Sb	115	0.872	4770	4.88	500	
137	Ba	115	200.244	336903	0.69	2000	>RL
205	Tl	209	0.265	6028	1.05	2000	
208	Pb	209	57.167	899044	0.96	2000	>RL

QC ISTD Table

Mass	Name	CPS	%RSD	Ref CPS	%Rec	Low	High	QC Flag
45	Sc	1102800	0.83	1262119	87.38	70	120	
72	Ge	686021	0.50	801025	85.64	70	120	
115	In	6714576	1.36	7659162	87.67	70	120	
209	Bi	13820811	0.59	15802225	87.46	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	

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	

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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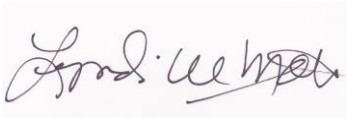

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73138

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill SUITE 350 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: 11/02/2016 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1611028
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: 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 ☐ 8082 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐	8321 HERB ☐ T PHOS, AMMONIA ☐ DISS. METALS ☐	METALS 6020 ☐ METALS 200.8 ☐ Level II	RCRA ☐ TX11 ☐ Level II	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS Level II	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	FIELD NOTES
SGR-DU100(0-2)-A	01	11-02-16	1020	S	Bag	1				1					X					X								
SGR-DU100(2-4)-A	02	11-02-16	1021	S	Bag	1				1					X					X								
SGR-DU100(4-6)-A	03	11-02-16	1022	S	Bag	1				1					X					X								
SGR-DU100(6-8)-A	04	11-02-16	1023	S	Bag	1				1					X					X								SGR-DU100(6-8)-A
SGR-DU100(0-2)-B	05	11-02-16	1100	S	Bag	1				1					X					X								
SGR-DU100(2-4)-B	06	11-02-16	1101	S	Bag	1				1					X					X								
SGR-DU100(4-6)-B	07	11-02-16	1102	S	Bag	1				1					X					X								
SGR-DU100(6-8)-B	08	11-02-16	1103	S	Bag	1				1					X					X								
SGR-DU100(0-2)-C	09	11-02-16	1105	S	Bag	1				1					X					X								
SGR-DU100(2-4)-C	10	11-02-16	1106	S	Bag	1				1					X					X								
SGR-DU100(4-6)-C	11	11-02-16	1107	S	Bag	1				1					X					X								
SGR-DU100(6-8)-C	12	11-02-16	1108	S	Bag	1				1					X					X								
SGR-EB100(20161102)	13	11-02-16	1129	W	Bottle	2		1		1					X					X								

RELINQUISHED BY: (Signature) DATE/TIME 11/2/2016 1745 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME 11/3/16 940 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: 0.7, 0.6, 1.5, 1.0 THERM #: 72
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

№ 73153

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill STE 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walker@arcadis.com
DATA REPORTED TO: Alex Walker
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: 11/02/2016 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1611028
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 04285081.0005 COLLECTOR:

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 ☐ TX1 ☐ 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	ANALYSES	FIELD NOTES
SGR-DU133(0-2)-A	14	11-2-16	1620	S	Bag	1				1		X X	
SGR-DU133(2-4)-A	15	11-2-16	1621	S	Bag	1				1		X X	
SGR-DU133(4-6)-A	16	11-2-16	1622	S	Bag	1				1		X X	
SGR-DU133(6-8)-A	17	11-2-16	1623	S	Bag	1				1		X X	
SGR-DU133(0-2)-B	18	11-2-16	1607	S	Bag	1				1		X X	
SGR-DU133(2-4)-B	19	11-2-16	1608	S	Bag	1				1		X X	
SGR-DU133(4-6)-B	20	11-2-16	1609	S	Bag	1				1		X X	
SGR-DU133(6-8)-B 21 (11-3-16)	21	11-2-16	1610	S	Bag	1				1		X X	
SGR-DU133(0-2)-C	22	11-2-16	1557	S	Bag	1				1		X X	
SGR-DU133(2-4)-C	23	11-2-16	1558	S	Bag	1				1		X X	
SGR-DU133(4-6)-C	24	11-2-16	1559	S	Bag	1				1		X X	
SGR-DU133(6-8)-C	25	11-2-16	1600	S	Bag	1				1		X X	
SGR-EB133(20161102)	26	11-2-16	1651	W	Bottles	2		1		1		X X	SGR-EB133(20161102)

RELINQUISHED BY: (Signature) DATE/TIME 11-2-16/1745 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/3/16 920 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: 0.7, 0.6, 1.5 C 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: 11/3/2016

Work Order Number 1611028 | Received by JB

Checklist completed by: _____ 11/3/2016 (Signature / Date) | Reviewed by _____ 11/3/2016 (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 ☐	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 JPB
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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-01
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:20 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.3	0.0893	0.268	0.134		mg/Kg-dry	5	11/16/16 02:38 PM
IS: Bismuth	85.7	0	30-120	0		%REC	5	11/16/16 02:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Acenaphthylene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Anthracene	0.0666	0.0482	0.0963	0.0723	J	mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[a]anthracene	0.237	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[a]pyrene	0.254	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[b]fluoranthene	0.228	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[e]pyrene	0.191	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[g,h,i]perylene	0.185	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[j]fluoranthene	0.109	0.0482	0.0963	0.0723	N	mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[k]fluoranthene	0.110	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Chrysene	0.277	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Dibenz[a,h]anthracene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Fluoranthene	0.508	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Fluorene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Indeno[1,2,3-cd]pyrene	0.161	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Phenanthrene	0.295	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Pyrene	0.411	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
IS: Acenaphthene-d10	76.1	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Chrysene-d12	76.4	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Naphthalene-d8	60.8	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Perylene-d12	76.3	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Phenanthrene-d10	77.0	0	50-200	0		%REC	10	11/10/16 01:42 PM
Surr: 2-Fluorobiphenyl	98.5	0	46-115	0		%REC	10	11/10/16 01:42 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(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-01
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:20 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 01:42 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-02
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:21 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.28	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 02:40 PM
IS: Bismuth	79.5	0	30-120	0		%REC	5	11/16/16 02:40 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Acenaphthylene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Anthracene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[a]anthracene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[a]pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[b]fluoranthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[e]pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[g,h,i]perylene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[j]fluoranthene	0.0689	0.0460	0.0919	0.0689	NU	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[k]fluoranthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Chrysene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Dibenz[a,h]anthracene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Fluoranthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Fluorene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Indeno[1,2,3-cd]pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Phenanthrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
IS: Acenaphthene-d10	81.7	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Chrysene-d12	83.1	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Naphthalene-d8	76.0	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Perylene-d12	84.8	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Phenanthrene-d10	83.2	0	50-200	0		%REC	10	11/10/16 02:10 PM
Surr: 2-Fluorobiphenyl	93.6	0	46-115	0		%REC	10	11/10/16 02:10 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(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-02
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:21 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	101	0	58-133	0		%REC	10	11/10/16 02:10 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-03
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:22 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.31	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 02:42 PM
IS: Bismuth	78.6	0	30-120	0		%REC	5	11/16/16 02:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Acenaphthylene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Anthracene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[a]anthracene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[a]pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[b]fluoranthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[e]pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[g,h,i]perylene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[j]fluoranthene	0.0735	0.0490	0.0979	0.0735	NU	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[k]fluoranthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Chrysene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Dibenz[a,h]anthracene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Fluoranthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Fluorene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Indeno[1,2,3-cd]pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Phenanthrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
IS: Acenaphthene-d10	81.9	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Chrysene-d12	81.3	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Naphthalene-d8	74.5	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Perylene-d12	83.7	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Phenanthrene-d10	82.2	0	50-200	0		%REC	10	11/10/16 02:39 PM
Surr: 2-Fluorobiphenyl	93.3	0	46-115	0		%REC	10	11/10/16 02:39 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(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-03
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:22 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.1	0	58-133	0		%REC	10	11/10/16 02:39 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-04
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:23 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.26	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:44 PM
IS: Bismuth	85.1	0	30-120	0		%REC	5	11/16/16 02:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[a]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[a]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[b]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	NU	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Chrysene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Indeno[1,2,3-cd]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Phenanthrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
IS: Acenaphthene-d10	80.4	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Chrysene-d12	82.9	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Naphthalene-d8	69.3	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Perylene-d12	82.3	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Phenanthrene-d10	81.7	0	50-200	0		%REC	10	11/10/16 04:34 PM
Surr: 2-Fluorobiphenyl	93.5	0	46-115	0		%REC	10	11/10/16 04:34 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(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-04
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:23 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	101	0	58-133	0		%REC	10	11/10/16 04:34 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-05
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:00 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	12.9	0.0885	0.265	0.133		mg/Kg-dry	5	11/16/16 02:46 PM
IS: Bismuth	88.8	0	30-120	0		%REC	5	11/16/16 02:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Acenaphthylene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[a]anthracene	0.0605	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[a]pyrene	0.0710	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[b]fluoranthene	0.0785	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[e]pyrene	0.0572	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[g,h,i]perylene	0.0603	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[j]fluoranthene	0.0723	0.0482	0.0964	0.0723	NU	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[k]fluoranthene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Chrysene	0.0666	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Dibenz[a,h]anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Fluoranthene	0.0983	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/10/16 05:03 PM
Fluorene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Indeno[1,2,3-cd]pyrene	0.0585	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Phenanthrene	0.0541	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Pyrene	0.0862	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
IS: Acenaphthene-d10	80.4	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Chrysene-d12	80.6	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Naphthalene-d8	63.8	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Perylene-d12	80.9	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Phenanthrene-d10	80.8	0	50-200	0		%REC	10	11/10/16 05:03 PM
Surr: 2-Fluorobiphenyl	93.9	0	46-115	0		%REC	10	11/10/16 05:03 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(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-05
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:00 AM
Lab Order:	1611028	**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	11/10/16 05:03 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(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-06
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:01 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.22	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:14 PM
IS: Bismuth	82.6	0	30-120	0		%REC	5	11/16/16 03:14 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Acenaphthylene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Anthracene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[a]anthracene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[a]pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[b]fluoranthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[e]pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[g,h,i]perylene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[j]fluoranthene	0.0727	0.0484	0.0969	0.0727	NU	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[k]fluoranthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Chrysene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Dibenz[a,h]anthracene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Fluoranthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Fluorene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Indeno[1,2,3-cd]pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Phenanthrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
IS: Acenaphthene-d10	80.3	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Chrysene-d12	81.8	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Naphthalene-d8	72.5	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Perylene-d12	83.0	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Phenanthrene-d10	80.9	0	50-200	0		%REC	10	11/10/16 05:31 PM
Surr: 2-Fluorobiphenyl	92.0	0	46-115	0		%REC	10	11/10/16 05:31 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(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-06
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:01 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 05:31 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(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-07
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:02 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.68	0.0935	0.280	0.140		mg/Kg-dry	5	11/16/16 03:16 PM
IS: Bismuth	85.1	0	30-120	0		%REC	5	11/16/16 03:16 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Acenaphthylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[a]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[a]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[b]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[e]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[g,h,i]perylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[j]fluoranthene	0.0718	0.0478	0.0957	0.0718	NU	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[k]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Chrysene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Dibenz[a,h]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Fluorene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Indeno[1,2,3-cd]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Phenanthrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
IS: Acenaphthene-d10	81.5	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Chrysene-d12	81.1	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Naphthalene-d8	70.9	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Perylene-d12	82.0	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Phenanthrene-d10	82.6	0	50-200	0		%REC	10	11/10/16 06:00 PM
Surr: 2-Fluorobiphenyl	95.9	0	46-115	0		%REC	10	11/10/16 06:00 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-07
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:02 AM
Lab Order:	1611028	**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	11/10/16 06:00 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-08
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:03 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.2	0.0877	0.263	0.132		mg/Kg-dry	5	11/16/16 03:18 PM
IS: Bismuth	83.0	0	30-120	0		%REC	5	11/16/16 03:18 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Acenaphthylene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Anthracene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[a]anthracene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[a]pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[b]fluoranthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[e]pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[g,h,i]perylene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[j]fluoranthene	0.0736	0.0491	0.0981	0.0736	NU	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[k]fluoranthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Chrysene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Dibenz[a,h]anthracene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Fluoranthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Fluorene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Indeno[1,2,3-cd]pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Phenanthrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
IS: Acenaphthene-d10	82.3	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Chrysene-d12	82.6	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Naphthalene-d8	75.6	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Perylene-d12	83.2	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Phenanthrene-d10	82.8	0	50-200	0		%REC	10	11/10/16 06:29 PM
Surr: 2-Fluorobiphenyl	90.9	0	46-115	0		%REC	10	11/10/16 06:29 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-DU100(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-08
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:03 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	97.0	0	58-133	0		%REC	10	11/10/16 06:29 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-DU100(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-09
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:05 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	14.6	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:20 PM
IS: Bismuth	85.7	0	30-120	0		%REC	5	11/16/16 03:20 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Acenaphthylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[a]anthracene	0.0824	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[a]pyrene	0.101	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[b]fluoranthene	0.106	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[e]pyrene	0.0756	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[g,h,i]perylene	0.0741	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[j]fluoranthene	0.0718	0.0478	0.0957	0.0718	NU	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[k]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Chrysene	0.0953	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Dibenz[a,h]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Fluoranthene	0.131	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
Fluorene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Indeno[1,2,3-cd]pyrene	0.0732	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Phenanthrene	0.0548	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Pyrene	0.116	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
IS: Acenaphthene-d10	80.9	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Chrysene-d12	81.5	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Naphthalene-d8	79.0	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Perylene-d12	82.3	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Phenanthrene-d10	81.2	0	50-200	0		%REC	10	11/10/16 06:57 PM
Surr: 2-Fluorobiphenyl	97.2	0	46-115	0		%REC	10	11/10/16 06:57 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-DU100(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-09
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:05 AM
Lab Order:	1611028	**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	11/10/16 06:57 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-10
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:06 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.04	0.0877	0.263	0.132		mg/Kg-dry	5	11/16/16 02:27 PM
IS: Bismuth	88.4	0	30-120	0		%REC	5	11/16/16 02:27 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Acenaphthylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[a]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[a]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[b]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[e]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[g,h,i]perylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[j]fluoranthene	0.0746	0.0498	0.0995	0.0746	NU	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[k]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Chrysene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Dibenz[a,h]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Fluorene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Phenanthrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
IS: Acenaphthene-d10	80.3	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Chrysene-d12	82.0	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Naphthalene-d8	81.4	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Perylene-d12	82.7	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Phenanthrene-d10	81.1	0	50-200	0		%REC	10	11/10/16 07:27 PM
Surr: 2-Fluorobiphenyl	93.1	0	46-115	0		%REC	10	11/10/16 07:27 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(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-10
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:06 AM
Lab Order:	1611028	**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	11/10/16 07:27 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-11
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:07 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.19	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 03:22 PM
IS: Bismuth	86.1	0	30-120	0		%REC	5	11/16/16 03:22 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Acenaphthylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[a]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[a]pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[b]fluoranthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[e]pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[g,h,i]perylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[j]fluoranthene	0.0712	0.0475	0.0950	0.0712	NU	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[k]fluoranthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Chrysene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Dibenz[a,h]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Fluoranthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Fluorene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Indeno[1,2,3-cd]pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Phenanthrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
IS: Acenaphthene-d10	78.8	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Chrysene-d12	79.6	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Naphthalene-d8	78.3	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Perylene-d12	80.8	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Phenanthrene-d10	78.8	0	50-200	0		%REC	10	11/10/16 07:55 PM
Surr: 2-Fluorobiphenyl	94.9	0	46-115	0		%REC	10	11/10/16 07:55 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-11
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:07 AM
Lab Order:	1611028	**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	11/10/16 07:55 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(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-12
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:08 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.81	0.0962	0.288	0.144		mg/Kg-dry	5	11/16/16 03:24 PM
IS: Bismuth	87.5	0	30-120	0		%REC	5	11/16/16 03:24 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Acenaphthylene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Anthracene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[a]anthracene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[a]pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[b]fluoranthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[e]pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[g,h,i]perylene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[j]fluoranthene	0.0732	0.0488	0.0977	0.0732	NU	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[k]fluoranthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Chrysene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Dibenz[a,h]anthracene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Fluoranthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Fluorene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Indeno[1,2,3-cd]pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Phenanthrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
IS: Acenaphthene-d10	82.3	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Chrysene-d12	83.1	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Naphthalene-d8	78.5	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Perylene-d12	83.7	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Phenanthrene-d10	82.3	0	50-200	0		%REC	10	11/10/16 08:24 PM
Surr: 2-Fluorobiphenyl	90.9	0	46-115	0		%REC	10	11/10/16 08:24 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(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-12
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:08 AM
Lab Order:	1611028	**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	11/10/16 08:24 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-EB100(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-13
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:29 AM
Lab Order:	1611028	**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 02:42 PM
IS: Bismuth	81.2	0	30-120	0		%REC	1	11/16/16 02:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Acenaphthylene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Anthracene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[a]anthracene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[a]pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[b]fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[e]pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[g,h,i]perylene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[j]fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	NU	mg/L	1	11/08/16 12:01 PM
Benzo[k]fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Chrysene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Dibenz[a,h]anthracene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Fluorene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Indeno[1,2,3-cd]pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Phenanthrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
IS: Acenaphthene-d10	102	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Chrysene-d12	99.9	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Naphthalene-d8	102	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Perylene-d12	107	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Phenanthrene-d10	98.9	0	50-200	0		%REC	1	11/08/16 12:01 PM
Surr: 2-Fluorobiphenyl	79.3	0	53-106	0		%REC	1	11/08/16 12:01 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB100(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-13
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:29 AM
Lab Order:	1611028	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	87.3	0	58-132	0		%REC	1	11/08/16 12:01 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-14
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:20 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	20.9	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:26 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/16/16 03:26 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Acenaphthylene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Anthracene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[a]anthracene	0.127	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[a]pyrene	0.147	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[b]fluoranthene	0.133	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[e]pyrene	0.107	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[g,h,i]perylene	0.107	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[j]fluoranthene	0.0671	0.0480	0.0960	0.0720	JN	mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[k]fluoranthene	0.0808	0.0480	0.0960	0.0720	J	mg/Kg-dry	10	11/10/16 08:52 PM
Chrysene	0.145	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Dibenz[a,h]anthracene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Fluoranthene	0.231	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Fluorene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Indeno[1,2,3-cd]pyrene	0.106	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Phenanthrene	0.123	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Pyrene	0.204	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
IS: Acenaphthene-d10	76.4	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Chrysene-d12	78.1	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Naphthalene-d8	75.2	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Perylene-d12	77.6	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Phenanthrene-d10	77.4	0	50-200	0		%REC	10	11/10/16 08:52 PM
Surr: 2-Fluorobiphenyl	98.5	0	46-115	0		%REC	10	11/10/16 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-14
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:20 PM
Lab Order:	1611028	**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	11/10/16 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-15
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:21 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.19	0.0901	0.270	0.135		mg/Kg-dry	5	11/16/16 03:28 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/16/16 03:28 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Acenaphthylene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[a]anthracene	0.154	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[a]pyrene	0.150	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[b]fluoranthene	0.125	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[e]pyrene	0.103	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[g,h,i]perylene	0.0953	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[j]fluoranthene	0.0675	0.0485	0.0971	0.0728	JN	mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[k]fluoranthene	0.0770	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/10/16 09:21 PM
Chrysene	0.150	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Dibenz[a,h]anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Fluoranthene	0.291	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Fluorene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Indeno[1,2,3-cd]pyrene	0.0955	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/10/16 09:21 PM
Phenanthrene	0.189	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Pyrene	0.250	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
IS: Acenaphthene-d10	78.8	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Chrysene-d12	79.7	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Naphthalene-d8	71.2	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Perylene-d12	80.1	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Phenanthrene-d10	79.1	0	50-200	0		%REC	10	11/10/16 09:21 PM
Surr: 2-Fluorobiphenyl	91.8	0	46-115	0		%REC	10	11/10/16 09:21 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-15
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:21 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.8	0	58-133	0		%REC	10	11/10/16 09:21 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-16
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:22 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.51	0.0962	0.288	0.144		mg/Kg-dry	5	11/16/16 03:30 PM
IS: Bismuth	85.6	0	30-120	0		%REC	5	11/16/16 03:30 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Acenaphthylene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Anthracene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[a]anthracene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[a]pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[b]fluoranthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[e]pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[g,h,i]perylene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[j]fluoranthene	0.0714	0.0476	0.0952	0.0714	NU	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[k]fluoranthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Chrysene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Dibenz[a,h]anthracene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Fluoranthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Fluorene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Indeno[1,2,3-cd]pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Phenanthrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
IS: Acenaphthene-d10	82.8	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Chrysene-d12	85.0	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Naphthalene-d8	87.5	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Perylene-d12	84.6	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Phenanthrene-d10	83.4	0	50-200	0		%REC	10	11/10/16 09:50 PM
Surr: 2-Fluorobiphenyl	93.3	0	46-115	0		%REC	10	11/10/16 09:50 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(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-16
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:22 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	101	0	58-133	0		%REC	10	11/10/16 09:50 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-17
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:23 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.88	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:32 PM
IS: Bismuth	87.0	0	30-120	0		%REC	5	11/16/16 03:32 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Acenaphthylene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Anthracene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[a]anthracene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[a]pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[b]fluoranthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[e]pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[g,h,i]perylene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[j]fluoranthene	0.0732	0.0488	0.0976	0.0732	NU	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[k]fluoranthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Chrysene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Dibenz[a,h]anthracene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Fluoranthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Fluorene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Indeno[1,2,3-cd]pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Phenanthrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
IS: Acenaphthene-d10	79.9	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Chrysene-d12	81.5	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Naphthalene-d8	79.6	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Perylene-d12	81.7	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Phenanthrene-d10	80.4	0	50-200	0		%REC	10	11/10/16 10:19 PM
Surr: 2-Fluorobiphenyl	95.7	0	46-115	0		%REC	10	11/10/16 10:19 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(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-17
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:23 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 10:19 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-18
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:07 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	17.1	0.0990	0.297	0.149		mg/Kg-dry	5	11/16/16 03:55 PM
IS: Bismuth	89.4	0	30-120	0		%REC	5	11/16/16 03:55 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Acenaphthylene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[a]anthracene	0.0547	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[a]pyrene	0.0653	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[b]fluoranthene	0.0628	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[e]pyrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[g,h,i]perylene	0.0502	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[j]fluoranthene	0.0734	0.0489	0.0978	0.0734	NU	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[k]fluoranthene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Chrysene	0.0611	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Dibenz[a,h]anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Fluoranthene	0.0880	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Fluorene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Indeno[1,2,3-cd]pyrene	0.0513	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Phenanthrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Pyrene	0.0792	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
IS: Acenaphthene-d10	94.2	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Chrysene-d12	98.0	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Naphthalene-d8	92.6	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Perylene-d12	97.6	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Phenanthrene-d10	94.9	0	50-200	0		%REC	10	11/11/16 11:01 AM
Surr: 2-Fluorobiphenyl	89.2	0	46-115	0		%REC	10	11/11/16 11:01 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-DU133(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-18
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:07 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	95.1	0	58-133	0		%REC	10	11/11/16 11:01 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-DU133(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-19
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:08 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.4	0.0935	0.280	0.140		mg/Kg-dry	5	11/16/16 03:57 PM
IS: Bismuth	86.2	0	30-120	0		%REC	5	11/16/16 03:57 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Acenaphthylene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Anthracene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[a]anthracene	0.0539	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[a]pyrene	0.0637	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[b]fluoranthene	0.0574	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[e]pyrene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[g,h,i]perylene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[j]fluoranthene	0.0741	0.0494	0.0988	0.0741	NU	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[k]fluoranthene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Chrysene	0.0606	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Dibenz[a,h]anthracene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Fluoranthene	0.0702	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Fluorene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Indeno[1,2,3-cd]pyrene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Phenanthrene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Pyrene	0.0656	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
IS: Acenaphthene-d10	93.8	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Chrysene-d12	94.4	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Naphthalene-d8	91.0	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Perylene-d12	93.4	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Phenanthrene-d10	92.6	0	50-200	0		%REC	10	11/11/16 11:29 AM
Surr: 2-Fluorobiphenyl	92.0	0	46-115	0		%REC	10	11/11/16 11:29 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-DU133(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-19
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:08 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	95.6	0	58-133	0		%REC	10	11/11/16 11:29 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-20
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:09 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.27	0.0917	0.275	0.138		mg/Kg-dry	5	11/16/16 03:59 PM
IS: Bismuth	86.0	0	30-120	0		%REC	5	11/16/16 03:59 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Acenaphthylene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Anthracene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[a]anthracene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[a]pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[b]fluoranthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[e]pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[g,h,i]perylene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[j]fluoranthene	0.0687	0.0458	0.0916	0.0687	NU	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[k]fluoranthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Chrysene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Dibenz[a,h]anthracene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Fluoranthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Fluorene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Indeno[1,2,3-cd]pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Phenanthrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
IS: Acenaphthene-d10	96.3	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Chrysene-d12	95.8	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Naphthalene-d8	96.1	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Perylene-d12	93.9	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Phenanthrene-d10	94.1	0	50-200	0		%REC	10	11/11/16 11:59 AM
Surr: 2-Fluorobiphenyl	91.6	0	46-115	0		%REC	10	11/11/16 11:59 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-DU133(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-20
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:09 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.7	0	58-133	0		%REC	10	11/11/16 11:59 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-21
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:10 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.24	0.0943	0.283	0.142		mg/Kg-dry	5	11/16/16 04:01 PM
IS: Bismuth	86.0	0	30-120	0		%REC	5	11/16/16 04:01 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[b]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
IS: Acenaphthene-d10	94.9	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Chrysene-d12	95.3	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Naphthalene-d8	100	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Perylene-d12	94.9	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Phenanthrene-d10	94.5	0	50-200	0		%REC	10	11/11/16 12:28 PM
Surr: 2-Fluorobiphenyl	92.9	0	46-115	0		%REC	10	11/11/16 12:28 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-21
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:10 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.2	0	58-133	0		%REC	10	11/11/16 12:28 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-22
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:57 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	16.0	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:03 PM
IS: Bismuth	88.6	0	30-120	0		%REC	5	11/16/16 04:03 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Acenaphthylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[a]anthracene	0.0487	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[a]pyrene	0.0589	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[b]fluoranthene	0.0627	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[e]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[g,h,i]perylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[j]fluoranthene	0.0721	0.0481	0.0962	0.0721	NU	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[k]fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Chrysene	0.0554	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Dibenz[a,h]anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Fluoranthene	0.0682	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Fluorene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Indeno[1,2,3-cd]pyrene	0.0503	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Phenanthrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Pyrene	0.0637	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
IS: Acenaphthene-d10	97.8	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Chrysene-d12	96.9	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Naphthalene-d8	101	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Perylene-d12	95.6	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Phenanthrene-d10	96.5	0	50-200	0		%REC	10	11/11/16 12:56 PM
Surr: 2-Fluorobiphenyl	89.4	0	46-115	0		%REC	10	11/11/16 12:56 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-22
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:57 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.7	0	58-133	0		%REC	10	11/11/16 12:56 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-23
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:58 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.20	0.0943	0.283	0.142		mg/Kg-dry	5	11/16/16 04:05 PM
IS: Bismuth	86.7	0	30-120	0		%REC	5	11/16/16 04:05 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	NU	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
IS: Acenaphthene-d10	97.2	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Chrysene-d12	96.7	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Naphthalene-d8	100	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Perylene-d12	96.1	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Phenanthrene-d10	95.6	0	50-200	0		%REC	10	11/11/16 01:25 PM
Surr: 2-Fluorobiphenyl	87.0	0	46-115	0		%REC	10	11/11/16 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-DU133(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-23
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:58 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.6	0	58-133	0		%REC	10	11/11/16 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-24
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:59 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.24	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:07 PM
IS: Bismuth	86.9	0	30-120	0		%REC	5	11/16/16 04:07 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Acenaphthylene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Anthracene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[a]anthracene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[a]pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[b]fluoranthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[e]pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[g,h,i]perylene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[j]fluoranthene	0.0706	0.0471	0.0942	0.0706	NU	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[k]fluoranthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Chrysene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Dibenz[a,h]anthracene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Fluoranthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Fluorene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Indeno[1,2,3-cd]pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Phenanthrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
IS: Acenaphthene-d10	93.1	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Chrysene-d12	93.6	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Naphthalene-d8	103	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Perylene-d12	92.5	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Phenanthrene-d10	91.7	0	50-200	0		%REC	10	11/11/16 01:54 PM
Surr: 2-Fluorobiphenyl	90.6	0	46-115	0		%REC	10	11/11/16 01:54 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-24
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:59 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.0	0	58-133	0		%REC	10	11/11/16 01:54 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-25
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:00 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.47	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:09 PM
IS: Bismuth	86.7	0	30-120	0		%REC	5	11/16/16 04:09 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Acenaphthylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[a]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[a]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[b]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[e]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[g,h,i]perylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[j]fluoranthene	0.0718	0.0478	0.0957	0.0718	NU	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[k]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Chrysene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Dibenz[a,h]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Fluorene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Indeno[1,2,3-cd]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Phenanthrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
IS: Acenaphthene-d10	88.1	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Chrysene-d12	88.9	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Naphthalene-d8	96.6	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Perylene-d12	88.3	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Phenanthrene-d10	88.7	0	50-200	0		%REC	10	11/11/16 03:54 PM
Surr: 2-Fluorobiphenyl	98.0	0	46-115	0		%REC	10	11/11/16 03:54 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(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-25
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:00 PM
Lab Order:	1611028	**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 03:54 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB133(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-26
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:51 PM
Lab Order:	1611028	**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 02:17 PM
IS: Bismuth	80.7	0	30-120	0		%REC	1	11/16/16 02:17 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Acenaphthylene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Anthracene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[a]anthracene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[a]pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[b]fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[e]pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[g,h,i]perylene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[j]fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	NU	mg/L	1	11/08/16 12:29 PM
Benzo[k]fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Chrysene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Dibenz[a,h]anthracene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Fluorene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Indeno[1,2,3-cd]pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Phenanthrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
IS: Acenaphthene-d10	103	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Chrysene-d12	105	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Naphthalene-d8	104	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Perylene-d12	110	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Phenanthrene-d10	100	0	50-200	0		%REC	1	11/08/16 12:29 PM
Surr: 2-Fluorobiphenyl	75.7	0	53-106	0		%REC	1	11/08/16 12:29 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-EB133(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-26
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:51 PM
Lab Order:	1611028	**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 12:29 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		

November 21, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1611028

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 26 sample(s) on 11/3/2016 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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№ 73138

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill SUITE 350 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: 11/02/2016 PAGE 1 OF 2
PO #: DHL WORK ORDER #: 1611028
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: 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 ☐ 8082 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐	8321 HERB ☐ T PHOS, AMMONIA ☐ DISS. METALS ☐	METALS 6020 ☐ METALS 200.8 ☐ Level II	RCRA ☐ TX11 ☐ Level II	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS Level II	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	FIELD NOTES
SGR-DU100(0-2)-A	01	11-02-16	1020	S	Bag	1				1					X					X								
SGR-DU100(2-4)-A	02	11-02-16	1021	S	Bag	1				1					X					X								
SGR-DU100(4-6)-A	03	11-02-16	1022	S	Bag	1				1					X					X								
SGR-DU100(6-8)-A	04	11-02-16	1023	S	Bag	1				1					X					X								SGR-DU100(6-8)-A
SGR-DU100(0-2)-B	05	11-02-16	1100	S	Bag	1				1					X					X								
SGR-DU100(2-4)-B	06	11-02-16	1101	S	Bag	1				1					X					X								
SGR-DU100(4-6)-B	07	11-02-16	1102	S	Bag	1				1					X					X								
SGR-DU100(6-8)-B	08	11-02-16	1103	S	Bag	1				1					X					X								
SGR-DU100(0-2)-C	09	11-02-16	1105	S	Bag	1				1					X					X								
SGR-DU100(2-4)-C	10	11-02-16	1106	S	Bag	1				1					X					X								
SGR-DU100(4-6)-C	11	11-02-16	1107	S	Bag	1				1					X					X								
SGR-DU100(6-8)-C	12	11-02-16	1108	S	Bag	1				1					X					X								
SGR-EB100(20161102)	13	11-02-16	1129	W	Bottle	2		1		1					X					X								

RELINQUISHED BY: (Signature) DATE/TIME 11/2/2016 1745 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) DATE/TIME 11/3/16 940 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: 0.7, 0.6, 1.5, 1.0 THERM #: 72
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

№ 73153

CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill STE 350 Lenexa KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walker@arcadis.com
DATA REPORTED TO: Alex Walker
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: 11/02/2016 PAGE 2 OF 2
PO #: DHL WORK ORDER #: 1611028
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 04285081.0005 COLLECTOR:

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 ☐ TX1 ☐ 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	ANALYSES	FIELD NOTES
SGR-DU133(0-2)-A	14	11-2-16	1620	S	Bag	1				1		X X	
SGR-DU133(2-4)-A	15	11-2-16	1621	S	Bag	1				1		X X	
SGR-DU133(4-6)-A	16	11-2-16	1622	S	Bag	1				1		X X	
SGR-DU133(6-8)-A	17	11-2-16	1623	S	Bag	1				1		X X	
SGR-DU133(0-2)-B	18	11-2-16	1607	S	Bag	1				1		X X	
SGR-DU133(2-4)-B	19	11-2-16	1608	S	Bag	1				1		X X	
SGR-DU133(4-6)-B	20	11-2-16	1609	S	Bag	1				1		X X	
SGR-DU133(6-8)-B 21 (11-3-16)	21	11-2-16	1610	S	Bag	1				1		X X	
SGR-DU133(0-2)-C	22	11-2-16	1557	S	Bag	1				1		X X	
SGR-DU133(2-4)-C	23	11-2-16	1558	S	Bag	1				1		X X	
SGR-DU133(4-6)-C	24	11-2-16	1559	S	Bag	1				1		X X	
SGR-DU133(6-8)-C	25	11-2-16	1600	S	Bag	1				1		X X	
SGR-EB133(20161102)	26	11-2-16	1651	W	Bottles	2		1		1		X X	SGR-EB133(20161102)

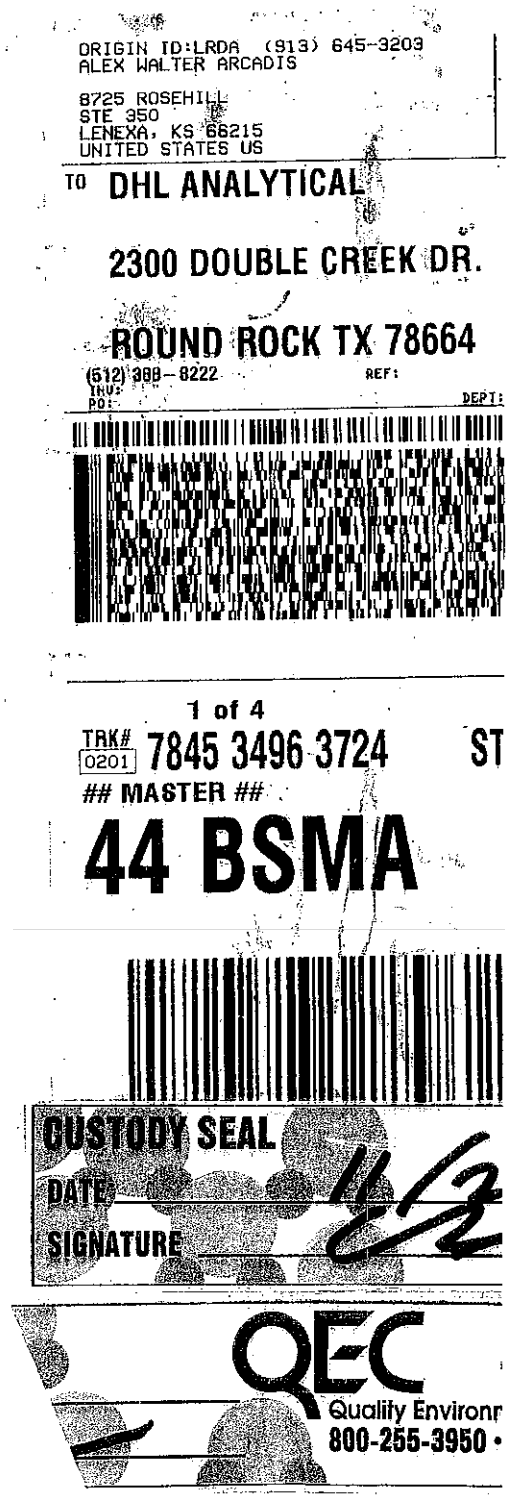
RELINQUISHED BY: (Signature) DATE/TIME 11-2-16/1745 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 11/3/16 920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ 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: 0.7, 0.6, 1.5 C 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: 02NOV16
ACTWGT: 4.30 LB
CAD: 006934463/SSFE1722
DIMS: 24x14x13 IN
BILL THIRD PARTY

Part # 1562907V-435 HT2 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

2 of 4

MPS# 0263 7845 3496 3735

Mstr# 7845 3496 3724 0201

THU - 03 NOV 3:00P
STANDARD OVERNIGHT

44 BSMA

78664
TX-US AUS

CUSTODY SEAL
DATE 11/2/16
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

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

1 of 4

TRK# 0201 7845 3496 3724 ST

MASTER

44 BSMA

CUSTODY SEAL
DATE 11/2
SIGNATURE

QEC
Quality Environr
800-255-3950 •

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 02NOV16
ACTWGT: 64.40 LB
CAD: 006994464/SSFE1722
DIMS: 24x14x13 IN

BILL THIRD PARTY

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J1620161012010V

3 of 4

MPS# 0263 7845 3496 3746

Mstr# 7845 3496 3724 0201

THU - 03 NOV 3:00P
STANDARD OVERNIGHT

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 11/2/16
SIGNATURE

ORIGIN ID:LRDA (913) 645-3203
ALEX WALTER ARCADIS

8725 ROSEHILL
STE 350
LENEXA, KS 66215
UNITED STATES US

SHIP DATE: 0
ACTWGT: 67.3
CAD: 0069944
DIMS: 24x14x

BILL THIRD P

TO DHL ANALYTICAL

2300 DOUBLE CREEK DR.

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

4 of 4

MPS# 0263 7845 3496 3757

Mstr# 7845 3496 3724 0201

THU - 03
STANDARD C

44 BSMA

T

QEC
Quality Environmental
800-255-3950 • 304-2

CUSTODY SEAL
DATE 11/2
SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Arcadis | Date Received: 11/3/2016

Work Order Number 1611028 | Received by JB

Checklist completed by: _____ 11/3/2016 (Signature / Date) | Reviewed by _____ 11/3/2016 (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 ☐	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 JPB
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:** 11/21/2016
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1611028
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:** 11/21/2016

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1611028

#[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				
		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:** *21-Nov-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611028

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 11/3/2016. A total of 26 samples were received and 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 batch 77861, the recoveries/RPDs of up to twelve compounds for the Matrix Spike and Matrix Spike Duplicate (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. 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 all of the surface and 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 twenty-four sub-surface samples for DHL WO # 1611028. 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.

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 11/3/2016. 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:
None

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT: Arcadis
Project: Laredo SGR
Lab Order: 1611028

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1611028-01	SGR-DU100(0-2)-A		11/02/16 10:20 AM	11/3/2016
1611028-02	SGR-DU100(2-4)-A		11/02/16 10:21 AM	11/3/2016
1611028-03	SGR-DU100(4-6)-A		11/02/16 10:22 AM	11/3/2016
1611028-04	SGR-DU100(6-8)-A		11/02/16 10:23 AM	11/3/2016
1611028-05	SGR-DU100(0-2)-B		11/02/16 11:00 AM	11/3/2016
1611028-06	SGR-DU100(2-4)-B		11/02/16 11:01 AM	11/3/2016
1611028-07	SGR-DU100(4-6)-B		11/02/16 11:02 AM	11/3/2016
1611028-08	SGR-DU100(6-8)-B		11/02/16 11:03 AM	11/3/2016
1611028-09	SGR-DU100(0-2)-C		11/02/16 11:05 AM	11/3/2016
1611028-10	SGR-DU100(2-4)-C		11/02/16 11:06 AM	11/3/2016
1611028-11	SGR-DU100(4-6)-C		11/02/16 11:07 AM	11/3/2016
1611028-12	SGR-DU100(6-8)-C		11/02/16 11:08 AM	11/3/2016
1611028-13	SGR-EB100(20161102)		11/02/16 11:29 AM	11/3/2016
1611028-14	SGR-DU133(0-2)-A		11/02/16 04:20 PM	11/3/2016
1611028-15	SGR-DU133(2-4)-A		11/02/16 04:21 PM	11/3/2016
1611028-16	SGR-DU133(4-6)-A		11/02/16 04:22 PM	11/3/2016
1611028-17	SGR-DU133(6-8)-A		11/02/16 04:23 PM	11/3/2016
1611028-18	SGR-DU133(0-2)-B		11/02/16 04:07 PM	11/3/2016
1611028-19	SGR-DU133(2-4)-B		11/02/16 04:08 PM	11/3/2016
1611028-20	SGR-DU133(4-6)-B		11/02/16 04:09 PM	11/3/2016
1611028-21	SGR-DU133(6-8)-B		11/02/16 04:10 PM	11/3/2016
1611028-22	SGR-DU133(0-2)-C		11/02/16 03:57 PM	11/3/2016
1611028-23	SGR-DU133(2-4)-C		11/02/16 03:58 PM	11/3/2016
1611028-24	SGR-DU133(4-6)-C		11/02/16 03:59 PM	11/3/2016
1611028-25	SGR-DU133(6-8)-C		11/02/16 04:00 PM	11/3/2016
1611028-26	SGR-EB133(20161102)		11/02/16 04:51 PM	11/3/2016

Lab Order: 1611028
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611028-01A	SGR-DU100(0-2)-A	11/02/16 10:20 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(0-2)-A	11/02/16 10:20 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-02A	SGR-DU100(2-4)-A	11/02/16 10:21 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(2-4)-A	11/02/16 10:21 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-03A	SGR-DU100(4-6)-A	11/02/16 10:22 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(4-6)-A	11/02/16 10:22 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-04A	SGR-DU100(6-8)-A	11/02/16 10:23 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(6-8)-A	11/02/16 10:23 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-05A	SGR-DU100(0-2)-B	11/02/16 11:00 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(0-2)-B	11/02/16 11:00 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-06A	SGR-DU100(2-4)-B	11/02/16 11:01 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(2-4)-B	11/02/16 11:01 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-07A	SGR-DU100(4-6)-B	11/02/16 11:02 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(4-6)-B	11/02/16 11:02 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-08A	SGR-DU100(6-8)-B	11/02/16 11:03 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(6-8)-B	11/02/16 11:03 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-09A	SGR-DU100(0-2)-C	11/02/16 11:05 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(0-2)-C	11/02/16 11:05 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-10A	SGR-DU100(2-4)-C	11/02/16 11:06 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(2-4)-C	11/02/16 11:06 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-11A	SGR-DU100(4-6)-C	11/02/16 11:07 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(4-6)-C	11/02/16 11:07 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-12A	SGR-DU100(6-8)-C	11/02/16 11:08 AM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU100(6-8)-C	11/02/16 11:08 AM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-13A	SGR-EB100(20161102)	11/02/16 11:29 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611028-13B	SGR-EB100(20161102)	11/02/16 11:29 AM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/07/16 10:45 AM	77809
1611028-14A	SGR-DU133(0-2)-A	11/02/16 04:20 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU133(0-2)-A	11/02/16 04:20 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902

Lab Order: 1611028
Client: Arcadis
Project: Laredo SGR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1611028-15A	SGR-DU133(2-4)-A	11/02/16 04:21 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU133(2-4)-A	11/02/16 04:21 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-16A	SGR-DU133(4-6)-A	11/02/16 04:22 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU133(4-6)-A	11/02/16 04:22 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-17A	SGR-DU133(6-8)-A	11/02/16 04:23 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/09/16 01:00 PM	77830
	SGR-DU133(6-8)-A	11/02/16 04:23 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:30 PM	77902
1611028-18A	SGR-DU133(0-2)-B	11/02/16 04:07 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(0-2)-B	11/02/16 04:07 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-19A	SGR-DU133(2-4)-B	11/02/16 04:08 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(2-4)-B	11/02/16 04:08 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-20A	SGR-DU133(4-6)-B	11/02/16 04:09 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(4-6)-B	11/02/16 04:09 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-21A	SGR-DU133(6-8)-B	11/02/16 04:10 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(6-8)-B	11/02/16 04:10 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-22A	SGR-DU133(0-2)-C	11/02/16 03:57 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(0-2)-C	11/02/16 03:57 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-23A	SGR-DU133(2-4)-C	11/02/16 03:58 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(2-4)-C	11/02/16 03:58 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-24A	SGR-DU133(4-6)-C	11/02/16 03:59 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(4-6)-C	11/02/16 03:59 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-25A	SGR-DU133(6-8)-C	11/02/16 04:00 PM	Soil	SW3550C	Soil Prep Sonication: PAH	11/10/16 02:12 PM	77861
	SGR-DU133(6-8)-C	11/02/16 04:00 PM	Soil	SW3050B	Soil Prep Total Metals: ICP-MS	11/14/16 03:32 PM	77903
1611028-26A	SGR-EB133(20161102)	11/02/16 04:51 PM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	11/15/16 09:08 AM	77913
1611028-26B	SGR-EB133(20161102)	11/02/16 04:51 PM	Equip Blank	SW3510C	Aq Prep Sep Funnel: PAH	11/07/16 10:45 AM	77809

Lab Order: 1611028
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
1611028-01A	SGR-DU100(0-2)-A	11/2/2016 10:20:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-02A	SGR-DU100(2-4)-A	11/2/2016 10:21:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-03A	SGR-DU100(4-6)-A	11/2/2016 10:22:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-04A	SGR-DU100(6-8)-A	11/2/2016 10:23:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-05A	SGR-DU100(0-2)-B	11/2/2016 11:00:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-06A	SGR-DU100(2-4)-B	11/2/2016 11:01:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-07A	SGR-DU100(4-6)-B	11/2/2016 11:02:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-08A	SGR-DU100(6-8)-B	11/2/2016 11:03:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-09A	SGR-DU100(0-2)-C	11/2/2016 11:05:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-10A	SGR-DU100(2-4)-C	11/2/2016 11:06:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-11A	SGR-DU100(4-6)-C	11/2/2016 11:07:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-12A	SGR-DU100(6-8)-C	11/2/2016 11:08:00 AM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-14A	SGR-DU133(0-2)-A	11/2/2016 4:20:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-15A	SGR-DU133(2-4)-A	11/2/2016 4:21:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-16A	SGR-DU133(4-6)-A	11/2/2016 4:22:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-17A	SGR-DU133(6-8)-A	11/2/2016 4:23:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-18A	SGR-DU133(0-2)-B	11/2/2016 4:07:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-19A	SGR-DU133(2-4)-B	11/2/2016 4:08:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-20A	SGR-DU133(4-6)-B	11/2/2016 4:09:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-21A	SGR-DU133(6-8)-B	11/2/2016 4:10:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-22A	SGR-DU133(0-2)-C	11/2/2016 3:57:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-23A	SGR-DU133(2-4)-C	11/2/2016 3:58:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-24A	SGR-DU133(4-6)-C	11/2/2016 3:59:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789
1611028-25A	SGR-DU133(6-8)-C	11/2/2016 4:00:00 PM	Soil	ISM-2	Incremental Sample Prep 2mm Sieve	11/3/2016 11:00:00 AM	77789

Lab Order: 1611028
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
1611028-01A	SGR-DU100(0-2)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 01:42 PM	GCMS8_161110A
	SGR-DU100(0-2)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:38 PM	ICP-MS4_161116B
1611028-02A	SGR-DU100(2-4)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 02:10 PM	GCMS8_161110A
	SGR-DU100(2-4)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:40 PM	ICP-MS4_161116B
1611028-03A	SGR-DU100(4-6)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 02:39 PM	GCMS8_161110A
	SGR-DU100(4-6)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:42 PM	ICP-MS4_161116B
1611028-04A	SGR-DU100(6-8)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 04:34 PM	GCMS8_161110A
	SGR-DU100(6-8)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:44 PM	ICP-MS4_161116B
1611028-05A	SGR-DU100(0-2)-B	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 05:03 PM	GCMS8_161110A
	SGR-DU100(0-2)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:46 PM	ICP-MS4_161116B
1611028-06A	SGR-DU100(2-4)-B	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 05:31 PM	GCMS8_161110A
	SGR-DU100(2-4)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:14 PM	ICP-MS4_161116B
1611028-07A	SGR-DU100(4-6)-B	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 06:00 PM	GCMS8_161110A
	SGR-DU100(4-6)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:16 PM	ICP-MS4_161116B
1611028-08A	SGR-DU100(6-8)-B	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 06:29 PM	GCMS8_161110A
	SGR-DU100(6-8)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:18 PM	ICP-MS4_161116B
1611028-09A	SGR-DU100(0-2)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 06:57 PM	GCMS8_161110A
	SGR-DU100(0-2)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:20 PM	ICP-MS4_161116B
1611028-10A	SGR-DU100(2-4)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 07:27 PM	GCMS8_161110A
	SGR-DU100(2-4)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 02:27 PM	ICP-MS4_161116B
1611028-11A	SGR-DU100(4-6)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 07:55 PM	GCMS8_161110A
	SGR-DU100(4-6)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:22 PM	ICP-MS4_161116B
1611028-12A	SGR-DU100(6-8)-C	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 08:24 PM	GCMS8_161110A
	SGR-DU100(6-8)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:24 PM	ICP-MS4_161116B
1611028-13A	SGR-EB100(20161102)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 02:42 PM	ICP-MS3_161116A
1611028-13B	SGR-EB100(20161102)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77809	1	11/08/16 12:01 PM	GCMS6_161108A
1611028-14A	SGR-DU133(0-2)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 08:52 PM	GCMS8_161110A
	SGR-DU133(0-2)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:26 PM	ICP-MS4_161116B

Lab Order: 1611028
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
1611028-15A	SGR-DU133(2-4)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 09:21 PM	GCMS8_161110A
	SGR-DU133(2-4)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:28 PM	ICP-MS4_161116B
1611028-16A	SGR-DU133(4-6)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 09:50 PM	GCMS8_161110A
	SGR-DU133(4-6)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:30 PM	ICP-MS4_161116B
1611028-17A	SGR-DU133(6-8)-A	Soil	SW8270D-LL	PAHs: GC/MS	77830	10	11/10/16 10:19 PM	GCMS8_161110A
	SGR-DU133(6-8)-A	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77902	5	11/16/16 03:32 PM	ICP-MS4_161116B
1611028-18A	SGR-DU133(0-2)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 11:01 AM	GCMS8_161111A
	SGR-DU133(0-2)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 03:55 PM	ICP-MS4_161116B
1611028-19A	SGR-DU133(2-4)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 11:29 AM	GCMS8_161111A
	SGR-DU133(2-4)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 03:57 PM	ICP-MS4_161116B
1611028-20A	SGR-DU133(4-6)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 11:59 AM	GCMS8_161111A
	SGR-DU133(4-6)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 03:59 PM	ICP-MS4_161116B
1611028-21A	SGR-DU133(6-8)-B	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 12:28 PM	GCMS8_161111A
	SGR-DU133(6-8)-B	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:01 PM	ICP-MS4_161116B
1611028-22A	SGR-DU133(0-2)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 12:56 PM	GCMS8_161111A
	SGR-DU133(0-2)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:03 PM	ICP-MS4_161116B
1611028-23A	SGR-DU133(2-4)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 01:25 PM	GCMS8_161111A
	SGR-DU133(2-4)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:05 PM	ICP-MS4_161116B
1611028-24A	SGR-DU133(4-6)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 01:54 PM	GCMS8_161111A
	SGR-DU133(4-6)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:07 PM	ICP-MS4_161116B
1611028-25A	SGR-DU133(6-8)-C	Soil	SW8270D-LL	PAHs: GC/MS	77861	10	11/11/16 03:54 PM	GCMS8_161111A
	SGR-DU133(6-8)-C	Soil	SW6020A	Trace Metals: ICP-MS - Solid	77903	5	11/16/16 04:09 PM	ICP-MS4_161116B
1611028-26A	SGR-EB133(20161102)	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	77913	1	11/16/16 02:17 PM	ICP-MS3_161116A
1611028-26B	SGR-EB133(20161102)	Equip Blank	SW8270D-LL	PAHs: GC/MS	77809	1	11/08/16 12:29 PM	GCMS6_161108A

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-01
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:20 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.3	0.0893	0.268	0.134		mg/Kg-dry	5	11/16/16 02:38 PM
IS: Bismuth	85.7	0	30-120	0		%REC	5	11/16/16 02:38 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Acenaphthylene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Anthracene	0.0666	0.0482	0.0963	0.0723	J	mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[a]anthracene	0.237	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[a]pyrene	0.254	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[b]fluoranthene	0.228	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[e]pyrene	0.191	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[g,h,i]perylene	0.185	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[j]fluoranthene	0.109	0.0482	0.0963	0.0723	N	mg/Kg-dry	10	11/10/16 01:42 PM
Benzo[k]fluoranthene	0.110	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Chrysene	0.277	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Dibenz[a,h]anthracene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Fluoranthene	0.508	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Fluorene	0.0723	0.0482	0.0963	0.0723	U	mg/Kg-dry	10	11/10/16 01:42 PM
Indeno[1,2,3-cd]pyrene	0.161	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Phenanthrene	0.295	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
Pyrene	0.411	0.0482	0.0963	0.0723		mg/Kg-dry	10	11/10/16 01:42 PM
IS: Acenaphthene-d10	76.1	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Chrysene-d12	76.4	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Naphthalene-d8	60.8	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Perylene-d12	76.3	0	50-200	0		%REC	10	11/10/16 01:42 PM
IS: Phenanthrene-d10	77.0	0	50-200	0		%REC	10	11/10/16 01:42 PM
Surr: 2-Fluorobiphenyl	98.5	0	46-115	0		%REC	10	11/10/16 01:42 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(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-01
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:20 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 01:42 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-02
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:21 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.28	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 02:40 PM
IS: Bismuth	79.5	0	30-120	0		%REC	5	11/16/16 02:40 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Acenaphthylene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Anthracene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[a]anthracene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[a]pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[b]fluoranthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[e]pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[g,h,i]perylene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[j]fluoranthene	0.0689	0.0460	0.0919	0.0689	NU	mg/Kg-dry	10	11/10/16 02:10 PM
Benzo[k]fluoranthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Chrysene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Dibenz[a,h]anthracene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Fluoranthene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Fluorene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Indeno[1,2,3-cd]pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Phenanthrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
Pyrene	0.0689	0.0460	0.0919	0.0689	U	mg/Kg-dry	10	11/10/16 02:10 PM
IS: Acenaphthene-d10	81.7	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Chrysene-d12	83.1	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Naphthalene-d8	76.0	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Perylene-d12	84.8	0	50-200	0		%REC	10	11/10/16 02:10 PM
IS: Phenanthrene-d10	83.2	0	50-200	0		%REC	10	11/10/16 02:10 PM
Surr: 2-Fluorobiphenyl	93.6	0	46-115	0		%REC	10	11/10/16 02:10 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(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-02
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:21 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	101	0	58-133	0		%REC	10	11/10/16 02:10 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-03
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:22 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.31	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 02:42 PM
IS: Bismuth	78.6	0	30-120	0		%REC	5	11/16/16 02:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Acenaphthylene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Anthracene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[a]anthracene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[a]pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[b]fluoranthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[e]pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[g,h,i]perylene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[j]fluoranthene	0.0735	0.0490	0.0979	0.0735	NU	mg/Kg-dry	10	11/10/16 02:39 PM
Benzo[k]fluoranthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Chrysene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Dibenz[a,h]anthracene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Fluoranthene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Fluorene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Indeno[1,2,3-cd]pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Phenanthrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
Pyrene	0.0735	0.0490	0.0979	0.0735	U	mg/Kg-dry	10	11/10/16 02:39 PM
IS: Acenaphthene-d10	81.9	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Chrysene-d12	81.3	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Naphthalene-d8	74.5	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Perylene-d12	83.7	0	50-200	0		%REC	10	11/10/16 02:39 PM
IS: Phenanthrene-d10	82.2	0	50-200	0		%REC	10	11/10/16 02:39 PM
Surr: 2-Fluorobiphenyl	93.3	0	46-115	0		%REC	10	11/10/16 02:39 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(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-03
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:22 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.1	0	58-133	0		%REC	10	11/10/16 02:39 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-04
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:23 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	8.26	0.0926	0.278	0.139		mg/Kg-dry	5	11/16/16 02:44 PM
IS: Bismuth	85.1	0	30-120	0		%REC	5	11/16/16 02:44 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Acenaphthylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[a]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[a]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[b]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[e]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[g,h,i]perylene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[j]fluoranthene	0.0739	0.0493	0.0985	0.0739	NU	mg/Kg-dry	10	11/10/16 04:34 PM
Benzo[k]fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Chrysene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Dibenz[a,h]anthracene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Fluoranthene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Fluorene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Indeno[1,2,3-cd]pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Phenanthrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
Pyrene	0.0739	0.0493	0.0985	0.0739	U	mg/Kg-dry	10	11/10/16 04:34 PM
IS: Acenaphthene-d10	80.4	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Chrysene-d12	82.9	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Naphthalene-d8	69.3	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Perylene-d12	82.3	0	50-200	0		%REC	10	11/10/16 04:34 PM
IS: Phenanthrene-d10	81.7	0	50-200	0		%REC	10	11/10/16 04:34 PM
Surr: 2-Fluorobiphenyl	93.5	0	46-115	0		%REC	10	11/10/16 04:34 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(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-04
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 10:23 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	101	0	58-133	0		%REC	10	11/10/16 04:34 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-05
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:00 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	12.9	0.0885	0.265	0.133		mg/Kg-dry	5	11/16/16 02:46 PM
IS: Bismuth	88.8	0	30-120	0		%REC	5	11/16/16 02:46 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Acenaphthylene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[a]anthracene	0.0605	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[a]pyrene	0.0710	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[b]fluoranthene	0.0785	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[e]pyrene	0.0572	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[g,h,i]perylene	0.0603	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[j]fluoranthene	0.0723	0.0482	0.0964	0.0723	NU	mg/Kg-dry	10	11/10/16 05:03 PM
Benzo[k]fluoranthene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Chrysene	0.0666	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Dibenz[a,h]anthracene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Fluoranthene	0.0983	0.0482	0.0964	0.0723		mg/Kg-dry	10	11/10/16 05:03 PM
Fluorene	0.0723	0.0482	0.0964	0.0723	U	mg/Kg-dry	10	11/10/16 05:03 PM
Indeno[1,2,3-cd]pyrene	0.0585	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Phenanthrene	0.0541	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
Pyrene	0.0862	0.0482	0.0964	0.0723	J	mg/Kg-dry	10	11/10/16 05:03 PM
IS: Acenaphthene-d10	80.4	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Chrysene-d12	80.6	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Naphthalene-d8	63.8	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Perylene-d12	80.9	0	50-200	0		%REC	10	11/10/16 05:03 PM
IS: Phenanthrene-d10	80.8	0	50-200	0		%REC	10	11/10/16 05:03 PM
Surr: 2-Fluorobiphenyl	93.9	0	46-115	0		%REC	10	11/10/16 05:03 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(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-05
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:00 AM
Lab Order:	1611028	**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	11/10/16 05:03 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(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-06
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:01 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.22	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:14 PM
IS: Bismuth	82.6	0	30-120	0		%REC	5	11/16/16 03:14 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Acenaphthylene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Anthracene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[a]anthracene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[a]pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[b]fluoranthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[e]pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[g,h,i]perylene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[j]fluoranthene	0.0727	0.0484	0.0969	0.0727	NU	mg/Kg-dry	10	11/10/16 05:31 PM
Benzo[k]fluoranthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Chrysene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Dibenz[a,h]anthracene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Fluoranthene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Fluorene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Indeno[1,2,3-cd]pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Phenanthrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
Pyrene	0.0727	0.0484	0.0969	0.0727	U	mg/Kg-dry	10	11/10/16 05:31 PM
IS: Acenaphthene-d10	80.3	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Chrysene-d12	81.8	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Naphthalene-d8	72.5	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Perylene-d12	83.0	0	50-200	0		%REC	10	11/10/16 05:31 PM
IS: Phenanthrene-d10	80.9	0	50-200	0		%REC	10	11/10/16 05:31 PM
Surr: 2-Fluorobiphenyl	92.0	0	46-115	0		%REC	10	11/10/16 05:31 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(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-06
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:01 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 05:31 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(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-07
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:02 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.68	0.0935	0.280	0.140		mg/Kg-dry	5	11/16/16 03:16 PM
IS: Bismuth	85.1	0	30-120	0		%REC	5	11/16/16 03:16 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Acenaphthylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[a]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[a]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[b]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[e]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[g,h,i]perylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[j]fluoranthene	0.0718	0.0478	0.0957	0.0718	NU	mg/Kg-dry	10	11/10/16 06:00 PM
Benzo[k]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Chrysene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Dibenz[a,h]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Fluorene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Indeno[1,2,3-cd]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Phenanthrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
Pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:00 PM
IS: Acenaphthene-d10	81.5	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Chrysene-d12	81.1	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Naphthalene-d8	70.9	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Perylene-d12	82.0	0	50-200	0		%REC	10	11/10/16 06:00 PM
IS: Phenanthrene-d10	82.6	0	50-200	0		%REC	10	11/10/16 06:00 PM
Surr: 2-Fluorobiphenyl	95.9	0	46-115	0		%REC	10	11/10/16 06:00 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-07
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:02 AM
Lab Order:	1611028	**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	11/10/16 06:00 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-08
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:03 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.2	0.0877	0.263	0.132		mg/Kg-dry	5	11/16/16 03:18 PM
IS: Bismuth	83.0	0	30-120	0		%REC	5	11/16/16 03:18 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Acenaphthylene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Anthracene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[a]anthracene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[a]pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[b]fluoranthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[e]pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[g,h,i]perylene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[j]fluoranthene	0.0736	0.0491	0.0981	0.0736	NU	mg/Kg-dry	10	11/10/16 06:29 PM
Benzo[k]fluoranthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Chrysene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Dibenz[a,h]anthracene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Fluoranthene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Fluorene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Indeno[1,2,3-cd]pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Phenanthrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
Pyrene	0.0736	0.0491	0.0981	0.0736	U	mg/Kg-dry	10	11/10/16 06:29 PM
IS: Acenaphthene-d10	82.3	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Chrysene-d12	82.6	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Naphthalene-d8	75.6	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Perylene-d12	83.2	0	50-200	0		%REC	10	11/10/16 06:29 PM
IS: Phenanthrene-d10	82.8	0	50-200	0		%REC	10	11/10/16 06:29 PM
Surr: 2-Fluorobiphenyl	90.9	0	46-115	0		%REC	10	11/10/16 06:29 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-DU100(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-08
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:03 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	97.0	0	58-133	0		%REC	10	11/10/16 06:29 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-DU100(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-09
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:05 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	14.6	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:20 PM
IS: Bismuth	85.7	0	30-120	0		%REC	5	11/16/16 03:20 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Acenaphthylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[a]anthracene	0.0824	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[a]pyrene	0.101	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[b]fluoranthene	0.106	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[e]pyrene	0.0756	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[g,h,i]perylene	0.0741	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[j]fluoranthene	0.0718	0.0478	0.0957	0.0718	NU	mg/Kg-dry	10	11/10/16 06:57 PM
Benzo[k]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Chrysene	0.0953	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Dibenz[a,h]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Fluoranthene	0.131	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
Fluorene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/10/16 06:57 PM
Indeno[1,2,3-cd]pyrene	0.0732	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Phenanthrene	0.0548	0.0478	0.0957	0.0718	J	mg/Kg-dry	10	11/10/16 06:57 PM
Pyrene	0.116	0.0478	0.0957	0.0718		mg/Kg-dry	10	11/10/16 06:57 PM
IS: Acenaphthene-d10	80.9	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Chrysene-d12	81.5	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Naphthalene-d8	79.0	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Perylene-d12	82.3	0	50-200	0		%REC	10	11/10/16 06:57 PM
IS: Phenanthrene-d10	81.2	0	50-200	0		%REC	10	11/10/16 06:57 PM
Surr: 2-Fluorobiphenyl	97.2	0	46-115	0		%REC	10	11/10/16 06:57 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-DU100(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-09
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:05 AM
Lab Order:	1611028	**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	11/10/16 06:57 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-10
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:06 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.04	0.0877	0.263	0.132		mg/Kg-dry	5	11/16/16 02:27 PM
IS: Bismuth	88.4	0	30-120	0		%REC	5	11/16/16 02:27 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Acenaphthylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[a]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[a]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[b]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[e]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[g,h,i]perylene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[j]fluoranthene	0.0746	0.0498	0.0995	0.0746	NU	mg/Kg-dry	10	11/10/16 07:27 PM
Benzo[k]fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Chrysene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Dibenz[a,h]anthracene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Fluoranthene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Fluorene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Indeno[1,2,3-cd]pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Phenanthrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
Pyrene	0.0746	0.0498	0.0995	0.0746	U	mg/Kg-dry	10	11/10/16 07:27 PM
IS: Acenaphthene-d10	80.3	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Chrysene-d12	82.0	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Naphthalene-d8	81.4	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Perylene-d12	82.7	0	50-200	0		%REC	10	11/10/16 07:27 PM
IS: Phenanthrene-d10	81.1	0	50-200	0		%REC	10	11/10/16 07:27 PM
Surr: 2-Fluorobiphenyl	93.1	0	46-115	0		%REC	10	11/10/16 07:27 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(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-10
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:06 AM
Lab Order:	1611028	**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	11/10/16 07:27 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU100(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-11
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:07 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.19	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 03:22 PM
IS: Bismuth	86.1	0	30-120	0		%REC	5	11/16/16 03:22 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Acenaphthylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[a]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[a]pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[b]fluoranthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[e]pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[g,h,i]perylene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[j]fluoranthene	0.0712	0.0475	0.0950	0.0712	NU	mg/Kg-dry	10	11/10/16 07:55 PM
Benzo[k]fluoranthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Chrysene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Dibenz[a,h]anthracene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Fluoranthene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Fluorene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Indeno[1,2,3-cd]pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Phenanthrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
Pyrene	0.0712	0.0475	0.0950	0.0712	U	mg/Kg-dry	10	11/10/16 07:55 PM
IS: Acenaphthene-d10	78.8	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Chrysene-d12	79.6	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Naphthalene-d8	78.3	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Perylene-d12	80.8	0	50-200	0		%REC	10	11/10/16 07:55 PM
IS: Phenanthrene-d10	78.8	0	50-200	0		%REC	10	11/10/16 07:55 PM
Surr: 2-Fluorobiphenyl	94.9	0	46-115	0		%REC	10	11/10/16 07:55 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-11
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:07 AM
Lab Order:	1611028	**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	11/10/16 07:55 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(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-12
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:08 AM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.81	0.0962	0.288	0.144		mg/Kg-dry	5	11/16/16 03:24 PM
IS: Bismuth	87.5	0	30-120	0		%REC	5	11/16/16 03:24 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Acenaphthylene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Anthracene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[a]anthracene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[a]pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[b]fluoranthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[e]pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[g,h,i]perylene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[j]fluoranthene	0.0732	0.0488	0.0977	0.0732	NU	mg/Kg-dry	10	11/10/16 08:24 PM
Benzo[k]fluoranthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Chrysene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Dibenz[a,h]anthracene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Fluoranthene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Fluorene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Indeno[1,2,3-cd]pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Phenanthrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
Pyrene	0.0732	0.0488	0.0977	0.0732	U	mg/Kg-dry	10	11/10/16 08:24 PM
IS: Acenaphthene-d10	82.3	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Chrysene-d12	83.1	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Naphthalene-d8	78.5	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Perylene-d12	83.7	0	50-200	0		%REC	10	11/10/16 08:24 PM
IS: Phenanthrene-d10	82.3	0	50-200	0		%REC	10	11/10/16 08:24 PM
Surr: 2-Fluorobiphenyl	90.9	0	46-115	0		%REC	10	11/10/16 08:24 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(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-12
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:08 AM
Lab Order:	1611028	**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	11/10/16 08:24 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-EB100(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-13
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:29 AM
Lab Order:	1611028	**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 02:42 PM
IS: Bismuth	81.2	0	30-120	0		%REC	1	11/16/16 02:42 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Acenaphthylene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Anthracene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[a]anthracene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[a]pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[b]fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[e]pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[g,h,i]perylene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Benzo[j]fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	NU	mg/L	1	11/08/16 12:01 PM
Benzo[k]fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Chrysene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Dibenz[a,h]anthracene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Fluoranthene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Fluorene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Indeno[1,2,3-cd]pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Phenanthrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
Pyrene	0.0000644	0.0000402	0.0000804	0.0000644	U	mg/L	1	11/08/16 12:01 PM
IS: Acenaphthene-d10	102	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Chrysene-d12	99.9	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Naphthalene-d8	102	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Perylene-d12	107	0	50-200	0		%REC	1	11/08/16 12:01 PM
IS: Phenanthrene-d10	98.9	0	50-200	0		%REC	1	11/08/16 12:01 PM
Surr: 2-Fluorobiphenyl	79.3	0	53-106	0		%REC	1	11/08/16 12:01 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB100(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-13
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 11:29 AM
Lab Order:	1611028	**Matrix:**	EQUIP BLANK

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Surr: 4-Terphenyl-d14	87.3	0	58-132	0		%REC	1	11/08/16 12:01 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-14
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:20 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	20.9	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:26 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/16/16 03:26 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Acenaphthylene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Anthracene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[a]anthracene	0.127	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[a]pyrene	0.147	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[b]fluoranthene	0.133	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[e]pyrene	0.107	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[g,h,i]perylene	0.107	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[j]fluoranthene	0.0671	0.0480	0.0960	0.0720	JN	mg/Kg-dry	10	11/10/16 08:52 PM
Benzo[k]fluoranthene	0.0808	0.0480	0.0960	0.0720	J	mg/Kg-dry	10	11/10/16 08:52 PM
Chrysene	0.145	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Dibenz[a,h]anthracene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Fluoranthene	0.231	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Fluorene	0.0720	0.0480	0.0960	0.0720	U	mg/Kg-dry	10	11/10/16 08:52 PM
Indeno[1,2,3-cd]pyrene	0.106	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Phenanthrene	0.123	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
Pyrene	0.204	0.0480	0.0960	0.0720		mg/Kg-dry	10	11/10/16 08:52 PM
IS: Acenaphthene-d10	76.4	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Chrysene-d12	78.1	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Naphthalene-d8	75.2	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Perylene-d12	77.6	0	50-200	0		%REC	10	11/10/16 08:52 PM
IS: Phenanthrene-d10	77.4	0	50-200	0		%REC	10	11/10/16 08:52 PM
Surr: 2-Fluorobiphenyl	98.5	0	46-115	0		%REC	10	11/10/16 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-A
Project:	Laredo SGR	**Lab ID:**	1611028-14
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:20 PM
Lab Order:	1611028	**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	11/10/16 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-15
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:21 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.19	0.0901	0.270	0.135		mg/Kg-dry	5	11/16/16 03:28 PM
IS: Bismuth	90.6	0	30-120	0		%REC	5	11/16/16 03:28 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Acenaphthylene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[a]anthracene	0.154	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[a]pyrene	0.150	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[b]fluoranthene	0.125	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[e]pyrene	0.103	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[g,h,i]perylene	0.0953	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[j]fluoranthene	0.0675	0.0485	0.0971	0.0728	JN	mg/Kg-dry	10	11/10/16 09:21 PM
Benzo[k]fluoranthene	0.0770	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/10/16 09:21 PM
Chrysene	0.150	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Dibenz[a,h]anthracene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Fluoranthene	0.291	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Fluorene	0.0728	0.0485	0.0971	0.0728	U	mg/Kg-dry	10	11/10/16 09:21 PM
Indeno[1,2,3-cd]pyrene	0.0955	0.0485	0.0971	0.0728	J	mg/Kg-dry	10	11/10/16 09:21 PM
Phenanthrene	0.189	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
Pyrene	0.250	0.0485	0.0971	0.0728		mg/Kg-dry	10	11/10/16 09:21 PM
IS: Acenaphthene-d10	78.8	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Chrysene-d12	79.7	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Naphthalene-d8	71.2	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Perylene-d12	80.1	0	50-200	0		%REC	10	11/10/16 09:21 PM
IS: Phenanthrene-d10	79.1	0	50-200	0		%REC	10	11/10/16 09:21 PM
Surr: 2-Fluorobiphenyl	91.8	0	46-115	0		%REC	10	11/10/16 09:21 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(2-4)-A
Project:	Laredo SGR	**Lab ID:**	1611028-15
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:21 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.8	0	58-133	0		%REC	10	11/10/16 09:21 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-16
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:22 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.51	0.0962	0.288	0.144		mg/Kg-dry	5	11/16/16 03:30 PM
IS: Bismuth	85.6	0	30-120	0		%REC	5	11/16/16 03:30 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Acenaphthylene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Anthracene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[a]anthracene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[a]pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[b]fluoranthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[e]pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[g,h,i]perylene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[j]fluoranthene	0.0714	0.0476	0.0952	0.0714	NU	mg/Kg-dry	10	11/10/16 09:50 PM
Benzo[k]fluoranthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Chrysene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Dibenz[a,h]anthracene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Fluoranthene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Fluorene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Indeno[1,2,3-cd]pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Phenanthrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
Pyrene	0.0714	0.0476	0.0952	0.0714	U	mg/Kg-dry	10	11/10/16 09:50 PM
IS: Acenaphthene-d10	82.8	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Chrysene-d12	85.0	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Naphthalene-d8	87.5	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Perylene-d12	84.6	0	50-200	0		%REC	10	11/10/16 09:50 PM
IS: Phenanthrene-d10	83.4	0	50-200	0		%REC	10	11/10/16 09:50 PM
Surr: 2-Fluorobiphenyl	93.3	0	46-115	0		%REC	10	11/10/16 09:50 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(4-6)-A
Project:	Laredo SGR	**Lab ID:**	1611028-16
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:22 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	101	0	58-133	0		%REC	10	11/10/16 09:50 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-17
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:23 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.88	0.0952	0.286	0.143		mg/Kg-dry	5	11/16/16 03:32 PM
IS: Bismuth	87.0	0	30-120	0		%REC	5	11/16/16 03:32 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Acenaphthylene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Anthracene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[a]anthracene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[a]pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[b]fluoranthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[e]pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[g,h,i]perylene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[j]fluoranthene	0.0732	0.0488	0.0976	0.0732	NU	mg/Kg-dry	10	11/10/16 10:19 PM
Benzo[k]fluoranthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Chrysene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Dibenz[a,h]anthracene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Fluoranthene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Fluorene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Indeno[1,2,3-cd]pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Phenanthrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
Pyrene	0.0732	0.0488	0.0976	0.0732	U	mg/Kg-dry	10	11/10/16 10:19 PM
IS: Acenaphthene-d10	79.9	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Chrysene-d12	81.5	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Naphthalene-d8	79.6	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Perylene-d12	81.7	0	50-200	0		%REC	10	11/10/16 10:19 PM
IS: Phenanthrene-d10	80.4	0	50-200	0		%REC	10	11/10/16 10:19 PM
Surr: 2-Fluorobiphenyl	95.7	0	46-115	0		%REC	10	11/10/16 10:19 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(6-8)-A
Project:	Laredo SGR	**Lab ID:**	1611028-17
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:23 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	103	0	58-133	0		%REC	10	11/10/16 10:19 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-18
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:07 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	17.1	0.0990	0.297	0.149		mg/Kg-dry	5	11/16/16 03:55 PM
IS: Bismuth	89.4	0	30-120	0		%REC	5	11/16/16 03:55 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Acenaphthylene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[a]anthracene	0.0547	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[a]pyrene	0.0653	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[b]fluoranthene	0.0628	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[e]pyrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[g,h,i]perylene	0.0502	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[j]fluoranthene	0.0734	0.0489	0.0978	0.0734	NU	mg/Kg-dry	10	11/11/16 11:01 AM
Benzo[k]fluoranthene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Chrysene	0.0611	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Dibenz[a,h]anthracene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Fluoranthene	0.0880	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Fluorene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Indeno[1,2,3-cd]pyrene	0.0513	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
Phenanthrene	0.0734	0.0489	0.0978	0.0734	U	mg/Kg-dry	10	11/11/16 11:01 AM
Pyrene	0.0792	0.0489	0.0978	0.0734	J	mg/Kg-dry	10	11/11/16 11:01 AM
IS: Acenaphthene-d10	94.2	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Chrysene-d12	98.0	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Naphthalene-d8	92.6	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Perylene-d12	97.6	0	50-200	0		%REC	10	11/11/16 11:01 AM
IS: Phenanthrene-d10	94.9	0	50-200	0		%REC	10	11/11/16 11:01 AM
Surr: 2-Fluorobiphenyl	89.2	0	46-115	0		%REC	10	11/11/16 11:01 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-DU133(0-2)-B
Project:	Laredo SGR	**Lab ID:**	1611028-18
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:07 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	95.1	0	58-133	0		%REC	10	11/11/16 11:01 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-DU133(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-19
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:08 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	11.4	0.0935	0.280	0.140		mg/Kg-dry	5	11/16/16 03:57 PM
IS: Bismuth	86.2	0	30-120	0		%REC	5	11/16/16 03:57 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Acenaphthylene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Anthracene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[a]anthracene	0.0539	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[a]pyrene	0.0637	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[b]fluoranthene	0.0574	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[e]pyrene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[g,h,i]perylene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[j]fluoranthene	0.0741	0.0494	0.0988	0.0741	NU	mg/Kg-dry	10	11/11/16 11:29 AM
Benzo[k]fluoranthene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Chrysene	0.0606	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Dibenz[a,h]anthracene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Fluoranthene	0.0702	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
Fluorene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Indeno[1,2,3-cd]pyrene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Phenanthrene	0.0741	0.0494	0.0988	0.0741	U	mg/Kg-dry	10	11/11/16 11:29 AM
Pyrene	0.0656	0.0494	0.0988	0.0741	J	mg/Kg-dry	10	11/11/16 11:29 AM
IS: Acenaphthene-d10	93.8	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Chrysene-d12	94.4	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Naphthalene-d8	91.0	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Perylene-d12	93.4	0	50-200	0		%REC	10	11/11/16 11:29 AM
IS: Phenanthrene-d10	92.6	0	50-200	0		%REC	10	11/11/16 11:29 AM
Surr: 2-Fluorobiphenyl	92.0	0	46-115	0		%REC	10	11/11/16 11:29 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-DU133(2-4)-B
Project:	Laredo SGR	**Lab ID:**	1611028-19
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:08 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	95.6	0	58-133	0		%REC	10	11/11/16 11:29 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-20
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:09 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	6.27	0.0917	0.275	0.138		mg/Kg-dry	5	11/16/16 03:59 PM
IS: Bismuth	86.0	0	30-120	0		%REC	5	11/16/16 03:59 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Acenaphthylene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Anthracene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[a]anthracene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[a]pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[b]fluoranthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[e]pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[g,h,i]perylene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[j]fluoranthene	0.0687	0.0458	0.0916	0.0687	NU	mg/Kg-dry	10	11/11/16 11:59 AM
Benzo[k]fluoranthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Chrysene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Dibenz[a,h]anthracene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Fluoranthene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Fluorene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Indeno[1,2,3-cd]pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Phenanthrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
Pyrene	0.0687	0.0458	0.0916	0.0687	U	mg/Kg-dry	10	11/11/16 11:59 AM
IS: Acenaphthene-d10	96.3	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Chrysene-d12	95.8	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Naphthalene-d8	96.1	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Perylene-d12	93.9	0	50-200	0		%REC	10	11/11/16 11:59 AM
IS: Phenanthrene-d10	94.1	0	50-200	0		%REC	10	11/11/16 11:59 AM
Surr: 2-Fluorobiphenyl	91.6	0	46-115	0		%REC	10	11/11/16 11:59 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-DU133(4-6)-B
Project:	Laredo SGR	**Lab ID:**	1611028-20
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:09 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.7	0	58-133	0		%REC	10	11/11/16 11:59 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-21
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:10 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.24	0.0943	0.283	0.142		mg/Kg-dry	5	11/16/16 04:01 PM
IS: Bismuth	86.0	0	30-120	0		%REC	5	11/16/16 04:01 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Acenaphthylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[a]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[a]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[b]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[e]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[g,h,i]perylene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[j]fluoranthene	0.0737	0.0491	0.0982	0.0737	NU	mg/Kg-dry	10	11/11/16 12:28 PM
Benzo[k]fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Chrysene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Dibenz[a,h]anthracene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Fluoranthene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Fluorene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Indeno[1,2,3-cd]pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Phenanthrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
Pyrene	0.0737	0.0491	0.0982	0.0737	U	mg/Kg-dry	10	11/11/16 12:28 PM
IS: Acenaphthene-d10	94.9	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Chrysene-d12	95.3	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Naphthalene-d8	100	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Perylene-d12	94.9	0	50-200	0		%REC	10	11/11/16 12:28 PM
IS: Phenanthrene-d10	94.5	0	50-200	0		%REC	10	11/11/16 12:28 PM
Surr: 2-Fluorobiphenyl	92.9	0	46-115	0		%REC	10	11/11/16 12:28 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-B
Project:	Laredo SGR	**Lab ID:**	1611028-21
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:10 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	98.2	0	58-133	0		%REC	10	11/11/16 12:28 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-22
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:57 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	16.0	0.0971	0.291	0.146		mg/Kg-dry	5	11/16/16 04:03 PM
IS: Bismuth	88.6	0	30-120	0		%REC	5	11/16/16 04:03 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Acenaphthylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[a]anthracene	0.0487	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[a]pyrene	0.0589	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[b]fluoranthene	0.0627	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[e]pyrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[g,h,i]perylene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[j]fluoranthene	0.0721	0.0481	0.0962	0.0721	NU	mg/Kg-dry	10	11/11/16 12:56 PM
Benzo[k]fluoranthene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Chrysene	0.0554	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Dibenz[a,h]anthracene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Fluoranthene	0.0682	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Fluorene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Indeno[1,2,3-cd]pyrene	0.0503	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
Phenanthrene	0.0721	0.0481	0.0962	0.0721	U	mg/Kg-dry	10	11/11/16 12:56 PM
Pyrene	0.0637	0.0481	0.0962	0.0721	J	mg/Kg-dry	10	11/11/16 12:56 PM
IS: Acenaphthene-d10	97.8	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Chrysene-d12	96.9	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Naphthalene-d8	101	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Perylene-d12	95.6	0	50-200	0		%REC	10	11/11/16 12:56 PM
IS: Phenanthrene-d10	96.5	0	50-200	0		%REC	10	11/11/16 12:56 PM
Surr: 2-Fluorobiphenyl	89.4	0	46-115	0		%REC	10	11/11/16 12:56 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		

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(0-2)-C
Project:	Laredo SGR	**Lab ID:**	1611028-22
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:57 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.7	0	58-133	0		%REC	10	11/11/16 12:56 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-23
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:58 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	9.20	0.0943	0.283	0.142		mg/Kg-dry	5	11/16/16 04:05 PM
IS: Bismuth	86.7	0	30-120	0		%REC	5	11/16/16 04:05 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Acenaphthylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[a]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[a]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[b]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[e]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[g,h,i]perylene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[j]fluoranthene	0.0744	0.0496	0.0992	0.0744	NU	mg/Kg-dry	10	11/11/16 01:25 PM
Benzo[k]fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Chrysene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Dibenz[a,h]anthracene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Fluoranthene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Fluorene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Indeno[1,2,3-cd]pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Phenanthrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
Pyrene	0.0744	0.0496	0.0992	0.0744	U	mg/Kg-dry	10	11/11/16 01:25 PM
IS: Acenaphthene-d10	97.2	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Chrysene-d12	96.7	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Naphthalene-d8	100	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Perylene-d12	96.1	0	50-200	0		%REC	10	11/11/16 01:25 PM
IS: Phenanthrene-d10	95.6	0	50-200	0		%REC	10	11/11/16 01:25 PM
Surr: 2-Fluorobiphenyl	87.0	0	46-115	0		%REC	10	11/11/16 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-DU133(2-4)-C
Project:	Laredo SGR	**Lab ID:**	1611028-23
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:58 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	94.6	0	58-133	0		%REC	10	11/11/16 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		

DHL Analytical, Inc.

Date: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-24
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:59 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.24	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:07 PM
IS: Bismuth	86.9	0	30-120	0		%REC	5	11/16/16 04:07 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Acenaphthylene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Anthracene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[a]anthracene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[a]pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[b]fluoranthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[e]pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[g,h,i]perylene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[j]fluoranthene	0.0706	0.0471	0.0942	0.0706	NU	mg/Kg-dry	10	11/11/16 01:54 PM
Benzo[k]fluoranthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Chrysene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Dibenz[a,h]anthracene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Fluoranthene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Fluorene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Indeno[1,2,3-cd]pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Phenanthrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
Pyrene	0.0706	0.0471	0.0942	0.0706	U	mg/Kg-dry	10	11/11/16 01:54 PM
IS: Acenaphthene-d10	93.1	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Chrysene-d12	93.6	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Naphthalene-d8	103	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Perylene-d12	92.5	0	50-200	0		%REC	10	11/11/16 01:54 PM
IS: Phenanthrene-d10	91.7	0	50-200	0		%REC	10	11/11/16 01:54 PM
Surr: 2-Fluorobiphenyl	90.6	0	46-115	0		%REC	10	11/11/16 01:54 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(4-6)-C
Project:	Laredo SGR	**Lab ID:**	1611028-24
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 03:59 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Surr: 4-Terphenyl-d14	99.0	0	58-133	0		%REC	10	11/11/16 01:54 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-DU133(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-25
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:00 PM
Lab Order:	1611028	**Matrix:**	SOIL

Analyses	Result	DL	RL	LOD	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - SOLID			**SW6020A**					Analyst: **RO**
Lead	5.47	0.0980	0.294	0.147		mg/Kg-dry	5	11/16/16 04:09 PM
IS: Bismuth	86.7	0	30-120	0		%REC	5	11/16/16 04:09 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DEW**
Acenaphthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Acenaphthylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[a]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[a]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[b]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[e]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[g,h,i]perylene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[j]fluoranthene	0.0718	0.0478	0.0957	0.0718	NU	mg/Kg-dry	10	11/11/16 03:54 PM
Benzo[k]fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Chrysene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Dibenz[a,h]anthracene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Fluoranthene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Fluorene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Indeno[1,2,3-cd]pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Phenanthrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
Pyrene	0.0718	0.0478	0.0957	0.0718	U	mg/Kg-dry	10	11/11/16 03:54 PM
IS: Acenaphthene-d10	88.1	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Chrysene-d12	88.9	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Naphthalene-d8	96.6	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Perylene-d12	88.3	0	50-200	0		%REC	10	11/11/16 03:54 PM
IS: Phenanthrene-d10	88.7	0	50-200	0		%REC	10	11/11/16 03:54 PM
Surr: 2-Fluorobiphenyl	98.0	0	46-115	0		%REC	10	11/11/16 03:54 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(6-8)-C
Project:	Laredo SGR	**Lab ID:**	1611028-25
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:00 PM
Lab Order:	1611028	**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 03:54 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: *21-Nov-16*

CLIENT:	Arcadis	**Client Sample ID:**	SGR-EB133(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-26
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:51 PM
Lab Order:	1611028	**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 02:17 PM
IS: Bismuth	80.7	0	30-120	0		%REC	1	11/16/16 02:17 PM
PAHS: GC/MS			**SW8270D-LL**					Analyst: **DB**
Acenaphthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Acenaphthylene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Anthracene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[a]anthracene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[a]pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[b]fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[e]pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[g,h,i]perylene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Benzo[j]fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	NU	mg/L	1	11/08/16 12:29 PM
Benzo[k]fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Chrysene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Dibenz[a,h]anthracene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Fluoranthene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Fluorene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Indeno[1,2,3-cd]pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Phenanthrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
Pyrene	0.0000619	0.0000387	0.0000774	0.0000619	U	mg/L	1	11/08/16 12:29 PM
IS: Acenaphthene-d10	103	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Chrysene-d12	105	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Naphthalene-d8	104	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Perylene-d12	110	0	50-200	0		%REC	1	11/08/16 12:29 PM
IS: Phenanthrene-d10	100	0	50-200	0		%REC	1	11/08/16 12:29 PM
Surr: 2-Fluorobiphenyl	75.7	0	53-106	0		%REC	1	11/08/16 12:29 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-EB133(20161102)
Project:	Laredo SGR	**Lab ID:**	1611028-26
Project No:	04285081.0000.00043	**Collection Date:**	11/02/16 04:51 PM
Lab Order:	1611028	**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 12:29 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
Work Order: 1611028
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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161116A

The QC data in batch 77913 applies to the following samples: 1611028-13A, 1611028-26A

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: 1611028
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: 1611028
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: 1611028
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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

The QC data in batch 77902 applies to the following samples: 1611028-01A, 1611028-02A, 1611028-03A, 1611028-04A, 1611028-05A, 1611028-06A, 1611028-07A, 1611028-08A, 1611028-09A, 1611028-10A, 1611028-11A, 1611028-12A, 1611028-14A, 1611028-15A, 1611028-16A, 1611028-17A

Sample ID **MB-77902** Batch ID: **77902** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 2:18:00 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		95.5	30	120			

Sample ID **LCS-77902** Batch ID: **77902** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 2:21:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	48.8	0.300	50.00	0	97.6	84	118			
IS: Bismuth	50.0		200.0		93.7	30	120			

Sample ID **LCSD-77902** Batch ID: **77902** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 2:23:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	49.2	0.300	50.00	0	98.3	84	118	0.696	20	
IS: Bismuth	50.0		200.0		95.1	30	120	0	0	

Sample ID **1611028-10A SD** Batch ID: **77902** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 2:29:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	6.10	1.32	0	6.043				0.957	10	
IS: Bismuth	219		175.4		92.3	30	120	0	0	

Sample ID **1611028-10A PDS** Batch ID: **77902** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 2:53:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	47.5	0.263	43.86	6.043	94.6	80	120			
IS: Bismuth	43.9		877.2		80.5	30	120			

Sample ID **1611028-10A MS** Batch ID: **77902** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_161116B** Analysis Date: **11/16/2016 2:55:00 PM** Prep Date: **11/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	52.6	0.278	46.30	6.043	101	84	118			
IS: Bismuth	46.3		185.2		84.9	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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

Sample ID **1611028-10A MSD**	Batch ID: **77902**	TestNo: **SW6020A**	Units: **mg/Kg-dry**		
SampType: **MSD**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 2:57:00 PM**	Prep Date: **11/14/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	48.9	0.270	45.05	6.043	95.2	84	118	7.21	20	
IS: Bismuth	45.0		180.2		81.7	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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

The QC data in batch 77903 applies to the following samples: 1611028-18A, 1611028-19A, 1611028-20A, 1611028-21A, 1611028-22A, 1611028-23A, 1611028-24A, 1611028-25A

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: 1611028
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 **CCV3-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.204	0.00100	0.200	0	102	90	110			
IS: Bismuth	0.200		0.200		94.9	30	120			

Sample ID **LCVL3-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000959	0.00100	0.00100	0	95.9	80	120			
IS: Bismuth	0.200		0.200		94.7	30	120			

Sample ID **CCV4-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 2:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.204	0.00100	0.200	0	102	90	110			
IS: Bismuth	0.200		0.200		91.0	30	120			

Sample ID **LCVL4-161116**	Batch ID: **R89029**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161116B**	Analysis Date: **11/16/2016 3:06:00 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		92.8	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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161116B

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: 1611028
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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS6_161108A

The QC data in batch 77809 applies to the following samples: 1611028-13B, 1611028-26B

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: 1611028
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: 1611028
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: 1611028
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: 1611028
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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

The QC data in batch 77830 applies to the following samples: 1611028-01A, 1611028-02A, 1611028-03A, 1611028-04A, 1611028-05A, 1611028-06A, 1611028-07A, 1611028-08A, 1611028-09A, 1611028-10A, 1611028-11A, 1611028-12A, 1611028-14A, 1611028-15A, 1611028-16A, 1611028-17A

Sample ID **LCS-77830** Batch ID: **77830** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_161110A** Analysis Date: **11/10/2016 10:49:00 A** Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.02	0.0100	1.000	0	102	44	111			
Acenaphthylene	1.03	0.0100	1.000	0	103	39	116			
Anthracene	0.942	0.0100	1.000	0	94.2	50	114			
Benzo[a]anthracene	1.07	0.0100	1.000	0	107	54	122			
Benzo[a]pyrene	0.992	0.0100	1.000	0	99.2	50	125			
Benzo[b]fluoranthene	1.10	0.0100	1.000	0	110	53	128			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	43	140			
Benzo[g,h,i]perylene	1.05	0.0100	1.000	0	105	49	127			
Benzo[j]fluoranthene	1.00	0.0100	1.000	0	100	45	125			N
Benzo[k]fluoranthene	1.02	0.0100	1.000	0	102	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	1.00	0.0100	1.000	0	100	55	119			
Fluorene	1.05	0.0100	1.000	0	105	47	114			
Indeno[1,2,3-cd]pyrene	1.06	0.0100	1.000	0	106	49	130			
Phenanthrene	1.02	0.0100	1.000	0	102	49	113			
Pyrene	0.979	0.0100	1.000	0	97.9	55	117			
IS: Acenaphthene-d10	4.00		4.000		80.1	50	200			
IS: Chrysene-d12	4.00		4.000		81.4	50	200			
IS: Naphthalene-d8	4.00		4.000		111	50	200			
IS: Perylene-d12	4.00		4.000		82.3	50	200			
IS: Phenanthrene-d10	4.00		4.000		82.3	50	200			
Surr: 2-Fluorobiphenyl	0.903		1.000		90.3	46	115			
Surr: 4-Terphenyl-d14	0.971		1.000		97.1	58	133			

Sample ID **MB-77830** Batch ID: **77830** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_161110A** Analysis Date: **11/10/2016 11:17:00 A** Prep Date: **11/9/2016**

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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **MB-77830**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MBLK**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:17:00 A**	Prep Date: **11/9/2016**

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		81.4	50	200			
IS: Chrysene-d12	4.00		4.000		83.3	50	200			
IS: Naphthalene-d8	4.00		4.000		107	50	200			
IS: Perylene-d12	4.00		4.000		83.5	50	200			
IS: Phenanthrene-d10	4.00		4.000		83.2	50	200			
Surr: 2-Fluorobiphenyl	0.916		1.000		91.6	46	115			
Surr: 4-Terphenyl-d14	0.999		1.000		99.9	58	133			

Sample ID **SB-161110**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **SBLK**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 4:05:00 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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **SB-161110**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **SBLK**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 4:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	0.0000800		0							
Surr: 4-Terphenyl-d14	0.000350		0							

Sample ID **1611028-10AMS**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MS**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 10:48:00 P**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.02	0.0987	0.9872	0	103	44	111			
Acenaphthylene	0.984	0.0987	0.9872	0	99.7	39	116			
Anthracene	0.969	0.0987	0.9872	0	98.2	50	114			
Benzo[a]anthracene	1.02	0.0987	0.9872	0	103	54	122			
Benzo[a]pyrene	0.984	0.0987	0.9872	0	99.7	50	125			
Benzo[b]fluoranthene	0.981	0.0987	0.9872	0	99.3	53	128			
Benzo[e]pyrene	1.05	0.0987	0.9872	0	107	43	140			
Benzo[g,h,i]perylene	1.01	0.0987	0.9872	0	103	49	127			
Benzo[j]fluoranthene	1.02	0.0987	0.9872	0	103	45	125			N
Benzo[k]fluoranthene	1.08	0.0987	0.9872	0	109	56	123			
Chrysene	1.06	0.0987	0.9872	0	108	57	118			
Dibenz[a,h]anthracene	0.980	0.0987	0.9872	0	99.2	50	129			
Fluoranthene	1.03	0.0987	0.9872	0	105	55	119			
Fluorene	1.03	0.0987	0.9872	0	104	47	114			
Indeno[1,2,3-cd]pyrene	1.02	0.0987	0.9872	0	104	49	130			
Phenanthrene	1.03	0.0987	0.9872	0	104	49	113			
Pyrene	1.02	0.0987	0.9872	0	104	55	117			
IS: Acenaphthene-d10	39.5		3.949		82.4	50	200			
IS: Chrysene-d12	39.5		3.949		84.0	50	200			
IS: Naphthalene-d8	39.5		3.949		83.9	50	200			
IS: Perylene-d12	39.5		3.949		84.4	50	200			
IS: Phenanthrene-d10	39.5		3.949		82.5	50	200			
Surr: 2-Fluorobiphenyl	0.923		0.9872		93.5	46	115			
Surr: 4-Terphenyl-d14	0.981		0.9872		99.4	58	133			

Sample ID **1611028-10AMSD**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:16:00 P**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.966	0.0979	0.9794	0	98.6	44	111	5.07	20	
Acenaphthylene	0.942	0.0979	0.9794	0	96.1	39	116	4.43	20	
Anthracene	0.920	0.0979	0.9794	0	93.9	50	114	5.25	20	
Benzo[a]anthracene	0.974	0.0979	0.9794	0	99.5	54	122	4.42	20	
Benzo[a]pyrene	0.930	0.0979	0.9794	0	94.9	50	125	5.64	20	

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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **1611028-10AMSD**	Batch ID: **77830**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **MSD**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:16:00 P**	Prep Date: **11/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo[b]fluoranthene	0.912	0.0979	0.9794	0	93.1	53	128	7.28	20	
Benzo[e]pyrene	0.987	0.0979	0.9794	0	101	43	140	6.38	20	
Benzo[g,h,i]perylene	0.960	0.0979	0.9794	0	98.0	49	127	5.31	20	
Benzo[j]fluoranthene	0.959	0.0979	0.9794	0	97.9	45	125	6.06	20	N
Benzo[k]fluoranthene	1.02	0.0979	0.9794	0	104	56	123	5.87	20	
Chrysene	1.02	0.0979	0.9794	0	104	57	118	4.36	20	
Dibenz[a,h]anthracene	0.934	0.0979	0.9794	0	95.4	50	129	4.73	20	
Fluoranthene	0.994	0.0979	0.9794	0	102	55	119	3.89	20	
Fluorene	0.983	0.0979	0.9794	0	100	47	114	4.76	20	
Indeno[1,2,3-cd]pyrene	0.972	0.0979	0.9794	0	99.2	49	130	5.13	20	
Phenanthrene	0.976	0.0979	0.9794	0	99.6	49	113	5.18	20	
Pyrene	0.987	0.0979	0.9794	0	101	55	117	3.62	20	
IS: Acenaphthene-d10	39.2		3.918		81.7	50	200	0	0	
IS: Chrysene-d12	39.2		3.918		83.6	50	200	0	0	
IS: Naphthalene-d8	39.2		3.918		77.5	50	200	0	0	
IS: Perylene-d12	39.2		3.918		84.5	50	200	0	0	
IS: Phenanthrene-d10	39.2		3.918		81.6	50	200	0	0	
Surr: 2-Fluorobiphenyl	0.886		0.9794		90.4	46	115	0	0	
Surr: 4-Terphenyl-d14	0.963		0.9794		98.3	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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **ICV-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 10:20:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.07	0.0100	2.000	0	104	80	120			
Acenaphthylene	2.06	0.0100	2.000	0	103	80	120			
Anthracene	1.95	0.0100	2.000	0	97.3	80	120			
Benzo[a]anthracene	2.05	0.0100	2.000	0	102	80	120			
Benzo[a]pyrene	2.01	0.0100	2.000	0	101	80	120			
Benzo[b]fluoranthene	1.91	0.0100	2.000	0	95.4	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.05	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	2.10	0.0100	2.000	0	105	80	120			
Chrysene	2.10	0.0100	2.000	0	105	80	120			
Dibenz[a,h]anthracene	2.05	0.0100	2.000	0	103	80	120			
Fluoranthene	1.89	0.0100	2.000	0	94.4	80	120			
Fluorene	2.03	0.0100	2.000	0	101	80	120			
Indeno[1,2,3-cd]pyrene	2.02	0.0100	2.000	0	101	80	120			
Phenanthrene	1.94	0.0100	2.000	0	97.1	80	120			
Pyrene	1.87	0.0100	2.000	0	93.5	80	120			
IS: Acenaphthene-d10	4.00		4.000		86.3	50	200			
IS: Chrysene-d12	4.00		4.000		87.2	50	200			
IS: Naphthalene-d8	4.00		4.000		64.1	50	200			
IS: Perylene-d12	4.00		4.000		88.8	50	200			
IS: Phenanthrene-d10	4.00		4.000		88.5	50	200			
Surr: 2-Fluorobiphenyl	2.07		2.000		104	65	120			
Surr: 4-Terphenyl-d14	2.07		2.000		104	65	120			

Sample ID **ICV2-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 3:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	2.10	0.0100	2.000	0	105	80	120			
Acenaphthylene	2.07	0.0100	2.000	0	104	80	120			
Anthracene	1.95	0.0100	2.000	0	97.4	80	120			
Benzo[a]anthracene	2.06	0.0100	2.000	0	103	80	120			
Benzo[a]pyrene	1.97	0.0100	2.000	0	98.5	80	120			
Benzo[b]fluoranthene	2.00	0.0100	2.000	0	99.9	80	120			
Benzo[e]pyrene	2.03	0.0100	2.000	0	102	80	120			
Benzo[g,h,i]perylene	2.03	0.0100	2.000	0	102	80	120			
Benzo[j]fluoranthene	2.03	0.0100	2.000	0	101	80	120			N
Benzo[k]fluoranthene	2.01	0.0100	2.000	0	101	80	120			
Chrysene	2.12	0.0100	2.000	0	106	80	120			
Dibenz[a,h]anthracene	2.03	0.0100	2.000	0	102	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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161110A

Sample ID **ICV2-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **ICV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 3:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoranthene	1.91	0.0100	2.000	0	95.7	80	120			
Fluorene	2.06	0.0100	2.000	0	103	80	120			
Indeno[1,2,3-cd]pyrene	2.02	0.0100	2.000	0	101	80	120			
Phenanthrene	1.95	0.0100	2.000	0	97.3	80	120			
Pyrene	1.89	0.0100	2.000	0	94.4	80	120			
IS: Acenaphthene-d10	4.00		4.000		84.5	50	200			
IS: Chrysene-d12	4.00		4.000		86.1	50	200			
IS: Naphthalene-d8	4.00		4.000		59.1	50	200			
IS: Perylene-d12	4.00		4.000		87.9	50	200			
IS: Phenanthrene-d10	4.00		4.000		87.0	50	200			
Surr: 2-Fluorobiphenyl	2.07		2.000		103	65	120			
Surr: 4-Terphenyl-d14	2.10		2.000		105	65	120			

Sample ID **CCV1-161110**	Batch ID: **R88950**	TestNo: **SW8270D-LL**	Units: **mg/Kg-dry**
SampType: **CCV**	Run ID: **GCMS8_161110A**	Analysis Date: **11/10/2016 11:45:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.10	0.0100	1.000	0	110	50	150			
Acenaphthylene	1.10	0.0100	1.000	0	110	50	150			
Anthracene	1.05	0.0100	1.000	0	105	50	150			
Benzo[a]anthracene	1.08	0.0100	1.000	0	108	50	150			
Benzo[a]pyrene	1.04	0.0100	1.000	0	104	50	150			
Benzo[b]fluoranthene	1.10	0.0100	1.000	0	110	50	150			
Benzo[e]pyrene	1.07	0.0100	1.000	0	107	50	150			
Benzo[g,h,i]perylene	1.05	0.0100	1.000	0	105	50	150			
Benzo[j]fluoranthene	1.11	0.0100	1.000	0	111	50	150			N
Benzo[k]fluoranthene	1.00	0.0100	1.000	0	100	50	150			
Chrysene	1.11	0.0100	1.000	0	111	50	150			
Dibenz[a,h]anthracene	1.06	0.0100	1.000	0	106	50	150			
Fluoranthene	1.03	0.0100	1.000	0	103	50	150			
Fluorene	1.10	0.0100	1.000	0	110	50	150			
Indeno[1,2,3-cd]pyrene	1.05	0.0100	1.000	0	105	50	150			
Phenanthrene	1.05	0.0100	1.000	0	105	50	150			
Pyrene	1.02	0.0100	1.000	0	102	50	150			
IS: Acenaphthene-d10	4.00		4.000		80.6	50	200			
IS: Chrysene-d12	4.00		4.000		83.1	50	200			
IS: Naphthalene-d8	4.00		4.000		71.0	50	200			
IS: Perylene-d12	4.00		4.000		83.4	50	200			
IS: Phenanthrene-d10	4.00		4.000		81.9	50	200			
Surr: 2-Fluorobiphenyl	1.11		1.000		111	50	150			
Surr: 4-Terphenyl-d14	1.13		1.000		113	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: 1611028
Project: Laredo SGR

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS8_161111A

The QC data in batch 77861 applies to the following samples: 1611028-18A, 1611028-19A, 1611028-20A, 1611028-21A, 1611028-22A, 1611028-23A, 1611028-24A, 1611028-25A

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: 1611028
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: 1611028
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: 1611028
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: 1611028
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: 1611028
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

Lab Order: 1611028
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_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
1611028-13B	SGR-EB100(20161102)	SW8270D-LL	77809	1	11/8/2016 12:01:00 PM	11/7/2016 10:45:00 AM	E
1611028-26B	SGR-EB133(20161102)	SW8270D-LL	77809	1	11/8/2016 12:29:00 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: 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: 1611028
Client: Arcadis
Project: Laredo SGR

Sequence Report

Run ID: GCMS8_161110A

Sample ID	Client Sample ID	Test Number	Batch ID	Dilution	Analysis Date	Prep Date	Matrix
DFTPP-161110	-----	SW8270D-LL	R88950	1	11/10/2016 9:51:00 AM		S
ICV-161110	-----	SW8270D-LL	R88950	1	11/10/2016 10:20:00 AM		S
LCS-77830	-----	SW8270D-LL	77830	1	11/10/2016 10:49:00 AM	11/9/2016 1:00:00 PM	S
MB-77830	-----	SW8270D-LL	77830	1	11/10/2016 11:17:00 AM	11/9/2016 1:00:00 PM	S
1611028-01A	SGR-DU100(0-2)-A	SW8270D-LL	77830	10	11/10/2016 1:42:00 PM	11/9/2016 1:00:00 PM	S
1611028-02A	SGR-DU100(2-4)-A	SW8270D-LL	77830	10	11/10/2016 2:10:00 PM	11/9/2016 1:00:00 PM	S
1611028-03A	SGR-DU100(4-6)-A	SW8270D-LL	77830	10	11/10/2016 2:39:00 PM	11/9/2016 1:00:00 PM	S
DFTPP2-161110	-----	SW8270D-LL	R88950	1	11/10/2016 3:08:00 PM		S
ICV2-161110	-----	SW8270D-LL	R88950	1	11/10/2016 3:37:00 PM		S
SB-161110	-----	SW8270D-LL	77830	1	11/10/2016 4:05:00 PM		S
1611028-04A	SGR-DU100(6-8)-A	SW8270D-LL	77830	10	11/10/2016 4:34:00 PM	11/9/2016 1:00:00 PM	S
1611028-05A	SGR-DU100(0-2)-B	SW8270D-LL	77830	10	11/10/2016 5:03:00 PM	11/9/2016 1:00:00 PM	S
1611028-06A	SGR-DU100(2-4)-B	SW8270D-LL	77830	10	11/10/2016 5:31:00 PM	11/9/2016 1:00:00 PM	S
1611028-07A	SGR-DU100(4-6)-B	SW8270D-LL	77830	10	11/10/2016 6:00:00 PM	11/9/2016 1:00:00 PM	S
1611028-08A	SGR-DU100(6-8)-B	SW8270D-LL	77830	10	11/10/2016 6:29:00 PM	11/9/2016 1:00:00 PM	S
1611028-09A	SGR-DU100(0-2)-C	SW8270D-LL	77830	10	11/10/2016 6:57:00 PM	11/9/2016 1:00:00 PM	S
1611028-10A	SGR-DU100(2-4)-C	SW8270D-LL	77830	10	11/10/2016 7:27:00 PM	11/9/2016 1:00:00 PM	S
1611028-11A	SGR-DU100(4-6)-C	SW8270D-LL	77830	10	11/10/2016 7:55:00 PM	11/9/2016 1:00:00 PM	S
1611028-12A	SGR-DU100(6-8)-C	SW8270D-LL	77830	10	11/10/2016 8:24:00 PM	11/9/2016 1:00:00 PM	S
1611028-14A	SGR-DU133(0-2)-A	SW8270D-LL	77830	10	11/10/2016 8:52:00 PM	11/9/2016 1:00:00 PM	S
1611028-15A	SGR-DU133(2-4)-A	SW8270D-LL	77830	10	11/10/2016 9:21:00 PM	11/9/2016 1:00:00 PM	S
1611028-16A	SGR-DU133(4-6)-A	SW8270D-LL	77830	10	11/10/2016 9:50:00 PM	11/9/2016 1:00:00 PM	S
1611028-17A	SGR-DU133(6-8)-A	SW8270D-LL	77830	10	11/10/2016 10:19:00 PM	11/9/2016 1:00:00 PM	S
1611028-10AMS	SGR-DU100(2-4)-CMS	SW8270D-LL	77830	10	11/10/2016 10:48:00 PM	11/9/2016 1:00:00 PM	S
1611028-10AMSD	SGR-DU100(2-4)-CMSD	SW8270D-LL	77830	10	11/10/2016 11:16:00 PM	11/9/2016 1:00:00 PM	S
CCV1-161110	-----	SW8270D-LL	R88950	1	11/10/2016 11:45:00 PM		S

Lab Order: 1611028
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
1611028-18A	SGR-DU133(0-2)-B	SW8270D-LL	77861	10	11/11/2016 11:01:00 AM	11/10/2016 2:12:53 PM	S
1611028-19A	SGR-DU133(2-4)-B	SW8270D-LL	77861	10	11/11/2016 11:29:00 AM	11/10/2016 2:12:53 PM	S
1611028-20A	SGR-DU133(4-6)-B	SW8270D-LL	77861	10	11/11/2016 11:59:00 AM	11/10/2016 2:12:53 PM	S
1611028-21A	SGR-DU133(6-8)-B	SW8270D-LL	77861	10	11/11/2016 12:28:00 PM	11/10/2016 2:12:53 PM	S
1611028-22A	SGR-DU133(0-2)-C	SW8270D-LL	77861	10	11/11/2016 12:56:00 PM	11/10/2016 2:12:53 PM	S
1611028-23A	SGR-DU133(2-4)-C	SW8270D-LL	77861	10	11/11/2016 1:25:00 PM	11/10/2016 2:12:53 PM	S
1611028-24A	SGR-DU133(4-6)-C	SW8270D-LL	77861	10	11/11/2016 1:54:00 PM	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
1611028-25A	SGR-DU133(6-8)-C	SW8270D-LL	77861	10	11/11/2016 3:54:00 PM	11/10/2016 2:12:53 PM	S
1611044-01AMS	-----	SW8270D-LL	77861	10	11/11/2016 10:07:00 PM	11/10/2016 2:12:53 PM	S
1611044-01AMSD	-----	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: 1611028
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	SGR-EB133(20161102)	SW6020A	77913	1	11/16/2016 2:17:00 PM	11/15/2016 9:08:38 AM	E
1611028-26A SD	SGR-EB133(20161102)	SW6020A	77913	5	11/16/2016 2:24:00 PM	11/15/2016 9:08:38 AM	A
1611028-13A	SGR-EB100(20161102)	SW6020A	77913	1	11/16/2016 2:42:00 PM	11/15/2016 9:08:38 AM	E
1611028-26A PDS	SGR-EB133(20161102)	SW6020A	77913	1	11/16/2016 3:06:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MS	SGR-EB133(20161102)MS	SW6020A	77913	1	11/16/2016 3:12:00 PM	11/15/2016 9:08:38 AM	A
1611028-26A MSD	SGR-EB133(20161102)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: 1611028
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
CCV3-161116	-----	SW6020A	R89029	1	11/16/2016 1:23:00 PM		A
LCVL3-161116	-----	SW6020A	R89029	1	11/16/2016 2:01:00 PM		A
CCB3-161116	-----	SW6020A	R89029	1	11/16/2016 2:16:00 PM		A
MB-77902	-----	SW6020A	77902	5	11/16/2016 2:18:00 PM	11/14/2016 3:30:43 PM	S
LCS-77902	-----	SW6020A	77902	5	11/16/2016 2:21:00 PM	11/14/2016 3:30:43 PM	S
LCSD-77902	-----	SW6020A	77902	5	11/16/2016 2:23:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A	SGR-DU100(2-4)-C	SW6020A	77902	5	11/16/2016 2:27:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A SD	SGR-DU100(2-4)-C	SW6020A	77902	25	11/16/2016 2:29:00 PM	11/14/2016 3:30:43 PM	S
1611028-01A	SGR-DU100(0-2)-A	SW6020A	77902	5	11/16/2016 2:38:00 PM	11/14/2016 3:30:43 PM	S
1611028-02A	SGR-DU100(2-4)-A	SW6020A	77902	5	11/16/2016 2:40:00 PM	11/14/2016 3:30:43 PM	S
1611028-03A	SGR-DU100(4-6)-A	SW6020A	77902	5	11/16/2016 2:42:00 PM	11/14/2016 3:30:43 PM	S
1611028-04A	SGR-DU100(6-8)-A	SW6020A	77902	5	11/16/2016 2:44:00 PM	11/14/2016 3:30:43 PM	S
1611028-05A	SGR-DU100(0-2)-B	SW6020A	77902	5	11/16/2016 2:46:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A PDS	SGR-DU100(2-4)-C	SW6020A	77902	5	11/16/2016 2:53:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A MS	SGR-DU100(2-4)-CMS	SW6020A	77902	5	11/16/2016 2:55:00 PM	11/14/2016 3:30:43 PM	S
1611028-10A MSD	SGR-DU100(2-4)-CMSD	SW6020A	77902	5	11/16/2016 2:57:00 PM	11/14/2016 3:30:43 PM	S
CCV4-161116	-----	SW6020A	R89029	1	11/16/2016 2:59:00 PM		A
LCVL4-161116	-----	SW6020A	R89029	1	11/16/2016 3:06:00 PM		A
CCB4-161116	-----	SW6020A	R89029	1	11/16/2016 3:12:00 PM		A
1611028-06A	SGR-DU100(2-4)-B	SW6020A	77902	5	11/16/2016 3:14:00 PM	11/14/2016 3:30:43 PM	S
1611028-07A	SGR-DU100(4-6)-B	SW6020A	77902	5	11/16/2016 3:16:00 PM	11/14/2016 3:30:43 PM	S
1611028-08A	SGR-DU100(6-8)-B	SW6020A	77902	5	11/16/2016 3:18:00 PM	11/14/2016 3:30:43 PM	S
1611028-09A	SGR-DU100(0-2)-C	SW6020A	77902	5	11/16/2016 3:20:00 PM	11/14/2016 3:30:43 PM	S
1611028-11A	SGR-DU100(4-6)-C	SW6020A	77902	5	11/16/2016 3:22:00 PM	11/14/2016 3:30:43 PM	S
1611028-12A	SGR-DU100(6-8)-C	SW6020A	77902	5	11/16/2016 3:24:00 PM	11/14/2016 3:30:43 PM	S

Lab Order: 1611028
Client: Arcadis
Project: Laredo SGR

Sequence Report

1611028-14A	SGR-DU133(0-2)-A	SW6020A	77902	5	11/16/2016 3:26:00 PM	11/14/2016 3:30:43 PM	S
1611028-15A	SGR-DU133(2-4)-A	SW6020A	77902	5	11/16/2016 3:28:00 PM	11/14/2016 3:30:43 PM	S
1611028-16A	SGR-DU133(4-6)-A	SW6020A	77902	5	11/16/2016 3:30:00 PM	11/14/2016 3:30:43 PM	S
1611028-17A	SGR-DU133(6-8)-A	SW6020A	77902	5	11/16/2016 3:32:00 PM	11/14/2016 3:30:43 PM	S
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 SD	-----	SW6020A	77903	25	11/16/2016 3:53:00 PM	11/14/2016 3:32:19 PM	S
1611028-18A	SGR-DU133(0-2)-B	SW6020A	77903	5	11/16/2016 3:55:00 PM	11/14/2016 3:32:19 PM	S
1611028-19A	SGR-DU133(2-4)-B	SW6020A	77903	5	11/16/2016 3:57:00 PM	11/14/2016 3:32:19 PM	S
1611028-20A	SGR-DU133(4-6)-B	SW6020A	77903	5	11/16/2016 3:59:00 PM	11/14/2016 3:32:19 PM	S
1611028-21A	SGR-DU133(6-8)-B	SW6020A	77903	5	11/16/2016 4:01:00 PM	11/14/2016 3:32:19 PM	S
1611028-22A	SGR-DU133(0-2)-C	SW6020A	77903	5	11/16/2016 4:03:00 PM	11/14/2016 3:32:19 PM	S
1611028-23A	SGR-DU133(2-4)-C	SW6020A	77903	5	11/16/2016 4:05:00 PM	11/14/2016 3:32:19 PM	S
1611028-24A	SGR-DU133(4-6)-C	SW6020A	77903	5	11/16/2016 4:07:00 PM	11/14/2016 3:32:19 PM	S
1611028-25A	SGR-DU133(6-8)-C	SW6020A	77903	5	11/16/2016 4:09:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A PDS	-----	SW6020A	77903	5	11/16/2016 4:13:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A MS	-----	SW6020A	77903	5	11/16/2016 4:15:00 PM	11/14/2016 3:32:19 PM	S
1611044-01A MSD	-----	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

CLIENT: Arcadis
Work Order: 1611028
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
1611028

GCMS6_161108A
For

DHL Work Order
1611028

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

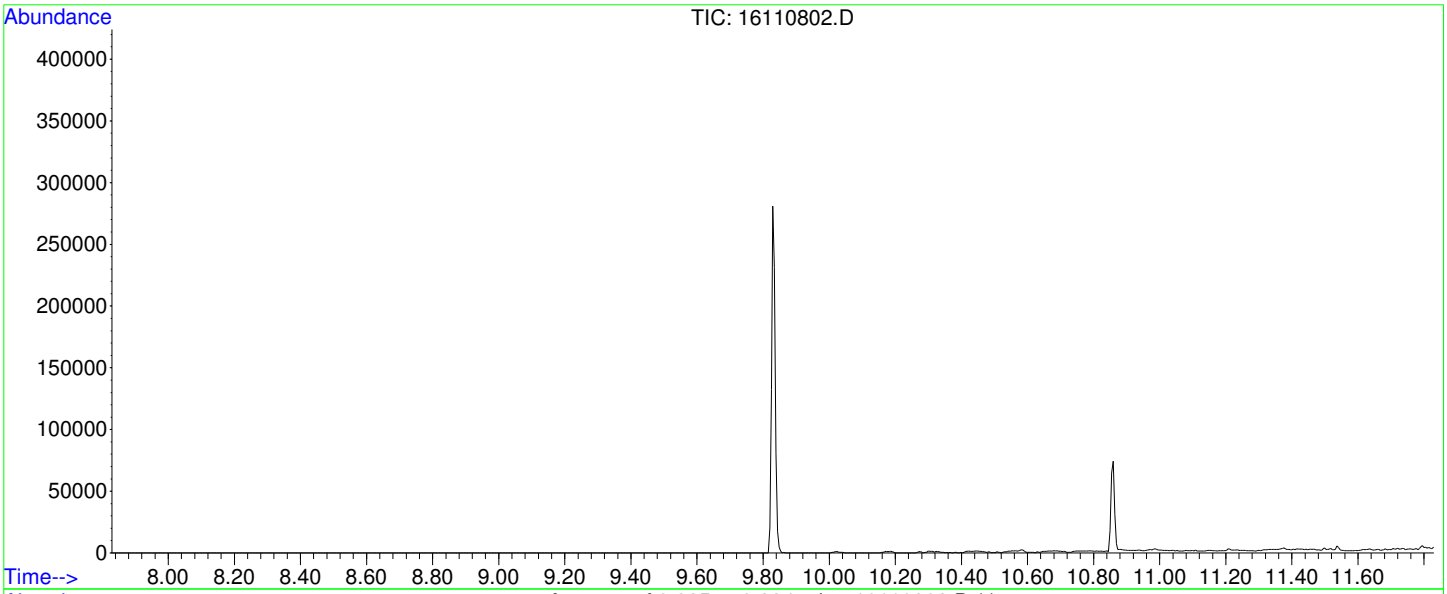
Number	Reagent Name	Amt	Units	Exp. Da
7509	pH paper 0-14	1	paper	10/15/2025
10213	Whatman 41 Filter	1	filter	08/23/2026
10637	Methylene Chloride	120	ml	08/09/2026
10696	Purified Sodium Sulfate	10	g	08/26/2026

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

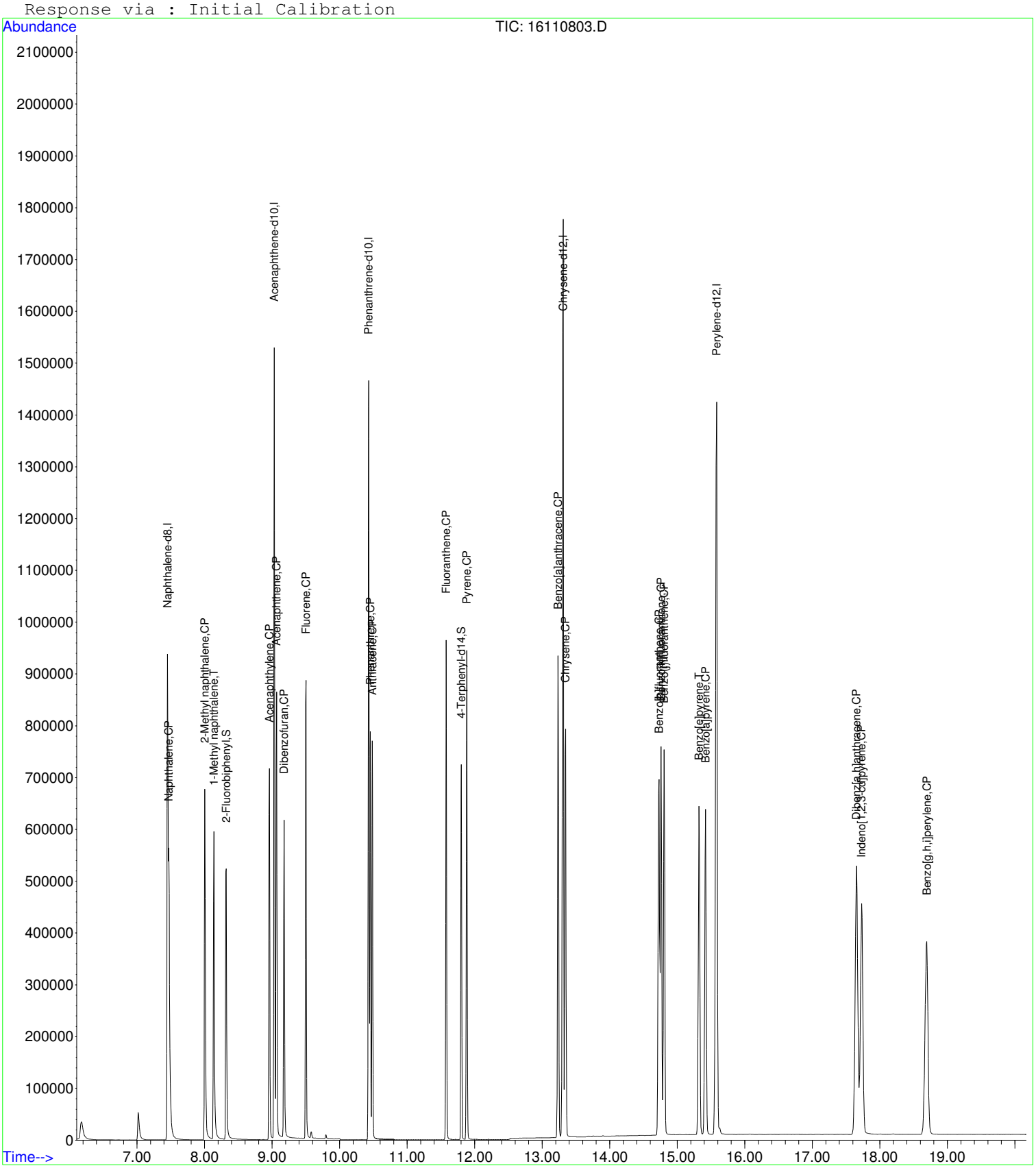
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1127580	4000.00	ug/kg	103
5) Acenaphthene-d10	9.03	164	606384	4000.00	ug/kg	96
11) Phenanthrene-d10	10.43	188	1183171	4000.00	ug/kg	99
17) Chrysene-d12	13.31	240	1572300	4000.00	ug/kg	102
20) Perylene-d12	15.58	264	1645898	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

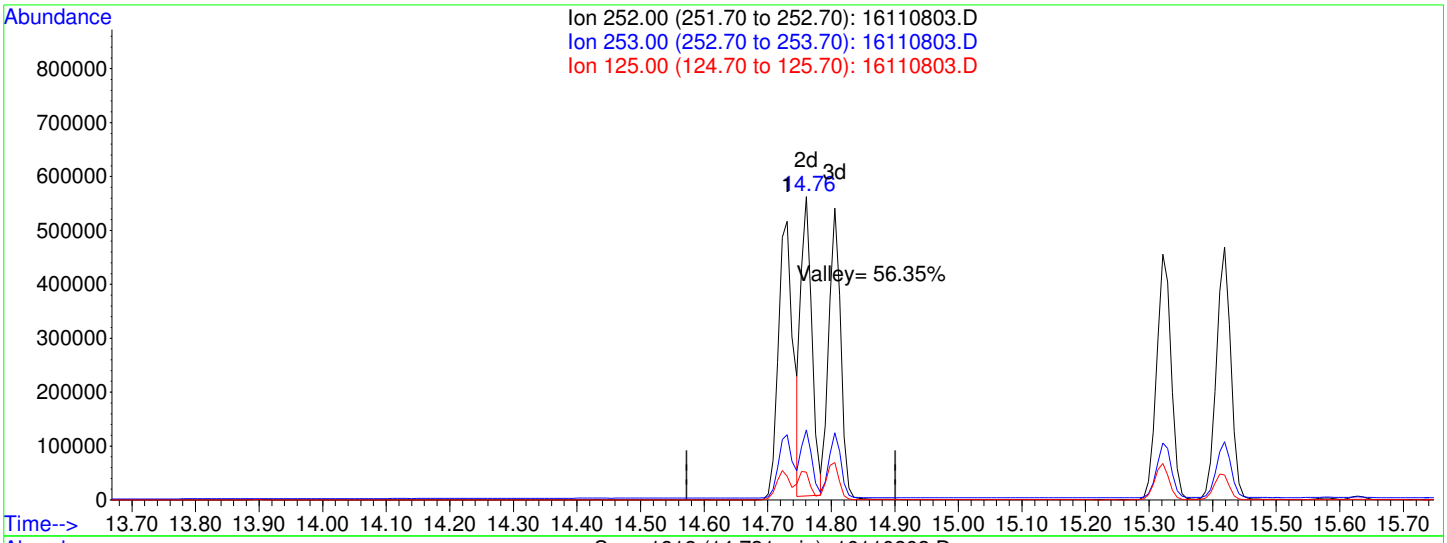
Method : C:\HPCHEM\1\METHODS\PP161020.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response via : Initial Calibration

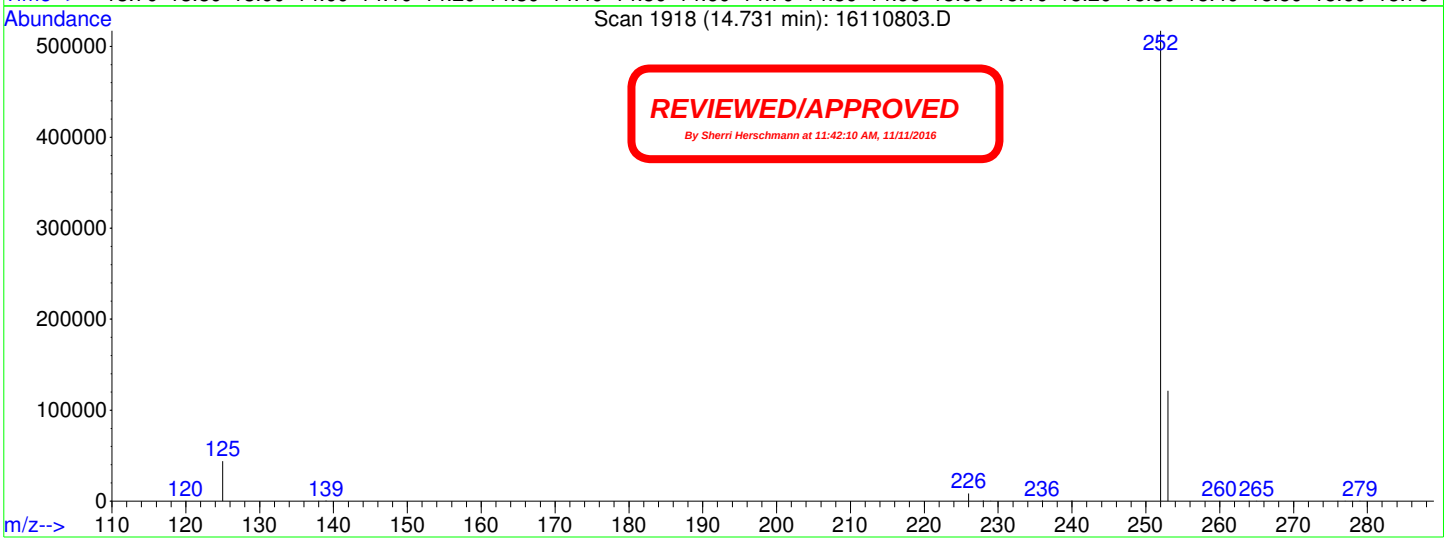


Quantitation Report (Qedit)

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





REVIEWED/APPROVED
By Sherri Herschmann at 11:42:10 AM, 11/11/2016

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

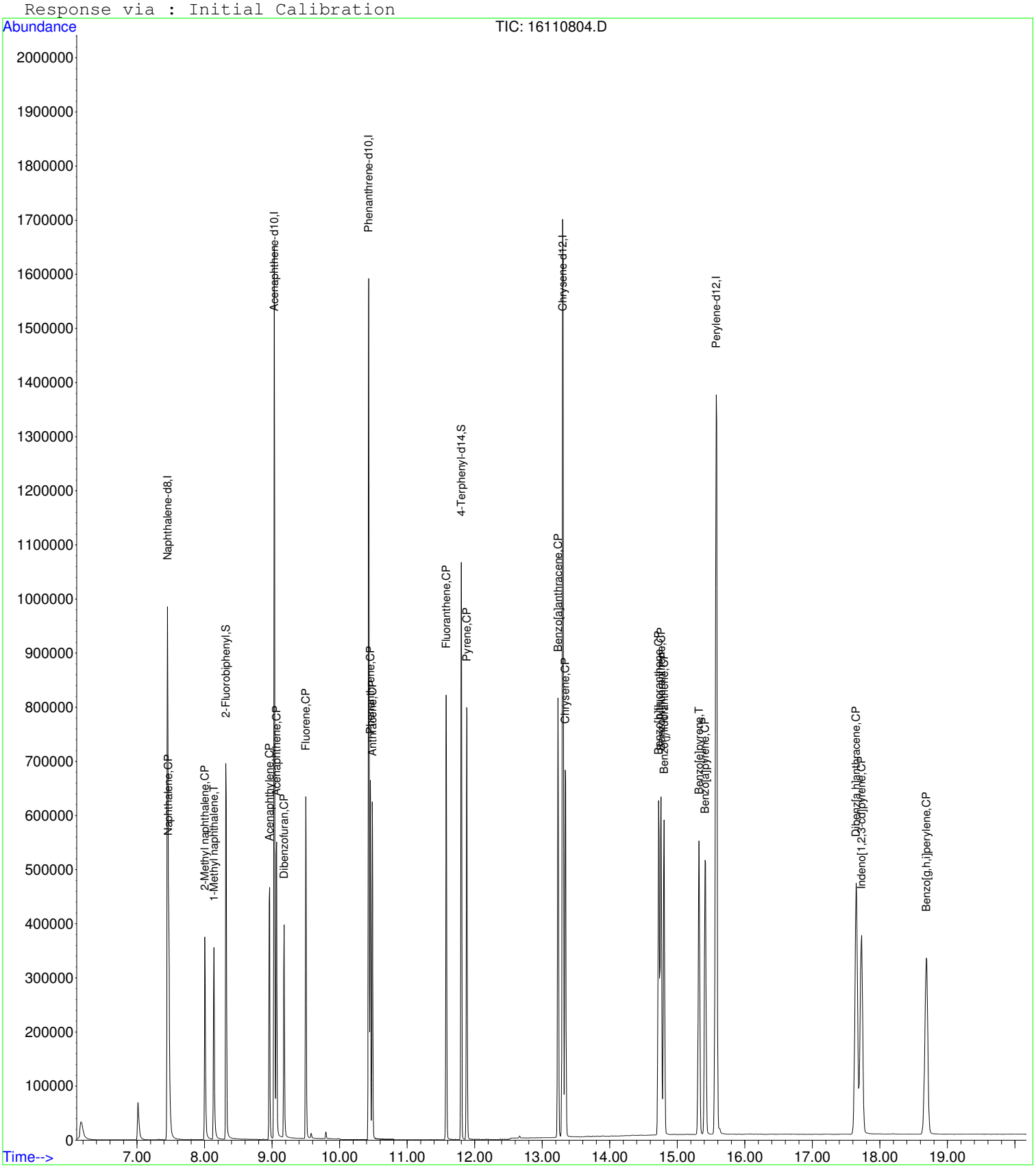
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1160264	4000.00	ug/kg	106
5) Acenaphthene-d10	9.03	164	652744	4000.00	ug/kg	103
11) Phenanthrene-d10	10.43	188	1237377	4000.00	ug/kg	103
17) Chrysene-d12	13.31	240	1603568	4000.00	ug/kg	104
20) Perylene-d12	15.58	264	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

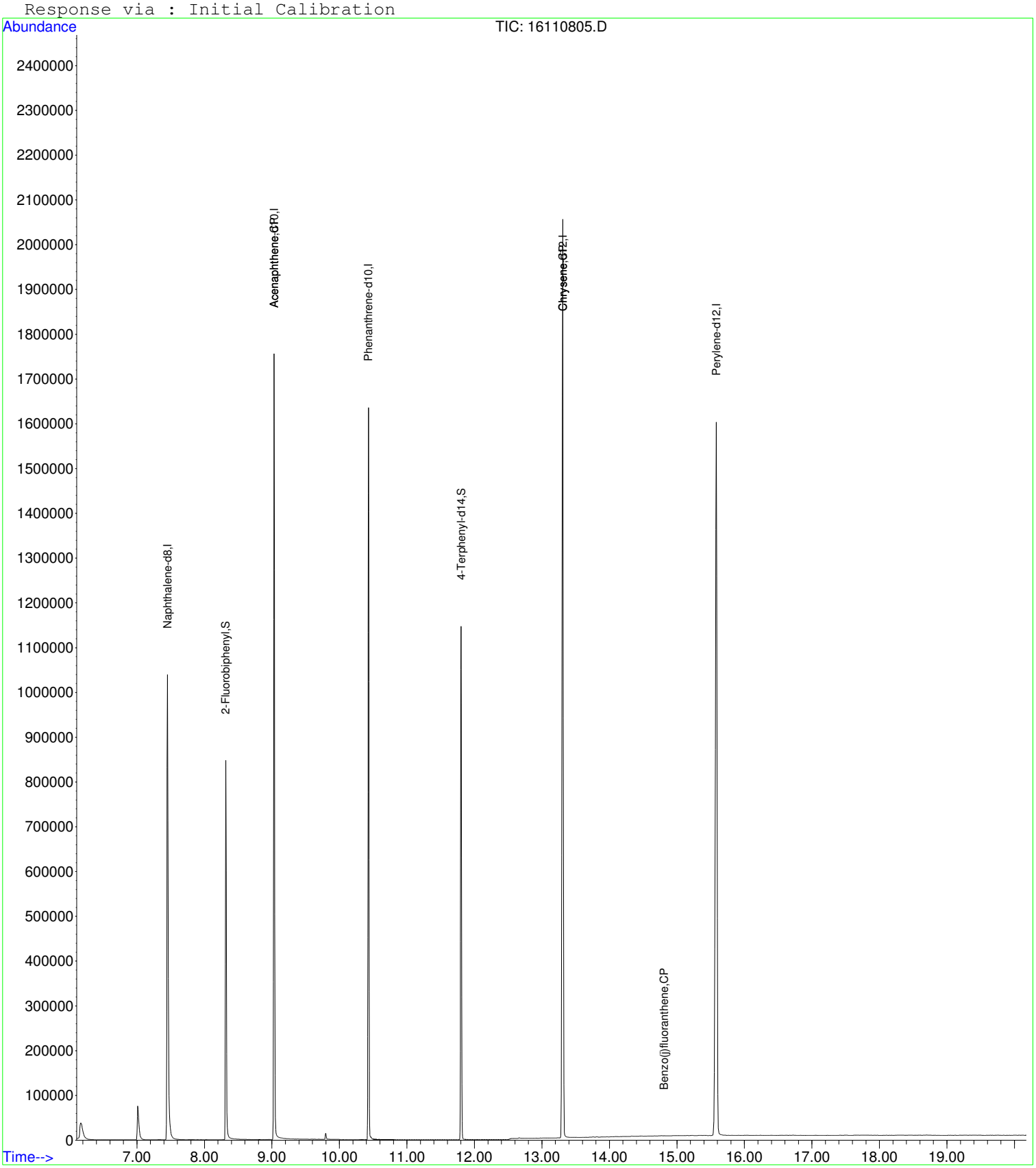
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1259697	4000.00	ug/kg	115
5) Acenaphthene-d10	9.03	164	718062	4000.00	ug/kg	113
11) Phenanthrene-d10	10.43	188	1317969	4000.00	ug/kg	110
17) Chrysene-d12	13.31	240	1816723	4000.00	ug/kg	118
20) Perylene-d12	15.58	264	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\16110808.D Vial: 8
Acq On : 8 Nov 2016 12:01 pm Operator:
Sample : 1611028-13B 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

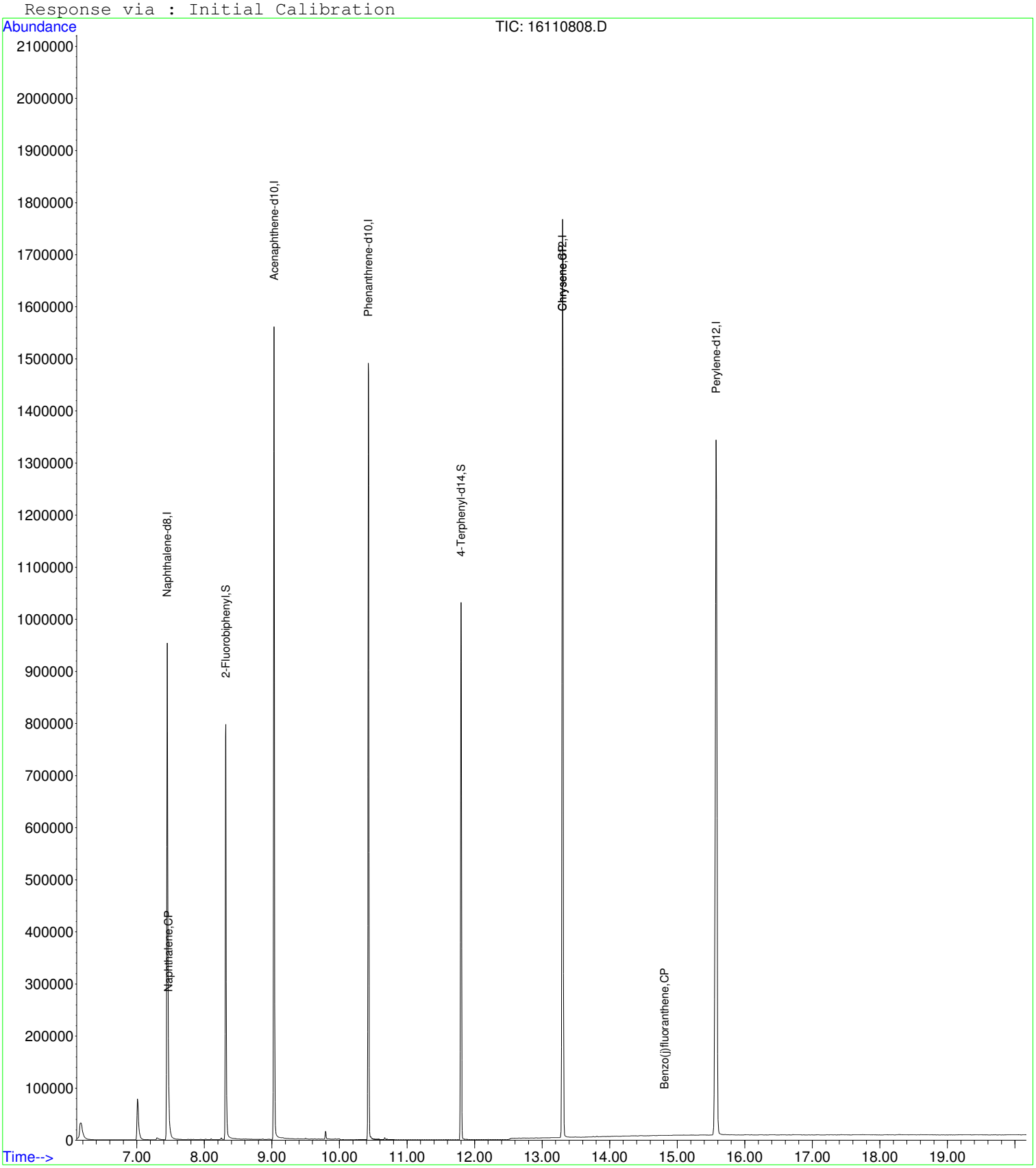
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1118412	4000.00	ug/kg	102
5) Acenaphthene-d10	9.03	164	644144	4000.00	ug/kg	102
11) Phenanthrene-d10	10.43	188	1187371	4000.00	ug/kg	99
17) Chrysene-d12	13.30	240	1540572	4000.00	ug/kg	100
20) Perylene-d12	15.58	264	1620662	4000.00	ug/kg	107
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	596644	3171.54	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 79.29%			
16) 4-Terphenyl-d14	11.80	244	832637	3491.47	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 87.29%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	1697	8.43	ug/kg#	18
19) Chrysene	13.30	228	3643	13.06	ug/kg	71
23) Benzo(j)fluoranthene	14.81	252	56	0.17	ug/kg#	1

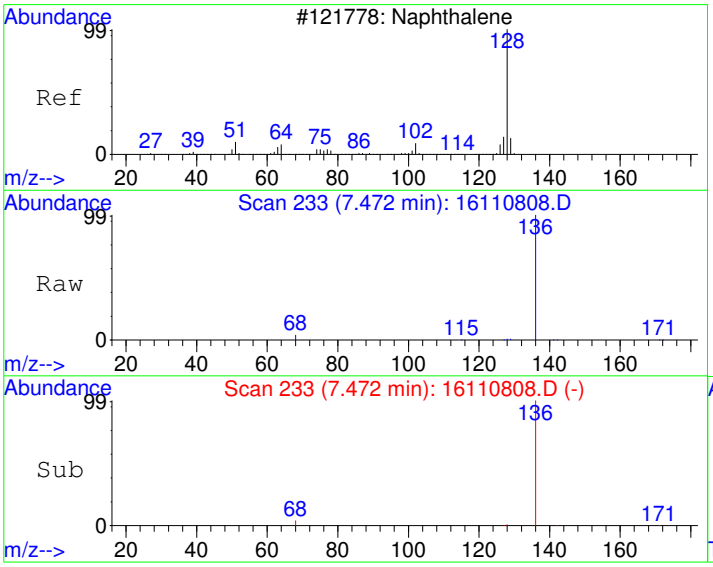
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110808.D Vial: 8
Acq On : 8 Nov 2016 12:01 pm Operator:
Sample : 1611028-13B 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

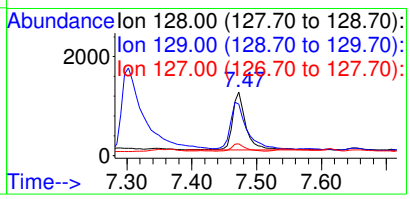


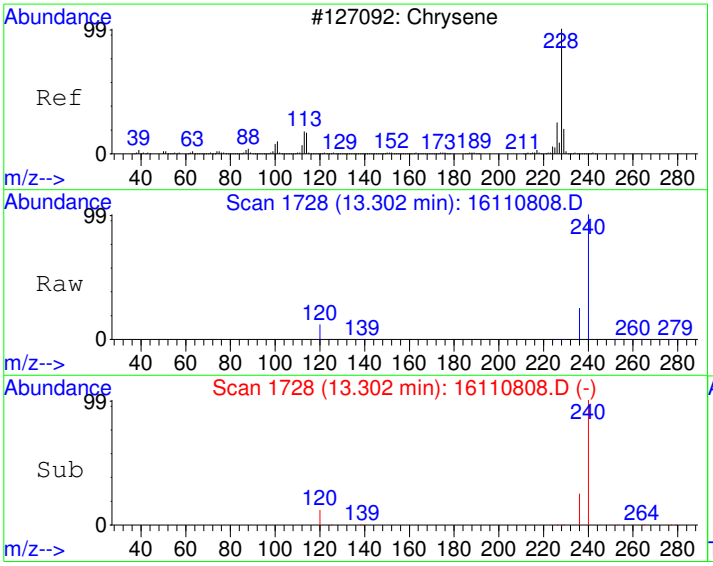


#2
Naphthalene
Concen: 8.43 ug/kg
RT: 7.47 min Scan# 233
Delta R.T. 0.00 min
Lab File: 16110808.D
Acq: 8 Nov 2016 12:01 pm

Tgt Ion:128 Resp: 1697

Ion	Ratio	Lower	Upper
128	100		
129	77.2	0.0	41.1#
127	11.8	0.0	42.7

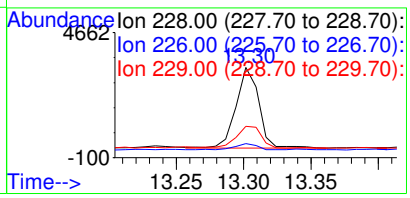


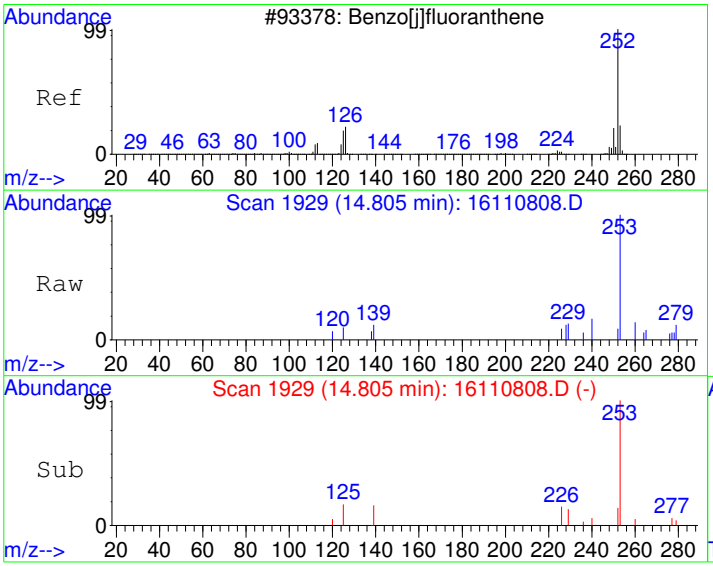


#19
Chrysene
Concen: 13.06 ug/kg
RT: 13.30 min Scan# 1728
Delta R.T. -0.05 min
Lab File: 16110808.D
Acq: 8 Nov 2016 12:01 pm

Tgt Ion:228 Resp: 3643

Ion	Ratio	Lower	Upper
228	100		
226	7.9	0.0	58.8
229	27.1	0.0	50.2

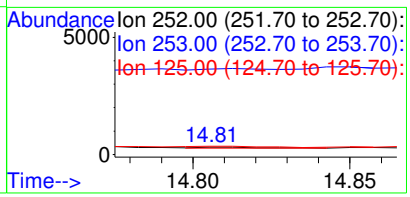




#23
Benzo(j)fluoranthene
Concen: 0.17 ug/kg
RT: 14.81 min Scan# 1929
Delta R.T. -0.01 min
Lab File: 16110808.D
Acq: 8 Nov 2016 12:01 pm

Tgt Ion:252 Resp: 56

Ion	Ratio	Lower	Upper
252	100		
253	132.4	2.3	42.3#
125	97.3	0.0	32.6#



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\161108\16110809.D Vial: 9
Acq On : 8 Nov 2016 12:29 pm Operator:
Sample : 1611028-26B 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

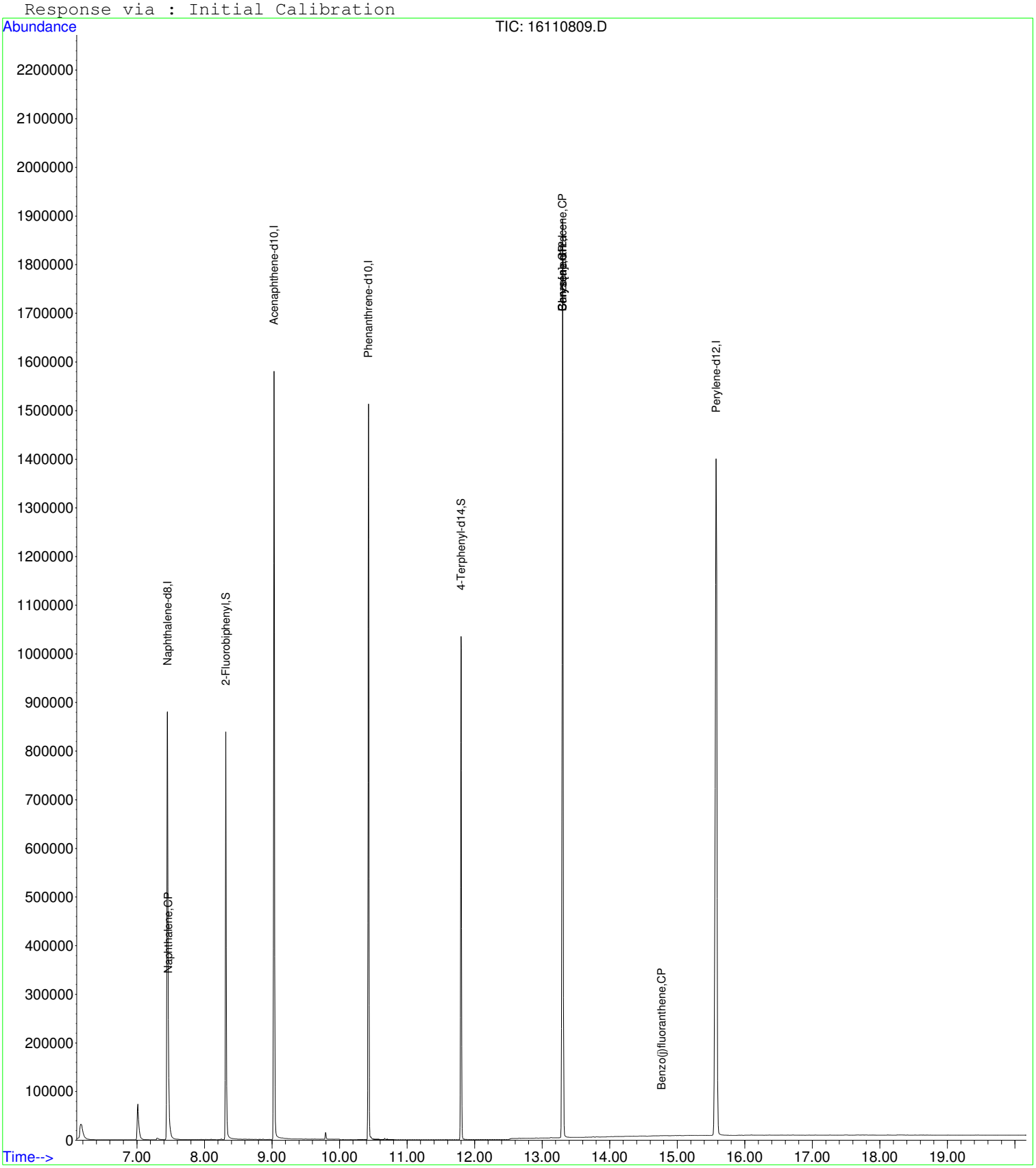
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1133842	4000.00	ug/kg	104
5) Acenaphthene-d10	9.03	164	650059	4000.00	ug/kg	103
11) Phenanthrene-d10	10.43	188	1201049	4000.00	ug/kg	100
17) Chrysene-d12	13.30	240	1614412	4000.00	ug/kg	105
20) Perylene-d12	15.58	264	1664472	4000.00	ug/kg	110
System Monitoring Compounds						
7) 2-Fluorobiphenyl	8.32	172	575045	3028.91	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 75.72%			
16) 4-Terphenyl-d14	11.80	244	804462	3334.91	ug/kg	-0.01
Spiked Amount 4000.000	Range 40 - 140		Recovery = 83.37%			
Target Compounds						Qvalue
2) Naphthalene	7.47	128	1317	6.45	ug/kg#	1
18) Benzo[a]anthracene	13.30	228	3774	11.96	ug/kg	74
19) Chrysene	13.30	228	3903	13.35	ug/kg	70
23) Benzo(j)fluoranthene	14.76	252	102	0.31	ug/kg#	59

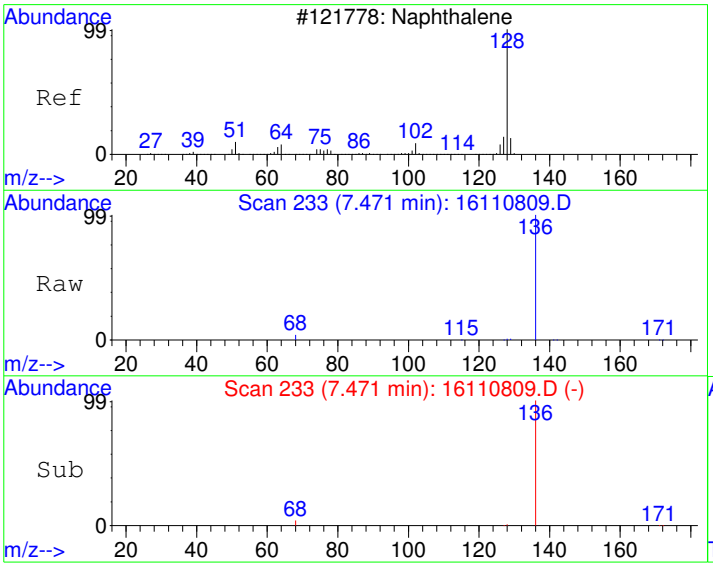
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\161108\16110809.D Vial: 9
Acq On : 8 Nov 2016 12:29 pm Operator:
Sample : 1611028-26B 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

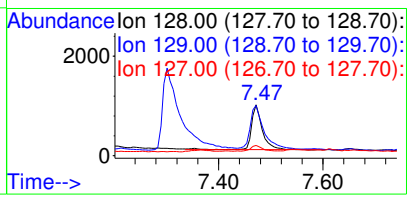


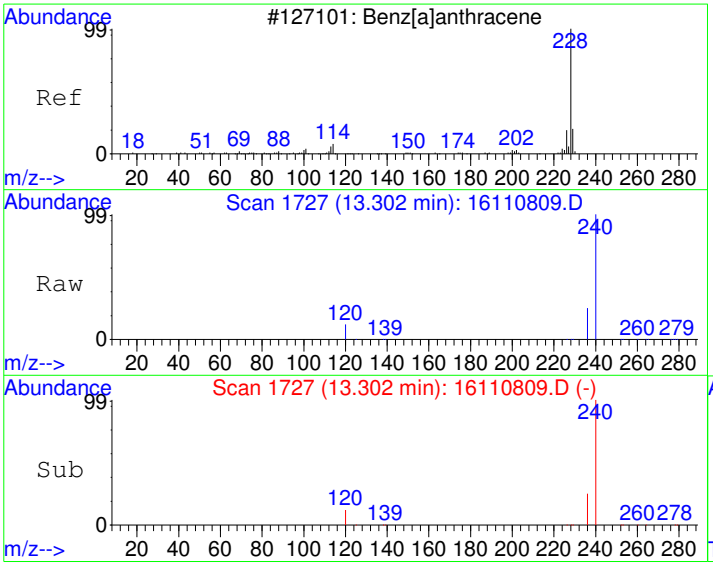


#2
Naphthalene
Concen: 6.45 ug/kg
RT: 7.47 min Scan# 233
Delta R.T. -0.00 min
Lab File: 16110809.D
Acq: 8 Nov 2016 12:29 pm

Tgt Ion:128 Resp: 1317

Ion	Ratio	Lower	Upper
128	100		
129	98.2	0.0	41.1#
127	12.6	0.0	42.7

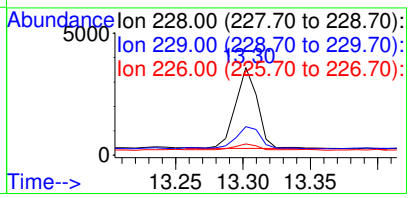


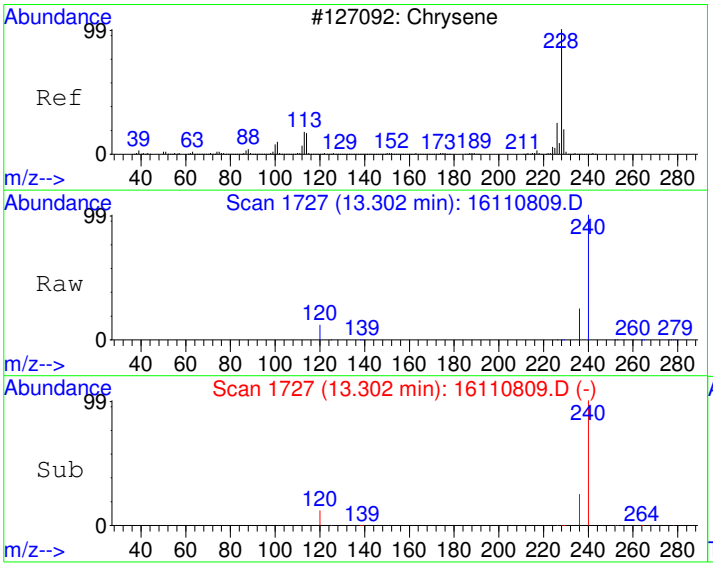


#18
Benzo[a]anthracene
Concen: 11.96 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. 0.05 min
Lab File: 16110809.D
Acq: 8 Nov 2016 12:29 pm

Tgt Ion:228 Resp: 3774

Ion	Ratio	Lower	Upper
228	100		
229	27.4	0.0	50.4
226	8.0	0.0	55.6

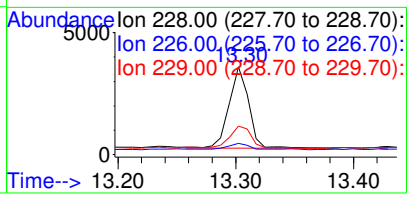


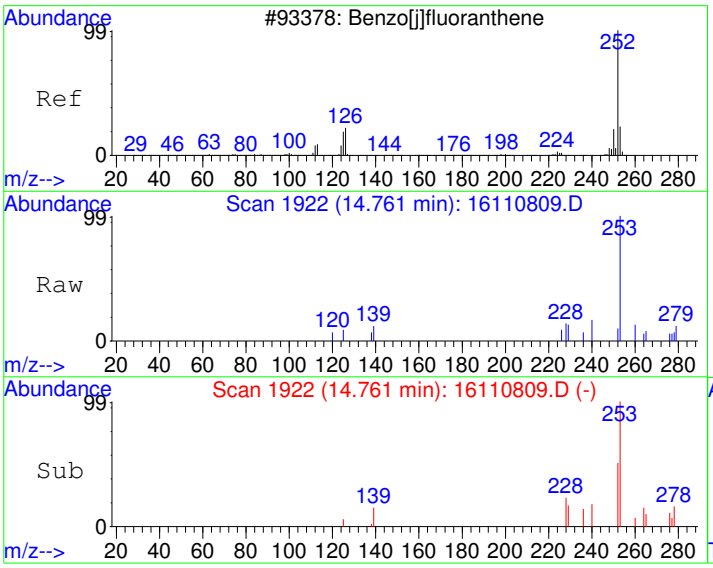


#19
Chrysene
Concen: 13.35 ug/kg
RT: 13.30 min Scan# 1727
Delta R.T. -0.05 min
Lab File: 16110809.D
Acq: 8 Nov 2016 12:29 pm

Tgt Ion:228 Resp: 3903

Ion	Ratio	Lower	Upper
228	100		
226	7.5	0.0	58.8
229	27.0	0.0	50.2

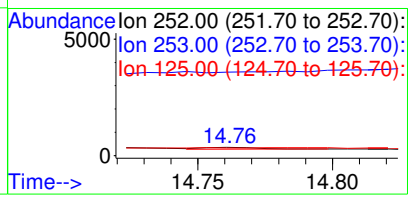




#23
Benzo(j)fluoranthene
Concen: 0.31 ug/kg
RT: 14.76 min Scan# 1922
Delta R.T. -0.06 min
Lab File: 16110809.D
Acq: 8 Nov 2016 12:29 pm

Tgt Ion:252 Resp: 102

Ion	Ratio	Lower	Upper
252	100		
253	0.0	2.3	42.3#
125	0.0	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

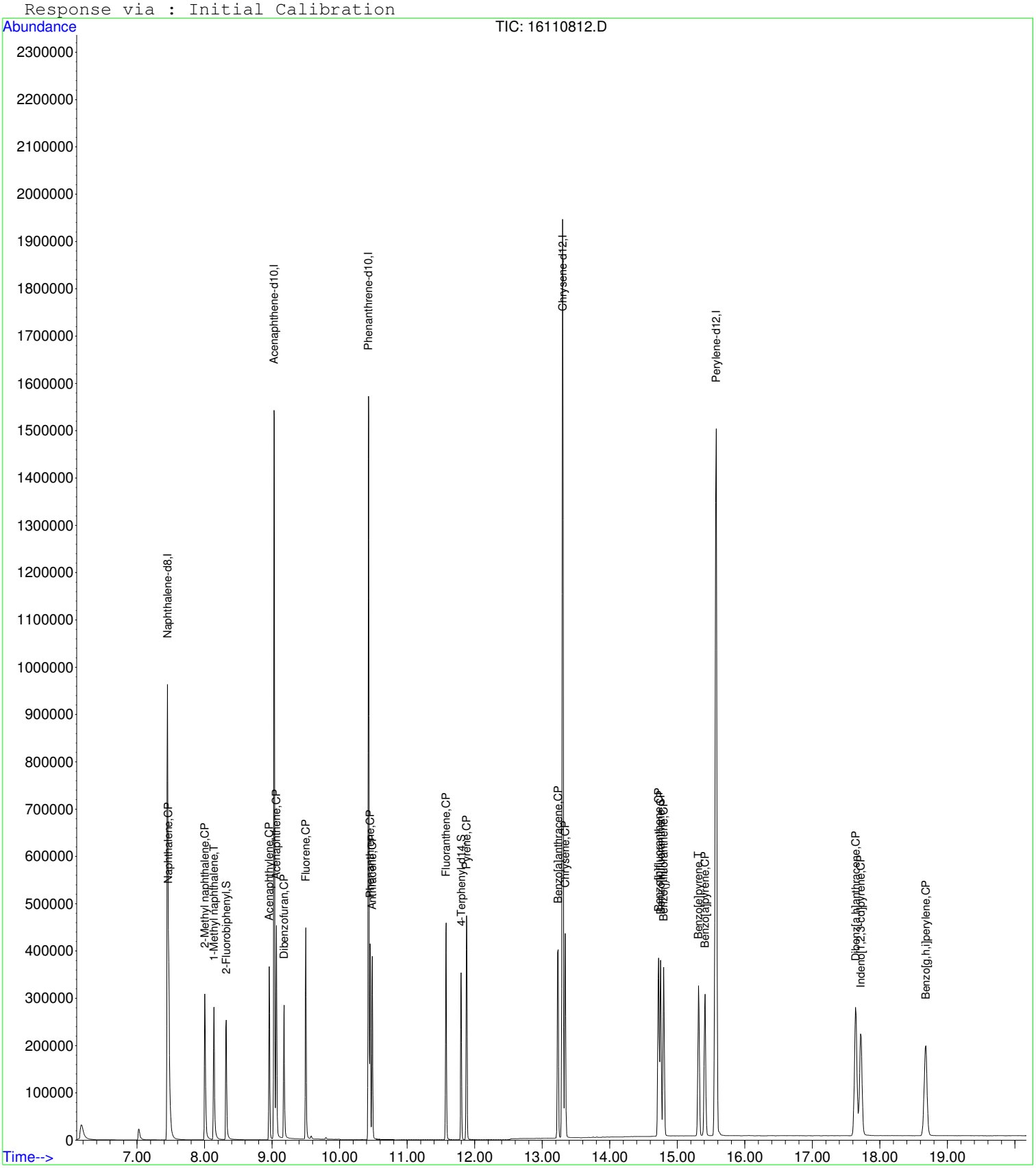
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1190454	4000.00	ug/kg	109
5) Acenaphthene-d10	9.03	164	666968	4000.00	ug/kg	105
11) Phenanthrene-d10	10.43	188	1263874	4000.00	ug/kg	105
17) Chrysene-d12	13.30	240	1659912	4000.00	ug/kg	108
20) Perylene-d12	15.58	264	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
Calibration Curve
For

DHL Work Order
1611028

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			

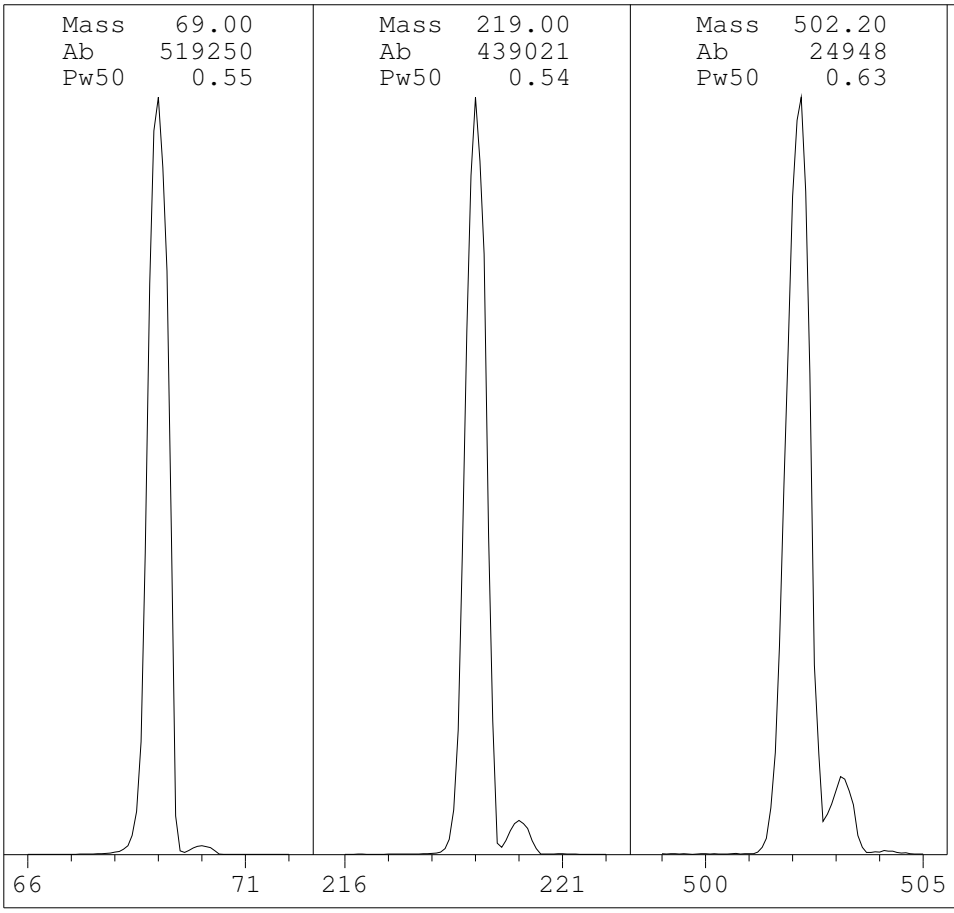
Analyst: Don Winston Date: 10/21/2016

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



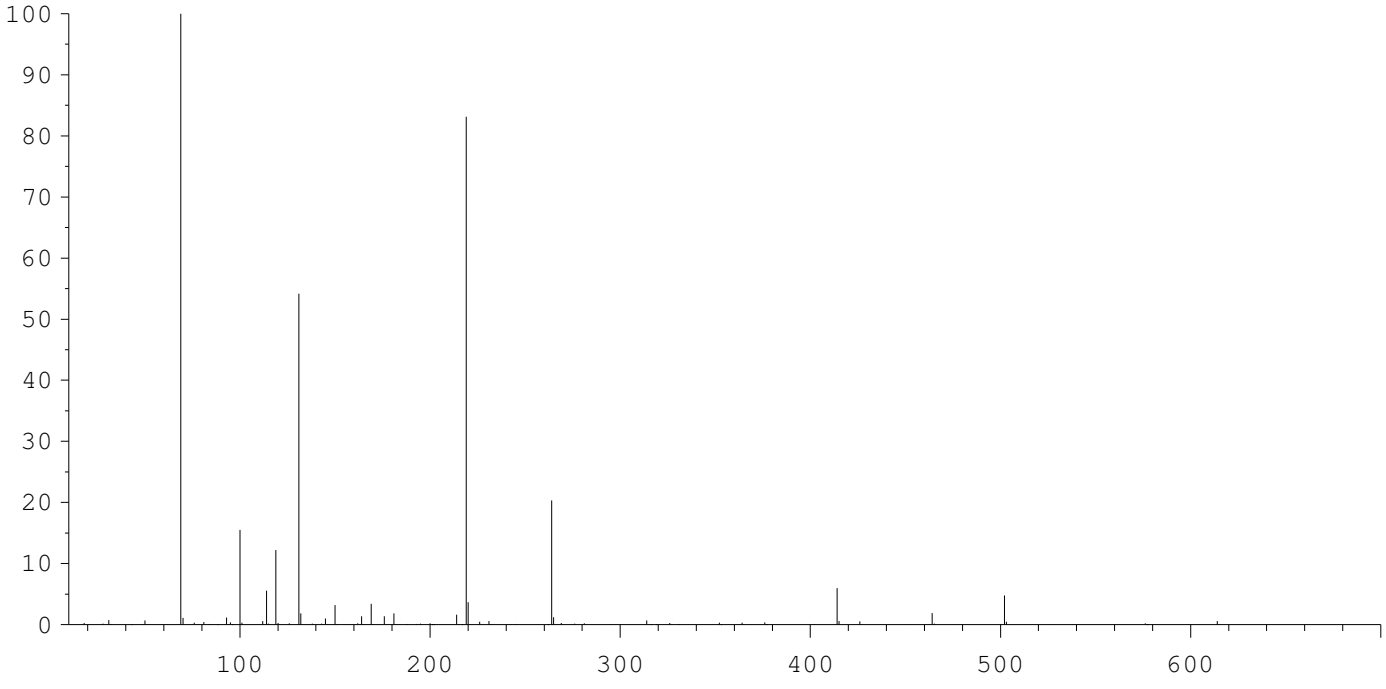
Ion Pol	POS	MassGain	22
		MassOffs	-14
Emission	34.6	AmuGain	2185
EleEnergy	69.9	AmuOffs	128
Filament	2	Wid219	0.011
		DC Pol	POS
Repeller	26.77		
IonFocus	68.3	HED	ON
EntLens	11.5	EMVolts	1365
EntOffs	17.32		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10

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	83.1	6.0	4.8

Response Factor Report GC/MS #6

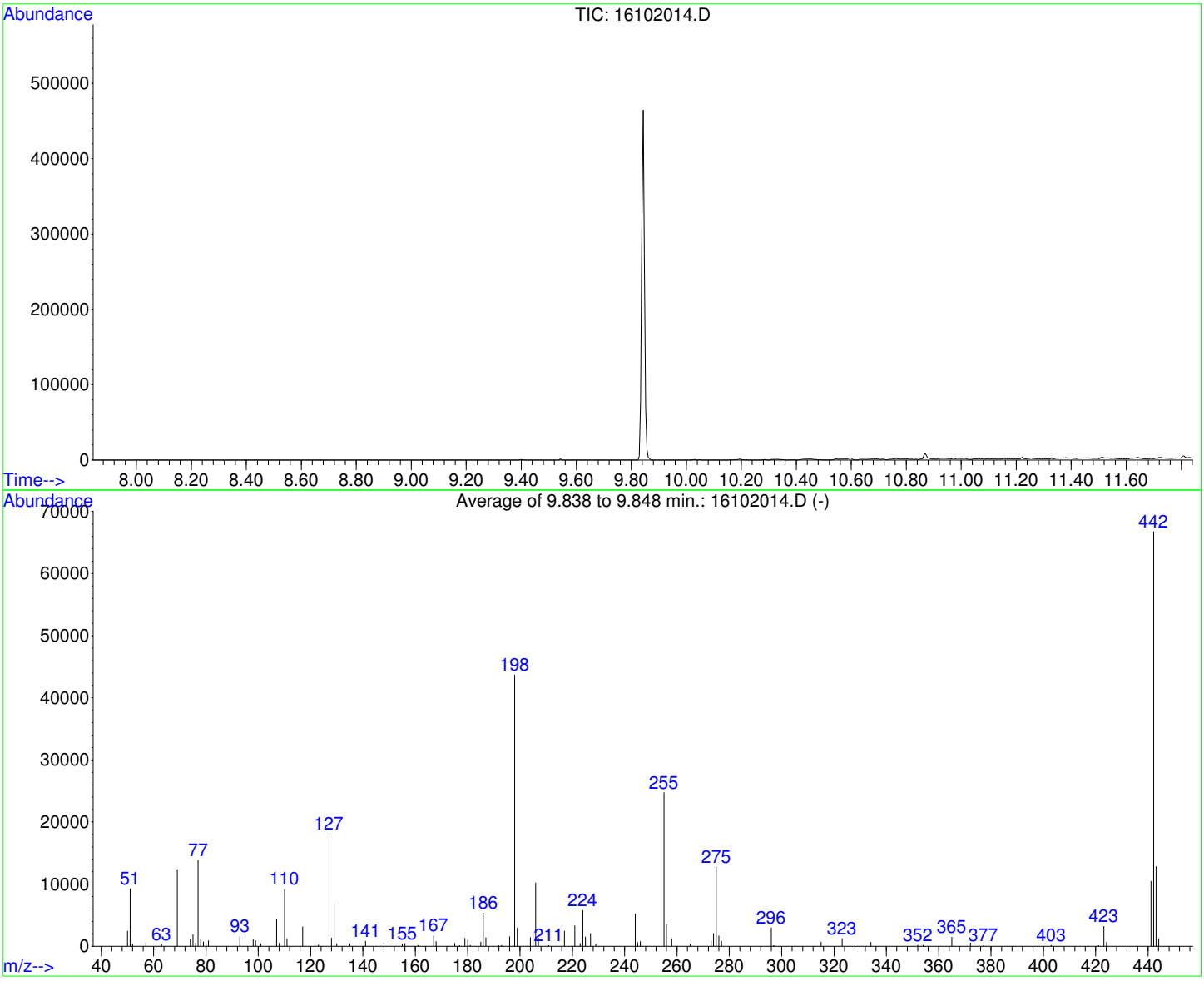
Method Path : F:\IC\GCMS#10\
Method File : PP161020.M
Title : PAH Calibration
Last Update : Fri Oct 21 10:41:50 2016
Response Via : Initial Calibration

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

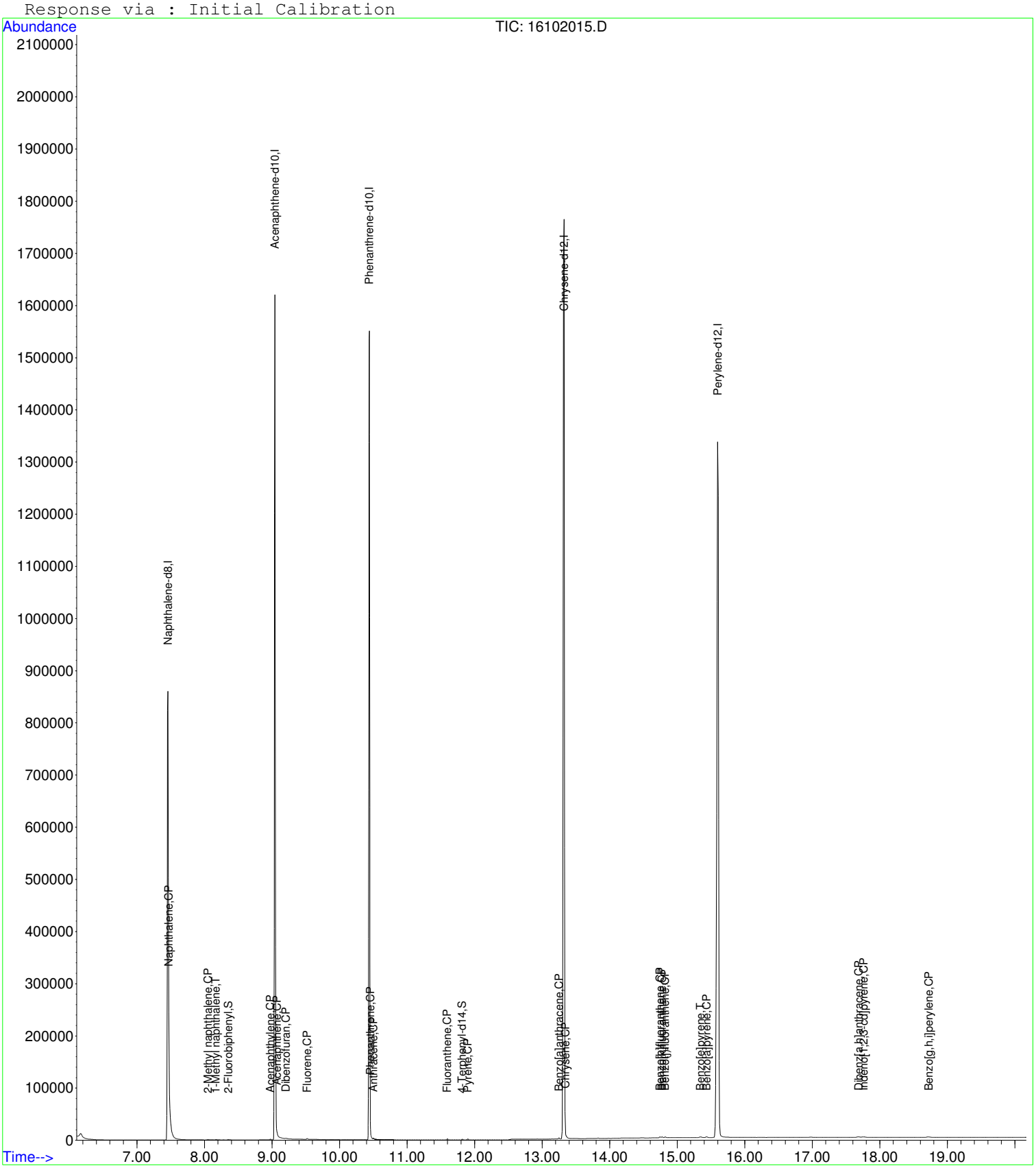
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1104031	4000.00	ug/kg	101
5) Acenaphthene-d10	9.04	164	663810	4000.00	ug/kg	105
11) Phenanthrene-d10	10.44	188	1243895	4000.00	ug/kg	104
17) Chrysene-d12	13.32	240	1645676	4000.00	ug/kg	107
20) Perylene-d12	15.60	264	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

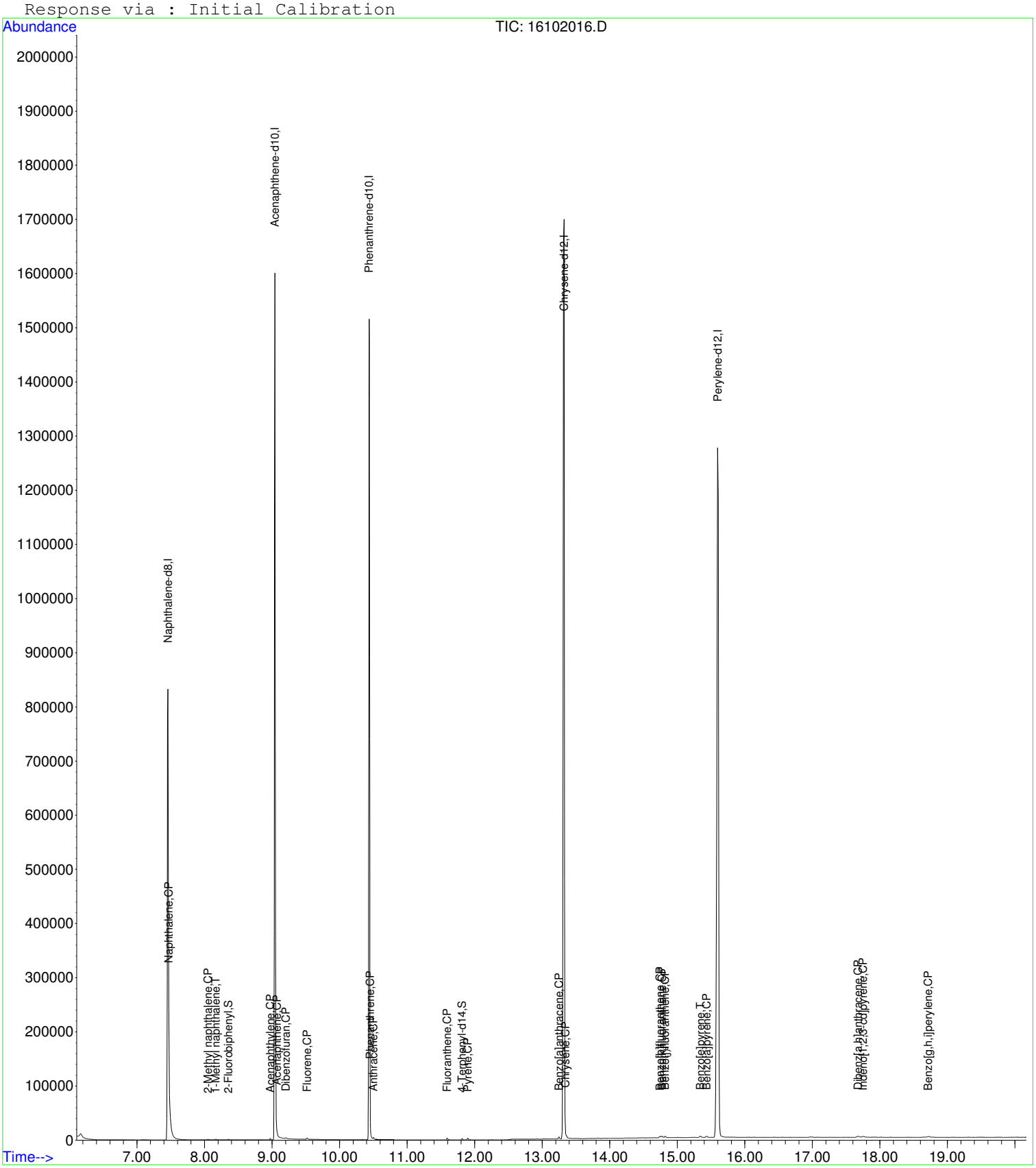
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1059596	4000.00	ug/kg	97
5) Acenaphthene-d10	9.04	164	650945	4000.00	ug/kg	103
11) Phenanthrene-d10	10.44	188	1218263	4000.00	ug/kg	102
17) Chrysene-d12	13.32	240	1574859	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	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

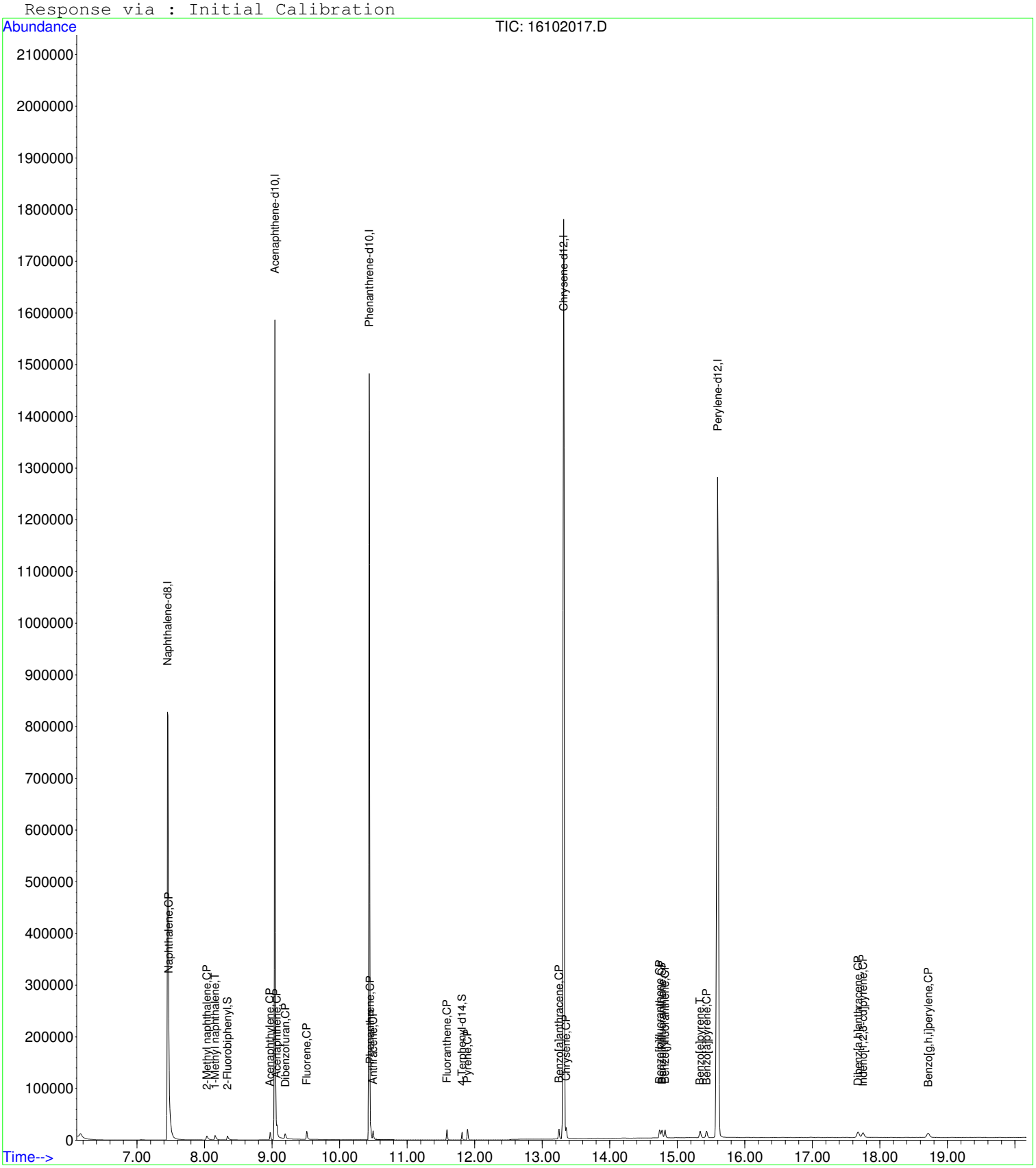
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1069876	4000.00	ug/kg	98
5) Acenaphthene-d10	9.04	164	639900	4000.00	ug/kg	101
11) Phenanthrene-d10	10.44	188	1199553	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1556495	4000.00	ug/kg	101
20) Perylene-d12	15.60	264	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

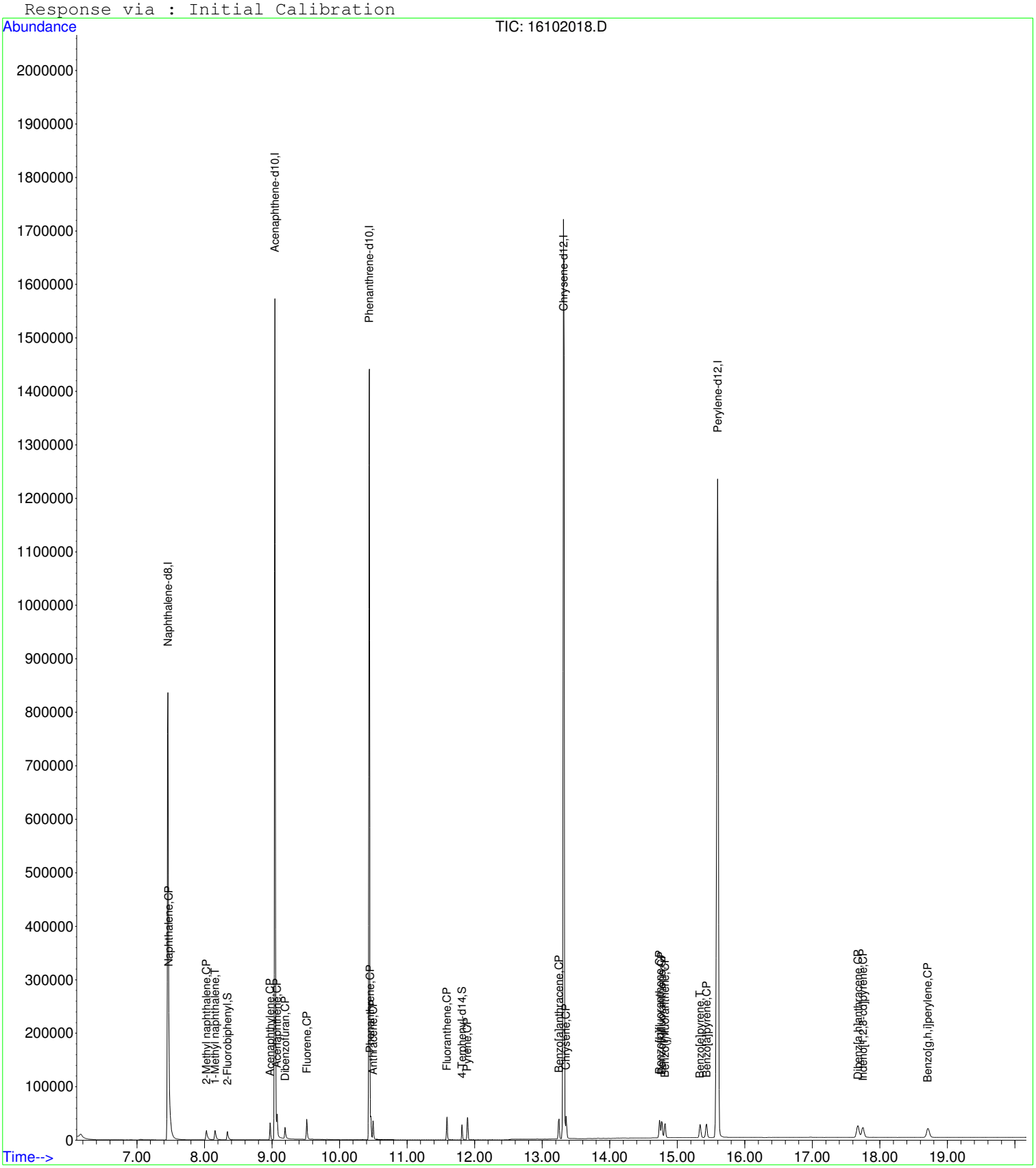
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040067	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	629544	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1179032	4000.00	ug/kg	98
17) Chrysene-d12	13.32	240	1524929	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1486769	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

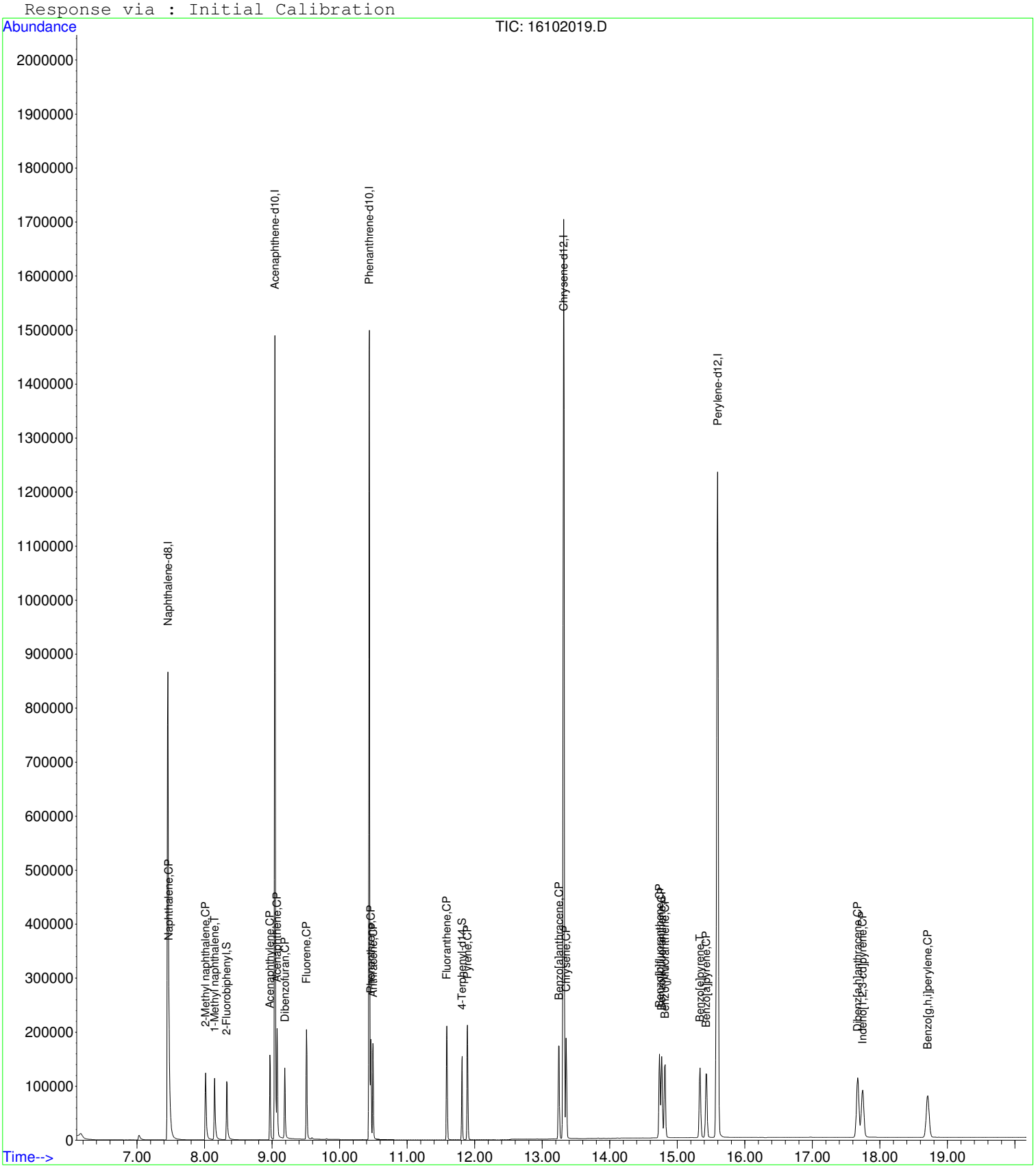
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1040959	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	616557	4000.00	ug/kg	97
11) Phenanthrene-d10	10.44	188	1169580	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1497950	4000.00	ug/kg	97
20) Perylene-d12	15.60	264	1474044	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

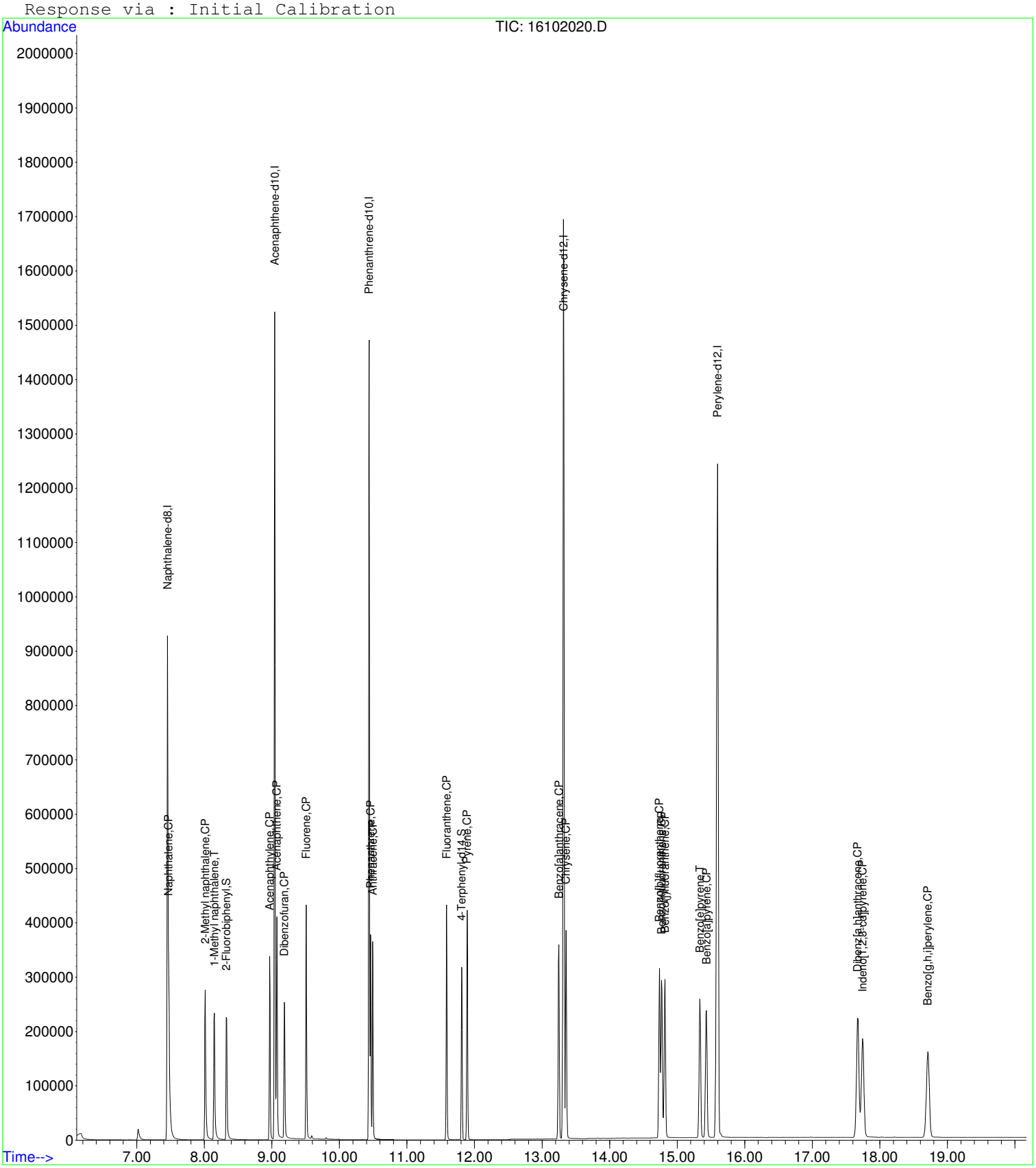
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.46	136	1048894	4000.00	ug/kg	96
5) Acenaphthene-d10	9.04	164	626534	4000.00	ug/kg	99
11) Phenanthrene-d10	10.44	188	1187118	4000.00	ug/kg	99
17) Chrysene-d12	13.32	240	1520400	4000.00	ug/kg	99
20) Perylene-d12	15.60	264	1497511	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

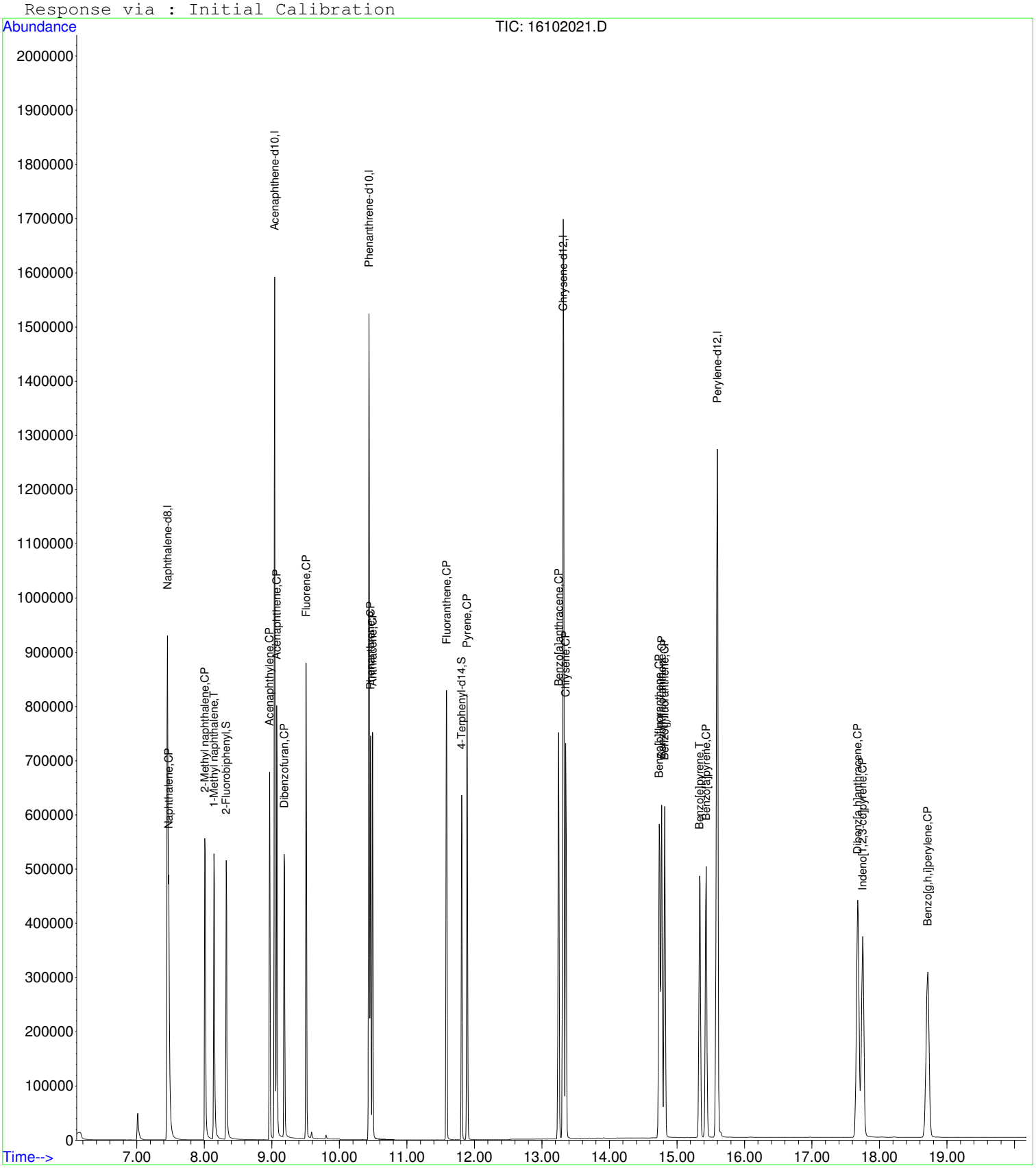
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1091786	4000.00	ug/kg	100
5) Acenaphthene-d10	9.04	164	633848	4000.00	ug/kg	100
11) Phenanthrene-d10	10.44	188	1200220	4000.00	ug/kg	100
17) Chrysene-d12	13.32	240	1541952	4000.00	ug/kg	100
20) Perylene-d12	15.60	264	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

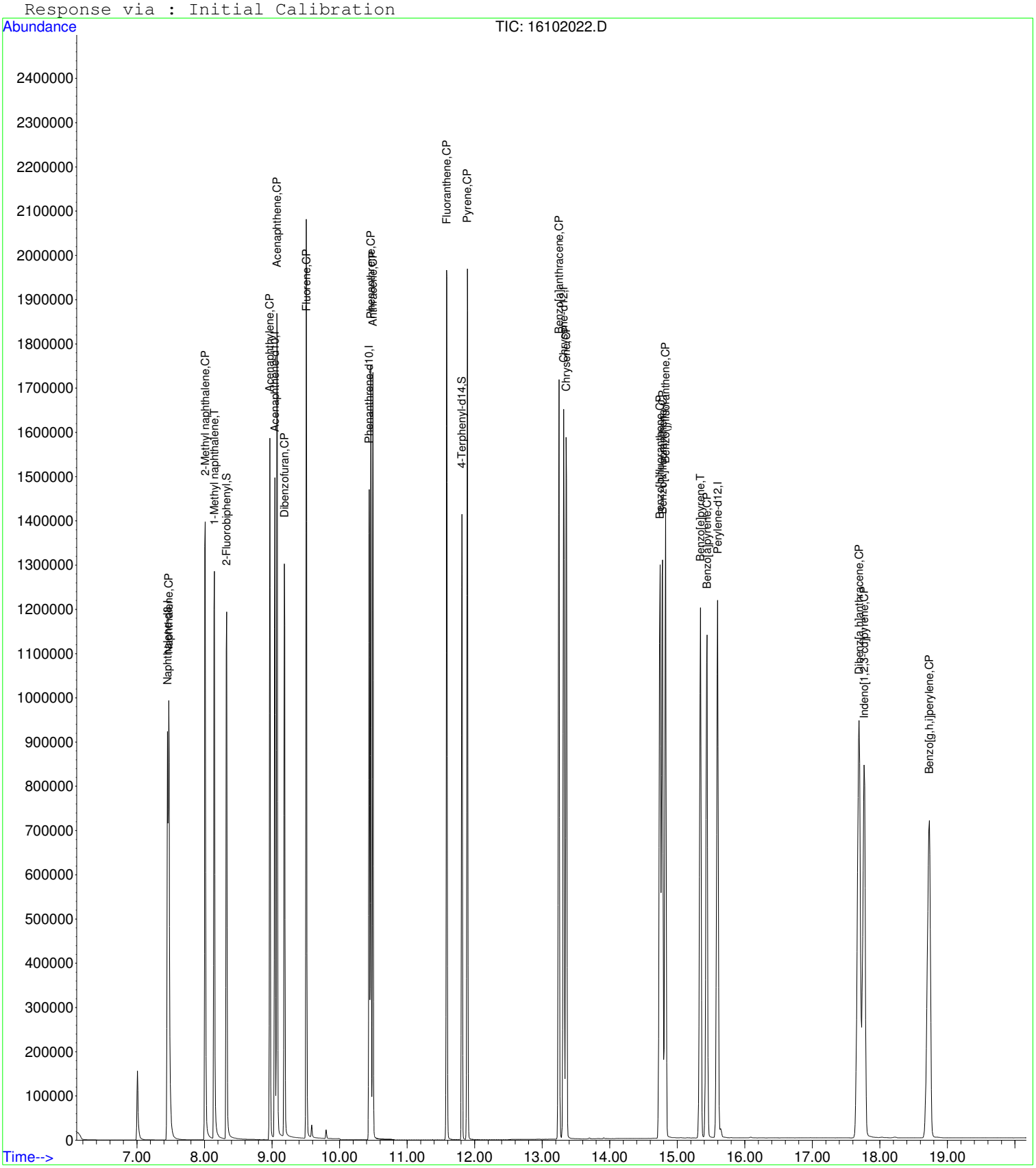
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1041865	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	606729	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1156115	4000.00	ug/kg	96
17) Chrysene-d12	13.32	240	1468571	4000.00	ug/kg	95
20) Perylene-d12	15.60	264	1438518	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

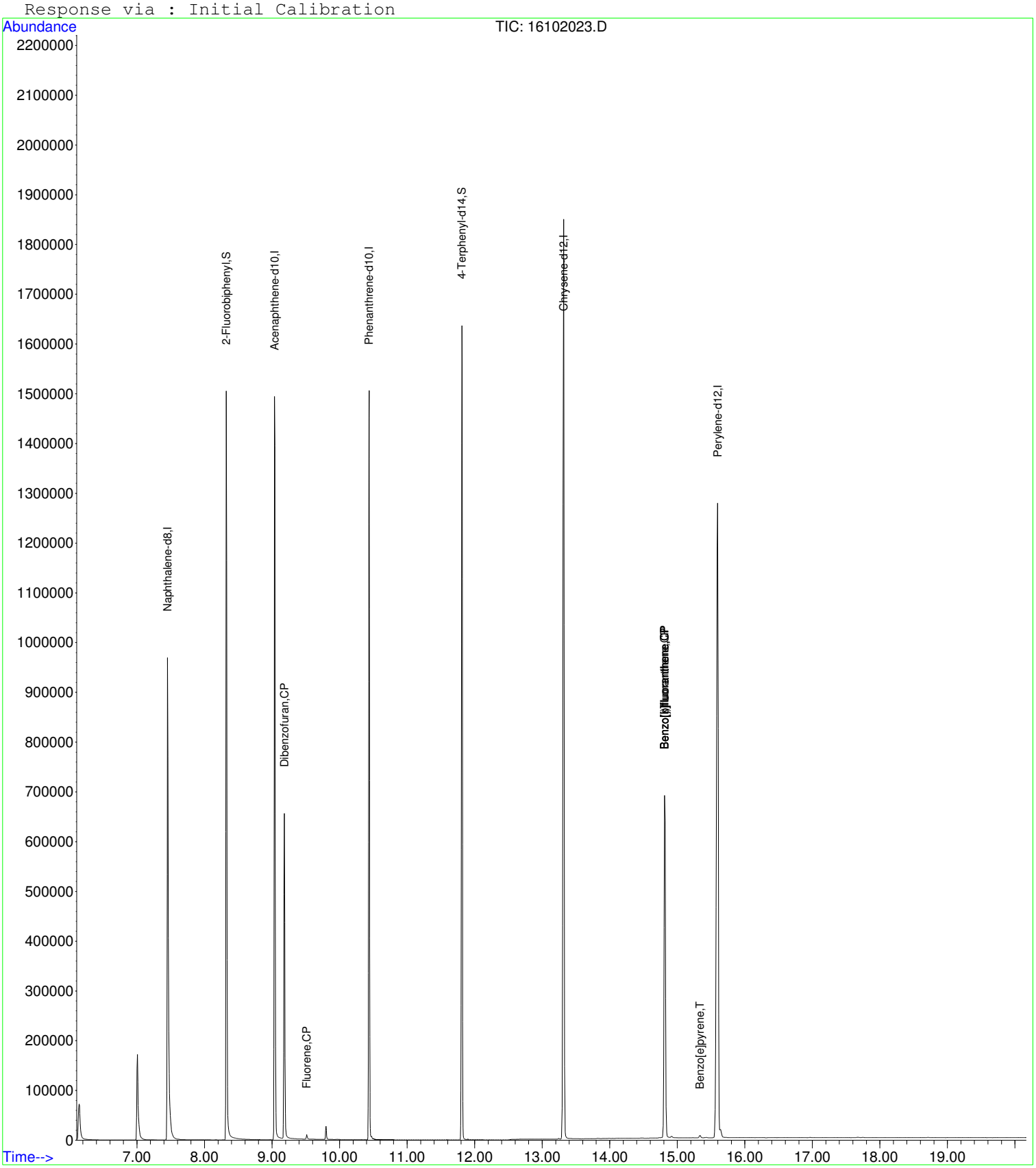
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1171217	4000.00	ug/kg	107
5) Acenaphthene-d10	9.04	164	648893	4000.00	ug/kg	102
11) Phenanthrene-d10	10.44	188	1210829	4000.00	ug/kg	101
17) Chrysene-d12	13.32	240	1579392	4000.00	ug/kg	102
20) Perylene-d12	15.60	264	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

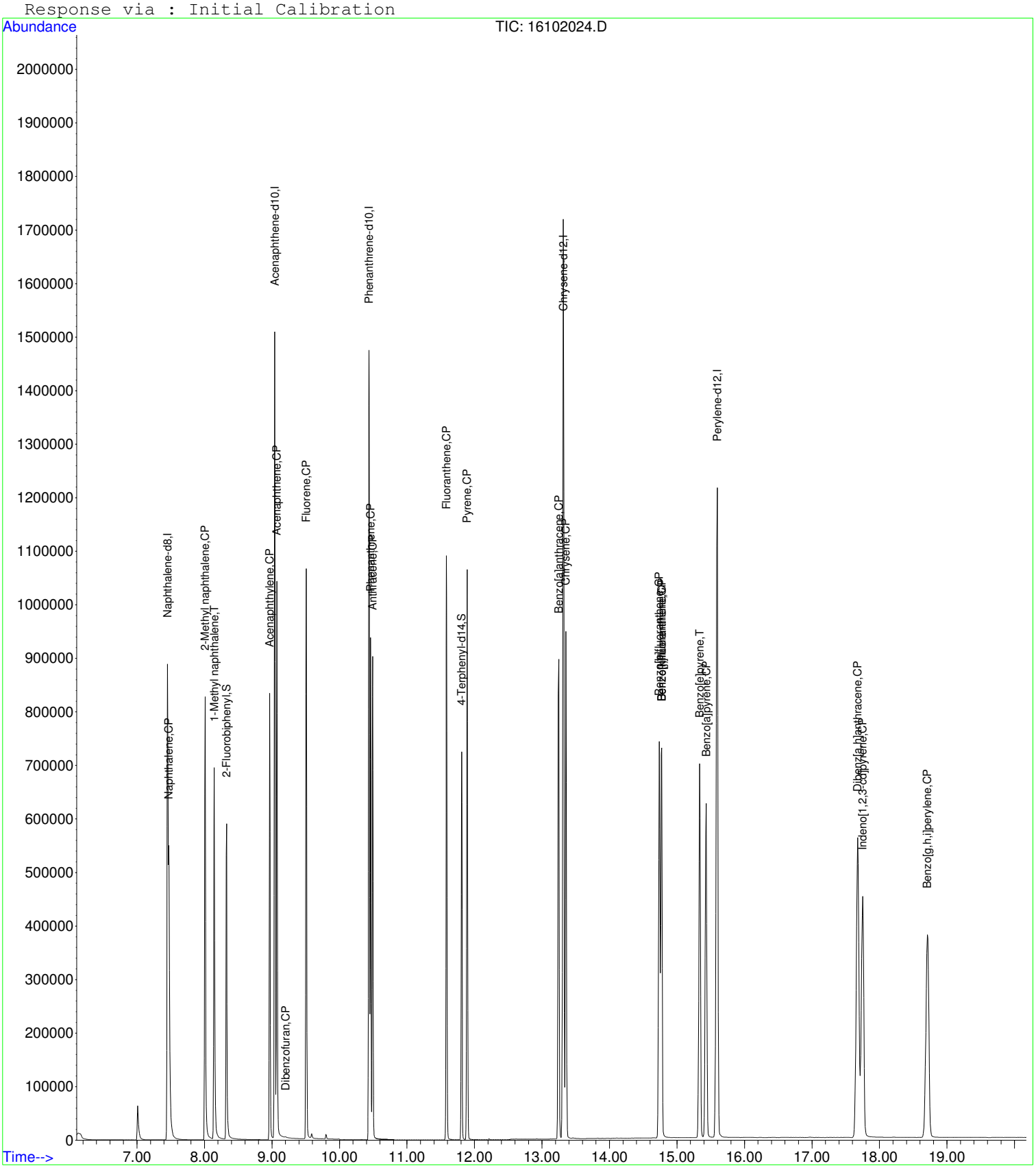
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	7.45	136	1036180	4000.00	ug/kg	95
5) Acenaphthene-d10	9.04	164	609450	4000.00	ug/kg	96
11) Phenanthrene-d10	10.44	188	1158659	4000.00	ug/kg	97
17) Chrysene-d12	13.32	240	1508270	4000.00	ug/kg	98
20) Perylene-d12	15.60	264	1454395	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
1611028

GCMS8_161110A
For

DHL Work Order
1611028

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_161110A
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: 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: Angie O'Donnell Date: 11/18/2016

DHL Analytical, Inc.

Run ID: GCMS8_161110A **Run No.:** 88950

Analytical Run Date: 11/10/2016 **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-161110	1	PAH_LL_SDOD1	TUNE	R88950	11/10/2016 9:51:00 AM		All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers.
ICV-161110	1	PAH_LL_SDOD1	ICV	R88950	11/10/2016 10:20:00 AM		
LCS-77830	1	PAH_LL_SDOD1	LCS	77830	11/10/2016 10:49:00 AM		
MB-77830	1	PAH_LL_SDOD1	MBLK	77830	11/10/2016 11:17:00 AM		
1611022-22A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 11:46:00 AM		
1611022-23A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 12:15:00 PM		
1611022-24A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 12:44:00 PM		
1611022-25A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 1:12:00 PM		
1611028-01A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 1:42:00 PM		
1611028-02A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 2:10:00 PM		
1611028-03A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 2:39:00 PM		
DFTPP2-161110	1	PAH_LL_SDOD1	TUNE	R88950	11/10/2016 3:08:00 PM		
ICV2-161110	1	PAH_LL_SDOD1	ICV	R88950	11/10/2016 3:37:00 PM		
SB-161110	1	PAH_LL_SDOD1	SBLK	77830	11/10/2016 4:05:00 PM		
1611028-04A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 4:34:00 PM		
1611028-05A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 5:03:00 PM		
1611028-06A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 5:31:00 PM		
1611028-07A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 6:00:00 PM		
1611028-08A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 6:29:00 PM		
1611028-09A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 6:57:00 PM		
1611028-10A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 7:27:00 PM		
1611028-11A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 7:55:00 PM		
1611028-12A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 8:24:00 PM		
1611028-14A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 8:52:00 PM		
1611028-15A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 9:21:00 PM		
1611028-16A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 9:50:00 PM		
1611028-17A	10	PAH_LL_SDOD1	SAMP	77830	11/10/2016 10:19:00 PM		
1611028-10AMS	10	PAH_LL_SDOD1	MS	77830	11/10/2016 10:48:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161020	1 PPM PAH CCV STANDARD	CCV	01/18/2017
PAHICV161020	2 PPM PAH ICV	ICV	01/18/2017
SVI160510-6	4000 PPM INTERNAL STANDAR	ALL	10/28/2017

DHL Analytical, Inc.

Run ID: GCMS8_161110A **Run No.:** 88950

1611028-10AMSD	10	PAH_LL_SDOD1	MSD	77830	11/10/2016 11:16:00 PM		
CCV1-161110	1	PAH_LL_SDOD1	CCV	R88950	11/10/2016 11:45:00 PM		

Std ID	Std Name	Type	Exp. Date
DFTPP160921	2.5 PPM 525 TUNE STD.	TUNE	09/20/2017
PAHCCV161020	1 PPM PAH CCV STANDARD	CCV	01/18/2017
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\161110.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	1	16111001	DFTPPPAH	DFTPP-161110
2)	Sample	2	16111002	PP161021	ICV-161110
3)	Sample	3	16111003	PP161021	LCS-77830
4)	Sample	4	16111004	PP161021	MB-77830
5)	Sample	5	16111005	PP161021	1611022-22A
6)	Sample	6	16111006	PP161021	1611022-23A
7)	Sample	7	16111007	PP161021	1611022-24A
8)	Sample	8	16111008	PP161021	1611022-25A
9)	Sample	9	16111009	PP161021	1611028-01A
10)	Sample	10	16111010	PP161021	1611028-02A
11)	Sample	11	16111011	PP161021	1611028-03A
12)	Sample	12	16111012	DFTPPPAH	DFTPP2-161110
13)	Sample	13	16111013	PP161021	ICV2-161110
14)	Sample	14	16111014	PP161021	SB-161110
15)	Sample	15	16111015	PP161021	1611028-04A
16)	Sample	16	16111016	PP161021	1611028-05A
17)	Sample	17	16111017	PP161021	1611028-06A
18)	Sample	18	16111018	PP161021	1611028-07A
19)	Sample	19	16111019	PP161021	1611028-08A
20)	Sample	20	16111020	PP161021	1611028-09A
21)	Sample	21	16111021	PP161021	1611028-10A
22)	Sample	22	16111022	PP161021	1611028-11A
23)	Sample	23	16111023	PP161021	1611028-12A
24)	Sample	24	16111024	PP161021	1611028-14A
25)	Sample	25	16111025	PP161021	1611028-15A
26)	Sample	26	16111026	PP161021	1611028-16A
27)	Sample	27	16111027	PP161021	1611028-17A
28)	Sample	28	16111028	PP161021	1611028-10AMS
29)	Sample	29	16111029	PP161021	1611028-10AMSD
30)	Sample	30	16111030	PP161021	CCV1-161110

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 1:00:00 PM**
Digestion:
Prep End Date: **11/9/2016 3:04:00 PM**

Prep Batch **77830** 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
1611022-22A	Soil		10.17	10	0.983	1 of 1	
1611022-23A	Soil		10.4	10	0.962	1 of 1	
1611022-24A	Soil		10.18	10	0.982	1 of 1	
1611022-25A	Soil		10.55	10	0.948	1 of 1	
1611028-01A	Soil		10.38	10	0.963	1 of 1	
1611028-02A	Soil		10.88	10	0.919	1 of 1	
1611028-03A	Soil		10.21	10	0.979	1 of 1	
1611028-04A	Soil		10.15	10	0.985	1 of 1	
1611028-05A	Soil		10.37	10	0.964	1 of 1	
1611028-06A	Soil		10.32	10	0.969	1 of 1	
1611028-07A	Soil		10.45	10	0.957	1 of 1	
1611028-08A	Soil		10.19	10	0.981	1 of 1	
1611028-09A	Soil		10.45	10	0.957	1 of 1	
1611028-10A	Soil		10.05	10	0.995	1 of 3	
1611028-10AMS	Soil		10.13	10	0.987	1 of	
1611028-10AMSD	Soil		10.21	10	0.979	1 of	
1611028-11A	Soil		10.53	10	0.950	1 of 1	
1611028-12A	Soil		10.24	10	0.977	1 of 1	
1611028-14A	Soil		10.42	10	0.960	1 of 1	
1611028-15A	Soil		10.3	10	0.971	1 of 1	
1611028-16A	Soil		10.5	10	0.952	1 of 1	
1611028-17A	Soil	10.28	~~10.25~~	10	0.976	1 of 1	afo 11/18/2016
LCS-77830	Soil		10	10	1.000	of	
MB-77830	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 Angie O'Donnell at 2:25:24 PM, 11/18/2016

DHL Analytical, Inc.

PREP BATCH REPORT

Prep Start Date: **11/9/2016 1:00:00 PM**
Digestion:
Prep End Date: 11/9/16 3:04PM

Prep Batch **77830** 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
1611022-22A	Soil		10.17	10	1.000	1 of 1	
1611022-23A	Soil		10.40	10	1.000	1 of 1	
1611022-24A	Soil		10.18	10	1.000	1 of 1	
1611022-25A	Soil		10.55	10	1.000	1 of 1	
1611028-01A	Soil		10.38	10	1.000	1 of 1	
1611028-02A	Soil		10.88	10	1.000	1 of 1	
1611028-03A	Soil		10.21	10	1.000	1 of 1	
1611028-04A	Soil		10.15	10	1.000	1 of 1	
1611028-05A	Soil		10.37	10	1.000	1 of 1	
1611028-06A	Soil		10.32	10	1.000	1 of 1	
1611028-07A	Soil		10.45	10	1.000	1 of 1	
1611028-08A	Soil		10.19	10	1.000	1 of 1	
1611028-09A	Soil		10.45	10	1.000	1 of 1	
1611028-10A	Soil		10.05	10	1.000	1 of 3	
1611028-10AMS	Soil		10.13	10	1.000	↓ of ↓	
1611028-10AMSD	Soil		10.21	10	1.000	of	
1611028-11A	Soil		10.53	10	1.000	1 of 1	
1611028-12A	Soil		10.24	10	1.000	1 of 1	
1611028-14A	Soil		10.42	10	1.000	1 of 1	
1611028-15A	Soil		10.30	10	1.000	1 of 1	
1611028-16A	Soil		10.50	10	1.000	1 of 1	
1611028-17A	Soil		10.28	10	1.000	1 of 1	
LCS-77830	Soil		10	10	1.000	of	
MB-77830	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

11/9/16

11/9/16

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							

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**

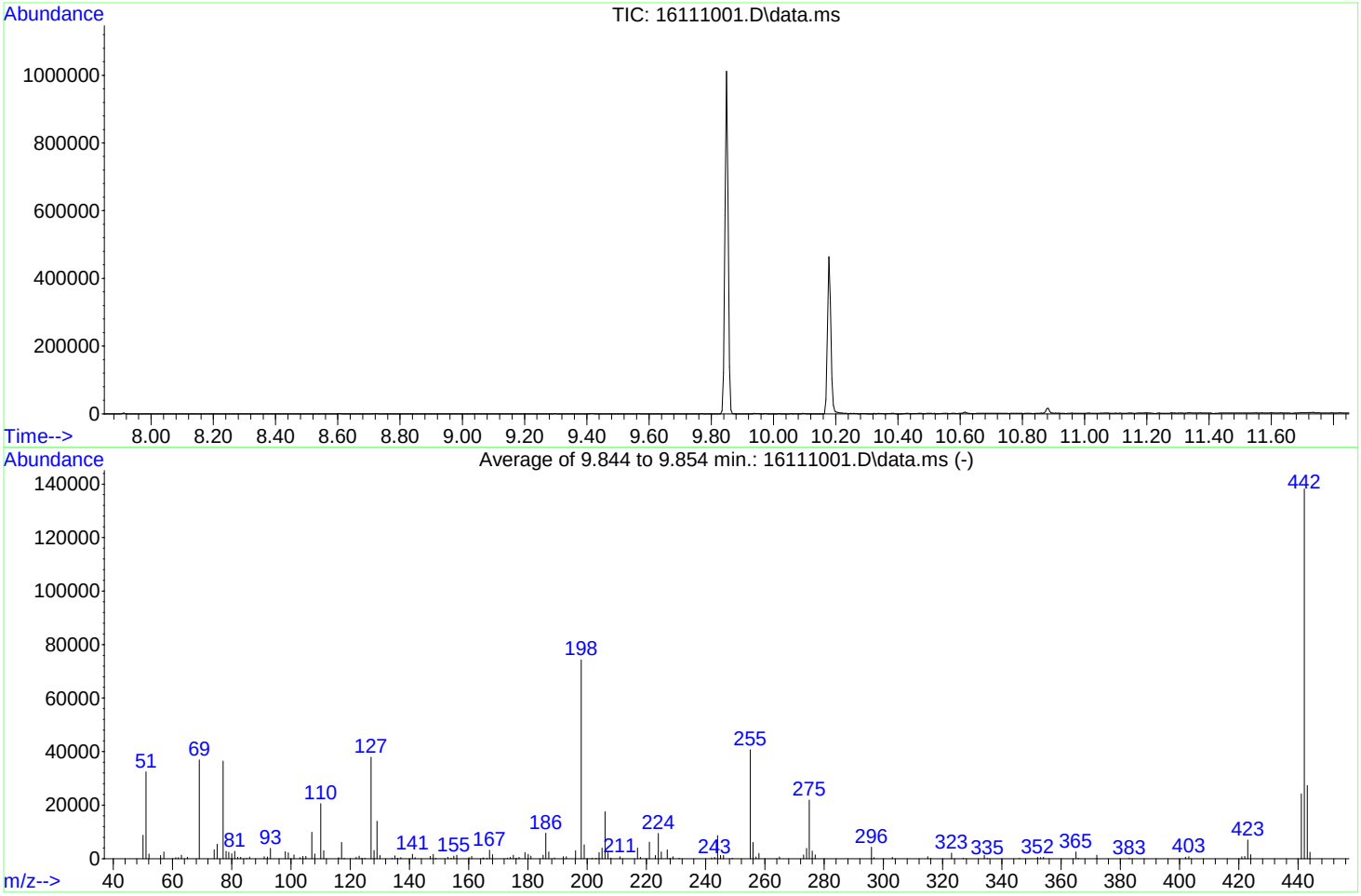
Prep Factor Units: **mL/**

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							

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111001.D
Acq On : 10 Nov 2016 9:51 am
Operator :
Sample : DFTPP-161110
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



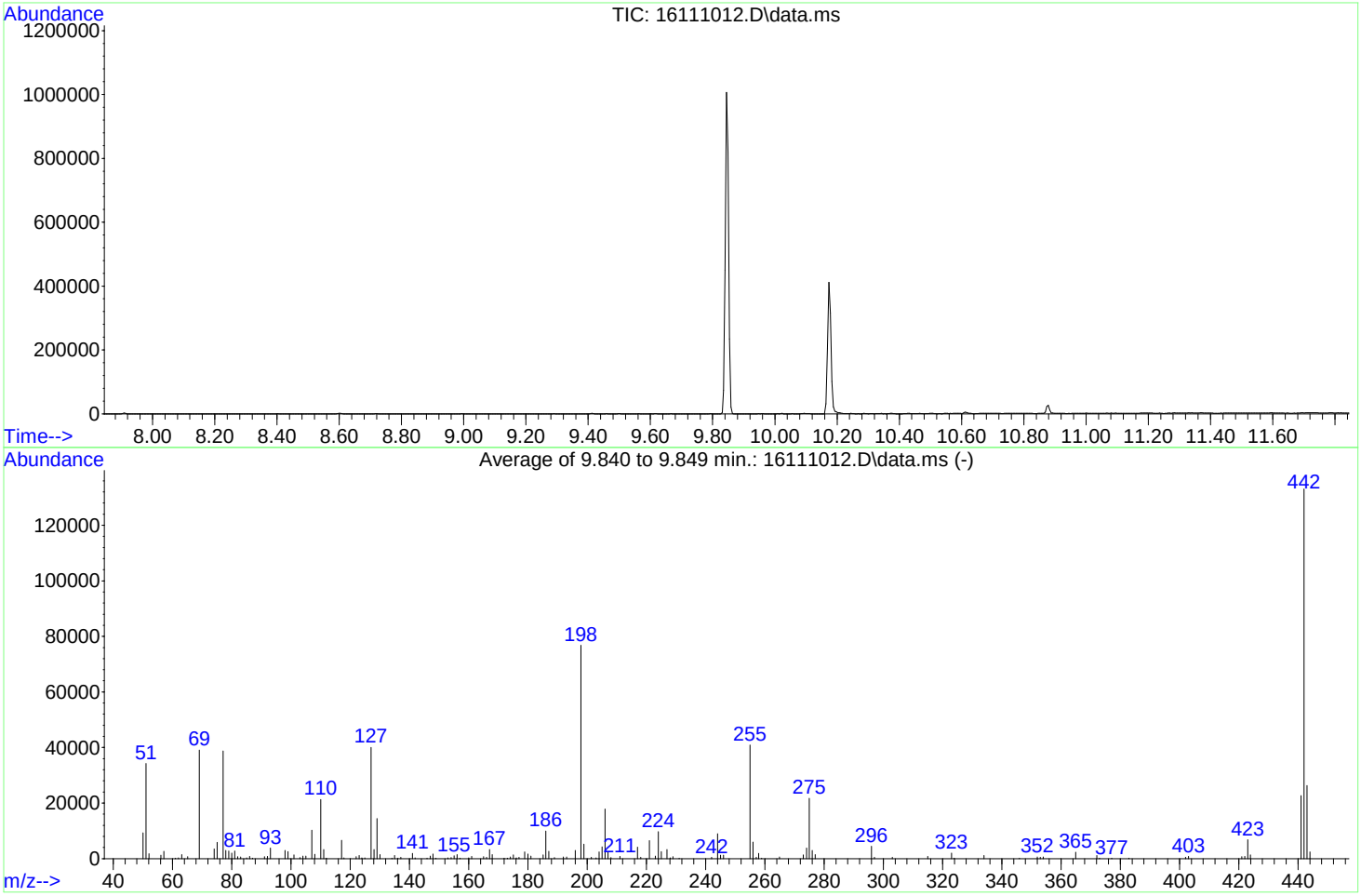
AutoFind: Scans 799, 800, 801; Background Corrected with Scan 794

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51	198	10	80	43.6	32434	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	49.6	36861	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	51.0	37898	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	74341	PASS
199	198	5	9	7.0	5170	PASS
275	198	10	60	29.4	21832	PASS
365	198	1	200	3.4	2549	PASS
441	442	0.01	24	17.5	24195	PASS
442	198	50	400	185.9	138210	PASS
443	442	15	24	19.7	27288	PASS

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111012.D
Acq On : 10 Nov 2016 3:08 pm
Operator :
Sample : DFTPP2-161110
Misc : TUNE
ALS Vial : 12 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	44.5	34205	PASS
68	69	0.00	2	0.0	0	PASS
69	198	0.00	100	50.9	39050	PASS
70	69	0.00	2	0.0	0	PASS
127	198	10	80	52.2	40048	PASS
197	198	0.00	2	0.0	0	PASS
198	198	100	100	100.0	76786	PASS
199	198	5	9	6.8	5189	PASS
275	198	10	60	28.2	21670	PASS
365	198	1	200	3.0	2323	PASS
441	442	0.01	24	17.0	22674	PASS
442	198	50	400	173.4	133122	PASS
443	442	15	24	19.8	26356	PASS

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111002.D
Acq On : 10 Nov 2016 10:20 am
Operator :
Sample : ICV-161110
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 11:37:31 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

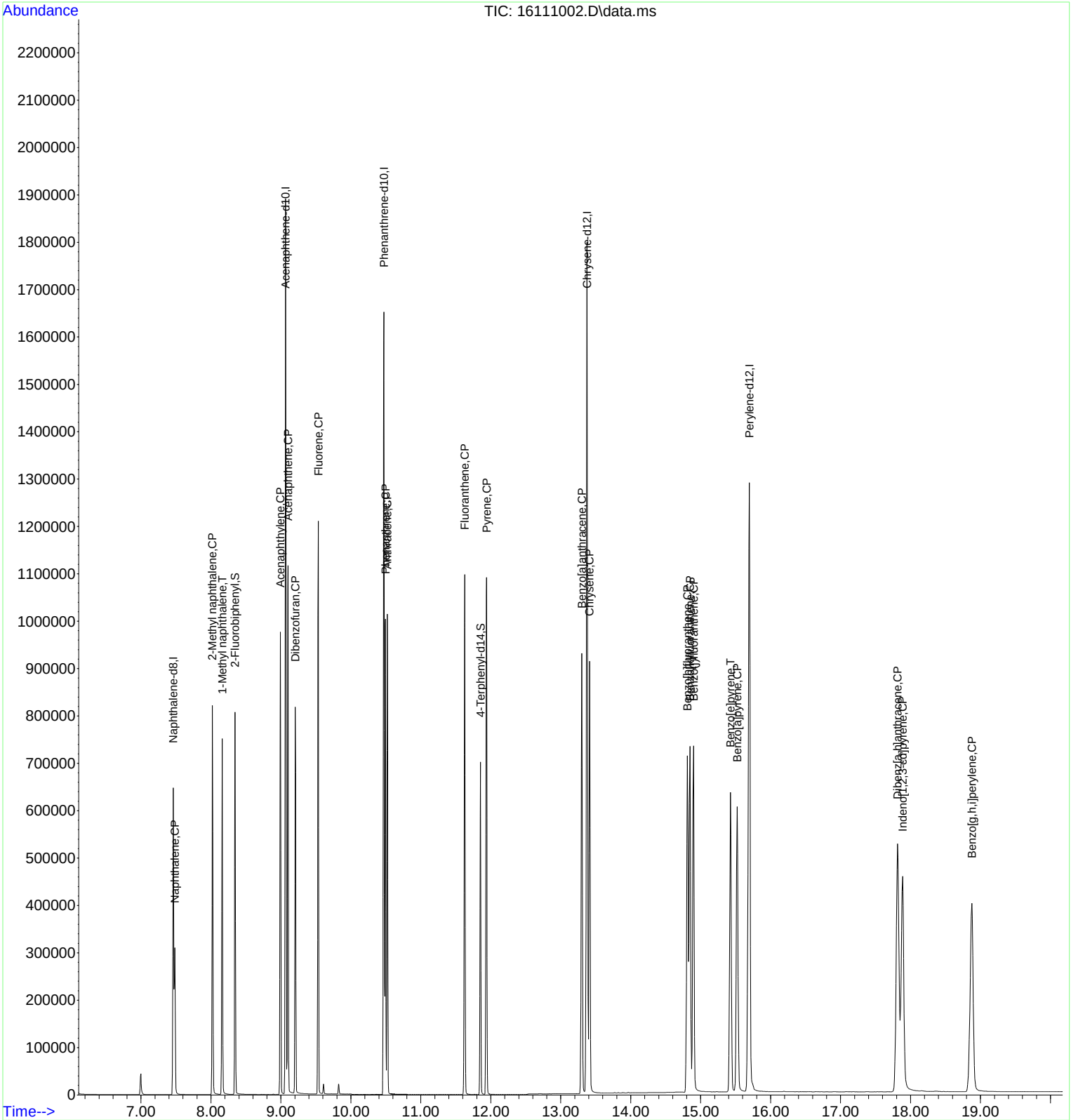
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.460	136	564627	4000.00	ug/kg	64
5) Acenaphthene-d10	9.067	164	682782	4000.00	ug/kg	86
11) Phenanthrene-d10	10.471	188	1249213	4000.00	ug/kg	88
17) Chrysene-d12	13.375	240	1457285	4000.00	ug/kg	87
20) Perylene-d12	15.697	264	1564035	4000.00	ug/kg	89
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	459531	2072.08	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.80%			
16) 4-Terphenyl-d14	11.851	244	497688	2072.66	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.82%			
Target Compounds						Qvalue
2) Naphthalene	7.483	128	218925	1996.56	ug/kg	100
3) 2-Methyl naphthalene	8.021	142	323490	2665.94	ug/kg	94
4) 1-Methyl naphthalene	8.159	142	285547	2606.53	ug/kg	94
6) Dibenzofuran	9.205	168	513882	2070.80	ug/kg	100
8) Acenaphthylene	8.994	152	586917	2061.78	ug/kg	99
9) Acenaphthene	9.102	154	341755	2072.45	ug/kg	95
10) Fluorene	9.534	166	418611	2026.71	ug/kg	98
12) Phenanthrene	10.494	178	569738	1941.36	ug/kg	100
13) Anthracene	10.522	178	581414	1946.05	ug/kg	100
14) Fluoranthene	11.627	202	655205	1888.39	ug/kg	100
15) Pyrene	11.938	202	665904	1869.32	ug/kg	100
18) Benzo[a]anthracene	13.301	228	703190	2049.13	ug/kg	100
19) Chrysene	13.411	228	652215	2096.35	ug/kg	100
21) Benzo[b]fluoranthene	14.810	252	744711	1908.43	ug/kg	100
22) Benzo[k]fluoranthene	14.847	252	740744	2100.11	ug/kg	99
23) Benzo(j)fluoranthene	14.898	252	716025	2063.78	ug/kg	100
24) Benzo[e]pyrene	15.426	252	710182	2030.38	ug/kg	99
25) Benzo[a]pyrene	15.521	252	719678	2013.80	ug/kg	99
26) Dibenz[a,h]anthracene	17.814	278	753472	2050.19	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.887	276	724282	2020.65	ug/kg	100
28) Benzo[g,h,i]perylene	18.876	276	776784	2046.26	ug/kg	99

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111002.D
Acq On : 10 Nov 2016 10:20 am
Operator :
Sample : ICV-161110
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

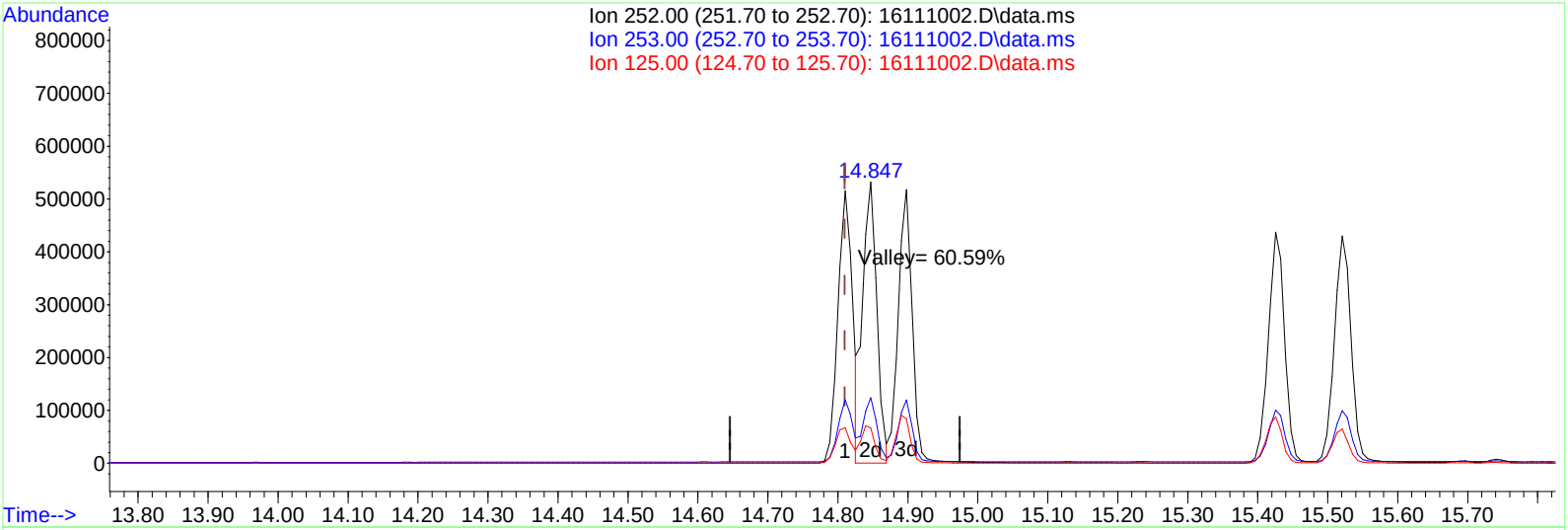
Quant Time: Nov 14 11:37:31 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

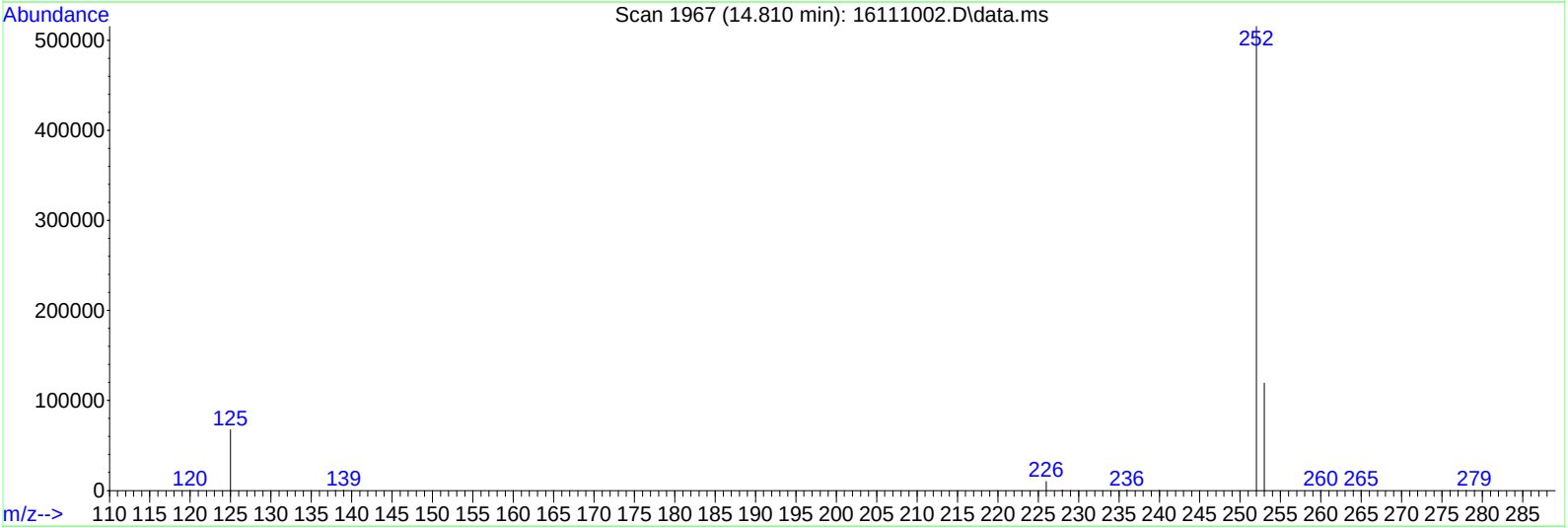


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111002.D
Acq On : 10 Nov 2016 10:20 am
Operator :
Sample : ICV-161110
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 14 11:37:31 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





TIC: 16111002.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.810min (+0.000) 1908.43ug/kg

response 744711

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.71
125.00	12.90	13.04
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111003.D
Acq On : 10 Nov 2016 10:49 am
Operator :
Sample : LCS-77830
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 11:37:35 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	7.465	136	976166	4000.00	ug/kg	111
5) Acenaphthene-d10	9.067	164	633785	4000.00	ug/kg	80
11) Phenanthrene-d10	10.468	188	1161520	4000.00	ug/kg	82
17) Chrysene-d12	13.374	240	1360060	4000.00	ug/kg	81
20) Perylene-d12	15.689	264	1449494	4000.00	ug/kg	82

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	185849	902.80	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.57%#			
16) 4-Terphenyl-d14	11.852	244	216703	970.61	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 24.27%#			

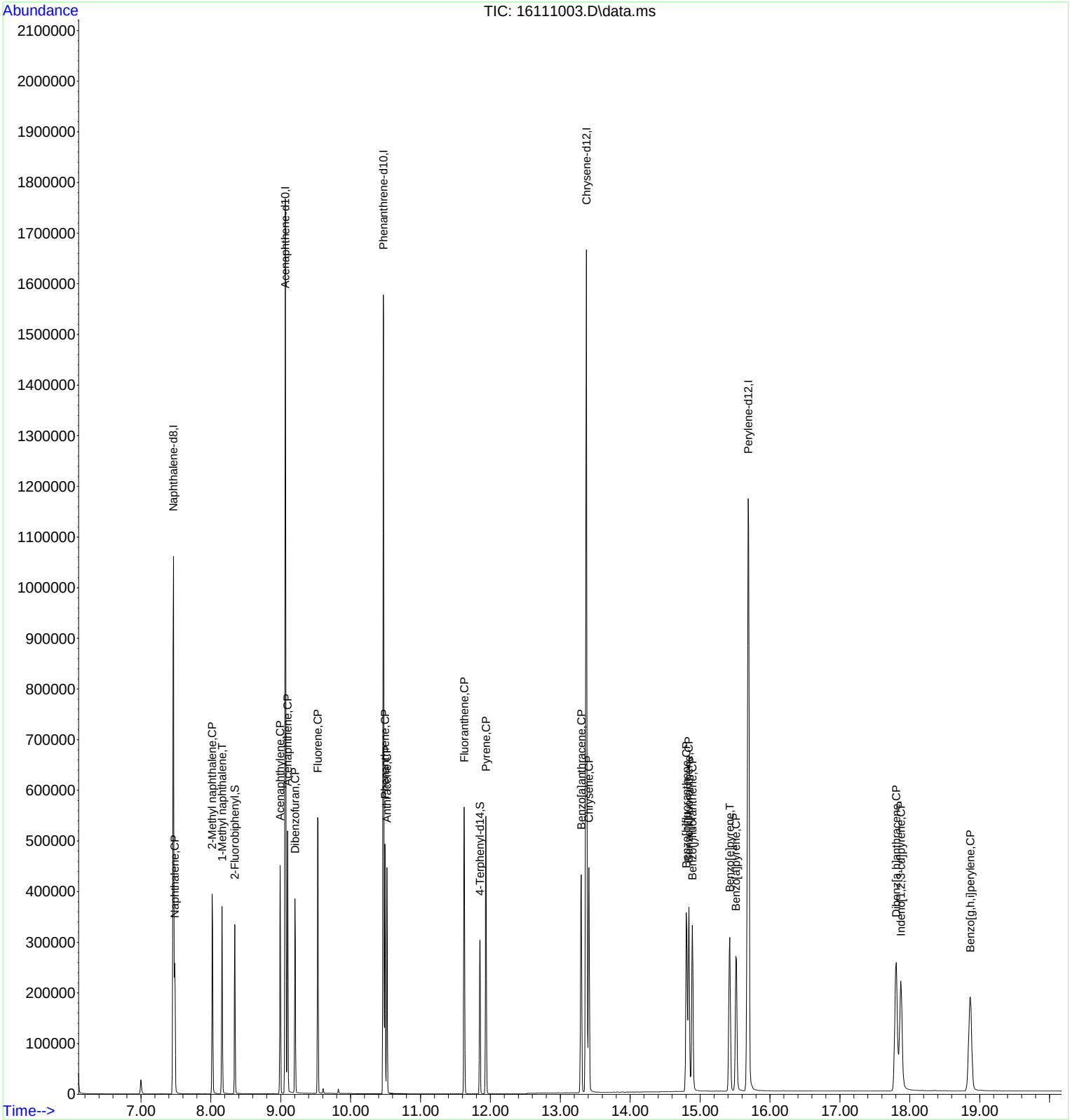
Target Compounds						Qvalue
2) Naphthalene	7.483	128	181633	958.12	ug/kg	99
3) 2-Methyl naphthalene	8.020	142	162461	774.42	ug/kg	90
4) 1-Methyl naphthalene	8.159	142	146173	771.77	ug/kg	90
6) Dibenzofuran	9.204	168	235486	1022.30	ug/kg	98
8) Acenaphthylene	8.993	152	271339	1026.88	ug/kg	99
9) Acenaphthene	9.096	154	155788	1017.75	ug/kg	97
10) Fluorene	9.533	166	201719	1052.13	ug/kg	97
12) Phenanthrene	10.492	178	277971	1018.68	ug/kg	99
13) Anthracene	10.521	178	261754	942.26	ug/kg	99
14) Fluoranthene	11.624	202	323138	1001.64	ug/kg	98
15) Pyrene	11.936	202	324201	978.81	ug/kg	99
18) Benzo[a]anthracene	13.301	228	344035	1074.20	ug/kg	99
19) Chrysene	13.410	228	319852	1101.56	ug/kg	99
21) Benzo[b]fluoranthene	14.802	252	397018	1097.82	ug/kg	98
22) Benzo[k]fluoranthene	14.839	252	332681	1017.73	ug/kg	99
23) Benzo(j)fluoranthene	14.890	252	321630	1000.28	ug/kg	99
24) Benzo[e]pyrene	15.425	252	347262	1071.26	ug/kg	96
25) Benzo[a]pyrene	15.513	252	328504	991.85	ug/kg	98
26) Dibenz[a,h]anthracene	17.805	278	360063	1057.15	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.871	276	351639	1058.55	ug/kg	99
28) Benzo[g,h,i]perylene	18.868	276	369980	1051.64	ug/kg	98

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111003.D
Acq On : 10 Nov 2016 10:49 am
Operator :
Sample : LCS-77830
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 14 11:37:35 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



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111004.D
Acq On : 10 Nov 2016 11:17 am
Operator :
Sample : MB-77830
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 11:37:38 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	7.466	136	945414	4000.00	ug/kg	107
5) Acenaphthene-d10	9.067	164	644118	4000.00	ug/kg	81
11) Phenanthrene-d10	10.469	188	1175015	4000.00	ug/kg	83
17) Chrysene-d12	13.374	240	1393166	4000.00	ug/kg	83
20) Perylene-d12	15.689	264	1471794	4000.00	ug/kg	84

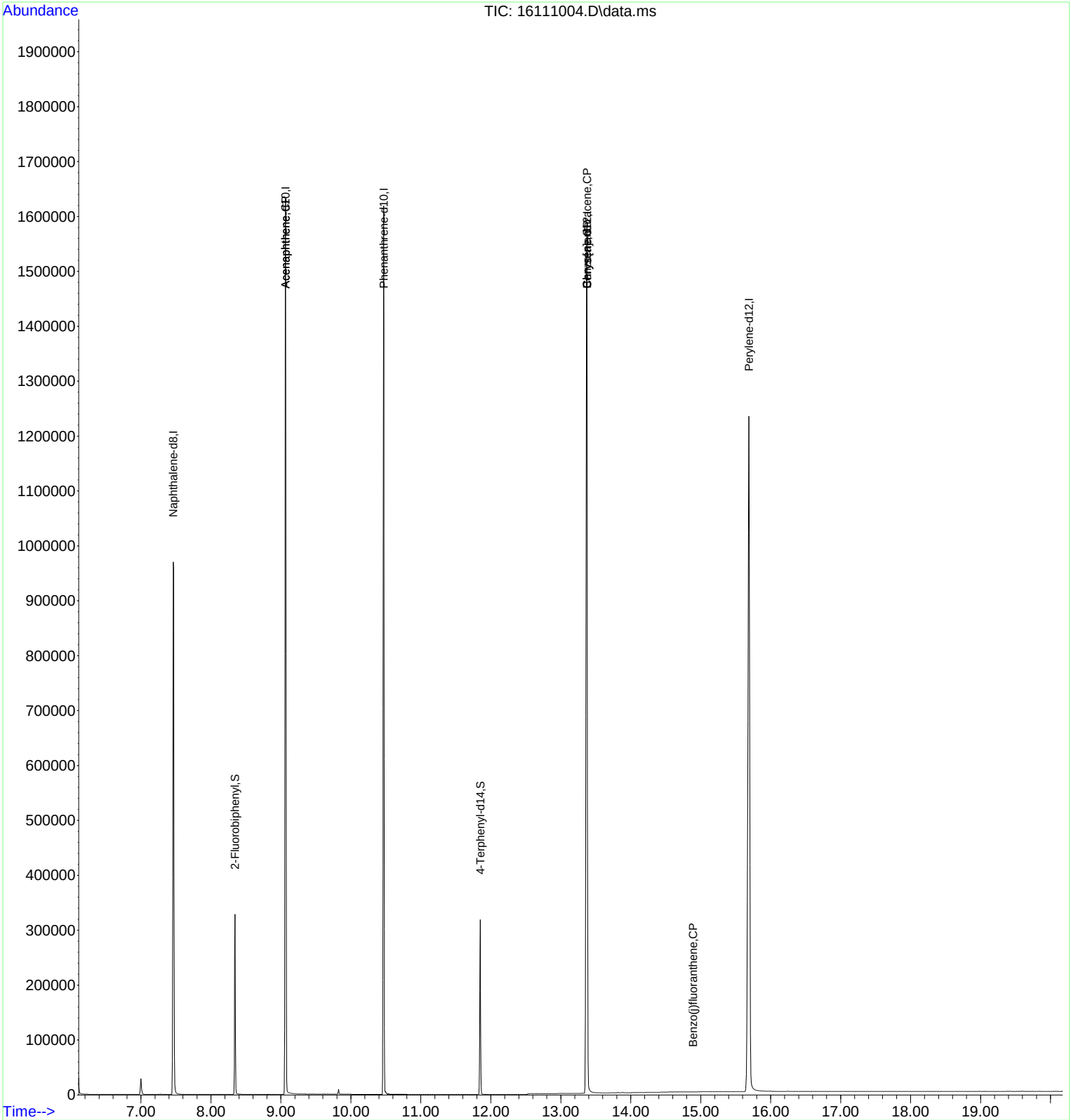
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	191680	916.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 22.90%#			
16) 4-Terphenyl-d14	11.848	244	225739	999.47	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 24.99%#			

Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2374	15.26	ug/kg#	10
18) Benzo[a]anthracene	13.374	228	3637	11.09	ug/kg	70
19) Chrysene	13.374	228	3644	12.25	ug/kg	66
23) Benzo(j)fluoranthene	14.883	252	76	0.23	ug/kg#	1

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

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111004.D
Acq On : 10 Nov 2016 11:17 am
Operator :
Sample : MB-77830
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 14 11:37:38 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\161110\
Data File : 16111009.D
Acq On : 10 Nov 2016 1:42 pm
Operator :
Sample : 1611028-01A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: Nov 14 11:38:57 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	535264	4000.00	ug/kg	61
5) Acenaphthene-d10	9.067	164	602494	4000.00	ug/kg	76
11) Phenanthrene-d10	10.469	188	1087427	4000.00	ug/kg	77
17) Chrysene-d12	13.374	240	1277295	4000.00	ug/kg	76
20) Perylene-d12	15.689	264	1344357	4000.00	ug/kg	76

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	19276	98.50	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.46%#			
16) 4-Terphenyl-d14	11.850	244	21535	103.03	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.58%#			

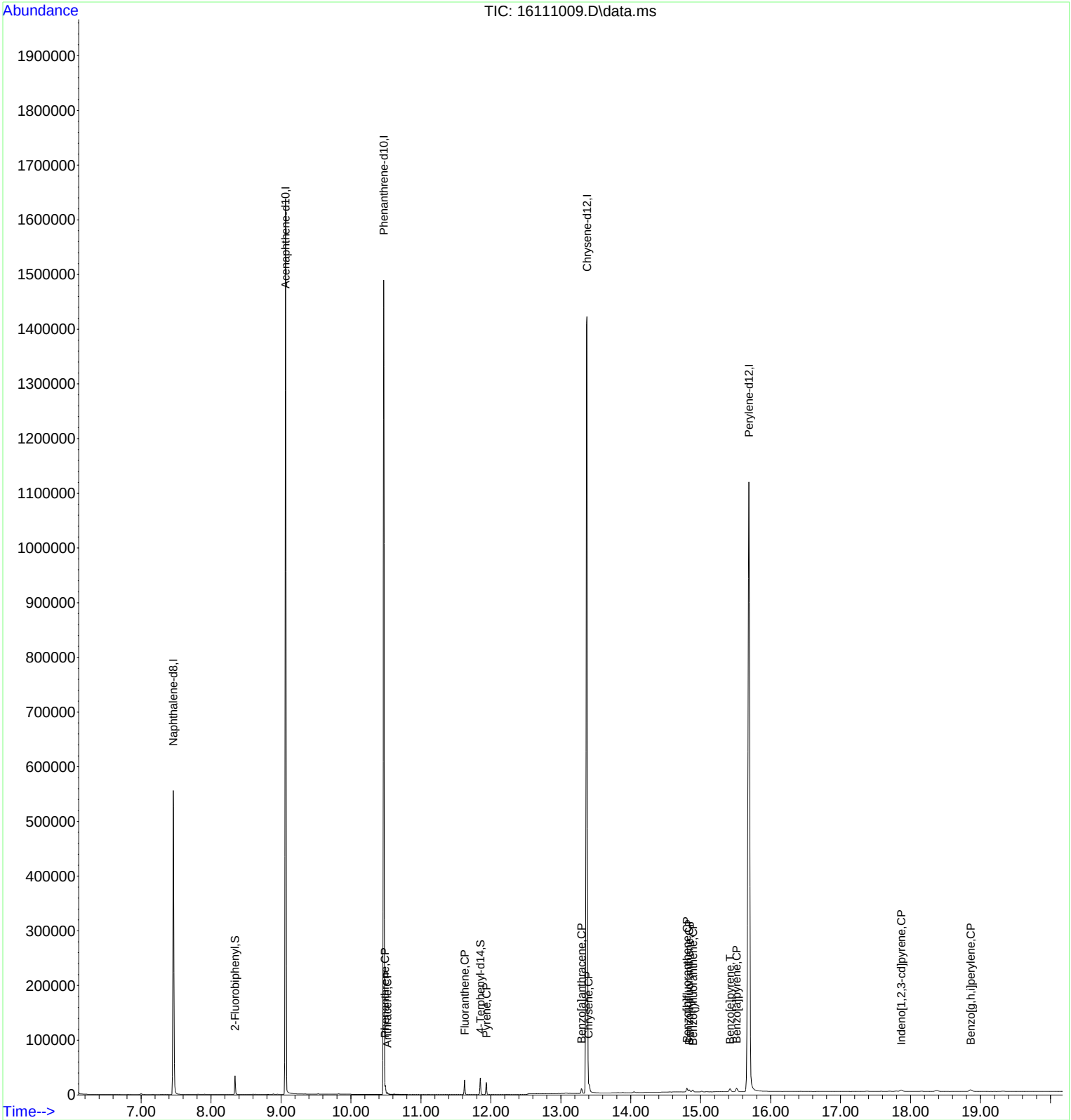
Target Compounds						Qvalue
12) Phenanthrene	10.492	178	7829	30.65	ug/kg	99
13) Anthracene	10.520	178	1798	6.91	ug/kg	98
14) Fluoranthene	11.623	202	15939	52.77	ug/kg	97
15) Pyrene	11.935	202	13229	42.66	ug/kg	99
18) Benzo[a]anthracene	13.294	228	7415	24.65	ug/kg	98
19) Chrysene	13.404	228	7850	28.79	ug/kg	99
21) Benzo[b]fluoranthene	14.803	252	7930	23.64	ug/kg	98
22) Benzo[k]fluoranthene	14.839	252	3448	11.37	ug/kg	87
23) Benzo(j)fluoranthene	14.891	252	3374	11.31	ug/kg	96
24) Benzo[e]pyrene	15.418	252	5975	19.87	ug/kg	97
25) Benzo[a]pyrene	15.513	252	8088	26.33	ug/kg	98
27) Indeno[1,2,3-cd]pyrene	17.872	276	5151	16.72	ug/kg	96
28) Benzo[g,h,i]perylene	18.861	276	6265	19.20	ug/kg	96

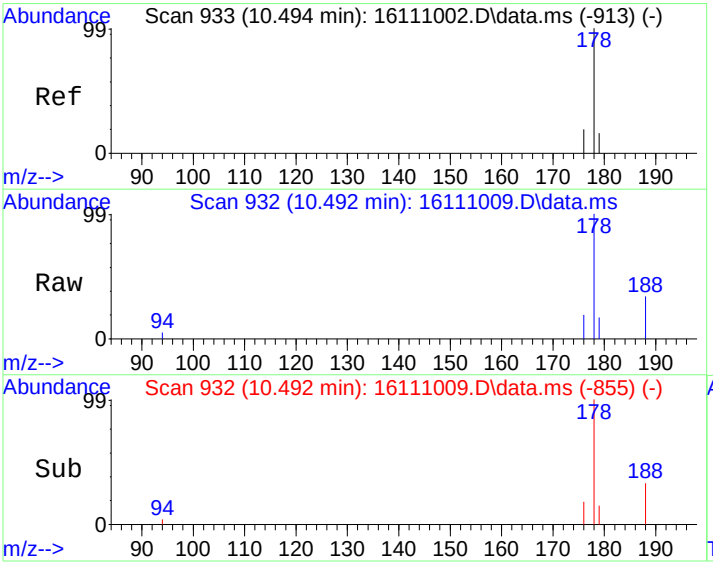
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111009.D
Acq On : 10 Nov 2016 1:42 pm
Operator :
Sample : 1611028-01A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: Nov 14 11:38:57 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

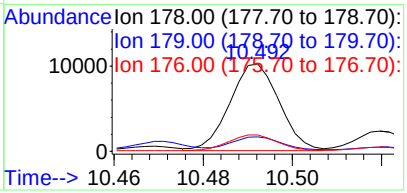


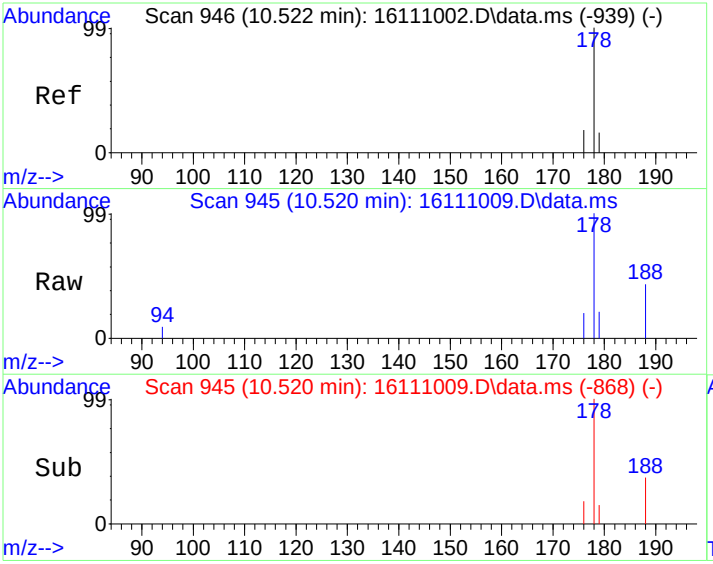


#12
Phenanthrene
Concen: 30.65 ug/kg
RT: 10.492 min Scan# 932
Delta R.T. -0.002 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:178 Resp: 7829

Ion	Ratio	Lower	Upper
178	100		
179	15.1	0.0	46.2
176	18.4	0.0	48.4

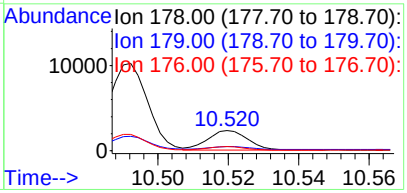


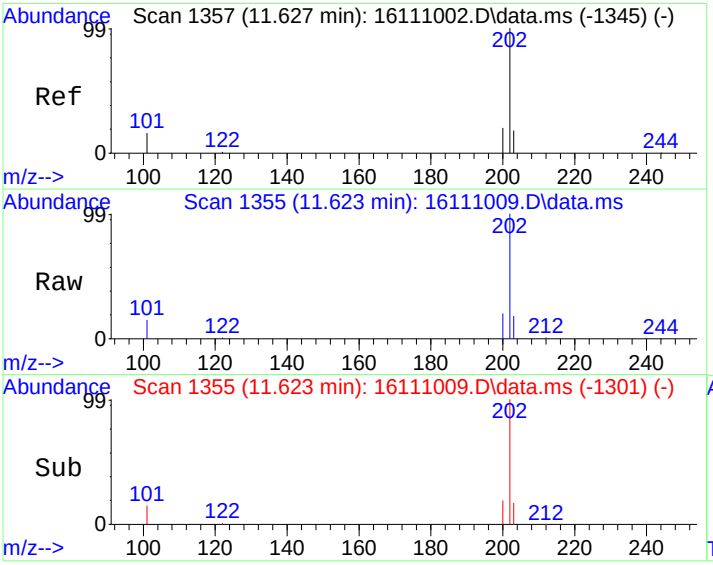


#13
Anthracene
Concen: 6.91 ug/kg
RT: 10.520 min Scan# 945
Delta R.T. -0.001 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:178 Resp: 1798

Ion	Ratio	Lower	Upper
178	100		
179	14.7	0.0	46.2
176	18.0	0.0	48.2

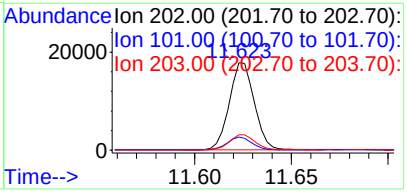


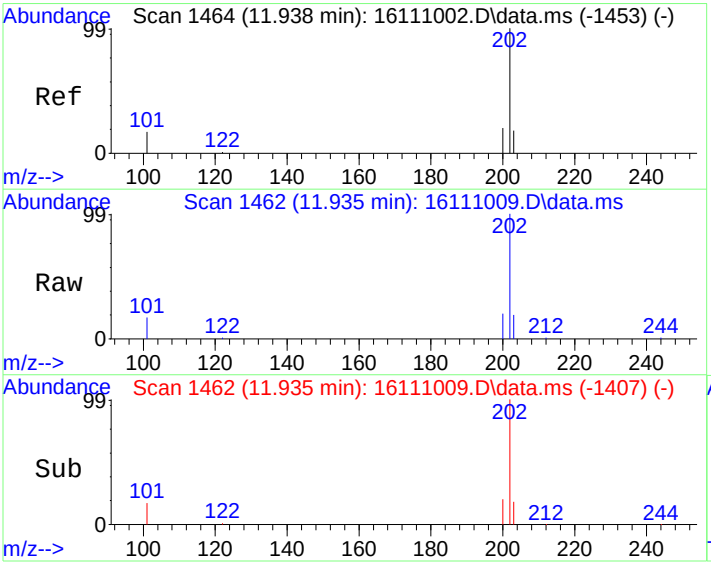


#14
Fluoranthene
Concen: 52.77 ug/kg
RT: 11.623 min Scan# 1355
Delta R.T. -0.003 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:202 Resp: 15939

Ion	Ratio	Lower	Upper
202	100		
101	14.6	0.0	45.8
203	17.1	0.0	48.2

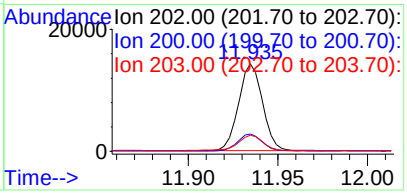


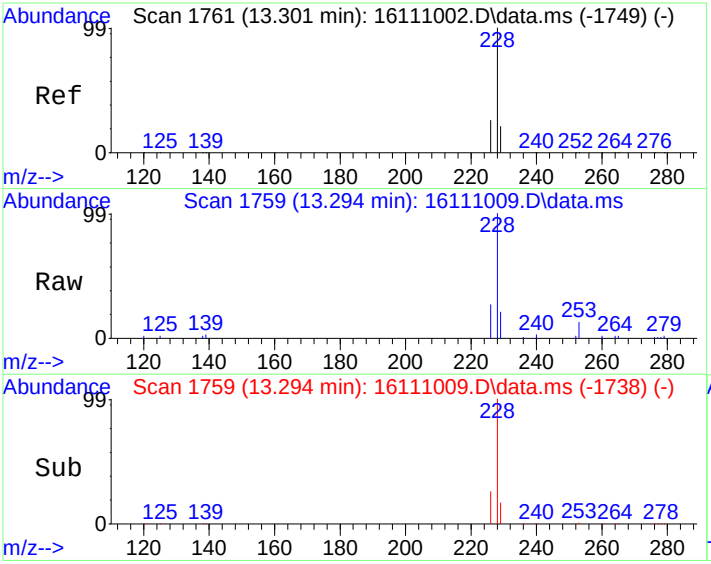


#15
Pyrene
Concen: 42.66 ug/kg
RT: 11.935 min Scan# 1462
Delta R.T. -0.003 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:202 Resp: 13229

Ion	Ratio	Lower	Upper
202	100		
200	19.6	0.0	50.3
203	17.8	0.0	48.2

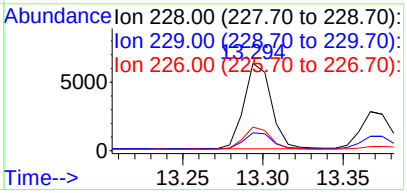


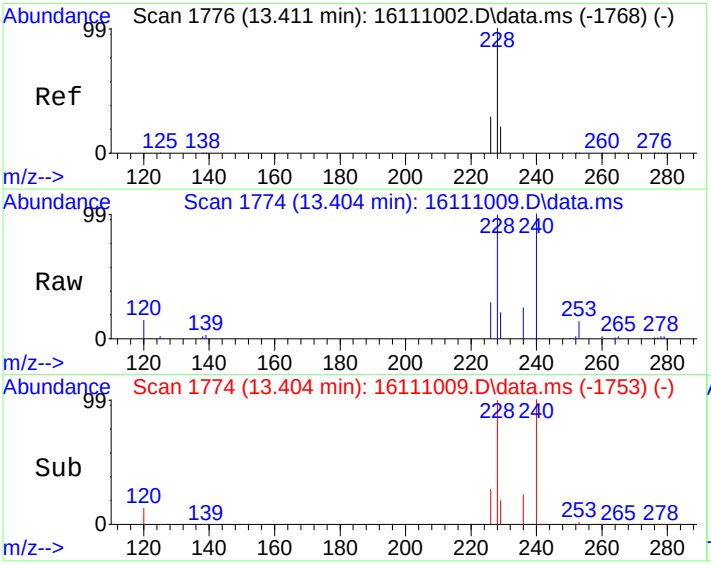


#18
Benzo[a]anthracene
Concen: 24.65 ug/kg
RT: 13.294 min Scan# 1759
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:228 Resp: 7415

Ion	Ratio	Lower	Upper
228	100		
229	18.8	0.0	50.8
226	25.9	0.0	55.5

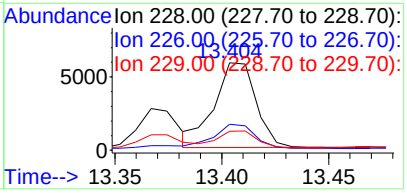


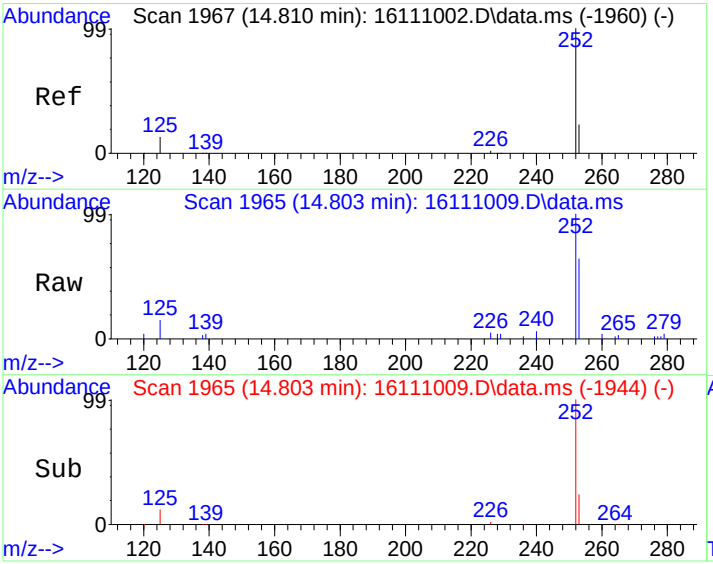


#19
Chrysene
Concen: 28.79 ug/kg
RT: 13.404 min Scan# 1774
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:228 Resp: 7850

Ion	Ratio	Lower	Upper
228	100		
226	28.6	0.0	58.7
229	19.7	0.0	50.4

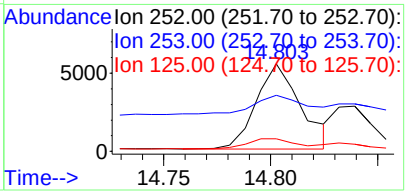


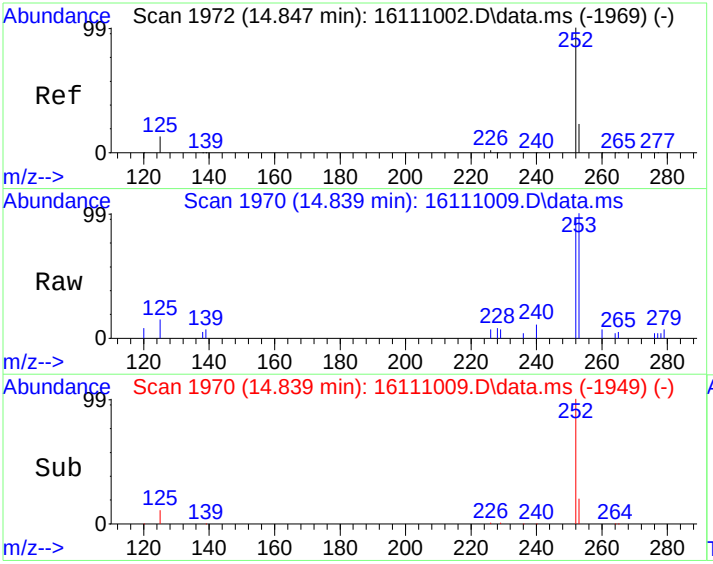


#21
Benzo[b]fluoranthene
Concen: 23.64 ug/kg
RT: 14.803 min Scan# 1965
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:252 Resp: 7930

Ion	Ratio	Lower	Upper
252	100		
253	21.9	0.0	52.7
125	11.8	0.0	42.9

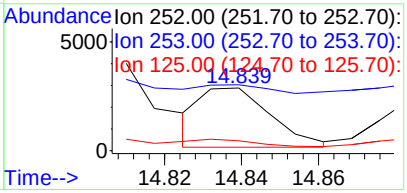


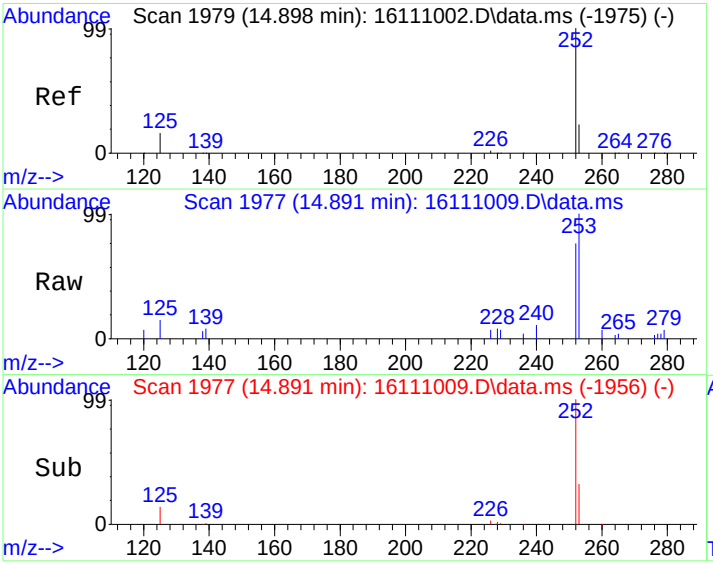


#22
Benzo[k]fluoranthene
Concen: 11.37 ug/kg
RT: 14.839 min Scan# 1970
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:252 Resp: 3448

Ion	Ratio	Lower	Upper
252	100		
253	13.6	2.8	42.8
125	10.8	0.0	31.3

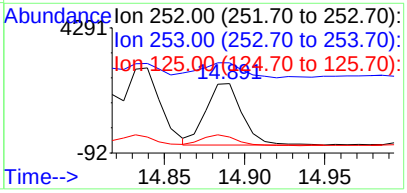


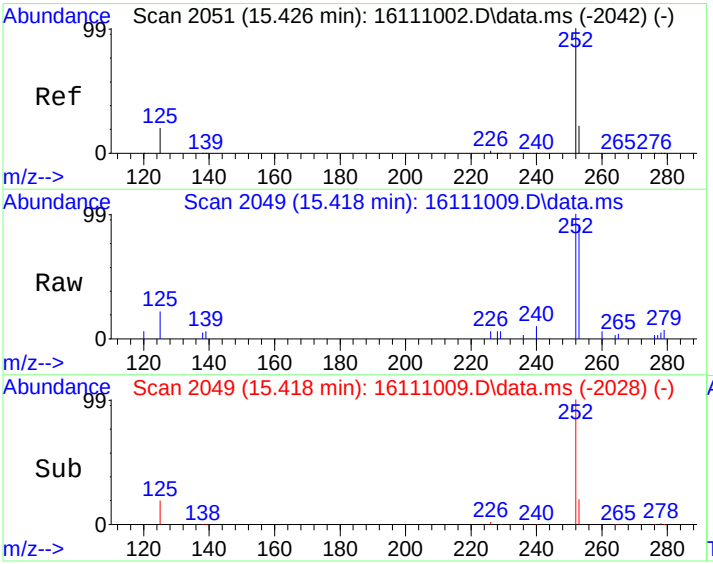


#23
Benzo(j)fluoranthene
Concen: 11.31 ug/kg
RT: 14.891 min Scan# 1977
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:252 Resp: 3374

Ion	Ratio	Lower	Upper
252	100		
253	22.0	2.7	42.7
125	13.4	0.0	36.4

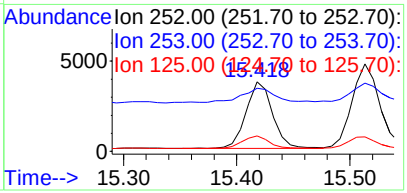


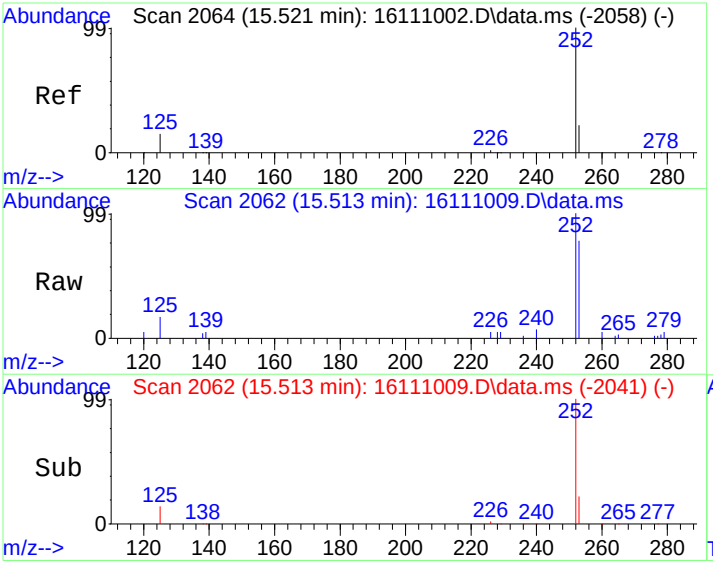


#24
Benzo[e]pyrene
Concen: 19.87 ug/kg
RT: 15.418 min Scan# 2049
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:252 Resp: 5975

Ion	Ratio	Lower	Upper
252	100		
253	21.4	2.5	42.5
125	18.8	0.9	40.9

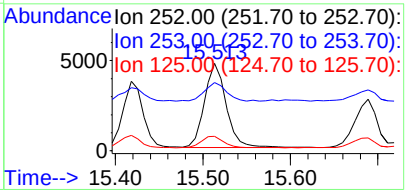


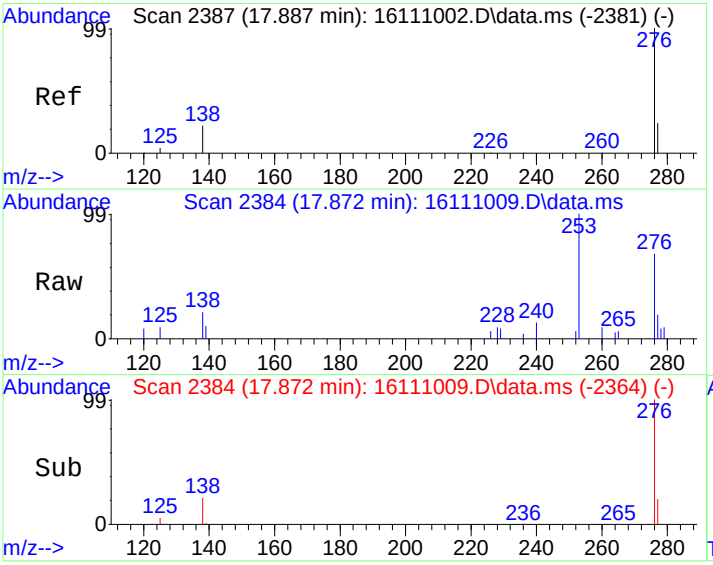


#25
Benzo[a]pyrene
Concen: 26.33 ug/kg
RT: 15.513 min Scan# 2062
Delta R.T. -0.007 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:252 Resp: 8088

Ion	Ratio	Lower	Upper
252	100		
253	21.6	2.7	42.7
125	13.4	0.0	33.9

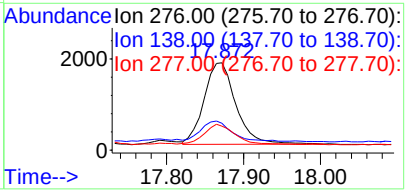


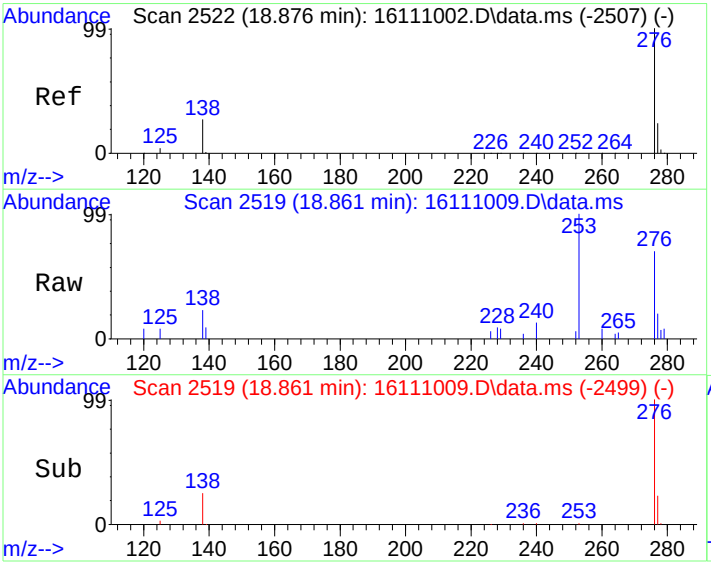


#27
Indeno[1,2,3-cd]pyrene
Concen: 16.72 ug/kg
RT: 17.872 min Scan# 2384
Delta R.T. -0.014 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:276 Resp: 5151

Ion	Ratio	Lower	Upper
276	100		
138	22.4	4.4	44.4
277	22.4	4.4	44.4

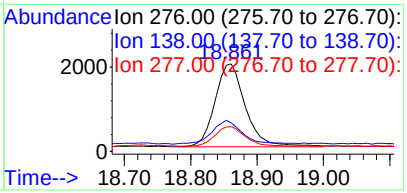




#28
Benzo[g,h,i]perylene
Concen: 19.20 ug/kg
RT: 18.861 min Scan# 2519
Delta R.T. -0.014 min
Lab File: 16111009.D
Acq: 10 Nov 2016 1:42 pm

Tgt Ion:276 Resp: 6265

Ion	Ratio	Lower	Upper
276	100		
138	24.9	7.7	47.7
277	23.4	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111010.D
Acq On : 10 Nov 2016 2:10 pm
Operator :
Sample : 1611028-02A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: Nov 14 11:39:05 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	7.465	136	668691	4000.00	ug/kg	76
5) Acenaphthene-d10	9.066	164	646172	4000.00	ug/kg	82
11) Phenanthrene-d10	10.467	188	1175354	4000.00	ug/kg	83
17) Chrysene-d12	13.373	240	1388984	4000.00	ug/kg	83
20) Perylene-d12	15.688	264	1494075	4000.00	ug/kg	85

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	19644	93.60	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.34%#			
16) 4-Terphenyl-d14	11.850	244	22829	101.05	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.53%#			

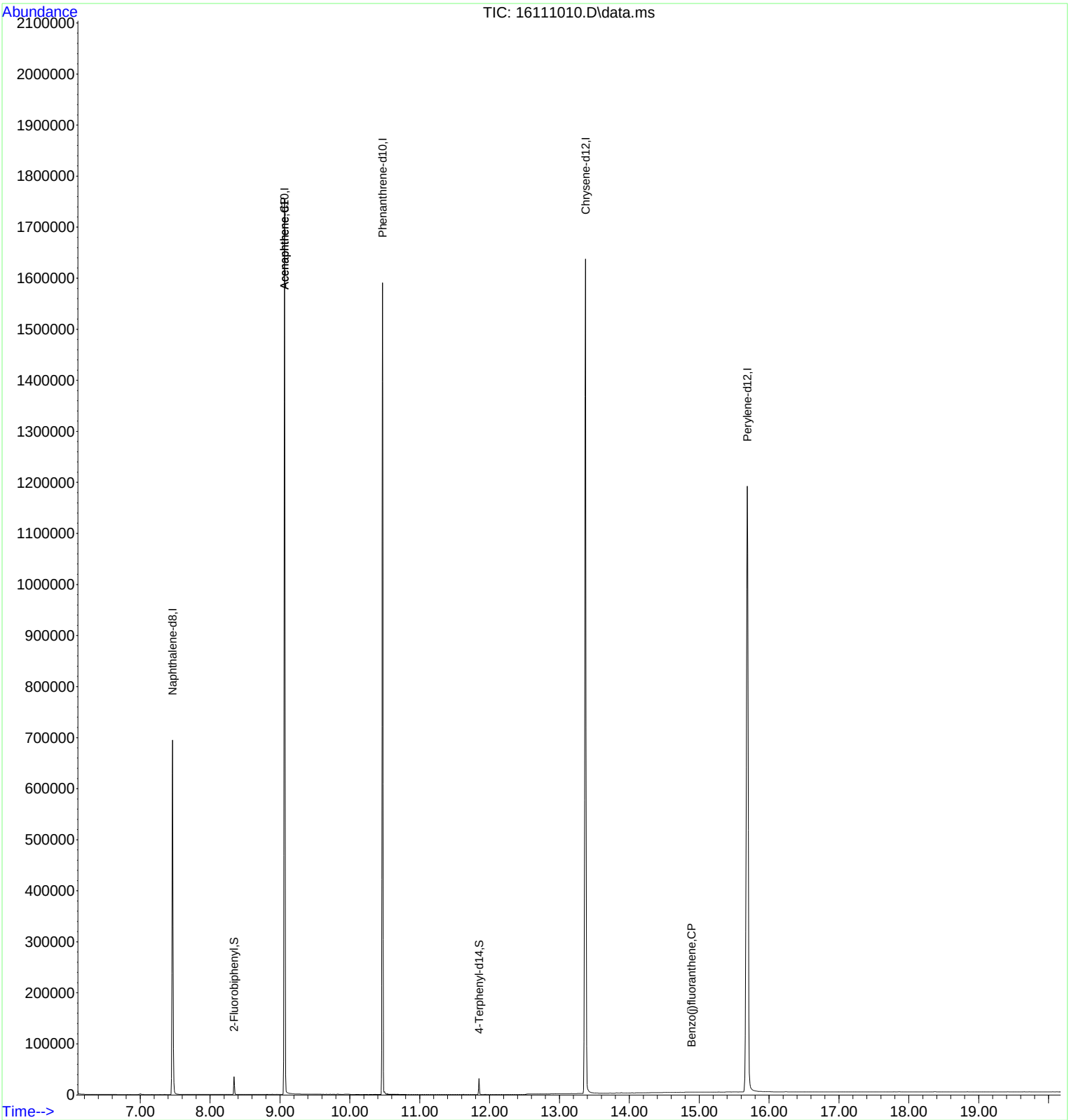
Target Compounds						Qvalue
9) Acenaphthene	9.066	154	2392	15.33	ug/kg#	12
23) Benzo(j)fluoranthene	14.890	252	36	0.11	ug/kg#	1

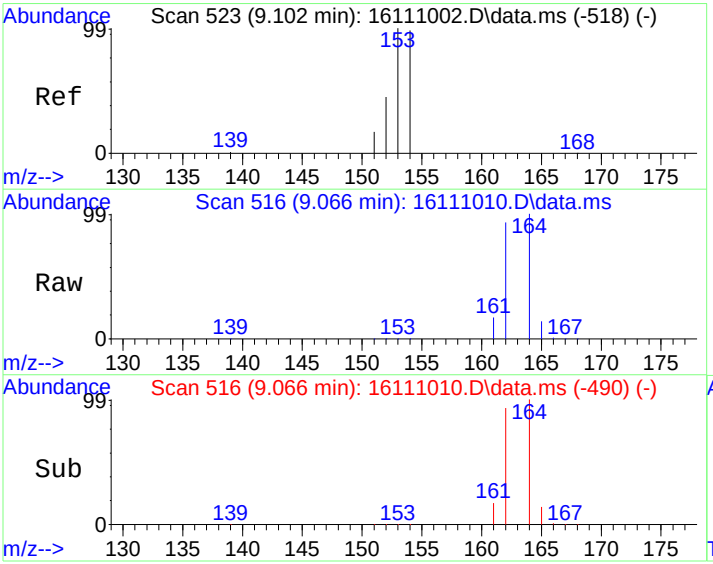
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111010.D
Acq On : 10 Nov 2016 2:10 pm
Operator :
Sample : 1611028-02A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: Nov 14 11:39:05 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

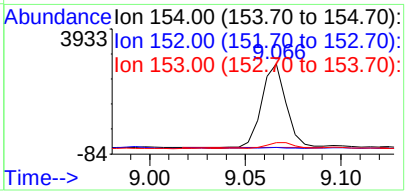


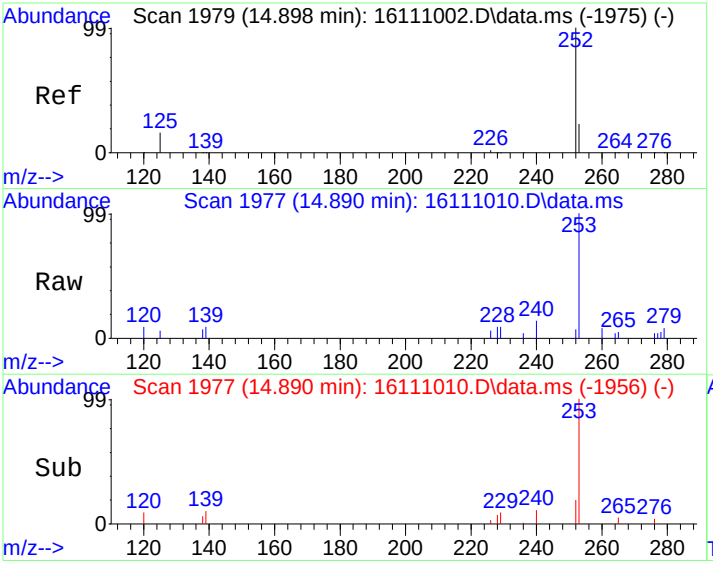


#9
Acenaphthene
Concen: 15.33 ug/kg
RT: 9.066 min Scan# 516
Delta R.T. -0.035 min
Lab File: 16111010.D
Acq: 10 Nov 2016 2:10 pm

Tgt Ion:154 Resp: 2392

Ion	Ratio	Lower	Upper
154	100		
152	1.2	20.7	80.7#
153	6.7	76.8	136.8#

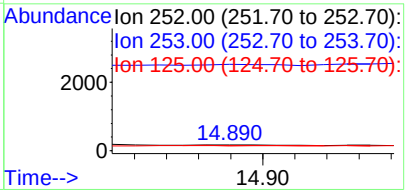




#23
Benzo(j)fluoranthene
Concen: 0.11 ug/kg
RT: 14.890 min Scan# 1977
Delta R.T. -0.008 min
Lab File: 16111010.D
Acq: 10 Nov 2016 2:10 pm

Tgt Ion:252 Resp: 36

Ion	Ratio	Lower	Upper
252	100		
253	100.0	2.7	42.7#
125	8.0	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111011.D
Acq On : 10 Nov 2016 2:39 pm
Operator :
Sample : 1611028-03A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: Nov 14 11:39:08 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

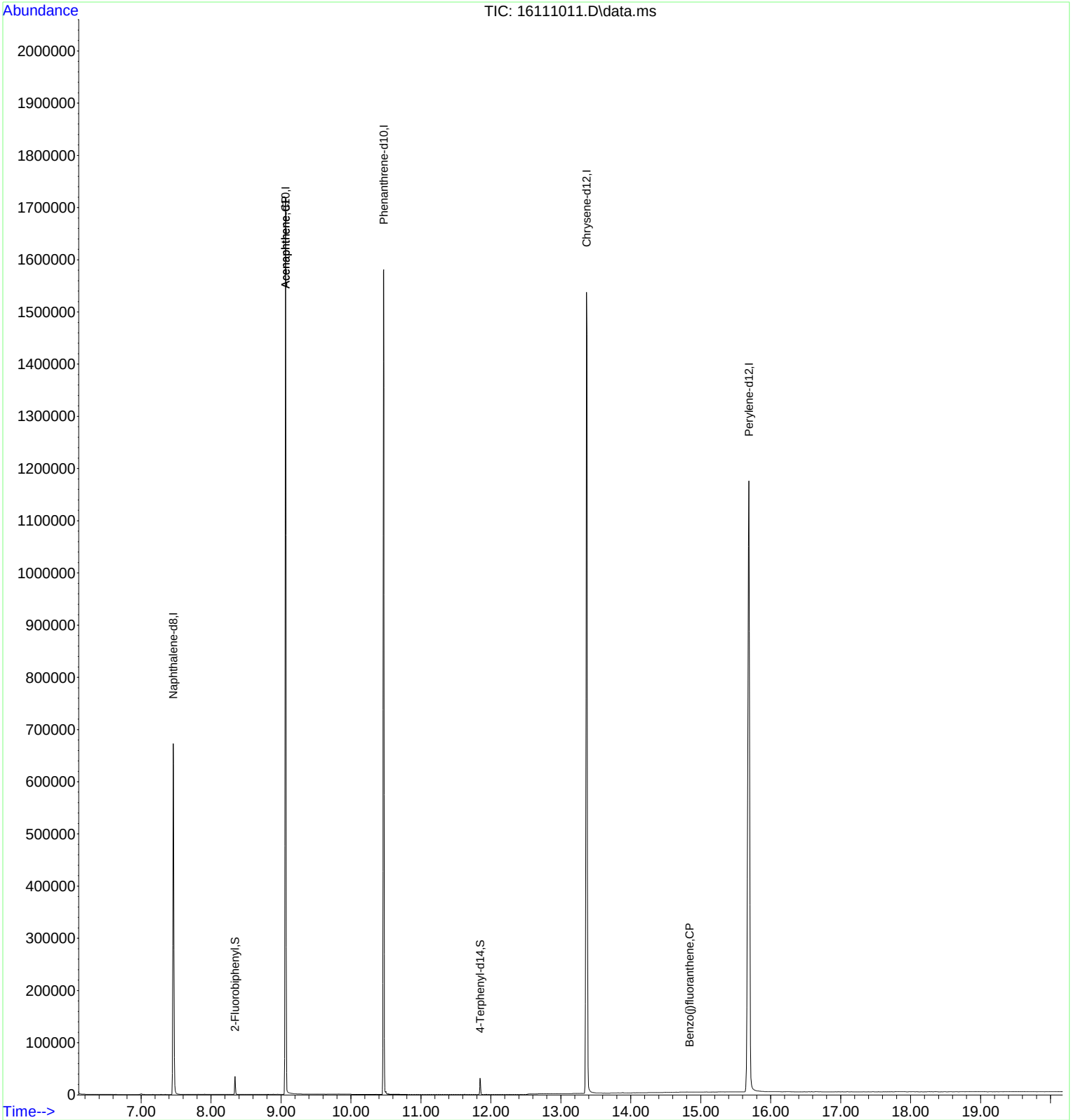
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	655763	4000.00	ug/kg	74
5) Acenaphthene-d10	9.066	164	648013	4000.00	ug/kg	82
11) Phenanthrene-d10	10.469	188	1160967	4000.00	ug/kg	82
17) Chrysene-d12	13.374	240	1359749	4000.00	ug/kg	81
20) Perylene-d12	15.689	264	1474089	4000.00	ug/kg	84
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	19642	93.32	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.33%#		
16) 4-Terphenyl-d14	11.847	244	22110	99.08	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	2.48%#		
Target Compounds						Qvalue
9) Acenaphthene	9.066	154	2383	15.23	ug/kg#	12
23) Benzo(j)fluoranthene	14.839	252	426	1.30	ug/kg	91

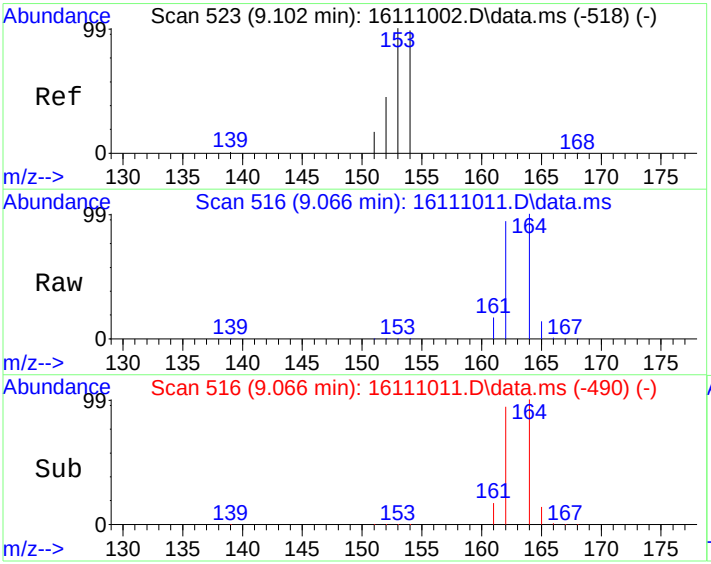
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111011.D
Acq On : 10 Nov 2016 2:39 pm
Operator :
Sample : 1611028-03A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: Nov 14 11:39:08 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

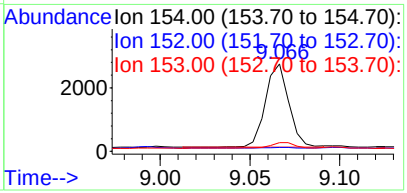


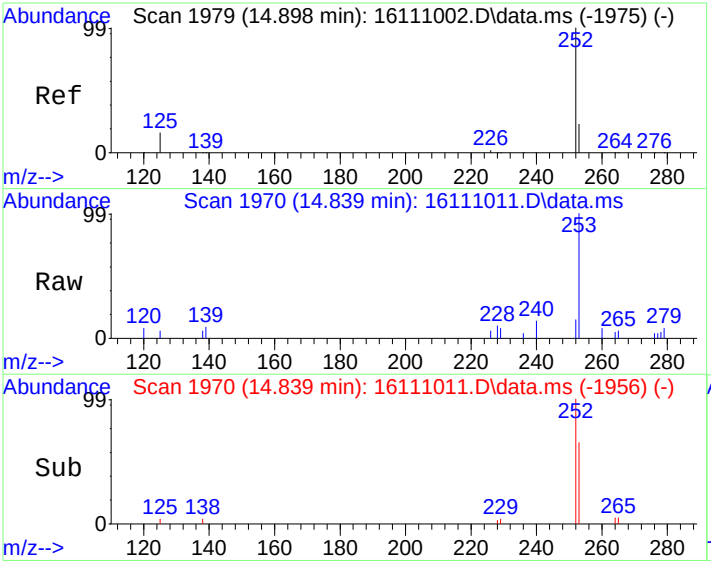


#9
Acenaphthene
Concen: 15.23 ug/kg
RT: 9.066 min Scan# 516
Delta R.T. -0.035 min
Lab File: 16111011.D
Acq: 10 Nov 2016 2:39 pm

Tgt Ion:154 Resp: 2383

Ion	Ratio	Lower	Upper
154	100		
152	1.0	20.7	80.7#
153	6.8	76.8	136.8#

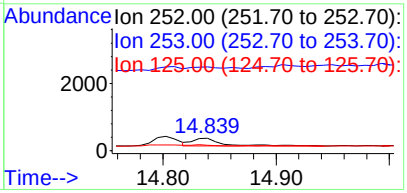




#23
Benzo(j)fluoranthene
Concen: 1.30 ug/kg
RT: 14.839 min Scan# 1970
Delta R.T. -0.059 min
Lab File: 16111011.D
Acq: 10 Nov 2016 2:39 pm

Tgt Ion:252 Resp: 426

Ion	Ratio	Lower	Upper
252	100		
253	25.7	2.7	42.7
125	10.4	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111013.D
Acq On : 10 Nov 2016 3:37 pm
Operator :
Sample : ICV2-161110
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 14 11:37:41 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

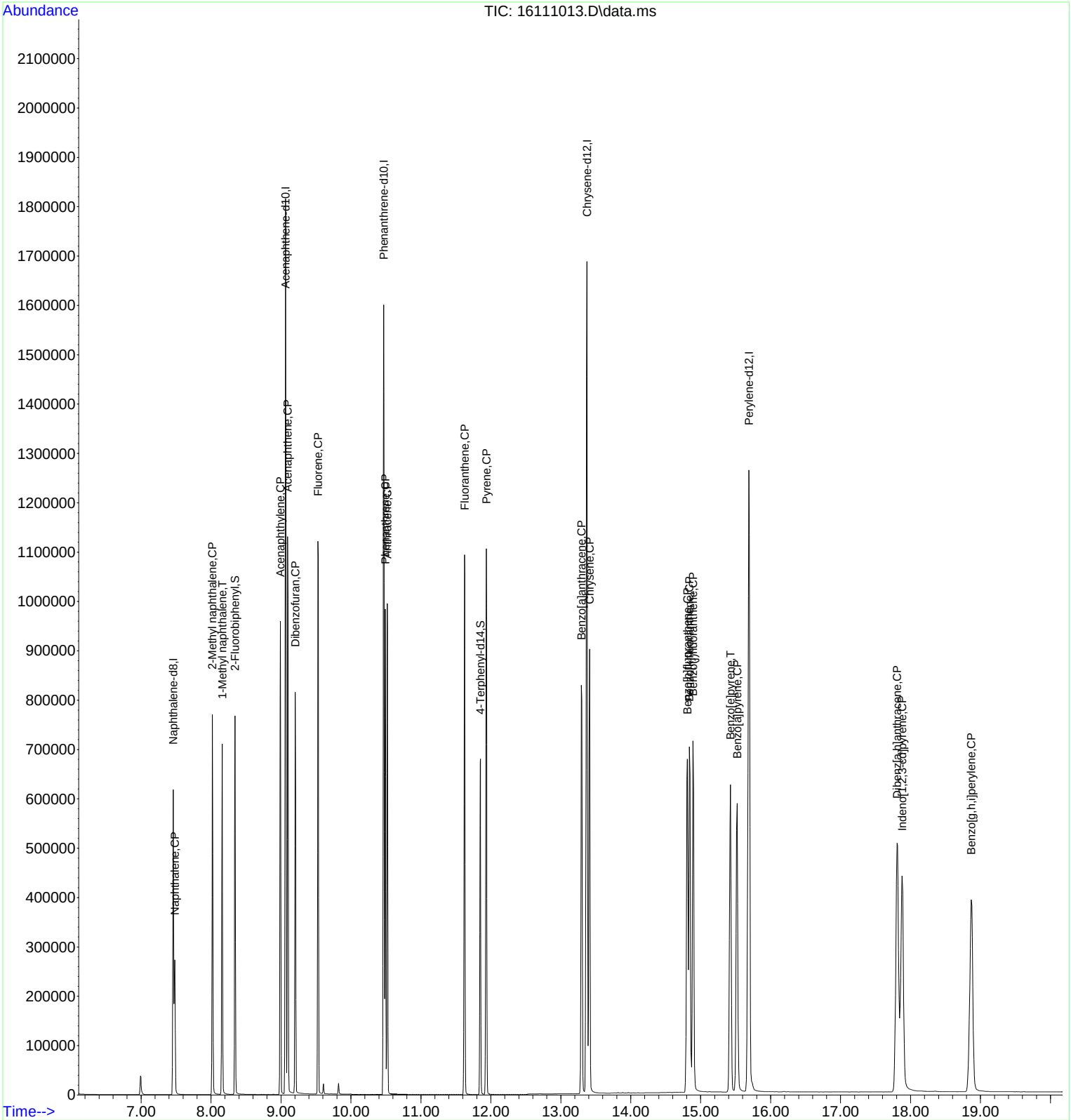
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	520081	4000.00	ug/kg	59
5) Acenaphthene-d10	9.067	164	668777	4000.00	ug/kg	85
11) Phenanthrene-d10	10.469	188	1228928	4000.00	ug/kg	87
17) Chrysene-d12	13.374	240	1439944	4000.00	ug/kg	86
20) Perylene-d12	15.689	264	1548387	4000.00	ug/kg	88
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	448876	2066.42	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 51.66%			
16) 4-Terphenyl-d14	11.850	244	495001	2095.49	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 52.39%			
Target Compounds						Qvalue
2) Naphthalene	7.482	128	198300	1963.36	ug/kg	100
3) 2-Methyl naphthalene	8.020	142	300762	2690.93	ug/kg	94
4) 1-Methyl naphthalene	8.159	142	272920	2704.65	ug/kg	96
6) Dibenzofuran	9.204	168	507066	2086.12	ug/kg	99
8) Acenaphthylene	8.993	152	578003	2072.99	ug/kg	99
9) Acenaphthene	9.096	154	338509	2095.75	ug/kg	98
10) Fluorene	9.533	166	416212	2057.29	ug/kg	98
12) Phenanthrene	10.492	178	562107	1946.97	ug/kg	99
13) Anthracene	10.520	178	572276	1947.08	ug/kg	100
14) Fluoranthene	11.623	202	653336	1914.09	ug/kg	100
15) Pyrene	11.935	202	661500	1887.61	ug/kg	100
18) Benzo[a]anthracene	13.294	228	699550	2063.07	ug/kg	99
19) Chrysene	13.411	228	653189	2124.76	ug/kg	99
21) Benzo[b]fluoranthene	14.810	252	771735	1997.67	ug/kg	99
22) Benzo[k]fluoranthene	14.839	252	702001	2010.38	ug/kg	98
23) Benzo(j)fluoranthene	14.891	252	696981	2029.20	ug/kg	97
24) Benzo[e]pyrene	15.425	252	703193	2030.72	ug/kg	97
25) Benzo[a]pyrene	15.521	252	696751	1969.35	ug/kg	100
26) Dibenz[a,h]anthracene	17.813	278	738683	2030.26	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.879	276	715606	2016.63	ug/kg	99
28) Benzo[g,h,i]perylene	18.868	276	764732	2034.87	ug/kg	100

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111013.D
Acq On : 10 Nov 2016 3:37 pm
Operator :
Sample : ICV2-161110
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

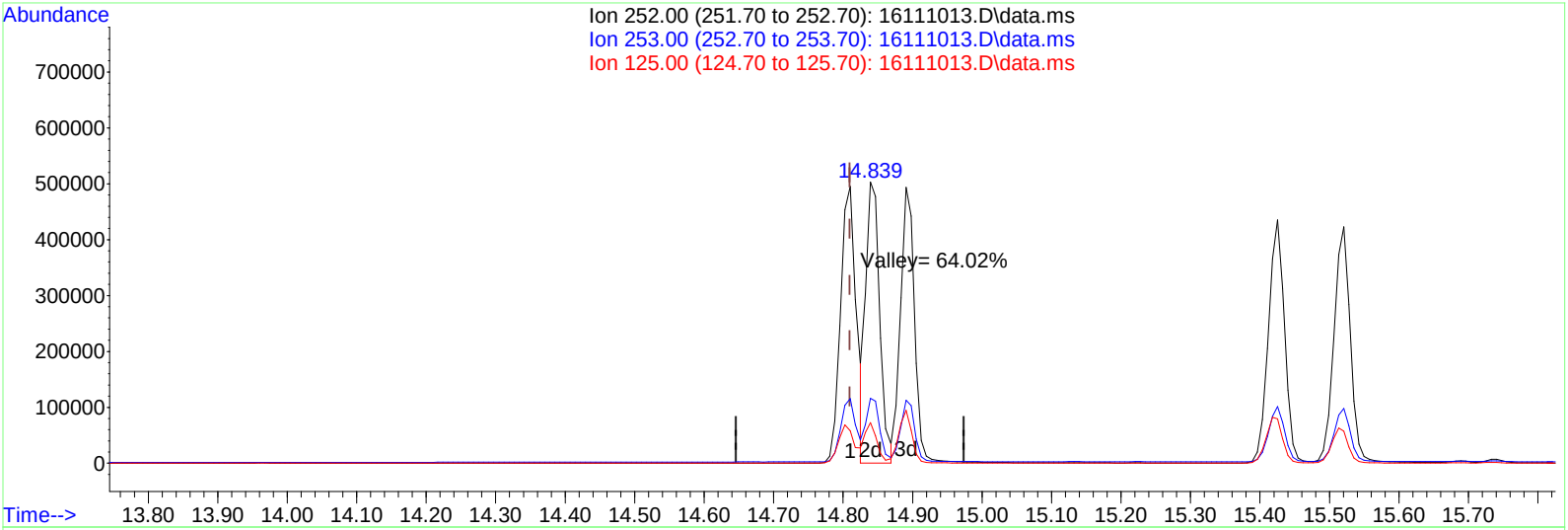
Quant Time: Nov 14 11:37:41 2016
Quant Method : C:\msdchem\1\METHODS\PP161021.M
Quant Title : PAH Calibration
QLast Update : Mon Nov 14 11:33:11 2016
Response via : Initial Calibration

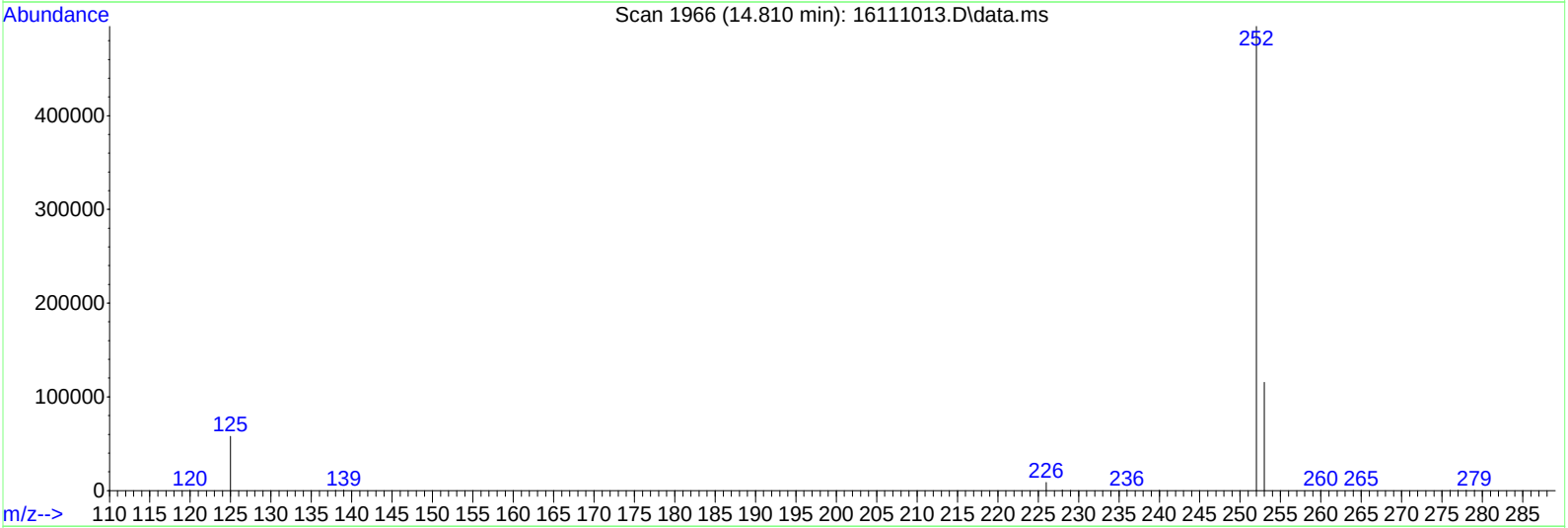


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111013.D
Acq On : 10 Nov 2016 3:37 pm
Operator :
Sample : ICV2-161110
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 14 11:37:41 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





TIC: 16111013.D\data.ms

(21) Benzo[b]fluoranthene (CP)

14.810min (+0.000) 1997.67ug/kg

response 771735

Ion	Exp%	Act%
252.00	100	100
253.00	22.70	22.83
125.00	12.90	11.63
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111014.D
Acq On : 10 Nov 2016 4:05 pm
Operator :
Sample : SB-161110
Misc : SBLK
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 14 11:37:44 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	7.460	136	555740	4000.00	ug/kg	63
5) Acenaphthene-d10	9.063	164	610235	4000.00	ug/kg	77
11) Phenanthrene-d10	10.467	188	1097627	4000.00	ug/kg	78
17) Chrysene-d12	13.367	240	1313161	4000.00	ug/kg	79
20) Perylene-d12	15.689	264	1407232	4000.00	ug/kg	80

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.345	172	16	0.08	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.00%#		
16) 4-Terphenyl-d14	11.850	244	74	0.35	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery =	0.01%#		

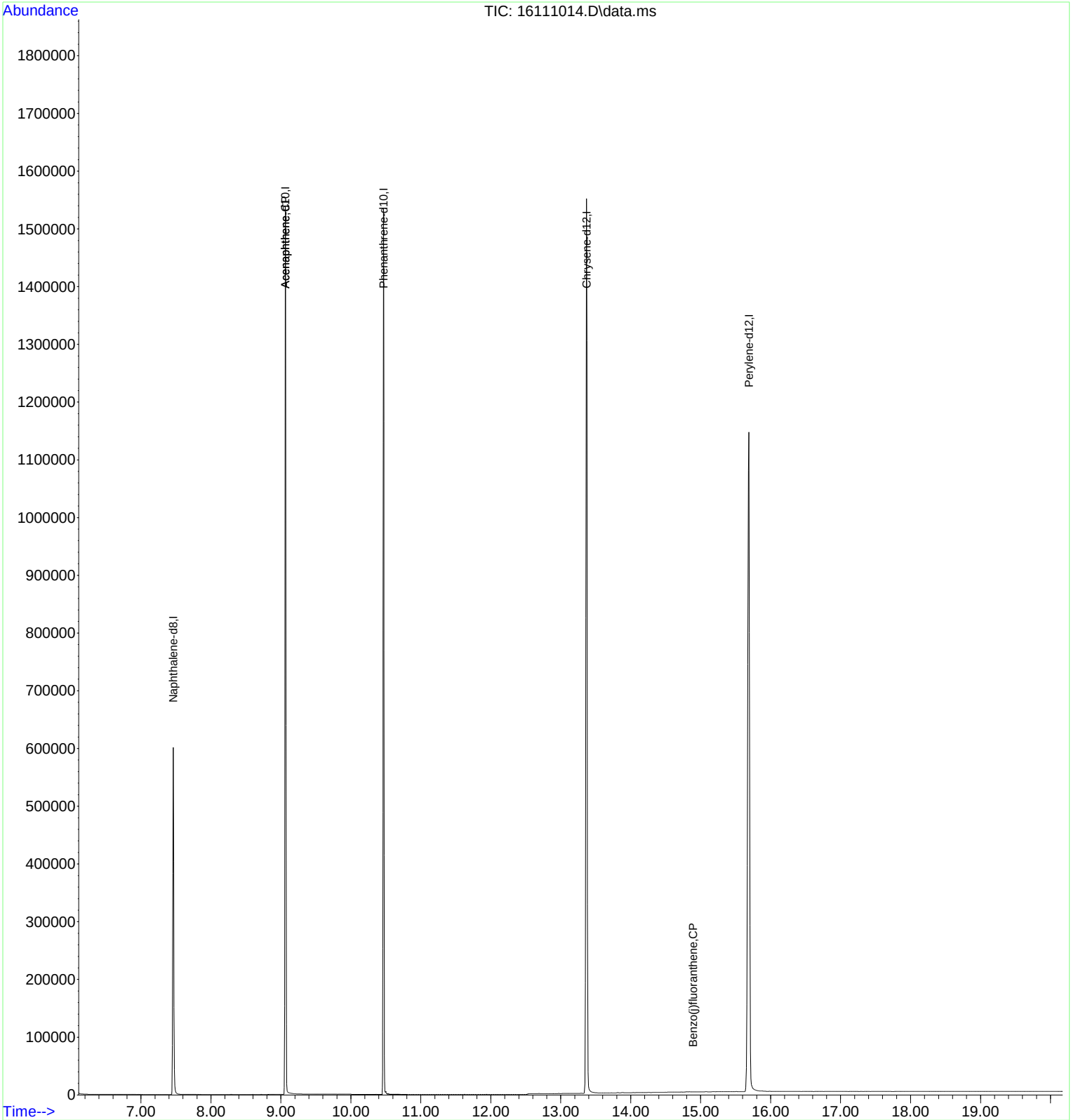
Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2260	15.33	ug/kg#	10
23) Benzo(j)fluoranthene	14.890	252	78	0.25	ug/kg#	21

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111014.D
Acq On : 10 Nov 2016 4:05 pm
Operator :
Sample : SB-161110
Misc : SBLK
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 14 11:37:44 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



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111015.D
Acq On : 10 Nov 2016 4:34 pm
Operator :
Sample : 1611028-04A
Misc : SAMP
ALS Vial : 15 Sample Multiplier: 10

Quant Time: Nov 14 11:39:12 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	609980	4000.00	ug/kg	69
5) Acenaphthene-d10	9.062	164	636523	4000.00	ug/kg	80
11) Phenanthrene-d10	10.467	188	1152877	4000.00	ug/kg	82
17) Chrysene-d12	13.366	240	1385119	4000.00	ug/kg	83
20) Perylene-d12	15.689	264	1450536	4000.00	ug/kg	82

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	19325	93.47	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.34%#			
16) 4-Terphenyl-d14	11.847	244	22476	101.42	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.54%#			

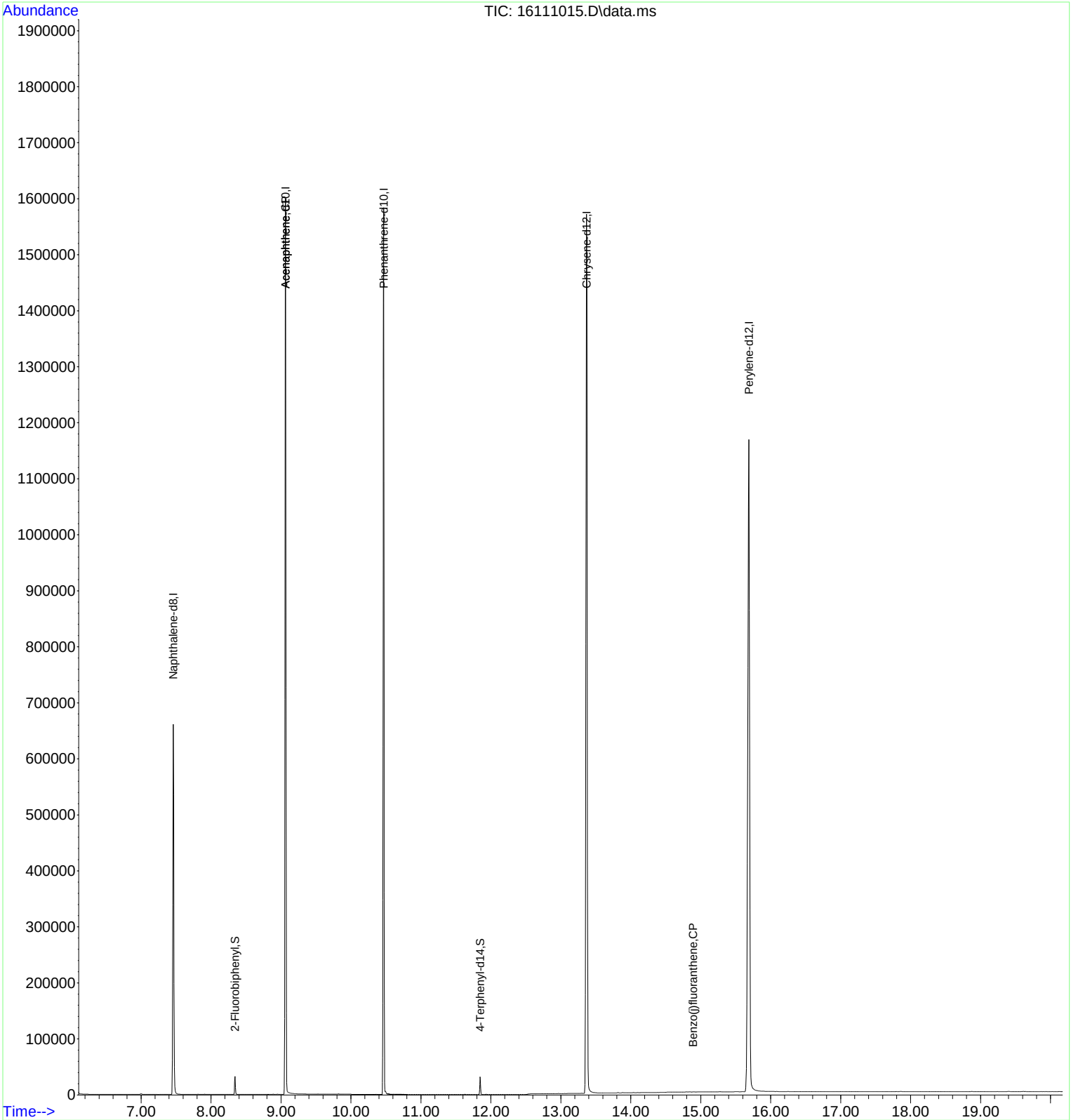
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2373	15.44	ug/kg#	10
23) Benzo(j)fluoranthene	14.883	252	43	0.13	ug/kg#	1

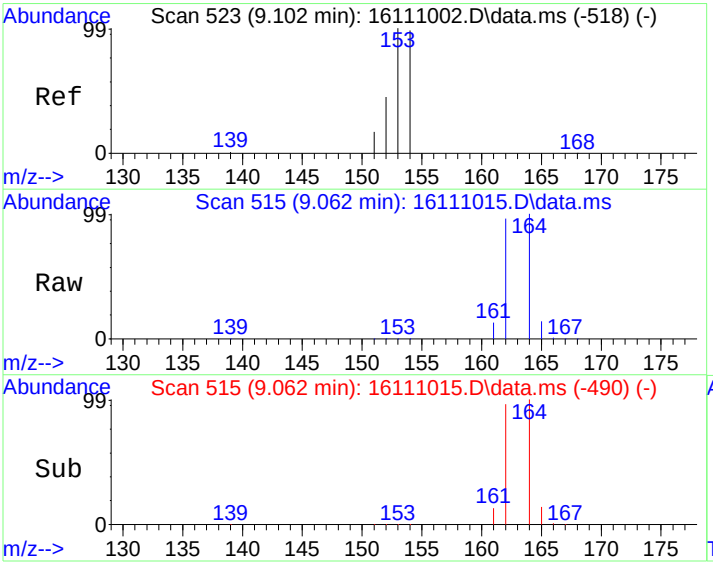
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111015.D
Acq On : 10 Nov 2016 4:34 pm
Operator :
Sample : 1611028-04A
Misc : SAMP
ALS Vial : 15 Sample Multiplier: 10

Quant Time: Nov 14 11:39:12 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

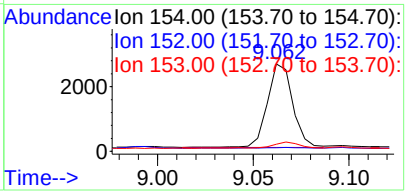


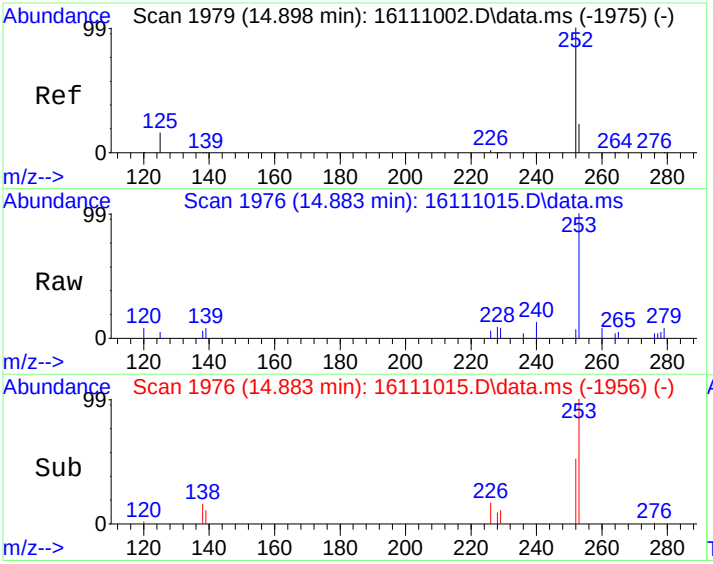


#9
Acenaphthene
Concen: 15.44 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111015.D
Acq: 10 Nov 2016 4:34 pm

Tgt Ion:154 Resp: 2373

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	4.8	76.8	136.8#

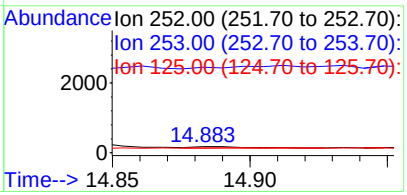




#23
Benzo(j)fluoranthene
Concen: 0.13 ug/kg
RT: 14.883 min Scan# 1976
Delta R.T. -0.015 min
Lab File: 16111015.D
Acq: 10 Nov 2016 4:34 pm

Tgt Ion:252 Resp: 43

Ion	Ratio	Lower	Upper
252	100		
253	142.9	2.7	42.7#
125	0.0	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111016.D
Acq On : 10 Nov 2016 5:03 pm
Operator :
Sample : 1611028-05A
Misc : SAMP
ALS Vial : 16 Sample Multiplier: 10

Quant Time: Nov 14 11:39:16 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	561937	4000.00	ug/kg	64
5) Acenaphthene-d10	9.063	164	636089	4000.00	ug/kg	80
11) Phenanthrene-d10	10.468	188	1141287	4000.00	ug/kg	81
17) Chrysene-d12	13.367	240	1347412	4000.00	ug/kg	81
20) Perylene-d12	15.689	264	1425202	4000.00	ug/kg	81

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	19407	93.93	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.35%#			
16) 4-Terphenyl-d14	11.848	244	22932	104.53	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.61%#			

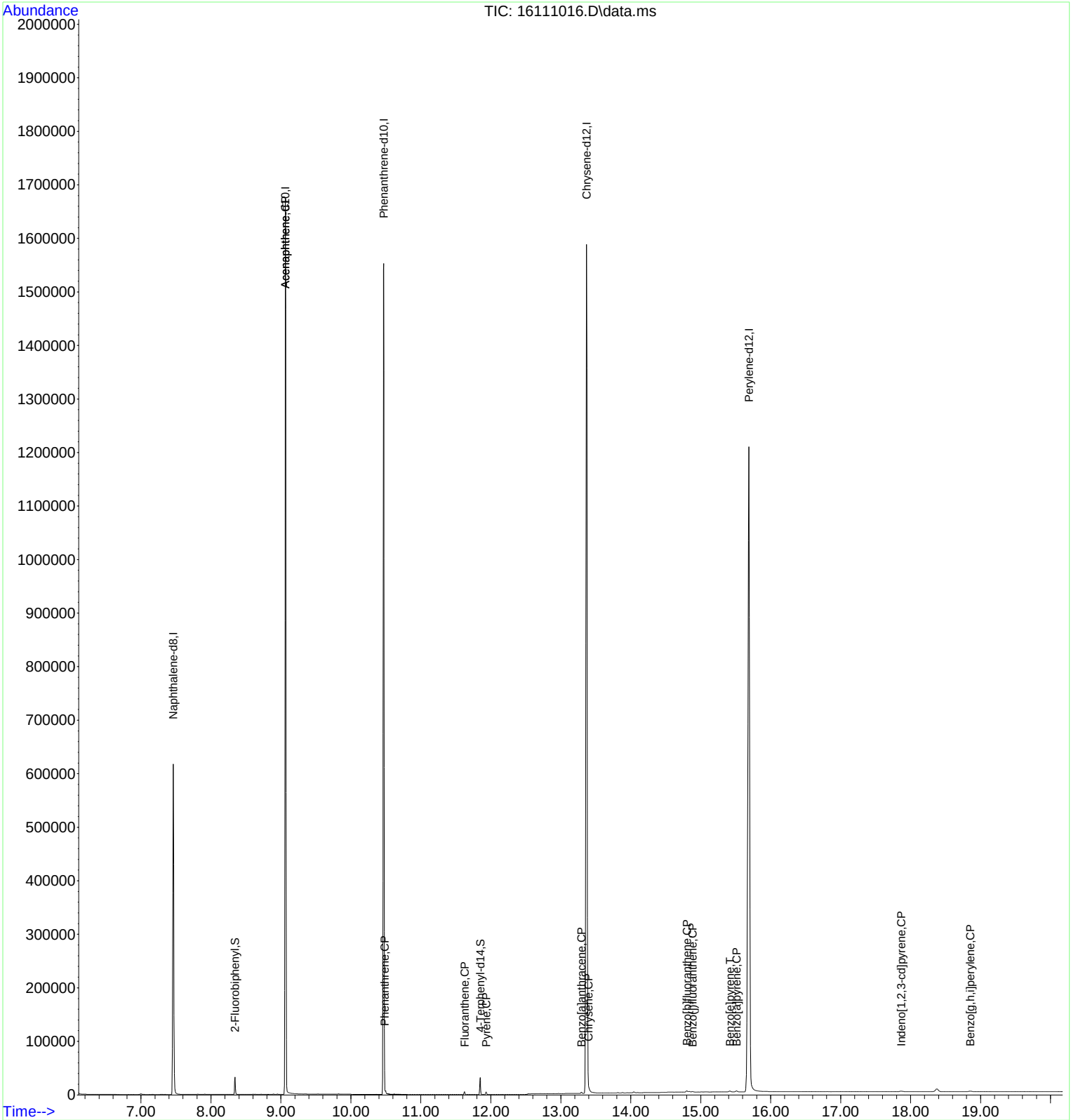
Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2324	15.13	ug/kg#	10
12) Phenanthrene	10.489	178	1504	5.61	ug/kg	97
14) Fluoranthene	11.624	202	3229	10.19	ug/kg	97
15) Pyrene	11.933	202	2910	8.94	ug/kg	100
18) Benzo[a]anthracene	13.293	228	1988	6.27	ug/kg	98
19) Chrysene	13.403	228	1988	6.91	ug/kg	99
21) Benzo[b]fluoranthene	14.802	252	2895	8.14	ug/kg	96
23) Benzo(j)fluoranthene	14.883	252	1055	3.34	ug/kg	97
24) Benzo[e]pyrene	15.418	252	1889	5.93	ug/kg	94
25) Benzo[a]pyrene	15.513	252	2397	7.36	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.864	276	1983	6.07	ug/kg	98
28) Benzo[g,h,i]perylene	18.853	276	2163	6.25	ug/kg	98

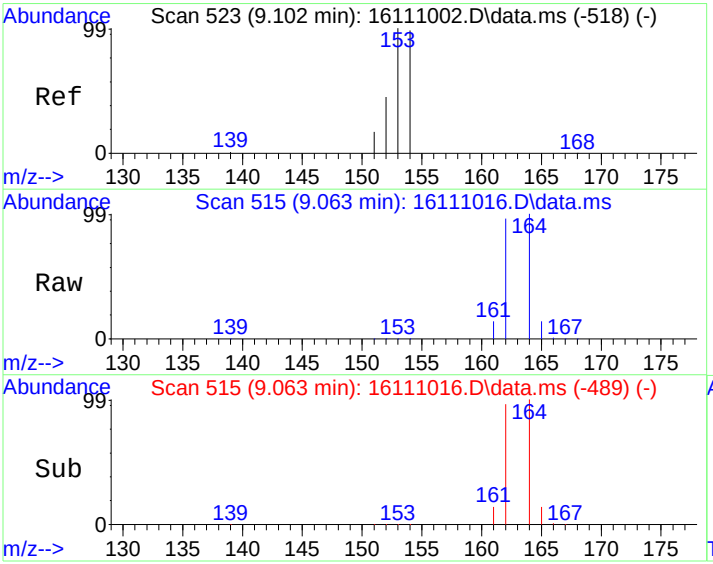
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111016.D
Acq On : 10 Nov 2016 5:03 pm
Operator :
Sample : 1611028-05A
Misc : SAMP
ALS Vial : 16 Sample Multiplier: 10

Quant Time: Nov 14 11:39:16 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

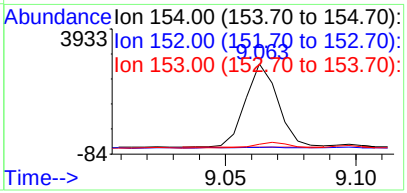


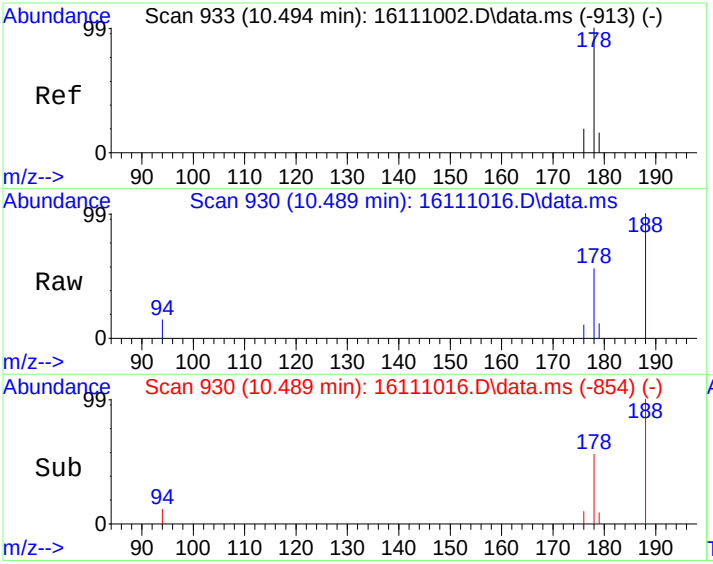


#9
Acenaphthene
Concen: 15.13 ug/kg
RT: 9.063 min Scan# 515
Delta R.T. -0.038 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:154 Resp: 2324

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	4.7	76.8	136.8#

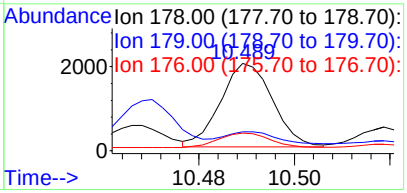


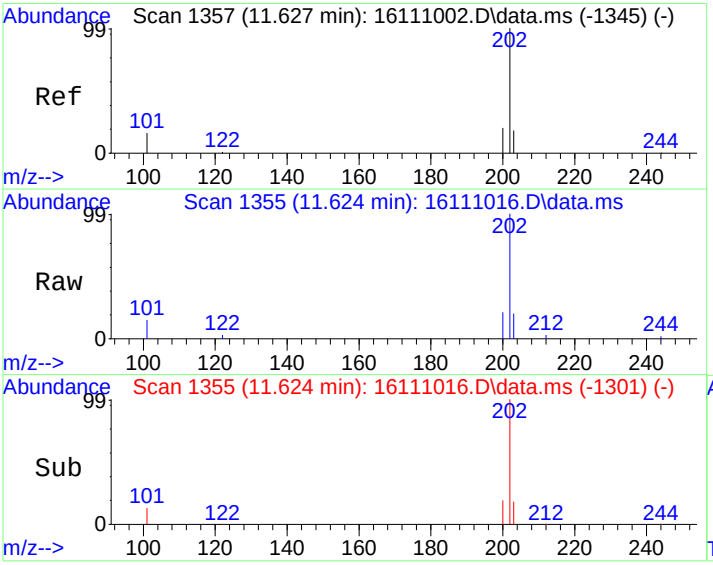


#12
Phenanthrene
Concen: 5.61 ug/kg
RT: 10.489 min Scan# 930
Delta R.T. -0.005 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:178 Resp: 1504

Ion	Ratio	Lower	Upper
178	100		
179	14.6	0.0	46.2
176	17.5	0.0	48.4

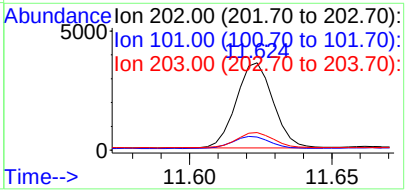


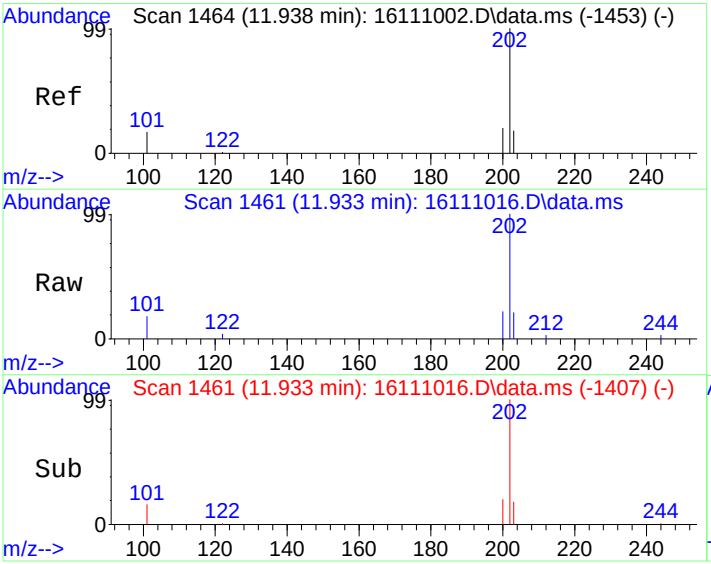


#14
Fluoranthene
Concen: 10.19 ug/kg
RT: 11.624 min Scan# 1355
Delta R.T. -0.002 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:202 Resp: 3229

Ion	Ratio	Lower	Upper
202	100		
101	13.5	0.0	45.8
203	17.6	0.0	48.2

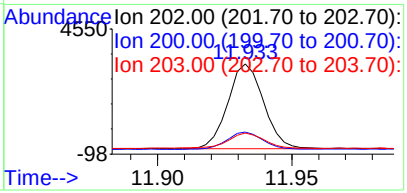


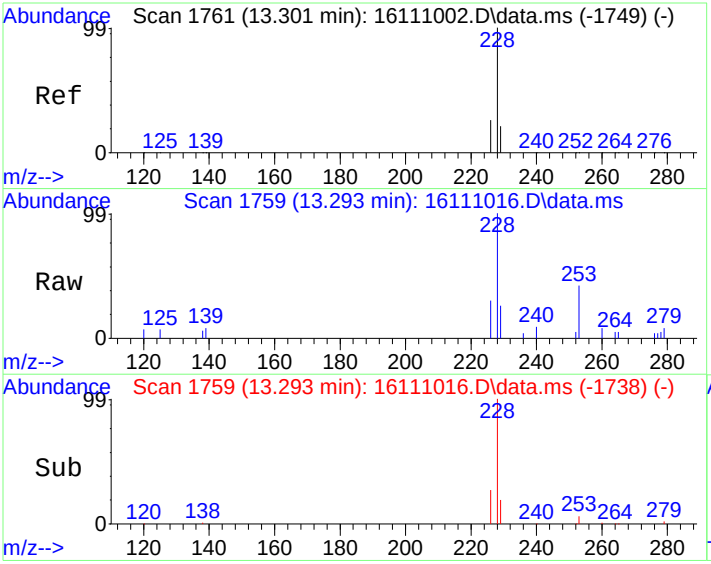


#15
Pyrene
Concen: 8.94 ug/kg
RT: 11.933 min Scan# 1461
Delta R.T. -0.005 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:202 Resp: 2910

Ion	Ratio	Lower	Upper
202	100		
200	20.3	0.0	50.3
203	18.0	0.0	48.2

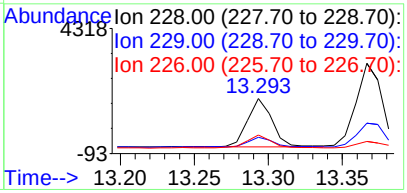


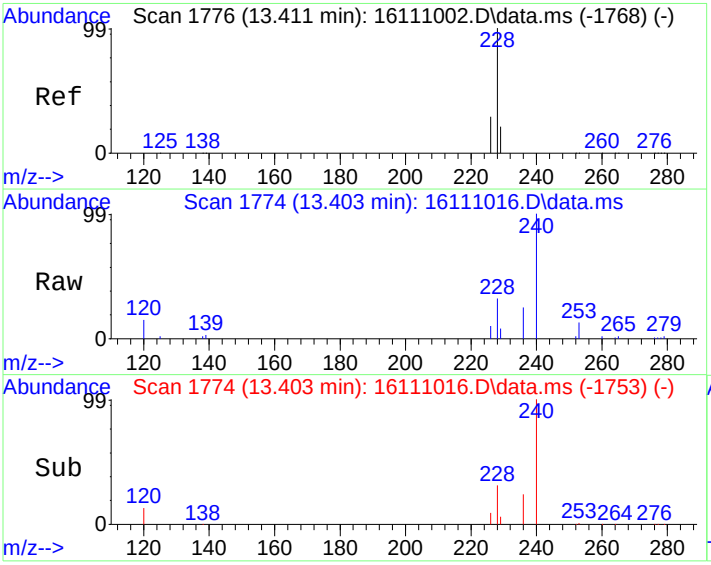


#18
Benzo[a]anthracene
Concen: 6.27 ug/kg
RT: 13.293 min Scan# 1759
Delta R.T. -0.008 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:228 Resp: 1988

Ion	Ratio	Lower	Upper
228	100		
229	19.7	0.0	50.8
226	26.3	0.0	55.5

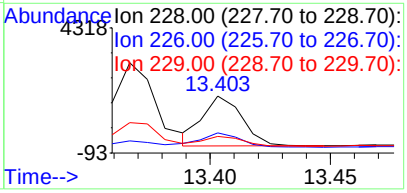


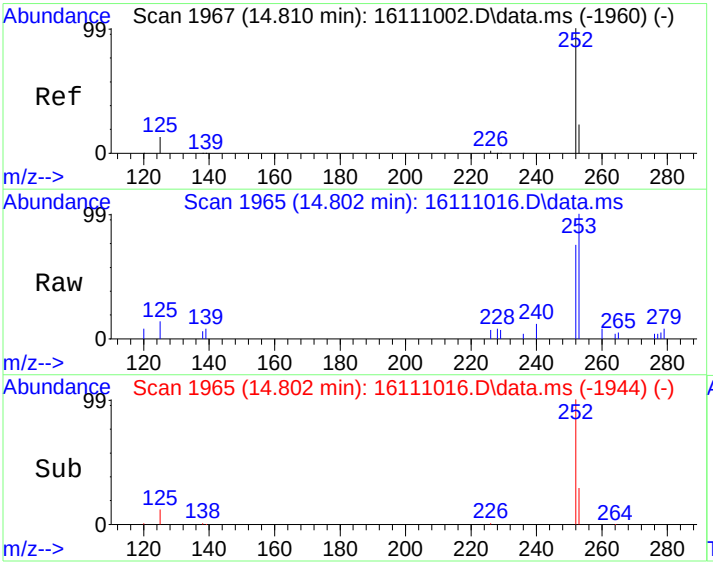


#19
Chrysene
Concen: 6.91 ug/kg
RT: 13.403 min Scan# 1774
Delta R.T. -0.008 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:228 Resp: 1988

Ion	Ratio	Lower	Upper
228	100		
226	29.0	0.0	58.7
229	19.8	0.0	50.4

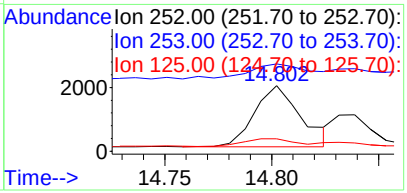


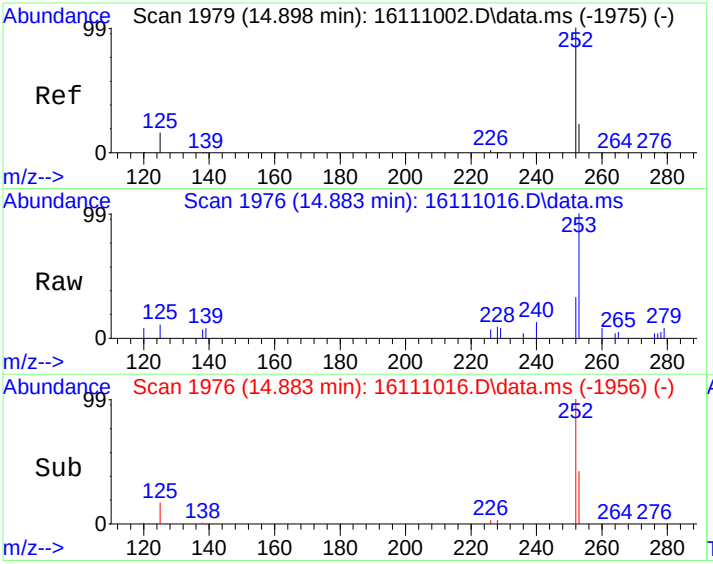


#21
Benzo[b]fluoranthene
Concen: 8.14 ug/kg
RT: 14.802 min Scan# 1965
Delta R.T. -0.008 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:252 Resp: 2895

Ion	Ratio	Lower	Upper
252	100		
253	24.8	0.0	52.7
125	11.8	0.0	42.9

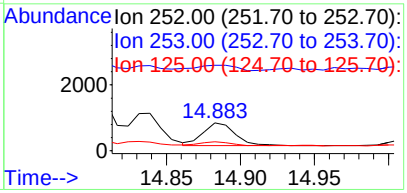


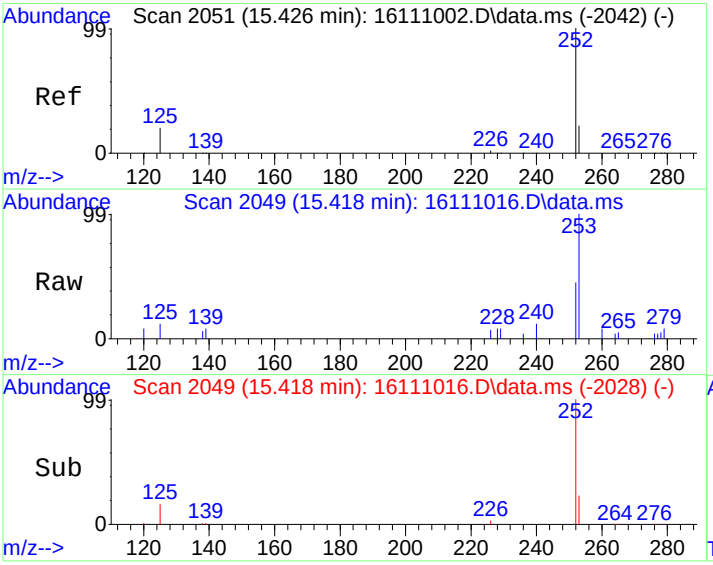


#23
Benzo(j)fluoranthene
Concen: 3.34 ug/kg
RT: 14.883 min Scan# 1976
Delta R.T. -0.015 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:252 Resp: 1055

Ion	Ratio	Lower	Upper
252	100		
253	21.9	2.7	42.7
125	18.6	0.0	36.4

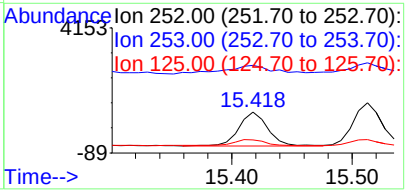


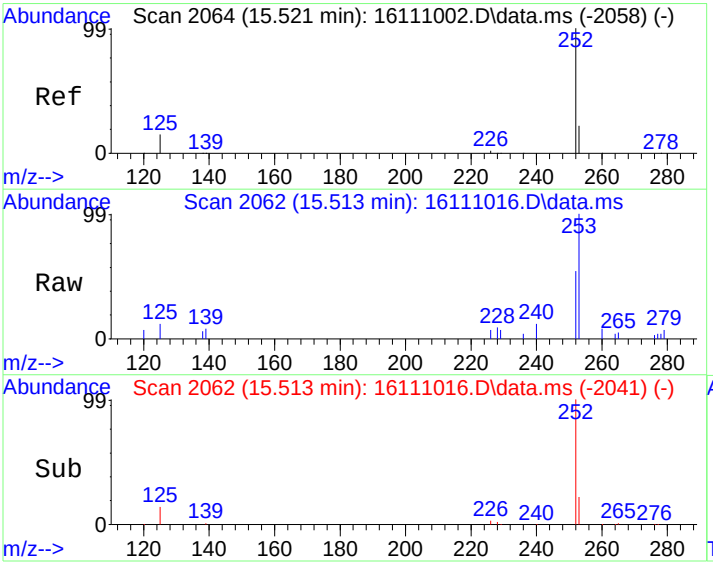


#24
Benzo[e]pyrene
Concen: 5.93 ug/kg
RT: 15.418 min Scan# 2049
Delta R.T. -0.007 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:252 Resp: 1889

Ion	Ratio	Lower	Upper
252	100		
253	21.0	2.5	42.5
125	16.4	0.9	40.9

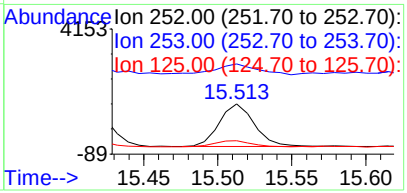


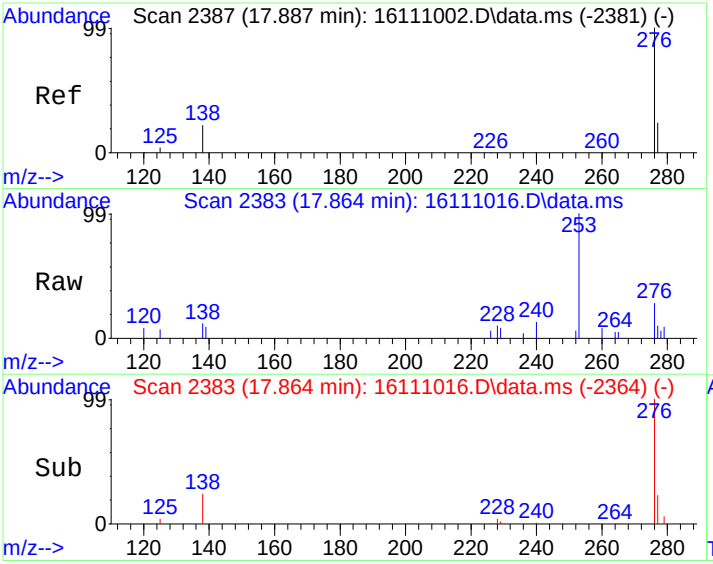


#25
Benzo[a]pyrene
Concen: 7.36 ug/kg
RT: 15.513 min Scan# 2062
Delta R.T. -0.007 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:252 Resp: 2397

Ion	Ratio	Lower	Upper
252	100		
253	22.6	2.7	42.7
125	14.3	0.0	33.9

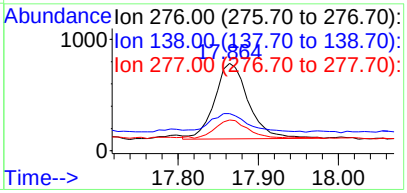


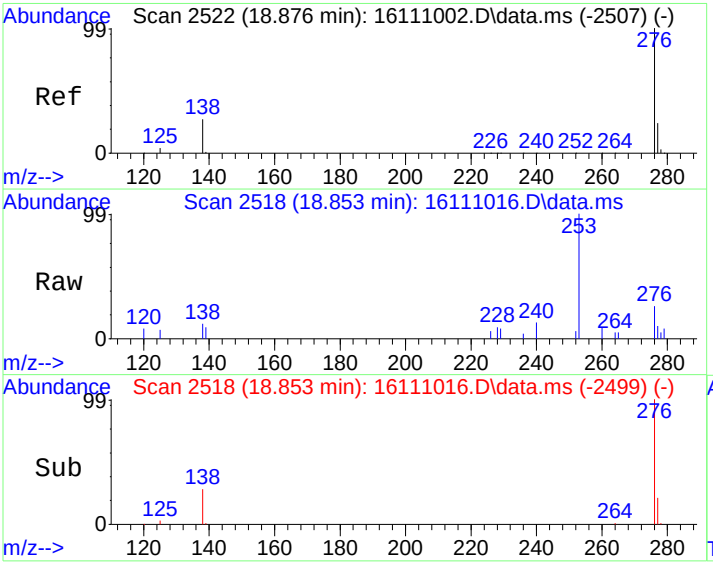


#27
Indeno[1,2,3-cd]pyrene
Concen: 6.07 ug/kg
RT: 17.864 min Scan# 2383
Delta R.T. -0.022 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:276 Resp: 1983

Ion	Ratio	Lower	Upper
276	100		
138	23.4	4.4	44.4
277	25.0	4.4	44.4

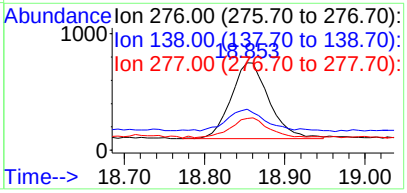




#28
Benzo[g,h,i]perylene
Concen: 6.25 ug/kg
RT: 18.853 min Scan# 2518
Delta R.T. -0.022 min
Lab File: 16111016.D
Acq: 10 Nov 2016 5:03 pm

Tgt Ion:276 Resp: 2163

Ion	Ratio	Lower	Upper
276	100		
138	28.3	7.7	47.7
277	25.6	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111017.D
Acq On : 10 Nov 2016 5:31 pm
Operator :
Sample : 1611028-06A
Misc : SAMP
ALS Vial : 17 Sample Multiplier: 10

Quant Time: Nov 14 11:39:23 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

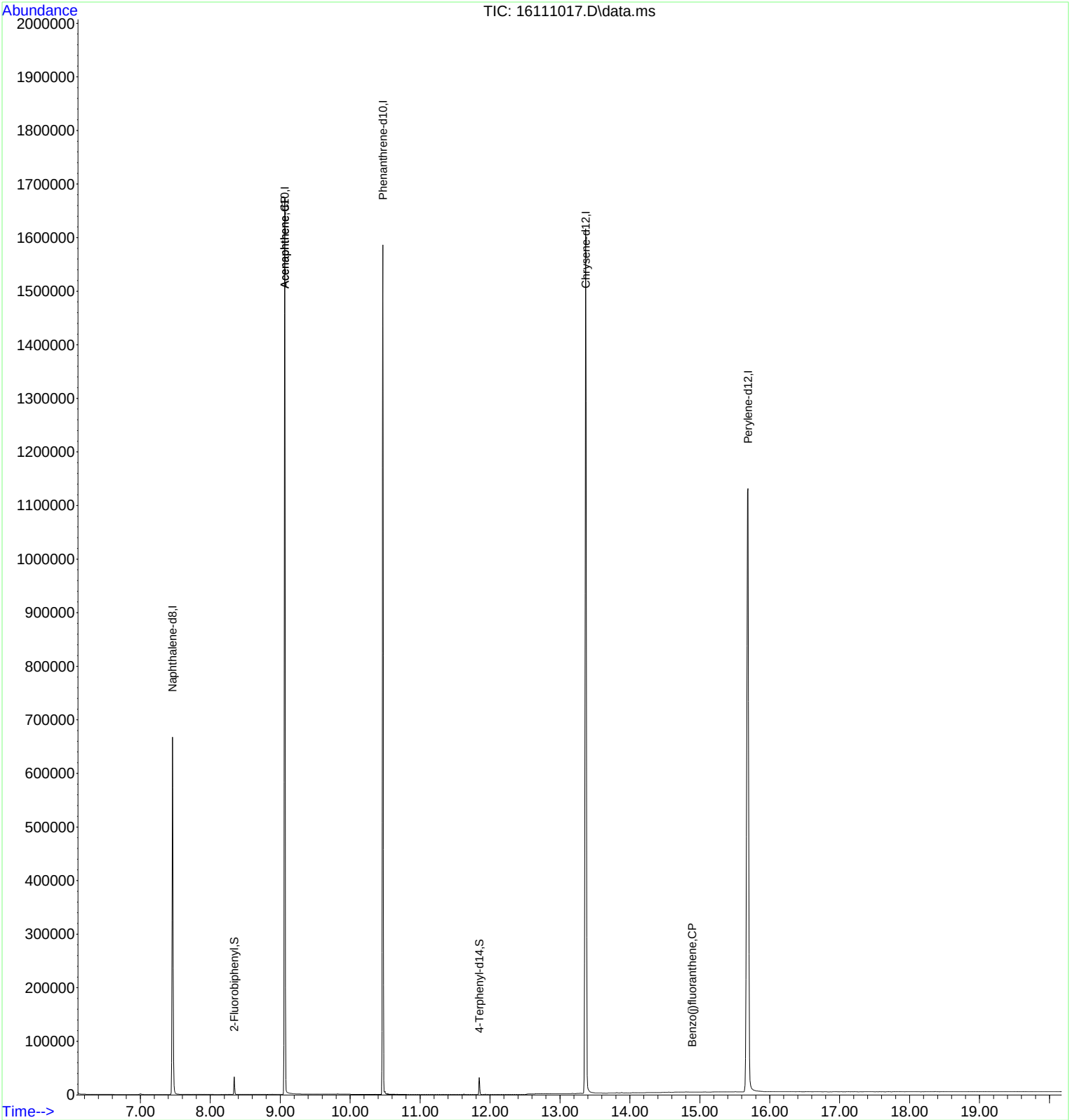
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	638010	4000.00	ug/kg	72
5) Acenaphthene-d10	9.066	164	635429	4000.00	ug/kg	80
11) Phenanthrene-d10	10.467	188	1141614	4000.00	ug/kg	81
17) Chrysene-d12	13.367	240	1367107	4000.00	ug/kg	82
20) Perylene-d12	15.689	264	1461695	4000.00	ug/kg	83
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	18988	92.00	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.30%#			
16) 4-Terphenyl-d14	11.847	244	22644	103.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.58%#			
Target Compounds						Qvalue
9) Acenaphthene	9.066	154	2351	15.32	ug/kg#	12
23) Benzo(j)fluoranthene	14.883	252	116	0.36	ug/kg#	43

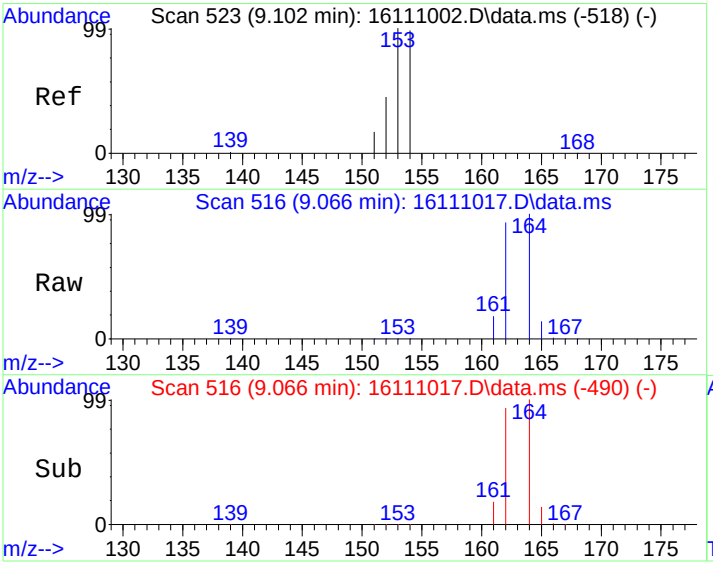
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111017.D
Acq On : 10 Nov 2016 5:31 pm
Operator :
Sample : 1611028-06A
Misc : SAMP
ALS Vial : 17 Sample Multiplier: 10

Quant Time: Nov 14 11:39:23 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

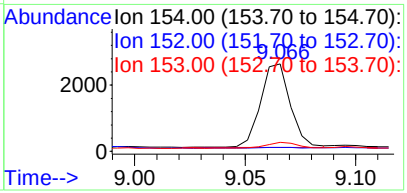


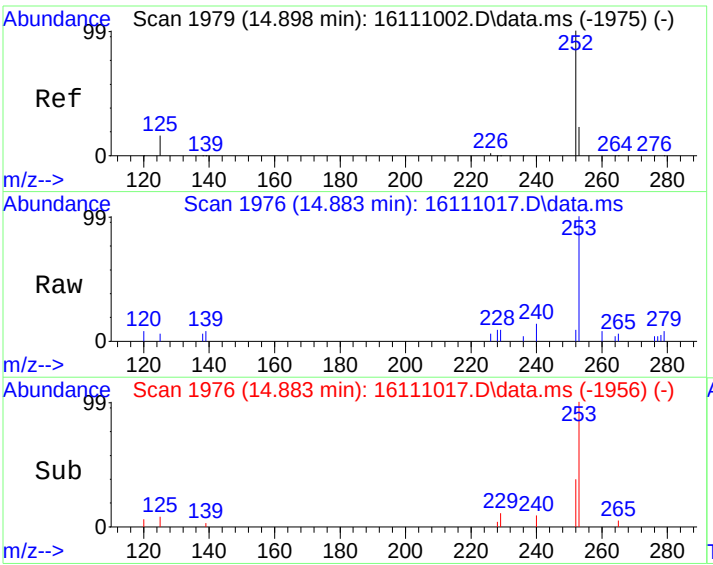


#9
Acenaphthene
Concen: 15.32 ug/kg
RT: 9.066 min Scan# 516
Delta R.T. -0.035 min
Lab File: 16111017.D
Acq: 10 Nov 2016 5:31 pm

Tgt Ion:154 Resp: 2351

Ion	Ratio	Lower	Upper
154	100		
152	0.6	20.7	80.7#
153	6.9	76.8	136.8#

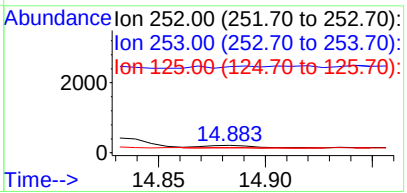




#23
Benzo(j)fluoranthene
Concen: 0.36 ug/kg
RT: 14.883 min Scan# 1976
Delta R.T. -0.015 min
Lab File: 16111017.D
Acq: 10 Nov 2016 5:31 pm

Tgt Ion:252 Resp: 116

Ion	Ratio	Lower	Upper
252	100		
253	63.4	2.7	42.7#
125	8.5	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111018.D
Acq On : 10 Nov 2016 6:00 pm
Operator :
Sample : 1611028-07A
Misc : SAMP
ALS Vial : 18 Sample Multiplier: 10

Quant Time: Nov 14 11:39:27 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	7.459	136	624073	4000.00	ug/kg	71
5) Acenaphthene-d10	9.066	164	644567	4000.00	ug/kg	81
11) Phenanthrene-d10	10.466	188	1166050	4000.00	ug/kg	83
17) Chrysene-d12	13.374	240	1356317	4000.00	ug/kg	81
20) Perylene-d12	15.688	264	1444088	4000.00	ug/kg	82

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	20086	95.94	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.40%#			
16) 4-Terphenyl-d14	11.847	244	22935	102.33	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.56%#			

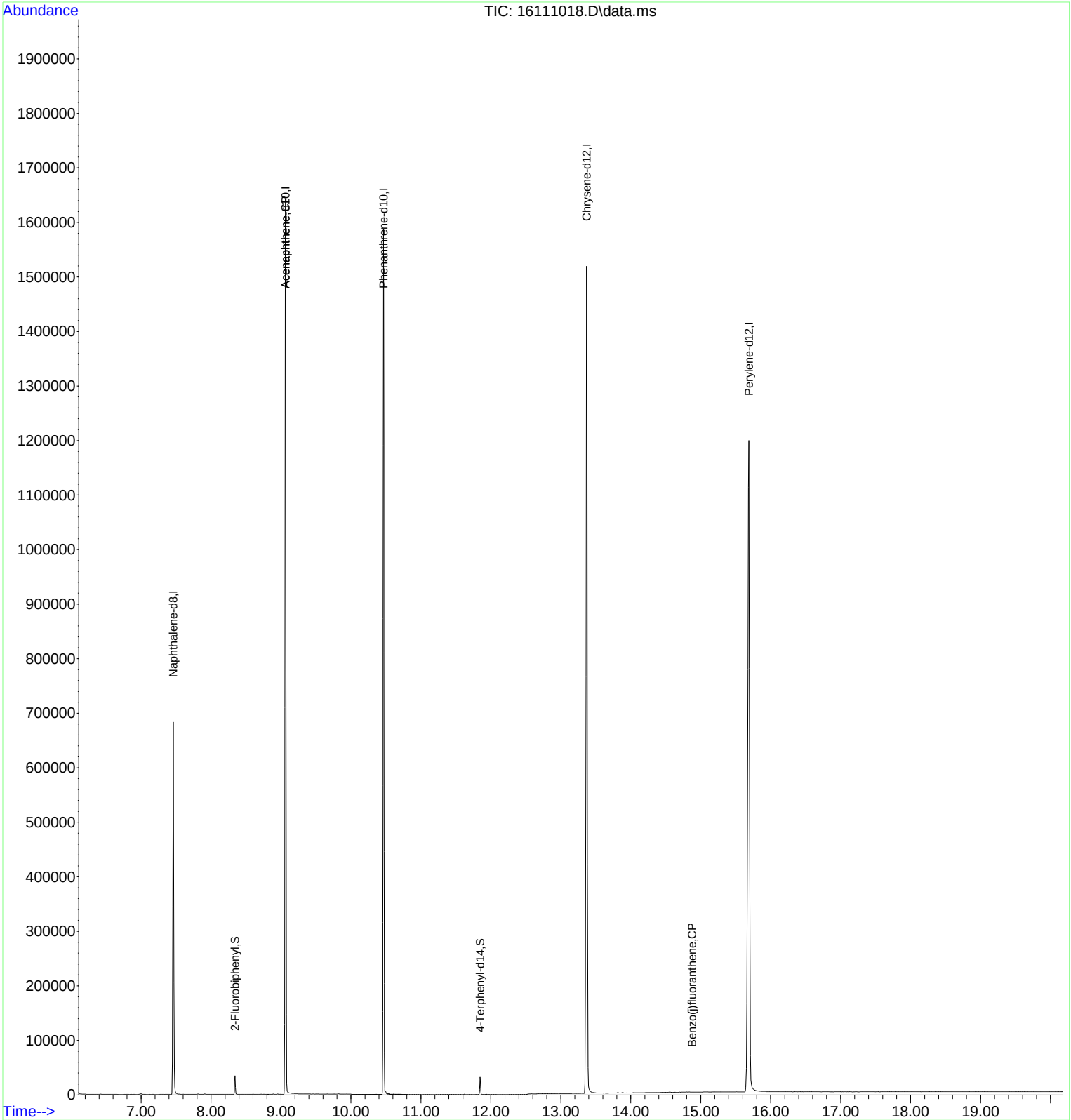
Target Compounds						Qvalue
9) Acenaphthene	9.061	154	2377	15.27	ug/kg#	10
23) Benzo(j)fluoranthene	14.875	252	38	0.12	ug/kg#	60

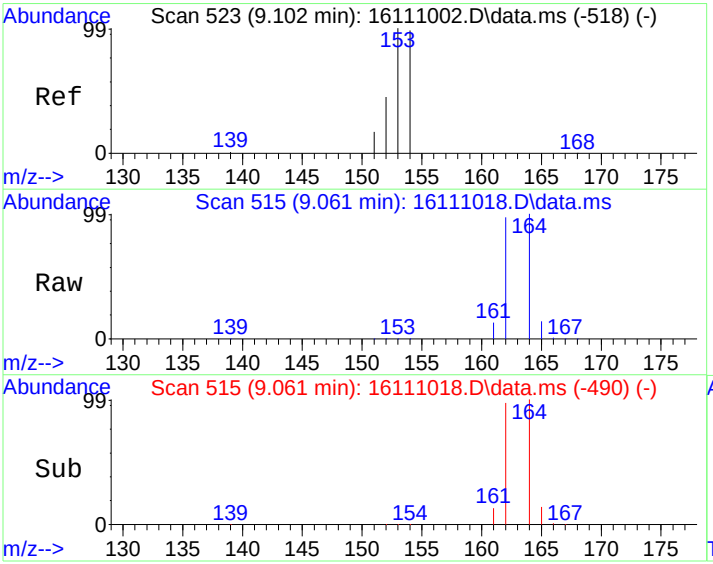
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111018.D
Acq On : 10 Nov 2016 6:00 pm
Operator :
Sample : 1611028-07A
Misc : SAMP
ALS Vial : 18 Sample Multiplier: 10

Quant Time: Nov 14 11:39:27 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

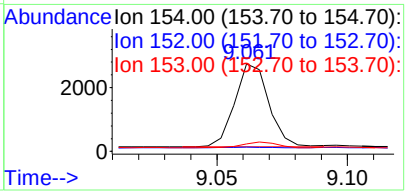


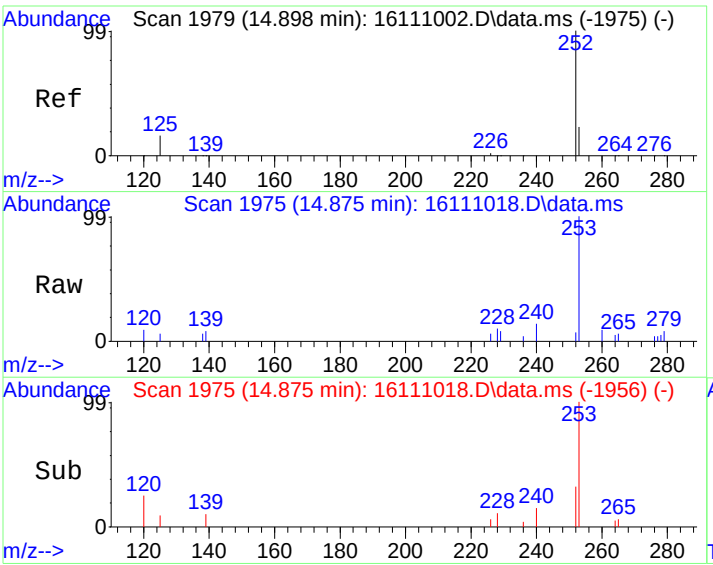


#9
Acenaphthene
Concen: 15.27 ug/kg
RT: 9.061 min Scan# 515
Delta R.T. -0.040 min
Lab File: 16111018.D
Acq: 10 Nov 2016 6:00 pm

Tgt Ion:154 Resp: 2377

Ion	Ratio	Lower	Upper
154	100		
152	0.6	20.7	80.7#
153	4.5	76.8	136.8#

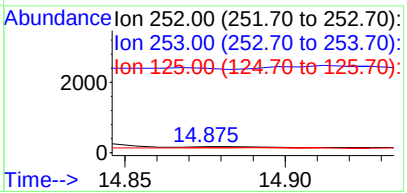




#23
Benzo(j)fluoranthene
Concen: 0.12 ug/kg
RT: 14.875 min Scan# 1975
Delta R.T. -0.023 min
Lab File: 16111018.D
Acq: 10 Nov 2016 6:00 pm

Tgt Ion:252 Resp: 38

Ion	Ratio	Lower	Upper
252	100		
253	0.0	2.7	42.7#
125	3.8	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111019.D
Acq On : 10 Nov 2016 6:29 pm
Operator :
Sample : 1611028-08A
Misc : SAMP
ALS Vial : 19 Sample Multiplier: 10

Quant Time: Nov 14 11:39:31 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	665535	4000.00	ug/kg	76
5) Acenaphthene-d10	9.066	164	651350	4000.00	ug/kg	82
11) Phenanthrene-d10	10.467	188	1168642	4000.00	ug/kg	83
17) Chrysene-d12	13.368	240	1381323	4000.00	ug/kg	83
20) Perylene-d12	15.690	264	1465786	4000.00	ug/kg	83

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	19225	90.87	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.27%#			
16) 4-Terphenyl-d14	11.847	244	21785	96.98	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.42%#			

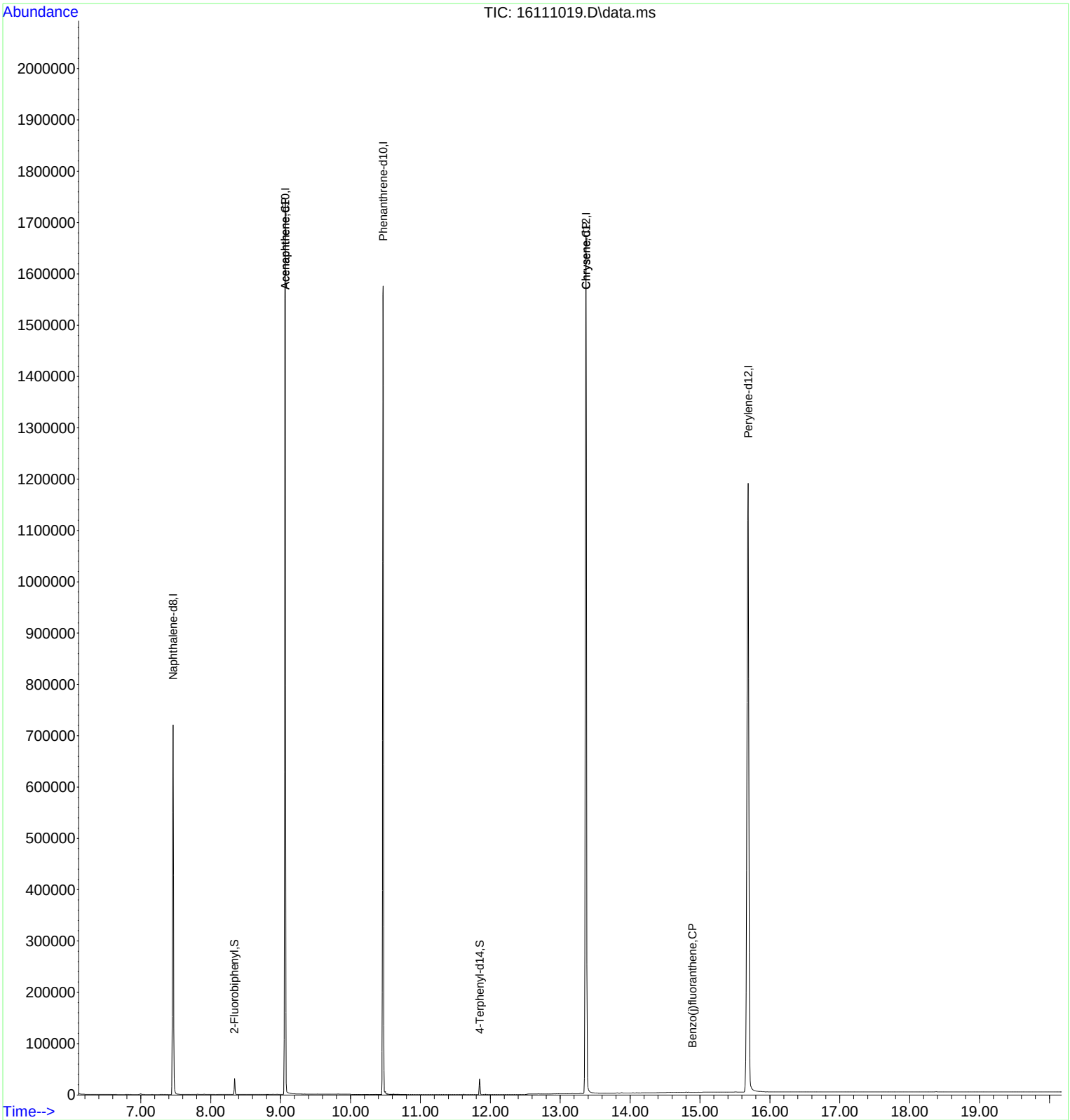
Target Compounds						Qvalue
9) Acenaphthene	9.061	154	2405	15.29	ug/kg#	10
19) Chrysene	13.368	228	3468	11.76	ug/kg	69
23) Benzo(j)fluoranthene	14.884	252	88	0.27	ug/kg	95

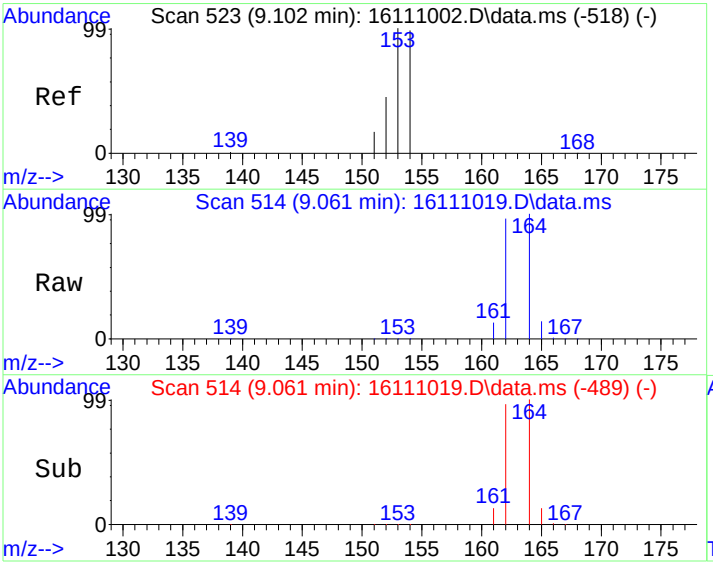
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111019.D
Acq On : 10 Nov 2016 6:29 pm
Operator :
Sample : 1611028-08A
Misc : SAMP
ALS Vial : 19 Sample Multiplier: 10

Quant Time: Nov 14 11:39:31 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

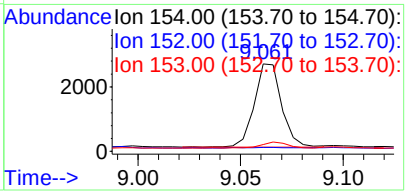


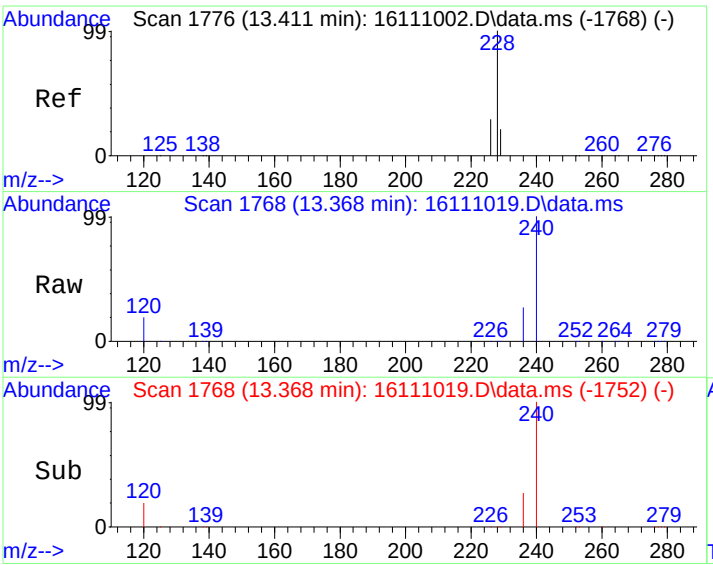


#9
Acenaphthene
Concen: 15.29 ug/kg
RT: 9.061 min Scan# 514
Delta R.T. -0.040 min
Lab File: 16111019.D
Acq: 10 Nov 2016 6:29 pm

Tgt Ion:154 Resp: 2405

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	4.2	76.8	136.8#

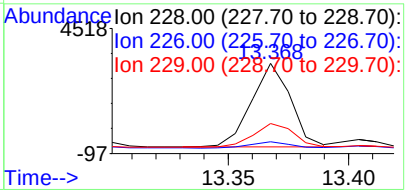


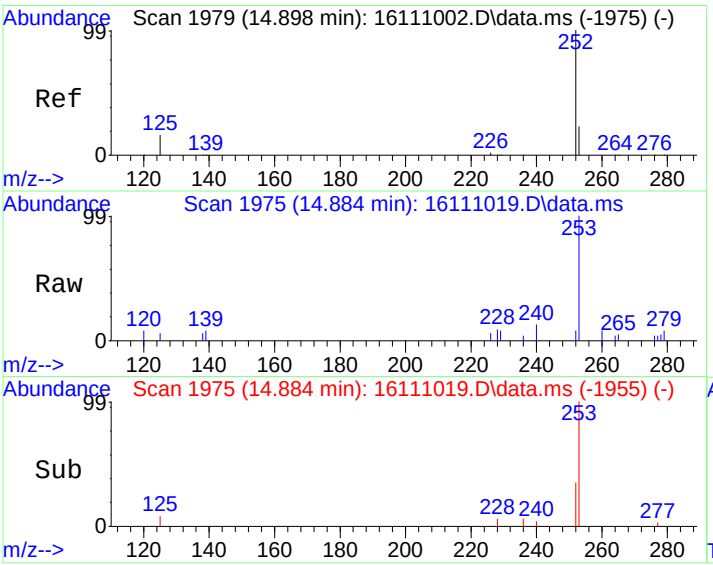


#19
Chrysene
Concen: 11.76 ug/kg
RT: 13.368 min Scan# 1768
Delta R.T. -0.043 min
Lab File: 16111019.D
Acq: 10 Nov 2016 6:29 pm

Tgt Ion:228 Resp: 3468

Ion	Ratio	Lower	Upper
228	100		
226	7.4	0.0	58.7
229	28.5	0.0	50.4

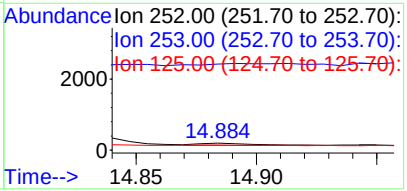




#23
Benzo(j)fluoranthene
Concen: 0.27 ug/kg
RT: 14.884 min Scan# 1975
Delta R.T. -0.014 min
Lab File: 16111019.D
Acq: 10 Nov 2016 6:29 pm

Tgt Ion:252 Resp: 88

Ion	Ratio	Lower	Upper
252	100		
253	26.3	2.7	42.7
125	17.5	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111020.D
Acq On : 10 Nov 2016 6:57 pm
Operator :
Sample : 1611028-09A
Misc : SAMP
ALS Vial : 20 Sample Multiplier: 10

Quant Time: Nov 14 11:39:35 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	7.460	136	695543	4000.00	ug/kg	79
5) Acenaphthene-d10	9.062	164	640176	4000.00	ug/kg	81
11) Phenanthrene-d10	10.466	188	1147038	4000.00	ug/kg	81
17) Chrysene-d12	13.366	240	1362096	4000.00	ug/kg	81
20) Perylene-d12	15.688	264	1449304	4000.00	ug/kg	82

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.344	172	20209	97.19	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.43%#			
16) 4-Terphenyl-d14	11.848	244	22942	104.05	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.60%#			

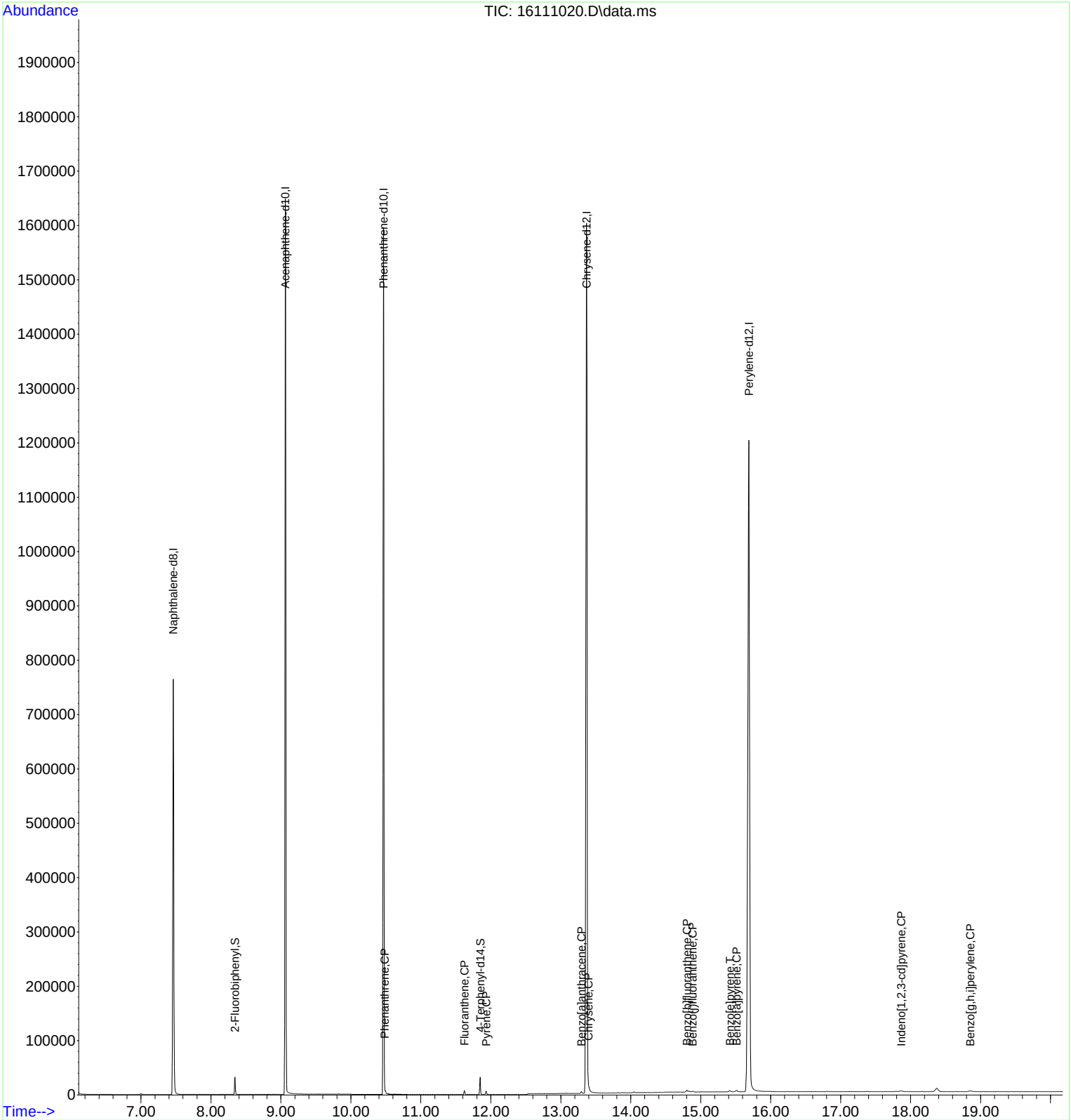
Target Compounds						Qvalue
12) Phenanthrene	10.490	178	1543	5.73	ug/kg	98
14) Fluoranthene	11.621	202	4376	13.74	ug/kg	98
15) Pyrene	11.932	202	3955	12.09	ug/kg	99
18) Benzo[a]anthracene	13.293	228	2762	8.61	ug/kg	98
19) Chrysene	13.403	228	2895	9.96	ug/kg	97
21) Benzo[b]fluoranthene	14.802	252	4010	11.09	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	1551	4.82	ug/kg	98
24) Benzo[e]pyrene	15.417	252	2559	7.90	ug/kg	96
25) Benzo[a]pyrene	15.513	252	3510	10.60	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.864	276	2541	7.65	ug/kg	98
28) Benzo[g,h,i]perylene	18.853	276	2724	7.74	ug/kg	97

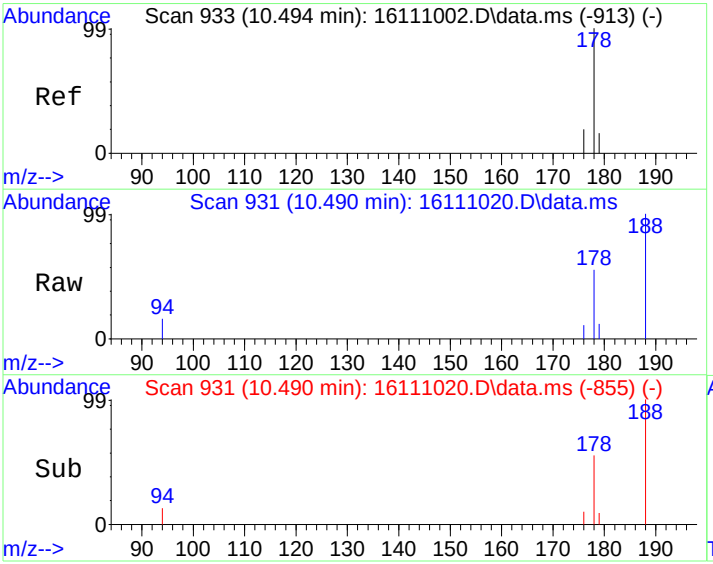
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111020.D
Acq On : 10 Nov 2016 6:57 pm
Operator :
Sample : 1611028-09A
Misc : SAMP
ALS Vial : 20 Sample Multiplier: 10

Quant Time: Nov 14 11:39:35 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

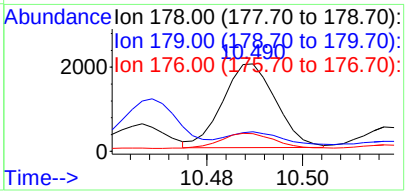


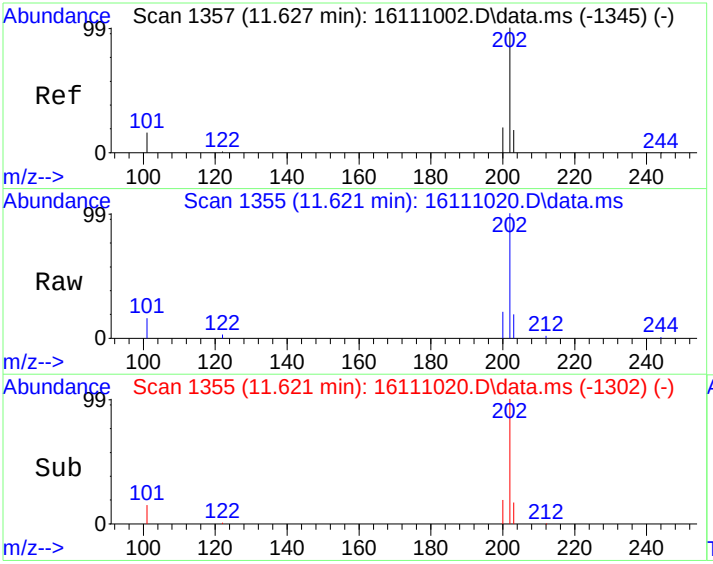


#12
Phenanthrene
Concen: 5.73 ug/kg
RT: 10.490 min Scan# 931
Delta R.T. -0.004 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:178 Resp: 1543

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	46.2
176	17.7	0.0	48.4

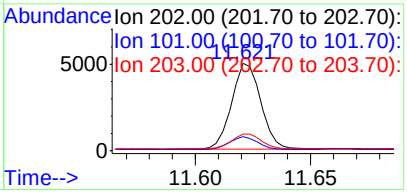


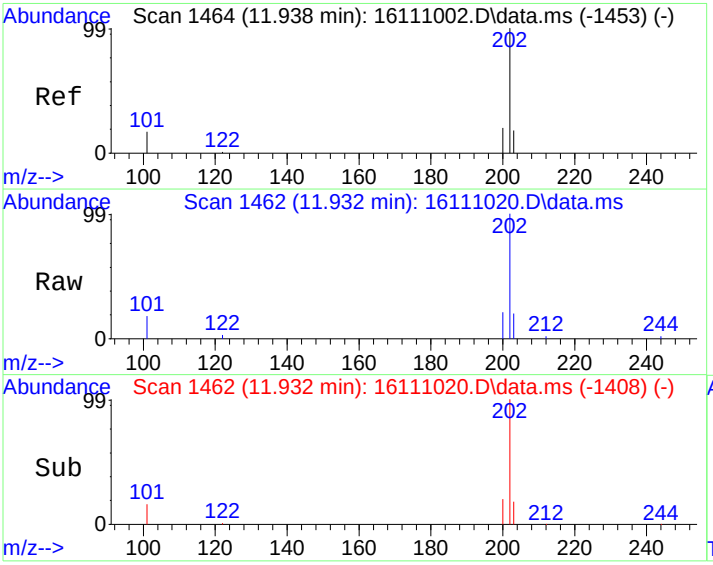


#14
Fluoranthene
Concen: 13.74 ug/kg
RT: 11.621 min Scan# 1355
Delta R.T. -0.005 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:202 Resp: 4376

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

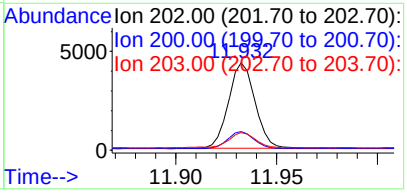


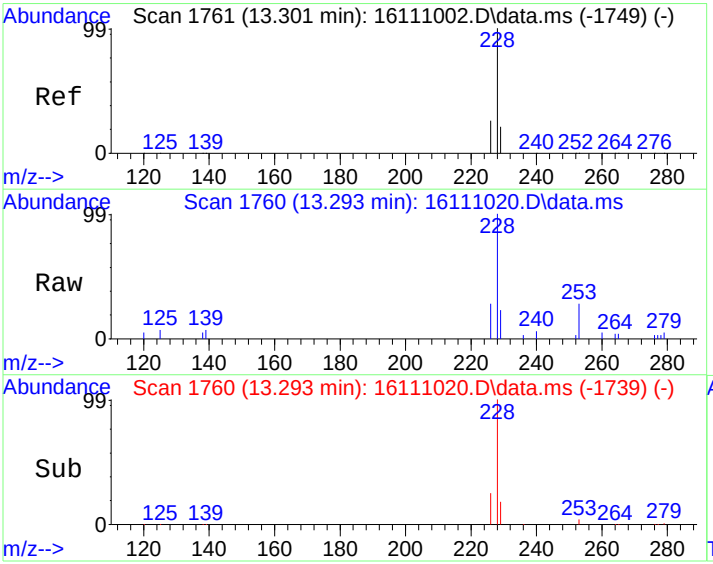


#15
Pyrene
Concen: 12.09 ug/kg
RT: 11.932 min Scan# 1462
Delta R.T. -0.006 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:202 Resp: 3955

Ion	Ratio	Lower	Upper
202	100		
200	19.8	0.0	50.3
203	17.9	0.0	48.2

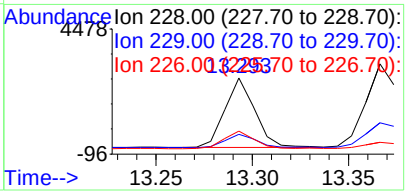


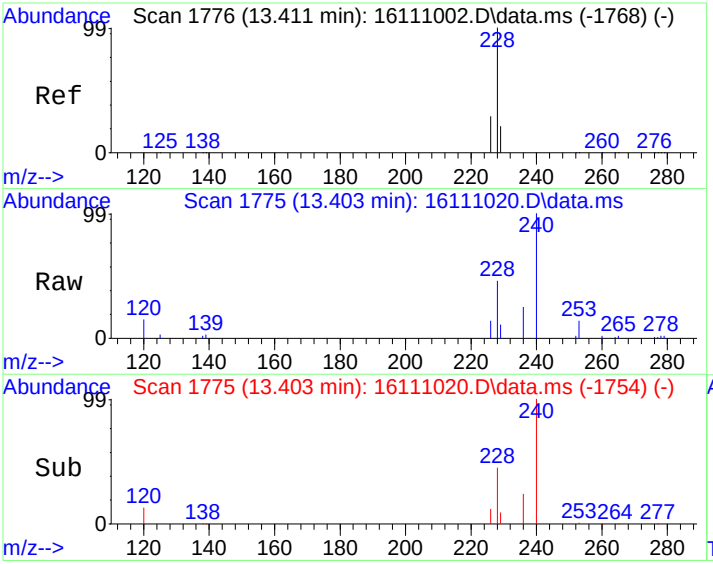


#18
Benzo[a]anthracene
Concen: 8.61 ug/kg
RT: 13.293 min Scan# 1760
Delta R.T. -0.008 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:228 Resp: 2762

Ion	Ratio	Lower	Upper
228	100		
229	19.1	0.0	50.8
226	25.2	0.0	55.5

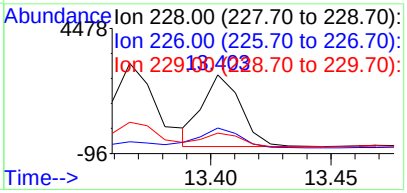


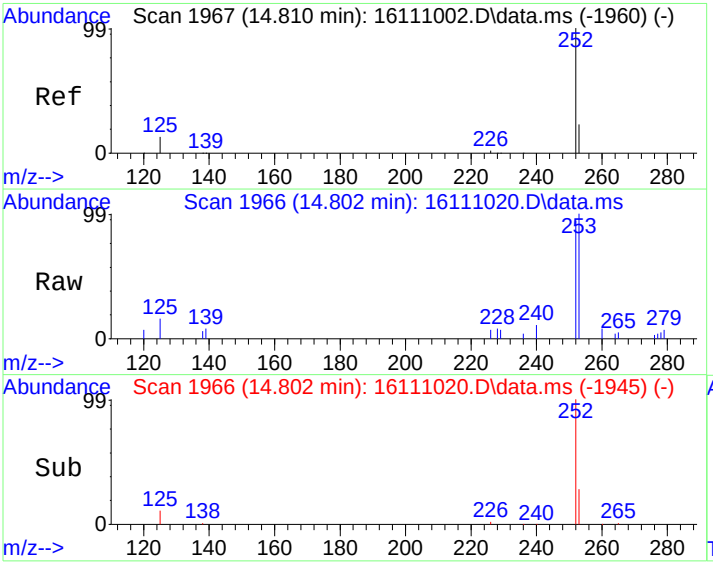


#19
Chrysene
Concen: 9.96 ug/kg
RT: 13.403 min Scan# 1775
Delta R.T. -0.008 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:228 Resp: 2895

Ion	Ratio	Lower	Upper
228	100		
226	27.5	0.0	58.7
229	19.0	0.0	50.4

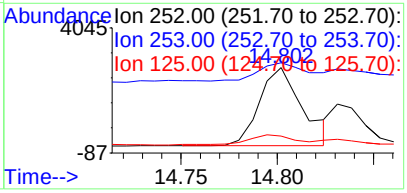


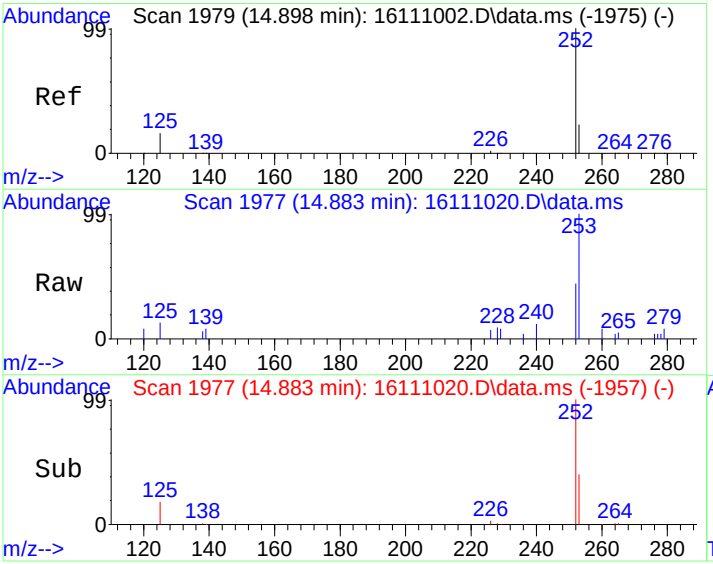


#21
Benzo[b]fluoranthene
Concen: 11.09 ug/kg
RT: 14.802 min Scan# 1966
Delta R.T. -0.008 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:252 Resp: 4010

Ion	Ratio	Lower	Upper
252	100		
253	22.9	0.0	52.7
125	11.0	0.0	42.9

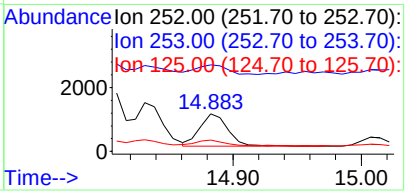


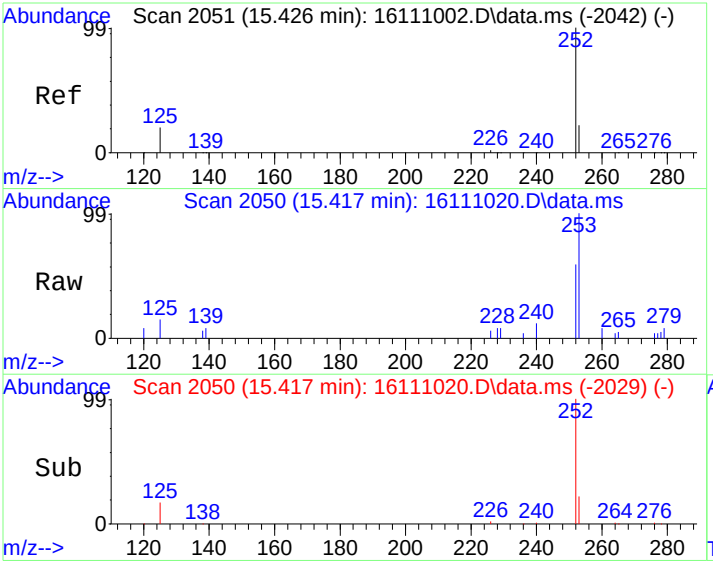


#23
Benzo(j)fluoranthene
Concen: 4.82 ug/kg
RT: 14.883 min Scan# 1977
Delta R.T. -0.015 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:252 Resp: 1551

Ion	Ratio	Lower	Upper
252	100		
253	21.8	2.7	42.7
125	17.6	0.0	36.4

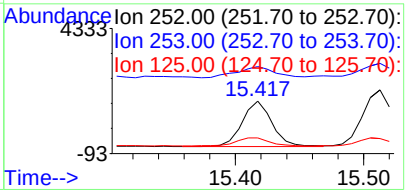


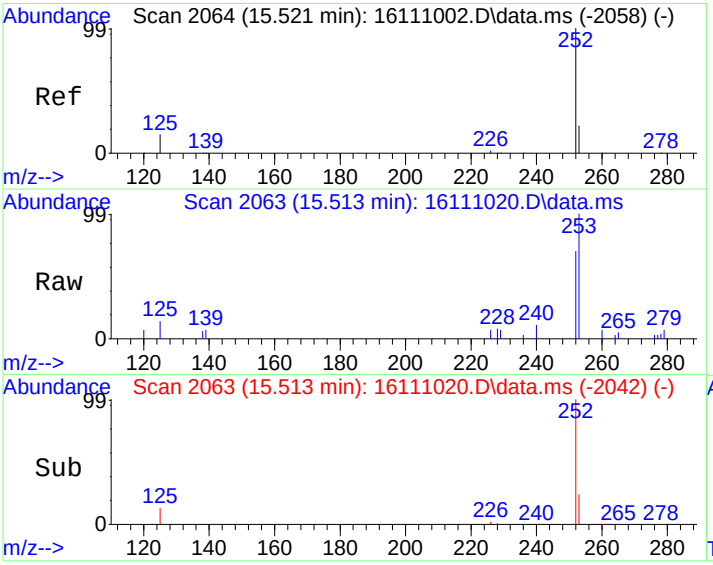


#24
Benzo[e]pyrene
Concen: 7.90 ug/kg
RT: 15.417 min Scan# 2050
Delta R.T. -0.008 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:252 Resp: 2559

Ion	Ratio	Lower	Upper
252	100		
253	22.7	2.5	42.5
125	17.6	0.9	40.9

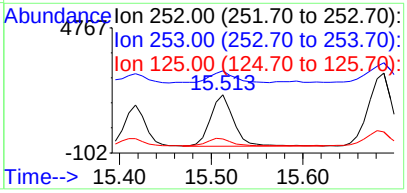


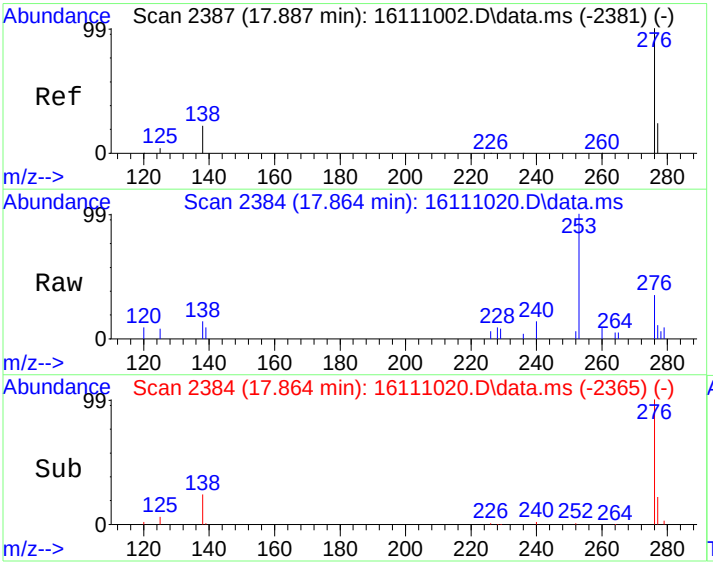


#25
Benzo[a]pyrene
Concen: 10.60 ug/kg
RT: 15.513 min Scan# 2063
Delta R.T. -0.007 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:252 Resp: 3510

Ion	Ratio	Lower	Upper
252	100		
253	22.6	2.7	42.7
125	12.9	0.0	33.9

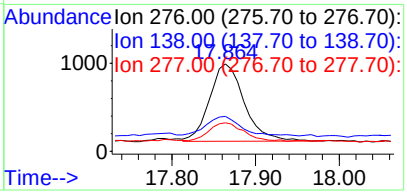


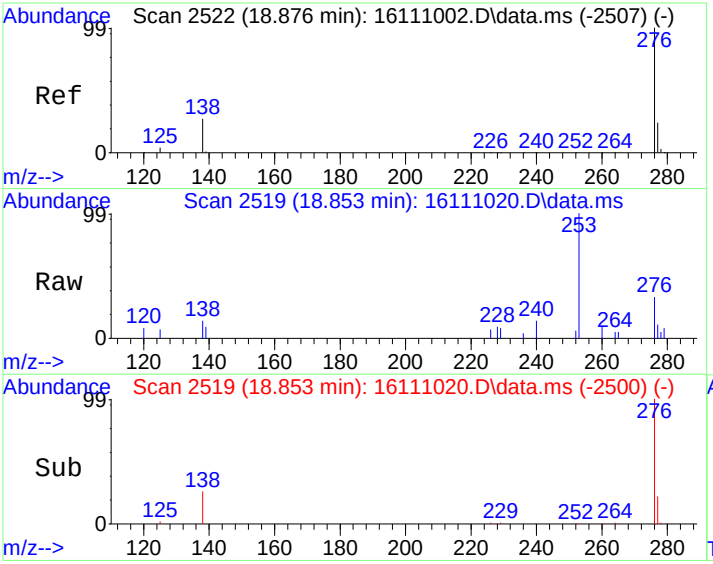


#27
Indeno[1,2,3-cd]pyrene
Concen: 7.65 ug/kg
RT: 17.864 min Scan# 2384
Delta R.T. -0.022 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:276 Resp: 2541

Ion	Ratio	Lower	Upper
276	100		
138	25.2	4.4	44.4
277	22.8	4.4	44.4

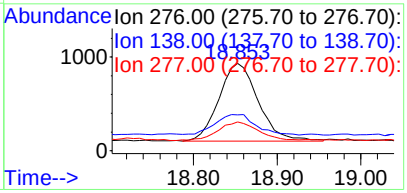




#28
Benzo[g,h,i]perylene
Concen: 7.74 ug/kg
RT: 18.853 min Scan# 2519
Delta R.T. -0.022 min
Lab File: 16111020.D
Acq: 10 Nov 2016 6:57 pm

Tgt Ion:276 Resp: 2724

Ion	Ratio	Lower	Upper
276	100		
138	26.1	7.7	47.7
277	22.9	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111021.D
Acq On : 10 Nov 2016 7:27 pm
Operator :
Sample : 1611028-10A
Misc : SAMP
ALS Vial : 21 Sample Multiplier: 10

Quant Time: Nov 14 11:39:42 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	716541	4000.00	ug/kg	81
5) Acenaphthene-d10	9.062	164	635840	4000.00	ug/kg	80
11) Phenanthrene-d10	10.467	188	1145538	4000.00	ug/kg	81
17) Chrysene-d12	13.367	240	1370782	4000.00	ug/kg	82
20) Perylene-d12	15.689	264	1456550	4000.00	ug/kg	83

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.341	172	19230	93.11	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.33%#			
16) 4-Terphenyl-d14	11.847	244	21986	99.85	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.50%#			

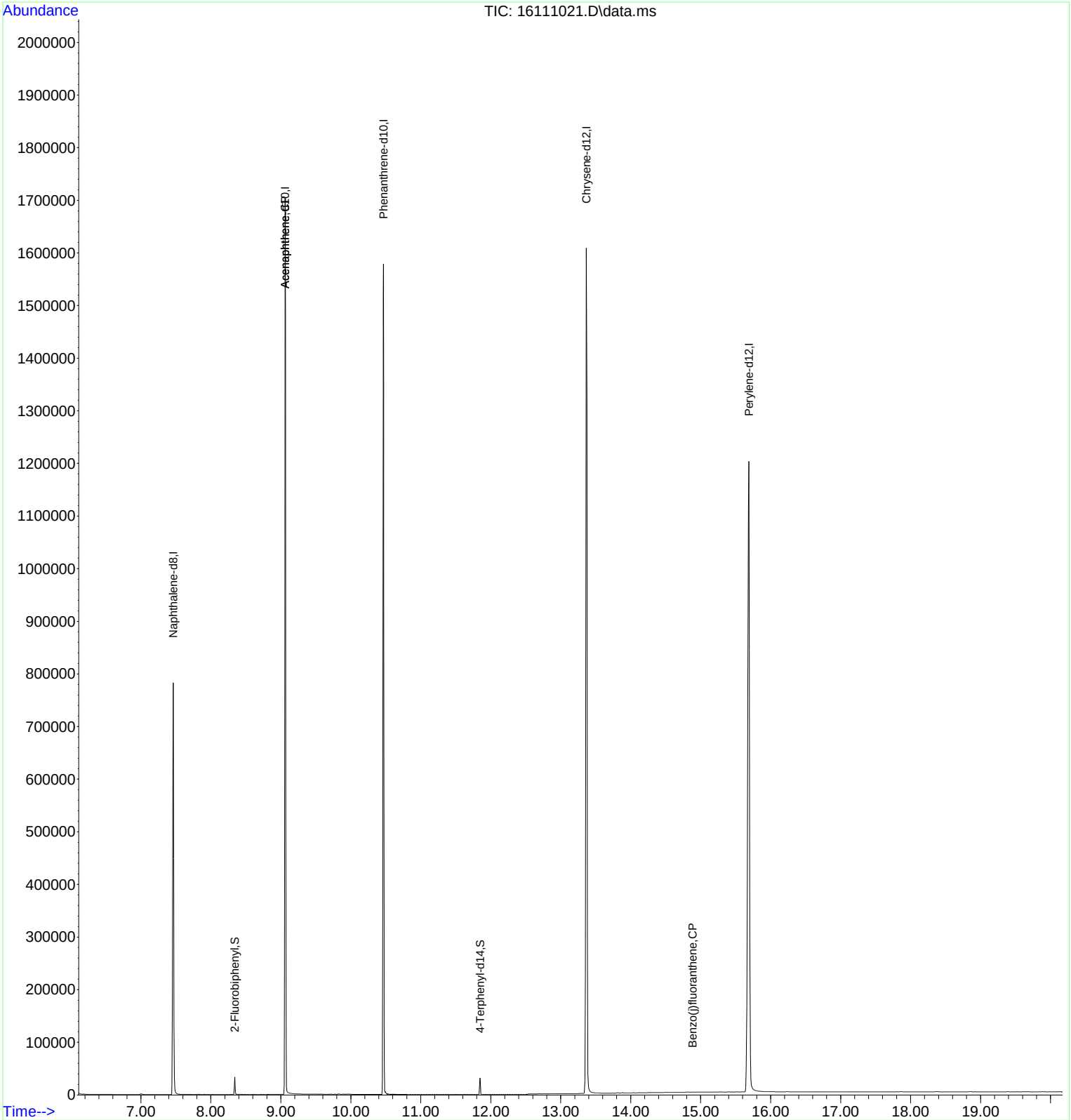
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2391	15.57	ug/kg#	10
23) Benzo(j)fluoranthene	14.883	252	57	0.18	ug/kg	61

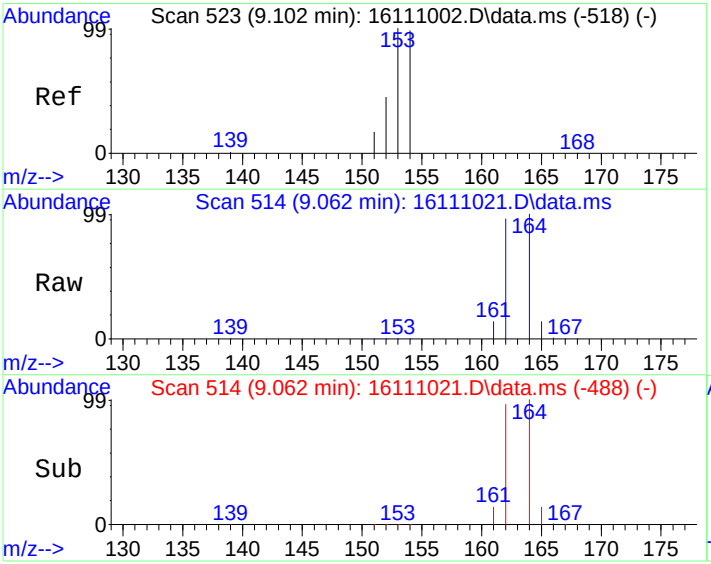
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111021.D
Acq On : 10 Nov 2016 7:27 pm
Operator :
Sample : 1611028-10A
Misc : SAMP
ALS Vial : 21 Sample Multiplier: 10

Quant Time: Nov 14 11:39:42 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

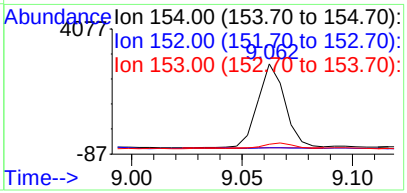


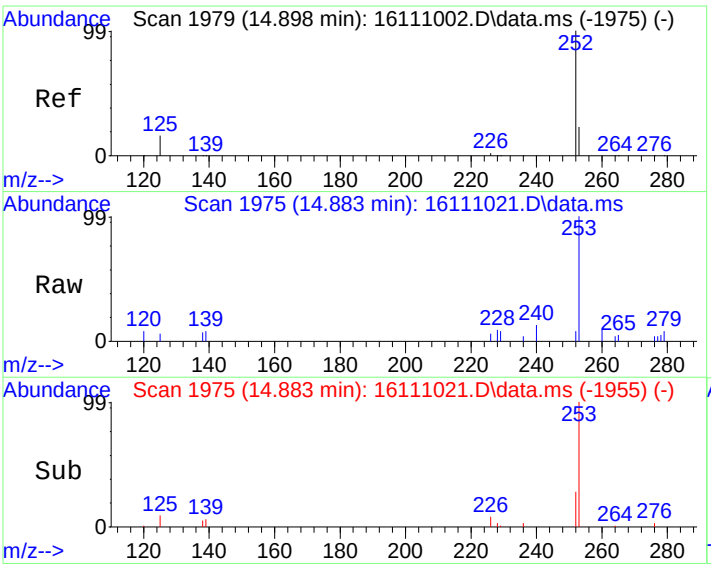


#9
Acenaphthene
Concen: 15.57 ug/kg
RT: 9.062 min Scan# 514
Delta R.T. -0.039 min
Lab File: 16111021.D
Acq: 10 Nov 2016 7:27 pm

Tgt Ion:154 Resp: 2391

Ion	Ratio	Lower	Upper
154	100		
152	0.7	20.7	80.7#
153	5.0	76.8	136.8#

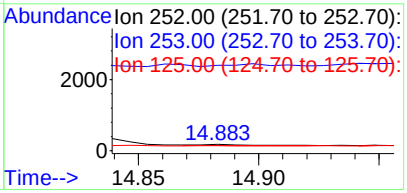




#23
Benzo(j)fluoranthene
Concen: 0.18 ug/kg
RT: 14.883 min Scan# 1975
Delta R.T. -0.015 min
Lab File: 16111021.D
Acq: 10 Nov 2016 7:27 pm

Tgt Ion:252 Resp: 57

Ion	Ratio	Lower	Upper
252	100		
253	38.9	2.7	42.7
125	36.1	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111022.D
Acq On : 10 Nov 2016 7:55 pm
Operator :
Sample : 1611028-11A
Misc : SAMP
ALS Vial : 22 Sample Multiplier: 10

Quant Time: Nov 14 11:39:46 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	7.461	136	689397	4000.00	ug/kg	78
5) Acenaphthene-d10	9.062	164	623796	4000.00	ug/kg	79
11) Phenanthrene-d10	10.465	188	1112753	4000.00	ug/kg	79
17) Chrysene-d12	13.366	240	1331271	4000.00	ug/kg	80
20) Perylene-d12	15.688	264	1422671	4000.00	ug/kg	81

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	19222	94.87	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.37%#			
16) 4-Terphenyl-d14	11.847	244	22242	103.99	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.60%#			

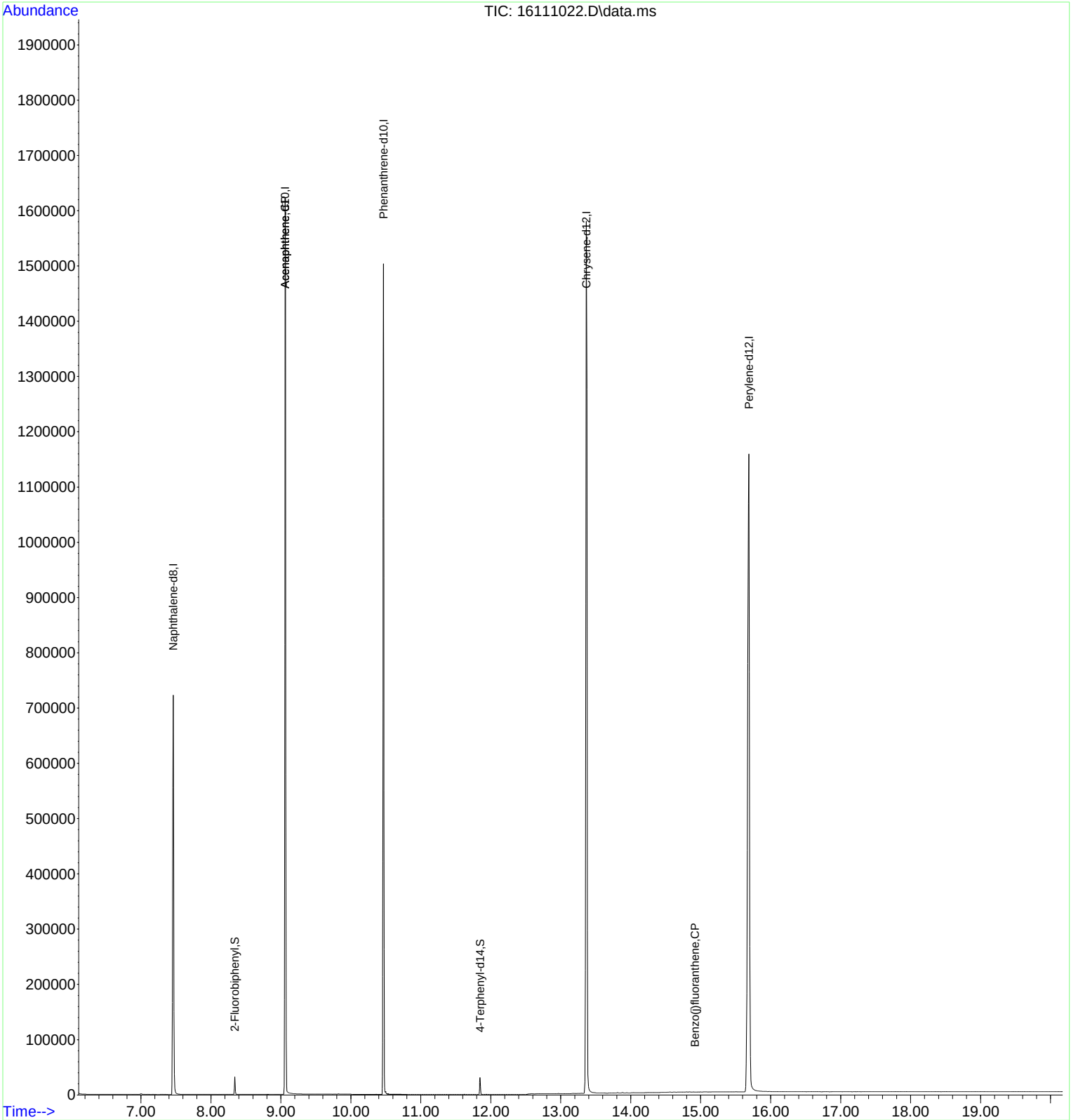
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2328	15.45	ug/kg#	11
23) Benzo(j)fluoranthene	14.926	252	15	0.05	ug/kg#	1

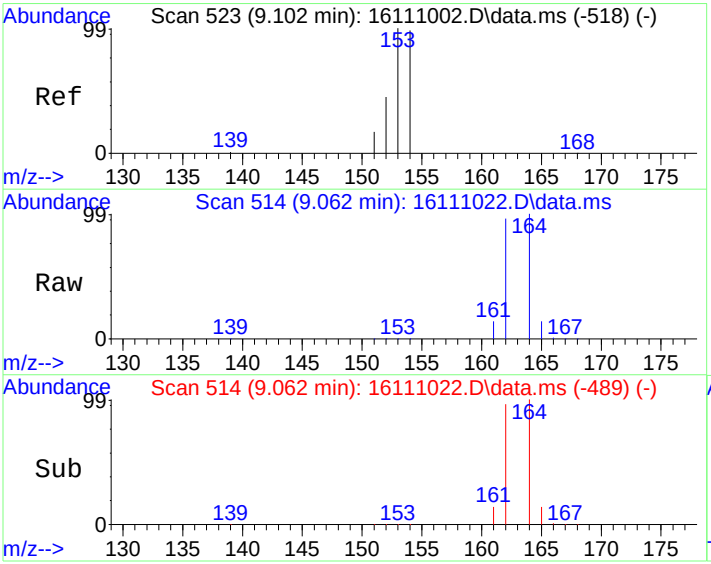
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111022.D
Acq On : 10 Nov 2016 7:55 pm
Operator :
Sample : 1611028-11A
Misc : SAMP
ALS Vial : 22 Sample Multiplier: 10

Quant Time: Nov 14 11:39:46 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

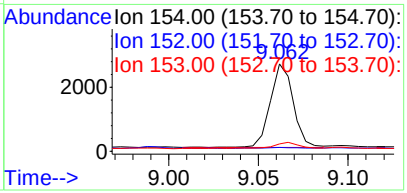


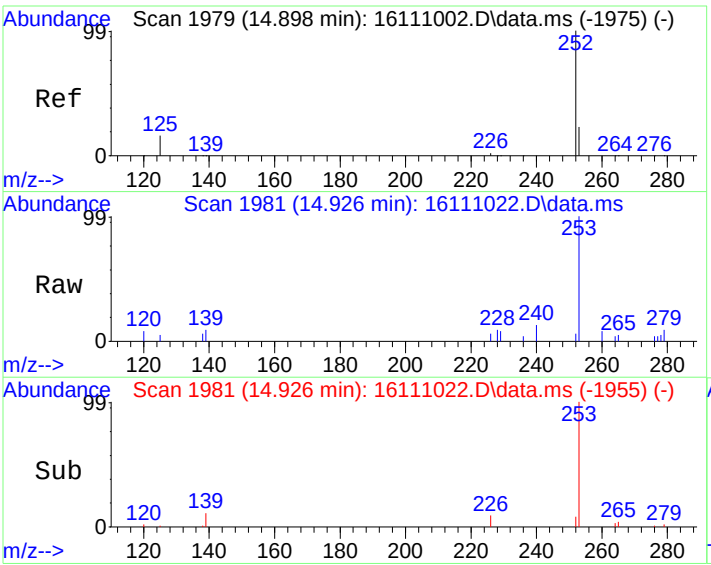


#9
Acenaphthene
Concen: 15.45 ug/kg
RT: 9.062 min Scan# 514
Delta R.T. -0.039 min
Lab File: 16111022.D
Acq: 10 Nov 2016 7:55 pm

Tgt Ion:154 Resp: 2328

Ion	Ratio	Lower	Upper
154	100		
152	0.8	20.7	80.7#
153	5.5	76.8	136.8#

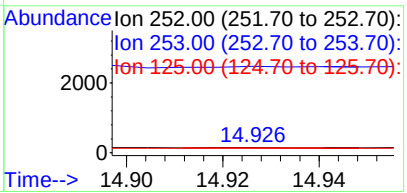




#23
Benzo(j)fluoranthene
Concen: 0.05 ug/kg
RT: 14.926 min Scan# 1981
Delta R.T. 0.028 min
Lab File: 16111022.D
Acq: 10 Nov 2016 7:55 pm

Tgt Ion:252 Resp: 15

Ion	Ratio	Lower	Upper
252	100		
253	181.3	2.7	42.7#
125	0.0	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111023.D
Acq On : 10 Nov 2016 8:24 pm
Operator :
Sample : 1611028-12A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: Nov 14 11:39:50 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	7.460	136	691357	4000.00	ug/kg	79
5) Acenaphthene-d10	9.063	164	651502	4000.00	ug/kg	82
11) Phenanthrene-d10	10.465	188	1161732	4000.00	ug/kg	82
17) Chrysene-d12	13.367	240	1389250	4000.00	ug/kg	83
20) Perylene-d12	15.689	264	1474585	4000.00	ug/kg	84

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	19232	90.88	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.27%#			
16) 4-Terphenyl-d14	11.848	244	21819	97.71	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.44%#			

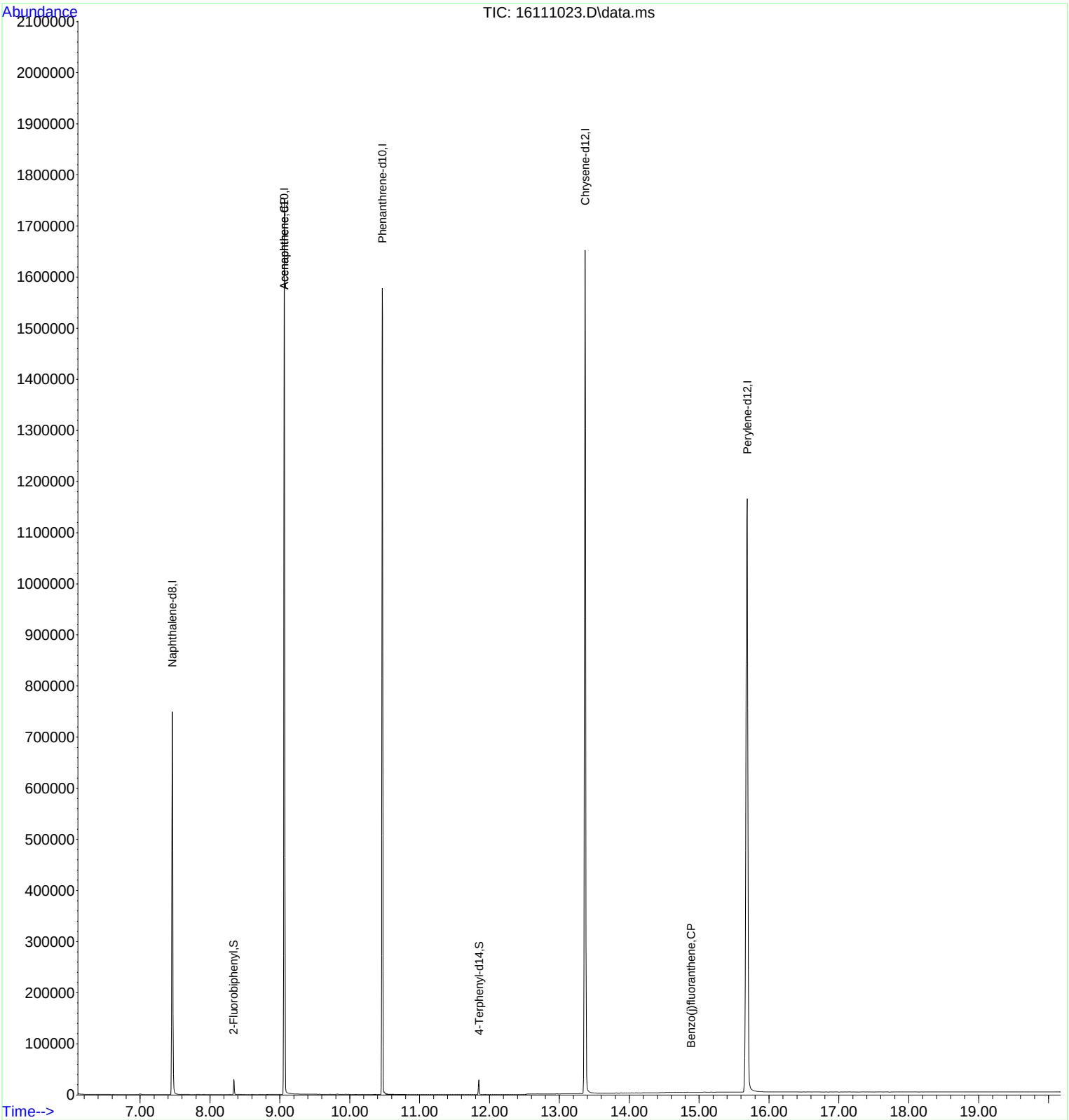
Target Compounds						Qvalue
9) Acenaphthene	9.063	154	2394	15.21	ug/kg#	11
23) Benzo(j)fluoranthene	14.876	252	47	0.14	ug/kg	85

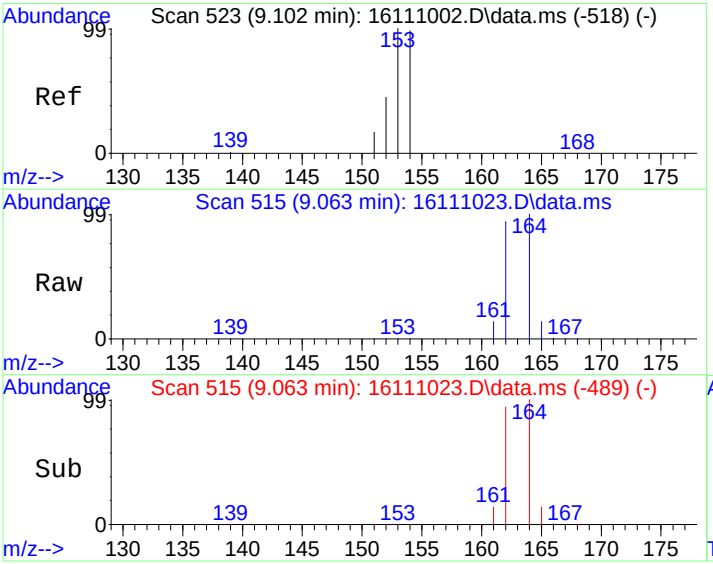
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111023.D
Acq On : 10 Nov 2016 8:24 pm
Operator :
Sample : 1611028-12A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: Nov 14 11:39:50 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

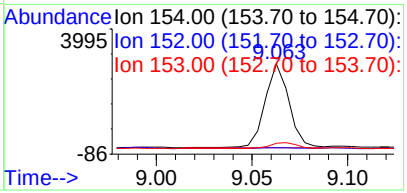


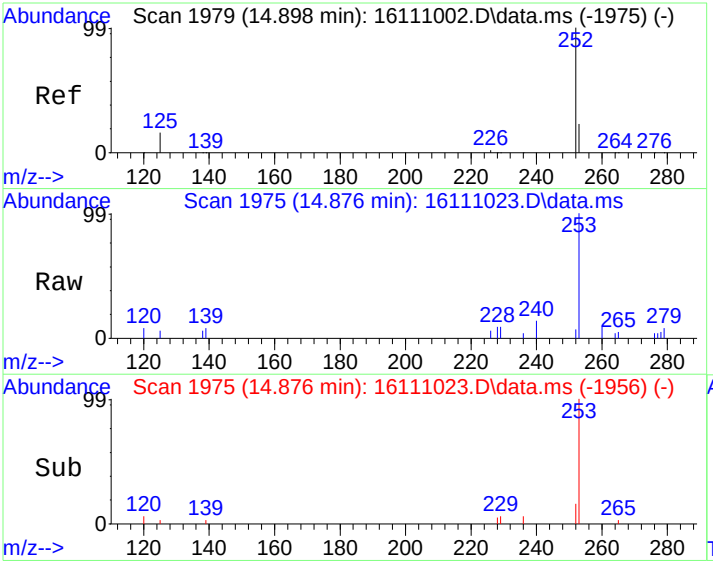


#9
Acenaphthene
Concen: 15.21 ug/kg
RT: 9.063 min Scan# 515
Delta R.T. -0.038 min
Lab File: 16111023.D
Acq: 10 Nov 2016 8:24 pm

Tgt Ion:154 Resp: 2394

Ion	Ratio	Lower	Upper
154	100		
152	0.9	20.7	80.7#
153	6.1	76.8	136.8#

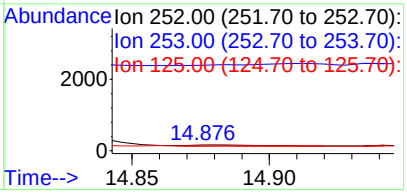




#23
Benzo(j)fluoranthene
Concen: 0.14 ug/kg
RT: 14.876 min Scan# 1975
Delta R.T. -0.022 min
Lab File: 16111023.D
Acq: 10 Nov 2016 8:24 pm

Tgt Ion:252 Resp: 47

Ion	Ratio	Lower	Upper
252	100		
253	13.0	2.7	42.7
125	13.0	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111024.D
Acq On : 10 Nov 2016 8:52 pm
Operator :
Sample : 1611028-14A
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 10

Quant Time: Nov 14 11:39:54 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	661953	4000.00	ug/kg	75
5) Acenaphthene-d10	9.066	164	604522	4000.00	ug/kg	76
11) Phenanthrene-d10	10.467	188	1092388	4000.00	ug/kg	77
17) Chrysene-d12	13.365	240	1305666	4000.00	ug/kg	78
20) Perylene-d12	15.687	264	1367943	4000.00	ug/kg	78

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	19339	98.49	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.46%#			
16) 4-Terphenyl-d14	11.847	244	21991	104.73	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.62%#			

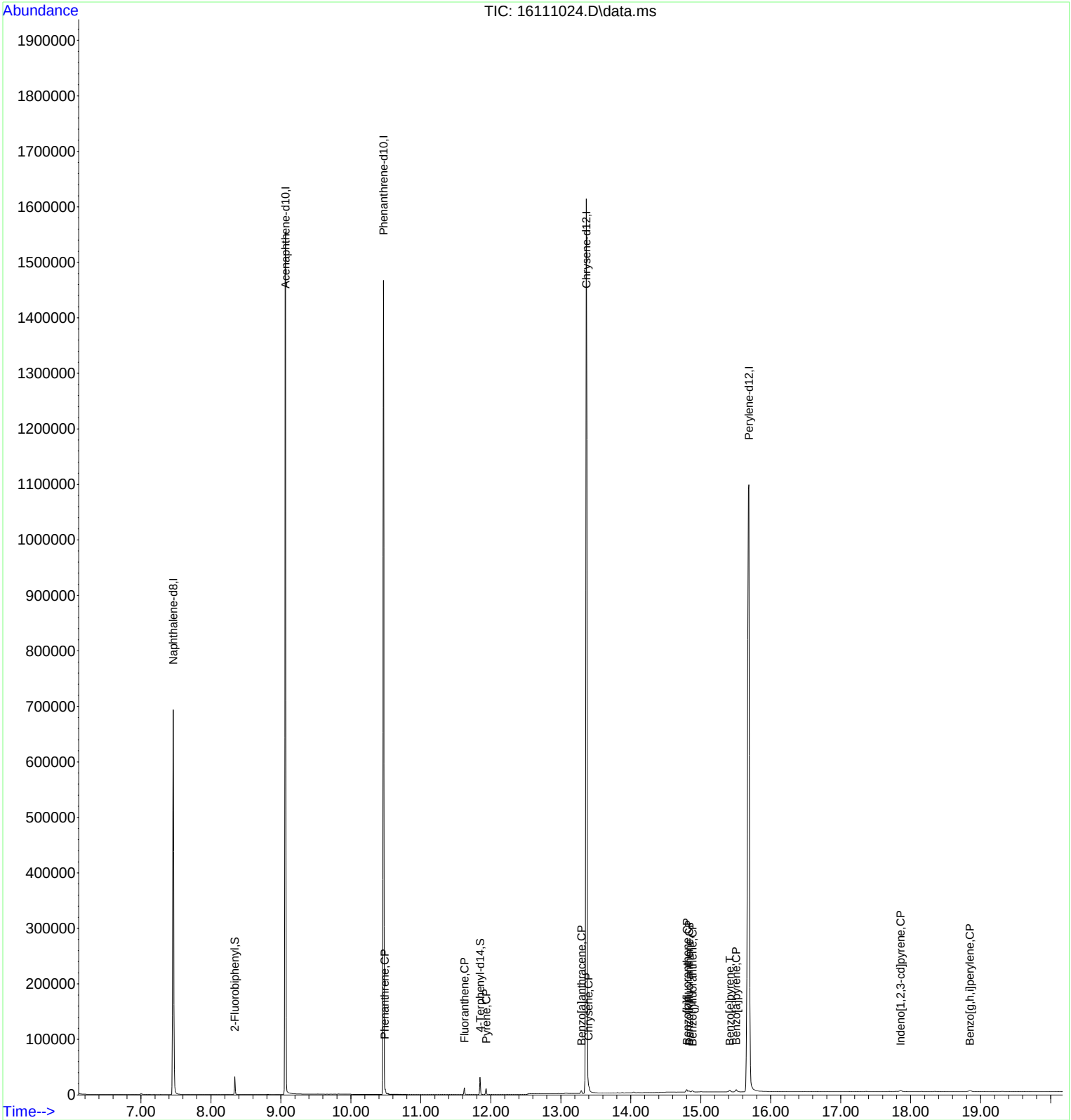
Target Compounds						Qvalue
12) Phenanthrene	10.490	178	3294	12.84	ug/kg	98
14) Fluoranthene	11.620	202	7298	24.05	ug/kg	97
15) Pyrene	11.932	202	6631	21.29	ug/kg	99
18) Benzo[a]anthracene	13.292	228	4073	13.25	ug/kg	99
19) Chrysene	13.402	228	4227	15.16	ug/kg	98
21) Benzo[b]fluoranthene	14.801	252	4741	13.89	ug/kg	94
22) Benzo[k]fluoranthene	14.830	252	2598	8.42	ug/kg	85
23) Benzo(j)fluoranthene	14.882	252	2121	6.99	ug/kg	98
24) Benzo[e]pyrene	15.416	252	3412	11.15	ug/kg	95
25) Benzo[a]pyrene	15.504	252	4794	15.34	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.863	276	3458	11.03	ug/kg	95
28) Benzo[g,h,i]perylene	18.844	276	3719	11.20	ug/kg	98

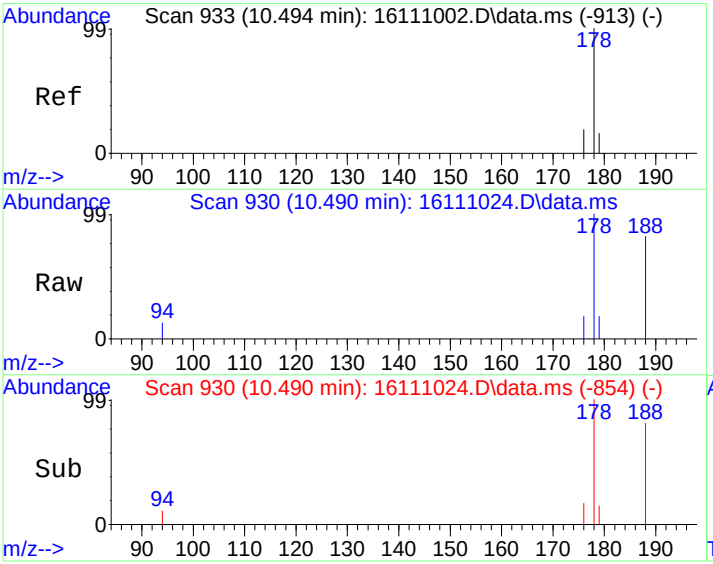
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111024.D
Acq On : 10 Nov 2016 8:52 pm
Operator :
Sample : 1611028-14A
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 10

Quant Time: Nov 14 11:39:54 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

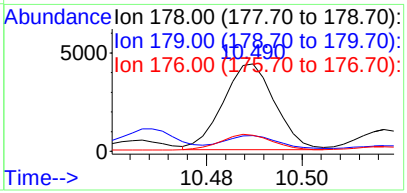


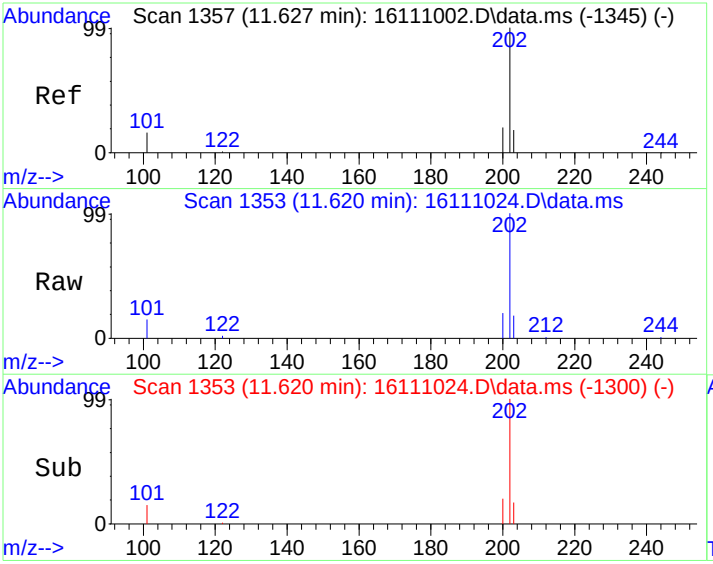


#12
Phenanthrene
Concen: 12.84 ug/kg
RT: 10.490 min Scan# 930
Delta R.T. -0.004 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:178 Resp: 3294

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	46.2
176	17.3	0.0	48.4

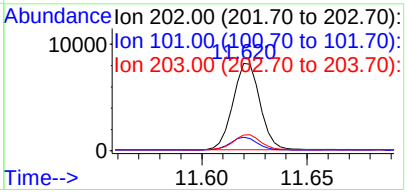


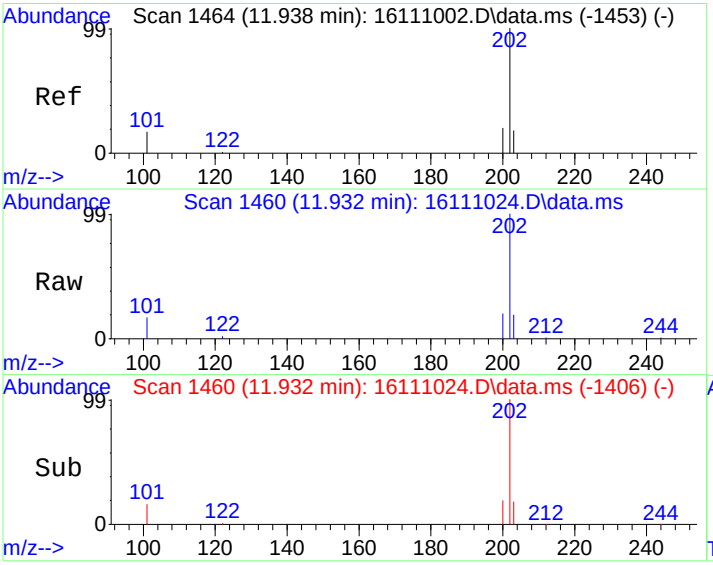


#14
Fluoranthene
Concen: 24.05 ug/kg
RT: 11.620 min Scan# 1353
Delta R.T. -0.006 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:202 Resp: 7298

Ion	Ratio	Lower	Upper
202	100		
101	14.6	0.0	45.8
203	17.2	0.0	48.2

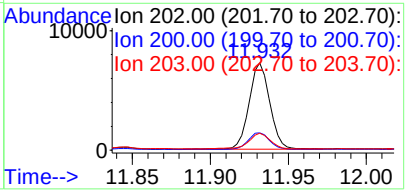


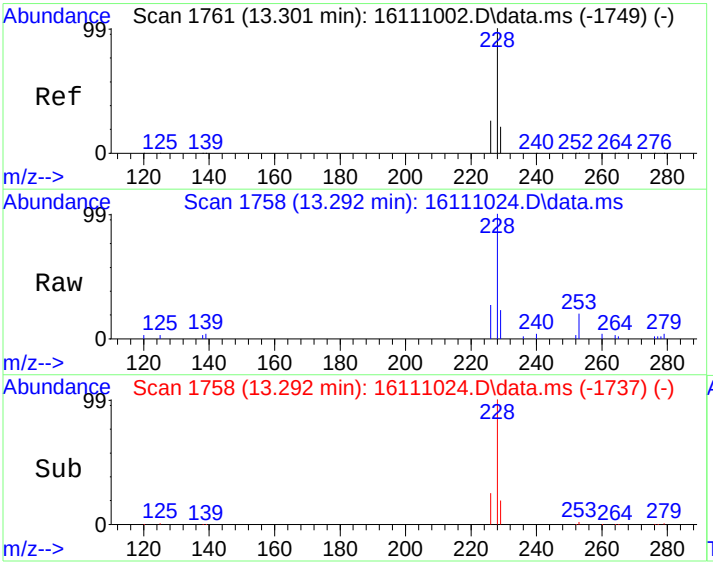


#15
Pyrene
Concen: 21.29 ug/kg
RT: 11.932 min Scan# 1460
Delta R.T. -0.006 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:202 Resp: 6631

Ion	Ratio	Lower	Upper
202	100		
200	19.2	0.0	50.3
203	18.1	0.0	48.2

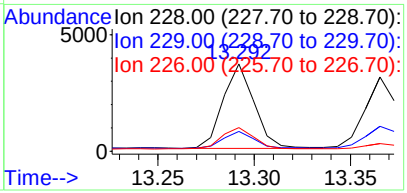


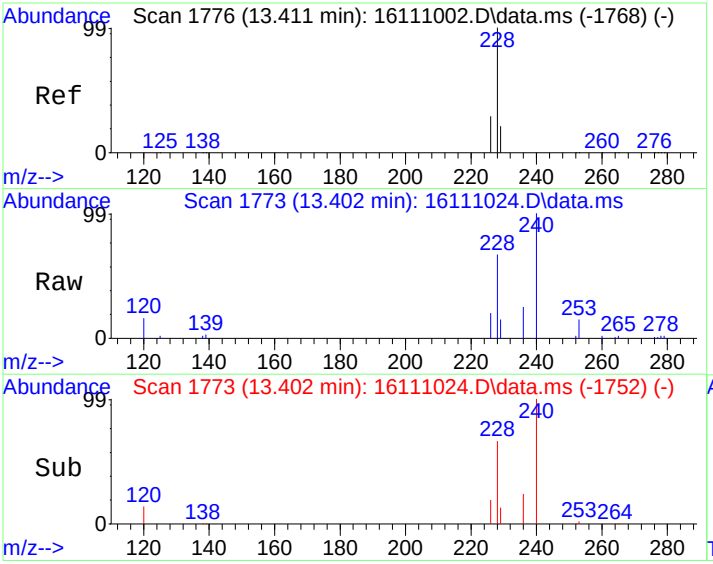


#18
Benzo[a]anthracene
Concen: 13.25 ug/kg
RT: 13.292 min Scan# 1758
Delta R.T. -0.009 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:228 Resp: 4073

Ion	Ratio	Lower	Upper
228	100		
229	20.0	0.0	50.8
226	25.4	0.0	55.5

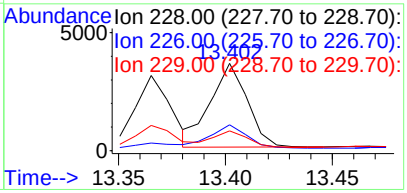


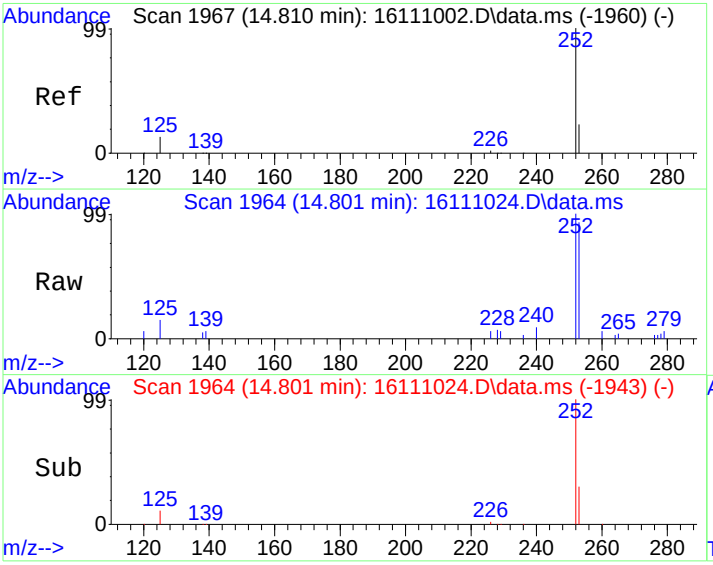


#19
Chrysene
Concen: 15.16 ug/kg
RT: 13.402 min Scan# 1773
Delta R.T. -0.009 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:228 Resp: 4227

Ion	Ratio	Lower	Upper
228	100		
226	27.8	0.0	58.7
229	19.6	0.0	50.4

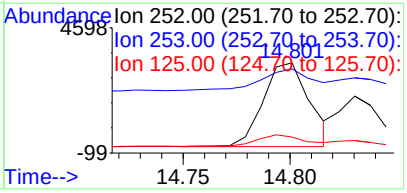


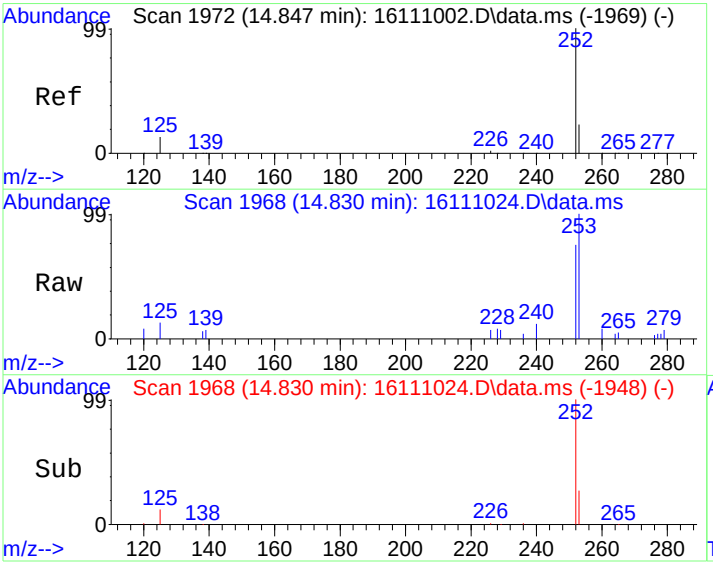


#21
Benzo[b]fluoranthene
Concen: 13.89 ug/kg
RT: 14.801 min Scan# 1964
Delta R.T. -0.009 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 4741

Ion	Ratio	Lower	Upper
252	100		
253	25.6	0.0	52.7
125	10.8	0.0	42.9

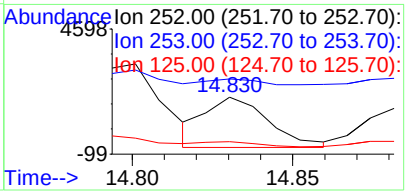


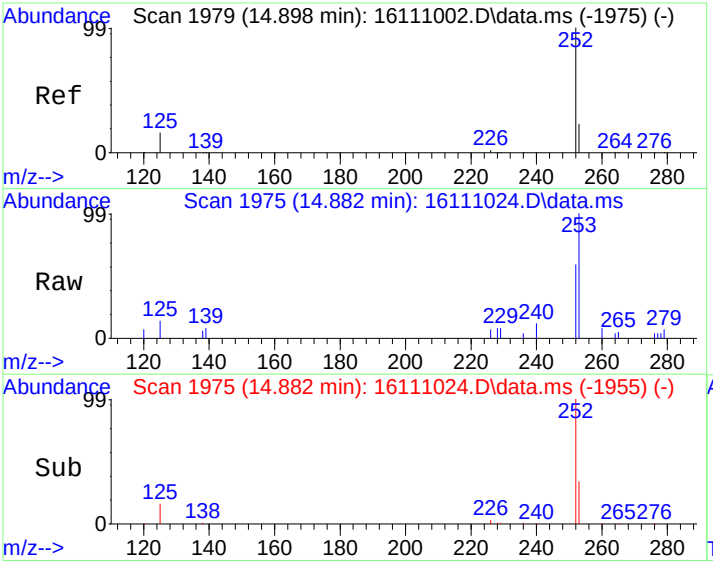


#22
Benzo[k]fluoranthene
Concen: 8.42 ug/kg
RT: 14.830 min Scan# 1968
Delta R.T. -0.016 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 2598

Ion	Ratio	Lower	Upper
252	100		
253	12.1	2.8	42.8
125	10.6	0.0	31.3

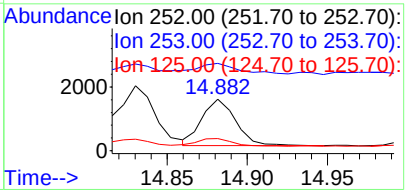


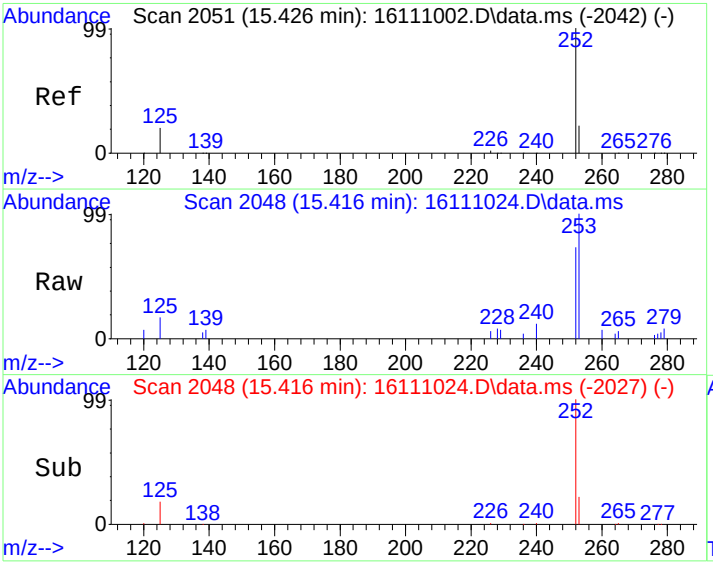


#23
Benzo(j)fluoranthene
Concen: 6.99 ug/kg
RT: 14.882 min Scan# 1975
Delta R.T. -0.016 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 2121

Ion	Ratio	Lower	Upper
252	100		
253	24.6	2.7	42.7
125	16.3	0.0	36.4

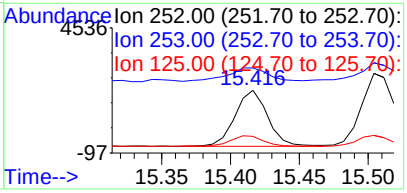


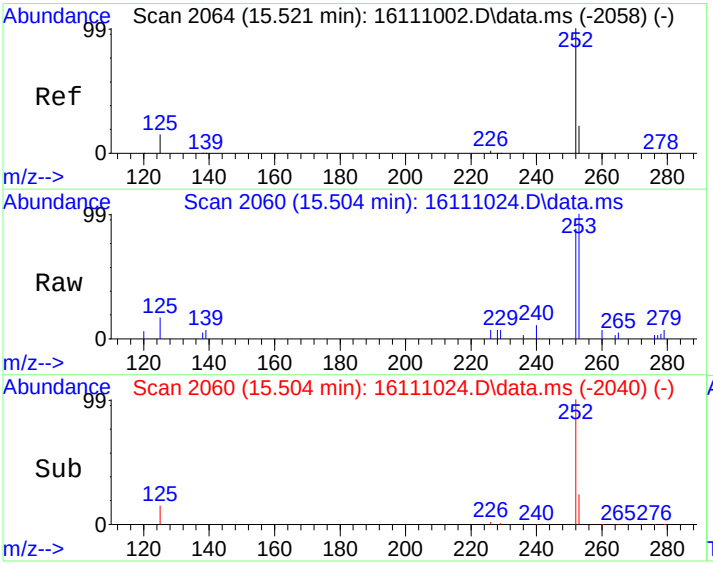


#24
Benzo[e]pyrene
Concen: 11.15 ug/kg
RT: 15.416 min Scan# 2048
Delta R.T. -0.009 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 3412

Ion	Ratio	Lower	Upper
252	100		
253	24.0	2.5	42.5
125	17.7	0.9	40.9

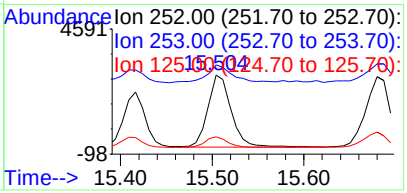


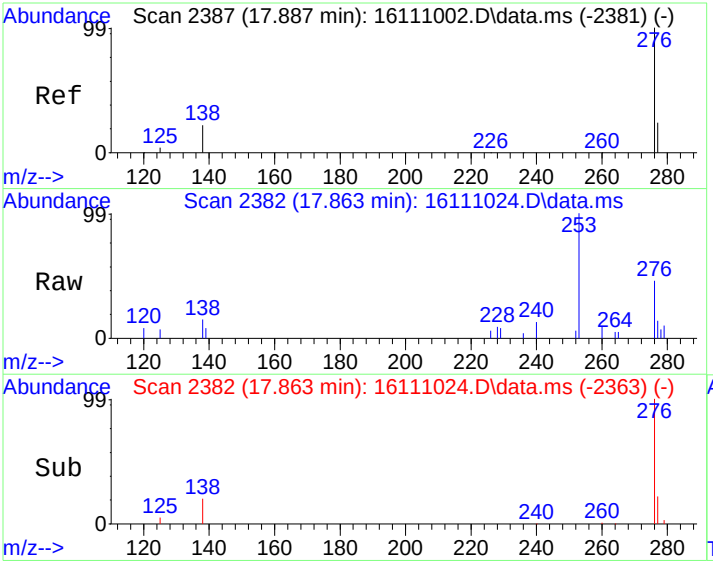


#25
Benzo[a]pyrene
Concen: 15.34 ug/kg
RT: 15.504 min Scan# 2060
Delta R.T. -0.016 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:252 Resp: 4794

Ion	Ratio	Lower	Upper
252	100		
253	24.6	2.7	42.7
125	14.7	0.0	33.9

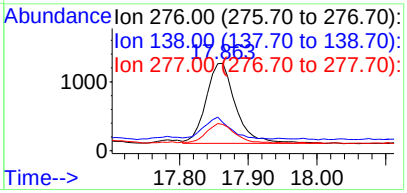


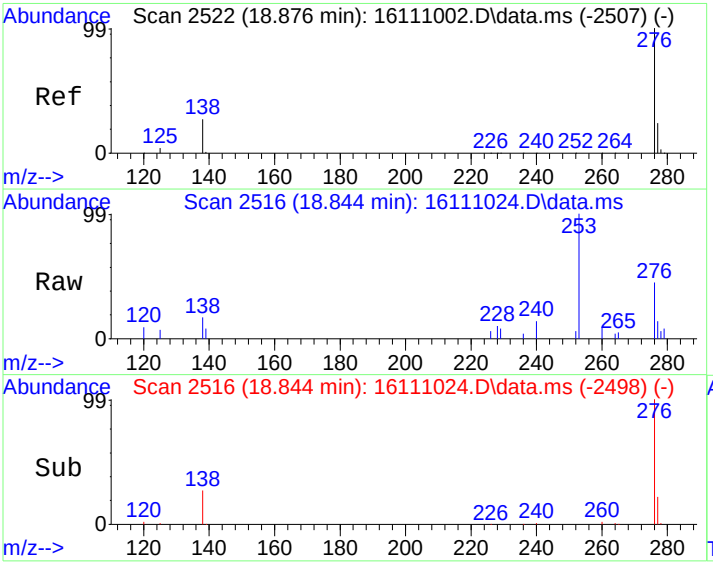


#27
Indeno[1,2,3-cd]pyrene
Concen: 11.03 ug/kg
RT: 17.863 min Scan# 2382
Delta R.T. -0.023 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:276 Resp: 3458

Ion	Ratio	Lower	Upper
276	100		
138	20.6	4.4	44.4
277	23.5	4.4	44.4

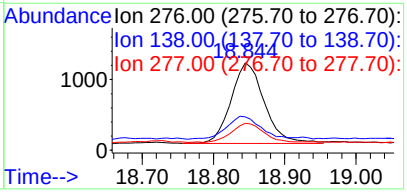




#28
Benzo[g,h,i]perylene
Concen: 11.20 ug/kg
RT: 18.844 min Scan# 2516
Delta R.T. -0.031 min
Lab File: 16111024.D
Acq: 10 Nov 2016 8:52 pm

Tgt Ion:276 Resp: 3719

Ion	Ratio	Lower	Upper
276	100		
138	26.6	7.7	47.7
277	23.3	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111025.D
Acq On : 10 Nov 2016 9:21 pm
Operator :
Sample : 1611028-15A
Misc : SAMP
ALS Vial : 25 Sample Multiplier: 10

Quant Time: Nov 14 11:40:01 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	626381	4000.00	ug/kg	71
5) Acenaphthene-d10	9.063	164	623532	4000.00	ug/kg	79
11) Phenanthrene-d10	10.466	188	1116705	4000.00	ug/kg	79
17) Chrysene-d12	13.367	240	1332488	4000.00	ug/kg	80
20) Perylene-d12	15.682	264	1411114	4000.00	ug/kg	80

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.339	172	18594	91.81	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.30%#			
16) 4-Terphenyl-d14	11.845	244	21198	98.76	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.47%#			

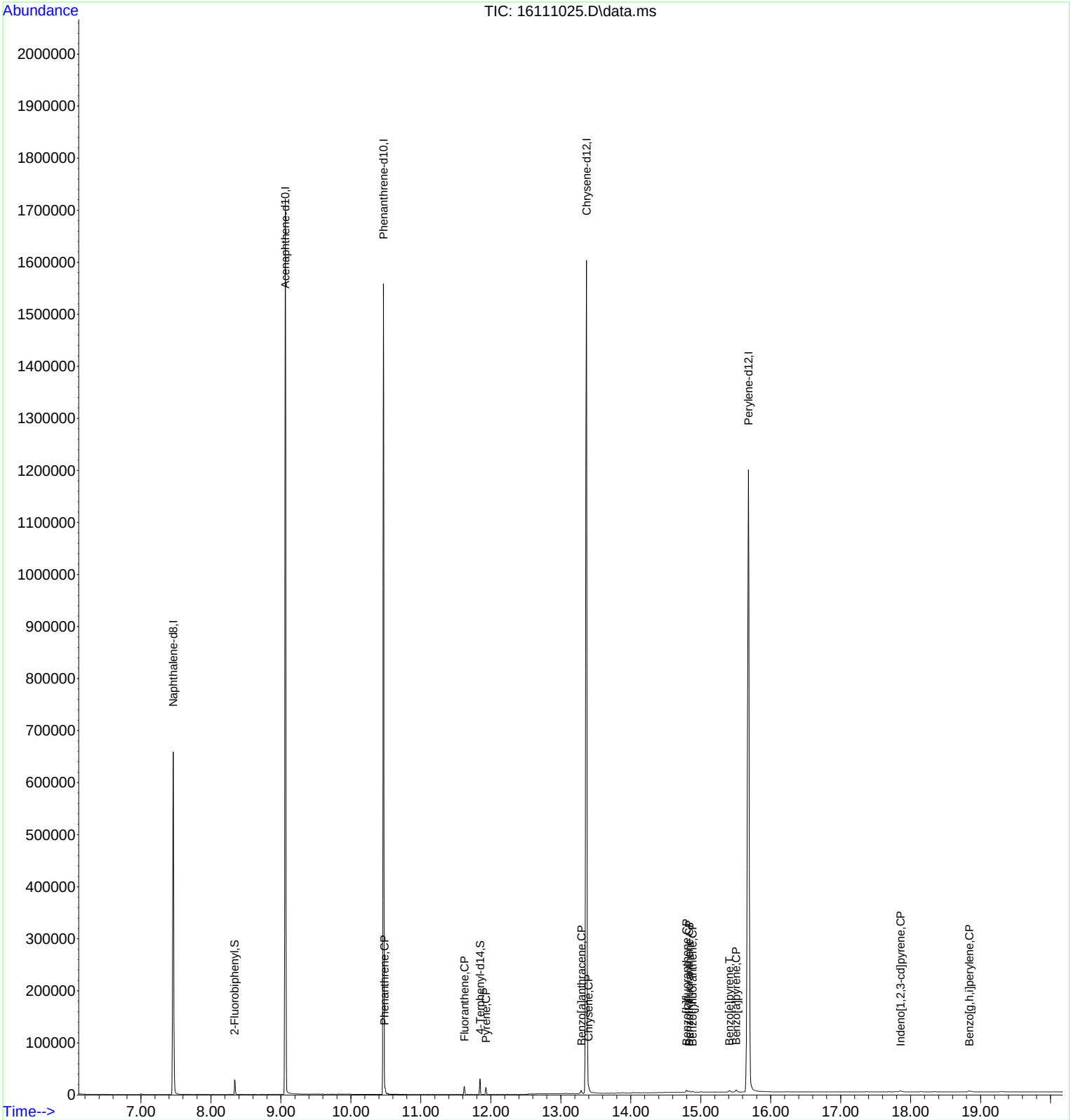
Target Compounds						Qvalue
12) Phenanthrene	10.487	178	5104	19.46	ug/kg	99
14) Fluoranthene	11.621	202	9310	30.02	ug/kg	97
15) Pyrene	11.930	202	8215	25.80	ug/kg	99
18) Benzo[a]anthracene	13.294	228	4990	15.90	ug/kg	97
19) Chrysene	13.404	228	4397	15.46	ug/kg	98
21) Benzo[b]fluoranthene	14.795	252	4545	12.91	ug/kg	99
22) Benzo[k]fluoranthene	14.832	252	2525	7.93	ug/kg	92
23) Benzo(j)fluoranthene	14.883	252	2175	6.95	ug/kg	96
24) Benzo[e]pyrene	15.411	252	3347	10.61	ug/kg	98
25) Benzo[a]pyrene	15.506	252	4970	15.41	ug/kg	97
27) Indeno[1,2,3-cd]pyrene	17.857	276	3181	9.84	ug/kg	98
28) Benzo[g,h,i]perylene	18.846	276	3365	9.82	ug/kg	97

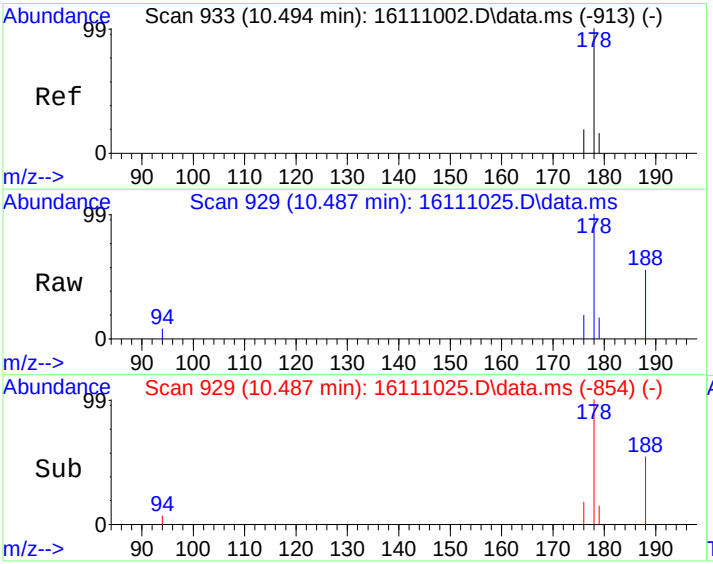
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111025.D
Acq On : 10 Nov 2016 9:21 pm
Operator :
Sample : 1611028-15A
Misc : SAMP
ALS Vial : 25 Sample Multiplier: 10

Quant Time: Nov 14 11:40:01 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

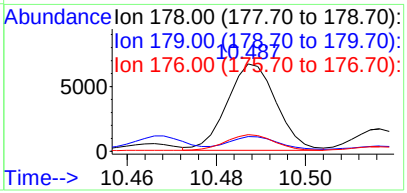


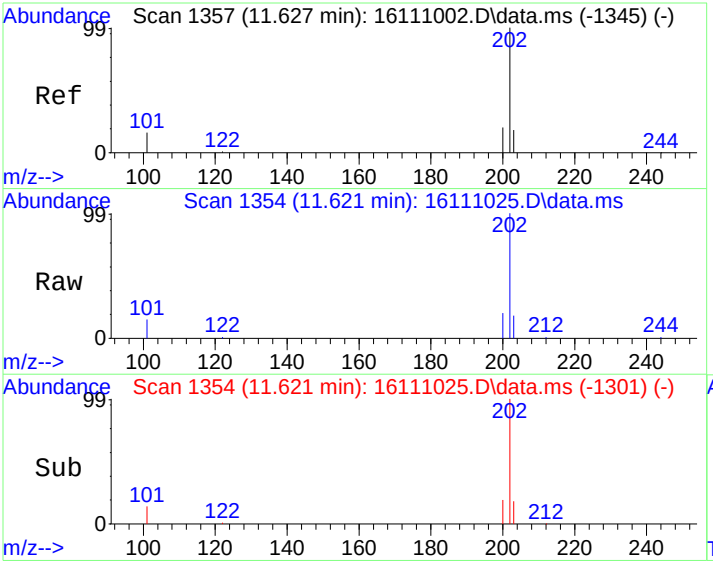


#12
Phenanthrene
Concen: 19.46 ug/kg
RT: 10.487 min Scan# 929
Delta R.T. -0.007 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:178 Resp: 5104

Ion	Ratio	Lower	Upper
178	100		
179	15.2	0.0	46.2
176	18.5	0.0	48.4

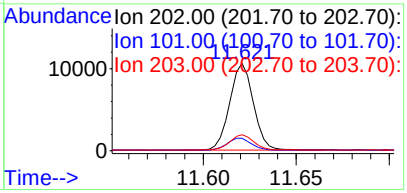


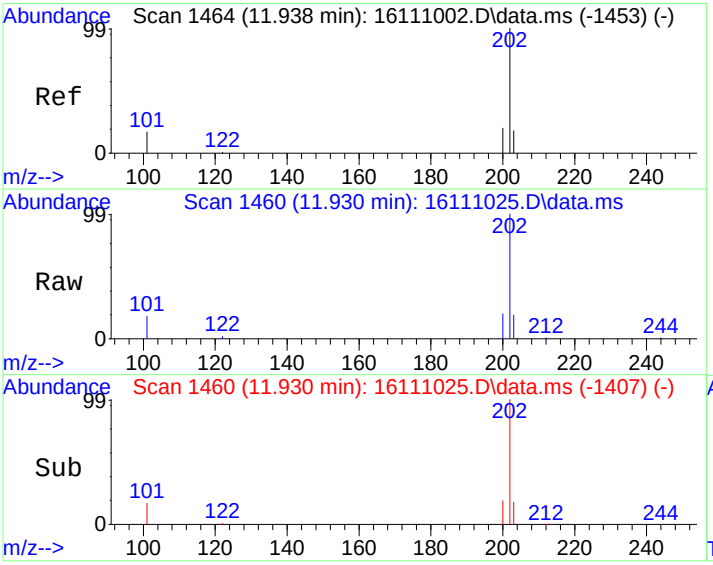


#14
Fluoranthene
Concen: 30.02 ug/kg
RT: 11.621 min Scan# 1354
Delta R.T. -0.005 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:202 Resp: 9310

Ion	Ratio	Lower	Upper
202	100		
101	14.0	0.0	45.8
203	17.7	0.0	48.2

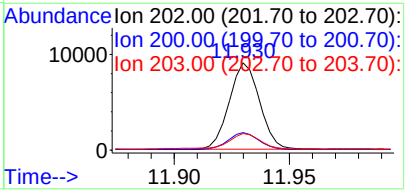


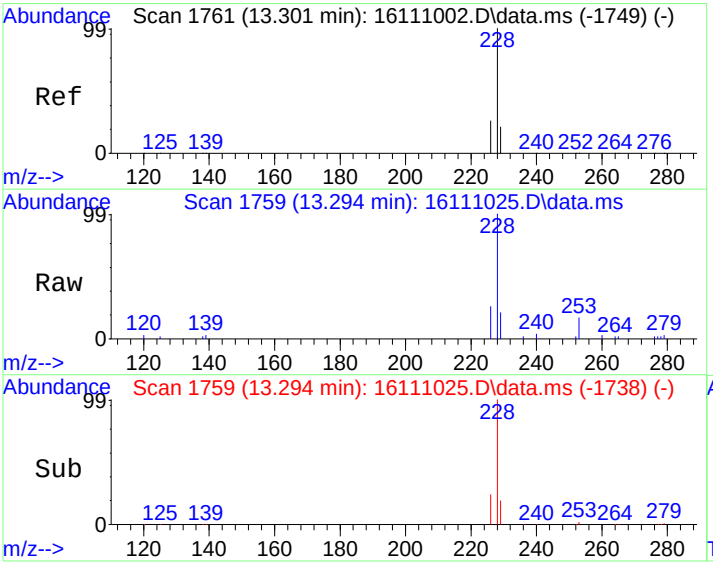


#15
Pyrene
Concen: 25.80 ug/kg
RT: 11.930 min Scan# 1460
Delta R.T. -0.008 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:202 Resp: 8215

Ion	Ratio	Lower	Upper
202	100		
200	19.5	0.0	50.3
203	18.3	0.0	48.2

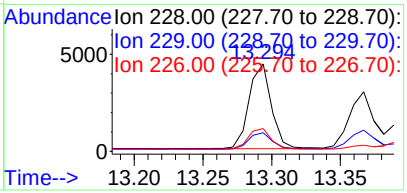


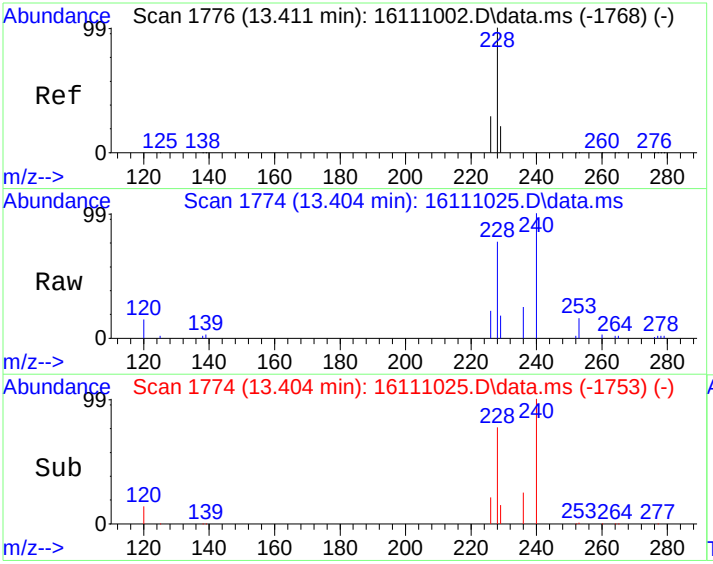


#18
Benzo[a]anthracene
Concen: 15.90 ug/kg
RT: 13.294 min Scan# 1759
Delta R.T. -0.007 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:228 Resp: 4990

Ion	Ratio	Lower	Upper
228	100		
229	19.0	0.0	50.8
226	24.5	0.0	55.5

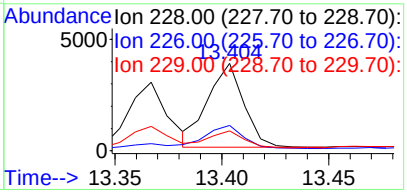


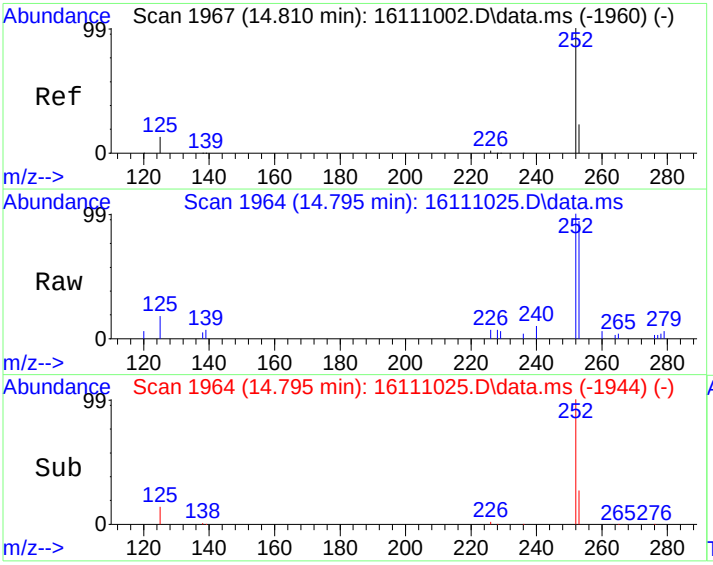


#19
Chrysene
Concen: 15.46 ug/kg
RT: 13.404 min Scan# 1774
Delta R.T. -0.007 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:228 Resp: 4397

Ion	Ratio	Lower	Upper
228	100		
226	27.3	0.0	58.7
229	20.0	0.0	50.4

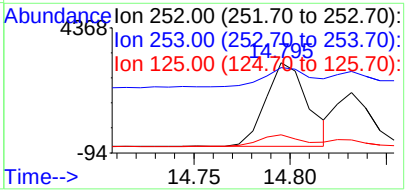


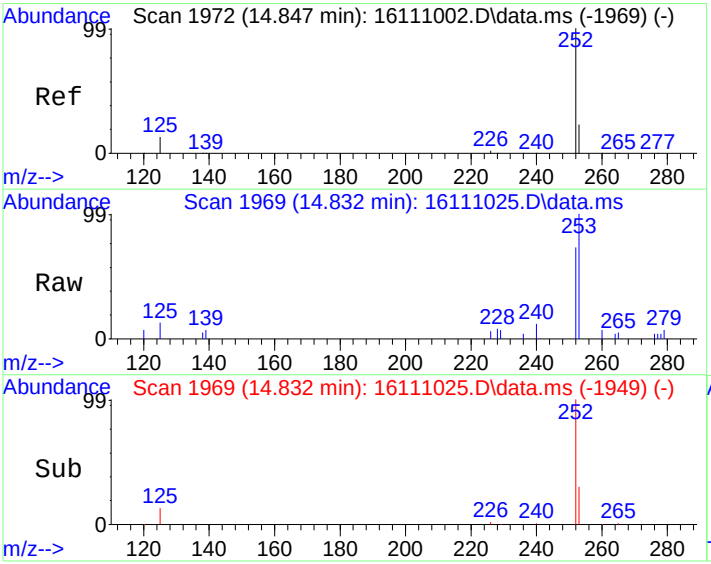


#21
Benzo[b]fluoranthene
Concen: 12.91 ug/kg
RT: 14.795 min Scan# 1964
Delta R.T. -0.015 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:252 Resp: 4545

Ion	Ratio	Lower	Upper
252	100		
253	22.4	0.0	52.7
125	14.0	0.0	42.9

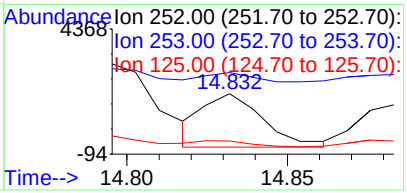


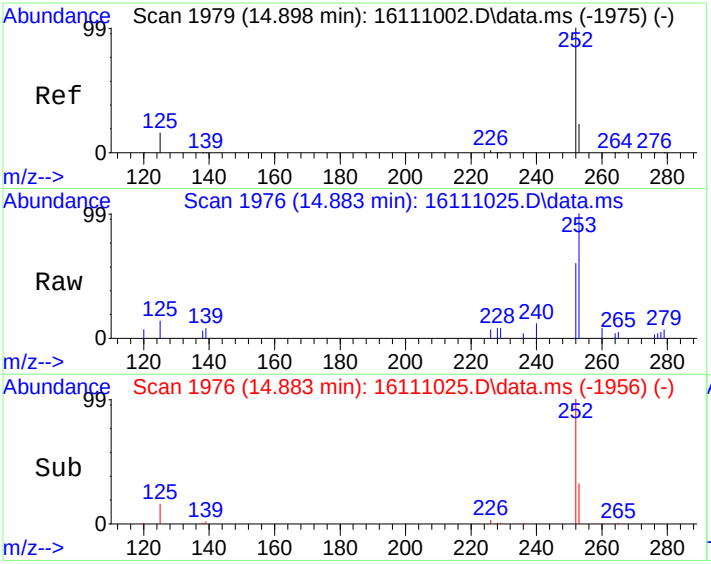


#22
Benzo[k]fluoranthene
Concen: 7.93 ug/kg
RT: 14.832 min Scan# 1969
Delta R.T. -0.014 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:252 Resp: 2525

Ion	Ratio	Lower	Upper
252	100		
253	17.1	2.8	42.8
125	10.9	0.0	31.3

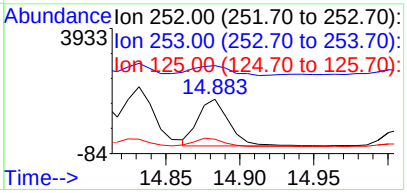


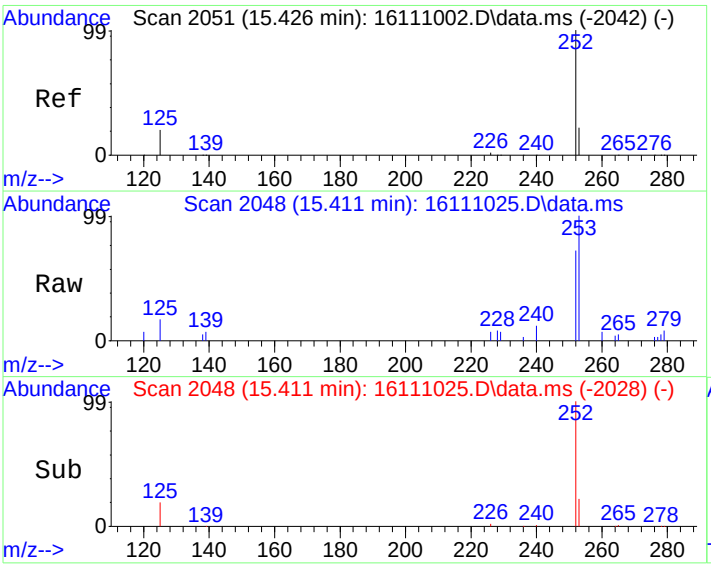


#23
Benzo(j)fluoranthene
Concen: 6.95 ug/kg
RT: 14.883 min Scan# 1976
Delta R.T. -0.015 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:252 Resp: 2175

Ion	Ratio	Lower	Upper
252	100		
253	19.5	2.7	42.7
125	15.8	0.0	36.4

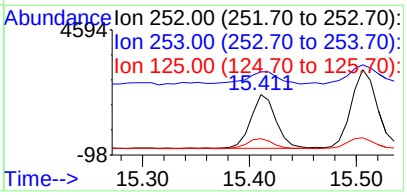


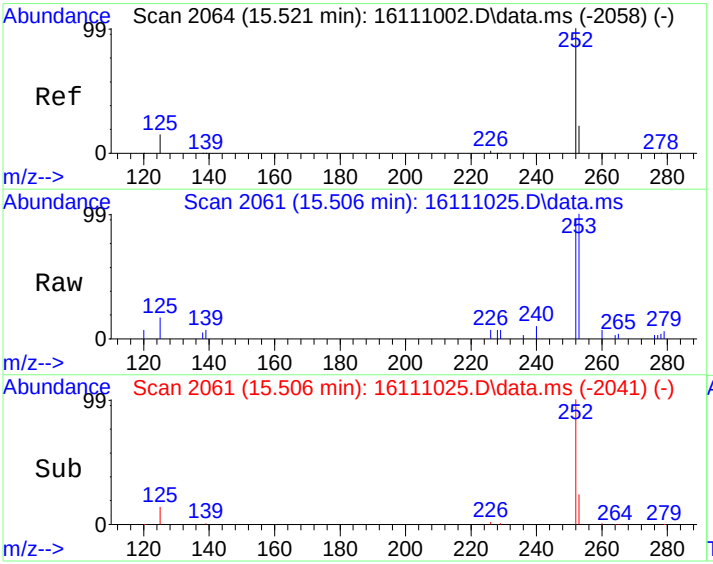


#24
Benzo[e]pyrene
Concen: 10.61 ug/kg
RT: 15.411 min Scan# 2048
Delta R.T. -0.014 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:252 Resp: 3347

Ion	Ratio	Lower	Upper
252	100		
253	22.4	2.5	42.5
125	18.7	0.9	40.9

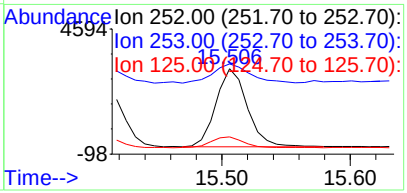


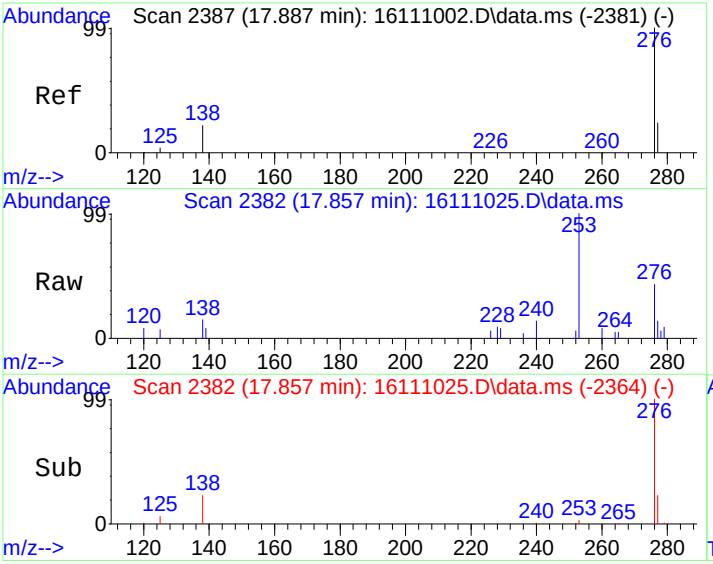


#25
Benzo[a]pyrene
Concen: 15.41 ug/kg
RT: 15.506 min Scan# 2061
Delta R.T. -0.014 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:252 Resp: 4970

Ion	Ratio	Lower	Upper
252	100		
253	24.6	2.7	42.7
125	14.0	0.0	33.9

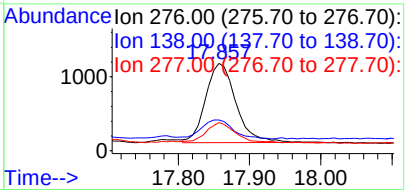


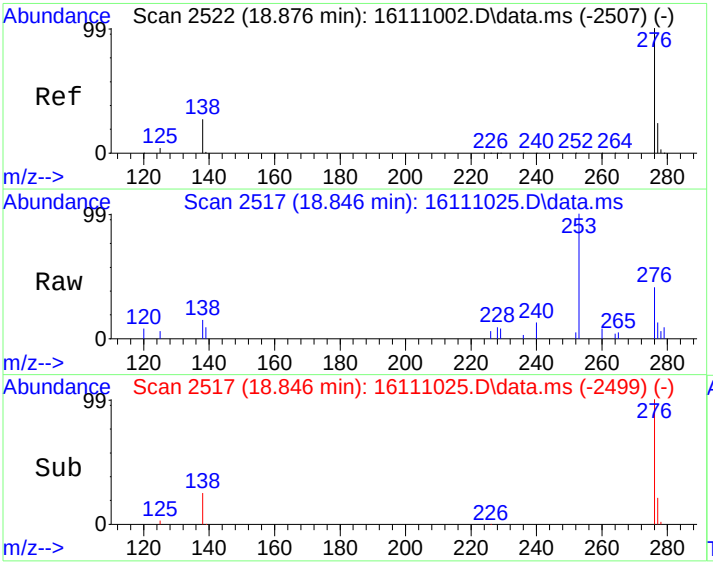


#27
Indeno[1,2,3-cd]pyrene
Concen: 9.84 ug/kg
RT: 17.857 min Scan# 2382
Delta R.T. -0.029 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:276 Resp: 3181

Ion	Ratio	Lower	Upper
276	100		
138	23.5	4.4	44.4
277	25.7	4.4	44.4

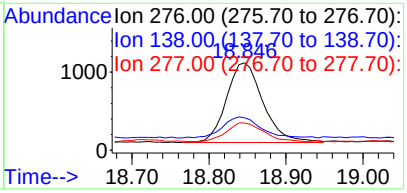




#28
Benzo[g,h,i]perylene
Concen: 9.82 ug/kg
RT: 18.846 min Scan# 2517
Delta R.T. -0.029 min
Lab File: 16111025.D
Acq: 10 Nov 2016 9:21 pm

Tgt Ion:276 Resp: 3365

Ion	Ratio	Lower	Upper
276	100		
138	25.3	7.7	47.7
277	23.3	4.1	44.1



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111026.D
Acq On : 10 Nov 2016 9:50 pm
Operator :
Sample : 1611028-16A
Misc : SAMP
ALS Vial : 26 Sample Multiplier: 10

Quant Time: Nov 14 11:40:08 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	7.460	136	770577	4000.00	ug/kg	88
5) Acenaphthene-d10	9.062	164	655620	4000.00	ug/kg	83
11) Phenanthrene-d10	10.465	188	1177307	4000.00	ug/kg	83
17) Chrysene-d12	13.366	240	1420366	4000.00	ug/kg	85
20) Perylene-d12	15.681	264	1490920	4000.00	ug/kg	85

System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.338	172	19865	93.28	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.33%#			
16) 4-Terphenyl-d14	11.847	244	22844	100.95	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.52%#			

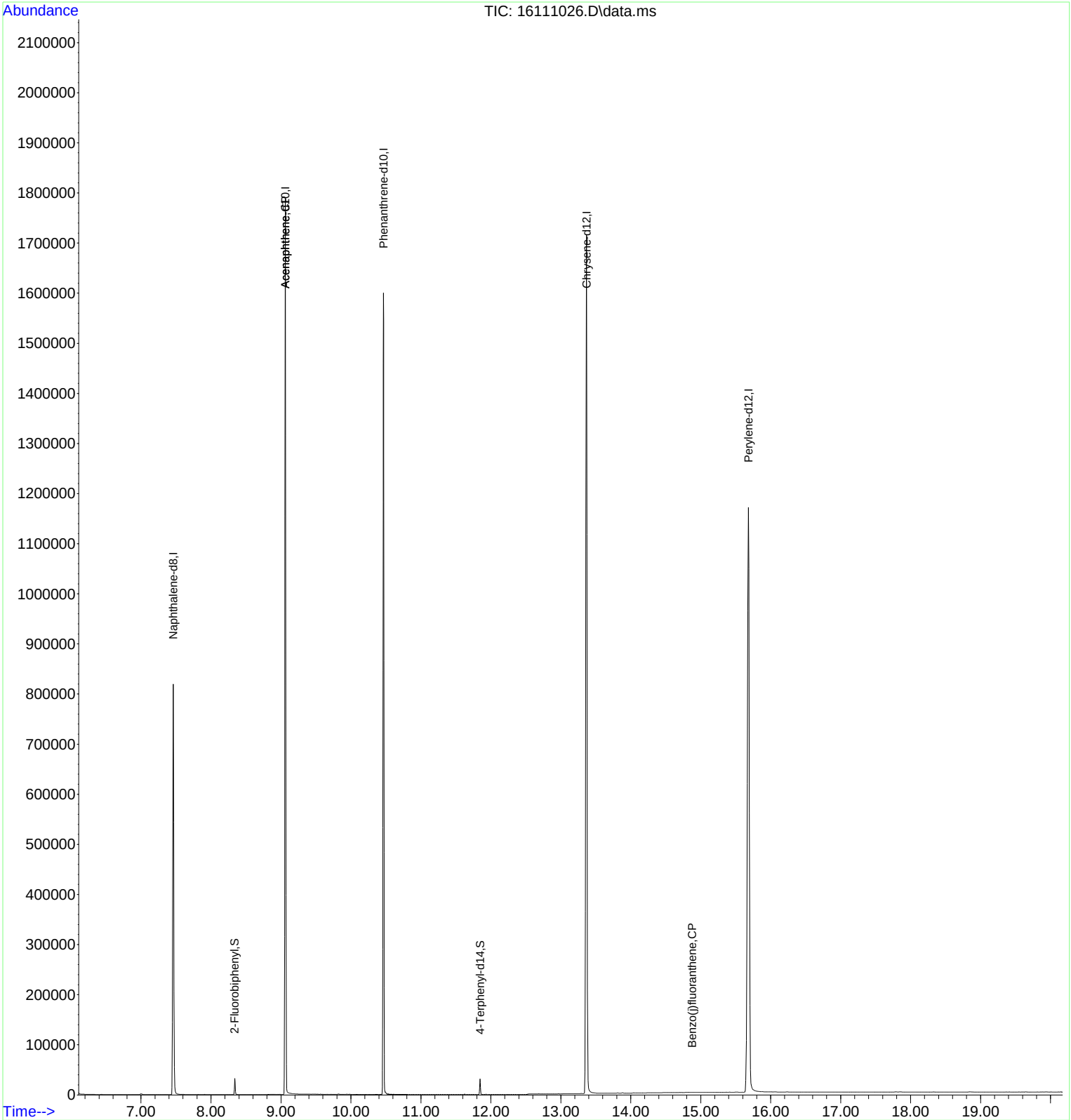
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2454	15.50	ug/kg#	11
23) Benzo(j)fluoranthene	14.883	252	113	0.34	ug/kg	80

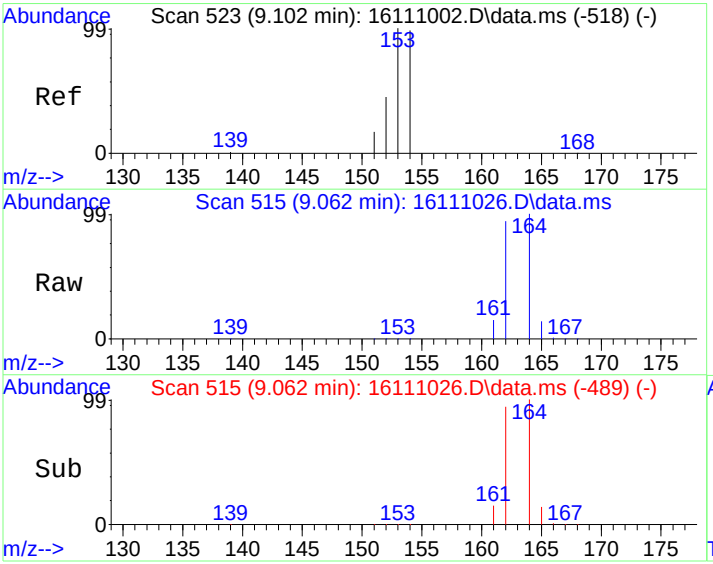
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111026.D
Acq On : 10 Nov 2016 9:50 pm
Operator :
Sample : 1611028-16A
Misc : SAMP
ALS Vial : 26 Sample Multiplier: 10

Quant Time: Nov 14 11:40:08 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

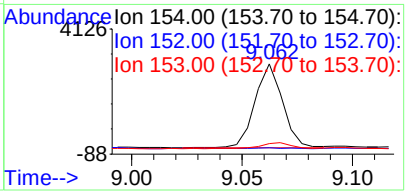


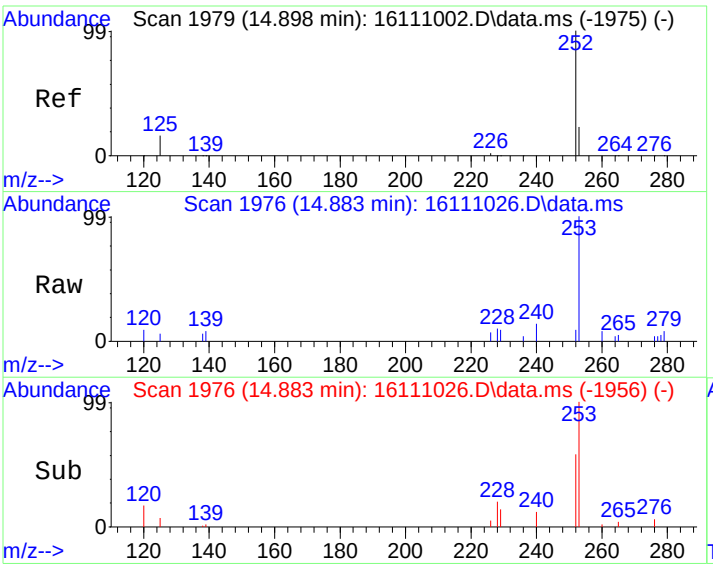


#9
Acenaphthene
Concen: 15.50 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111026.D
Acq: 10 Nov 2016 9:50 pm

Tgt Ion:154 Resp: 2454

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

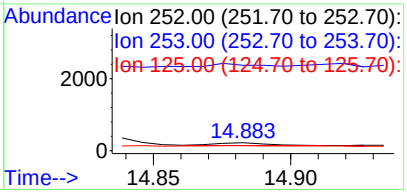




#23
Benzo(j)fluoranthene
Concen: 0.34 ug/kg
RT: 14.883 min Scan# 1976
Delta R.T. -0.015 min
Lab File: 16111026.D
Acq: 10 Nov 2016 9:50 pm

Tgt Ion:252 Resp: 113

Ion	Ratio	Lower	Upper
252	100		
253	39.2	2.7	42.7
125	16.5	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111027.D
Acq On : 10 Nov 2016 10:19 pm
Operator :
Sample : 1611028-17A
Misc : SAMP
ALS Vial : 27 Sample Multiplier: 10

Quant Time: Nov 14 11:40:12 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	700319	4000.00	ug/kg	80
5) Acenaphthene-d10	9.062	164	632236	4000.00	ug/kg	80
11) Phenanthrene-d10	10.465	188	1134926	4000.00	ug/kg	80
17) Chrysene-d12	13.367	240	1363252	4000.00	ug/kg	82
20) Perylene-d12	15.682	264	1438970	4000.00	ug/kg	82

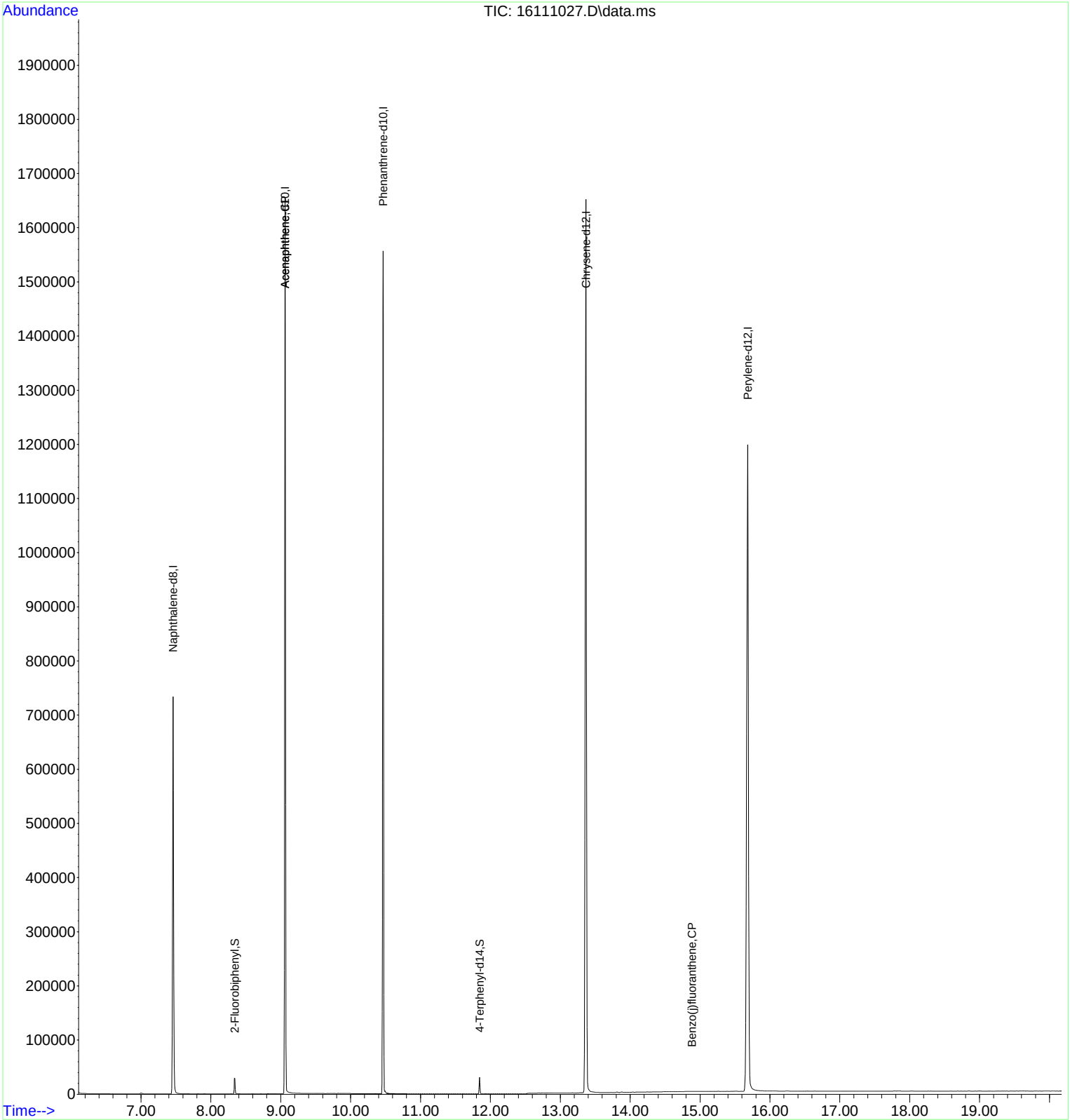
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.343	172	19650	95.69	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.39%#			
16) 4-Terphenyl-d14	11.844	244	22514	103.20	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.58%#			

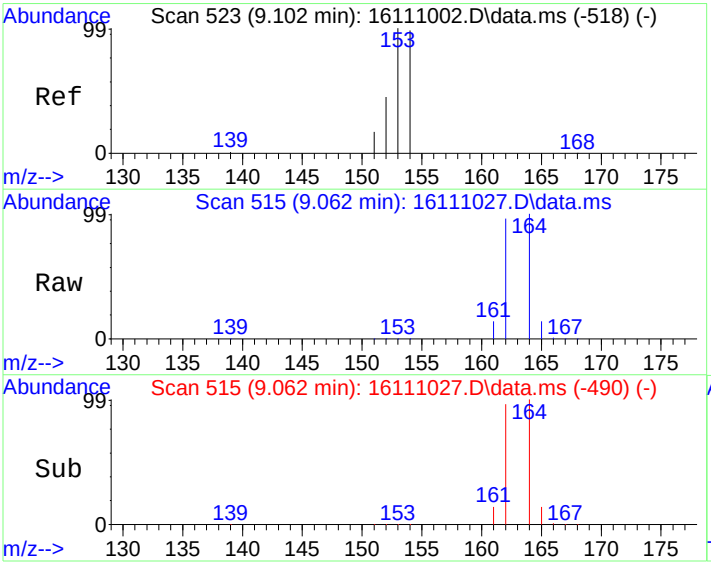
Target Compounds						Qvalue
9) Acenaphthene	9.062	154	2403	15.74	ug/kg#	11
23) Benzo(j)fluoranthene	14.883	252	33	0.10	ug/kg#	1

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

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111027.D
Acq On : 10 Nov 2016 10:19 pm
Operator :
Sample : 1611028-17A
Misc : SAMP
ALS Vial : 27 Sample Multiplier: 10

Quant Time: Nov 14 11:40:12 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

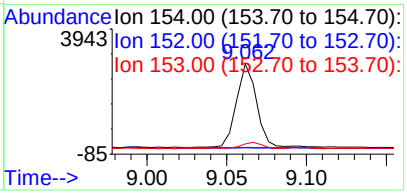


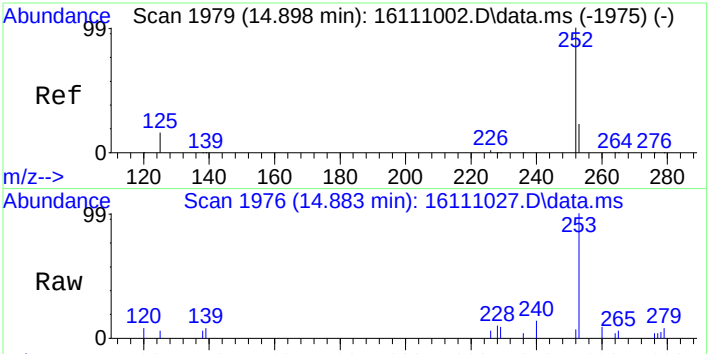


#9
Acenaphthene
Concen: 15.74 ug/kg
RT: 9.062 min Scan# 515
Delta R.T. -0.039 min
Lab File: 16111027.D
Acq: 10 Nov 2016 10:19 pm

Tgt Ion:154 Resp: 2403

Ion	Ratio	Lower	Upper
154	100		
152	1.1	20.7	80.7#
153	5.3	76.8	136.8#

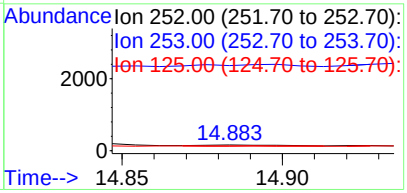




#23
Benzo(j)fluoranthene
Concen: 0.10 ug/kg
RT: 14.883 min Scan# 1976
Delta R.T. -0.015 min
Lab File: 16111027.D
Acq: 10 Nov 2016 10:19 pm

Tgt Ion:252 Resp: 33

Ion	Ratio	Lower	Upper
252	100		
253	119.0	2.7	42.7#
125	23.8	0.0	36.4



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111028.D
Acq On : 10 Nov 2016 10:48 pm
Operator :
Sample : 1611028-10AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 11:37:47 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

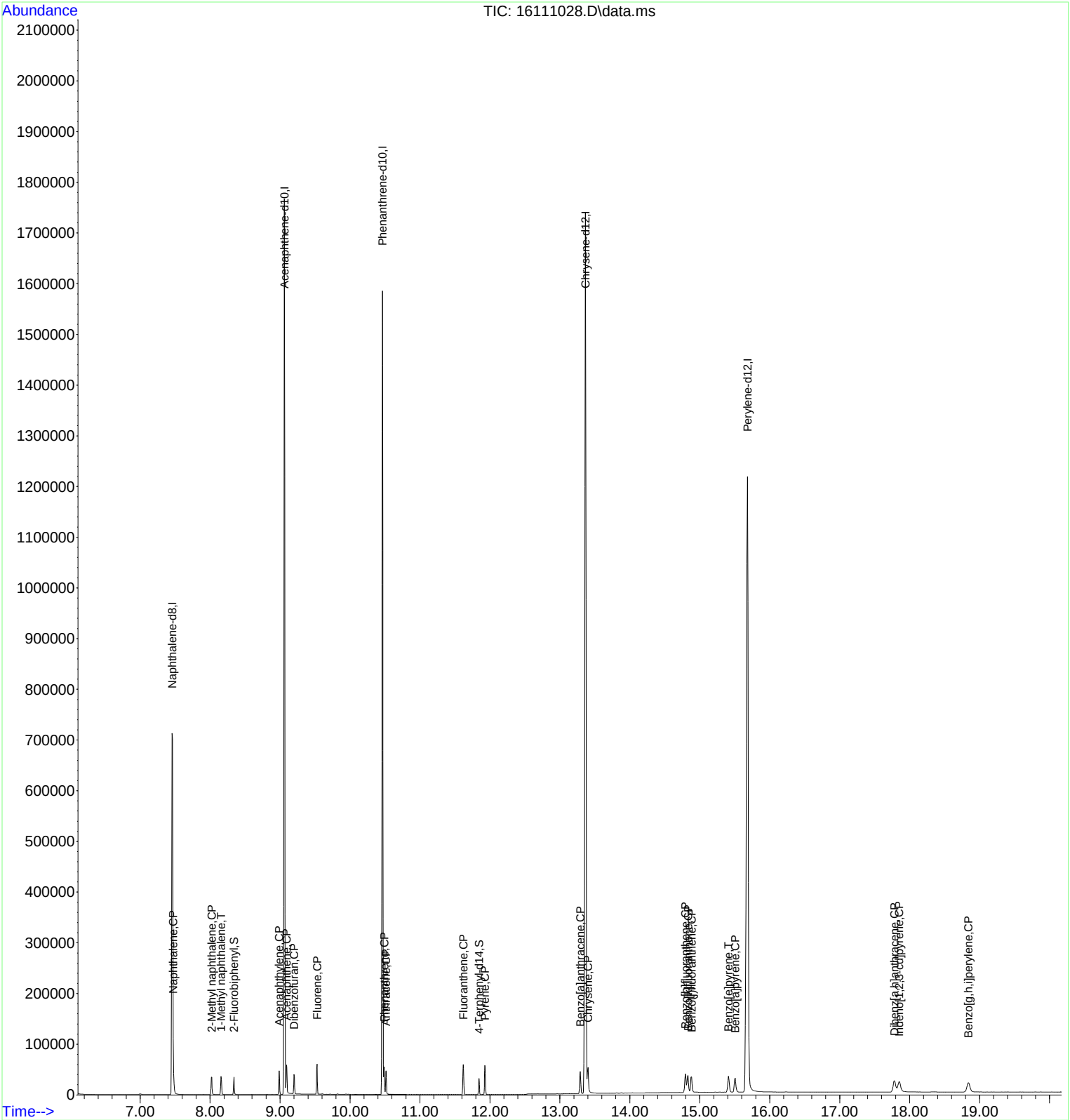
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.462	136	738706	4000.00	ug/kg	84
5) Acenaphthene-d10	9.062	164	651729	4000.00	ug/kg	82
11) Phenanthrene-d10	10.465	188	1164289	4000.00	ug/kg	82
17) Chrysene-d12	13.366	240	1404661	4000.00	ug/kg	84
20) Perylene-d12	15.681	264	1487069	4000.00	ug/kg	84
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.341	172	19802	93.54	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.34%#			
16) 4-Terphenyl-d14	11.844	244	22237	99.36	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.48%#			
Target Compounds						Qvalue
2) Naphthalene	7.480	128	13670	95.29	ug/kg	99
3) 2-Methyl naphthalene	8.023	142	16083	101.31	ug/kg	98
4) 1-Methyl naphthalene	8.156	142	14726	102.74	ug/kg	89
6) Dibenzofuran	9.205	168	24595	103.83	ug/kg	98
8) Acenaphthylene	8.989	152	27089	99.70	ug/kg	98
9) Acenaphthene	9.092	154	16199	102.91	ug/kg	96
10) Fluorene	9.529	166	20593	104.45	ug/kg	99
12) Phenanthrene	10.488	178	28482	104.13	ug/kg	98
13) Anthracene	10.515	178	27344	98.20	ug/kg	98
14) Fluoranthene	11.619	202	33862	104.71	ug/kg	98
15) Pyrene	11.928	202	34411	103.64	ug/kg	98
18) Benzo[a]anthracene	13.293	228	34115	103.14	ug/kg	99
19) Chrysene	13.403	228	32280	107.64	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	36855	99.33	ug/kg	99
22) Benzo[k]fluoranthene	14.831	252	36592	109.11	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	34047	103.21	ug/kg	96
24) Benzo[e]pyrene	15.410	252	35434	106.55	ug/kg	96
25) Benzo[a]pyrene	15.505	252	33864	99.66	ug/kg	98
26) Dibenz[a,h]anthracene	17.783	278	34673	99.23	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.857	276	35319	103.64	ug/kg	97
28) Benzo[g,h,i]perylene	18.845	276	36999	102.51	ug/kg	96

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111028.D
Acq On : 10 Nov 2016 10:48 pm
Operator :
Sample : 1611028-10AMS
Misc : MS
ALS Vial : 28 Sample Multiplier: 10

Quant Time: Nov 14 11:37:47 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\161110\
Data File : 16111029.D
Acq On : 10 Nov 2016 11:16 pm
Operator :
Sample : 1611028-10AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 11:37:50 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

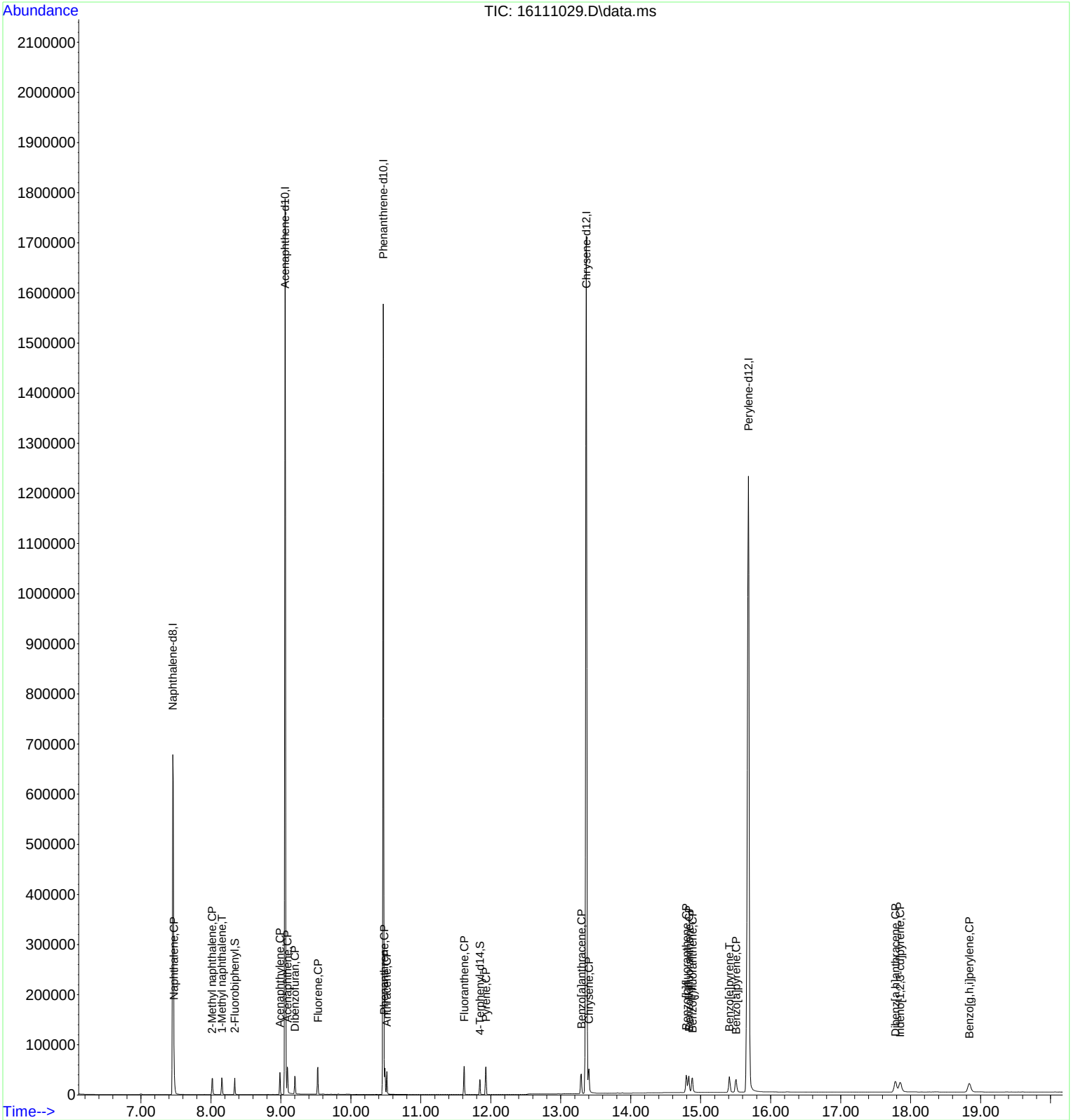
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.456	136	682314	4000.00	ug/kg	78
5) Acenaphthene-d10	9.062	164	646737	4000.00	ug/kg	82
11) Phenanthrene-d10	10.465	188	1152487	4000.00	ug/kg	82
17) Chrysene-d12	13.366	240	1397848	4000.00	ug/kg	84
20) Perylene-d12	15.681	264	1488432	4000.00	ug/kg	84
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.340	172	18996	90.43	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.26%#			
16) 4-Terphenyl-d14	11.846	244	21778	98.31	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 2.46%#			
Target Compounds						Qvalue
2) Naphthalene	7.479	128	12022	90.73	ug/kg	99
3) 2-Methyl naphthalene	8.022	142	15310	104.41	ug/kg	98
4) 1-Methyl naphthalene	8.155	142	13931	105.23	ug/kg	88
6) Dibenzofuran	9.204	168	23595	100.38	ug/kg	97
8) Acenaphthylene	8.988	152	25919	96.13	ug/kg	98
9) Acenaphthene	9.096	154	15400	98.59	ug/kg	96
10) Fluorene	9.529	166	19639	100.38	ug/kg	99
12) Phenanthrene	10.486	178	26980	99.65	ug/kg	98
13) Anthracene	10.515	178	25886	93.91	ug/kg	98
14) Fluoranthene	11.618	202	32492	101.51	ug/kg	97
15) Pyrene	11.930	202	33109	100.74	ug/kg	98
18) Benzo[a]anthracene	13.293	228	32739	99.46	ug/kg	98
19) Chrysene	13.403	228	30994	103.86	ug/kg	98
21) Benzo[b]fluoranthene	14.795	252	34565	93.08	ug/kg	98
22) Benzo[k]fluoranthene	14.831	252	34808	103.70	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	32329	97.91	ug/kg	96
24) Benzo[e]pyrene	15.410	252	33537	100.75	ug/kg	96
25) Benzo[a]pyrene	15.505	252	32288	94.94	ug/kg	99
26) Dibenz[a,h]anthracene	17.783	278	33363	95.39	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.849	276	33850	99.23	ug/kg	99
28) Benzo[g,h,i]perylene	18.838	276	35395	97.98	ug/kg	98

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111029.D
Acq On : 10 Nov 2016 11:16 pm
Operator :
Sample : 1611028-10AMSD
Misc : MSD
ALS Vial : 29 Sample Multiplier: 10

Quant Time: Nov 14 11:37:50 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 (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111030.D
Acq On : 10 Nov 2016 11:45 pm
Operator :
Sample : CCV1-161110
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 11:37:53 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

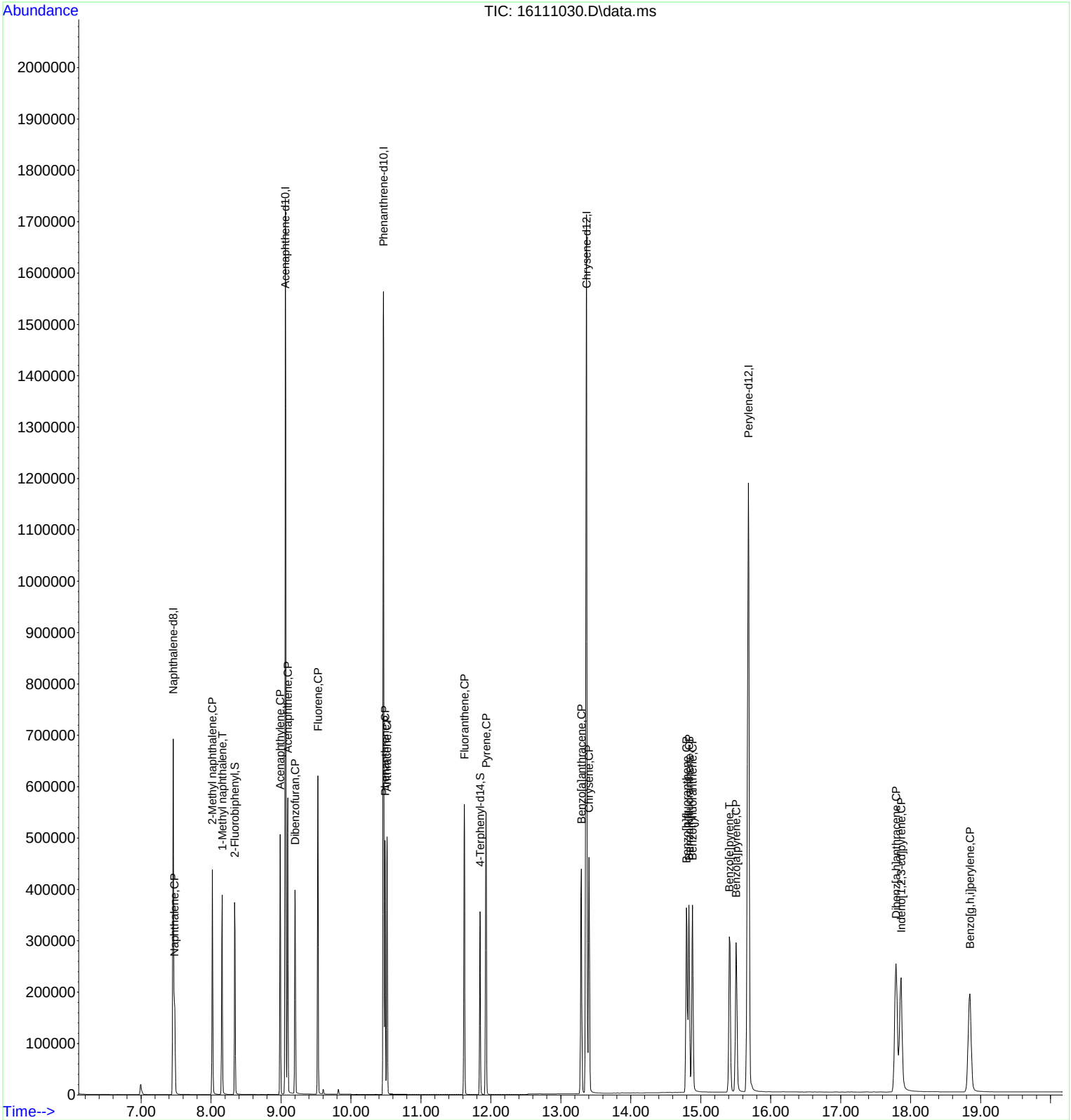
Internal Standards	R.T.	QIon	Response	Conc	Units	%Rec
1) Naphthalene-d8	7.459	136	625093	4000.00	ug/kg	71
5) Acenaphthene-d10	9.062	164	637997	4000.00	ug/kg	81
11) Phenanthrene-d10	10.465	188	1156026	4000.00	ug/kg	82
17) Chrysene-d12	13.367	240	1389892	4000.00	ug/kg	83
20) Perylene-d12	15.681	264	1469645	4000.00	ug/kg	83
System Monitoring Compounds						Dev(Min)
7) 2-Fluorobiphenyl	8.337	172	230491	1112.27	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 27.81%#			
16) 4-Terphenyl-d14	11.844	244	251058	1129.83	ug/kg	0.00
Spiked Amount 4000.000	Range 40 - 140		Recovery = 28.25%#			
Target Compounds						Qvalue
2) Naphthalene	7.482	128	128925	1062.04	ug/kg	99
3) 2-Methyl naphthalene	8.020	142	171422	1276.07	ug/kg	98
4) 1-Methyl naphthalene	8.158	142	153271	1263.75	ug/kg	99
6) Dibenzofuran	9.204	168	257600	1110.92	ug/kg	98
8) Acenaphthylene	8.988	152	292903	1101.17	ug/kg	99
9) Acenaphthene	9.096	154	169863	1102.38	ug/kg	96
10) Fluorene	9.529	166	212312	1100.07	ug/kg	98
12) Phenanthrene	10.488	178	284674	1048.21	ug/kg	99
13) Anthracene	10.516	178	290324	1050.08	ug/kg	99
14) Fluoranthene	11.620	202	330727	1030.04	ug/kg	99
15) Pyrene	11.931	202	337280	1023.13	ug/kg	99
18) Benzo[a]anthracene	13.293	228	353431	1079.85	ug/kg	99
19) Chrysene	13.403	228	329232	1109.53	ug/kg	99
21) Benzo[b]fluoranthene	14.795	252	405062	1104.70	ug/kg	98
22) Benzo[k]fluoranthene	14.832	252	331731	1000.91	ug/kg	98
23) Benzo(j)fluoranthene	14.883	252	361538	1108.98	ug/kg	98
24) Benzo[e]pyrene	15.410	252	351715	1070.12	ug/kg	99
25) Benzo[a]pyrene	15.506	252	349285	1040.14	ug/kg	98
26) Dibenz[a,h]anthracene	17.791	278	366350	1060.86	ug/kg	99
27) Indeno[1,2,3-cd]pyrene	17.864	276	352285	1045.95	ug/kg	98
28) Benzo[g,h,i]perylene	18.846	276	376022	1054.16	ug/kg	98

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\161110\
Data File : 16111030.D
Acq On : 10 Nov 2016 11:45 pm
Operator :
Sample : CCV1-161110
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 14 11:37:53 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



GCMS8_161111A
For

DHL Work Order
1611028

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			
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			
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		
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		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			
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			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