received 12/29/2015
CWW Sand Creek MW
Investigation

GC/MS Semivolatiles

SIMPAH

Case Narrative

COGCC

MW

Work Order Number: 1512229

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 12/14/15.

2. The sample was prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the water sample was extracted using continuous liquid-liquid extractors, according to SW-846 Method 3520C, utilizing the current revision of SOP 617.

3. The extract was analyzed using GC/MS with a DB-5MS capillary column according to the current revision of SOP 506 based on SW-846 Method 8270D. The samples were analyzed using selective ion monitoring (SIM), in order to achieve lower reporting limits. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and a limited number of major ions from the mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria were met. If average response factors were used in the initial calibration, %RSD was ≤20%. If linear or higher order regression calibrations were used in the initial calibration, the coefficient of determination (r^2) ≥0.99.

5. All initial calibration standards are verified by comparing a second source standard initial calibration verification (ICV) against the calibration curve. All target compounds in the second source verification had a %D ≤30%.

6. All compounds in the daily (continuing) calibration verifications were within 20%D.

7. All method blank criteria were met.

8. A laboratory control spike and laboratory control spike duplicate were not reported with this data package. See SW8270 report for LCS/LCSD results.

9. A matrix spike and matrix spike duplicate were not performed because of insufficient sample. A laboratory control sample and laboratory control sample duplicate were performed instead.

10. The sample was extracted and analyzed within the established holding times.

11. Surrogate recoveries were not calculated for the sample in this data package. See SW8270 report for surrogate recoveries.

12. All internal standard recoveries were within acceptance criteria.

13. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Emily Lyons — 12/29/15
Organics Primary Data Reviewer — Date

12/29/15
Organics Final Data Reviewer — Date

ALS
Data Qualifier Flags
Organics

U or ND:	**This flag indicates that the compound was analyzed for but not detected.**
J:	**This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.**
B:	**This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.**
E:	**This flag identifies compounds whose concentration exceeds the upper level of the calibration range.**
A:	**This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.**
X:	**This flag indicates that the analyte was diluted below an accurate quantitation level.**
***:**	**This flag indicates that a spike recovery is equal to or outside the control criteria used.**
+:	**This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.**

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1512229
Client Name: COGCC
Client Project Name: MW
Client Project Number:
Client PO Number: CT 2016-141

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
754506 + 70	1512229-1		WATER	11-Dec-15	11:55

ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody 4.0°C

Form 202r8

PROJECT NAME	MW	SAMPLER	PAG	DATE	14 Dec 15
PROJECT No.		SITE ID		TURNAROUND	14
		EDD FORMAT			
COMPANY NAME	Colorado Analytical Lab	PURCHASE ORDER	CT 2016-141		
SEND REPORT TO	Peter Gintautas	BILL TO COMPANY			
ADDRESS	1120 Lincoln St #801	INVOICE ATTN TO			
CITY / STATE / ZIP	Denver CO 80203	ADDRESS			
PHONE	719-679-1326	CITY / STATE / ZIP			
FAX		PHONE			
E-MAIL	petergintautas@stateco.us	FAX			
		E-MAIL			

WORKORDER # 1512229

PAGE 1 of 1

DISPOSAL (By Lab) or Return to Client

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	8270 + SIM PAH
1	754506 +70	W	11 Dec 15	11:55				X

*Time Zone (Circle): EST CST (MST) PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)	
5 of 17	X	LEVEL II (Standard QC)
		LEVEL III (Std QC + forms)
		LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Peter Gintautas	14 Dec 15	10:55
RECEIVED BY		Rebecca Mosic	12/14/15	10:55
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC Workorder No: 1512229

Project Manager: ARW Initials: ECP Date: 12/14

1. Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2. Are custody seals on shipping containers intact?	(NONE)	YES	NO
3. Are Custody seals on sample containers intact?	(NONE)	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5. Are the COC and bottle labels complete and legible?		(YES)	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7. Were airbills / shipping documents present and/or removable?	(DROP OFF)	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	(YES)	NO
10. Is there sufficient sample for the requested analyses?		(YES)	NO
11. Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12. Are all samples within holding times for the requested analyses?		(YES)	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)	YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	(NO)
16. Were the samples shipped on ice?		(YES)	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: (#2) #4	RAD ONLY	(YES)	NO

Cooler #:	1							
Temperature (°C):	4.0°							
No. of custody seals on cooler:	0							
DOT Survey/ Acceptance Information — External µR/hr reading:	NA							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? **YES / NO / (NA)** (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? **YES / NO / (NA)** Contact: _____ Date/Time: _____

Project Manager Signature / Date: 12-14-15

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

GC/MS Semi-volatiles

Method SW8270SIMD

Method Blank

Lab Name: ALS Environmental -- FC
Work Order Number: 1512229
Client Name: COGCC
ClientProject ID: MW

Lab ID: EX151216-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 16-Dec-15
Date Analyzed: 23-Dec-15

Prep Batch: EX151216-1
QCBatchID: EX151216-1-2
Run ID: SV151223-4
Cleanup: NONE
Basis: N/A
File Name: S03667

Sample Aliquot: 1000 ml
Final Volume: 1 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
91-20-3	NAPHTHALENE	1	0.1	0.1	0.1	U	
91-57-6	2-METHYLNAPHTHALENE	1	0.1	0.1	0.1	U	
90-12-0	1-METHYLNAPHTHALENE	1	0.1	0.1	0.1	U	
208-96-8	ACENAPHTHYLENE	1	0.1	0.1	0.1	U	
83-32-9	ACENAPHTHENE	1	0.1	0.1	0.1	U	
86-73-7	FLUORENE	1	0.1	0.1	0.1	U	
85-01-8	PHENANTHRENE	1	0.1	0.1	0.1	U	
120-12-7	ANTHRACENE	1	0.1	0.1	0.1	U	
206-44-0	FLUORANTHENE	1	0.1	0.1	0.1	U	
129-00-0	PYRENE	1	0.1	0.1	0.1	U	
56-55-3	BENZO(A)ANTHRACENE	1	0.1	0.1	0.1	U	
218-01-9	CHRYSENE	1	0.1	0.1	0.1	U	
205-99-2	BENZO(B)FLUORANTHENE	1	0.1	0.1	0.1	U	
207-08-9	BENZO(K)FLUORANTHENE	1	0.1	0.1	0.1	U	
50-32-8	BENZO(A)PYRENE	1	0.1	0.1	0.1	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	0.1	0.1	0.1	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	0.1	0.1	0.1	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	0.1	0.1	0.1	U	

Data Package ID: *SV1512229-2*

GC/MS Semi-volatiles

Method SW8270SIM

Tentatively Identified Compounds

Lab Name: ALS Environmental -- FC
Work Order Number: 1512229
Client Name: COGCC
ClientProject ID: MW

Field ID:
Lab ID: EX151216-1MB

Sample Matrix: WATER
% Moisture: N/A
Date Collected: N/A
Date Extracted: 16-Dec-15
Date Analyzed: 23-Dec-15

Prep Batch: EX151216-1
QCBatchID: EX151216-1-2
Run ID: SV151223-4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 1000 ml
Final Volume: 1 ml
Clean DF: 1
File Name: S03667

CASNO	Retention Time	Target Analyte	Dilution Factor	Result	Units	Qualifier
		NONE DETECTED	1			U

Data Package ID: *SV1512229-2*

GC/MS Semi-volatiles

Method SW8270SIMD

Sample Results

Lab Name: ALS Environmental -- FC
Work Order Number: 1512229
Client Name: COGCC
ClientProject ID: MW

Field ID: 754506 + 70
Lab ID: 1512229-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 11-Dec-15
Date Extracted: 16-Dec-15
Date Analyzed: 23-Dec-15
Prep Method: SW3520 Rev C

Prep Batch: EX151216-1
QCBatchID: EX151216-1-2
Run ID: SV151223-4
Cleanup: NONE
Basis: As Received
File Name: S03668

Analyst: Tyler Knaebel
Sample Aliquot: 915 ml
Final Volume: 1 ml
Result Units: UG/L
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
91-20-3	NAPHTHALENE	1	0.11	0.11	0.11	U	
91-57-6	2-METHYLNAPHTHALENE	1	0.11	0.11	0.11	U	
90-12-0	1-METHYLNAPHTHALENE	1	0.11	0.11	0.11	U	
208-96-8	ACENAPHTHYLENE	1	0.11	0.11	0.11	U	
83-32-9	ACENAPHTHENE	1	0.11	0.11	0.11	U	
86-73-7	FLUORENE	1	0.11	0.11	0.11	U	
85-01-8	PHENANTHRENE	1	0.11	0.11	0.11	U	
120-12-7	ANTHRACENE	1	0.11	0.11	0.11	U	
206-44-0	FLUORANTHENE	1	0.11	0.11	0.11	U	
129-00-0	PYRENE	1	0.11	0.11	0.11	U	
56-55-3	BENZO(A)ANTHRACENE	1	0.11	0.11	0.11	U	
218-01-9	CHRYSENE	1	0.11	0.11	0.11	U	
205-99-2	BENZO(B)FLUORANTHENE	1	0.11	0.11	0.11	U	
207-08-9	BENZO(K)FLUORANTHENE	1	0.11	0.11	0.11	U	
50-32-8	BENZO(A)PYRENE	1	0.11	0.11	0.11	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	0.11	0.11	0.11	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	0.11	0.11	0.11	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	0.11	0.11	0.11	U	

Data Package ID: *SV1512229-2*

GC/MS Semi-volatiles

Method SW8270SIM

Tentatively Identified Compounds

Lab Name: ALS Environmental -- FC
Work Order Number: 1512229
Client Name: COGCC
ClientProject ID: MW

Field ID: 754506 + 70
Lab ID: 1512229-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 11-Dec-15
Date Extracted: 16-Dec-15
Date Analyzed: 23-Dec-15

Prep Batch: EX151216-1
QCBatchID: EX151216-1-2
Run ID: SV151223-4
Cleanup: NONE
Basis: As Received

Sample Aliquot: 915 ml
Final Volume: 1 ml
Clean DF: 1
File Name: S03668

CASNO	Retention Time	Target Analyte	Dilution Factor	Result	Units	Qualifier
		NONE DETECTED	1			U

Data Package ID: *SV1512229-2*

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\122315\
Data File : S03666.D
Acq On : 23 Dec 2015 11:14
Operator : TK HPSV4 sn #: CV11451177
Sample : SV151223-4CCV
Misc : ST150924-12
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 23 11:59:40 2015
Quant Method : C:\msdchem\1\methods\102315S.M
Quant Title :
QLast Update : Wed Dec 23 11:56:34 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	4.742	136	452701	4000.00	ng/ml	# 0.00
6) Acenaphthene-d10	6.275	164	234589	4000.00	ng/ml	# 0.00
11) Phenanthrene-d10	7.564	188	438426	4000.00	ng/ml	# 0.00
15) Chrysene-d12	9.848	240	417919	4000.00	ng/ml	# 0.00
20) Perylene-d12	11.335	264	368303	4000.00	ng/ml	# 0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	4.093	82	100511	2433.72	ng/ml	0.00
Spiked Amount 2000.000	Range 34 - 111		Recovery = 121.69%#			
7) 2-Fluorobiphenyl	5.658	172	212567	2184.57	ng/ml	0.00
Spiked Amount 2000.000	Range 21 - 106		Recovery = 109.23%#			
17) p-Terphenyl-d14	8.890	244	180025	1943.31	ng/ml	0.00
Spiked Amount 2000.000	Range 33 - 111		Recovery = 97.17%			
Target Compounds						Qvalue
3) Naphthalene	4.761	128	276857	2119.47	ng/ml	100
4) 2-Methylnaphthalene	5.357	142	181525	2202.64	ng/ml	100
5) 1-Methylnaphthalene	5.445	142	163757	2081.97	ng/ml	100
8) Acenaphthylene	6.156	152	251908	2221.22	ng/ml#	100
9) Acenaphthene	6.306	154	164331	2103.67	ng/ml	100
10) Fluorene	6.747	166	198802	2153.02	ng/ml	100
12) Phenanthrene	7.584	178	300366	2102.59	ng/ml	100
13) Anthracene	7.624	178	266118	2090.55	ng/ml	100
14) Fluoranthene	8.613	202	300825	2102.22	ng/ml#	100
16) Pyrene	8.817	202	302848	2130.07	ng/ml#	100
18) Benzo[a]anthracene	9.837	228	252453	2172.38	ng/ml	100
19) Chrysene	9.871	228	278569	2009.79	ng/ml	100
21) Benzo[b]fluoranthene	10.885	252	246664	2090.72	ng/ml	100
22) Benzo[k]fluoranthene	10.912	252	261395	2043.69	ng/ml	100
23) Benzo[a]pyrene	11.270	252	241119	2135.96	ng/ml	100
24) Indeno(1,2,3-c,d)pyrene	12.821	276	254203	2031.85	ng/ml	100
25) Dibenzo[a,h]anthracene	12.809	278	209842	2018.56	ng/ml	100
26) Benzo[g,h,i]perylene	13.279	276	221404	2073.16	ng/ml	100

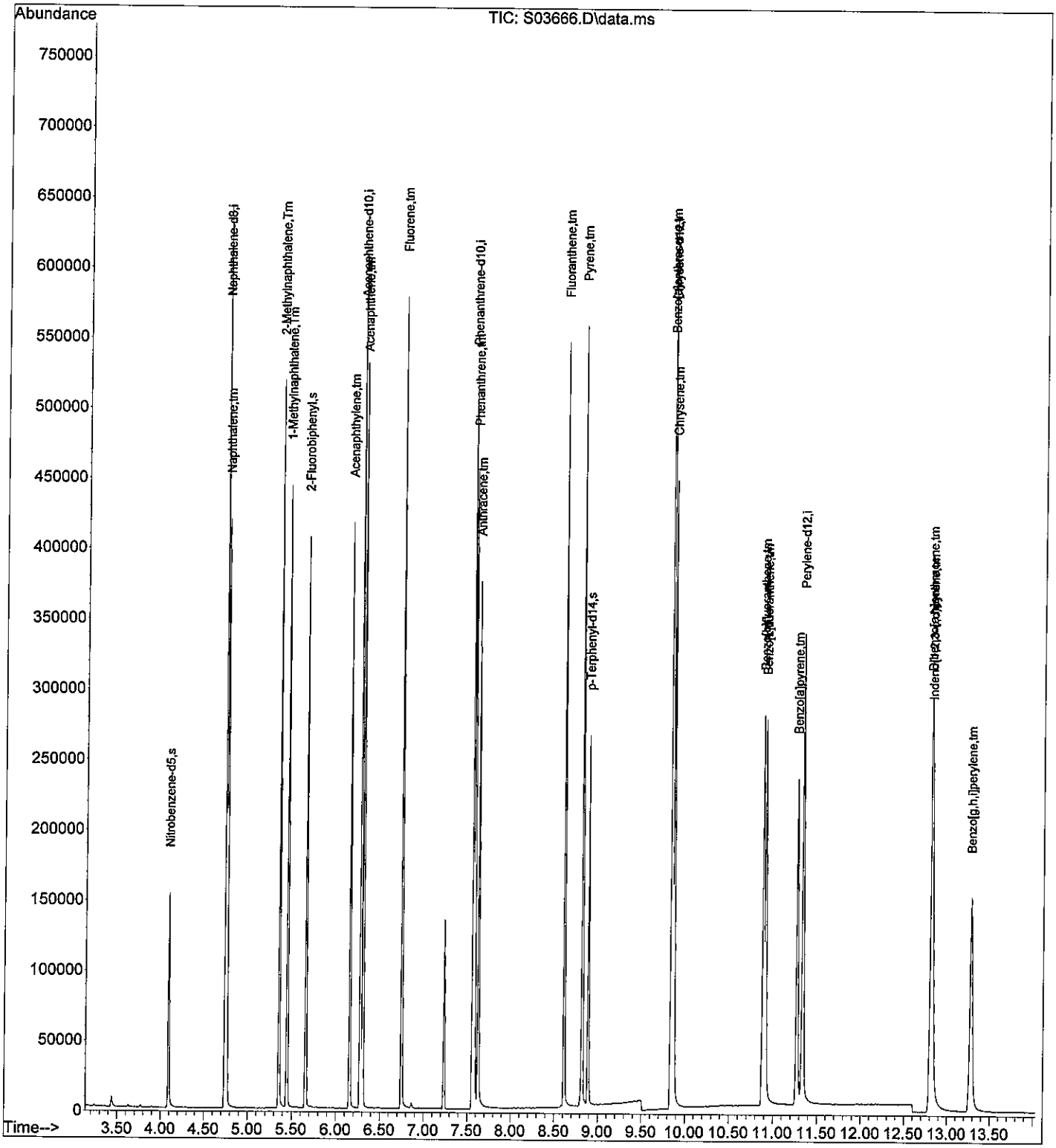
(#) = qualifier out of range (m) = manual integration (+) = signals summed

12/23/15

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\122315\
Data File : S03666.D
Acq On : 23 Dec 2015 11:14
Operator : TK HPSV4 sn #: CV11451177
Sample : SV151223-4CCV
Misc : ST150924-12
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 23 11:59:40 2015
Quant Method : C:\msdchem\1\methods\102315S.M
Quant Title :
QLast Update : Wed Dec 23 11:56:34 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\data\122315\
Data File : S03667.D
Acq On : 23 Dec 2015 11:34
Operator : TK HPSV4 sn #: CV11451177
Sample : EX151216-1MB
Misc : EX151216-1 WATER
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 23 12:00:42 2015
Quant Method : C:\msdchem\1\methods\102315S.M
Quant Title :
QLast Update : Wed Dec 23 12:00:30 2015
Response via : Initial Calibration

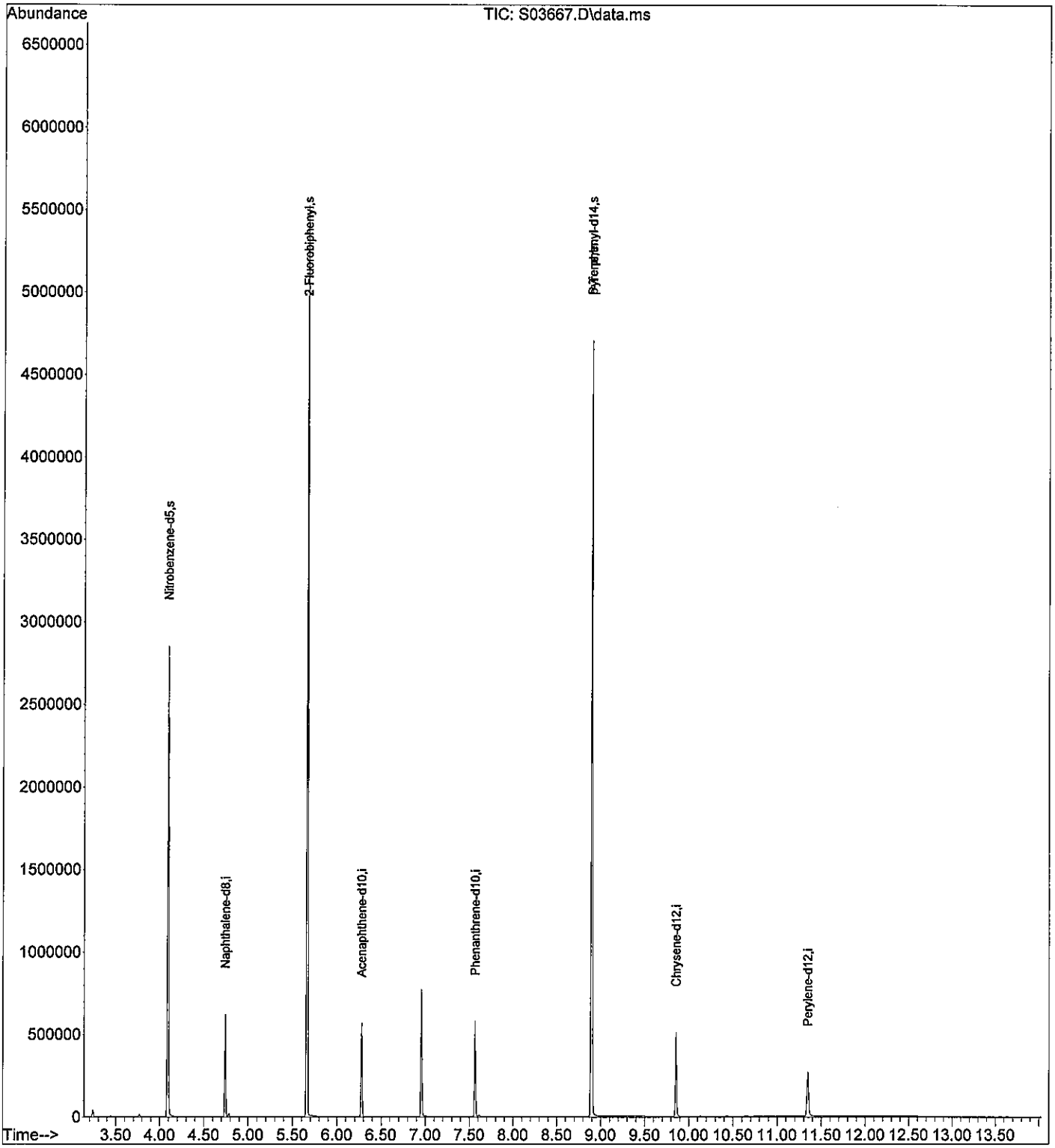
Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Naphthalene-d8	4.742	136	439982	4000.00 ng/ml	# 0.00
6) Acenaphthene-d10	6.280	164	229883	4000.00 ng/ml	# 0.00
11) Phenanthrene-d10	7.564	188	418529	4000.00 ng/ml	# 0.00
15) Chrysene-d12	9.856	240	375763	4000.00 ng/ml	# 0.00
20) Perylene-d12	11.346	264	294594	4000.00 ng/ml	# 0.01
System Monitoring Compounds				Full Scan concentration	
2) Nitrobenzene-d5	4.091	82	1688395	42063.73 ng/ml	0.00
Spiked Amount 2000.000	Range 34 - 111		Recovery	= 2103.19%#	
7) 2-Fluorobiphenyl	5.658	172	3047956	31965.34 ng/ml	0.00
Spiked Amount 2000.000	Range 21 - 106		Recovery	= 1598.27%#	
17) p-Terphenyl-d14	8.896	244	3228400	38759.12 ng/ml	0.00
Spiked Amount 2000.000	Range 33 - 111		Recovery	= 1937.96%#	
Target Compounds					Qvalue
16) Pyrene	8.896	202	13010	101.77 ng/ml#	64 NO

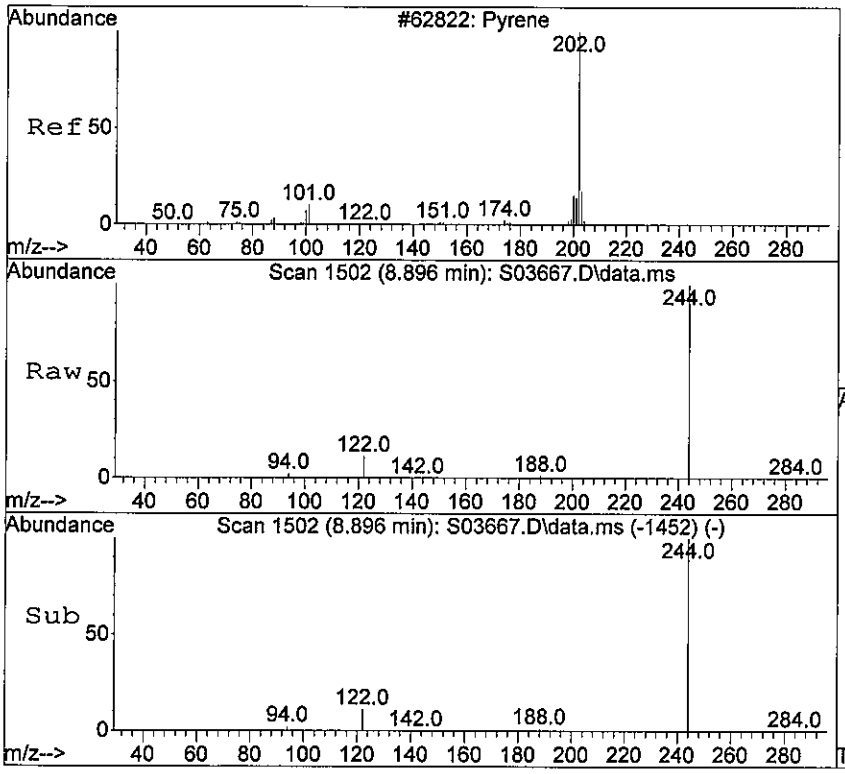
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Tm 12/23/15

Data Path : C:\msdchem\1\data\122315\
Data File : S03667.D
Acq On : 23 Dec 2015 11:34
Operator : TK HPSV4 sn #: CV11451177
Sample : EX151216-1MB
Misc : EX151216-1 WATER
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 23 12:00:42 2015
Quant Method : C:\msdchem\1\methods\102315S.M
Quant Title :
QLast Update : Wed Dec 23 12:00:30 2015
Response via : Initial Calibration



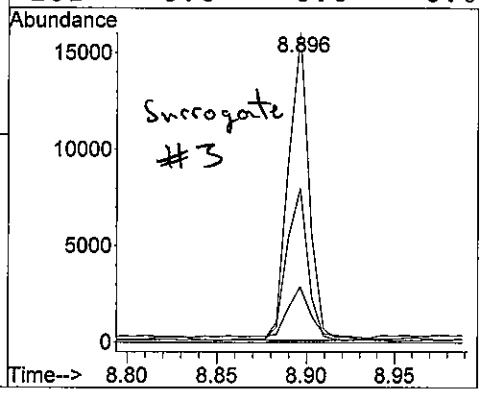


#16
Pyrene
Concen: 101.77 ng/ml
RT: 8.896 min Scan# 1502
Delta R.T. 0.079 min
Lab File: S03667.D
Acq: 23 Dec 2015 11:34

NO

Tgt Ion:202 Resp: 13010

Ion	Ratio	Lower	Upper
202	100		
200	50.3	16.1	24.1#
203	18.3	14.2	21.2
101	0.0	0.0	0.0



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\data\122315\
Data File : S03668.D
Acq On : 23 Dec 2015 11:52
Operator : TK HPSV4 sn #: CV11451177
Sample : 1512229-1
Misc : EX151216-1 WATER
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 23 12:08:55 2015
Quant Method : C:\msdchem\1\methods\102315S.M
Quant Title :
QLast Update : Wed Dec 23 12:00:30 2015
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Naphthalene-d8	4.742	136	412015	4000.00 ng/ml	# 0.00
6) Acenaphthene-d10	6.275	164	220507	4000.00 ng/ml	# 0.00
11) Phenanthrene-d10	7.558	188	395497	4000.00 ng/ml	# 0.00
15) Chrysene-d12	9.846	240	357809	4000.00 ng/ml	# 0.00
20) Perylene-d12	11.336	264	320694	4000.00 ng/ml	# 0.00
System Monitoring Compounds				Full Scan concentration	
2) Nitrobenzene-d5	4.091	82	1538144	40921.60 ng/ml	0.00
Spiked Amount 2000.000	Range 34 - 111		Recovery	= 2046.08%#	
7) 2-Fluorobiphenyl	5.658	172	2910970	31826.79 ng/ml	0.00
Spiked Amount 2000.000	Range 21 - 106		Recovery	= 1591.34%#	
17) p-Terphenyl-d14	8.890	244	2519886	31770.95 ng/ml	0.00
Spiked Amount 2000.000	Range 33 - 111		Recovery	= 1588.55%#	
Target Compounds					Qvalue

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

TM 12/23/15

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\data\122315\
Data File : S03668.D
Acq On : 23 Dec 2015 11:52
Operator : TK HPSV4 sn #: CV11451177
Sample : 1512229-1
Misc : EX151216-1 WATER
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 23 12:08:55 2015
Quant Method : C:\msdchem\1\methods\102315S.M
Quant Title :
QLast Update : Wed Dec 23 12:00:30 2015
Response via : Initial Calibration