Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: September 02, 2016

Project: Woodbine Phase III MEC RFI

Submittal Date: 07/01/2016
Group Number: 1678394
SDG: DWD93
PO Number: 10381-7-113967
Release Number: DWD93
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
TB-08 Water	8457188
DU-1-3-A Grab Soil	8457189
DU-1-3-A Grab Soil	8457190
DU-1-3-A Grab Soil	8457191
DU-1-3-A Grab Soil	8457192
DU-1-3-B Grab Soil	8457193
DU-1-3-B Grab Soil	8457194
DU-1-3-B Grab Soil	8457195
DU-1-3-B Grab Soil	8457196
DU-1-3-C Grab Soil	8457197
DU-1-3-C Grab Soil	8457198
DU-1-3-C Grab Soil	8457199
DU-1-3-C Grab Soil	8457200
DU-1-2-A Grab Soil	8457201
DU-1-2-A Grab Soil	8457202
DU-1-2-A Grab Soil	8457203
DU-1-2-A Grab Soil	8457204
DU-1-2-B Grab Soil	8457205
DU-1-2-B Grab Soil	8457206
DU-1-2-B Grab Soil	8457207
DU-1-2-B Grab Soil	8457208
DU-1-2-C Grab Soil	8457209
DU-1-2-C Grab Soil	8457210
DU-1-2-C Grab Soil	8457211
DU-1-2-C Grab Soil	8457212
DU-1-12-40mm-SS Grab Soil	8457213
DU-1-12-40mm-SSD Grab Soil	8457214
Metals Blank Grab Sand	8457215
Exp/Perchlorate Blank Grab Sand	8457216

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Sherrill
Electronic Copy To	CH2M Hill, Inc.	Attn: Chemistry Mailbox
Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Stinnett

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Sample Description: TB-08 Water
Woodbine Phase III MEC RFI

LL Sample # WW 8457188
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 08:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

TB08- SDG#: DWD93-01TB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/l		ug/l	ug/l	
11997	4-Methyl-2-pentanone	108-10-1	3	U	3	10	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	L161872AA	07/06/2016 02:20	Matthew S rause	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L161872AA	07/06/2016 02:20	Matthew S rause	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457189
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13A-1 SDG#: DWD93-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	180	U	180	900	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	900	U	900	2,700	1
10726	Quinoline	91-22-5	180	U	180	900	1
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0363	J	0.0099	0.0993	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	U	0.19	0.54	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	645		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.4	U	5.4	16.1	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.66		0.0100	0.0100	1
	The pH was measured in water at 21.4 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	7.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16194SLB026	07/13/2016 23:17	Anthony P Bauer	1
10813	BNA Soil Microwave APP I	SW-846 3546	1	16194SLB026	07/13/2016 09:00	ate E Lutte	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:47	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457189
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13A-1 SDG#: DWD93-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05895	Total Cyanide solid	SW-846 9012B	1	16195102201A	07/13/2016 16:02	Dein Bernot	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16195102201A	07/13/2016 08:30	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16194042501A	07/13/2016 21:15	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16194042501A	07/12/2016 20:00	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-3-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457190
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13A-2 SDG#: DWD93-03B G

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,100		8.89	41.0	1
06944	Antimony	7440-36-0	0.717	U	0.717	4.10	1
06935	Arsenic	7440-38-2	0.993	U	0.993	4.10	1
06946	Barium	7440-39-3	3.75		0.0338	1.02	1
06947	Beryllium	7440-41-7	0.0686	U	0.0686	1.02	1
06949	Cadmium	7440-43-9	0.0502	U	0.0502	1.02	1
01650	Calcium	7440-70-2	211		5.80	41.0	1
06951	Chromium	7440-47-3	1.89	J	0.143	3.07	1
06952	Cobalt	7440-48-4	0.123	U	0.123	1.02	1
06953	Copper	7440-50-8	0.793	J	0.236	2.05	1
01654	Iron	7439-89-6	536		4.22	41.0	1
06955	Lead	7439-92-1	7.40		0.563	3.07	1
01657	Magnesium	7439-95-4	82.2		1.95	20.5	1
06958	Manganese	7439-96-5	15.9		0.0850	1.02	1
06961	Nickel	7440-02-0	0.418	J	0.307	2.05	1
01662	Potassium	7440-09-7	35.4	J	24.5	102	1
06936	Selenium	7782-49-2	0.922	U	0.922	4.10	1
06966	Silver	7440-22-4	0.154	U	0.154	1.02	1
01667	Sodium	7440-23-5	28.9	J	24.5	205	1
06971	Vanadium	7440-62-2	3.18		0.143	1.02	1
06972	Zinc	7440-66-6	3.08	J	0.696	4.10	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0297	U	0.0297	0.205	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	7.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:06	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:06	Cindy M Gehman	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457190
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13A-2 SDG#: DWD93-03B G

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:06	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 00:32	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 02:59	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457191
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-3 SDG#: DWD93-04B G

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		**ug/kg**		**ug/kg**	**ug/kg**	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	44	U	44	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	44	U	44	130	1
13413	1,3-Dinitrobenzene	99-65-0	43	U	43	130	1
13413	2,4-Dinitrotoluene	121-14-2	43	U	43	130	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	130	1
13413	HM	2691-41-0	230	U	230	320	1
13413	Nitrobenzene	98-95-3	110	U	110	320	1
13413	Nitroglycerin	55-63-0	850	U	850	2,600	1
13413	2-Nitrotoluene	88-72-2	80	U	80	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	850	U	850	2,600	1
13413	RD	121-82-4	43	U	43	130	1
13413	Tetryl	479-45-8	110	U	110	320	1
13413	1,3,5-Trinitrobenzene	99-35-4	43	U	43	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	47	U	47	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		**ug/kg**		**ug/kg**	**ug/kg**	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.3	U	2.3	5.4	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00118	Moisture	n.a.	7.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 07:14	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 16:11	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-3-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457192
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-4 SDG#: DWD93-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	13	1.24
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	7.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161792AB	07/06/2016 14:27	Jennifer Howe	1.24
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201618341721	07/01/2016 18:40	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201618341721	07/01/2016 18:40	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201618341721	07/01/2016 18:31	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457193
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:45 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13B-1 SDG#: DWD93-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	180	U	180	910	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	910	U	910	2,700	1
10726	Quinoline	91-22-5	180	U	180	910	1
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0368	J	0.0110	0.110	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	U	0.19	0.53	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	657		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.0	U	11.0	32.9	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.38		0.0100	0.0100	1
	The pH was measured in water at 21.1 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	8.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16194SLB026	07/13/2016 23:42	Anthony P Bauer	1
10813	BNA Soil Microwave APP I	SW-846 3546	1	16194SLB026	07/13/2016 09:00	ate E Lutte	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:49	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457193
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:45 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13B-1 SDG#: DWD93-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05895	Total Cyanide solid	SW-846 9012B	1	16195102201A	07/13/2016 16:05	Dein Bernot	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16195102201A	07/13/2016 08:30	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16194042501A	07/13/2016 21:15	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16194042501A	07/12/2016 20:00	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457194
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:45 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13B-2 SDG#: DWD93-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,090		8.20	37.8	1
06944	Antimony	7440-36-0	0.661	U	0.661	3.78	1
06935	Arsenic	7440-38-2	0.916	U	0.916	3.78	1
06946	Barium	7440-39-3	3.99		0.0312	0.944	1
06947	Beryllium	7440-41-7	0.0633	U	0.0633	0.944	1
06949	Cadmium	7440-43-9	0.0463	U	0.0463	0.944	1
01650	Calcium	7440-70-2	205		5.34	37.8	1
06951	Chromium	7440-47-3	1.88	J	0.132	2.83	1
06952	Cobalt	7440-48-4	0.113	U	0.113	0.944	1
06953	Copper	7440-50-8	0.788	J	0.217	1.89	1
01654	Iron	7439-89-6	524		3.89	37.8	1
06955	Lead	7439-92-1	6.98		0.519	2.83	1
01657	Magnesium	7439-95-4	81.9		1.79	18.9	1
06958	Manganese	7439-96-5	15.2		0.0784	0.944	1
06961	Nickel	7440-02-0	0.470	J	0.283	1.89	1
01662	Potassium	7440-09-7	36.2	J	22.6	94.4	1
06936	Selenium	7782-49-2	0.850	U	0.850	3.78	1
06966	Silver	7440-22-4	0.142	U	0.142	0.944	1
01667	Sodium	7440-23-5	30.5	J	22.6	189	1
06971	Vanadium	7440-62-2	3.31		0.132	0.944	1
06972	Zinc	7440-66-6	2.71	J	0.642	3.78	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0274	U	0.0274	0.189	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:26	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:26	Cindy M Gehman	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457194
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:45 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13B-2 SDG#: DWD93-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:26	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 00:51	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:10	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457195
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:45 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13B-3 SDG#: DWD93-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	44	U	44	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	44	U	44	130	1
13413	1,3-Dinitrobenzene	99-65-0	43	U	43	130	1
13413	2,4-Dinitrotoluene	121-14-2	43	U	43	130	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	130	1
13413	HM	2691-41-0	230	U	230	330	1
13413	Nitrobenzene	98-95-3	110	U	110	330	1
13413	Nitroglycerin	55-63-0	870	U	870	2,600	1
13413	2-Nitrotoluene	88-72-2	81	U	81	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	870	U	870	2,600	1
13413	RD	121-82-4	43	U	43	130	1
13413	Tetryl	479-45-8	110	U	110	330	1
13413	1,3,5-Trinitrobenzene	99-35-4	43	U	43	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	48	U	48	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.3	U	2.3	5.5	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	8.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 07:57	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 16:49	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-3-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457196
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:45 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13B-4 SDG#: DWD93-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	5	U	5	17	1.53
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161792AB	07/06/2016 14:50	Jennifer Howe	1.53
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201618341721	07/01/2016 18:41	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201618341721	07/01/2016 18:41	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201618341721	07/01/2016 18:38	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457197
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 10:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13C-1 SDG#: DWD93-10

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	180	U	180	910	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	910	U	910	2,700	1
10726	Quinoline	91-22-5	180	U	180	910	1
Trial ID: RE							
10726	2-Chlorobenzaldehyde	89-98-5	180	U	180	900	5
10726	2-Chlorobenzaldehyde	89-98-5	180	U	180	910	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	900	U	900	2,700	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	910	U	910	2,700	1
10726	Quinoline	91-22-5	180	U	180	900	5
10726	Quinoline	91-22-5	180	U	180	910	1

Reporting limits were raised due to interference from the sample matrix.

The recovery for the sample surrogate s is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method re uired holding time and the QC is compliant. All results are reported.
Similar results were obtained in all trials.

The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect.
The reported data is from the initial analysis of the sample.

Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0397	J	0.0109	0.109	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	U	0.19	0.54	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	651		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	10.9	U	10.9	32.7	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.31		0.0100	0.0100	1
	The pH was measured in water at 21.1 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	8.3		0.50	0.50	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457197
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 10:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13C-1 SDG#: DWD93-10

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Wet Chemistry	SM 2540 G-1997		%	%	%	

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16194SLB026	07/14/2016 00:07	Anthony P Bauer	1
10726	SVOA 8270D microwave	SW-846 8270D	2-RE	16194SLB026	07/14/2016 10:14	Brandon H Smith	1
10726	SVOA 8270D microwave	SW-846 8270D	3-RE	16205SLA026	07/25/2016 10:06	Joseph M Gambler	5
10813	BNA Soil Microwave APP I	SW-846 3546	1	16194SLB026	07/13/2016 09:00	ate E Lutte	1
10813	BNA Soil Microwave APP I	SW-846 3546	2	16205SLA026	07/24/2016 22:30	David V Hershey Jr	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:51	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16195102201A	07/13/2016 16:07	Dein Bernot	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16195102201A	07/13/2016 08:30	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16194042501A	07/13/2016 21:15	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16194042501A	07/12/2016 20:00	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457198
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 10:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13C-2 SDG#: DWD93-11

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals		SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum		7429-90-5	896		9.37	43.2	1
06944	Antimony		7440-36-0	0.756	U	0.756	4.32	1
06935	Arsenic		7440-38-2	1.05	U	1.05	4.32	1
06946	Barium		7440-39-3	2.90		0.0356	1.08	1
06947	Beryllium		7440-41-7	0.0723	U	0.0723	1.08	1
06949	Cadmium		7440-43-9	0.0529	U	0.0529	1.08	1
01650	Calcium		7440-70-2	199		6.11	43.2	1
06951	Chromium		7440-47-3	1.74	J	0.151	3.24	1
06952	Cobalt		7440-48-4	0.130	U	0.130	1.08	1
06953	Copper		7440-50-8	0.796	J	0.248	2.16	1
01654	Iron		7439-89-6	469		4.45	43.2	1
06955	Lead		7439-92-1	6.75		0.594	3.24	1
01657	Magnesium		7439-95-4	68.3		2.05	21.6	1
06958	Manganese		7439-96-5	15.3		0.0896	1.08	1
06961	Nickel		7440-02-0	0.420	J	0.324	2.16	1
01662	Potassium		7440-09-7	27.3	J	25.8	108	1
06936	Selenium		7782-49-2	0.972	U	0.972	4.32	1
06966	Silver		7440-22-4	0.162	U	0.162	1.08	1
01667	Sodium		7440-23-5	25.8	U	25.8	216	1
06971	Vanadium		7440-62-2	3.17		0.151	1.08	1
06972	Zinc		7440-66-6	2.28	J	0.734	4.32	1
		SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium		7440-28-0	0.0313	U	0.0313	0.216	2
Wet Chemistry		SM 2540 G-1997		%		%	%	
00118	Moisture		n.a.	8.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457198
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 10:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

13C-2 SDG#: DWD93-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:29	Cindy M Gehman	1
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:29	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 00:54	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:12	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-3-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457199
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 10:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13C-3 SDG#: DWD93-12

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	43	U	43	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	43	U	43	130	1
13413	1,3-Dinitrobenzene	99-65-0	42	U	42	130	1
13413	2,4-Dinitrotoluene	121-14-2	42	U	42	130	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	130	1
13413	HM	2691-41-0	220	U	220	310	1
13413	Nitrobenzene	98-95-3	100	U	100	310	1
13413	Nitroglycerin	55-63-0	840	U	840	2,500	1
13413	2-Nitrotoluene	88-72-2	79	U	79	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	840	U	840	2,500	1
13413	RD	121-82-4	42	U	42	130	1
13413	Tetryl	479-45-8	100	U	100	310	1
13413	1,3,5-Trinitrobenzene	99-35-4	42	U	42	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	46	U	46	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	SW-846 6850 1/2007		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.3	U	2.3	5.5	1
	The stated QC limits are advisory.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 08:39	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 17:14	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-3-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457200
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 10:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13C-4 SDG#: DWD93-13

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	14	1.26
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161792AB	07/06/2016 15:12	Jennifer Howe	1.26
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201618341721	07/01/2016 18:41	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201618341721	07/01/2016 18:41	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201618341721	07/01/2016 18:36	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457201
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 11:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12A-1 SDG#: DWD93-14

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	36	U	36	180	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	180	U	180	540	1
10726	Quinoline	91-22-5	36	U	36	180	1
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0181	J	0.0107	0.107	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	U	0.19	0.54	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	640		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.5	U	5.5	16.4	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	5.10		0.0100	0.0100	1
	The pH was measured in water at 20.9 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	8.4		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16194SLB026	07/14/2016 00:32	Anthony P Bauer	1
10813	BNA Soil Microwave APP I	SW-846 3546	1	16194SLB026	07/13/2016 09:00	ate E Lutte	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:53	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16195102201A	07/13/2016 16:08	Dein Bernot	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457201
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 11:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12A-1 SDG#: DWD93-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05896	Cyanide Solid Distillation	SW-846 9012B	1	16195102201A	07/13/2016 08:30	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16194042501A	07/13/2016 21:15	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16194042501A	07/12/2016 20:00	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457202
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 11:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12A-2 SDG#: DWD93-15

CAT No.	Analysis Name		CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals		SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum		7429-90-5	899		8.24	38.0	1
06944	Antimony		7440-36-0	0.665	U	0.665	3.80	1
06935	Arsenic		7440-38-2	0.921	U	0.921	3.80	1
06946	Barium		7440-39-3	7.30		0.0313	0.949	1
06947	Beryllium		7440-41-7	0.0636	U	0.0636	0.949	1
06949	Cadmium		7440-43-9	0.0465	U	0.0465	0.949	1
01650	Calcium		7440-70-2	452		5.37	38.0	1
06951	Chromium		7440-47-3	1.45	J	0.133	2.85	1
06952	Cobalt		7440-48-4	0.114	U	0.114	0.949	1
06953	Copper		7440-50-8	1.55	J	0.218	1.90	1
01654	Iron		7439-89-6	521		3.91	38.0	1
06955	Lead		7439-92-1	5.92		0.522	2.85	1
01657	Magnesium		7439-95-4	77.1		1.80	19.0	1
06958	Manganese		7439-96-5	23.6		0.0788	0.949	1
06961	Nickel		7440-02-0	0.340	J	0.285	1.90	1
01662	Potassium		7440-09-7	37.4	J	22.7	94.9	1
06936	Selenium		7782-49-2	0.854	U	0.854	3.80	1
06966	Silver		7440-22-4	0.142	U	0.142	0.949	1
01667	Sodium		7440-23-5	23.3	J	22.7	190	1
06971	Vanadium		7440-62-2	2.03		0.133	0.949	1
06972	Zinc		7440-66-6	2.79	J	0.646	3.80	1
		SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium		7440-28-0	0.0275	U	0.0275	0.190	2
Wet Chemistry		SM 2540 G-1997		%		%	%	
00118	Moisture		n.a.	8.4		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457202
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 11:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12A-2 SDG#: DWD93-15

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:39	Cindy M Gehman	1
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:39	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 01:03	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:17	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457203
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 11:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12A-3 SDG#: DWD93-16

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		**ug/kg**		**ug/kg**	**ug/kg**	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	44	U	44	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	44	U	44	130	1
13413	1,3-Dinitrobenzene	99-65-0	42	U	42	130	1
13413	2,4-Dinitrotoluene	121-14-2	42	U	42	130	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	130	1
13413	HM	2691-41-0	230	U	230	320	1
13413	Nitrobenzene	98-95-3	110	U	110	320	1
13413	Nitroglycerin	55-63-0	850	U	850	2,500	1
13413	2-Nitrotoluene	88-72-2	80	U	80	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	850	U	850	2,500	1
13413	RD	121-82-4	42	U	42	130	1
13413	Tetryl	479-45-8	110	U	110	320	1
13413	1,3,5-Trinitrobenzene	99-35-4	42	U	42	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	47	U	47	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. This sample was used for the ISM triplicate. The individual RSD is included in the data package for review.						
Perchlorate	**SW-846 6850 1/2007**		**ug/kg**		**ug/kg**	**ug/kg**	
06557	Perchlorate in Soil LC/MS/MS The stated QC limits are advisory.	14797-73-0	2.3	U	2.3	5.5	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00118	Moisture	n.a.	8.4		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 09:21	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 17:27	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-2-A Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457204
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 11:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12A-4 SDG#: DWD93-17

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	14	1.29
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.4		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161792AB	07/06/2016 15:35	Jennifer Howe	1.29
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201618341721	07/01/2016 18:40	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201618341721	07/01/2016 18:41	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201618341721	07/01/2016 18:35	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457205
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12B-1 SDG#: DWD93-18

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	36	U	36	180	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	460	J	180	550	1
10726	Quinoline	91-22-5	36	U	36	180	1
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0286	J	0.0104	0.104	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	U	0.19	0.54	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	601		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.5	U	5.5	16.4	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.76		0.0100	0.0100	1
	The pH was measured in water at 20.9 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	8.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16194SLB026	07/14/2016 00:57	Anthony P Bauer	1
10813	BNA Soil Microwave APP I	SW-846 3546	1	16194SLB026	07/13/2016 09:00	ate E Lutte	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:55	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16195102201A	07/13/2016 16:09	Dein Bernot	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457205
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12B-1 SDG#: DWD93-18

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05896	Cyanide Solid Distillation	SW-846 9012B	1	16195102201A	07/13/2016 08:30	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16194042501A	07/13/2016 21:15	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16194042501A	07/12/2016 20:00	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457206
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12B-2 SDG#: DWD93-19

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	920		8.56	39.5	1
06944	Antimony	7440-36-0	0.691	U	0.691	3.95	1
06935	Arsenic	7440-38-2	0.957	U	0.957	3.95	1
06946	Barium	7440-39-3	4.38		0.0326	0.987	1
06947	Beryllium	7440-41-7	0.0661	U	0.0661	0.987	1
06949	Cadmium	7440-43-9	0.0484	U	0.0484	0.987	1
01650	Calcium	7440-70-2	430		5.58	39.5	1
06951	Chromium	7440-47-3	1.38	J	0.138	2.96	1
06952	Cobalt	7440-48-4	0.118	U	0.118	0.987	1
06953	Copper	7440-50-8	1.57	J	0.227	1.97	1
01654	Iron	7439-89-6	527		4.07	39.5	1
06955	Lead	7439-92-1	5.86		0.543	2.96	1
01657	Magnesium	7439-95-4	78.4		1.87	19.7	1
06958	Manganese	7439-96-5	22.5		0.0819	0.987	1
06961	Nickel	7440-02-0	0.365	J	0.296	1.97	1
01662	Potassium	7440-09-7	36.8	J	23.6	98.7	1
06936	Selenium	7782-49-2	0.888	U	0.888	3.95	1
06966	Silver	7440-22-4	0.148	U	0.148	0.987	1
01667	Sodium	7440-23-5	23.6	U	23.6	197	1
06971	Vanadium	7440-62-2	2.04		0.138	0.987	1
06972	Zinc	7440-66-6	2.81	J	0.671	3.95	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0286	U	0.0286	0.197	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:42	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:42	Cindy M Gehman	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457206
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12B-2 SDG#: DWD93-19

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:42	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 01:06	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:19	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457207
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12B-3 SDG#: DWD93-20

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	43	U	43	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	43	U	43	130	1
13413	1,3-Dinitrobenzene	99-65-0	42	U	42	130	1
13413	2,4-Dinitrotoluene	121-14-2	42	U	42	130	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	130	1
13413	HM	2691-41-0	220	U	220	320	1
13413	Nitrobenzene	98-95-3	110	U	110	320	1
13413	Nitroglycerin	55-63-0	850	U	850	2,500	1
13413	2-Nitrotoluene	88-72-2	79	U	79	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	850	U	850	2,500	1
13413	RD	121-82-4	42	U	42	130	1
13413	Tetryl	479-45-8	110	U	110	320	1
13413	1,3,5-Trinitrobenzene	99-35-4	42	U	42	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	47	U	47	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.7	U	2.7	5.5	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	8.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 12:11	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 17:40	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457207
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12B-3 SDG#: DWD93-20

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-2-B Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457208
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 12:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12B-4 SDG#: DWD93-21

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	14	1.28
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	8.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161792AB	07/06/2016 15:57	Jennifer Howe	1.28
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201618341721	07/01/2016 18:40	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201618341721	07/01/2016 18:40	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201618341721	07/01/2016 18:29	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457209
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12C-1 SDG#: DWD93-22

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	36	U	36	180	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	180	U	180	540	1
10726	Quinoline	91-22-5	36	U	36	180	1
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0293	J	0.0102	0.102	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	U	0.19	0.53	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	614		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.4	U	5.4	16.3	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.94		0.0100	0.0100	1
	The pH was measured in water at 20.9 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	7.9		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16194SLB026	07/14/2016 01:22	Anthony P Bauer	1
10813	BNA Soil Microwave APP I	SW-846 3546	1	16194SLB026	07/13/2016 09:00	ate E Lutte	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:57	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16195102201A	07/13/2016 16:10	Dein Bernot	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457209
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12C-1 SDG#: DWD93-22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05896	Cyanide Solid Distillation	SW-846 9012B	1	16195102201A	07/13/2016 08:30	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16194042501A	07/13/2016 21:15	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16194042501A	07/12/2016 20:00	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457210
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12C-2 SDG#: DWD93-23

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	843		7.31	33.7	1
06944	Antimony	7440-36-0	0.589	U	0.589	3.37	1
06935	Arsenic	7440-38-2	0.816	U	0.816	3.37	1
06946	Barium	7440-39-3	3.57		0.0278	0.842	1
06947	Beryllium	7440-41-7	0.0564	U	0.0564	0.842	1
06949	Cadmium	7440-43-9	0.0412	U	0.0412	0.842	1
01650	Calcium	7440-70-2	390		4.76	33.7	1
06951	Chromium	7440-47-3	1.35	J	0.118	2.53	1
06952	Cobalt	7440-48-4	0.101	U	0.101	0.842	1
06953	Copper	7440-50-8	1.68	J	0.194	1.68	1
01654	Iron	7439-89-6	482		3.47	33.7	1
06955	Lead	7439-92-1	5.73		0.463	2.53	1
01657	Magnesium	7439-95-4	69.1		1.60	16.8	1
06958	Manganese	7439-96-5	21.2		0.0699	0.842	1
06961	Nickel	7440-02-0	0.328	J	0.253	1.68	1
01662	Potassium	7440-09-7	26.7	J	20.1	84.2	1
06936	Selenium	7782-49-2	0.758	U	0.758	3.37	1
06966	Silver	7440-22-4	0.126	U	0.126	0.842	1
01667	Sodium	7440-23-5	20.1	U	20.1	168	1
06971	Vanadium	7440-62-2	1.88		0.118	0.842	1
06972	Zinc	7440-66-6	3.35	J	0.572	3.37	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0244	U	0.0244	0.168	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	7.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457210
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12C-2 SDG#: DWD93-23

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:45	Cindy M Gehman	1
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:45	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 01:09	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:21	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457211
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12C-3 SDG#: DWD93-24

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	44	U	44	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	44	U	44	130	1
13413	1,3-Dinitrobenzene	99-65-0	43	U	43	130	1
13413	2,4-Dinitrotoluene	121-14-2	43	U	43	130	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	130	1
13413	HM	2691-41-0	230	U	230	330	1
13413	Nitrobenzene	98-95-3	110	U	110	330	1
13413	Nitroglycerin	55-63-0	870	U	870	2,600	1
13413	2-Nitrotoluene	88-72-2	81	U	81	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	870	U	870	2,600	1
13413	RD	121-82-4	43	U	43	130	1
13413	Tetryl	479-45-8	110	U	110	330	1
13413	1,3,5-Trinitrobenzene	99-35-4	43	U	43	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	48	U	48	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.3	U	2.3	5.4	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	7.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 12:54	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 17:52	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457211
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

12C-3 SDG#: DWD93-24

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-2-C Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457212
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 13:30 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

12C-4 SDG#: DWD93-25

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	14	1.3
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	7.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161792AB	07/06/2016 16:20	Jennifer Howe	1.3
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201618341721	07/01/2016 18:40	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201618341721	07/01/2016 18:41	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201618341721	07/01/2016 18:33	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-12-40mm-SS Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457213
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 14:15 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

40MMS SDG#: DWD93-26

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	99	U	99	300	1
13413	Nitroglycerin	55-63-0	790	U	790	2,400	1
13413	2-Nitrotoluene	88-72-2	74	U	74	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	790	U	790	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	99	U	99	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	0.50	U	0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 13:36	James H Place	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-12-40mm-SSD Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8457214
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 14:20 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

40MMD SDG#: DWD93-27

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	40	U	40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	40	U	40	120	1
13413	1,3-Dinitrobenzene	99-65-0	39	U	39	120	1
13413	2,4-Dinitrotoluene	121-14-2	39	U	39	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	290	1
13413	Nitrobenzene	98-95-3	97	U	97	290	1
13413	Nitroglycerin	55-63-0	780	U	780	2,300	1
13413	2-Nitrotoluene	88-72-2	73	U	73	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	780	U	780	2,300	1
13413	RD	121-82-4	39	U	39	120	1
13413	Tetryl	479-45-8	97	U	97	290	1
13413	1,3,5-Trinitrobenzene	99-35-4	39	U	39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	43	U	43	120	1

The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.
The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.

Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	0.50	U	0.50	0.50	1

Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 14:19	James H Place	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: Metals Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8457215
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/01/2016 by LAB

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D92B1 SDG#: DWD93-28BL

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	6.29	U	6.29	29.0	1
06944	Antimony	7440-36-0	0.507	U	0.507	2.90	1
06935	Arsenic	7440-38-2	0.703	U	0.703	2.90	1
06946	Barium	7440-39-3	0.641	J	0.0239	0.725	1
06947	Beryllium	7440-41-7	0.0486	U	0.0486	0.725	1
06949	Cadmium	7440-43-9	0.0355	U	0.0355	0.725	1
01650	Calcium	7440-70-2	4.10	U	4.10	29.0	1
06951	Chromium	7440-47-3	0.101	U	0.101	2.17	1
06952	Cobalt	7440-48-4	0.0870	U	0.0870	0.725	1
06953	Copper	7440-50-8	0.167	U	0.167	1.45	1
01654	Iron	7439-89-6	2.99	U	2.99	29.0	1
06955	Lead	7439-92-1	0.417	J	0.399	2.17	1
01657	Magnesium	7439-95-4	1.38	U	1.38	14.5	1
06958	Manganese	7439-96-5	0.0601	U	0.0601	0.725	1
06961	Nickel	7440-02-0	0.217	U	0.217	1.45	1
01662	Potassium	7440-09-7	17.3	U	17.3	72.5	1
06936	Selenium	7782-49-2	0.652	U	0.652	2.90	1
06966	Silver	7440-22-4	0.109	U	0.109	0.725	1
01667	Sodium	7440-23-5	17.3	U	17.3	145	1
06971	Vanadium	7440-62-2	0.101	U	0.101	0.725	1
06972	Zinc	7440-66-6	0.493	U	0.493	2.90	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0210	U	0.0210	0.145	2

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was collected following the protocol specified by each method listed in the Laboratory Sample Analysis Record.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:49	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:49	Cindy M Gehman	1

*=This limit was used in the evaluation of the final result

Sample Description: Metals Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8457215
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/01/2016 by LAB

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

D92B1 SDG#: DWD93-28BL

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:49	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 01:12	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:23	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1

*=This limit was used in the evaluation of the final result

Sample Description: Exp/Perchlorate Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8457216
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/01/2016 by LAB

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D92B2 SDG#: DWD93-29BL

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	40	U	40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	40	U	40	120	1
13413	1,3-Dinitrobenzene	99-65-0	39	U	39	120	1
13413	2,4-Dinitrotoluene	121-14-2	39	U	39	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	290	1
13413	Nitrobenzene	98-95-3	98	U	98	290	1
13413	Nitroglycerin	55-63-0	790	U	790	2,400	1
13413	2-Nitrotoluene	88-72-2	74	U	74	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	790	U	790	2,400	1
13413	RD	121-82-4	39	U	39	120	1
13413	Tetryl	479-45-8	98	U	98	290	1
13413	1,3,5-Trinitrobenzene	99-35-4	39	U	39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	43	U	43	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	SW-846 6850 1/2007		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS The stated QC limits are advisory.	14797-73-0	2.9	J	2.1	5.0	1
	Trial ID: RE						
06557	Perchlorate in Soil LC/MS/MS The stated QC limits are advisory.	14797-73-0	3.6	J	2.1	5.0	1
	Trial ID: RE2						
06557	Perchlorate in Soil LC/MS/MS The stated QC limits are advisory.	14797-73-0	4.2	J	2.1	5.0	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was collected following the protocol specified by each method listed in the Laboratory Sample Analysis Record.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor

*=This limit was used in the evaluation of the final result

Sample Description: Exp/Perchlorate Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8457216
LL Group # 1678394
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/01/2016 by LAB

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 15:28

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D92B2 SDG#: DWD93-29BL

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 15:01	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 18:05	Richard A Shober	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	2-RE	162020019A	07/27/2016 17:14	Richard A Shober	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	3-RE2	162020019A	07/28/2016 07:35	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	2	162020019A	07/27/2016 09:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		MDL**	LOQ
	ug/kg		ug/kg	ug/kg
Batch number: A161792AB	Sample number s : 8457192,8457196,8457200,8457204,8457208,8457212			
4-Methyl-2-pentanone	3	U	3	10
	ug/l		ug/l	ug/l
Batch number: L161872AA	Sample number s : 8457188			
4-Methyl-2-pentanone	3	U	3	10
	ug/kg		ug/kg	ug/kg
Batch number: 16194SLB026	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209			
2-Chlorobenzaldehyde	33	U	33	170
2-Chlorobenzalmalononitrile	170	U	170	500
Quinoline	33	U	33	170
Batch number: 16205SLA026	Sample number s : 8457197			
2-Chlorobenzaldehyde	33	U	33	170
2-Chlorobenzalmalononitrile	170	U	170	500
Quinoline	33	U	33	170
Batch number: 161960014A	Sample number s : 8457191,8457195,8457199,8457203,8457207,8457211,8457213-8457214,8457216			
4-Amino-2,6-Dinitrotoluene	41	U	41	120
2-Amino-4,6-Dinitrotoluene	41	U	41	120
1,3-Dinitrobenzene	40	U	40	120
2,4-Dinitrotoluene	40	U	40	120
2,6-Dinitrotoluene	110	U	110	120
HM	210	U	210	300
Nitrobenzene	100	U	100	300
Nitroglycerin	800	U	800	2,400
2-Nitrotoluene	75	U	75	120
3-Nitrotoluene	110	U	110	120
4-Nitrotoluene	110	U	110	120
PETN	800	U	800	2,400
RD	40	U	40	120
Tetryl	100	U	100	300
1,3,5-Trinitrobenzene	40	U	40	120
2,4,6-Trinitrotoluene	44	U	44	120
Batch number: 161970016A	Sample number s : 8457191,8457195,8457199,8457203,8457207,8457211,8457216			
Perchlorate in Soil LC/MS/MS	2.1	U	2.1	5.0
Batch number: 162020019A	Sample number s : 8457216			
Perchlorate in Soil LC/MS/MS	2.1	U	2.1	5.0
	mg/kg		mg/kg	mg/kg
Batch number: 162010637002	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215			
Aluminum	8.68	U	8.68	40.0

*- Outside of specification
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P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

Method Blank continued

Analysis Name	Result		MDL**	LOQ
	mg/kg		mg/kg	mg/kg
Antimony	0.725	J	0.700	4.00
Arsenic	0.970	U	0.970	4.00
Barium	0.0610	J	0.0330	1.00
Beryllium	0.0670	U	0.0670	1.00
Cadmium	0.0490	U	0.0490	1.00
Calcium	7.15	J	5.66	40.0
Chromium	0.140	U	0.140	3.00
Cobalt	0.120	U	0.120	1.00
Copper	0.230	U	0.230	2.00
Iron	4.12	U	4.12	40.0
Lead	0.550	U	0.550	3.00
Magnesium	2.40	J	1.90	20.0
Manganese	0.0830	U	0.0830	1.00
Nickel	0.300	U	0.300	2.00
Potassium	23.9	U	23.9	100
Selenium	0.900	U	0.900	4.00
Silver	0.150	U	0.150	1.00
Sodium	23.9	U	23.9	200
Vanadium	0.140	U	0.140	1.00
Zinc	0.680	U	0.680	4.00
Batch number: 162010637002A	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215			
Thallium	0.0290	U	0.0290	0.200
Batch number: 162010638001	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209			
Mercury	0.0100	U	0.0100	0.100
Batch number: 16195102201A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209			
Total Cyanide solid	0.18	U	0.18	0.50
Batch number: 16194042501A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209			
Hexavalent Chromium SOLIDS	0.50	U	0.50	1.5

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: A161792AB	Sample number s : 8457192,8457196,8457200,8457204,8457208,8457212								
4-Methyl-2-pentanone	100	117.14	100	122.54	117	123	50-120	5	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: L161872AA	Sample number s : 8457188								
4-Methyl-2-pentanone	100	108.79	100	109.11	109	109	47-133	0	30
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 16194SLB026	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209								
2-Chlorobenzaldehyde	1666.67	1602.23	1666.67	1590.96	96	95	58-114	1	30
2-Chlorobenzalmalononitrile	1666.67	1215.62	1666.67	1171.4	73	70	70-130	4	30

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(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

LCS/LCSD continued

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Quinoline	1666.67	1542			93		80-119		
Batch number: 16205SLA026	Sample number s : 8457197								
2-Chlorobenzaldehyde	1666.67	1667	1666.67	1596.96	100	96	58-114	4	30
2-Chlorobenzalmalononitrile	1666.67	1321.93	1666.67	1355.88	79	81	70-130	3	30
Quinoline	1666.67	1642.37			99		80-119		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161960014A	Sample number s : 8457191,8457195,8457199,8457203,8457207,8457211,8457213-8457214,8457216								
4-Amino-2,6-Dinitrotoluene	1953	6975.87			357		42-138		
2-Amino-4,6-Dinitrotoluene	1953	3312.22			170		43-141		
1,3-Dinitrobenzene	1953	3490.42			179		54-140		
2,4-Dinitrotoluene	1953	1416.97			73		52-137		
2,6-Dinitrotoluene	1953	6442.47			330		51-138		
HM	1953	2519.25			129		29-148		
Nitrobenzene	1953	1558.64			80		64-138		
Nitroglycerin	9766	7034.87			72		45-137		
2-Nitrotoluene	1953	1550.87			79		57-135		
3-Nitrotoluene	1953	1641.22			84		57-135		
4-Nitrotoluene	1953	4117.11			211		53-133		
PETN	9766	7621.5			78		36-143		
RD	1953	6013.57			308		45-145		
Tetryl	1953	945.07			48		38-152		
1,3,5-Trinitrobenzene	1953	1720.72			88		48-141		
2,4,6-Trinitrotoluene	1953	1361.01			70		47-140		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161970016A	Sample number s : 8457191,8457195,8457199,8457203,8457207,8457211,8457216								
Perchlorate in Soil LC/MS/MS	100	59.17			59		80-120		
Batch number: 162020019A	Sample number s : 8457216								
Perchlorate in Soil LC/MS/MS	100	101.85			102		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010637002	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215								
Aluminum	200	200.34			100		80-120		
Antimony	50	51.73			103		80-120		
Arsenic	15	14.95			100		80-120		
Barium	200	195.96			98		80-120		
Beryllium	5.00	4.84			97		80-120		
Cadmium	5.00	4.97			99		80-120		
Calcium	400	400.49			100		80-120		
Chromium	20	19.49			97		80-120		
Cobalt	50	49.94			100		80-120		
Copper	25	24.97			100		80-120		
Iron	100	99.16			99		80-120		
Lead	15	15.06			100		80-120		
Magnesium	200	201.47			101		80-120		
Manganese	50	49.28			99		80-120		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

LCS/LCSD continued

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/kg	mg/kg	mg/kg	mg/kg					
Nickel	50	50.37			101		80-120		
Potassium	1000	967.95			97		80-120		
Selenium	15	13.87			92		80-120		
Silver	5.00	4.72			94		80-120		
Sodium	1000	913.43			91		80-120		
Vanadium	50	51.11			102		80-120		
Zinc	50	49.11			98		80-120		
Batch number: 162010637002A	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215								
Thallium	0.200	0.197			98		80-120		
Batch number: 162010638001	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209								
Mercury	0.100	0.104			104		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16195102201A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209								
Total Cyanide solid	10	10.69			107		90-110		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16194042501A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209								
Hexavalent Chromium SOLIDS	5.00	4.47			89		80-120		
	m	m	m	m					
Batch number: 16200182101A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209								
Oxidation Reduction Potential	427	427			100		98-102		
	Std. Units	Std. Units	Std. Units	Std. Units					
Batch number: 16200039401A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209								
pH	7.00	7.06			101		95-105		
	%	%	%	%					
Batch number: 16232820002A	Sample number s : 8457189-8457214								
Moisture	89.5	89.46			100		99-101		
Moisture	89.5	89.46			100		99-101		

MS/MSD

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc		MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/kg		ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: A161792AB	Sample number s : 8457192,8457196,8457200,8457204,8457208,8457212 UNSP : P442813										
4-Methyl-2-pentanone	4	U	255.1	243.91	179.86	188.93	96	105	50-120	25	30

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P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

MS/MSD continued

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 16194SLB026	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 UNSP : P468616									
Quinoline	33 U	1666.67	1250.14	1666.67	1215.04	75	73	80-119	3	30
Batch number: 16205SLA026	Sample number s : 8457197 UNSP : 8457197									
Quinoline	170 U	1666.67	1150.07	1666.67	1158.4	69	70	80-119	1	30
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161960014A	Sample number s : 8457191,8457195,8457199,8457203,8457207,8457211,8457213-8457214,8457216 UNSP : 8457191									
4-Amino-2,6-Dinitrotoluene	41 U	1930	2313.13	1930	2232.68	120	116	42-138	4	50
2-Amino-4,6-Dinitrotoluene	41 U	1940	1985.87	1940	1928.24	102	99	43-141	3	50
1,3-Dinitrobenzene	40 U	1940	1818.15	1940	1797.68	94	93	54-140	1	50
2,4-Dinitrotoluene	40 U	1940	698.05	1940	662.18	36	34	52-137	5	50
2,6-Dinitrotoluene	110 U	1940	3122.31	1950	3166.23	161	162	51-138	1	50
HM	210 U	1930	2434.22	1940	2300.13	126	119	29-148	6	50
Nitrobenzene	99 U	1940	954.47	1940	902.81	49	47	64-138	6	50
Nitroglycerin	790 U	19400	10872.22	19400	10856.52	56	56	45-137	0	50
2-Nitrotoluene	74 U	1940	938.21	1940	981.44	48	51	57-135	5	50
3-Nitrotoluene	110 U	1940	1038.99	1940	1034.57	54	53	57-135	0	50
4-Nitrotoluene	110 U	1940	3058.3	1950	3239.62	158	166	53-133	6	50
PETN	790 U	19500	13735.35	19500	13998.16	70	72	36-143	2	50
RD	40 U	1930	1509.7	1940	1415.93	78	73	45-145	6	50
Tetryl	99 U	1950	511.15	1950	541.62	26	28	38-152	6	50
2,4,6-Trinitrotoluene	43 U	1940	629.41	1950	665.93	32	34	47-140	6	50
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161970016A	Sample number s : 8457191,8457195,8457199,8457203,8457207,8457211,8457216 UNSP : 8457191									
Perchlorate in Soil LC/MS/MS	2.1 U	100	94.66	100	95.26	95	95	70-130	1	15
Batch number: 162020019A	Sample number s : 8457216 UNSP : P474735									
Perchlorate in Soil LC/MS/MS	2.1 U	100	91.08	100	99.39	91	99	70-130	9	15
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010637002	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215 UNSP : 8457190									
Aluminum	1025.12	168.07	1611.74	136.05	1492.82	349 2	344 2	75-125	8	20
Antimony	0.667 U	42.02	39.27	34.01	31.21	93	92	75-125	23	20
Arsenic	0.924 U	12.61	11.47	10.2	8.79	91	86	75-125	26	20
Barium	3.48	168.07	170.95	136.05	136.48	100	98	75-125	22	20
Beryllium	0.0638 U	4.20	4.17	3.40	3.32	99	98	75-125	23	20
Cadmium	0.0467 U	4.20	4.18	3.40	3.31	100	97	75-125	23	20
Calcium	196.35	336.13	540.48	272.11	445.73	102	92	75-125	19	20
Chromium	1.76	16.81	18.72	13.61	15.03	101	98	75-125	22	20
Cobalt	0.114 U	42.02	42.33	34.01	33.44	101	98	75-125	23	20
Copper	0.737	21.01	22.52	17.01	17.97	104	101	75-125	22	20
Iron	498.66	84.03	634.82	68.03	554.42	162 2	82 2	75-125	14	20

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(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

MS/MSD continued

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Lead	6.88	12.61	19.93	10.2	16.95	104	99	75-125	16	20
Magnesium	76.48	168.07	285.34	136.05	220.97	124	106	75-125	25	20
Manganese	14.8	42.02	53.71	34.01	43.2	93	83	75-125	22	20
Nickel	0.389	42.02	42.94	34.01	33.99	101	99	75-125	23	20
Potassium	32.97	840.34	872.68	680.27	694.82	100	97	75-125	23	20
Selenium	0.857 U	12.61	10.22	10.2	8.58	81	84	75-125	17	20
Silver	0.143 U	4.20	3.87	3.40	3.08	92	90	75-125	23	20
Sodium	26.88	840.34	790.96	680.27	632.1	91	89	75-125	22	20
Vanadium	2.96	42.02	47.31	34.01	37.73	106	102	75-125	23	20
Zinc	2.87	42.02	44.73	34.01	35.33	100	95	75-125	23	20
Batch number: 162010637002A	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215 UNSP : 8457190									
Thallium	0.0276 U	0.336	0.466	0.272	0.391	139	144	75-125	18	20
Batch number: 162010638001	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 UNSP : P472661									
Mercury	0.0423	0.158	0.211	0.162	0.212	107	105	80-120	1	20
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16195102201A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 UNSP : 8457189									
Total Cyanide solid	0.18 U	4.95	5.31			107		41-145		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16194042501A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 UNSP : P468616									
Hexavalent Chromium SOLIDS	0.50 U	40.2	36.61			91		75-125		

Laboratory Duplicate

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Batch number: 162010637002	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215 B G: 8457190			
Aluminum	1025.12	976.3	5	20
Antimony	0.667 U	0.493 U	0 1	20
Arsenic	0.924 U	0.683 U	0 1	20
Barium	3.48	3.41	2 1	20
Beryllium	0.0638 U	0.0472 U	0 1	20
Cadmium	0.0467 U	0.0345 U	0 1	20
Calcium	196.35	185.93	5	20
Chromium	1.76	1.85	5 1	20
Cobalt	0.114 U	0.0845 U	0 1	20
Copper	0.737	0.854	15 1	20
Iron	498.66	486.33	3	20

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1678394
Reported: 09/02/2016 15:28

Laboratory Duplicate continued

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/kg	mg/kg		
Lead	6.88	7.77	12 1	20
Magnesium	76.48	73.05	5 1	20
Manganese	14.8	13.67	8	20
Nickel	0.389	0.407	5 1	20
Potassium	32.97	31.93	3 1	20
Selenium	0.857 U	0.634 U	0 1	20
Silver	0.143 U	0.106 U	0 1	20
Sodium	26.88	25.06	7 1	20
Vanadium	2.96	3.17	7 1	20
Zinc	2.87	2.72	5 1	20
Batch number: 162010637002A	Sample number s : 8457190,8457194,8457198,8457202,8457206,8457210,8457215 B G: 8457190			
Thallium	0.0276 U	0.0204 U	0 1	20
Batch number: 162010638001	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 B G: P472661			
Mercury	0.0423	0.0435	3 1	20
	mg/kg	mg/kg		
Batch number: 16195102201A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 B G: 8457189			
Total Cyanide solid	0.18 U	0.18 U	0 1	20
	mg/kg	mg/kg		
Batch number: 16194042501A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 B G: P468616			
Hexavalent Chromium SOLIDS	0.50 U	0.50 U	0 1	20
	m	m		
Batch number: 16200182101A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 B G: P454729			
Oxidation Reduction Potential	504.5	484.5	4	5
	Std. Units	Std. Units		
Batch number: 16200039401A	Sample number s : 8457189,8457193,8457197,8457201,8457205,8457209 B G: P454721			
pH	7.89	7.66	3	3
	%	%		
Batch number: 16232820002A	Sample number s : 8457189-8457214 B G: 8457189, P457189			
Moisture	7.05	7.67	8	5
Moisture	7.05	7.67	8	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: A161792AB

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 09/02/2016 15:28

Group Number: 1678394

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8457192	103	101	120	73
8457196	104	101	117	78
8457200	104	104	117	73
8457204	105	103	111	85
8457208	103	103	109	83
8457212	105	102	117	82
Blank	102	101	101	96
LCS	102	104	101	100
LCSD	102	103	102	101
MSD	102	101	107	93
MSRE	101	99	105	92
Limits:	50-141	54-135	52-141	50-131

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: L161872AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8457188	102	103	96	99
Blank	102	102	95	98
LCS	101	100	97	102
LCSD	102	102	97	101
Limits:	80-116	77-113	80-113	78-113

Analysis Name: SVOA 8270D microwave
Batch number: 16194SLB026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8457189	94	102	117	90	101	101
8457193	92	100	117	87	95	95
8457197	51	54	59	47	50	52
8457197RE	50	55	59	49	52	50
8457201	80	88	96	81	87	85
8457205	80	90	94	78	84	86
8457209	83	90	98	81	87	87
Blank	82	91	109	81	90	95
LCS	87	96	106	81	91	93
LCSD	87	95	115	81	92	97
MS	72	78	87	68	77	76
MSD	69	76	90	67	75	75
Limits:	58-122	57-126	35-136	54-123	63-117	59-129

Analysis Name: SVOA 8270D microwave
Batch number: 16205SLA026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8457197RE	101	106	127	102	108	106
Blank	96	102	127	96	102	111
LCS	106	110	136	102	105	109
LCSD	95	101	126	96	103	110

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 09/02/2016 15:28

Group Number: 1678394

Surrogate Quality Control continued

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
MSDRE	108	111	128	105	111	109
MSRE	107	111	127	104	106	106
Limits:	58-122	57-126	35-136	54-123	63-117	59-129

Analysis Name: Nitroaromatics/Amines 8330B s
Batch number: 161960014A

	3,4-Dinitrotoluene
8457191	99
8457195	86
8457199	82
8457203	81
8457207	85
8457211	100
8457213	81
8457214	81
8457216	121
Blank	77
LCS	195
MS	128
MSD	107
Limits:	62-133

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1678394 Sample # 8457188-216

COC # 503226

Client Information

Client: CH2MHILL

Acct. #:

Project Name/#: DOW WOODBINE

PWSID #:

Project Manager: MERK SHERRILL

P.O. #:

Sampler: J. Crostic M. Burlington

Quote #:

State where samples were collected: Georgia

For Compliance: Yes ☐ No ☐

Matrix

Soil: Sediment ☐ Tissue ☐ | Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: QC

Analysis Requested

Preservation Codes: H | — | — | — | — | — | — | — | — | —

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOC in water	VOC in soil	SVOC	Hex Chromium	Cyanide	Mercury/Metals	Perchlorate	Explosives	Moisture	pH Loop
TB-08	6/30	0800	X		2	X									
DU-1-3-A		0900		X	6		X	X	X	X	X	X	X	X	X
DU-1-3-B		0945		X	6		X	X	X	X	X	X	X	X	X
DU-1-3-C		1030		X	6		X	X	X	X	X	X	X	X	X
DU-1-2-A		1130		X	6		X	X	X	X	X	X	X	X	X
DU-1-2-B		1230		X	6		X	X	X	X	X	X	X	X	X
DU-1-2-C		1330		X	6		X	X	X	X	X	X	X	X	X
DU-1-12-40mm-SS		1415		X	1								X		
DU-1-12-40mm-SSD		1420		X	1								X		

For Lab Use Only

FSC:

SCR#:

Preservation Codes: H=HCl T=Thiosulfate N=HNO_3 B=NaOH S=H_2SO_4 O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
J. Crostic	6/30	1700			
				7-1-16	930

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx ✓ Other _____

Temperature upon receipt 2.3 °C

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Sample Administration Receipt Documentation Log

Doc Log ID: 152404

Group Number(s): 1678394

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	07/01/2016 9:30
Number of Packages:	1	Number of Projects:	1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Timothy Cubberley (6520) at 10:14 on 07/01/2016

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	2.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: September 02, 2016

Project: Woodbine Phase III MEC RFI

Submittal Date: 07/01/2016
Group Number: 1681573
SDG: DWD93
PO Number: 10381-7-113967
Release Number: DWD93
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
DU-1-3-A MS Grab Soil	8469767
DU-1-3-A MSD Grab Soil	8469768
DU-1-3-A DUP Grab Soil	8469769
DU-1-3-A MS Grab Soil	8469770
DU-1-3-A MSD Grab Soil	8469771

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Sherrill
Electronic Copy To	CH2M Hill, Inc.	Attn: Chemistry Mailbox
Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Stinnett

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

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Analysis Report

REVISED

Sample Description: DU-1-3-A MS Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469767
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-2 SDG#: DWD93-03MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,730	7.84	36.1	1
06944	Antimony	7440-36-0	42.2	0.633	3.61	1
06935	Arsenic	7440-38-2	12.3	0.876	3.61	1
06946	Barium	7440-39-3	184	0.0298	0.904	1
06947	Beryllium	7440-41-7	4.48	0.0605	0.904	1
06949	Cadmium	7440-43-9	4.50	0.0443	0.904	1
01650	Calcium	7440-70-2	581	5.11	36.1	1
06951	Chromium	7440-47-3	20.1	0.127	2.71	1
06952	Cobalt	7440-48-4	45.5	0.108	0.904	1
06953	Copper	7440-50-8	24.2	0.208	1.81	1
01654	Iron	7439-89-6	683	3.72	36.1	1
06955	Lead	7439-92-1	21.4	0.497	2.71	1
01657	Magnesium	7439-95-4	307	1.72	18.1	1
06958	Manganese	7439-96-5	57.8	0.0750	0.904	1
06961	Nickel	7440-02-0	46.2	0.271	1.81	1
01662	Potassium	7440-09-7	938	21.6	90.4	1
06936	Selenium	7782-49-2	11.0	0.813	3.61	1
06966	Silver	7440-22-4	4.16	0.136	0.904	1
01667	Sodium	7440-23-5	850	21.6	181	1
06971	Vanadium	7440-62-2	50.9	0.127	0.904	1
06972	Zinc	7440-66-6	48.1	0.614	3.61	1
	SW-846 6020A		mg/kg	mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.501	0.0262	0.181	2
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	7.0	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:15	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A MS Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469767
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-2 SDG#: DWD93-03MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 00:41	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 11:25	Choon Y Tian	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: DU-1-3-A MSD Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469768
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-2 SDG#: DWD93-03MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,610	6.35	29.3	1
06944	Antimony	7440-36-0	33.6	0.512	2.93	1
06935	Arsenic	7440-38-2	9.45	0.710	2.93	1
06946	Barium	7440-39-3	147	0.0241	0.731	1
06947	Beryllium	7440-41-7	3.57	0.0490	0.731	1
06949	Cadmium	7440-43-9	3.56	0.0358	0.731	1
01650	Calcium	7440-70-2	479	4.14	29.3	1
06951	Chromium	7440-47-3	16.2	0.102	2.19	1
06952	Cobalt	7440-48-4	36.0	0.0878	0.731	1
06953	Copper	7440-50-8	19.3	0.168	1.46	1
01654	Iron	7439-89-6	596	3.01	29.3	1
06955	Lead	7439-92-1	18.2	0.402	2.19	1
01657	Magnesium	7439-95-4	238	1.39	14.6	1
06958	Manganese	7439-96-5	46.5	0.0607	0.731	1
06961	Nickel	7440-02-0	36.5	0.219	1.46	1
01662	Potassium	7440-09-7	747	17.5	73.1	1
06936	Selenium	7782-49-2	9.22	0.658	2.93	1
06966	Silver	7440-22-4	3.31	0.110	0.731	1
01667	Sodium	7440-23-5	680	17.5	146	1
06971	Vanadium	7440-62-2	40.6	0.102	0.731	1
06972	Zinc	7440-66-6	38.0	0.497	2.93	1
	SW-846 6020A		mg/kg	mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.420	0.0212	0.146	2
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	7.0	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:19	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A MSD Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469768
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

13A-2 SDG#: DWD93-03MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 00:44	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 11:27	Choon Y Tian	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A DUP Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469769
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-2 SDG#: DWD93-03DUP

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,050		6.57	30.3	1
06944	Antimony	7440-36-0	0.530	U	0.530	3.03	1
06935	Arsenic	7440-38-2	0.735	U	0.735	3.03	1
06946	Barium	7440-39-3	3.67		0.0250	0.757	1
06947	Beryllium	7440-41-7	0.0507	U	0.0507	0.757	1
06949	Cadmium	7440-43-9	0.0371	U	0.0371	0.757	1
01650	Calcium	7440-70-2	200		4.29	30.3	1
06951	Chromium	7440-47-3	1.99	J	0.106	2.27	1
06952	Cobalt	7440-48-4	0.0909	U	0.0909	0.757	1
06953	Copper	7440-50-8	0.919	J	0.174	1.51	1
01654	Iron	7439-89-6	523		3.12	30.3	1
06955	Lead	7439-92-1	8.36		0.416	2.27	1
01657	Magnesium	7439-95-4	78.5		1.44	15.1	1
06958	Manganese	7439-96-5	14.7		0.0629	0.757	1
06961	Nickel	7440-02-0	0.438	J	0.227	1.51	1
01662	Potassium	7440-09-7	34.3	J	18.1	75.7	1
06936	Selenium	7782-49-2	0.682	U	0.682	3.03	1
06966	Silver	7440-22-4	0.114	U	0.114	0.757	1
01667	Sodium	7440-23-5	26.9	J	18.1	151	1
06971	Vanadium	7440-62-2	3.41		0.106	0.757	1
06972	Zinc	7440-66-6	2.92	J	0.515	3.03	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0220	U	0.0220	0.151	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	7.0		0.50	0.50	1
00121	Moisture Duplicate	n.a.	7.7		0.50	0.50	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06944	Antimony	SW-846 6010C	1	162010637002	07/21/2016 19:12	Cindy M Gehman	1
06935	Arsenic	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A DUP Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469769
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

13A-2 SDG#: DWD93-03DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06946	Barium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06947	Beryllium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06949	Cadmium	SW-846 6010C	1	162010637002	07/21/2016 19:12	Cindy M Gehman	1
01650	Calcium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06951	Chromium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06952	Cobalt	SW-846 6010C	1	162010637002	07/21/2016 19:12	Cindy M Gehman	1
06953	Copper	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
01654	Iron	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06955	Lead	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
01657	Magnesium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06958	Manganese	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06961	Nickel	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
01662	Potassium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06936	Selenium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06966	Silver	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
01667	Sodium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06971	Vanadium	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06972	Zinc	SW-846 6010C	1	162010637002	07/21/2016 00:38	Elaine F Stoltzfus	1
06145	Thallium	SW-846 6020A	1	162010637002A	07/22/2016 03:03	Tara L Snyder	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637002	07/20/2016 05:24	James L Mertz	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A MS Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469770
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-3 SDG#: DWD93-04MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg	ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	2,500	43	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	2,100	43	120	1
13413	1,3-Dinitrobenzene	99-65-0	2,000	41	120	1
13413	2,4-Dinitrotoluene	121-14-2	750	41	120	1
13413	2,6-Dinitrotoluene	606-20-2	3,400	120	120	1
13413	HM	2691-41-0	2,600	220	310	1
13413	Nitrobenzene	98-95-3	1,000	100	310	1
13413	Nitroglycerin	55-63-0	12,000	830	2,500	1
13413	2-Nitrotoluene	88-72-2	1,000	78	120	1
13413	3-Nitrotoluene	99-08-1	1,100	110	120	1
13413	4-Nitrotoluene	99-99-0	3,300	110	120	1
13413	PETN	78-11-5	15,000	830	2,500	1
13413	RD	121-82-4	1,600	41	120	1
13413	Tetryl	479-45-8	550	100	310	1
13413	1,3,5-Trinitrobenzene	99-35-4	360	41	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	680	46	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.					
Perchlorate	SW-846 6850 1/2007		ug/kg	ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	100	2.3	5.4	1
	The stated QC limits are advisory.					
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	7.0	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 15:44	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 16:23	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A MS Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469770
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-3 SDG#: DWD93-04MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

REVISED

Sample Description: DU-1-3-A MSD Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469771
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

13A-3 SDG#: DWD93-04MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg	ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	2,400	43	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	2,100	43	120	1
13413	1,3-Dinitrobenzene	99-65-0	1,900	42	120	1
13413	2,4-Dinitrotoluene	121-14-2	710	42	120	1
13413	2,6-Dinitrotoluene	606-20-2	3,400	120	120	1
13413	HM	2691-41-0	2,500	220	310	1
13413	Nitrobenzene	98-95-3	970	100	310	1
13413	Nitroglycerin	55-63-0	12,000	830	2,500	1
13413	2-Nitrotoluene	88-72-2	1,100	78	120	1
13413	3-Nitrotoluene	99-08-1	1,100	110	120	1
13413	4-Nitrotoluene	99-99-0	3,500	110	120	1
13413	PETN	78-11-5	15,000	830	2,500	1
13413	RD	121-82-4	1,500	42	120	1
13413	Tetryl	479-45-8	580	100	310	1
13413	1,3,5-Trinitrobenzene	99-35-4	390	42	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	720	46	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.					
Perchlorate	SW-846 6850 1/2007		ug/kg	ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	100	2.3	5.4	1
	The stated QC limits are advisory.					
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	7.0	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	08/20/2016 16:26	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	161970016A	07/18/2016 16:36	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	161970016A	07/16/2016 07:25	Maria Davenport	1

*=This limit was used in the evaluation of the final result

REVISED

Sample Description: DU-1-3-A MSD Grab Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8469771
LL Group # 1681573
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 06/30/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/01/2016 09:30
Reported: 09/02/2016 13:22

13A-3 SDG#: DWD93-04MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	161960014A	07/14/2016 21:30	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681573
Reported: 09/02/2016 13:22

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		MDL**	LOQ
	ug/kg		ug/kg	ug/kg
Batch number: 161960014A	Sample number s : 8469770-8469771			
4-Amino-2,6-Dinitrotoluene	41	U	41	120
2-Amino-4,6-Dinitrotoluene	41	U	41	120
1,3-Dinitrobenzene	40	U	40	120
2,4-Dinitrotoluene	40	U	40	120
2,6-Dinitrotoluene	110	U	110	120
HM	210	U	210	300
Nitrobenzene	100	U	100	300
Nitroglycerin	800	U	800	2,400
2-Nitrotoluene	75	U	75	120
3-Nitrotoluene	110	U	110	120
4-Nitrotoluene	110	U	110	120
PETN	800	U	800	2,400
RD	40	U	40	120
Tetryl	100	U	100	300
1,3,5-Trinitrobenzene	40	U	40	120
2,4,6-Trinitrotoluene	44	U	44	120
Batch number: 161970016A	Sample number s : 8469770-8469771			
Perchlorate in Soil LC/MS/MS	2.1	U	2.1	5.0
	mg/kg		mg/kg	mg/kg
Batch number: 162010637002	Sample number s : 8469767-8469769			
Aluminum	8.68	U	8.68	40.0
Antimony	0.725	J	0.700	4.00
Arsenic	0.970	U	0.970	4.00
Barium	0.0610	J	0.0330	1.00
Beryllium	0.0670	U	0.0670	1.00
Cadmium	0.0490	U	0.0490	1.00
Calcium	7.15	J	5.66	40.0
Chromium	0.140	U	0.140	3.00
Cobalt	0.120	U	0.120	1.00
Copper	0.230	U	0.230	2.00
Iron	4.12	U	4.12	40.0
Lead	0.550	U	0.550	3.00
Magnesium	2.40	J	1.90	20.0
Manganese	0.0830	U	0.0830	1.00
Nickel	0.300	U	0.300	2.00
Potassium	23.9	U	23.9	100
Selenium	0.900	U	0.900	4.00
Silver	0.150	U	0.150	1.00
Sodium	23.9	U	23.9	200
Vanadium	0.140	U	0.140	1.00
Zinc	0.680	U	0.680	4.00

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 09/02/2016 13:22

Group Number: 1681573

Method Blank continued

Analysis Name	Result	MDL**	LOQ
	mg/kg	mg/kg	mg/kg
Batch number: 162010637002A	Sample number s : 8469767-8469769		
Thallium	0.0290 U	0.0290	0.200

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161960014A	Sample number s : 8469770-8469771								
4-Amino-2,6-Dinitrotoluene	1953	6975.87			357		42-138		
2-Amino-4,6-Dinitrotoluene	1953	3312.22			170		43-141		
1,3-Dinitrobenzene	1953	3490.42			179		54-140		
2,4-Dinitrotoluene	1953	1416.97			73		52-137		
2,6-Dinitrotoluene	1953	6442.47			330		51-138		
HM	1953	2519.25			129		29-148		
Nitrobenzene	1953	1558.64			80		64-138		
Nitroglycerin	9766	7034.87			72		45-137		
2-Nitrotoluene	1953	1550.87			79		57-135		
3-Nitrotoluene	1953	1641.22			84		57-135		
4-Nitrotoluene	1953	4117.11			211		53-133		
PETN	9766	7621.5			78		36-143		
RD	1953	6013.57			308		45-145		
Tetryl	1953	945.07			48		38-152		
1,3,5-Trinitrobenzene	1953	1720.72			88		48-141		
2,4,6-Trinitrotoluene	1953	1361.01			70		47-140		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161970016A	Sample number s : 8469770-8469771								
Perchlorate in Soil LC/MS/MS	100	59.17			59		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010637002	Sample number s : 8469767-8469769								
Aluminum	200	200.34			100		80-120		
Antimony	50	51.73			103		80-120		
Arsenic	15	14.95			100		80-120		
Barium	200	195.96			98		80-120		
Beryllium	5.00	4.84			97		80-120		
Cadmium	5.00	4.97			99		80-120		
Calcium	400	400.49			100		80-120		
Chromium	20	19.49			97		80-120		
Cobalt	50	49.94			100		80-120		
Copper	25	24.97			100		80-120		
Iron	100	99.16			99		80-120		
Lead	15	15.06			100		80-120		
Magnesium	200	201.47			101		80-120		
Manganese	50	49.28			99		80-120		
Nickel	50	50.37			101		80-120		

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 09/02/2016 13:22

Group Number: 1681573

LCS/LCSD continued

Analysis Name	LCS Spike Added mg/kg	LCS Conc mg/kg	LCSD Spike Added mg/kg	LCSD Conc mg/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Potassium	1000	967.95			97		80-120		
Selenium	15	13.87			92		80-120		
Silver	5.00	4.72			94		80-120		
Sodium	1000	913.43			91		80-120		
Vanadium	50	51.11			102		80-120		
Zinc	50	49.11			98		80-120		
Batch number: 162010637002A	Sample number s : 8469767-8469769								
Thallium	0.200	0.197			98		80-120		
	%	%	%	%					
Batch number: 16232820002A	Sample number s : 8469767-8469771								
Moisture	89.5	89.46			100		99-101		
Moisture Duplicate	89.5	89.46			100		99-101		

MS/MSD

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: 161960014A	Sample number s : 8469770-8469771 UNSP : P457191									
4-Amino-2,6-Dinitrotoluene	41 U	1930	2313.13	1930	2232.68	120	116	42-138	4	50
2-Amino-4,6-Dinitrotoluene	41 U	1940	1985.87	1940	1928.24	102	99	43-141	3	50
1,3-Dinitrobenzene	40 U	1940	1818.15	1940	1797.68	94	93	54-140	1	50
2,4-Dinitrotoluene	40 U	1940	698.05	1940	662.18	36	34	52-137	5	50
2,6-Dinitrotoluene	110 U	1940	3122.31	1950	3166.23	161	162	51-138	1	50
HM	210 U	1930	2434.22	1940	2300.13	126	119	29-148	6	50
Nitrobenzene	99 U	1940	954.47	1940	902.81	49	47	64-138	6	50
Nitroglycerin	790 U	19400	10872.22	19400	10856.52	56	56	45-137	0	50
2-Nitrotoluene	74 U	1940	938.21	1940	981.44	48	51	57-135	5	50
3-Nitrotoluene	110 U	1940	1038.99	1940	1034.57	54	53	57-135	0	50
4-Nitrotoluene	110 U	1940	3058.3	1950	3239.62	158	166	53-133	6	50
PETN	790 U	19500	13735.35	19500	13998.16	70	72	36-143	2	50
RD	40 U	1930	1509.7	1940	1415.93	78	73	45-145	6	50
Tetryl	99 U	1950	511.15	1950	541.62	26	28	38-152	6	50
2,4,6-Trinitrotoluene	43 U	1940	629.41	1950	665.93	32	34	47-140	6	50
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 161970016A	Sample number s : 8469770-8469771 UNSP : P457191									
Perchlorate in Soil LC/MS/MS	2.1 U	100	94.66	100	95.26	95	95	70-130	1	15
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010637002	Sample number s : 8469767-8469769 UNSP : P457190									
Aluminum	1025.12	168.07	1611.74	136.05	1492.82	349 2	344 2	75-125	8	20

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681573
Reported: 09/02/2016 13:22

MS/MSD continued

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Antimony	0.667 U	42.02	39.27	34.01	31.21	93	92	75-125	23	20
Arsenic	0.924 U	12.61	11.47	10.2	8.79	91	86	75-125	26	20
Barium	3.48	168.07	170.95	136.05	136.48	100	98	75-125	22	20
Beryllium	0.0638 U	4.20	4.17	3.40	3.32	99	98	75-125	23	20
Cadmium	0.0467 U	4.20	4.18	3.40	3.31	100	97	75-125	23	20
Calcium	196.35	336.13	540.48	272.11	445.73	102	92	75-125	19	20
Chromium	1.76	16.81	18.72	13.61	15.03	101	98	75-125	22	20
Cobalt	0.114 U	42.02	42.33	34.01	33.44	101	98	75-125	23	20
Copper	0.737	21.01	22.52	17.01	17.97	104	101	75-125	22	20
Iron	498.66	84.03	634.82	68.03	554.42	162 2	82 2	75-125	14	20
Lead	6.88	12.61	19.93	10.2	16.95	104	99	75-125	16	20
Magnesium	76.48	168.07	285.34	136.05	220.97	124	106	75-125	25	20
Manganese	14.8	42.02	53.71	34.01	43.2	93	83	75-125	22	20
Nickel	0.389	42.02	42.94	34.01	33.99	101	99	75-125	23	20
Potassium	32.97	840.34	872.68	680.27	694.82	100	97	75-125	23	20
Selenium	0.857 U	12.61	10.22	10.2	8.58	81	84	75-125	17	20
Silver	0.143 U	4.20	3.87	3.40	3.08	92	90	75-125	23	20
Sodium	26.88	840.34	790.96	680.27	632.1	91	89	75-125	22	20
Vanadium	2.96	42.02	47.31	34.01	37.73	106	102	75-125	23	20
Zinc	2.87	42.02	44.73	34.01	35.33	100	95	75-125	23	20
Batch number: 162010637002A	Sample number s : 8469767-8469769 UNSP : P457190									
Thallium	0.0276 U	0.336	0.466	0.272	0.391	139	144	75-125	18	20

Laboratory Duplicate

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Batch number: 162010637002	Sample number s : 8469767-8469769 B G: P457190			
Aluminum	1025.12	976.3	5	20
Antimony	0.667 U	0.493 U	0 1	20
Arsenic	0.924 U	0.683 U	0 1	20
Barium	3.48	3.41	2 1	20
Beryllium	0.0638 U	0.0472 U	0 1	20
Cadmium	0.0467 U	0.0345 U	0 1	20
Calcium	196.35	185.93	5	20
Chromium	1.76	1.85	5 1	20
Cobalt	0.114 U	0.0845 U	0 1	20
Copper	0.737	0.854	15 1	20
Iron	498.66	486.33	3	20
Lead	6.88	7.77	12 1	20
Magnesium	76.48	73.05	5 1	20
Manganese	14.8	13.67	8	20

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

REVISED

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681573
Reported: 09/02/2016 13:22

Laboratory Duplicate continued

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc	DUP Conc	DUP RPD		DUP RPD Max
	mg/kg	mg/kg			
Nickel	0.389	0.407	5	1	20
Potassium	32.97	31.93	3	1	20
Selenium	0.857 U	0.634 U	0	1	20
Silver	0.143 U	0.106 U	0	1	20
Sodium	26.88	25.06	7	1	20
Vanadium	2.96	3.17	7	1	20
Zinc	2.87	2.72	5	1	20
Batch number: 162010637002A	Sample number s : 8469767-8469769 B G: P457190				
Thallium	0.0276 U	0.0204 U	0	1	20
	%	%			
Batch number: 16232820002A	Sample number s : 8469767-8469771 B G: P457189				
Moisture	7.05	7.67	8		5
Moisture Duplicate	7.05	7.67	8		5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Nitroaromatics/Amines 8330B s
Batch number: 161960014A

	3,4-Dinitrotoluene
8469770	128
8469771	107
Blank	77
LCS	195
MS	128
MSD	107
Limits:	62-133

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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Acct. # 11372 Group # 1681573 Sample # 846976771

COC # 503226

Client Information

Client: CH2MHILL | Acct. #:

Project Name/#: DOW WOODBINE | PWSID #:

Project Manager: MARK STERRILL | P.O. #:

Sampler: J. Crostic M. Burlington | Quote #:

State where samples were collected: Georgia | For Compliance: Yes ☐ No ☐

Matrix

Soil ☒ Sediment ☐ Water ☐ Tissue ☐ Potable ☐ Ground ☐ NPDES ☐ Surface ☐ Other: QC

Analysis Requested

Preservation Codes: H

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOC in water	VOC in soil	SVOC	Hex Chromium	Cyanide	Mercury	Metals	Perchlorate	Explosives	Moisture	pH Long
TB-08	6/30	0800	X		2	X										
DU-1-3-A		0900		X	6		X	X	X	X	X	X	X	X	X	
DU-1-3-B		0945		X	6		X	X	X	X	X	X	X	X	X	
DU-1-3-C		1030		X	6		X	X	X	X	X	X	X	X	X	
DU-1-2-A		1130		X	6		X	X	X	X	X	X	X	X	X	
DU-1-2-B		1230		X	6		X	X	X	X	X	X	X	X	X	
DU-1-2-C		1330		X	6		X	X	X	X	X	X	X	X	X	
DU-1-12-40mm-SS		1415		X	1								X			
DU-1-12-40mm-SSD		1420		X	1								X			

For Lab Use Only: FSC: | SCR#:

Preservation Codes: H=HCl T=Thiosulfate N=HNO_3 B=NaOH S=H_2SO_4 O=Other

Remarks

Turnaround Time (TAT) Requested (please circle): Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) Type VI (Raw Data Only)

Type III (Reduced non-CLP) NJ DKQP TX TRRP-13

NYSDEC Category A or B MA MCP CT RCP

Relinquished by	Date	Time	Received by	Date	Time
J. Crostic	6/30	1700			

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____

Temperature upon receipt 2.3 °C

Co#160573

Natalie Luciano

From: Mark.Stinnett@CH2M.com
Sent: Tuesday, July 12, 2016 10:06 AM
To: Natalie Luciano
Subject: TB sets for Woodbine Special Event. MS/MSD sets for DU

Importance: High

Hi Natalie,

We will need 8 sets of TBs for Woodbine Special Events. This will be a FedEx order for arrival tomorrow morning. Also, let's use DU-1-3A for the MS/MSD set.



Mark Stinnett
Project Chemist-CH2M HILL/GNV
GNV CHEM GROUP
Gainesville-Florida, USA
352-384-7180 Direct
352-335-7991 Switchboard
352-335-2959 Fax
mstinnet@ch2m.com

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Sample Administration Receipt Documentation Log

Doc Log ID: 152404

Group Number(s): 1678394 1681573 AHO 7/6/16

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	07/01/2016 9:30
Number of Packages:	1	Number of Projects:	1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Timothy Cubberley (6520) at 10:14 on 07/01/2016

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT131	2.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425

T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

<	less than
>	greater than
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
ppb	parts per billion
Dry weight basis	Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8457188	TB-08	X		1	Trip Blank
8457192	DU-1-3-A		X	1.24	
8457196	DU-1-3-B		X	1.53	
8457200	DU-1-3-C		X	1.26	
8457204	DU-1-2-A		X	1.29	
8457208	DU-1-2-B		X	1.28	
8457212	DU-1-2-C		X	1.3	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 8457192, 8457196, 8457200, 8457204, 8457208, 8457212: Analysis: 11995)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

(Sample number(s): 8457192, 8457196, 8457200, 8457204, 8457208, 8457212: Analysis: 11995)
The recovery for a target analyte(s) in the Laboratory Control
Spike(s) is outside the QC acceptance limits as noted on the QC
Summary. Since the recovery is high and the target analyte(s)
was not detected in the sample, the data is reported.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Batch#: A161792AB (Sample number(s): 8457192, 8457196, 8457200, 8457204, 8457208, 8457212)
The recovery(ies) for the following analyte(s) in the LCSD exceeds the acceptance window indicating a positive bias: 4-Methyl-2-pentanone
Since the recovery is high and no analytes are detected above the quantitation limit, the data is reported.

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

SAMPLE ANALYSIS:

(Sample number(s): 8457192, 8457196, 8457200, 8457204, 8457208, 8457212: Analysis: 11995)
The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken: since this internal standard was not used to quantitate any target analytes, the data is reported.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
4-Methyl-2-pentanone 8260C	A161792AB	VBLKA41	07/06/2016 08:54:00
		LCSA41	07/06/2016 09:20:00
		LCDA41	07/06/2016 09:45:00
		8457192	07/06/2016 14:27:00
		8457196	07/06/2016 14:50:00
		8457200	07/06/2016 15:12:00
		8457204	07/06/2016 15:35:00
		8457208	07/06/2016 15:57:00
		8457212	07/06/2016 16:20:00
4-Methyl-2-pentanone 8260C	L161872AA	VBLKL14	07/05/2016 18:19:00
		LCSL14	07/05/2016 17:35:00
		LCDL14	07/05/2016 17:57:00
		8457188	07/06/2016 02:20:00

Fraction: Volatiles by GC/MS

A161792AB / VBLKA41 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
4-Methyl-2-pentanone	07/06/16	N.D.	ug/kg	3	10

Fraction: Volatiles by GC/MS

L161872AA / VBLKL14 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
4-Methyl-2-pentanone	07/05/16	N.D.	ug/l	3	10

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DWD93
Matrix: SOLID

Fraction: Volatiles by GC/MS

A161792AB	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKA41	101	54 - 135	96	50 - 131	102	50 - 141	101	52 - 141
LCSA41	104	54 - 135	100	50 - 131	102	50 - 141	101	52 - 141
LCDA41	103	54 - 135	101	50 - 131	102	50 - 141	102	52 - 141
8457192	101	54 - 135	73	50 - 131	103	50 - 141	120	52 - 141
8457196	101	54 - 135	78	50 - 131	104	50 - 141	117	52 - 141
8457200	104	54 - 135	73	50 - 131	104	50 - 141	117	52 - 141
8457204	103	54 - 135	85	50 - 131	105	50 - 141	111	52 - 141
8457208	103	54 - 135	83	50 - 131	103	50 - 141	109	52 - 141
8457212	102	54 - 135	82	50 - 131	105	50 - 141	117	52 - 141

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DWD93
Matrix: LIQUID

Fraction: Volatiles by GC/MS

L161872AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKL14	102	77 - 113	98	78 - 113	102	80 - 116	95	80 - 113
LCSL14	100	77 - 113	102	78 - 113	101	80 - 116	97	80 - 113
LCDL14	102	77 - 113	101	78 - 113	102	80 - 116	97	80 - 113
8457188	103	77 - 113	99	78 - 113	102	80 - 116	96	80 - 113

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD93
Matrix: SOLID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSA41 LCSD: LCDA41 **Analyte**	Batch: **A161792AB** (Sample number(s): 8457192, 8457196, 8457200, 8457204, 8457208, 8457212)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
4-Methyl-2-pentanone	100	117.14	122.54	117	123 *	50-120	5	30

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD93
Matrix: LIQUID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSL14 LCSD: LCDL14	Batch: **L161872AA** (Sample number(s): 8457188)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
4-Methyl-2-pentanone	100	108.79	109.11	109	109	47-133	0	30

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID: au20t01.d BFB Injection Date: 06/20/16

Instrument ID: HP09685 BFB Injection Time: 08:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.74
75	30.0 - 60.0% of mass 95	48.97
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.93
173	Less than 2.0% of mass 174	0.26 (0.34)1
174	Greater than 50.0% of mass 95	77.00
175	5.0 - 9.0% of mass 174	5.63 (7.31)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.51 (99.37)1
177	5.0 - 9.0% of mass 176	5.06 (6.61)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	au20i01.d	06/20/16	08:48
02	VSTD100	au20i02.d	06/20/16	09:12
03	VSTD50	au20i03.d	06/20/16	10:23
04	VSTD20	au20i04.d	06/20/16	10:49
05	VSTD10	au20i05.d	06/20/16	11:14
06	VSTD4	au20i06.d	06/20/16	12:06
07	VSTD1	au20i07.d	06/20/16	12:32
08	VSTD0.5	au20m01.d	06/20/16	12:58
09	LCSAICVC	au20v01.d	06/20/16	13:30
10	LCSA26	au20l01.d	06/20/16	14:36
11	LCDA26	au20l02.d	06/20/16	14:59
12	VBLKA26	au20b01.d	06/20/16	15:21
13	8416938	au20s09.d	06/20/16	15:58
14	8416934	au20s03.d	06/20/16	17:33
15	8416937	au20s04.d	06/20/16	17:55
16	8416945	au20s05.d	06/20/16	18:18
17	8416946	au20s06.d	06/20/16	18:41
18	8419253	au20s07.d	06/20/16	19:04
19	8414856	au20s08.d	06/20/16	19:26

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID: al06t01.d BFB Injection Date: 07/06/16

Instrument ID: HP09685 BFB Injection Time: 07:23

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.07
75	30.0 - 60.0% of mass 95	47.70
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.04
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	79.61
175	5.0 - 9.0% of mass 174	5.48 (6.88)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.33 (95.88)1
177	5.0 - 9.0% of mass 176	5.13 (6.72)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	al06c01.d	07/06/16	08:09
02	VBLKA39	al06b01.d	07/06/16	08:54
03	VBLKA41	al06b02.d	07/06/16	08:54
04	LCSA39	al06l01.d	07/06/16	09:20
05	LCSA41	al06l61.d	07/06/16	09:20
06	LCDA39	al06l02.d	07/06/16	09:45
07	LCDA41	al06l62.d	07/06/16	09:45
08	8459953	al06s03.d	07/06/16	10:41
09	8459954	al06s04.d	07/06/16	11:03
10	8459958	al06s05.d	07/06/16	11:26
11	8459959	al06s06.d	07/06/16	11:49
12	8459960	al06s07.d	07/06/16	12:11
13	8459961	al06s08.d	07/06/16	12:34
14	8459962	al06s09.d	07/06/16	12:56
15	8459963	al06s10.d	07/06/16	13:19
16	SECC050	al06c02.d	07/06/16	13:42
17	8442814RE	al06s63.d	07/06/16	14:04
18	8457192	al06s64.d	07/06/16	14:27
19	8457196	al06s65.d	07/06/16	14:50
20	8457200	al06s66.d	07/06/16	15:12
21	8457204	al06s67.d	07/06/16	15:35
22	8457208	al06s68.d	07/06/16	15:57

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID: al06t01.d BFB Injection Date: 07/06/16

Instrument ID: HP09685 BFB Injection Time: 07:23

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.07
75	30.0 - 60.0% of mass 95	47.70
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	7.04
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	79.61
175	5.0 - 9.0% of mass 174	5.48 (6.88)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.33 (95.88)1
177	5.0 - 9.0% of mass 176	5.13 (6.72)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	8457212	al06s69.d	07/06/16	16:20
24	LOD008 - LOD008	al06d02.d	07/06/16	17:05
25	LOD004 - LOD004	al06d03.d	07/06/16	17:28
26	LOD002 - LOD002	al06d04.d	07/06/16	17:50
27	LODS - LODS	al06d05.d	07/06/16	18:13
28	LOQV - LOQV	al06d06.d	07/06/16	18:36

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID: la22t01.d BFB Injection Date: 04/22/16

Instrument ID: HP09915 BFB Injection Time: 09:13

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.66
75	30.0 - 60.0% of mass 95	47.86
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.71
173	Less than 2.0% of mass 174	0.58 (0.66)1
174	Greater than 50.0% of mass 95	87.40
175	5.0 - 9.0% of mass 174	5.94 (6.79)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.17 (95.16)1
177	5.0 - 9.0% of mass 176	5.11 (6.15)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	la22i01.d	04/22/16	09:55
02	VSTD100	la22i02.d	04/22/16	10:17
03	VSTD50	la22i03.d	04/22/16	10:39
04	VSTD20	la22i04.d	04/22/16	11:01
05	VSTD10	la22i05.d	04/22/16	11:23
06	VSTD4	la22i06.d	04/22/16	11:45
07	VSTD1	la22i07.d	04/22/16	12:07
08	MDL0.5 - MDL0.5	la22m01.d	04/22/16	12:29
09	LCS01	la22v01.d	04/22/16	12:51
10	VSTD300	la22i11.d	04/22/16	14:05
11	VSTD100	la22i12.d	04/22/16	14:27
12	VSTD50	la22i13.d	04/22/16	14:49
13	VSTD20	la22i14.d	04/22/16	15:11
14	VSTD10	la22i15.d	04/22/16	15:33
15	VSTD4	la22i16.d	04/22/16	15:55
16	MDL001 - MDL001	la22m02.d	04/22/16	16:17
17	LCS02	la22v02.d	04/22/16	16:39

FORM V VOA

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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID: l105t05.d BFB Injection Date: 07/05/16

Instrument ID: HP09915 BFB Injection Time: 16:32

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.91
75	30.0 - 60.0% of mass 95	45.88
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.46
173	Less than 2.0% of mass 174	0.59 (0.70)1
174	Greater than 50.0% of mass 95	84.60
175	5.0 - 9.0% of mass 174	6.35 (7.50)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.49 (96.32)1
177	5.0 - 9.0% of mass 176	5.42 (6.65)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	l105c05.d	07/05/16	17:13
02	LCSL14	l105s31.d	07/05/16	17:35
03	LCDL14	l105s32.d	07/05/16	17:57
04	VBLKL14	l105b05.d	07/05/16	18:19
05	8442828	l105s33.d	07/05/16	18:41
06	8442829	l105s34.d	07/05/16	19:03
07	8442830	l105s35.d	07/05/16	19:25
08	8442831	l105s36.d	07/05/16	19:47
09	8444113	l105s37.d	07/05/16	20:09
10	8444114	l105s38.d	07/05/16	20:31
11	8444115	l105s39.d	07/05/16	20:52
12	8444116	l105s40.d	07/05/16	21:14
13	8445666	l105s41.d	07/05/16	21:36
14	8445667	l105s42.d	07/05/16	21:58
15	8445668	l105s43.d	07/05/16	22:20
16	8449085	l105s44.d	07/05/16	22:42
17	8450968	l105s45.d	07/05/16	23:04
18	8451646	l105s46.d	07/05/16	23:26
19	8451647	l105s47.d	07/05/16	23:47
20	8451647DL	l105s48.d	07/06/16	00:09
21	8451648	l105s49.d	07/06/16	00:31
22	8451649	l105s50.d	07/06/16	00:53

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID: l105t05.d BFB Injection Date: 07/05/16

Instrument ID: HP09915 BFB Injection Time: 16:32

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.91
75	30.0 - 60.0% of mass 95	45.88
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.46
173	Less than 2.0% of mass 174	0.59 (0.70)1
174	Greater than 50.0% of mass 95	84.60
175	5.0 - 9.0% of mass 174	6.35 (7.50)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.49 (96.32)1
177	5.0 - 9.0% of mass 176	5.42 (6.65)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
23	8451650	l105s51.d	07/06/16	01:15
24	8451651	l105s52.d	07/06/16	01:37
25	8454720	l105s53.d	07/06/16	01:59
26	8457188	l105s54.d	07/06/16	02:20

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VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date(s): 06/20/16 06/20/16

Heated Purge: (Y/N) Y Calibration Times: 08:48 12:32

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = au20i07.d RRF 4 = au20i06.d RRF 10= au20i05.d
RRF 20= au20i04.d RRF 50= au20i03.d RRF100= au20i02.d RRF300= au20i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Dichlorodifluoromethane	#0.3015	0.4061	0.4347	0.4374	0.4139	0.3790	0.3721	0.3921	12	AVG #
Chloromethane	#0.3447	0.4453	0.4523	0.4173	0.4163	0.4043	0.3715	0.4074	9	AVG #
Vinyl Chloride	#0.2880	0.3897	0.4136	0.3999	0.3821	0.3636	0.3504	0.3696	11	AVG #
Bromomethane	#0.2231	0.2697	0.2762	0.2688	0.2576	0.2444	0.2169	0.2509	9	AVG #
Chloroethane	#0.1715	0.2217	0.2260	0.2194	0.2097	0.2000	0.1809	0.2042	10	AVG #
Dichlorofluoromethane	0.3851	0.4846	0.5016	0.4950	0.4828	0.4623	0.4563	0.4668	8	AVG
Trichlorofluoromethane	#0.3332	0.4472	0.4646	0.4680	0.4482	0.4096	0.4182	0.4270	11	AVG #
Ethanol	0.1832	0.1707	0.1917	0.1795	0.1769	0.1750	0.1818	0.1798	4	AVG
Freon 123a	0.2483	0.3140	0.3249	0.3171	0.3106	0.3000	0.3009	0.3023	8	AVG
Acrolein	2.4021	2.5457	3.3317	2.7087	2.6390	2.4547	2.5173	2.6570	12	AVG
1,1-Dichloroethene	#0.1624	0.2170	0.2212	0.2280	0.2345	0.2401	0.2326	0.2194	12	AVG #
1,1-Dichloroethene(2)	#0.0795	0.1177	0.1184	0.1226	0.1269	0.1265	0.1221	0.1162	14	AVG #
Acetone	#	1.3648	1.3025	1.3884	1.2412	1.2298	1.2487	1.2959	5	AVG #
Freon 113	#	0.2142	0.2000	0.2274	0.2423	0.2385	0.2319	0.2257	7	AVG #
2-Propanol	0.9644	0.9736	0.9905	1.0054	0.9555	0.9485	1.0546	0.9846	4	AVG
Methyl Iodide	0.3045	0.3904	0.4101	0.4170	0.4287	0.4403	0.4218	0.4018	11	AVG
Carbon Disulfide	#0.5631	0.6775	0.6999	0.7313	0.7775	0.8023	0.7824	0.7191	11	AVG #
Methyl Acetate	#0.1880	0.1928	0.2056	0.1771	0.1902	0.1950	0.1903	0.1913	4	AVG #
Allyl Chloride	0.3026	0.3903	0.4225	0.4162	0.4191	0.4249	0.4101	0.3979	11	AVG
Methylene Chloride	#0.3152	0.2782	0.2730	0.2658	0.2695	0.2770	0.2653	0.2777	6	AVG #
t-Butyl alcohol	1.5669	1.4165	1.4095	1.4042	1.3935	1.4328	1.6033	1.4610	6	AVG
Acrylonitrile	0.0554	0.0927	0.1014	0.0876	0.1013	0.1035	0.1021	0.0920	19	AVG
Methyl Tertiary Butyl Ether	#0.6256	0.6812	0.7136	0.6962	0.7418	0.7734	0.7514	0.7119	7	AVG #
trans-1,2-Dichloroethene	#0.1629	0.2384	0.2466	0.2505	0.2588	0.2682	0.2595	0.2407	15	AVG #
n-Hexane	0.2650	0.4265	0.3194	0.3732	0.4142	0.4110	0.3881	0.3710	16	AVG
1,1-Dichloroethane	#0.3556	0.4482	0.4614	0.4701	0.4818	0.4944	0.4785	0.4557	10	AVG #
di-Isopropyl ether	0.6921	0.7832	0.8484	0.8697	0.9005	0.9307	0.8961	0.8458	10	AVG
2-Chloro-1,3-butadiene		0.3403	0.3562	0.3861	0.4125	0.4290	0.4166	0.3901	9	AVG
Ethyl t-butyl ether	0.5878	0.6774	0.7142	0.7400	0.7689	0.7974	0.7678	0.7219	10	AVG
2-Butanone	#5.3778	5.5432	5.9079	5.9932	5.7792	5.7351	5.9830	5.7599	4	AVG #
cis-1,2-Dichloroethene	#0.2147	0.2639	0.2716	0.2783	0.2879	0.3005	0.2934	0.2729	10	AVG #
2,2-Dichloropropane	0.2106	0.3006	0.3103	0.3371	0.3623	0.3763	0.3666	0.3234	18	AVG
Propionitrile	1.6199	1.7320	1.7848	1.9565	1.7845	1.8265	1.9266	1.8044	6	AVG
Methacrylonitrile	0.0964	0.1016	0.1084	0.0992	0.1112	0.1162	0.1155	0.1069	7	AVG
Bromochloromethane	0.1064	0.1276	0.1385	0.1350	0.1372	0.1443	0.1420	0.1330	10	AVG
Tetrahydrofuran	1.1724	1.5211	1.5964	1.6479	1.6139	1.6360	1.7360	1.5605	12	AVG
Chloroform	#0.3505	0.4241	0.4358	0.4434	0.4544	0.4741	0.4608	0.4347	9	AVG #
1,1,1-Trichloroethane	#0.3137	0.4274	0.3786	0.4061	0.4007	0.4193	0.4129	0.3941	10	AVG #
Cyclohexane	#	0.4357	0.3897	0.4473	0.4847	0.4905	0.4714	0.4532	8	AVG #
Cyclohexane(2)	#	0.3584	0.3235	0.3751	0.4008	0.4034	0.3926	0.3756	8	AVG #
Cyclohexane(3)	#	0.1307	0.1149	0.1351	0.1464	0.1472	0.1446	0.1365	9	AVG #
1,1-Dichloropropene	0.2488	0.3298	0.3293	0.3588	0.3795	0.3962	0.3884	0.3473	15	AVG
Carbon Tetrachloride	#0.1802	0.2618	0.2580	0.2905	0.3194	0.3373	0.3430	0.2843	20	AVG #
Isobutyl Alcohol	0.4537	0.4876	0.4729	0.4960	0.4858	0.4892	0.5813	0.4952	8	AVG
Benzene	#1.0591	1.0676	1.0493	1.0817	1.1002	1.1301	1.0920	1.0828	3	AVG #
1,2-Dichloroethane	#0.3559	0.3433	0.3403	0.3384	0.3492	0.3571	0.3510	0.3479	2	AVG #
1,2-Dichloroethane(2)	#0.0836	0.0280	0.0309	0.0315	0.0317	0.0332	0.0332	0.0389	51	AVG #<-
t-Amyl methyl ether	0.5453	0.6221	0.6535	0.6637	0.7052	0.7391	0.7281	0.6653	10	AVG
n-Heptane		0.4539	0.3277	0.3804	0.4334	0.4308	0.3947	0.4035	11	AVG
n-Butanol		0.3671	0.3752	0.4078	0.4078	0.4315	0.5268	0.4194	14	AVG
Trichloroethene	#0.1915	0.2524	0.2448	0.2633	0.2741	0.2851	0.2829	0.2563	13	AVG #
Methylcyclohexane	#0.3180	0.4777	0.5098	0.4992	0.5058	0.5050	0.5200	0.4765	15	AVG #

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date(s): 06/20/16 06/20/16

Heated Purge: (Y/N) Y Calibration Times: 08:48 12:32

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = au20i07.d RRF 4 = au20i06.d RRF 10= au20i05.d
RRF 20= au20i04.d RRF 50= au20i03.d RRF100= au20i02.d RRF300= au20i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dichloropropane	#0.2283	0.2616	0.2721	0.2831	0.2954	0.3045	0.3019	0.2781	10	AVG #
Methyl Methacrylate	0.1288	0.1602	0.1738	0.1690	0.1936	0.2033	0.2122	0.1773	16	AVG
1,4-Dioxane	0.1229	0.1384	0.1470	0.1632	0.1530	0.1618	0.1818	0.1526	12	AVG
Dibromomethane	0.1386	0.1458	0.1526	0.1533	0.1616	0.1683	0.1697	0.1557	7	AVG
Bromodichloromethane	#0.2211	0.2624	0.2852	0.2990	0.3218	0.3417	0.3524	0.2977	16	AVG #
2-Nitropropane	1.7609	2.0810	2.2922	2.6388	2.8433	2.9702	3.3801	2.5666	22	2NDDEG
cis-1,3-Dichloropropene	#0.2846	0.3452	0.3783	0.4117	0.4489	0.4671	0.4741	0.4014	17	AVG #
4-Methyl-2-pentanone	#0.2068	0.2198	0.2590	0.2159	0.2657	0.2752	0.2759	0.2455	12	AVG #
Toluene	#0.7560	0.8874	0.8576	0.9211	0.9432	0.9638	0.9191	0.8926	8	AVG #
trans-1,3-Dichloropropene	#0.3248	0.4093	0.4524	0.4825	0.5294	0.5601	0.5632	0.4745	18	AVG #
Ethyl Methacrylate		0.3660	0.4073	0.3893	0.4908	0.5152	0.5243	0.4488	15	AVG
1,1,2-Trichloroethane	#0.2905	0.3023	0.3120	0.3081	0.3186	0.3279	0.3261	0.3122	4	AVG #
Tetrachloroethene	#0.2598	0.3623	0.3321	0.3727	0.3864	0.4021	0.3961	0.3588	14	AVG #
1,3-Dichloropropane	0.5018	0.5304	0.5583	0.5384	0.5684	0.5828	0.5684	0.5498	5	AVG
2-Hexanone	#0.1955	0.2066	0.2561	0.2023	0.2549	0.2669	0.2606	0.2347	13	AVG #
Dibromochloromethane	#0.2165	0.2557	0.2852	0.3061	0.3412	0.3658	0.3837	0.3077	20	AVG #
1,2-Dibromoethane	#0.2579	0.2860	0.3072	0.3028	0.3223	0.3377	0.3401	0.3077	10	AVG #
Chlorobenzene	#0.9042	1.0052	0.9846	1.0410	1.0695	1.1016	1.0659	1.0245	6	AVG #
1,1,1,2-Tetrachloroethane	0.2345	0.2750	0.2949	0.3186	0.3492	0.3722	0.3811	0.3179	17	AVG
Ethylbenzene	#1.2977	1.5878	1.5438	1.7403	1.8265	1.9162	1.7982	1.6729	13	AVG #
m+p-Xylene	#0.4795	0.6281	0.6196	0.6907	0.7249	0.7593	0.7180	0.6600	14	AVG #
o-Xylene	#0.4625	0.6030	0.6017	0.6770	0.7168	0.7432	0.7216	0.6465	15	AVG #
Styrene	#0.6754	0.9290	0.9813	1.0954	1.1792	1.2419	1.1979	1.0429	19	AVG #
Bromoform	#0.1436	0.1474	0.1716	0.1769	0.2111	0.2339	0.2632	0.1925	23	2NDDEG #
Isopropylbenzene	#	1.5815	1.4307	1.6569	1.7711	1.8488	1.7304	1.6699	9	AVG #
Cyclohexanone	0.5409	0.6101	0.6740	0.7496	0.7770	0.8206	0.9059	0.7254	17	AVG
1,1,2,2-Tetrachloroethane	#0.7474	0.7754	0.8373	0.7730	0.8265	0.8647	0.8985	0.8176	7	AVG #
Bromobenzene	0.6970	0.7970	0.8020	0.8480	0.8622	0.9139	0.9235	0.8348	9	AVG
trans-1,4-Dichloro-2-butene	0.1944	0.2169	0.2251	0.2132	0.2357	0.2552	0.2636	0.2291	11	AVG
1,2,3-Trichloropropane	0.2162	0.2305	0.2435	0.2209	0.2381	0.2467	0.2548	0.2358	6	AVG
n-Propylbenzene		3.9361	3.3856	3.8815	3.9988	4.2017	3.6867	3.8484	7	AVG
2-Chlorotoluene	0.5984	0.7674	0.7193	0.8021	0.8165	0.8469	0.8257	0.7680	11	AVG
1,3,5-Trimethylbenzene		2.7816	2.4478	2.8063	2.9309	3.0795	2.8518	2.8163	7	AVG
4-Chlorotoluene	0.6272	0.8053	0.7621	0.8281	0.8592	0.8941	0.8712	0.8067	11	AVG
tert-Butylbenzene		0.5948	0.4929	0.5695	0.6116	0.6547	0.6283	0.5920	10	AVG
Pentachloroethane	0.2918	0.3873	0.4509	0.4644	0.4949	0.5369	0.5575	0.4548	20	AVG
1,2,4-Trimethylbenzene		2.8554	2.5291	2.9113	3.0688	3.2519	3.0038	2.9367	8	AVG
sec-Butylbenzene		3.6375	3.0055	3.4821	3.7111	3.9143	3.4622	3.5355	9	AVG
1,3-Dichlorobenzene	#1.3743	1.5803	1.4548	1.6184	1.6810	1.7785	1.6905	1.5968	9	AVG #
p-Isopropyltoluene		3.0890	2.6079	3.0491	3.3204	3.5550	3.1344	3.1260	10	AVG
1,4-Dichlorobenzene	#1.4607	1.6670	1.5209	1.6591	1.7203	1.8160	1.7240	1.6526	7	AVG #
1,2,3-Trimethylbenzene	2.5652	2.9257	3.2590	3.1978	3.1772	3.3435	3.0668	3.0765	9	AVG
Benzyl Chloride	0.1354	0.1932	0.2361	0.2594	0.3234	0.3656	0.4101	0.2747	35	2NDDEG
1,3-Diethylbenzene	1.2868	1.7335	2.0046	1.9770	1.9763	2.0710	1.9646	1.8591	15	AVG
1,4-Diethylbenzene	1.2887	1.8115	2.0572	2.0125	2.0432	2.1507	2.0260	1.9128	15	AVG
n-Butylbenzene		1.6337	1.3216	1.5213	1.6516	1.7524	1.6079	1.5814	9	AVG
1,2-Dichlorobenzene	#1.3661	1.5139	1.4423	1.5534	1.5937	1.6831	1.6460	1.5426	7	AVG #
1,2-Diethylbenzene	1.1358	1.5333	1.7182	1.6667	1.6620	1.7360	1.6657	1.5882	13	AVG
1,2-Dibromo-3-chloropropane	#0.1183	0.1187	0.1357	0.1293	0.1521	0.1648	0.1796	0.1426	17	AVG #
1,3,5-Trichlorobenzene	0.9298	1.2419	1.0502	1.1716	1.2701	1.3590	1.3240	1.1924	13	AVG
1,2,4-Trichlorobenzene	#0.8273	1.0410	0.9037	1.0191	1.1385	1.2409	1.2292	1.0571	15	AVG #
Hexachlorobutadiene		0.5717	0.4320	0.4909	0.5649	0.6053	0.5773	0.5403	12	AVG

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date(s): 06/20/16 06/20/16

Heated Purge: (Y/N) Y Calibration Times: 08:48 12:32

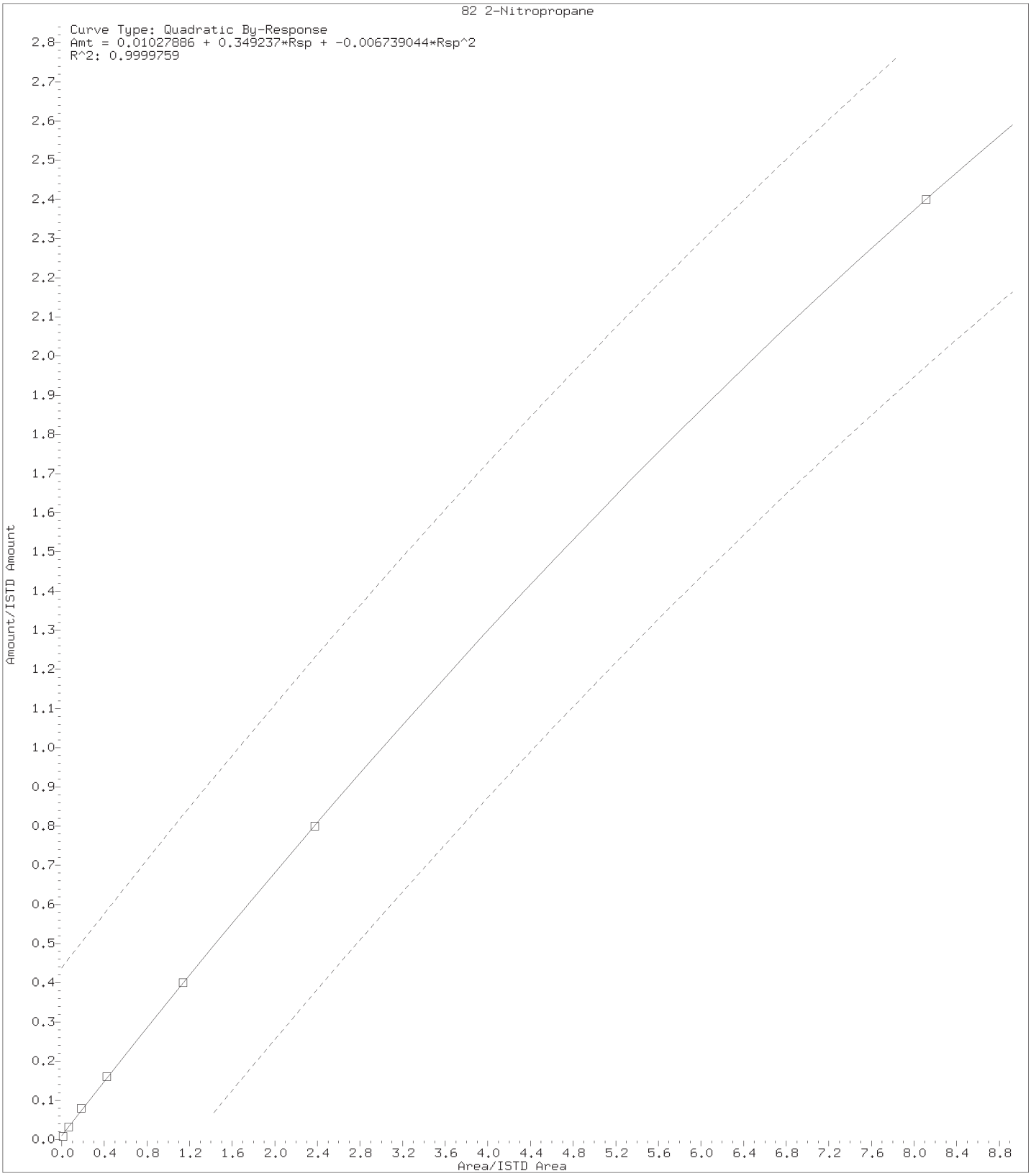
Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = au20i07.d RRF 4 = au20i06.d RRF 10= au20i05.d
RRF 20= au20i04.d RRF 50= au20i03.d RRF100= au20i02.d RRF300= au20i01.d

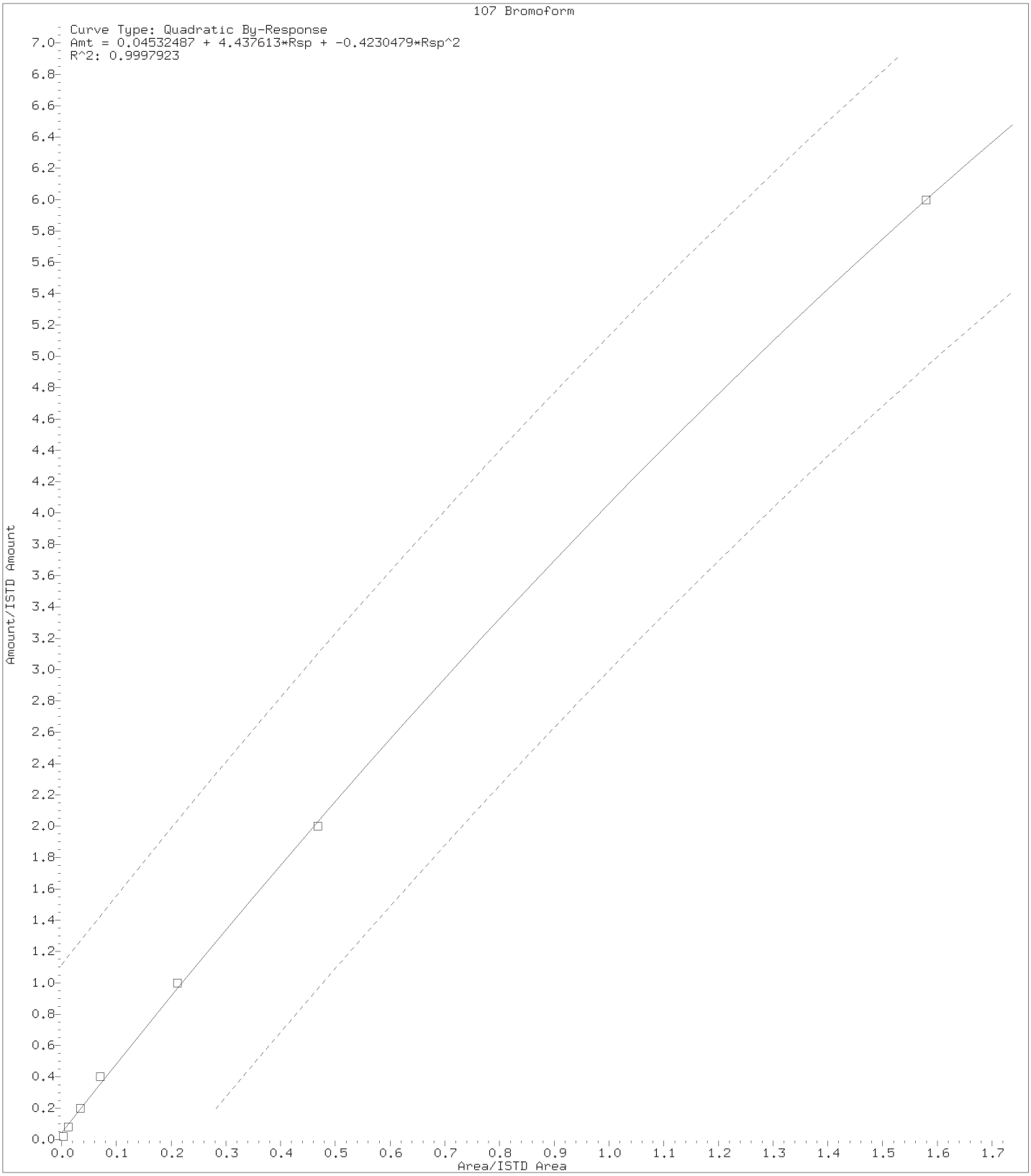
COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Naphthalene	1.6611	2.0874	2.1936	2.3059	2.6972	2.9378	2.8996	2.3975	20	AVG
1,2,3-Trichlorobenzene	0.7448	0.9699	0.8660	0.9346	1.0379	1.1291	1.1252	0.9725	14	AVG
2-Methylnaphthalene	0.3019	0.4877	0.6633	0.7839	1.2435	1.5532	1.5861	0.9456	55	1STDEG
Dibromofluoromethane	0.2254	0.2277	0.2258	0.2276	0.2305	0.2327	0.2331	0.2289	1	AVG
Dibromofluoromethane(2)	0.2327	0.2360	0.2329	0.2343	0.2354	0.2383	0.2383	0.2354	1	AVG
1,2-Dichloroethane-d4	0.0551	0.0551	0.0538	0.0546	0.0543	0.0544	0.0542	0.0545	1	AVG
1,2-Dichloroethane-d4(2)	0.2669	0.2682	0.2655	0.2542	0.2627	0.2630	0.2616	0.2631	2	AVG
1,2-Dichloroethane-d4(3)	0.0347	0.0345	0.0344	0.0340	0.0348	0.0345	0.0346	0.0345	1	AVG
Toluene-d8	1.3834	1.3782	1.3883	1.3847	1.3661	1.3475	1.3044	1.3647	2	AVG
Toluene-d8(2)	0.8882	0.8824	0.8909	0.8905	0.8809	0.8691	0.8385	0.8772	2	AVG
4-Bromofluorobenzene	0.4831	0.4854	0.4866	0.4874	0.4906	0.4859	0.4771	0.4851	1	AVG
4-Bromofluorobenzene(2)	0.3937	0.4007	0.3996	0.3994	0.4034	0.4011	0.3925	0.3986	1	AVG

Average %RSD 11

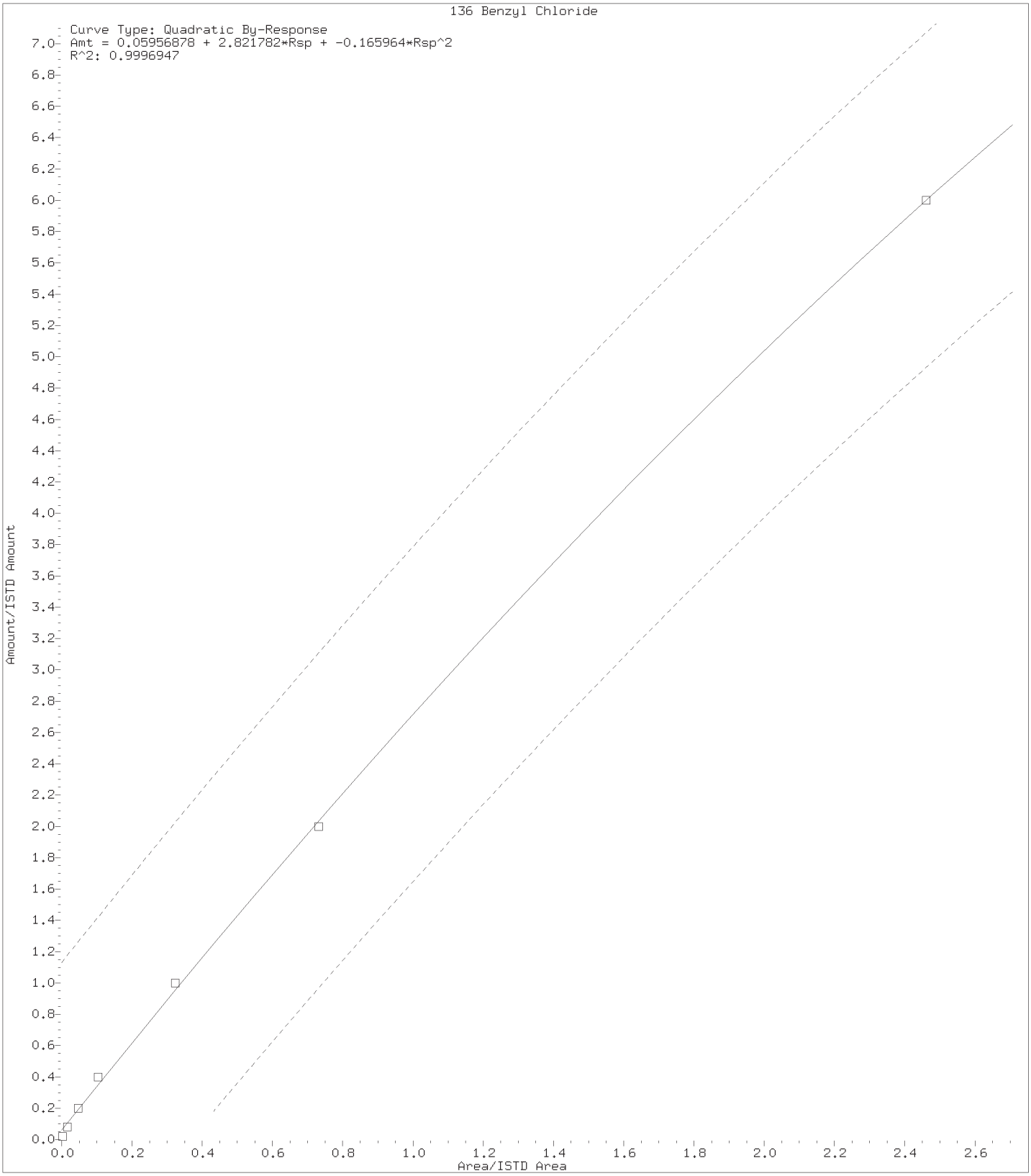
Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.



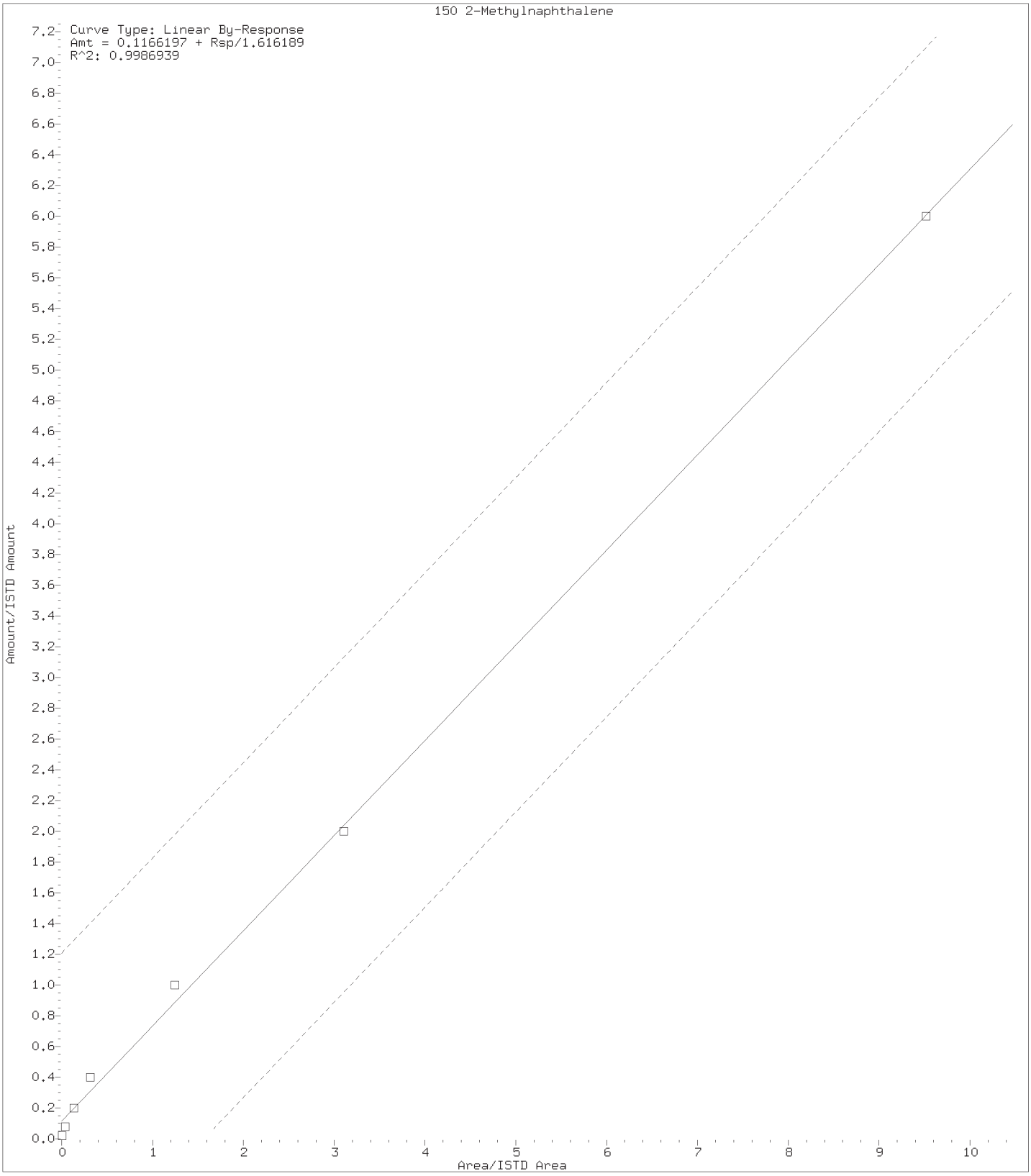
Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002



Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002



Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002



Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09685.i/16jun20a.b/au20i01.d	VSTD300
/chem2/HP09685.i/16jun20a.b/au20i02.d	VSTD100
/chem2/HP09685.i/16jun20a.b/au20i03.d	VSTD050
/chem2/HP09685.i/16jun20a.b/au20i04.d	VSTD020
/chem2/HP09685.i/16jun20a.b/au20i05.d	VSTD010
/chem2/HP09685.i/16jun20a.b/au20i06.d	VSTD004
/chem2/HP09685.i/16jun20a.b/au20i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	au20i01.d	au20i02.d	au20i03.d	au20i04.d	au20i05.d	au20i06.d	au20i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	112141	118889	117913	89597	109332	104982	108967	108832	9	Yes
Fluorobenzene	1071415	1077063	1094634	1048020	1028410	1037340	1012750	1052805	3	Yes
Chlorobenzene-d5	824113	803173	812973	772869	750874	757792	737599	779913	4	Yes
1,4-Dichlorobenzene-d4	449572	427501	430819	399200	387544	389396	371801	407976	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	au20i01.d	au20i02.d	au20i03.d	au20i04.d	au20i05.d	au20i06.d	au20i07.d	Avg. RT
t-Butyl alcohol-d10	3.951	3.964	3.958	3.964	3.970	3.958	3.957	3.960
Fluorobenzene	7.456	7.449	7.449	7.456	7.456	7.449	7.455	7.453
Chlorobenzene-d5	11.015	11.008	11.008	11.015	11.015	11.008	11.008	11.011
1,4-Dichlorobenzene-d4	12.919	12.919	12.919	12.919	12.919	12.919	12.919	12.919

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 06/20/2016 at 13:53.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 ICV Date: 06/20/16 Time: 13:30

Lab File ID: au20v01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	$\overline{RRF}$	RRF	CONC.	CONC.	DRIFT	
# Dichlorodifluoromethane	0.3921	0.3638	18.56	20	-7	#
# Chloromethane	0.4074	0.3946	19.37	20	-3	#
# Vinyl Chloride	0.3696	0.3695	19.99	20	0	#
# Bromomethane	0.2509	0.2490	19.84	20	-1	#
# Chloroethane	0.2042	0.2043	20.02	20	0	#
Dichlorofluoromethane	0.4668	0.5158	22.10	20	10	
# Trichlorofluoromethane	0.4270	0.4531	21.22	20	6	#
Ethanol	0.1798	0.1844	1025.73	1000	3	
Freon 123a	0.3023	0.3352	22.18	20	11	
Acrolein	2.6570	2.4149	136.33	150	-9	
# 1,1-Dichloroethene	0.2194	0.2418	22.04	20	10	#
# Acetone	1.2959	1.2141	140.53	150	-6	#
# Freon 113	0.2257	0.2491	22.07	20	10	#
2-Propanol	0.9846	0.9493	144.62	150	-4	
Methyl Iodide	0.4018	0.4114	20.48	20	2	
# Carbon Disulfide	0.7191	0.7407	20.60	20	3	#
# Methyl Acetate	0.1913	0.1927	20.15	20	1	#
Allyl Chloride	0.3979	0.4110	20.66	20	3	
# Methylene Chloride	0.2777	0.2767	19.93	20	0	#
t-Butyl alcohol	1.4610	1.4421	197.42	200	-1	
Acrylonitrile	0.0920	0.0942	102.44	100	2	
# Methyl Tertiary Butyl Ether	0.7119	0.7282	20.46	20	2	#
# trans-1,2-Dichloroethene	0.2407	0.2693	22.37	20	12	#
n-Hexane	0.3710	0.4433	23.89	20	19	
# 1,1-Dichloroethane	0.4557	0.4894	21.48	20	7	#
di-Isopropyl ether	0.8458	0.8881	21.00	20	5	
2-Chloro-1,3-butadiene	0.3901	0.4070	20.87	20	4	
Ethyl t-butyl ether	0.7219	0.7383	20.45	20	2	
# 2-Butanone	5.7599	5.9380	154.64	150	3	#
# cis-1,2-Dichloroethene	0.2729	0.2892	21.20	20	6	#
2,2-Dichloropropane	0.3234	0.3365	20.81	20	4	
Propionitrile	1.8044	1.9077	158.59	150	6	
Methacrylonitrile	0.1069	0.1117	156.67	150	4	
Bromochloromethane	0.1330	0.1381	20.77	20	4	
Tetrahydrofuran	1.5605	1.6311	104.52	100	5	
# Chloroform	0.4347	0.4490	20.66	20	3	#

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 ICV Date: 06/20/16 Time: 13:30

Lab File ID: au20v01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
1,1,1-Trichloroethane	0.3941	0.4132	20.97	20	5	#
Cyclohexane	0.4532	0.5050	22.28	20	11	#
1,1-Dichloropropene	0.3473	0.3671	21.14	20	6	
Carbon Tetrachloride	0.2843	0.3143	22.11	20	11	#
Isobutyl Alcohol	0.4952	0.5147	519.64	500	4	
Benzene	1.0828	1.1066	20.44	20	2	#
1,2-Dichloroethane	0.3479	0.3457	19.88	20	-1	#
t-Amyl methyl ether	0.6653	0.6716	20.19	20	1	
n-Heptane	0.4035	0.4468	22.15	20	11	
n-Butanol	0.4194	0.4207	1003.18	1000	0	
Trichloroethene	0.2563	0.2793	21.80	20	9	#
Methylcyclohexane	0.4765	0.5018	21.06	20	5	#
1,2-Dichloropropane	0.2781	0.2947	21.19	20	6	#
Methyl Methacrylate	0.1773	0.1829	20.64	20	3	
1,4-Dioxane	0.1526	0.1626	532.63	500	7	
Dibromomethane	0.1557	0.1574	20.22	20	1	
Bromodichloromethane	0.2977	0.3111	20.90	20	5	#
2-Nitropropane	2.5666	2.3419	18.87	20	-6	
cis-1,3-Dichloropropene	0.4014	0.4084	20.35	20	2	#
4-Methyl-2-pentanone	0.2455	0.2530	103.07	100	3	#
Toluene	0.8926	0.9644	21.61	20	8	#
trans-1,3-Dichloropropene	0.4745	0.4934	20.79	20	4	#
Ethyl Methacrylate	0.4488	0.4612	20.55	20	3	
1,1,2-Trichloroethane	0.3122	0.3138	20.10	20	1	#
Tetrachloroethene	0.3588	0.4004	22.32	20	12	#
1,3-Dichloropropane	0.5498	0.5525	20.10	20	0	
2-Hexanone	0.2347	0.2460	104.83	100	5	#
Dibromochloromethane	0.3077	0.3055	19.85	20	-1	#
1,2-Dibromoethane	0.3077	0.3226	20.97	20	5	#
Chlorobenzene	1.0245	1.0872	21.22	20	6	#
1,1,1,2-Tetrachloroethane	0.3179	0.3264	20.53	20	3	
Ethylbenzene	1.6729	1.8247	21.81	20	9	#
m+p-Xylene	0.6600	0.7282	44.13	40	10	#
o-Xylene	0.6465	0.6974	21.57	20	8	#
Styrene	1.0429	1.1490	22.04	20	10	#
Bromoform	0.1925	0.1782	17.97	20	-10	#

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 ICV Date: 06/20/16 Time: 13:30

Lab File ID: au20v01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Isopropylbenzene	1.6699	1.8417	22.06	20	10	#
	Cyclohexanone	0.7254	0.6809	469.33	500	-6	
#	1,1,2,2-Tetrachloroethane	0.8176	0.8075	19.75	20	-1	#
	Bromobenzene	0.8348	0.8656	20.74	20	4	
	trans-1,4-Dichloro-2-butene	0.2291	0.2339	102.07	100	2	
	1,2,3-Trichloropropane	0.2358	0.2401	20.36	20	2	
	n-Propylbenzene	3.8484	4.1950	21.80	20	9	
	2-Chlorotoluene	0.7680	0.8406	21.89	20	9	
	1,3,5-Trimethylbenzene	2.8163	3.0219	21.46	20	7	
	4-Chlorotoluene	0.8067	0.8719	21.62	20	8	
	tert-Butylbenzene	0.5920	0.6353	21.46	20	7	
	Pentachloroethane	0.4548	0.4629	20.36	20	2	
	1,2,4-Trimethylbenzene	2.9367	3.1060	21.15	20	6	
	sec-Butylbenzene	3.5355	3.9235	22.19	20	11	
#	1,3-Dichlorobenzene	1.5968	1.6753	20.98	20	5	#
	p-Isopropyltoluene	3.1260	3.3377	21.35	20	7	
#	1,4-Dichlorobenzene	1.6526	1.7176	20.79	20	4	#
	1,2,3-Trimethylbenzene	3.0765	3.2218	20.94	20	5	
	Benzyl Chloride	0.2747	0.2649	17.83	20	-11	
	1,3-Diethylbenzene	1.8591	1.9511	20.99	20	5	
	1,4-Diethylbenzene	1.9128	2.0763	21.71	20	9	
	n-Butylbenzene	1.5814	1.7128	21.66	20	8	
#	1,2-Dichlorobenzene	1.5426	1.6123	20.90	20	5	#
	1,2-Diethylbenzene	1.5882	1.6740	21.08	20	5	
#	1,2-Dibromo-3-chloropropane	0.1426	0.1341	18.80	20	-6	#
	1,3,5-Trichlorobenzene	1.1924	1.2645	21.21	20	6	
#	1,2,4-Trichlorobenzene	1.0571	1.0995	20.80	20	4	#
	Hexachlorobutadiene	0.5403	0.5927	21.94	20	10	
	Naphthalene	2.3975	2.5002	20.86	20	4	
	1,2,3-Trichlorobenzene	0.9725	0.9948	20.46	20	2	
	2-Methylnaphthalene	0.9456	0.8872	16.81	20	-16	

Average %Drift 6

Compounds with required minimum RRF.
Maximum % Drift = 30 %

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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date(s): 04/22/16 04/22/16

Heated Purge: (Y/N) Y Calibration Times: 09:55 12:07

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = la22i07.d RRF 4 = la22i06.d RRF 10= la22i05.d
RRF 20= la22i04.d RRF 50= la22i03.d RRF100= la22i02.d RRF300= la22i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane	#0.2870	0.3828	0.3893	0.3614	0.4075	0.3999	0.3699	0.3711	11	AVG	#
Chloromethane	#0.3320	0.3656	0.3714	0.3576	0.4022	0.4037	0.3767	0.3727	7	AVG	#
1,3-Butadiene	1.1325	0.9842	0.5645	0.5365	0.3908	0.3624	0.3065	0.6111	53	AVG	
Vinyl Chloride	#0.2958	0.3515	0.3575	0.3395	0.3770	0.3874	0.3532	0.3517	8	AVG	#
Bromomethane	#0.1986	0.2254	0.2372	0.2241	0.2420	0.2439	0.2250	0.2280	7	AVG	#
Chloroethane	#0.1753	0.1946	0.1922	0.1881	0.2064	0.2045	0.1861	0.1924	6	AVG	#
Dichlorofluoromethane	0.4077	0.4571	0.4349	0.4597	0.4592	0.4732	0.4544	0.4495	5	AVG	
n-Pentane	0.3891	0.4514	0.4094	0.4260	0.4534	0.4467	0.3920	0.4240	7	AVG	
Trichlorofluoromethane	#0.2826	0.3829	0.3851	0.3612	0.4022	0.3985	0.3803	0.3704	11	AVG	#
Ethyl ether	0.2529	0.2516	0.2591	0.2549	0.2699	0.2771	0.2737	0.2627	4	AVG	
Freon 123a	0.2777	0.3271	0.3039	0.3102	0.3135	0.3156	0.3028	0.3072	5	AVG	
Acrolein	2.1334	2.0442	2.2649	2.1023	2.1291	2.0899	2.2077	2.1388	3	AVG	
1,1-Dichloroethene	#0.1775	0.2115	0.2230	0.2222	0.2331	0.2339	0.2314	0.2189	9	AVG	#
1,1-Dichloroethene(2)	#0.0963	0.1136	0.1200	0.1180	0.1248	0.1254	0.1227	0.1173	9	AVG	#
Acetone	#0.8613	0.9062	1.0419	0.9788	0.9942	0.9364	0.9829	0.9574	6	AVG	#
Freon 113	#0.1527	0.2095	0.2284	0.2124	0.2261	0.2282	0.2160	0.2105	13	AVG	#
2-Propanol	0.7482	0.7228	0.6565	0.7423	0.7481	0.7671	0.7543	0.7342	5	AVG	
Methyl Iodide	0.3302	0.3840	0.4083	0.4067	0.4312	0.4400	0.4450	0.4065	10	AVG	
Carbon Disulfide	#0.6244	0.6879	0.7237	0.7328	0.7913	0.7973	0.7889	0.7352	9	AVG	#
Allyl Chloride	0.3373	0.3844	0.4165	0.4337	0.4556	0.4743	0.4591	0.4230	11	AVG	
Methyl Acetate	#0.3003	0.2670	0.2840	0.2884	0.3033	0.3155	0.3059	0.2949	6	AVG	#
Methylene Chloride	#0.2545	0.2542	0.2686	0.2638	0.2799	0.2836	0.2853	0.2700	5	AVG	#
t-Butyl alcohol	1.2726	1.1572	1.1518	1.1610	1.1772	1.2180	1.1969	1.1906	4	AVG	
Acrylonitrile	0.1390	0.1416	0.1550	0.1474	0.1519	0.1499	0.1572	0.1489	5	AVG	
trans-1,2-Dichloroethene	#0.1997	0.2320	0.2535	0.2507	0.2639	0.2709	0.2686	0.2484	10	AVG	#
Methyl Tertiary Butyl Ether	#0.7855	0.7876	0.8575	0.8357	0.8801	0.8958	0.8827	0.8464	5	AVG	#
n-Hexane	0.2773	0.3768	0.3853	0.3997	0.4208	0.4283	0.3998	0.3840	13	AVG	
1,1-Dichloroethane	#0.4097	0.4562	0.4870	0.4994	0.5326	0.5380	0.5292	0.4931	10	AVG	#
di-Isopropyl ether	0.8239	0.8699	0.9588	0.9544	1.0090	1.0226	0.9906	0.9470	8	AVG	
2-Chloro-1,3-butadiene	0.2883	0.3510	0.3935	0.3960	0.4291	0.4363	0.4288	0.3890	14	AVG	
Ethyl t-butyl ether	0.7478	0.7910	0.8677	0.8599	0.9198	0.9351	0.9155	0.8624	8	AVG	
cis-1,2-Dichloroethene	#0.2282	0.2629	0.2815	0.2814	0.2992	0.3037	0.3018	0.2798	10	AVG	#
2-Butanone	#0.1791	0.1803	0.2015	0.1881	0.1977	0.1949	0.2000	0.1917	5	AVG	#
2,2-Dichloropropane	0.2527	0.3028	0.3405	0.3452	0.3810	0.3918	0.3827	0.3424	15	AVG	
Propionitrile	1.4728	1.5239	1.5189	1.5568	1.5326	1.6033	1.5810	1.5413	3	AVG	
Methacrylonitrile	0.1377	0.1399	0.1450	0.1484	0.1526	0.1569	0.1538	0.1477	5	AVG	
Bromochloromethane	0.1237	0.1337	0.1414	0.1410	0.1489	0.1557	0.1543	0.1427	8	AVG	
Tetrahydrofuran	1.0707	1.2371	1.3781	1.3057	1.3311	1.3040	1.3979	1.2892	9	AVG	
Chloroform	#0.3918	0.4166	0.4485	0.4475	0.4724	0.4825	0.4775	0.4481	8	AVG	#
1,1,1-Trichloroethane	#0.3469	0.4069	0.4039	0.3995	0.4047	0.4135	0.4112	0.3981	6	AVG	#
Cyclohexane	#0.3435	0.4453	0.4651	0.4680	0.5054	0.5086	0.4768	0.4589	12	AVG	#
Cyclohexane(2)	#0.3252	0.3422	0.3653	0.3620	0.3916	0.3970	0.3688	0.3646	7	AVG	#
Cyclohexane(3)	#0.0975	0.1254	0.1364	0.1350	0.1453	0.1488	0.1401	0.1327	13	AVG	#
1,1-Dichloropropene	0.2986	0.3360	0.3681	0.3653	0.3979	0.4049	0.3951	0.3665	10	AVG	
Carbon Tetrachloride	#0.2265	0.2631	0.2897	0.3001	0.3298	0.3394	0.3380	0.2981	14	AVG	#
Isobutyl Alcohol	0.4163	0.4107	0.4018	0.4066	0.4148	0.4444	0.4375	0.4189	4	AVG	
Benzene	#0.9229	1.0064	1.0891	1.0779	1.1390	1.1605	1.1245	1.0743	8	AVG	#
1,2-Dichloroethane	#0.3957	0.3778	0.3982	0.3859	0.4022	0.4133	0.4088	0.3974	3	AVG	#
1,2-Dichloroethane(2)	#0.0310	0.0317	0.0355	0.0345	0.0359	0.0368	0.0367	0.0346	7	AVG	#<-
t-Amyl methyl ether	0.7072	0.7066	0.8032	0.8014	0.8459	0.8752	0.8531	0.7989	9	AVG	
n-Heptane	0.3508	0.4281	0.4293	0.4354	0.4536	0.4644	0.4173	0.4255	9	AVG	
n-Butanol	0.2782	0.3017	0.3098	0.3324	0.3411	0.3647	0.3577	0.3265	10	AVG	

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date(s): 04/22/16 04/22/16

Heated Purge: (Y/N) Y Calibration Times: 09:55 12:07

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = la22i07.d RRF 4 = la22i06.d RRF 10= la22i05.d
RRF 20= la22i04.d RRF 50= la22i03.d RRF100= la22i02.d RRF300= la22i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Trichloroethene	#0.2264	0.2535	0.2711	0.2713	0.2905	0.2951	0.2924	0.2715	9	AVG #
Methylcyclohexane	#0.3214	0.4266	0.4552	0.4635	0.4851	0.5025	0.4766	0.4473	14	AVG #
Methylcyclohexane(2)	#0.1499	0.1904	0.2036	0.2028	0.2190	0.2257	0.2153	0.2009	13	AVG #
1,2-Dichloropropane	#0.2499	0.2713	0.2981	0.2974	0.3151	0.3226	0.3159	0.2958	9	AVG #
Dibromomethane	0.1636	0.1712	0.1845	0.1791	0.1910	0.1968	0.1970	0.1833	7	AVG
1,4-Dioxane	0.0995	0.1062	0.1079	0.1102	0.1154	0.1198	0.1152	0.1106	6	AVG
Methyl Methacrylate	0.1854	0.2206	0.2502	0.2521	0.2674	0.2811	0.2782	0.2479	14	AVG
Bromodichloromethane	#0.2713	0.2876	0.3258	0.3276	0.3645	0.3795	0.3857	0.3346	13	AVG #
2-Nitropropane	0.0727	0.0753	0.0905	0.0915	0.1008	0.1035	0.1104	0.0921	15	AVG
2-Chloroethyl Vinyl Ether	0.1545	0.1805	0.2061	0.2051	0.2397	0.2485	0.2430	0.2111	17	AVG
cis-1,3-Dichloropropene	#0.3116	0.3583	0.4217	0.4373	0.4785	0.4970	0.4999	0.4292	17	AVG #
4-Methyl-2-pentanone	#0.3178	0.3502	0.4164	0.4053	0.4245	0.4161	0.4228	0.3933	11	AVG #
Toluene	#0.7746	0.8364	0.9016	0.9109	0.9437	0.9433	0.9176	0.8897	7	AVG #
trans-1,3-Dichloropropene	#0.3516	0.4233	0.4915	0.5342	0.5838	0.6087	0.6154	0.5155	19	AVG #
Ethyl Methacrylate	0.4405	0.4863	0.5708	0.5907	0.6250	0.6488	0.6355	0.5711	14	AVG
1,1,2-Trichloroethane	#0.3178	0.3216	0.3508	0.3414	0.3629	0.3646	0.3606	0.3457	6	AVG #
Tetrachloroethene	#0.3081	0.3519	0.3818	0.3816	0.4028	0.4052	0.4049	0.3766	9	AVG #
1,3-Dichloropropane	0.5449	0.5635	0.6223	0.6189	0.6430	0.6520	0.6408	0.6122	7	AVG
2-Hexanone	#0.3130	0.3278	0.3943	0.3980	0.4088	0.4008	0.4016	0.3778	10	AVG #
Dibromochloromethane	#0.2550	0.2765	0.3265	0.3422	0.3723	0.3920	0.4123	0.3395	17	AVG #
1,2-Dibromoethane	#0.3141	0.3392	0.3711	0.3759	0.3934	0.4026	0.4032	0.3713	9	AVG #
1-Chlorohexane	0.4522	0.4760	0.4969	0.5007	0.5275	0.5281	0.5124	0.4991	6	AVG
Chlorobenzene	#0.8769	0.9248	1.0194	1.0239	1.0673	1.0719	1.0638	1.0069	8	AVG #
1,1,1,2-Tetrachloroethane	0.2644	0.2911	0.3278	0.3373	0.3591	0.3713	0.3811	0.3332	13	AVG
Ethylbenzene	#1.3961	1.5924	1.7537	1.7724	1.8530	1.8631	1.7848	1.7165	10	AVG #
m+p-Xylene	#0.5302	0.5986	0.6784	0.6810	0.7111	0.7170	0.6968	0.6590	10	AVG #
o-Xylene	#0.5161	0.5895	0.6670	0.6653	0.6961	0.7083	0.6950	0.6482	11	AVG #
Styrene	#0.7989	0.9728	1.1154	1.1434	1.2039	1.2245	1.1840	1.0918	14	AVG #
Bromoform	#0.1831	0.1832	0.2089	0.2271	0.2540	0.2785	0.3018	0.2338	20	AVG #
Isopropylbenzene	#1.2543	1.5384	1.7097	1.7228	1.7909	1.8006	1.7339	1.6501	12	AVG #
Cyclohexanone	0.4397	0.4358	0.5803	0.5316	0.5203	0.5301	0.5326	0.5100	10	AVG
Bromobenzene	0.7529	0.7988	0.8533	0.8741	0.8985	0.9232	0.9146	0.8593	7	AVG
1,1,2,2-Tetrachloroethane	#0.9259	0.9395	1.0265	1.0311	1.0483	1.0805	1.0366	1.0126	6	AVG #
1,2,3-Trichloropropane	0.2909	0.2784	0.2897	0.2909	0.2957	0.3057	0.2960	0.2925	3	AVG
trans-1,4-Dichloro-2-butene	0.0404	0.0695	0.0962	0.1362	0.1644	0.2064	0.2318	0.1350	52	2NDDEG
n-Propylbenzene	3.1408	3.6653	3.9623	4.0646	4.1491	4.1511	3.7625	3.8422	9	AVG
2-Chlorotoluene	0.6777	0.7158	0.7826	0.8044	0.8207	0.8336	0.8200	0.7793	8	AVG
4-Chlorotoluene	0.6926	0.7664	0.8374	0.8476	0.8696	0.8866	0.8599	0.8229	8	AVG
1,3,5-Trimethylbenzene	2.1318	2.5246	2.7768	2.8631	2.9485	2.9754	2.8303	2.7215	11	AVG
tert-Butylbenzene	0.4613	0.5206	0.5523	0.5832	0.6023	0.6192	0.6041	0.5633	10	AVG
Pentachloroethane	0.3322	0.3941	0.4399	0.4759	0.5118	0.5515	0.5499	0.4650	18	AVG
1,2,4-Trimethylbenzene	2.2913	2.6289	2.8813	2.9487	3.0386	3.0853	2.9358	2.8300	10	AVG
sec-Butylbenzene	2.7720	3.3416	3.5031	3.6472	3.7339	3.7220	3.4234	3.4490	10	AVG
1,3-Dichlorobenzene	#1.4757	1.5232	1.6098	1.6526	1.6892	1.7213	1.6445	1.6166	5	AVG #
p-Isopropyltoluene	2.3507	2.8191	3.0347	3.1655	3.2336	3.2836	3.1108	2.9997	11	AVG
1,4-Dichlorobenzene	#1.5844	1.6105	1.7143	1.7158	1.7446	1.7731	1.6798	1.6889	4	AVG #
1,2,3-Trimethylbenzene	2.6174	2.7684	2.9411	3.0563	3.1132	3.2112	3.0087	2.9595	7	AVG
Benzyl Chloride	1.0881	1.3714	1.6479	1.8342	2.0342	2.1754	2.1461	1.7568	23	2NDDEG
1,3-Diethylbenzene	1.4843	1.7174	1.8059	1.8857	1.9136	1.9595	1.8592	1.8037	9	AVG
1,4-Diethylbenzene	1.5943	1.8034	1.8904	1.9651	1.9762	2.0236	1.9148	1.8811	8	AVG
1,2-Dichlorobenzene	#1.5095	1.5321	1.6250	1.6310	1.6384	1.6651	1.6164	1.6025	4	AVG #
n-Butylbenzene	1.3650	1.5046	1.5472	1.6079	1.6153	1.6132	1.4918	1.5350	6	AVG

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date(s): 04/22/16 04/22/16

Heated Purge: (Y/N) Y Calibration Times: 09:55 12:07

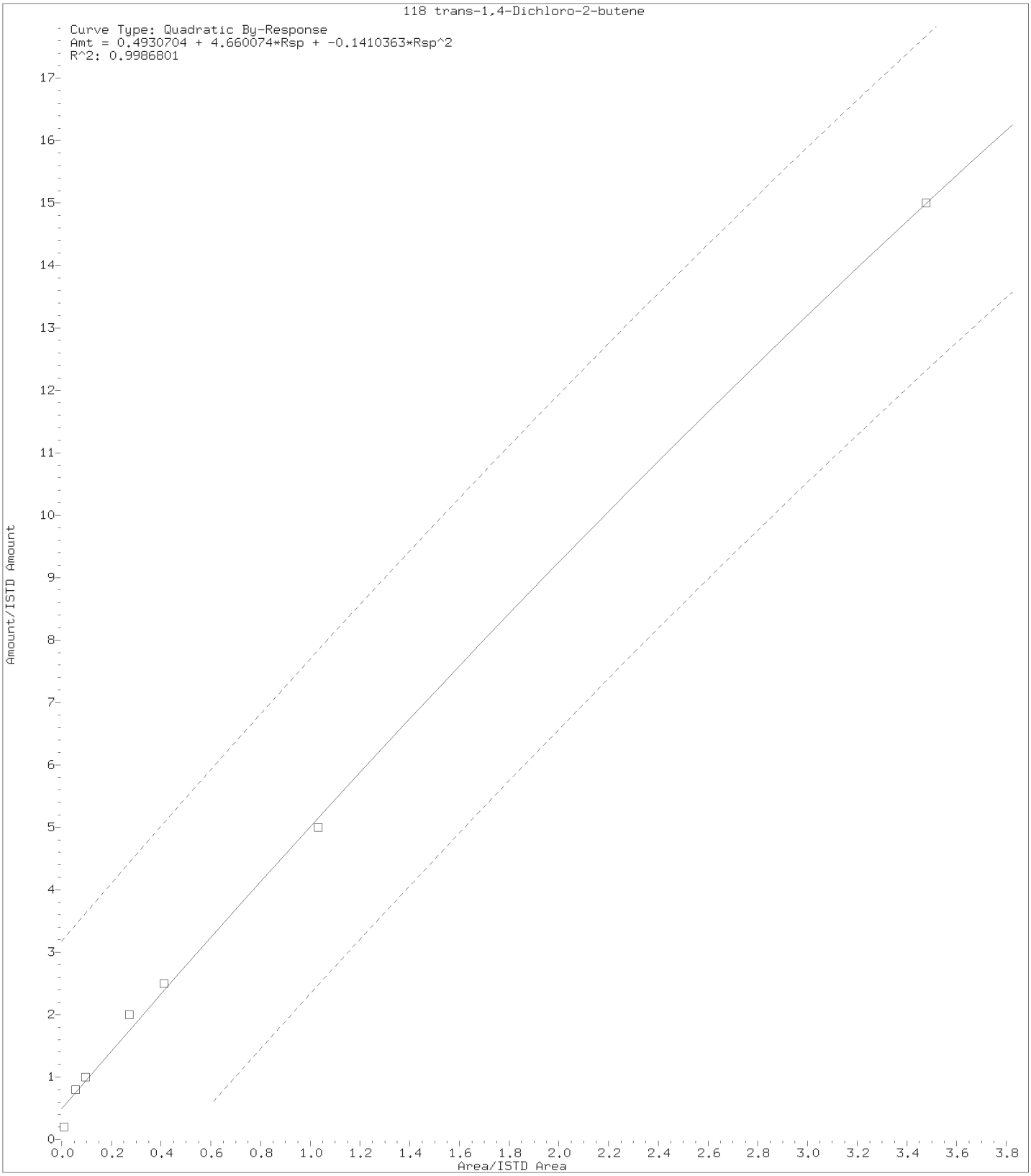
Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = la22i07.d RRF 4 = la22i06.d RRF 10= la22i05.d
RRF 20= la22i04.d RRF 50= la22i03.d RRF100= la22i02.d RRF300= la22i01.d

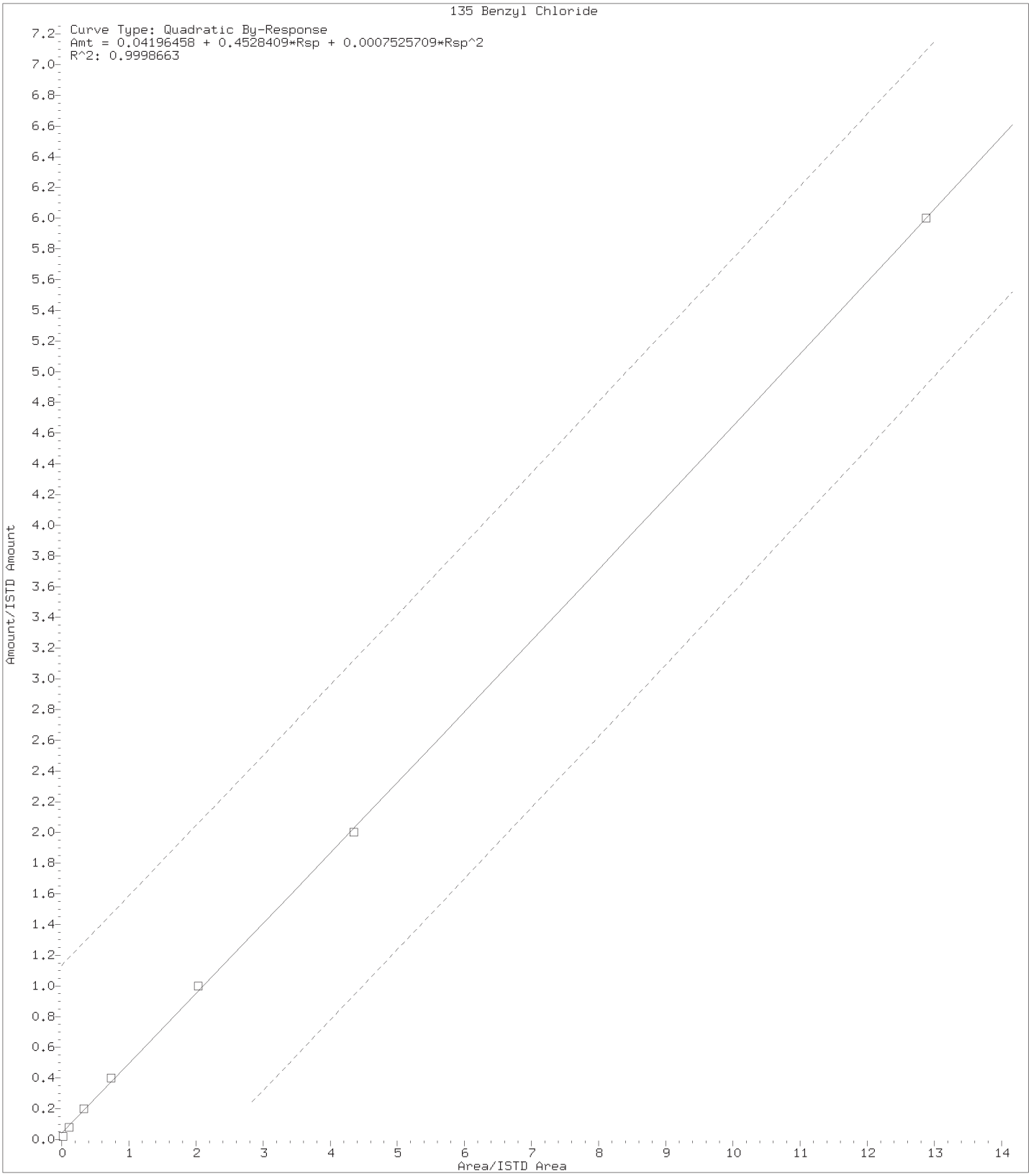
COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Diethylbenzene	1.3225	1.4672	1.5421	1.5992	1.6106	1.6506	1.5771	1.5385	7	AVG
1,2-Dibromo-3-chloropropane	#0.1574	0.1700	0.1944	0.1980	0.2062	0.2228	0.2214	0.1957	13	AVG #
1,3,5-Trichlorobenzene	1.2631	1.1999	1.2685	1.2933	1.3000	1.3228	1.2797	1.2753	3	AVG
1,2,4-Trichlorobenzene	#1.3374	1.2075	1.2395	1.2630	1.2635	1.3040	1.2310	1.2637	4	AVG #
Hexachlorobutadiene	0.6454	0.5291	0.5122	0.5462	0.5263	0.5436	0.4748	0.5397	10	AVG
Naphthalene	3.1904	3.2213	3.4607	3.5124	3.5111	3.6599	3.2750	3.4044	5	AVG
1,2,3-Trichlorobenzene	1.2456	1.1501	1.1979	1.1964	1.1890	1.2328	1.1262	1.1911	4	AVG
2-Methylnaphthalene	2.2999	1.9798	2.0306	2.2775	2.1941	2.4127	1.6627	2.1225	12	AVG
Dibromofluoromethane	0.2376	0.2337	0.2391	0.2342	0.2404	0.2400	0.2377	0.2375	1	AVG
Dibromofluoromethane(2)	0.2444	0.2402	0.2448	0.2387	0.2441	0.2464	0.2436	0.2432	1	AVG
1,2-Dichloroethane-d4	0.0602	0.0599	0.0605	0.0595	0.0603	0.0604	0.0589	0.0600	1	AVG
1,2-Dichloroethane-d4(2)	0.3102	0.3070	0.3092	0.3013	0.3114	0.3084	0.3040	0.3073	1	AVG
1,2-Dichloroethane-d4(3)	0.0385	0.0381	0.0382	0.0376	0.0386	0.0381	0.0375	0.0381	1	AVG
Toluene-d8	1.3085	1.3151	1.3157	1.3199	1.3074	1.3027	1.2919	1.3088	1	AVG
Toluene-d8(2)	0.8506	0.8586	0.8547	0.8598	0.8471	0.8503	0.8445	0.8522	1	AVG
4-Bromofluorobenzene	0.4845	0.4849	0.4902	0.4836	0.4854	0.4830	0.4785	0.4843	1	AVG
4-Bromofluorobenzene(2)	0.4157	0.4147	0.4154	0.4124	0.4125	0.4070	0.4073	0.4121	1	AVG

Average %RSD 9

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.



Digitally signed by Brett W. Kenyon on 04/25/2016 at 16:07.
Target 3.5 esignature user ID: bwk03231



Digitally signed by Brett W. Kenyon on 04/25/2016 at 16:07.
Target 3.5 esignature user ID: bwk03231

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP09915.i/16apr22i.b/la22i01.d	VSTD300
/chem/HP09915.i/16apr22i.b/la22i02.d	VSTD100
/chem/HP09915.i/16apr22i.b/la22i03.d	VSTD050
/chem/HP09915.i/16apr22i.b/la22i04.d	VSTD020
/chem/HP09915.i/16apr22i.b/la22i05.d	VSTD010
/chem/HP09915.i/16apr22i.b/la22i06.d	VSTD004
/chem/HP09915.i/16apr22i.b/la22i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	la22i01.d	la22i02.d	la22i03.d	la22i04.d	la22i05.d	la22i06.d	la22i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	230813	237588	239110	234793	222755	229317	220884	230751	3	Yes
Fluorobenzene	1256794	1268629	1288793	1295555	1231017	1298555	1242368	1268816	2	Yes
Chlorobenzene-d5	960626	972262	977519	964347	926964	970322	934821	958123	2	Yes
1,4-Dichlorobenzene-d4	517298	509521	514202	499944	492114	506851	490975	504415	2	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	la22i01.d	la22i02.d	la22i03.d	la22i04.d	la22i05.d	la22i06.d	la22i07.d	Avg. RT
t-Butyl alcohol-d10	4.012	3.993	3.990	3.996	3.993	3.993	4.009	3.998
Fluorobenzene	7.510	7.504	7.504	7.507	7.507	7.507	7.510	7.507
Chlorobenzene-d5	11.041	11.041	11.041	11.041	11.041	11.041	11.041	11.041
1,4-Dichlorobenzene-d4	12.938	12.935	12.938	12.935	12.938	12.935	12.935	12.936

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 04/22/2016 at 13:38.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 ICV Date: 04/22/16 Time: 12:51

Lab File ID: la22v01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	$\overline{RRF}$	RRF	CONC.	CONC.	DRIFT	
# Dichlorodifluoromethane	0.3711	0.3115	16.78	20	-16	#
# Chloromethane	0.3727	0.3338	17.91	20	-10	#
1,3-Butadiene	0.6111	0.5293	17.32	20	-13	
# Vinyl Chloride	0.3517	0.3217	18.29	20	-9	#
# Bromomethane	0.2280	0.2031	17.81	20	-11	#
# Chloroethane	0.1924	0.1731	17.99	20	-10	#
Dichlorofluoromethane	0.4495	0.4047	18.01	20	-10	
n-Pentane	0.4240	0.4263	20.11	20	1	
# Trichlorofluoromethane	0.3704	0.3612	19.50	20	-2	#
Ethyl ether	0.2627	0.2668	20.31	20	2	
Freon 123a	0.3072	0.2804	18.25	20	-9	
Acrolein	2.1388	2.0638	144.74	150	-4	
# 1,1-Dichloroethene	0.2189	0.2240	20.47	20	2	#
# Acetone	0.9574	1.3094	205.15	150	37	#<-
# Freon 113	0.2105	0.2190	20.81	20	4	#
2-Propanol	0.7342	0.7487	152.96	150	2	
Methyl Iodide	0.4065	0.4033	19.84	20	-1	
# Carbon Disulfide	0.7352	0.7026	19.11	20	-4	#
Allyl Chloride	0.4230	0.4568	21.60	20	8	
# Methyl Acetate	0.2949	0.2937	19.92	20	0	#
# Methylene Chloride	0.2700	0.2743	20.32	20	2	#
t-Butyl alcohol	1.1906	1.1915	200.15	200	0	
Acrylonitrile	0.1489	0.1442	96.88	100	-3	
# trans-1,2-Dichloroethene	0.2484	0.2708	21.80	20	9	#
# Methyl Tertiary Butyl Ether	0.8464	0.8425	19.91	20	0	#
n-Hexane	0.3840	0.4115	21.44	20	7	
# 1,1-Dichloroethane	0.4931	0.5078	20.59	20	3	#
di-Isopropyl ether	0.9470	0.9965	21.05	20	5	
2-Chloro-1,3-butadiene	0.3890	0.4414	22.69	20	13	
Ethyl t-butyl ether	0.8624	0.8747	20.28	20	1	
# cis-1,2-Dichloroethene	0.2798	0.2972	21.24	20	6	#
# 2-Butanone	0.1917	0.2181	170.71	150	14	#
2,2-Dichloropropane	0.3424	0.3561	20.80	20	4	
Propionitrile	1.5413	1.6254	158.18	150	5	
Methacrylonitrile	0.1477	0.1546	156.95	150	5	
Bromochloromethane	0.1427	0.1464	20.53	20	3	

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 ICV Date: 04/22/16 Time: 12:51

Lab File ID: la22v01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
Tetrahydrofuran	1.2892	1.3255	102.81	100	3	
# Chloroform	0.4481	0.4687	20.92	20	5	#
# 1,1,1-Trichloroethane	0.3981	0.4040	20.30	20	1	#
# Cyclohexane	0.4589	0.4841	21.10	20	5	#
1,1-Dichloropropene	0.3665	0.3654	19.93	20	0	
# Carbon Tetrachloride	0.2981	0.3125	20.97	20	5	#
Isobutyl Alcohol	0.4189	0.4211	502.62	500	1	
# Benzene	1.0743	1.1239	20.92	20	5	#
# 1,2-Dichloroethane	0.3974	0.4004	20.15	20	1	#
t-Amyl methyl ether	0.7989	0.8070	20.20	20	1	
n-Heptane	0.4255	0.4381	20.59	20	3	
n-Butanol	0.3265	0.3337	1022.09	1000	2	
# Trichloroethene	0.2715	0.2900	21.37	20	7	#
# Methylcyclohexane	0.4473	0.4906	21.94	20	10	#
# 1,2-Dichloropropane	0.2958	0.3121	21.10	20	6	#
Dibromomethane	0.1833	0.1840	20.07	20	0	
1,4-Dioxane	0.1106	0.1060	479.13	500	-4	
Methyl Methacrylate	0.2479	0.2459	19.84	20	-1	
# Bromodichloromethane	0.3346	0.3385	20.24	20	1	#
2-Nitropropane	0.0921	0.0858	18.63	20	-7	
2-Chloroethyl Vinyl Ether	0.2111	0.2174	20.60	20	3	
# cis-1,3-Dichloropropene	0.4292	0.4456	20.76	20	4	#
# 4-Methyl-2-pentanone	0.3933	0.4092	104.03	100	4	#
# Toluene	0.8897	0.9420	21.17	20	6	#
# trans-1,3-Dichloropropene	0.5155	0.5416	21.01	20	5	#
Ethyl Methacrylate	0.5711	0.6002	21.02	20	5	
# 1,1,2-Trichloroethane	0.3457	0.3536	20.46	20	2	#
# Tetrachloroethene	0.3766	0.3996	21.22	20	6	#
1,3-Dichloropropane	0.6122	0.6201	20.26	20	1	
# 2-Hexanone	0.3778	0.4137	109.50	100	10	#
# Dibromochloromethane	0.3395	0.3374	19.87	20	-1	#
# 1,2-Dibromoethane	0.3713	0.3836	20.66	20	3	#
1-Chlorohexane	0.4991	0.5187	20.78	20	4	
# Chlorobenzene	1.0069	1.0463	20.78	20	4	#
1,1,1,2-Tetrachloroethane	0.3332	0.3426	20.57	20	3	
# Ethylbenzene	1.7165	1.8147	21.14	20	6	#

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 ICV Date: 04/22/16 Time: 12:51

Lab File ID: la22v01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	$\overline{RRF}$	RRF	CONC.	CONC.	DRIFT	
# m+p-Xylene	0.6590	0.7026	42.65	40	7	#
# o-Xylene	0.6482	0.6768	20.88	20	4	#
# Styrene	1.0918	1.1651	21.34	20	7	#
# Bromoform	0.2338	0.2201	18.83	20	-6	#
# Isopropylbenzene	1.6501	1.7896	21.69	20	8	#
Cyclohexanone	0.5100	0.4286	420.13	500	-16	
Bromobenzene	0.8593	0.8833	20.56	20	3	
# 1,1,2,2-Tetrachloroethane	1.0126	1.0072	19.89	20	-1	#
1,2,3-Trichloropropane	0.2925	0.2953	20.19	20	1	
trans-1,4-Dichloro-2-butene	0.1350	0.1304	84.95	100	-15	
n-Propylbenzene	3.8422	4.0837	21.26	20	6	
2-Chlorotoluene	0.7793	0.8185	21.01	20	5	
4-Chlorotoluene	0.8229	0.8474	20.60	20	3	
1,3,5-Trimethylbenzene	2.7215	2.9057	21.35	20	7	
tert-Butylbenzene	0.5633	0.5909	20.98	20	5	
Pentachloroethane	0.4650	0.4842	20.82	20	4	
1,2,4-Trimethylbenzene	2.8300	2.9549	20.88	20	4	
sec-Butylbenzene	3.4490	3.6765	21.32	20	7	
# 1,3-Dichlorobenzene	1.6166	1.6408	20.30	20	1	#
p-Isopropyltoluene	2.9997	3.1165	20.78	20	4	
# 1,4-Dichlorobenzene	1.6889	1.7215	20.39	20	2	#
1,2,3-Trimethylbenzene	2.9595	3.1291	21.15	20	6	
Benzyl Chloride	1.7568	1.7737	18.18	20	-9	
1,3-Diethylbenzene	1.8037	1.8905	20.96	20	5	
1,4-Diethylbenzene	1.8811	2.0058	21.33	20	7	
# 1,2-Dichlorobenzene	1.6025	1.6168	20.18	20	1	#
n-Butylbenzene	1.5350	1.5804	20.59	20	3	
1,2-Diethylbenzene	1.5385	1.6189	21.05	20	5	
# 1,2-Dibromo-3-chloropropane	0.1957	0.1875	19.15	20	-4	#
1,3,5-Trichlorobenzene	1.2753	1.2558	19.69	20	-2	
# 1,2,4-Trichlorobenzene	1.2637	1.2019	19.02	20	-5	#
Hexachlorobutadiene	0.5397	0.4853	17.99	20	-10	
Naphthalene	3.4044	3.2790	19.26	20	-4	
1,2,3-Trichlorobenzene	1.1911	1.1001	18.47	20	-8	
2-Methylnaphthalene	2.1225	1.6045	15.12	20	-24	

Average %Drift 5

Compounds with required minimum RRF.
Maximum % Drift = 30 %

^

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09685.i/16jun20a.b/au20i07.d
/chem2/HP09685.i/16jun20a.b/au20i06.d
/chem2/HP09685.i/16jun20a.b/au20i05.d
/chem2/HP09685.i/16jun20a.b/au20i04.d
/chem2/HP09685.i/16jun20a.b/au20i03.d
/chem2/HP09685.i/16jun20a.b/au20i02.d
/chem2/HP09685.i/16jun20a.b/au20i01.d

File /chem2/HP09685.i/16jun20a.b/au20i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09685.i/16jul06a.b/al06c01.d

RT Summary

Internal Standard Name	File ID: al06c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	3.958	3.958	Yes
Fluorobenzene	7.456	7.449	Yes
Chlorobenzene-d5	11.015	11.008	Yes
1,4-Dichlorobenzene-d4	12.919	12.919	Yes

A "No" indicates the retention time is greater than 30 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: al06c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	95546	117913	58956	235826	Yes
Fluorobenzene	962411	1094634	547317	2189268	Yes
Chlorobenzene-d5	732907	812973	406486	1625946	Yes
1,4-Dichlorobenzene-d4	396433	430819	215410	861638	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments:

report generated on 07/06/2016 at 09:50

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date: 07/06/16 Time: 08:09

Lab File ID: al06c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Dichlorodifluoromethane	0.3921	0.4216	53.76	50	8	#
# Chloromethane	0.4074	0.4345	53.33	50	7	#
# Vinyl Chloride	0.3696	0.3982	53.87	50	8	#
# Bromomethane	0.2509	0.2716	54.13	50	8	#
# Chloroethane	0.2042	0.2225	54.48	50	9	#
# Trichlorofluoromethane	0.4270	0.4544	53.20	50	6	#
Ethanol	0.1798	0.1771	2461.54	2500	-2	
Acrolein	2.6570	2.8859	543.06	500	9	
# 1,1-Dichloroethene	0.2194	0.2422	55.20	50	10	#
# 1,1-Dichloroethene(2)	0.1162	0.1307	56.20	50	12	#
# Acetone	1.2959	1.3409	103.47	100	3	#
# Freon 113	0.2257	0.2421	53.62	50	7	#
2-Propanol	0.9846	1.0004	253.99	250	2	
Methyl Iodide	0.4018	0.4351	54.14	50	8	
# Carbon Disulfide	0.7191	0.8179	56.87	50	14	#
# Methyl Acetate	0.1913	0.1988	51.97	50	4	#
Allyl Chloride	0.3979	0.4464	56.09	50	12	
# Methylene Chloride	0.2777	0.2819	50.75	50	2	#
t-Butyl alcohol	1.4610	1.4124	241.69	250	-3	
Acrylonitrile	0.0920	0.1039	56.48	50	13	
# Methyl Tertiary Butyl Ether	0.7119	0.7438	52.24	50	4	#
# trans-1,2-Dichloroethene	0.2407	0.2694	55.97	50	12	#
n-Hexane	0.3710	0.4173	56.23	50	12	
# 1,1-Dichloroethane	0.4557	0.5069	55.62	50	11	#
di-Isopropyl ether	0.8458	0.9467	55.97	50	12	
2-Chloro-1,3-butadiene	0.3901	0.4324	55.42	50	11	
Ethyl t-butyl ether	0.7219	0.7748	53.66	50	7	
# 2-Butanone	5.7599	6.3659	110.52	100	11	#
# cis-1,2-Dichloroethene	0.2729	0.3026	55.44	50	11	#
2,2-Dichloropropane	0.3234	0.3683	56.95	50	14	
Propionitrile	1.8044	2.0431	283.08	250	13	
Methacrylonitrile	0.1069	0.1156	135.11	125	8	
Bromochloromethane	0.1330	0.1444	54.28	50	9	
Tetrahydrofuran	1.5605	1.7260	110.60	100	11	
# Chloroform	0.4347	0.4834	55.60	50	11	#
# 1,1,1-Trichloroethane	0.3941	0.3950	50.12	50	0	#

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date: 07/06/16 Time: 08:09

Lab File ID: al06c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Cyclohexane	0.4532	0.4970	54.83	50	10	#
# Cyclohexane(2)	0.3756	0.4099	54.55	50	9	#
# Cyclohexane(3)	0.1365	0.1488	54.49	50	9	#
1,1-Dichloropropene	0.3473	0.3950	56.88	50	14	
# Carbon Tetrachloride	0.2843	0.3367	59.21	50	18	#
Isobutyl Alcohol	0.4952	0.5497	693.82	625	11	
# Benzene	1.0828	1.1522	53.20	50	6	#
# 1,2-Dichloroethane	0.3479	0.3683	52.93	50	6	#
# 1,2-Dichloroethane(2)	0.0389	0.0334	43.00	50	-14	#<-
t-Amyl methyl ether	0.6653	0.7060	53.06	50	6	
n-Heptane	0.4035	0.4628	57.35	50	15	
n-Butanol	0.4194	0.4349	1296.23	1250	4	
# Trichloroethene	0.2563	0.2861	55.81	50	12	#
# Methylcyclohexane	0.4765	0.5198	54.54	50	9	#
# 1,2-Dichloropropane	0.2781	0.3081	55.39	50	11	#
Methyl Methacrylate	0.1773	0.1972	55.63	50	11	
1,4-Dioxane	0.1526	0.1709	699.96	625	12	
Dibromomethane	0.1557	0.1690	54.29	50	9	
# Bromodichloromethane	0.2977	0.3470	58.28	50	17	#
2-Nitropropane	2.5666	3.4088	118.48	100	18	
# cis-1,3-Dichloropropene	0.4014	0.4637	57.75	50	16	#
# 4-Methyl-2-pentanone	0.2455	0.2796	113.89	100	14	#
# Toluene	0.8926	0.9533	53.40	50	7	#
# trans-1,3-Dichloropropene	0.4745	0.5395	56.84	50	14	#
Ethyl Methacrylate	0.4488	0.4897	54.56	50	9	
# 1,1,2-Trichloroethane	0.3122	0.3231	51.74	50	3	#
# Tetrachloroethene	0.3588	0.3943	54.95	50	10	#
1,3-Dichloropropane	0.5498	0.5815	52.89	50	6	
# 2-Hexanone	0.2347	0.2626	111.88	100	12	#
# Dibromochloromethane	0.3077	0.3535	57.43	50	15	#
# 1,2-Dibromoethane	0.3077	0.3283	53.34	50	7	#
# Chlorobenzene	1.0245	1.0940	53.39	50	7	#
1,1,1,2-Tetrachloroethane	0.3179	0.3560	55.99	50	12	
# Ethylbenzene	1.6729	1.8780	56.13	50	12	#
# m+p-Xylene	0.6600	0.7453	112.92	100	13	#
# o-Xylene	0.6465	0.7270	56.22	50	12	#

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract: _____

Lab Code: LANCAS Case No.: _____ SAS No.: _____ SDG No.: _____

Instrument ID: HP09685 Calibration Date: 07/06/16 Time: 08:09

Lab File ID: al06c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Styrene	1.0429	1.1970	57.39	50	15	#
#	Bromoform	0.1925	0.2171	49.45	50	-1	#
#	Isopropylbenzene	1.6699	1.8376	55.02	50	10	#
	Cyclohexanone	0.7254	0.6606	569.16	625	-9	
#	1,1,2,2-Tetrachloroethane	0.8176	0.8317	50.87	50	2	#
	Bromobenzene	0.8348	0.8649	51.81	50	4	
	trans-1,4-Dichloro-2-butene	0.2291	0.2367	129.14	125	3	
	1,2,3-Trichloropropane	0.2358	0.2377	50.40	50	1	
	n-Propylbenzene	3.8484	4.1199	53.53	50	7	
	2-Chlorotoluene	0.7680	0.8177	53.23	50	6	
	1,3,5-Trimethylbenzene	2.8163	2.9887	53.06	50	6	
	4-Chlorotoluene	0.8067	0.8553	53.01	50	6	
	tert-Butylbenzene	0.5920	0.6219	52.53	50	5	
	Pentachloroethane	0.4548	0.5128	56.38	50	13	
	1,2,4-Trimethylbenzene	2.9367	3.1272	53.24	50	6	
	sec-Butylbenzene	3.5355	3.8102	53.89	50	8	
#	1,3-Dichlorobenzene	1.5968	1.6838	52.72	50	5	#
	p-Isopropyltoluene	3.1260	3.3967	54.33	50	9	
#	1,4-Dichlorobenzene	1.6526	1.7212	52.08	50	4	#
	1,2,3-Trimethylbenzene	3.0765	3.2865	53.41	50	7	
	Benzyl Chloride	0.2747	0.3127	46.28	50	-7	
	1,3-Diethylbenzene	1.8591	2.1135	56.84	50	14	
	1,4-Diethylbenzene	1.9128	1.7082	44.65	50	-11	
	n-Butylbenzene	1.5814	1.7120	54.13	50	8	
#	1,2-Dichlorobenzene	1.5426	1.6035	51.97	50	4	#
	1,2-Diethylbenzene	1.5882	1.7097	53.82	50	8	
#	1,2-Dibromo-3-chloropropane	0.1426	0.1525	53.44	50	7	#
	1,3,5-Trichlorobenzene	1.1924	1.2787	53.62	50	7	
#	1,2,4-Trichlorobenzene	1.0571	1.1379	53.82	50	8	#
	Hexachlorobutadiene	0.5403	0.5968	55.23	50	10	
	Naphthalene	2.3975	2.6757	55.80	50	12	
	1,2,3-Trichlorobenzene	0.9725	1.0490	53.94	50	8	
	2-Methylnaphthalene	0.9456	1.1891	42.62	50	-15	
	Dibromofluoromethane	0.2289	0.2339	51.09	50	2	
	Dibromofluoromethane(2)	0.2354	0.2417	51.33	50	3	

Compounds with required minimum RRF.

All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:

Lab Code: LANCAS Case No.: SAS No.: SDG No.:

Instrument ID: HP09685 Calibration Date: 07/06/16 Time: 08:09

Lab File ID: al06c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4	0.0545	0.0567	51.97	50	4
1,2-Dichloroethane-d4(2)	0.2631	0.2732	51.91	50	4
1,2-Dichloroethane-d4(3)	0.0345	0.0347	50.27	50	1
Toluene-d8	1.3647	1.3563	49.69	50	-1
Toluene-d8(2)	0.8772	0.8709	49.64	50	-1
4-Bromofluorobenzene	0.4851	0.4900	50.50	50	1
4-Bromofluorobenzene(2)	0.3986	0.4048	50.77	50	2

Average %Drift 8

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP09915.i/16apr22i.b/la22i07.d
/chem/HP09915.i/16apr22i.b/la22i06.d
/chem/HP09915.i/16apr22i.b/la22i05.d
/chem/HP09915.i/16apr22i.b/la22i04.d
/chem/HP09915.i/16apr22i.b/la22i03.d
/chem/HP09915.i/16apr22i.b/la22i02.d
/chem/HP09915.i/16apr22i.b/la22i01.d

File /chem/HP09915.i/16apr22i.b/la22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP09915.i/16jul05b.b/ll05c05.d

RT Summary

Internal Standard Name	ll05c05.d File ID:	ICAL RT	In Spec
t-Butyl alcohol-d10	4.006	3.990	Yes
Fluorobenzene	7.514	7.504	Yes
Chlorobenzene-d5	11.041	11.041	Yes
1,4-Dichlorobenzene-d4	12.938	12.938	Yes

A "No" indicates the retention time is greater than 30 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	ll05c05.d File ID:	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	209480	239110	119555	478220	Yes
Fluorobenzene	1092308	1288793	644396	2577586	Yes
Chlorobenzene-d5	901632	977519	488760	1955038	Yes
1,4-Dichlorobenzene-d4	497736	514202	257101	1028404	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 07/05/2016 at 17:34

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/05/16 Time: 17:13

Lab File ID: l105c05.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Dichlorodifluoromethane	0.3711	0.3644	49.10	50	-2	#
#	Chloromethane	0.3727	0.3773	50.61	50	1	#
#	Vinyl Chloride	0.3517	0.3554	50.52	50	1	#
#	Bromomethane	0.2280	0.2393	52.46	50	5	#
#	Chloroethane	0.1924	0.2044	53.11	50	6	#
#	Trichlorofluoromethane	0.3704	0.4144	55.94	50	12	#
	Ethyl ether	0.2627	0.2701	51.39	50	3	
	Acrolein	2.1388	2.2149	517.79	500	4	
#	1,1-Dichloroethene	0.2189	0.2211	50.50	50	1	#
#	1,1-Dichloroethene(2)	0.1173	0.1192	50.82	50	2	#
#	Acetone	0.9574	0.9748	101.82	100	2	#
#	Freon 113	0.2105	0.2357	55.99	50	12	#
	2-Propanol	0.7342	0.7889	268.62	250	7	
	Methyl Iodide	0.4065	0.4329	53.24	50	6	
#	Carbon Disulfide	0.7352	0.7896	53.70	50	7	#
	Allyl Chloride	0.4230	0.4510	53.31	50	7	
#	Methyl Acetate	0.2949	0.2959	50.17	50	0	#
#	Methylene Chloride	0.2700	0.2716	50.30	50	1	#
	t-Butyl alcohol	1.1906	1.1645	244.50	250	-2	
	Acrylonitrile	0.1489	0.1554	52.18	50	4	
#	trans-1,2-Dichloroethene	0.2484	0.2580	51.92	50	4	#
#	Methyl Tertiary Butyl Ether	0.8464	0.8309	49.08	50	-2	#
	n-Hexane	0.3840	0.4167	54.26	50	9	
#	1,1-Dichloroethane	0.4931	0.4943	50.12	50	0	#
	di-Isopropyl ether	0.9470	0.9751	51.48	50	3	
	2-Chloro-1,3-butadiene	0.3890	0.4483	57.62	50	15	
	Ethyl t-butyl ether	0.8624	0.8579	49.74	50	-1	
#	cis-1,2-Dichloroethene	0.2798	0.2963	52.95	50	6	#
#	2-Butanone	0.1917	0.2034	106.13	100	6	#
	2,2-Dichloropropane	0.3424	0.3654	53.36	50	7	
	Propionitrile	1.5413	1.5906	257.99	250	3	
	Methacrylonitrile	0.1477	0.1573	133.10	125	6	
	Bromochloromethane	0.1427	0.1510	52.90	50	6	
	Tetrahydrofuran	1.2892	1.3474	104.51	100	5	
#	Chloroform	0.4481	0.4818	53.76	50	8	#
#	1,1,1-Trichloroethane	0.3981	0.4119	51.74	50	3	#

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/05/16 Time: 17:13

Lab File ID: l105c05.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Cyclohexane	0.4589	0.4948	53.91	50	8	#
#	Cyclohexane(2)	0.3646	0.3907	53.58	50	7	#
#	Cyclohexane(3)	0.1327	0.1426	53.76	50	8	#
	1,1-Dichloropropene	0.3665	0.3872	52.82	50	6	
#	Carbon Tetrachloride	0.2981	0.3314	55.59	50	11	#
	Isobutyl Alcohol	0.4189	0.4319	644.46	625	3	
#	Benzene	1.0743	1.1245	52.34	50	5	#
#	1,2-Dichloroethane	0.3974	0.4041	50.84	50	2	#
#	1,2-Dichloroethane(2)	0.0346	0.0353	50.99	50	2	#<-
	t-Amyl methyl ether	0.7989	0.8172	51.14	50	2	
	n-Heptane	0.4255	0.4756	55.89	50	12	
	n-Butanol	0.3265	0.3447	1319.55	1250	6	
#	Trichloroethene	0.2715	0.2831	52.14	50	4	#
#	Methylcyclohexane	0.4473	0.4883	54.58	50	9	#
#	Methylcyclohexane(2)	0.2009	0.2239	55.71	50	11	#
#	1,2-Dichloropropane	0.2958	0.3094	52.31	50	5	#
	Dibromomethane	0.1833	0.1917	52.29	50	5	
	1,4-Dioxane	0.1106	0.1209	683.14	625	9	
	Methyl Methacrylate	0.2479	0.2601	52.47	50	5	
#	Bromodichloromethane	0.3346	0.3571	53.36	50	7	#
	2-Nitropropane	0.0921	0.1045	113.43	100	13	
	2-Chloroethyl Vinyl Ether	0.2111	0.2349	55.65	50	11	
#	cis-1,3-Dichloropropene	0.4292	0.4755	55.39	50	11	#
#	4-Methyl-2-pentanone	0.3933	0.4399	111.84	100	12	#
#	Toluene	0.8897	0.8621	48.45	50	-3	#
#	trans-1,3-Dichloropropene	0.5155	0.5384	52.22	50	4	#
	Ethyl Methacrylate	0.5711	0.5711	50.00	50	0	
#	1,1,2-Trichloroethane	0.3457	0.3297	47.68	50	-5	#
#	Tetrachloroethene	0.3766	0.3735	49.59	50	-1	#
	1,3-Dichloropropane	0.6122	0.5905	48.23	50	-4	
#	2-Hexanone	0.3778	0.3889	102.95	100	3	#
#	Dibromochloromethane	0.3395	0.3551	52.30	50	5	#
#	1,2-Dibromoethane	0.3713	0.3628	48.85	50	-2	#
	1-Chlorohexane	0.4991	0.4811	48.19	50	-4	
#	Chlorobenzene	1.0069	0.9789	48.61	50	-3	#
	1,1,1,2-Tetrachloroethane	0.3332	0.3358	50.40	50	1	

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/05/16 Time: 17:13

Lab File ID: l105c05.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Ethylbenzene	1.7165	1.6938	49.34	50	-1	#
#	m+p-Xylene	0.6590	0.6573	99.75	100	0	#
#	o-Xylene	0.6482	0.6482	50.00	50	0	#
#	Styrene	1.0918	1.1191	51.25	50	2	#
#	Bromoform	0.2338	0.2639	56.43	50	13	#
#	Isopropylbenzene	1.6501	1.6590	50.27	50	1	#
	Cyclohexanone	0.5100	0.4585	561.80	625	-10	
	Bromobenzene	0.8593	0.8109	47.18	50	-6	
#	1,1,2,2-Tetrachloroethane	1.0126	0.9420	46.51	50	-7	#
	1,2,3-Trichloropropane	0.2925	0.2695	46.07	50	-8	
	trans-1,4-Dichloro-2-butene	0.1350	0.2019	140.46	125	12	
	n-Propylbenzene	3.8422	3.6643	47.68	50	-5	
	2-Chlorotoluene	0.7793	0.7353	47.18	50	-6	
	4-Chlorotoluene	0.8229	0.7774	47.24	50	-6	
	1,3,5-Trimethylbenzene	2.7215	2.5876	47.54	50	-5	
	tert-Butylbenzene	0.5633	0.5368	47.64	50	-5	
	Pentachloroethane	0.4650	0.4954	53.27	50	7	
	1,2,4-Trimethylbenzene	2.8300	2.6796	47.34	50	-5	
	sec-Butylbenzene	3.4490	3.3017	47.86	50	-4	
#	1,3-Dichlorobenzene	1.6166	1.5193	46.99	50	-6	#
	p-Isopropyltoluene	2.9997	2.8877	48.13	50	-4	
#	1,4-Dichlorobenzene	1.6889	1.5703	46.49	50	-7	#
	1,2,3-Trimethylbenzene	2.9595	2.8983	48.97	50	-2	
	Benzyl Chloride	1.7568	1.8369	43.82	50	-12	
	1,3-Diethylbenzene	1.8037	1.7717	49.11	50	-2	
	1,4-Diethylbenzene	1.8811	1.8362	48.81	50	-2	
#	1,2-Dichlorobenzene	1.6025	1.4764	46.06	50	-8	#
	n-Butylbenzene	1.5350	1.4647	47.71	50	-5	
	1,2-Diethylbenzene	1.5385	1.4902	48.43	50	-3	
#	1,2-Dibromo-3-chloropropane	0.1957	0.1892	48.34	50	-3	#
	1,3,5-Trichlorobenzene	1.2753	1.1659	45.71	50	-9	
#	1,2,4-Trichlorobenzene	1.2637	1.0971	43.41	50	-13	#
	Hexachlorobutadiene	0.5397	0.4726	43.79	50	-12	
	Naphthalene	3.4044	3.0531	44.84	50	-10	
	1,2,3-Trichlorobenzene	1.1911	1.0228	42.93	50	-14	
	2-Methylnaphthalene	2.1225	1.7641	41.56	50	-17	

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/05/16 Time: 17:13

Lab File ID: l105c05.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane	0.2375	0.2463	51.84	50	4
Dibromofluoromethane(2)	0.2432	0.2522	51.86	50	4
1,2-Dichloroethane-d4	0.0600	0.0618	51.51	50	3
1,2-Dichloroethane-d4(2)	0.3073	0.3181	51.74	50	3
1,2-Dichloroethane-d4(3)	0.0381	0.0394	51.79	50	4
Toluene-d8	1.3088	1.2410	47.41	50	-5
Toluene-d8(2)	0.8522	0.8164	47.90	50	-4
4-Bromofluorobenzene	0.4843	0.4925	50.85	50	2
4-Bromofluorobenzene(2)	0.4121	0.4275	51.87	50	4

Average %Drift 5

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID (Standard): al06c01.d Date Analyzed: 07/06/16

Instrument ID: HP09685 Time Analyzed: 08:09

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	95546	3.958	962411	7.456	732907	11.014	396433	12.919
UPPER LIMIT	191092	4.458	1924822	7.956	1465814	11.514	792866	13.419
LOWER LIMIT	47773	3.458	481206	6.956	366454	10.514	198216	12.419
LAB SAMPLE ID								
01 VBLKA39	87620	3.964	931745	7.456	691505	11.014	340882	12.919
02 VBLKA41	87620	3.964	931745	7.456	691505	11.014	340882	12.919
03 LCSA39	95650	3.952	953811	7.450	712607	11.008	378454	12.919
04 LCSA41	95650	3.952	953811	7.450	712607	11.008	378454	12.919
05 LCDA39	109181	3.951	975932	7.456	718091	11.008	378514	12.919
06 LCDA41	109181	3.951	975932	7.456	718091	11.008	378514	12.919
07 8459953	83066	3.951	959730	7.450	704130	11.008	345462	12.919
08 8459954	57681	3.958	934033	7.456	691690	11.015	336187	12.919
09 8459958	77066	3.976	912069	7.456	680719	11.015	334633	12.919
10 8459959	59944	3.958	897538	7.456	669586	11.015	326182	12.919
11 8459960	69309	3.976	885457	7.456	664801	11.015	323593	12.919
12 8459961	70333	3.970	863607	7.456	623395	11.015	277314	12.919
13 8459962	81730	3.970	773922	7.456	575750	11.015	253542	12.919
14 8459963	56455	3.976	833533	7.456	586498	11.015	234306	12.919
15 SECC050	76365	3.964	891617	7.456	670526	11.014	362938	12.919
16 8442814RE	56678	3.964	900291	7.456	638846	11.015	276036	12.919
17 8457192	60974	3.970	833920	7.456	486667	11.014	129477 *	12.919
18 8457196	54590	3.964	824778	7.456	498995	11.015	142731 *	12.919
19 8457200	54312	3.970	810326	7.456	491557	11.015	137755 *	12.919
20 8457204	37579 *	3.964	818214	7.456	532463	11.014	176280 *	12.919
21 8457208	65979	3.970	820568	7.456	548087	11.014	196486 *	12.919
22 8457212	56356	3.970	769282	7.456	467410	11.014	143768 *	12.919

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID (Standard): al06c01.d Date Analyzed: 07/06/16

Instrument ID: HP09685 Time Analyzed: 08:09

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	95546	3.958	962411	7.456	732907	11.014	396433	12.919
UPPER LIMIT	191092	4.458	1924822	7.956	1465814	11.514	792866	13.419
LOWER LIMIT	47773	3.458	481206	6.956	366454	10.514	198216	12.419
LAB SAMPLE ID								
23 LOD008 - LO	77458	3.951	856227	7.456	632666	11.014	332955	12.919
24 LOD004 - LO	73982	3.964	853366	7.456	629831	11.014	326359	12.919
25 LOD002 - LO	74864	3.970	842604	7.456	619971	11.015	317346	12.919
26 LODS - LODS	75332	3.964	839806	7.456	619581	11.015	324247	12.919
27 LOQV - LOQV	79151	3.958	845836	7.456	625675	11.014	327100	12.919

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID (Standard): l105c05.d Date Analyzed: 07/05/16

Instrument ID: HP09915 Time Analyzed: 17:13

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	209480	4.006	1092308	7.514	901632	11.041	497736	12.938
UPPER LIMIT	418960	4.506	2184616	8.014	1803264	11.541	995472	13.438
LOWER LIMIT	104740	3.506	546154	7.014	450816	10.541	248868	12.438
LAB SAMPLE ID								
01 LCSL14	212366	4.002	1100570	7.507	887709	11.044	486915	12.938
02 LCDL14	223115	4.006	1106309	7.510	897419	11.041	483707	12.938
03 VBLKL14	211276	3.999	1102672	7.510	891167	11.041	471727	12.938
04 8442828	204520	3.996	1078699	7.510	861489	11.044	454196	12.938
05 8442829	202254	3.996	1071257	7.510	862417	11.041	462353	12.938
06 8442830	197810	4.006	1042238	7.510	843487	11.041	448018	12.938
07 8442831	188160	3.996	1025447	7.510	832328	11.044	443898	12.938
08 8444113	189061	4.015	1028296	7.514	832945	11.041	447171	12.938
09 8444114	191694	4.006	1030084	7.514	837193	11.041	449751	12.938
10 8444115	183373	4.012	989443	7.513	806200	11.044	435523	12.938
11 8444116	187430	4.006	1031727	7.513	832347	11.044	446250	12.938
12 8445666	182754	4.009	1001748	7.514	811629	11.044	437852	12.938
13 8445667	178039	3.999	974975	7.513	791133	11.044	424104	12.938
14 8445668	178398	3.999	1006422	7.510	812380	11.044	438661	12.938
15 8449085	174638	4.012	978859	7.514	786056	11.044	423280	12.938
16 8450968	174993	3.993	962499	7.510	784206	11.044	420457	12.938
17 8451646	193702	4.006	1011404	7.514	826643	11.044	447891	12.938
18 8451647	159400	4.002	1065835	7.510	878407	11.044	488918	12.938
19 8451647DL	179097	4.009	1135006	7.514	924144	11.044	494591	12.938
20 8451648	183542	3.996	1133785	7.510	912586	11.044	479012	12.938
21 8451649	199187	4.006	1139899	7.510	909184	11.044	484015	12.938
22 8451650	215388	4.015	1156384	7.514	931475	11.044	495108	12.938

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD93___

Lab File ID (Standard): l105c05.d Date Analyzed: 07/05/16

Instrument ID: HP09915 Time Analyzed: 17:13

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	209480	4.006	1092308	7.514	901632	11.041	497736	12.938
UPPER LIMIT	418960	4.506	2184616	8.014	1803264	11.541	995472	13.438
LOWER LIMIT	104740	3.506	546154	7.014	450816	10.541	248868	12.438
LAB SAMPLE ID								
23 8451651	215620	3.996	1123483	7.514	918394	11.044	505255	12.938
24 8454720	213475	3.996	1138915	7.510	913232	11.041	478665	12.938
25 8457188	208631	3.999	1156166	7.510	923106	11.041	489145	12.938

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

Preparation and Run Logs

Volatiles by GC/MS

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09685 **HP #22**

Data Directory Path is - d:\data\16JUN20A\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	AU20T01.D	BFB50NG	06/20/2016	08:05		
JKH09052	AU20X01.D	BLK	06/20/2016	08:20		
JKH09052	AU20I01.D	VSTD300	06/20/2016	08:48		
JKH09052	AU20I02.D	VSTD100	06/20/2016	09:12		
JKH09052	AU20I03.D	VSTD050	06/20/2016	10:23		
JKH09052	AU20I04.D	VSTD020	06/20/2016	10:49		
JKH09052	AU20I05.D	VSTD010	06/20/2016	11:14		
JKH09052	AU20I06.D	VSTD004	06/20/2016	12:06		
JKH09052	AU20I07.D	VSTD001	06/20/2016	12:32		
JKH09052	AU20M01.D	VSTD0.5	06/20/2016	12:58		
JKH09052	AU20V01.D	LCSAICVC	06/20/2016	13:30		
jkh09052	AU20L01.D	LCSA26	06/20/2016	14:36	A161721AA	
jkh09052	AU20L02.D	LCDA26	06/20/2016	14:59	A161721AA	
jkh09052	AU20B01.D	VBLKA26	06/20/2016	15:21	A161721AA	
jkh09052	AU20S09.D	8416938	06/20/2016	15:58	A161721AA	
jkh09052	AU20X02.D	VBLKA26	06/20/2016	16:25	A161721AA	
jkh09052	AU20X03.D	VBLKA26	06/20/2016	16:48	A161721AA	
jkh09052	AU20S03.D	8416934	06/20/2016	17:33	A161721AA	
jkh09052	AU20S04.D	8416937	06/20/2016	17:55	A161721AA	
jkh09052	AU20S05.D	8416945	06/20/2016	18:18	A161721AA	
jkh09052	AU20S06.D	8416946	06/20/2016	18:41	A161721AA	
jkh09052	AU20S07.D	8419253	06/20/2016	19:04	A161721AA	
jkh09052	AU20S08.D	8414856	06/20/2016	19:26	A161721AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09685 **HP #22**

Data Directory Path is - d:\data\16JUL06A\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	AL06T01.D	BFB50NG	07/06/2016	07:23		
jkh09052	AL06X00.D	VBLKA39	07/06/2016	07:44	A161881AA	
jkh09052	AL06C01.D	VSTD050	07/06/2016	08:09	A161881AA	
jkh09052	AL06X01.D	VBLKA39	07/06/2016	08:32	A161881AA	
jkh09052	AL06B01.D	VBLKA39	07/06/2016	08:54	A161881AA	
jkh09052	AL06L01.D	LCSA39	07/06/2016	09:20	A161881AA	
jkh09052	AL06L02.D	LCDA39	07/06/2016	09:45	A161881AA	
jkh09052	AL06S03.D	8459953	07/06/2016	10:41	A161881AA	
jkh09052	AL06S04.D	8459954	07/06/2016	11:03	A161881AA	
jkh09052	AL06S05.D	8459958	07/06/2016	11:26	A161881AA	
jkh09052	AL06S06.D	8459959	07/06/2016	11:49	A161881AA	
jkh09052	AL06S07.D	8459960	07/06/2016	12:11	A161881AA	
jkh09052	AL06S08.D	8459961	07/06/2016	12:34	A161881AA	
jkh09052	AL06S09.D	8459962	07/06/2016	12:56	A161881AA	
jkh09052	AL06S10.D	8459963	07/06/2016	13:19	A161881AA	
jkh09052	AL06C02.D	SECC050	07/06/2016	13:42	A161881AA	
jkh09052	AL06S63.D	8442814MS	07/06/2016	14:04	A161792AB	
jkh09052	AL06S64.D	8457192	07/06/2016	14:27	A161792AB	
jkh09052	AL06S65.D	8457196	07/06/2016	14:50	A161792AB	
jkh09052	AL06S66.D	8457200	07/06/2016	15:12	A161792AB	
jkh09052	AL06S67.D	8457204	07/06/2016	15:35	A161792AB	
jkh09052	AL06S68.D	8457208	07/06/2016	15:57	A161792AB	
jkh09052	AL06S69.D	8457212	07/06/2016	16:20	A161792AB	
jkh09052	AL06D01.D	LOD020	07/06/2016	16:42	A161881AA	
jkh09052	AL06D02.D	LOD008	07/06/2016	17:05	A161881AA	
jkh09052	AL06D03.D	LOD004	07/06/2016	17:28	A161881AA	
jkh09052	AL06D04.D	LOD002	07/06/2016	17:50	A161881AA	
jkh09052	AL06D05.D	LODS	07/06/2016	18:13	A161881AA	
jkh09052	AL06D06.D	LOQV	07/06/2016	18:36	A161881AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09915 **HP #23**

Data Directory Path is - d:\data\16APR22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
BWK03231	LA22T01.D	50NGBFB	04/22/2016	09:13		
BWK03231	LA22X01.D	BLK	04/22/2016	09:33		
BWK03231	LA22I01.D	VSTD300	04/22/2016	09:55		
BWK03231	LA22I02.D	VSTD100	04/22/2016	10:17		
BWK03231	LA22I03.D	VSTD050	04/22/2016	10:39		
BWK03231	LA22I04.D	VSTD020	04/22/2016	11:01		
BWK03231	LA22I05.D	VSTD010	04/22/2016	11:23		
BWK03231	LA22I06.D	VSTD004	04/22/2016	11:45		
BWK03231	LA22I07.D	VSTD001	04/22/2016	12:07		
BWK03231	LA22M01.D	MDL0.5	04/22/2016	12:29		
BWK03231	LA22V01.D	LCS01	04/22/2016	12:51		
BWK03231	LA22X02.D	BLK	04/22/2016	13:43		
BWK03231	LA22I11.D	VSTD300	04/22/2016	14:05		
BWK03231	LA22I12.D	VSTD100	04/22/2016	14:27		
BWK03231	LA22I13.D	VSTD050	04/22/2016	14:49		
BWK03231	LA22I14.D	VSTD020	04/22/2016	15:11		
BWK03231	LA22I15.D	VSTD010	04/22/2016	15:33		
BWK03231	LA22I16.D	VSTD004	04/22/2016	15:55		
BWK03231	LA22M02.D	MDL001	04/22/2016	16:17		
BWK03231	LA22V02.D	LCS02	04/22/2016	16:39		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09915 **HP #23**

Data Directory Path is - d:\data\16JUL05B\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
MSK07970	LL05T05.D	50NGBFB	07/05/2016	16:32	L161872AA	
MSK07970	LL05X05.D	VBLKL14	07/05/2016	16:51	L161872AA	
MSK07970	LL05C05.D	VSTD050	07/05/2016	17:13	L161872AA	
MSK07970	LL05S31.D	LCSL14	07/05/2016	17:35	L161872AA	
MSK07970	LL05S32.D	LCDL14	07/05/2016	17:57	L161872AA	
MSK07970	LL05B05.D	VBLKL14	07/05/2016	18:19	L161872AA	
MSK07970	LL05S33.D	8442828	07/05/2016	18:41	L161872AA	
MSK07970	LL05S34.D	8442829	07/05/2016	19:03	L161872AA	
MSK07970	LL05S35.D	8442830	07/05/2016	19:25	L161872AA	
MSK07970	LL05S36.D	8442831	07/05/2016	19:47	L161872AA	
MSK07970	LL05S37.D	8444113	07/05/2016	20:09	L161872AA	
MSK07970	LL05S38.D	8444114	07/05/2016	20:31	L161872AA	
MSK07970	LL05S39.D	8444115	07/05/2016	20:52	L161872AA	
MSK07970	LL05S40.D	8444116	07/05/2016	21:14	L161872AA	
MSK07970	LL05S41.D	8445666	07/05/2016	21:36	L161872AA	
MSK07970	LL05S42.D	8445667	07/05/2016	21:58	L161872AA	
MSK07970	LL05S43.D	8445668	07/05/2016	22:20	L161872AA	
MSK07970	LL05S44.D	8449085	07/05/2016	22:42	L161872AA	
MSK07970	LL05S45.D	8450968	07/05/2016	23:04	L161872AA	
MSK07970	LL05S46.D	8451646	07/05/2016	23:26	L161872AA	
MSK07970	LL05S47.D	8451647	07/05/2016	23:47	L161872AA	
MSK07970	LL05S48.D	8451647DL	07/06/2016	00:09	L161872AA	10
MSK07970	LL05S49.D	8451648	07/06/2016	00:31	L161872AA	
MSK07970	LL05S50.D	8451649	07/06/2016	00:53	L161872AA	
MSK07970	LL05S51.D	8451650	07/06/2016	01:15	L161872AA	
MSK07970	LL05S52.D	8451651	07/06/2016	01:37	L161872AA	
MSK07970	LL05S53.D	8454720	07/06/2016	01:59	L161872AA	
MSK07970	LL05S54.D	8457188	07/06/2016	02:20	L161872AA	

eurofins | Lancaster Laboratories Environmental

VOA Prep Summary by SDG: DWD93

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
8457192	150A	07320	16689788	Y	06/30/16 09:00	07/01/16 18:40	32.66 g	36.68 g	4.02 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457192	150B	07320	16689803	N	06/30/16 09:00	07/01/16 18:40	32.55 g	36.05 g	3.50 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457192	169A	07578	16689737	N	06/30/16 09:00	07/01/16 18:31	29.50 g	32.77 g	3.27 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8457196	150A	07320	16689785	Y	06/30/16 09:45	07/01/16 18:41	32.36 g	35.63 g	3.27 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457196	150B	07320	16689786	N	06/30/16 09:45	07/01/16 18:41	32.46 g	35.18 g	2.72 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457196	169A	07578	16689743	N	06/30/16 09:45	07/01/16 18:38	29.38 g	33.57 g	4.19 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A
8457200	150A	07320	16689833	Y	06/30/16 10:30	07/01/16 18:41	32.61 g	36.58 g	3.97 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8457200	150B	07320	16689832	N	06/30/16 10:30	07/01/16 18:41	32.74 g	36.47 g	3.73 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8457200	169A	07578	16689742	N	06/30/16 10:30	07/01/16 18:36	29.64 g	33.72 g	4.08 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A
8457204	150A	07320	16689827	N	06/30/16 11:30	07/01/16 18:40	32.58 g	35.68 g	3.10 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457204	150B	07320	16689826	Y	06/30/16 11:30	07/01/16 18:41	32.68 g	36.56 g	3.88 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457204	169A	07578	16689741	N	06/30/16 11:30	07/01/16 18:35	29.39 g	32.95 g	3.56 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8457208	150A	07320	16689815	Y	06/30/16 12:30	07/01/16 18:40	32.61 g	36.52 g	3.91 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457208	150B	07320	16689814	N	06/30/16 12:30	07/01/16 18:40	32.60 g	36.43 g	3.83 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457208	169A	07578	16689736	N	06/30/16 12:30	07/01/16 18:29	29.43 g	33.26 g	3.83 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8457212	150A	07320	16689821	N	06/30/16 13:30	07/01/16 18:40	32.51 g	36.16 g	3.65 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457212	150B	07320	16689820	Y	06/30/16 13:30	07/01/16 18:41	32.59 g	36.44 g	3.85 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8457212	169A	07578	16689735	N	06/30/16 13:30	07/01/16 18:33	29.47 g	33.44 g	3.97 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8442813	150A	07320	16681290	N	06/22/16 08:37	06/24/16 12:23	32.21 g	34.74 g	2.53 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8442813	150B	07320	16681296	Y	06/22/16 08:37	06/24/16 12:23	32.15 g	36.14 g	3.99 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8442813	169A	07578	16688828	N	06/22/16 08:37	06/24/16 12:13	29.60 g	33.37 g	3.77 g	4.50 g - 5.50 g	N	16158	MeOH w/surrogate (5 mL)	5.000	A
8442814	150A	07320	16681302	Y	06/22/16 08:37	06/24/16 12:24	32.21 g	34.17 g	1.96 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8442814	150B	07320	16681301	N	06/22/16 08:37	06/24/16 12:24	32.17 g	35.99 g	3.82 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8442814	169A	07578	16688836	N	06/22/16 08:37	06/24/16 12:21	29.54 g	32.79 g	3.25 g	4.50 g - 5.50 g	N	16158	MeOH w/surrogate (5 mL)	5.000	A

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DWD93

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
8442815	150A	07320	16681295	Y	06/22/16 08:37	06/24/16 12:24	32.33 g	35.11 g	2.78 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8442815	150B	07320	16681289	N	06/22/16 08:37	06/24/16 12:24	32.19 g	34.73 g	2.54 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A
8442815	169A	07578	16688832	N	06/22/16 08:37	06/24/16 12:22	29.50 g	33.09 g	3.59 g	4.50 g - 5.50 g	N	16158	MeOH w/surrogate (5 mL)	5.000	A
8468616	150A	00374	16692210	N	07/08/16 00:00	07/12/16 13:35	0.00 g	4.72 g	4.72 g	4.50 g - 5.50 g	Y	1618101	DI Water (5 mL)	5.000	
8468616	150B	00374	16692209	Y	07/08/16 00:00	07/12/16 13:35	0.00 g	4.93 g	4.93 g	4.50 g - 5.50 g	Y	1618101	DI Water (5 mL)	5.000	
8468616	169A	06646	16692211	N	07/08/16 00:00	07/12/16 15:11	0.00 g	5.11 g	5.11 g	4.50 g - 5.50 g	Y	1618001	MeOH w/surrogate (5 mL)	5.000	

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

Semivolatiles by GC/MS Data

Case Narrative/Conformance Summary

Semivolatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8457189	DU-1-3-A		X	1	
8457193	DU-1-3-B		X	1	
8457197	DU-1-3-C		X	1; 5	
8457201	DU-1-2-A		X	1	
8457205	DU-1-2-B		X	1	
8457209	DU-1-2-C		X	1	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Please note that US EPA Methods for organic compounds do not require action by the laboratory based on out-of-specification MS/MSD results.

Batch#: 16194SLB026 (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209, UNSPK: P468616)
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: Quinoline

Batch#: 16205SLA026 (Sample number(s): 8457197, UNSPK: 8457197)
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: Quinoline

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

Refer to the QC Summary forms for more information.

Surrogate

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

Batch#: 16194SLB026 (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209, UNSPK: P468616)
The recovery(ies) for the following surrogate(s) is below the acceptance window: 2-Fluorobiphenyl (8457197, 8457197RE), 2-Fluorophenol (8457197, 8457197RE), Nitrobenzene-d5 (8457197, 8457197RE), Phenol-d6 (8457197, 8457197RE), Terphenyl-d14 (8457197, 8457197RE)

(Sample number(s): 8457197: Analysis: 10726)
The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken:
The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported.
Similar results were obtained in all trials.

SAMPLE ANALYSIS:

(Sample number(s): 8457189, 8457193, 8457197: Analysis: 10726)
Reporting limits were raised due to interference from the sample matrix.

(Sample number(s): 8457197: Analysis: 10726)
The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken:
The sample was re-analyzed and internal standard areas are again outside of the QC acceptance limits, indicating a matrix effect.
The reported data is from the initial analysis of the sample.

No other problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Semivolatiles by GC/MS

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Quality Control Reference List
GC/MS Semivolatiles

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Fraction: Semivolatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
SVOA 8270D (microwave)	16194SLB026	SBLKLB194	07/13/2016 19:21:00
		194LBLCS	07/13/2016 19:44:00
		194LBLCS1	07/13/2016 20:08:00
		194LBLCSD1	07/13/2016 20:31:00
		194LBLCS2	07/13/2016 20:54:00
		194LBLCSD2	07/13/2016 21:17:00
		8457189	07/13/2016 23:17:00
		8457193	07/13/2016 23:42:00
		8457197	07/14/2016 00:07:00
		8457197RE	07/14/2016 10:14:00
		8457201	07/14/2016 00:32:00
		8457205	07/14/2016 00:57:00
		8457209	07/14/2016 01:22:00
		P468616 UNSPK	07/13/2016 21:41:00
		P468616 MS	07/13/2016 22:05:00
		P468616 MSD	07/13/2016 22:28:00
SVOA 8270D (microwave)	16205SLA026	SBLKLA205	07/25/2016 07:24:00
		205LALCS	07/25/2016 07:52:00
		205LALCS2	07/25/2016 08:19:00
		205LALCSD2	07/25/2016 08:46:00
		205LALCS3	07/25/2016 09:12:00
		205LALCSD3	07/25/2016 09:39:00
		8457197 MS	07/25/2016 10:33:00
		8457197 MSD	07/25/2016 10:59:00
		8457197RE UNSPK	07/25/2016 10:06:00

Fraction: Semivolatiles by GC/MS

10726: SVOA 8270D (microwave) Analyte Name	Default MDL	Default LOQ	Units
2-Chlorobenzaldehyde	33	170	ug/kg
Quinoline	33	170	ug/kg
2-Chlorobenzalmalononitrile	170	500	ug/kg

Quality Control Summary
Method Blank
GC/MS Semivolatiles
SDG: DWD93
Matrix: SOLID

Fraction: Semivolatiles by GC/MS

16194SLB026 / SBLKLB194 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
2-Chlorobenzaldehyde	07/13/16	N.D.	ug/kg	33	170
Quinoline	07/13/16	N.D.	ug/kg	33	170
2-Chlorobenzalmalononitrile	07/13/16	N.D.	ug/kg	170	500

16205SLA026 / SBLKLA205 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
2-Chlorobenzaldehyde	07/25/16	N.D.	ug/kg	33	170
Quinoline	07/25/16	N.D.	ug/kg	33	170
2-Chlorobenzalmalononitrile	07/25/16	N.D.	ug/kg	170	500

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Quality Control Summary
Surrogates
GC/MS Semivolatiles
SDG: DWD93
Matrix: SOLID

Fraction: Semivolatiles by GC/MS

16194SLB026	2,4,6-Tribromophenol		2-Fluorobiphenyl		2-Fluorophenol		Nitrobenzene-d5		Phenol-d6		Terphenyl-d14	
	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
SBLKLB194	109	35 - 136	90	63 - 117	91	57 - 126	81	54 - 123	82	58 - 122	95	59 - 129
194LBLCS	106	35 - 136	91	63 - 117	96	57 - 126	81	54 - 123	87	58 - 122	93	59 - 129
194LBLCSD1	115	35 - 136	92	63 - 117	95	57 - 126	81	54 - 123	87	58 - 122	97	59 - 129
8457189	117	35 - 136	101	63 - 117	102	57 - 126	90	54 - 123	94	58 - 122	101	59 - 129
8457193	117	35 - 136	95	63 - 117	100	57 - 126	87	54 - 123	92	58 - 122	95	59 - 129
8457197	59	35 - 136	50 *	63 - 117	54 *	57 - 126	47 *	54 - 123	51 *	58 - 122	52 *	59 - 129
8457197RE	59	35 - 136	52 *	63 - 117	55 *	57 - 126	49 *	54 - 123	50 *	58 - 122	50 *	59 - 129
8457201	96	35 - 136	87	63 - 117	88	57 - 126	81	54 - 123	80	58 - 122	85	59 - 129
8457205	94	35 - 136	84	63 - 117	90	57 - 126	78	54 - 123	80	58 - 122	86	59 - 129
8457209	98	35 - 136	87	63 - 117	90	57 - 126	81	54 - 123	83	58 - 122	87	59 - 129
P468616 UNSPK	78	35 - 136	67	63 - 117	68	57 - 126	59	54 - 123	61	58 - 122	65	59 - 129
P468616 MS	87	35 - 136	77	63 - 117	78	57 - 126	68	54 - 123	72	58 - 122	76	59 - 129
P468616 MSD	90	35 - 136	75	63 - 117	76	57 - 126	67	54 - 123	69	58 - 122	75	59 - 129

16205SLA026	2,4,6-Tribromophenol		2-Fluorobiphenyl		2-Fluorophenol		Nitrobenzene-d5		Phenol-d6		Terphenyl-d14	
	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
SBLKLA205	127	35 - 136	102	63 - 117	102	57 - 126	96	54 - 123	96	58 - 122	111	59 - 129
205LALCS	136	35 - 136	105	63 - 117	110	57 - 126	102	54 - 123	106	58 - 122	109	59 - 129
205LALCSD2	126	35 - 136	103	63 - 117	101	57 - 126	96	54 - 123	95	58 - 122	110	59 - 129
8457197 MS	127	35 - 136	106	63 - 117	111	57 - 126	104	54 - 123	107	58 - 122	106	59 - 129
8457197 MSD	128	35 - 136	111	63 - 117	111	57 - 126	105	54 - 123	108	58 - 122	109	59 - 129
8457197RE UNSPK	127	35 - 136	108	63 - 117	106	57 - 126	102	54 - 123	101	58 - 122	106	59 - 129

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

UNSPK: P468616 MS: P468616 MSD: P468616 **Analyte**	Batch: **16194SLB026** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)								
	Spike Added ug/kg	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Quinoline	1666.67	N.D.	1250.14	1215.04	75 *	73 *	80-119	3	30

UNSPK: 8457197RE MS: 8457197 MSD: 8457197 **Analyte**	Batch: **16205SLA026** (Sample number(s): 8457197)								
	Spike Added ug/kg	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Quinoline	1666.67	N.D.	1150.07	1158.4	69 *	70 *	80-119	1	30

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

LCS: 194LBLCS	Batch: **16194SLB026** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Quinoline	1666.67	1542	NA	93	NA	80-119	NA	NA

LCS: 194LBLCS1 LCSD: 194LBLCSD1	Batch: **16194SLB026** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
2-Chlorobenzaldehyde	1666.67	1602.23	1590.96	96	95	58-114	1	30

LCS: 194LBLCS2 LCSD: 194LBLCSD2	Batch: **16194SLB026** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
2-Chlorobenzalmalononitrile	1666.67	1215.62	1171.4	73	70	70-130	4	30

LCS: 205LALCS	Batch: **16205SLA026** (Sample number(s): 8457197)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Quinoline	1666.67	1642.37	NA	99	NA	80-119	NA	NA

LCS: 205LALCS2 LCSD: 205LALCSD2	Batch: **16205SLA026** (Sample number(s): 8457197)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
2-Chlorobenzalmalononitrile	1666.67	1321.93	1355.88	79	81	70-130	3	30

LCS: 205LALCS3 LCSD: 205LALCSD3	Batch: **16205SLA026** (Sample number(s): 8457197)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
2-Chlorobenzaldehyde	1666.67	1667	1596.96	100	96	58-114	4	30

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gf0200.d DFTPP Injection Date: 06/07/16

Instrument ID: HP11165 DFTPP Injection Time: 09:16

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	43.7
68	Less than 2.0% of mass 69	1.05 (1.88)1
69	Mass 69 relative abundance	55.9
70	Less than 2.0% of mass 69	0.45 (0.8)1
127	10.0 - 80.00% of mass 198	50.2
197	Less than 2.0% of mass 198	0.39
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	7.13
275	10.0 - 60.0% of mass 198	22.2
365	Greater than 1.00% of mass 198	2.94
441	Present, and less than mass 443	10.1
442	Greater than 50.00% of mass 198	60.5
443	15.00 - 24.00% of mass 442	11.4 (18.9)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1526 - SSTD30	gf0201.d	06/07/16	09:32
02	STD1526 - SSTD120	gf0202.d	06/07/16	09:59
03	STD1526 - SSTD80	gf0203.d	06/07/16	10:25
04	STD1526 - SSTD50	gf0204.d	06/07/16	10:51
05	STD1526 - SSTD15	gf0205.d	06/07/16	11:20
06	STD1526 - SSTD5	gf0206.d	06/07/16	11:47
07	STD1526 - SSTD1	gf0207.d	06/07/16	12:13
08	STD1526 - SSTD.5	gf0208.d	06/07/16	12:39
09	MDL1526 - SSTD00.5	gf0209.d	06/07/16	13:06
10	MDLPAH1526 - SSTD00.1	gf0210.d	06/07/16	13:32
11	ICV1376 - SSTD050	gf0211.d	06/07/16	14:00
12	ICVBAS0716 - SSTD050	gf0212.d	06/07/16	14:28

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gf1000.d DFTPP Injection Date: 06/28/16

Instrument ID: HP11165 DFTPP Injection Time: 07:05

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	39.3
68	Less than 2.0% of mass 69	0.7 (1.42)1
69	Mass 69 relative abundance	49.3
70	Less than 2.0% of mass 69	0.33 (0.67)1
127	10.0 - 80.00% of mass 198	45.0
197	Less than 2.0% of mass 198	0.74
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.72
275	10.0 - 60.0% of mass 198	24.0
365	Greater than 1.00% of mass 198	2.51
441	Present, and less than mass 443	9.53
442	Greater than 50.00% of mass 198	62.5
443	15.00 - 24.00% of mass 442	12.6 (20.1)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1526 - SSTD30	gf1001.d	06/28/16	07:22
02	TRG1586 - SSTD120	gf1002.d	06/28/16	07:48
03	TRG1586 - SSTD80	gf1003.d	06/28/16	08:14
04	TRG1586 - SSTD50	gf1004.d	06/28/16	08:40
05	TRG1586 - SSTD30	gf1005.d	06/28/16	09:07
06	TRG1586 - SSTD15	gf1006.d	06/28/16	09:32
07	TRG1586 - SSTD5	gf1007.d	06/28/16	09:58
08	TRGMDL1586 - SSTD001	gf1008.d	06/28/16	10:25
09	SBLKWA178	gf1009.d	06/28/16	10:51
10	178WALCS	gf1010.d	06/28/16	11:18
11	178WALCSD	gf1011.d	06/28/16	11:44
12	8438378	gf1012.d	06/28/16	12:10
13	8438379	gf1013.d	06/28/16	12:37
14	8442829	gf1014.d	06/28/16	13:03
15	8442830	gf1015.d	06/28/16	13:29
16	8442831	gf1016.d	06/28/16	13:56
17	8444113	gf1017.d	06/28/16	14:22
18	8444115	gf1018.d	06/28/16	14:48

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gf1000.d DFTPP Injection Date: 06/28/16

Instrument ID: HP11165 DFTPP Injection Time: 07:05

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	39.3
68	Less than 2.0% of mass 69	0.7 (1.42)1
69	Mass 69 relative abundance	49.3
70	Less than 2.0% of mass 69	0.33 (0.67)1
127	10.0 - 80.00% of mass 198	45.0
197	Less than 2.0% of mass 198	0.74
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.72
275	10.0 - 60.0% of mass 198	24.0
365	Greater than 1.00% of mass 198	2.51
441	Present, and less than mass 443	9.53
442	Greater than 50.00% of mass 198	62.5
443	15.00 - 24.00% of mass 442	12.6 (20.1)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
19	8444116	gf1019.d	06/28/16	15:15
20	8445666	gf1020.d	06/28/16	15:41
21	8445667	gf1021.d	06/28/16	16:07

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0160.d DFTPP Injection Date: 07/05/16

Instrument ID: HP11165 DFTPP Injection Time: 06:05

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	41.0
68	Less than 2.0% of mass 69	0.61 (1.19)1
69	Mass 69 relative abundance	51.2
70	Less than 2.0% of mass 69	0.19 (0.37)1
127	10.0 - 80.00% of mass 198	45.8
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.58
275	10.0 - 60.0% of mass 198	23.7
365	Greater than 1.00% of mass 198	2.3
441	Present, and less than mass 443	9.31
442	Greater than 50.00% of mass 198	59.7
443	15.00 - 24.00% of mass 442	10.8 (18.1)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1526 - SSTD30	gg0161.d	07/05/16	06:21
02	TRG1566 - SSTD30	gg0162.d	07/05/16	06:47
03	CBZ1876 - SSTD120	gg0163.d	07/05/16	07:13
04	CBZ1876 - SSTD80	gg0164.d	07/05/16	07:38
05	CBZ1876 - SSTD50	gg0165.d	07/05/16	08:04
06	CBZ1876 - SSTD30	gg0166.d	07/05/16	08:29
07	CBZ1876 - SSTD15	gg0167.d	07/05/16	08:55
08	CBZ1876 - SSTD5	gg0168.d	07/05/16	09:20
09	CBZMDL1876 - SSTD001	gg0169.d	07/05/16	09:46
10	SBLKLF182	gg0170.d	07/05/16	10:13
11	182LFLCS	gg0171.d	07/05/16	10:40
12	182LFLCS2	gg0172.d	07/05/16	11:07
13	182LFLCSD2	gg0173.d	07/05/16	11:32
14	182LFLCS3	gg0174.d	07/05/16	11:58
15	182LFLCSD3	gg0175.d	07/05/16	12:24
16	8438353	gg0176.d	07/05/16	12:49
17	8438354MS	gg0177.d	07/05/16	13:14
18	8438355MSD	gg0178.d	07/05/16	13:41

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0160.d DFTPP Injection Date: 07/05/16

Instrument ID: HP11165 DFTPP Injection Time: 06:05

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	41.0
68	Less than 2.0% of mass 69	0.61 (1.19)1
69	Mass 69 relative abundance	51.2
70	Less than 2.0% of mass 69	0.19 (0.37)1
127	10.0 - 80.00% of mass 198	45.8
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.58
275	10.0 - 60.0% of mass 198	23.7
365	Greater than 1.00% of mass 198	2.3
441	Present, and less than mass 443	9.31
442	Greater than 50.00% of mass 198	59.7
443	15.00 - 24.00% of mass 442	10.8 (18.1)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
19	8438321	gg0179.d	07/05/16	14:08
20	8438325	gg0180.d	07/05/16	14:35
21	8438329	gg0181.d	07/05/16	15:01
22	8438370	gg0182.d	07/05/16	15:26
23	8438374	gg0183.d	07/05/16	15:51

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0570.d DFTPP Injection Date: 07/13/16

Instrument ID: HP11165 DFTPP Injection Time: 15:36

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	39.0
68	Less than 2.0% of mass 69	0.91 (1.95)1
69	Mass 69 relative abundance	46.8
70	Less than 2.0% of mass 69	0.35 (0.75)1
127	10.0 - 80.00% of mass 198	44.6
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.82
275	10.0 - 60.0% of mass 198	23.9
365	Greater than 1.00% of mass 198	2.35
441	Present, and less than mass 443	9.21
442	Greater than 50.00% of mass 198	65.2
443	15.00 - 24.00% of mass 442	12.6 (19.4)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD30	gg0571.d	07/13/16	15:52
02	TRG1566 - SSTD30	gg0572.d	07/13/16	16:52
03	CBZ1876 - SSTD30	gg0573.d	07/13/16	17:15
04	SBLKWN194	gg0574.d	07/13/16	17:49
05	194WNLCS	gg0575.d	07/13/16	18:11
06	SBLKLB194	gg0578.d	07/13/16	19:21
07	194LBLCS	gg0579.d	07/13/16	19:44
08	194LBLCS1	gg0580.d	07/13/16	20:08
09	194LBLCSD1	gg0581.d	07/13/16	20:31
10	194LBLCS2	gg0582.d	07/13/16	20:54
11	194LBLCSD2	gg0583.d	07/13/16	21:17
12	8468616	gg0584.d	07/13/16	21:41
13	8468616MS	gg0585.d	07/13/16	22:05
14	8468616MSD	gg0586.d	07/13/16	22:28
15	8444067RE	gg0587.d	07/13/16	22:53
16	8457189	gg0588.d	07/13/16	23:17
17	8457193	gg0589.d	07/13/16	23:42
18	8457197	gg0590.d	07/14/16	00:07

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0570.d DFTPP Injection Date: 07/13/16

Instrument ID: HP11165 DFTPP Injection Time: 15:36

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	39.0
68	Less than 2.0% of mass 69	0.91 (1.95)1
69	Mass 69 relative abundance	46.8
70	Less than 2.0% of mass 69	0.35 (0.75)1
127	10.0 - 80.00% of mass 198	44.6
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.82
275	10.0 - 60.0% of mass 198	23.9
365	Greater than 1.00% of mass 198	2.35
441	Present, and less than mass 443	9.21
442	Greater than 50.00% of mass 198	65.2
443	15.00 - 24.00% of mass 442	12.6 (19.4)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
19	8457201	gg0591.d	07/14/16	00:32
20	8457205	gg0592.d	07/14/16	00:57
21	8457209	gg0593.d	07/14/16	01:22
22	8466599	gg0594.d	07/14/16	01:48
23	8466599MS	gg0595.d	07/14/16	02:13
24	8466599MSD	gg0596.d	07/14/16	02:39
25	8466590	gg0598.d	07/14/16	03:30

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0610.d DFTPP Injection Date: 07/14/16

Instrument ID: HP11165 DFTPP Injection Time: 06:45

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	36.7
68	Less than 2.0% of mass 69	0.65 (1.4)1
69	Mass 69 relative abundance	46.5
70	Less than 2.0% of mass 69	0.0 (0.06)1
127	10.0 - 80.00% of mass 198	44.3
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.61
275	10.0 - 60.0% of mass 198	23.6
365	Greater than 1.00% of mass 198	2.73
441	Present, and less than mass 443	9.87
442	Greater than 50.00% of mass 198	68.0
443	15.00 - 24.00% of mass 442	12.7 (18.7)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD030 - SSTD30	gg0611.d	07/14/16	07:18
02	TRG1586 - SSTD50	gg0612.d	07/14/16	09:26
03	CBZ1876 - SSTD50	gg0613.d	07/14/16	09:49
04	8457197RE	gg0614.d	07/14/16	10:14
05	8466587	gg0615.d	07/14/16	10:37
06	8466593	gg0616.d	07/14/16	11:02
07	8466602	gg0618.d	07/14/16	11:51
08	8466605	gg0619.d	07/14/16	12:15
09	8466587DL	gg0620a.d	07/14/16	16:33
10	8466596DL	gg0617a.d	07/14/16	16:56

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0890.d DFTPP Injection Date: 07/20/16

Instrument ID: HP11165 DFTPP Injection Time: 20:26

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	50.3
68	Less than 2.0% of mass 69	0.93 (1.59)1
69	Mass 69 relative abundance	58.5
70	Less than 2.0% of mass 69	0.44 (0.75)1
127	10.0 - 80.00% of mass 198	56.7
197	Less than 2.0% of mass 198	0.19
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.19
275	10.0 - 60.0% of mass 198	22.2
365	Greater than 1.00% of mass 198	2.12
441	Present, and less than mass 443	7.94
442	Greater than 50.00% of mass 198	50.4
443	15.00 - 24.00% of mass 442	9.23 (18.3)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1886 - SSTD30	gg0891.d	07/20/16	20:46
02	STD1886 - SSTD120	gg0892.d	07/20/16	21:24
03	STD1886 - SSTD80	gg0893.d	07/20/16	21:50
04	STD1886 - SSTD50	gg0894.d	07/20/16	22:18
05	STD1886 - SSTD15	gg0895.d	07/20/16	22:44
06	STD1886 - SSTD5	gg0896.d	07/20/16	23:11
07	STD1886 - SSTD1	gg0897.d	07/20/16	23:37
08	STD1886 - SSTD.5	gg0898.d	07/21/16	00:04
09	MDL1886 - SSTD00.5	gg0899.d	07/21/16	00:30
10	MDLPAH1886 - SSTD00.1	gg0900.d	07/21/16	00:56
11	ICV1376 - SSTD050	gg0901.d	07/21/16	01:23
12	BAS1166 - SSTD120	gg0903.d	07/21/16	01:49
13	BAS1166 - SSTD80	gg0904.d	07/21/16	02:16
14	BAS1166 - SSTD50	gg0905.d	07/21/16	02:43
15	BAS1166 - SSTD30	gg0906.d	07/21/16	03:09
16	BAS1166 - SSTD15	gg0907.d	07/21/16	03:36
17	BAS1166 - SSTD5	gg0908.d	07/21/16	04:02
18	BAS1166 - SSTD001	gg0909.d	07/21/16	04:29

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0890.d DFTPP Injection Date: 07/20/16

Instrument ID: HP11165 DFTPP Injection Time: 20:26

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	50.3
68	Less than 2.0% of mass 69	0.93 (1.59)1
69	Mass 69 relative abundance	58.5
70	Less than 2.0% of mass 69	0.44 (0.75)1
127	10.0 - 80.00% of mass 198	56.7
197	Less than 2.0% of mass 198	0.19
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.19
275	10.0 - 60.0% of mass 198	22.2
365	Greater than 1.00% of mass 198	2.12
441	Present, and less than mass 443	7.94
442	Greater than 50.00% of mass 198	50.4
443	15.00 - 24.00% of mass 442	9.23 (18.3)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
19	ICVBAS0716 - SSTD050	gg0902.d	07/21/16	04:55

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1000.d DFTPP Injection Date: 07/22/16

Instrument ID: HP11165 DFTPP Injection Time: 16:25

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	46.0
68	Less than 2.0% of mass 69	0.88 (1.65)1
69	Mass 69 relative abundance	53.4
70	Less than 2.0% of mass 69	0.33 (0.63)1
127	10.0 - 80.00% of mass 198	56.0
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.38
275	10.0 - 60.0% of mass 198	24.4
365	Greater than 1.00% of mass 198	2.86
441	Present, and less than mass 443	9.14
442	Greater than 50.00% of mass 198	58.7
443	15.00 - 24.00% of mass 442	10.7 (18.3)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD30	gg1001.d	07/22/16	16:42
02	CBZ1876 - SSTD120	gg1002.d	07/22/16	17:19
03	CBZ1876 - SSTD80	gg1003.d	07/22/16	17:45
04	CBZ1876 - SSTD50	gg1004.d	07/22/16	18:11
05	CBZ1876 - SSTD30	gg1005.d	07/22/16	18:38
06	CBZ1876 - SSTD15	gg1006.d	07/22/16	19:05
07	CBZ1876 - SSTD5	gg1007.d	07/22/16	19:31
08	CBZMDL1876 - SSTD001	gg1008.d	07/22/16	19:59
09	TRG1586 - SSTD120	gg1009.d	07/22/16	20:26
10	TRG1586 - SSTD80	gg1010.d	07/22/16	20:52
11	TRG1586 - SSTD50	gg1011.d	07/22/16	21:19
12	TRG1586 - SSTD30	gg1012.d	07/22/16	21:46
13	TRG1586 - SSTD15	gg1013.d	07/22/16	22:12
14	TRG1586 - SSTD5	gg1014.d	07/22/16	22:38
15	TRGMDL1586 - SSTD001	gg1015.d	07/22/16	23:05

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1200.d DFTPP Injection Date: 07/25/16

Instrument ID: HP11165 DFTPP Injection Time: 03:40

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	44.9
68	Less than 2.0% of mass 69	0.81 (1.57)1
69	Mass 69 relative abundance	51.4
70	Less than 2.0% of mass 69	0.26 (0.5)1
127	10.0 - 80.00% of mass 198	53.6
197	Less than 2.0% of mass 198	0.07
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.32
275	10.0 - 60.0% of mass 198	23.9
365	Greater than 1.00% of mass 198	2.45
441	Present, and less than mass 443	8.52
442	Greater than 50.00% of mass 198	56.0
443	15.00 - 24.00% of mass 442	10.6 (18.9)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1806 - SSTD30	gg1201.d	07/25/16	04:09
02	CBZ1876 - SSTD50	gg1202.d	07/25/16	04:41
03	TRG1586 - SSTD50	gg1203.d	07/25/16	05:07
04	SSTD50	gg1204.d	07/25/16	05:34
05	SBLKWB204	gg1205.d	07/25/16	06:03
06	204WBLCS	gg1206.d	07/25/16	06:29
07	204WBLCSD	gg1207.d	07/25/16	06:56
08	SBLKLA205	gg1208.d	07/25/16	07:24
09	205LALCS	gg1209.d	07/25/16	07:52
10	205LALCS2	gg1210.d	07/25/16	08:19
11	205LALCSD2	gg1211.d	07/25/16	08:46
12	205LALCS3	gg1212.d	07/25/16	09:12
13	205LALCSD3	gg1213.d	07/25/16	09:39
14	8457197RE	gg1214.d	07/25/16	10:06
15	8457197RE	gg1215.d	07/25/16	10:33
16	8457197MSDSD	gg1216.d	07/25/16	10:59
17	8480581	gg1217.d	07/25/16	11:27
18	SBLKWL204	gg1218.d	07/25/16	11:55

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1200.d DFTPP Injection Date: 07/25/16

Instrument ID: HP11165 DFTPP Injection Time: 03:40

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	44.9
68	Less than 2.0% of mass 69	0.81 (1.57)1
69	Mass 69 relative abundance	51.4
70	Less than 2.0% of mass 69	0.26 (0.5)1
127	10.0 - 80.00% of mass 198	53.6
197	Less than 2.0% of mass 198	0.07
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.32
275	10.0 - 60.0% of mass 198	23.9
365	Greater than 1.00% of mass 198	2.45
441	Present, and less than mass 443	8.52
442	Greater than 50.00% of mass 198	56.0
443	15.00 - 24.00% of mass 442	10.6 (18.9)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
19	204WLLCS	gg1219.d	07/25/16	12:22
20	8466599RE	gg1222.d	07/25/16	13:42
21	8466599RE	gg1223.d	07/25/16	14:08
22	8466599MSDSD	gg1224.d	07/25/16	14:35
23	8466587RE	gg1225.d	07/25/16	15:04
24	8466590RE	gg1226.d	07/25/16	15:32

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 06/07/16 06/07/16

Calibration Times: 09:32 12:39

LAB FILE ID: RRF0.5 = gf0208.d RRF1 = gf0207.d RRF5 = gf0206.d RRF15 = gf0205.d
RRF30 = gf0201.d RRF50 = gf0204.d RRF80 = gf0203.d RRF120 = gf0202.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	RRF	% RSD	CAL. METHOD
1,4-Dioxane			0.661	0.609	0.608	0.645	0.625	0.590	0.623	4	AVG
N-Nitrosodimethylamine				0.814	0.908	1.046	1.049	1.030	0.969	11	AVG
Pyridine			1.642	1.504	1.748	1.701	1.767	1.774	1.689	6	AVG
2-Picoline			1.434	1.697	1.787	1.862	1.767	1.837	1.731	9	AVG
N-Nitrosomethylethylamine			0.996	0.863	0.877	0.910	0.873	0.841	0.893	6	AVG
Methyl methanesulfonate			0.853	0.916	0.894	0.921	0.913	0.881	0.896	3	AVG
N-Nitrosodiethylamine		0.763	0.913	0.834	0.867	0.901	0.880	0.848	0.858	6	AVG
Ethyl methanesulfonate		0.916	0.865	0.817	0.841	0.835	0.844	0.811	0.847	4	AVG
Phenol		2.498	2.511	2.504	2.584	2.647	2.632	2.572	2.564	2	AVG
Aniline		2.670	2.981	2.889	2.948	2.951	2.973	2.876	2.898	4	AVG
a-methylstyrene			1.640	1.662	1.571	1.677	1.616	1.597	1.627	2	AVG
bis(2-Chloroethyl)ether		1.942	1.901	1.878	1.749	1.813	1.770	1.722	1.825	5	AVG
2-Chlorophenol		1.543	1.456	1.529	1.530	1.604	1.563	1.497	1.532	3	AVG
1,3-Dichlorobenzene		1.591	1.627	1.548	1.554	1.610	1.537	1.493	1.566	3	AVG
1,4-Dichlorobenzene		1.816	1.668	1.622	1.587	1.635	1.610	1.529	1.638	5	AVG
Benzyl alcohol		1.129	1.185	1.174	1.146	1.238	1.236	1.204	1.188	4	AVG
1,2-Dichlorobenzene		1.799	1.638	1.567	1.525	1.584	1.540	1.479	1.590	7	AVG
Indene			2.801	2.753	2.766	2.897	2.819	2.750	2.798	2	AVG
2-Methylphenol	1.623	1.431	1.595	1.614	1.608	1.638	1.648	1.582	1.592	4	AVG
2,2'-oxybis(1-Chloropropane)		2.473	2.029	1.950	1.918	1.988	1.959	1.907	2.032	10	AVG
bis(2-Chloroisopropyl)ether		2.473	2.029	1.950	1.918	1.988	1.959	1.907	2.032	10	AVG
N-Nitrosopyrrolidine		0.954	0.829	0.922	0.952	1.018	1.014	0.953	0.949	7	AVG
Acetophenone		2.132	2.508	2.368	2.457	2.572	2.565	2.453	2.436	6	AVG
4-Methylphenol		1.679	1.832	1.976	1.889	1.992	1.974	1.930	1.896	6	AVG
Total Cresols		1.555	1.713	1.795	1.749	1.815	1.811	1.756	1.742	5	AVG
N-Nitroso-di-n-propylamine		1.571	1.638	1.584	1.570	1.617	1.588	1.537	1.586	2	AVG
N-Nitrosomorpholine			1.089	1.099	1.133	1.145	1.192	1.107	1.128	3	AVG
o-Toluidine		2.454	2.820	2.904	2.790	2.856	2.849	2.783	2.780	5	AVG
Hexachloroethane			0.623	0.583	0.622	0.620	0.583	0.569	0.600	4	AVG
Nitrobenzene		0.476	0.509	0.494	0.494	0.497	0.482	0.490	0.492	2	AVG
N-Nitrosopiperidine		0.167	0.212	0.201	0.213	0.217	0.205	0.210	0.204	8	AVG
Isophorone		0.920	0.938	0.895	0.895	0.902	0.885	0.887	0.903	2	AVG
2-Nitrophenol		0.201	0.190	0.203	0.211	0.212	0.208	0.208	0.205	4	AVG
2,4-Dimethylphenol	0.429	0.354	0.402	0.431	0.413	0.430	0.406	0.414	0.410	6	AVG
O,O,O-Triethylphosphorothioate			0.201	0.182	0.186	0.185	0.181	0.183	0.186	4	AVG
bis(2-Chloroethoxy)methane		0.524	0.542	0.513	0.520	0.498	0.505	0.488	0.513	3	AVG
Benzoic acid			0.372	0.354	0.432	0.429	0.419	0.459	0.411	10	AVG
1,2,3,4-Tetrahydronaphthalene			0.580	0.562	0.591	0.578	0.574	0.591	0.580	2	AVG
2,4-Dichlorophenol		0.280	0.303	0.317	0.319	0.315	0.307	0.314	0.308	4	AVG
1,2,4-Trichlorobenzene			0.321	0.308	0.317	0.323	0.308	0.312	0.315	2	AVG
Naphthalene	1.073	1.130	1.100	1.090	1.071	1.093	1.060	1.088	1.088	2	AVG
4-Chloroaniline		0.434	0.490	0.464	0.497	0.478	0.471	0.493	0.475	5	AVG
2,6-Dichlorophenol		0.289	0.310	0.317	0.308	0.312	0.307	0.312	0.308	3	AVG
Hexachloropropene			0.146	0.154	0.160	0.156	0.155	0.163	0.156	4	AVG
Hexachlorobutadiene	0.163	0.160	0.152	0.151	0.150	0.155	0.145	0.146	0.153	4	AVG
Quinoline			0.788	0.766	0.754	0.772	0.766	0.750	0.766	2	AVG
Caprolactam			0.177	0.155	0.170	0.172	0.175	0.161	0.168	5	AVG
N-Nitrosodi-n-butylamine		0.440	0.384	0.425	0.456	0.449	0.443		0.433	6	AVG
4-Chloro-3-methylphenol		0.361	0.389	0.386	0.399	0.397	0.392	0.385	0.387	3	AVG
Safrole			0.290	0.291	0.297	0.300	0.297	0.299	0.296	1	AVG
2-Methylnaphthalene	0.930	0.743	0.821	0.779	0.786	0.781	0.771	0.764	0.797	7	AVG
1-Methylnaphthalene	0.790	0.724	0.767	0.716	0.729	0.734	0.716	0.714	0.736	4	AVG

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 06/07/16 06/07/16

Calibration Times: 09:32 12:39

LAB FILE ID: RRF0.5 = gf0208.d RRF1 = gf0207.d RRF5 = gf0206.d RRF15 = gf0205.d
RRF30 = gf0201.d RRF50 = gf0204.d RRF80 = gf0203.d RRF120 = gf0202.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
Hexachlorocyclopentadiene			0.182	0.201	0.227	0.225	0.226	0.237	0.216	10	AVG
1,2,4,5-Tetrachlorobenzene		0.471	0.481	0.479	0.459	0.475	0.458	0.466	0.470	2	AVG
cis-Isosafrole			0.426	0.475	0.528	0.467	0.486	0.494	0.479	7	AVG
2,4,6-Trichlorophenol		0.356	0.344	0.369	0.355	0.361	0.357	0.362	0.358	2	AVG
2,4,5-Trichlorophenol		0.323	0.399	0.437	0.398	0.400	0.394	0.399	0.393	9	AVG
trans-Isosafrole			0.515	0.525	0.539	0.545	0.528	0.530	0.530	2	AVG
Isosafrole			0.500	0.517	0.537	0.531	0.521	0.524	0.522	2	AVG
1,1'-Biphenyl		1.509	1.513	1.485	1.496	1.516	1.510	1.498	1.504	1	AVG
2-Chloronaphthalene		1.134	1.134	1.117	1.286	1.154	1.043	1.173	1.149	6	AVG
1-Chloronaphthalene		1.017	1.164	1.204	1.091	1.081	1.157	1.039	1.107	6	AVG
Diphenyl ether		0.802	0.792	0.826	0.785	0.822	0.782	0.795	0.801	2	AVG
2-Nitroaniline		0.292	0.372	0.427	0.417	0.438	0.428	0.431	0.400	13	AVG
1,4-Naphthoquinone			0.466	0.515	0.533	0.530	0.519	0.510	0.512	5	AVG
1,4-Dinitrobenzene			0.183	0.218	0.216	0.234	0.235	0.239	0.221	9	AVG
Dimethylphthalate			1.468	1.426	1.371	1.375	1.363	1.328	1.389	4	AVG
1,3-Dinitrobenzene			0.228	0.250	0.248	0.259	0.258	0.258	0.250	5	AVG
2,6-Dinitrotoluene		0.256	0.329	0.338	0.328	0.341	0.330	0.337	0.323	9	AVG
Acenaphthylene	1.766	1.891	1.819	1.873	1.829	1.853	1.798	1.816	1.831	2	AVG
3-Nitroaniline		0.249	0.345	0.397	0.388	0.383	0.379	0.374	0.359	14	AVG
Acenaphthene	1.347	1.248	1.251	1.244	1.166	1.210	1.191	1.190	1.231	5	AVG
2,4-Dinitrophenol			0.200	0.227	0.236	0.239	0.247	0.252	0.234	8	AVG
4-Nitrophenol			0.203	0.215	0.211	0.221	0.212	0.238	0.217	5	AVG
Pentachlorobenzene		0.461	0.439	0.412	0.404	0.417	0.402	0.402	0.420	5	AVG
2,4-Dinitrotoluene			0.452	0.472	0.446	0.444	0.459	0.451	0.454	2	AVG
2,4_2,6-Dinitrotoluenes			0.390	0.405	0.387	0.393	0.395	0.394	0.394	2	AVG
Dibenzofuran		1.733	1.820	1.793	1.716	1.709	1.691	1.674	1.734	3	AVG
1-Naphthylamine			1.385	1.412	1.369	1.388	1.368	1.385	1.385	1	AVG
2,3,4,6-Tetrachlorophenol		0.282	0.316	0.333	0.308	0.316	0.310	0.308	0.311	5	AVG
2-Naphthylamine			1.353	1.408	1.356	1.382	1.336	1.353	1.365	2	AVG
Diethylphthalate			1.376	1.424	1.347	1.369	1.358	1.330	1.367	2	AVG
Thionazin			0.278	0.290	0.283	0.282	0.280	0.270	0.280	2	AVG
Fluorene	1.329	1.374	1.508	1.477	1.396	1.435	1.395	1.388	1.413	4	AVG
4-Chlorophenyl-phenylether		0.741	0.638	0.681	0.655	0.654	0.634	0.634	0.663	6	AVG
5-Nitro-o-toluidine		0.336	0.462	0.473	0.453	0.445	0.443	0.440	0.436	10	AVG
4-Nitroaniline		0.377	0.436	0.451	0.422	0.434	0.420	0.396	0.419	6	AVG
4,6-Dinitro-2-methylphenol			0.129	0.134	0.144	0.157	0.156	0.159	0.147	9	AVG
N-Nitrosodiphenylamine (1)	0.672	0.633	0.660	0.655	0.640	0.678	0.664	0.660	0.658	2	AVG
NDPA as diphenylamine	0.672	0.633	0.660	0.655	0.640	0.678	0.664	0.660	0.658	2	AVG
1,2-Diphenylhydrazine		0.965	0.859	0.869	0.879	0.922	0.909	0.898	0.900	4	AVG
Tetraethyldithiopyrophosphate			0.111	0.122	0.131	0.126	0.127	0.123	0.123	6	AVG
1,3,5-Trinitrobenzene			0.062	0.081	0.087	0.095	0.098	0.102	0.087	17	AVG
Diallate (peak 1)			0.407	0.394	0.401	0.410	0.404	0.411	0.405	2	AVG
Phorate		0.475	0.493	0.534	0.546	0.568	0.568	0.571	0.536	7	AVG
Phenacetin		0.384	0.433	0.431	0.441	0.439	0.437	0.433	0.428	5	AVG
4-Bromophenyl-phenylether			0.161	0.181	0.168	0.183	0.177	0.179	0.175	5	AVG
Diallate (peak 2)			0.396	0.393	0.394	0.398	0.404	0.380	0.394	2	AVG
Diallate trans/cis			0.405	0.393	0.400	0.408	0.404	0.406	0.403	1	AVG
Hexachlorobenzene	0.163	0.210	0.168	0.168	0.168	0.183	0.171	0.175	0.176	9	AVG
Dimethoate			0.337	0.370	0.373	0.386	0.358	0.360	0.364	5	AVG
Pentachlorophenol			0.129	0.126	0.129	0.133	0.130	0.133	0.130	2	AVG
4-Aminobiphenyl		0.591	0.617	0.628	0.582	0.545	0.517		0.580	7	AVG
Pentachloronitrobenzene			0.080	0.070	0.068	0.073	0.075	0.074	0.073	5	AVG

(1) Cannot be separated from Diphenylamine
4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 06/07/16 06/07/16

Calibration Times: 09:32 12:39

LAB FILE ID: RRF0.5 = gf0208.d RRF1 = gf0207.d RRF5 = gf0206.d RRF15 = gf0205.d
RRF30 = gf0201.d RRF50 = gf0204.d RRF80 = gf0203.d RRF120 = gf0202.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
Pronamide		0.300	0.294	0.309	0.322	0.330	0.326	0.324	0.315	4	AVG
Dinoseb			0.127	0.167	0.199	0.209	0.210	0.220	0.189	19	AVG
Phenanthrene	1.139	1.246	1.133	1.125	1.078	1.147	1.121	1.113	1.138	4	AVG
Anthracene	1.028	1.067	1.106	1.130	1.117	1.167	1.130	1.131	1.109	4	AVG
Carbazole		1.078	1.087	1.104	1.060	1.130	1.104	1.084	1.093	2	AVG
Methyl parathion			0.212	0.252	0.274	0.278	0.265	0.268	0.258	9	AVG
Di-n-butylphthalate			1.182	1.219	1.241	1.299	1.288	1.249	1.246	3	AVG
Parathion			0.143	0.157	0.164	0.169	0.168	0.172	0.162	7	AVG
4-Nitroquinoline-1-oxide				0.096	0.109	0.128	0.122	0.131	0.117	13	AVG
Octachlorostyrene			0.064	0.056	0.059	0.062	0.062	0.062	0.061	5	AVG
Isodrin		0.124	0.112	0.114	0.114	0.120	0.119	0.117	0.117	3	AVG
Fluoranthene	1.202	1.134	1.183	1.214	1.157	1.244	1.203	1.176	1.189	3	AVG
Benzidine			0.764	0.791	0.829	0.835	0.805	0.830	0.809	3	AVG
Pyrene	1.307	1.304	1.180	1.158	1.143	1.121	1.120	1.140	1.184	7	AVG
p-Dimethylaminoazobenzene		0.148	0.182	0.200	0.216	0.220	0.222	0.224	0.202	14	AVG
Chlorobenzilate		0.304	0.320	0.323	0.337	0.329	0.326	0.332	0.325	3	AVG
3,3'-Dimethylbenzidine			0.612	0.602	0.641	0.666	0.623	0.760	0.651	9	AVG
Butylbenzylphthalate			0.491	0.501	0.538	0.527	0.521	0.529	0.518	4	AVG
2-Acetylaminofluorene			0.426	0.478	0.496	0.483	0.494	0.490	0.478	5	AVG
3,3'-Dichlorobenzidine			0.373	0.374	0.388	0.377	0.373	0.372	0.376	2	AVG
4,4'-Methylenebis(2-chloroani1			0.196	0.192	0.205	0.199	0.195	0.198	0.197	2	AVG
Benzo(a)anthracene	0.926	0.979	1.060	1.029	1.056	1.033	1.023	0.999	1.013	4	AVG
Chrysene	1.157	1.078	1.012	0.984	0.978	0.976	0.960	0.965	1.014	7	AVG
bis(2-Ethylhexyl)phthalate			0.675	0.692	0.747	0.722	0.722	0.731	0.715	4	AVG
6-Methylchrysene			0.699	0.680	0.708	0.709	0.703	0.704	0.701	2	AVG
Di-n-octylphthalate			1.309	1.474	1.724	1.689	1.628	1.706	1.588	10	AVG
Benzo(b)fluoranthene	1.166	1.232	1.250	1.298	1.277	1.304	1.293	1.273	1.262	4	AVG
7,12-Dimethylbenz[a]anthracene		0.470	0.533	0.601	0.657	0.640	0.597	0.622	0.589	11	AVG
Benzo(k)fluoranthene	1.118	1.171	1.253	1.264	1.360	1.318	1.206	1.263	1.244	6	AVG
Benzo(a)pyrene	0.967	1.131	1.198	1.237	1.245	1.262	1.206	1.200	1.181	8	AVG
3-Methylcholanthrene		0.489	0.481	0.514	0.538	0.558	0.526	0.535	0.520	5	AVG
Dibenz(a,h)acridine			0.808	0.833	0.948	0.952	0.923	0.925	0.898	7	AVG
Dibenz(a,j)acridine			0.920	0.898	1.020	0.985	0.934	0.953	0.951	5	AVG
Indeno(1,2,3-cd)pyrene	1.011	1.089	1.195	1.252	1.307	1.302	1.250	1.250	1.207	9	AVG
Dibenz(a,h)anthracene	0.944	0.963	1.028	1.044	1.106	1.097	1.066	1.047	1.037	6	AVG
Benzo(g,h,i)perylene	0.902	1.042	1.027	1.036	1.098	1.056	1.044	1.032	1.030	5	AVG
Total PAHs	1.053	1.061	1.107	1.132	1.177	1.182	1.129	1.171	1.127	4	AVG
2-Fluorophenol			1.506	1.494	1.480	1.544	1.493	1.458	1.496	2	AVG
Phenol-d6			2.191	2.221	2.188	2.236	2.265	2.182	2.214	1	AVG
Nitrobenzene-d5			0.475	0.466	0.475	0.482	0.465	0.470	0.472	1	AVG
2-Fluorobiphenyl			1.314	1.317	1.279	1.294	1.261	1.265	1.288	2	AVG
2,4,6-Tribromophenol			0.142	0.146	0.141	0.145	0.141	0.138	0.142	2	AVG
Terphenyl-d14			0.754	0.747	0.738	0.725	0.717	0.713	0.732	2	AVG

Average %RSD 5

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jun07.b/gf0201.d SSTD030
/chem/HP11165.i/16jun07.b/gf0202.d SSTD120
/chem/HP11165.i/16jun07.b/gf0203.d SSTD080
/chem/HP11165.i/16jun07.b/gf0204.d SSTD050
/chem/HP11165.i/16jun07.b/gf0205.d SSTD015
/chem/HP11165.i/16jun07.b/gf0206.d SSTD005
/chem/HP11165.i/16jun07.b/gf0207.d SSTD001
/chem/HP11165.i/16jun07.b/gf0208.d SSTD00.5

Area Summary

	File ID:									
Internal Standard Name	gf0201.d	gf0202.d	gf0203.d	gf0204.d	gf0205.d	gf0206.d	gf0207.d	gf0208.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	70096	80056	69946	73872	74388	75855	70518	68894	72953	5	Yes
Naphthalene-d8	296116	339990	315991	325835	322701	324878	300737	292985	314904	5	Yes
Acenaphthene-d10	192522	219303	205887	212735	203039	209044	189605	188690	202603	6	Yes
Phenanthrene-d10	374023	412819	389703	400814	413018	417859	369222	370475	393492	5	Yes
Pyrene-d10	404786	440349	432286	456203	461359	456027	416814	425673	436687	5	Yes
Perylene-d12	301130	329460	331473	334394	351858	365369	345528	338486	337212	6	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

	File ID:								
Internal Standard Name	gf0201.d	gf0202.d	gf0203.d	gf0204.d	gf0205.d	gf0206.d	gf0207.d	gf0208.d	Avg. RT
1,4-Dichlorobenzene-d4	5.528	5.534	5.534	5.534	5.528	5.528	5.528	5.528	5.530
Naphthalene-d8	6.763	6.763	6.763	6.763	6.763	6.763	6.763	6.763	6.763
Acenaphthene-d10	8.475	8.475	8.475	8.475	8.475	8.469	8.475	8.469	8.473
Phenanthrene-d10	9.922	9.927	9.928	9.922	9.922	9.922	9.922	9.922	9.923
Pyrene-d10	11.310	11.310	11.310	11.310	11.304	11.304	11.304	11.304	11.307
Perylene-d12	13.939	13.945	13.945	13.945	13.939	13.939	13.939	13.939	13.941

Comments: _____

Report generated on 06/07/2016 at 18:24

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS | LAB CODE: LANCAS | INSTRUMENT: HP11165

Method: SW-846 8270D | File ID: gf0211.d

ICV SAMPLE ID: ICV1376 | BATCH: 16JUN07026 | Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
1,4-Dioxane	50.00	53.67	7	30	YES
N-Nitrosodimethylamine	50.00	51.70	3	30	YES
Pyridine	50.00	55.26	11	30	YES
2-Picoline	50.00	51.90	4	30	YES
N-Nitrosomethylethylamine	50.00	41.43	-17	30	YES
Methyl methanesulfonate	50.00	52.74	5	30	YES
N-Nitrosodiethylamine	50.00	48.88	-2	30	YES
Ethyl methanesulfonate	50.00	49.75	-1	30	YES
Phenol	50.00	50.98	2	30	YES
Aniline	50.00	48.42	-3	30	YES
bis(2-Chloroethyl)ether	50.00	48.81	-2	30	YES
2-Chlorophenol	50.00	52.08	4	30	YES
1,3-Dichlorobenzene	50.00	52.08	4	30	YES
1,4-Dichlorobenzene	50.00	51.06	2	30	YES
Benzyl alcohol	50.00	51.04	2	30	YES
1,2-Dichlorobenzene	50.00	49.45	-1	30	YES
Indene	50.00	49.46	-1	30	YES
2-Methylphenol	50.00	53.12	6	30	YES
2,2'-oxybis(1-Chloropropane	50.00	51.97	4	30	YES
bis(2-Chloroisopropyl)ether	50.00	51.97	4	30	YES
N-Nitrosopyrrolidine	50.00	49.17	-2	30	YES
Acetophenone	50.00	49.36	-1	30	YES
4-Methylphenol	50.00	51.50	3	30	YES
N-Nitroso-di-n-propylamine	50.00	49.22	-2	30	YES
N-Nitrosomorpholine	50.00	50.77	2	30	YES
o-Toluidine	50.00	49.28	-1	30	YES
Total Cresols	100.00	104.63	5	30	YES
Hexachloroethane	50.00	50.96	2	30	YES
Nitrobenzene	50.00	48.91	-2	30	YES
N-Nitrosopiperidine	50.00	48.00	-4	30	YES
Isophorone	50.00	46.64	-7	30	YES
2-Nitrophenol	50.00	49.47	-1	30	YES
2,4-Dimethylphenol	50.00	45.31	-9	30	YES
bis(2-Chloroethoxy)methane	50.00	48.38	-3	30	YES
Benzoic acid	100.00	94.14	-6	30	YES
O,O,O-Triethylphosphorothio	50.00	46.81	-6	30	YES
2,4-Dichlorophenol	50.00	50.24	0	30	YES

NC = Could not calculate

Comments:

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gf0211.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUN07026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
1,2,4-Trichlorobenzene	50.00	50.78	2	30	YES
Naphthalene	50.00	49.34	-1	30	YES
4-Chloroaniline	50.00	50.91	2	30	YES
2,6-Dichlorophenol	50.00	49.38	-1	30	YES
Hexachloropropene	50.00	53.33	7	30	YES
Hexachlorobutadiene	50.00	49.70	-1	30	YES
Quinoline	50.00	47.91	-4	30	YES
N-Nitrosodi-n-butylamine	50.00	36.21	-28	30	YES
4-Chloro-3-methylphenol	50.00	48.54	-3	30	YES
Safrole	50.00	49.09	-2	30	YES
2-Methylnaphthalene	50.00	46.43	-7	30	YES
1-Methylnaphthalene	50.00	46.31	-7	30	YES
Hexachlorocyclopentadiene	100.00	90.59	-9	30	YES
1,2,4,5-Tetrachlorobenzene	50.00	50.80	2	30	YES
cis-Isosafrole	6.00	6.25	4	30	YES
2,4,6-Trichlorophenol	50.00	49.91	0	30	YES
2,4,5-Trichlorophenol	50.00	51.15	2	30	YES
trans-Isosafrole	44.00	46.22	5	30	YES
1,1'-Biphenyl	50.00	48.75	-3	30	YES
2-Chloronaphthalene	50.00	50.26	1	30	YES
Isosafrole	50.00	52.47	5	30	YES
1-Chloronaphthalene	50.00	49.36	-1	30	YES
Diphenyl ether	50.00	49.24	-2	30	YES
2-Nitroaniline	50.00	52.74	5	30	YES
1,4-Naphthoquinone	62.50	58.31	-7	30	YES
1,4-Dinitrobenzene	50.00	51.33	3	30	YES
Dimethylphthalate	50.00	48.55	-3	30	YES
1,3-Dinitrobenzene	50.00	50.59	1	30	YES
2,6-Dinitrotoluene	50.00	52.28	5	30	YES
Acenaphthylene	50.00	43.69	-13	30	YES
3-Nitroaniline	50.00	52.01	4	30	YES
Acenaphthene	50.00	48.87	-2	30	YES
2,4-Dinitrophenol	100.00	100.32	0	30	YES
4-Nitrophenol	50.00	52.72	5	30	YES
Pentachlorobenzene	50.00	49.86	0	30	YES
2,4-Dinitrotoluene	50.00	50.32	1	30	YES
Dibenzofuran	50.00	48.44	-3	30	YES

NC = Could not calculate

Comments: _____

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS | LAB CODE: LANCAS | INSTRUMENT: HP11165

Method: SW-846 8270D | File ID: gf0211.d

ICV SAMPLE ID: ICV1376 | BATCH: 16JUN07026 | Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
2,4_2,6-Dinitrotoluenes	100.00	102.60	3	30	YES
1-Naphthylamine	100.00	94.52	-5	30	YES
2,3,4,6-Tetrachlorophenol	50.00	54.18	8	30	YES
2-Naphthylamine	100.00	91.56	-8	30	YES
Diethylphthalate	50.00	48.98	-2	30	YES
Thionazin	50.00	41.55	-17	30	YES
Fluorene	50.00	51.88	4	30	YES
4-Chlorophenyl-phenylether	50.00	49.68	-1	30	YES
5-Nitro-o-toluidine	50.00	50.51	1	30	YES
4-Nitroaniline	50.00	47.08	-6	30	YES
4,6-Dinitro-2-methylphenol	50.00	50.51	1	30	YES
N-Nitrosodiphenylamine	50.00	48.76	-2	30	YES
NDPA as diphenylamine	50.00	48.76	-2	30	YES
1,2-Diphenylhydrazine	50.00	48.83	-2	30	YES
Tetraethyldithiopyrophospha	50.00	46.53	-7	30	YES
1,3,5-Trinitrobenzene	50.00	49.05	-2	30	YES
Diallate (peak 1)	37.50	33.84	-10	30	YES
Phorate	50.00	49.55	-1	30	YES
Phenacetin	50.00	47.14	-6	30	YES
4-Bromophenyl-phenylether	50.00	49.76	0	30	YES
Diallate (peak 2)	12.50	11.62	-7	30	YES
Hexachlorobenzene	50.00	48.55	-3	30	YES
Diallate trans/cis	50.00	45.47	-9	30	YES
Dimethoate	50.00	44.62	-11	30	YES
Pentachlorophenol	50.00	52.02	4	30	YES
4-Aminobiphenyl	50.00	67.10	34	30	NO*
Pentachloronitrobenzene	50.00	47.02	-6	30	YES
Pronamide	50.00	47.53	-5	30	YES
Dinoseb	50.00	52.71	5	30	YES
Phenanthrene	50.00	47.06	-6	30	YES
Anthracene	50.00	49.49	-1	30	YES
Carbazole	50.00	48.06	-4	30	YES
Methyl parathion	50.00	47.81	-4	30	YES
Di-n-butylphthalate	50.00	48.97	-2	30	YES
Parathion	50.00	50.59	1	30	YES
4-Nitroquinoline-1-oxide	600.00	770.14	28	30	YES
Isodrin	50.00	46.43	-7	30	YES

NC = Could not calculate

Comments: *APPIX compound. Rerun any samples with hits for 4-Aminobiphenyl under valid ICV.

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS | LAB CODE: LANCAS | INSTRUMENT: HP11165

Method: SW-846 8270D | File ID: gf0211.d

ICV SAMPLE ID: ICV1376 | BATCH: 16JUN07026 | Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
Fluoranthene	50.00	49.03	-2	30	YES
Benzidine	250.00	248.93	0	30	YES
Pyrene	50.00	47.76	-4	30	YES
p-Dimethylaminoazobenzene	50.00	59.50	19	30	YES
Chlorobenzilate	50.00	49.10	-2	30	YES
3,3'-Dimethylbenzidine	100.00	104.27	4	30	YES
Butylbenzylphthalate	50.00	52.12	4	30	YES
2-Acetylaminofluorene	50.00	49.76	0	30	YES
3,3'-Dichlorobenzidine	50.00	47.12	-6	30	YES
Benzo(a)anthracene	50.00	51.44	3	30	YES
Chrysene	50.00	49.83	0	30	YES
4,4'-Methylenebis(2-chloroa	50.00	47.77	-4	30	YES
bis(2-Ethylhexyl)phthalate	50.00	50.47	1	30	YES
6-Methylchrysene	50.00	49.29	-1	30	YES
Di-n-octylphthalate	50.00	54.60	9	30	YES
Benzo(b)fluoranthene	50.00	53.49	7	30	YES
7,12-Dimethylbenz[a]anthrac	50.00	54.14	8	30	YES
Benzo(k)fluoranthene	50.00	57.36	15	30	YES
Benzo(a)pyrene	50.00	52.95	6	30	YES
3-Methylcholanthrene	50.00	63.50	27	30	YES
Dibenz(a,h)acridine	50.00	50.97	2	30	YES
Dibenz(a,j)acridine	50.00	50.12	0	30	YES
Indeno(1,2,3-cd)pyrene	50.00	56.11	12	30	YES
Dibenz(a,h)anthracene	50.00	55.58	11	30	YES
Benzo(g,h,i)perylene	50.00	54.71	9	30	YES
Total PAHs	900.00	911.32	1	30	YES

NC = Could not calculate

Comments:

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gf0212.d

ICV SAMPLE ID: ICVBAS0716 BATCH: 16JUN07026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
Caprolactam	50.00	44.50	-11	30	YES

NC = Could not calculate

Comments: _____

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 06/28/16 06/28/16

Calibration Times: 07:48 09:58

LAB FILE ID: RRF5 = gf1007.d RRF15 = gf1006.d

RRF30 = gf1005.d RRF50 = gf1004.d RRF80 = gf1003.d RRF120 = gf1002.d

COMPOUND	RRF	RRF	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
2-Chlorobenzalmalononitrile			0.373	0.369	0.378	0.374	0.376	0.382	0.375	1	AVG
								Average %RSD		1	

07-12-2016

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jun28.b/gf1002.d SSTD120
/chem/HP11165.i/16jun28.b/gf1003.d SSTD080
/chem/HP11165.i/16jun28.b/gf1004.d SSTD050
/chem/HP11165.i/16jun28.b/gf1005.d SSTD030
/chem/HP11165.i/16jun28.b/gf1006.d SSTD015
/chem/HP11165.i/16jun28.b/gf1007.d SSTD005

Area Summary

	File ID:								
Internal Standard Name	gf1002.d	gf1003.d	gf1004.d	gf1005.d	gf1006.d	gf1007.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	69353	75067	81429	77374	76768	84981	77495	7	Yes
Naphthalene-d8	300636	313602	337965	327580	320228	357147	326193	6	Yes
Acenaphthene-d10	200693	208546	226613	225158	220824	240109	220324	6	Yes
Phenanthrene-d10	415370	427022	462700	443931	443085	487450	446593	6	Yes
Pyrene-d10	497800	513778	536406	523166	517538	581064	528292	5	Yes
Perylene-d12	427018	435295	432549	423115	415118	448269	430227	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

	File ID:						
Internal Standard Name	gf1002.d	gf1003.d	gf1004.d	gf1005.d	gf1006.d	gf1007.d	Avg. RT
1,4-Dichlorobenzene-d4	5.151	5.151	5.152	5.151	5.151	5.151	5.151
Naphthalene-d8	6.387	6.386	6.387	6.386	6.381	6.381	6.385
Acenaphthene-d10	8.087	8.086	8.087	8.086	8.086	8.087	8.086
Phenanthrene-d10	9.528	9.527	9.528	9.527	9.528	9.528	9.528
Pyrene-d10	10.904	10.904	10.898	10.898	10.898	10.898	10.900
Perylene-d12	13.480	13.480	13.480	13.480	13.480	13.480	13.480

Comments: _____

Report generated on 06/28/2016 at 16:24

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/05/16 07/05/16

Calibration Times: 07:13 09:20

LAB FILE ID: RRF5 = gg0168.d RRF15 = gg0167.d
RRF30 = gg0166.d RRF50 = gg0165.d RRF80 = gg0164.d RRF120 = gg0163.d

COMPOUND	RRF	RRF	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	RRF	% RSD	CAL. METHOD
2-Chlorobenzaldehyde			0.224	0.263	0.256	0.265	0.267	0.270	0.257	7	AVG
								Average %RSD		4	

07-05-2016

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul05.b/gg0163.d SSTD120
/chem/HP11165.i/16jul05.b/gg0164.d SSTD080
/chem/HP11165.i/16jul05.b/gg0165.d SSTD050
/chem/HP11165.i/16jul05.b/gg0166.d SSTD030
/chem/HP11165.i/16jul05.b/gg0167.d SSTD015
/chem/HP11165.i/16jul05.b/gg0168.d SSTD005

Area Summary

File ID:

Internal Standard Name	gg0163.d	gg0164.d	gg0165.d	gg0166.d	gg0167.d	gg0168.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	47137	51183	50572	51241	50923	52470	50588	4	Yes
Naphthalene-d8	201732	208877	212564	213177	210827	209380	209426	2	Yes
Acenaphthene-d10	131120	131752	132398	133283	131450	131673	131946	1	Yes
Phenanthrene-d10	259478	257521	267085	263821	257523	255200	260105	2	Yes
Pyrene-d10	300869	308649	314265	319659	311533	306987	310327	2	Yes
Perylene-d12	262779	280597	291691	282485	276925	275886	278394	3	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	gg0163.d	gg0164.d	gg0165.d	gg0166.d	gg0167.d	gg0168.d	Avg. RT
1,4-Dichlorobenzene-d4	4.934	4.934	4.934	4.934	4.934	4.934	4.934
Naphthalene-d8	6.163	6.163	6.163	6.163	6.163	6.163	6.163
Acenaphthene-d10	7.857	7.857	7.857	7.857	7.857	7.857	7.857
Phenanthrene-d10	9.280	9.280	9.286	9.286	9.286	9.286	9.284
Pyrene-d10	10.645	10.645	10.645	10.645	10.645	10.645	10.645
Perylene-d12	13.186	13.186	13.186	13.186	13.186	13.186	13.186

Comments: _____

07-05-2015

Report generated on 07/05/2016 at 09:43

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/20/16 07/21/16

Calibration Times: 20:46 00:04

JUL 21 2016

Joe Gambler
Senior Chemist

LAB FILE ID:RRF0.5 = gg0898.d RRF1 = gg0897.d RRF5 = gg0896.d RRF15 = gg0895.d
RRF30 = gg0891.d RRF50 = gg0894.d RRF80 = gg0893.d RRF120 = gg0892.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
1,4-Dioxane			0.631	0.708	0.681	0.676	0.647	0.641	0.664	4	AVG
N-Nitrosodimethylamine				1.148	1.185	1.138	1.173	1.132	1.155	2	AVG
Pyridine			1.257	1.843	1.943	2.003	1.780	1.903	1.788	15	AVG
2-Picoline			1.756	1.891	1.904	1.913	1.864	1.895	1.870	3	AVG
N-Nitrosomethylethylamine			0.806	0.902	0.890	0.902	0.865	0.866	0.872	4	AVG
Methyl methanesulfonate			0.832	0.893	0.856	0.870	0.845	0.835	0.855	3	AVG
N-Nitrosodiethylamine		0.717	0.808	0.879	0.879	0.902	0.867	0.843	0.842	7	AVG
Ethyl methanesulfonate		0.776	0.766	0.888	0.862	0.889	0.834	0.830	0.835	6	AVG
Phenol		2.107	2.357	2.668	2.553	2.600	2.477	2.417	2.454	8	AVG
Aniline		2.479	2.719	3.028	2.922	2.972	2.789	2.761	2.810	7	AVG
a-methylstyrene			1.346	1.539	1.699	1.666	1.632	1.492	1.562	8	AVG
bis(2-Chloroethyl)ether		1.926	1.738	1.929	1.842	1.832	1.787	1.786	1.834	4	AVG
2-Chlorophenol		1.295	1.438	1.589	1.533	1.582	1.528	1.527	1.499	7	AVG
1,3-Dichlorobenzene		1.486	1.524	1.629	1.547	1.571	1.508	1.498	1.538	3	AVG
1,4-Dichlorobenzene		1.644	1.541	1.679	1.585	1.617	1.551	1.526	1.592	4	AVG
Benzyl alcohol		0.829	1.002	1.095	1.239	1.226	1.209	1.099	1.100	13	AVG
1,2-Dichlorobenzene		1.431	1.477	1.553	1.526	1.550	1.479	1.461	1.497	3	AVG
Indene			2.430	2.615	2.978	2.869	2.808	2.560	2.710	8	AVG
2-Methylphenol	1.216	1.371	1.475	1.689	1.615	1.664	1.593	1.594	1.527	11	AVG
2,2'-oxybis(1-Chloropropane)		2.070	2.311	2.439	2.393	2.332	2.217	2.181	2.277	6	AVG
bis(2-Chloroisopropyl)ether		2.070	2.311	2.439	2.393	2.332	2.217	2.181	2.277	6	AVG
N-Nitrosopyrrolidine		0.781	0.886	1.063	0.988	1.015	0.978	0.969	0.954	10	AVG
Acetophenone		1.711	1.988	2.537	2.657	2.535	2.404	2.399	2.319	15	AVG
4-Methylphenol		1.458	1.729	1.813	1.920	1.961	1.875	1.833	1.798	9	AVG
Total Cresols		1.414	1.602	1.751	1.768	1.812	1.734	1.713	1.685	8	AVG
N-Nitroso-di-n-propylamine		1.312	1.444	1.614	1.543	1.559	1.481	1.434	1.484	7	AVG
N-Nitrosomorpholine			1.074	1.229	1.157	1.172	1.084	1.073	1.132	6	AVG
o-Toluidine		2.487	2.745	3.019	2.873	2.895	2.738	2.677	2.776	6	AVG
Hexachloroethane			0.560	0.631	0.615	0.623	0.612	0.597	0.606	4	AVG
Nitrobenzene		0.395	0.422	0.464	0.444	0.467	0.451	0.435	0.440	6	AVG
N-Nitrosopiperidine		0.181	0.194	0.203	0.192	0.206	0.199	0.195	0.196	4	AVG
Isophorone		0.726	0.829	0.879	0.863	0.890	0.859	0.847	0.842	7	AVG
2-Nitrophenol		0.100	0.120	0.152	0.154	0.178	0.176	0.171	0.150	20	AVG +
2,4-Dimethylphenol	0.292	0.319	0.354	0.392	0.390	0.408	0.391	0.380	0.366	11	AVG
O,O,O-Triethylphosphorothioate			0.163	0.175	0.169	0.172	0.167	0.164	0.168	3	AVG
bis(2-Chloroethoxy)methane		0.481	0.479	0.521	0.491	0.497	0.483	0.477	0.490	3	AVG
Benzoic acid			0.185	0.243	0.268	0.307	0.315	0.319	0.273	19	AVG
1,2,3,4-Tetrahydronaphthalene			0.484	0.501	0.576	0.561	0.552	0.500	0.529	7	AVG
2,4-Dichlorophenol		0.211	0.256	0.288	0.277	0.289	0.287	0.279	0.270	11	AVG
1,2,4-Trichlorobenzene			0.277	0.291	0.279	0.294	0.283	0.279	0.284	2	AVG
Naphthalene	1.153	1.033	1.016	1.081	1.050	1.067	1.037	1.012	1.056	4	AVG
4-Chloroaniline		0.407	0.449	0.478	0.464	0.477	0.457	0.449	0.454	5	AVG
2,6-Dichlorophenol		0.211	0.264	0.280	0.268	0.284	0.272	0.272	0.264	9	AVG
Hexachloropropene			0.121	0.130	0.129	0.137	0.134	0.134	0.131	4	AVG
Hexachlorobutadiene	0.145	0.132	0.131	0.139	0.137	0.142	0.140	0.137	0.138	4	AVG
Quinoline			0.730	0.758	0.717	0.744	0.711	0.694	0.726	3	AVG
Caprolactam			0.117	0.142	0.149	0.154	0.147	0.141	0.141	9	AVG
N-Nitrosodi-n-butylamine		0.322	0.368	0.401	0.399	0.414	0.396		0.383	9	AVG
4-Chloro-3-methylphenol		0.280	0.302	0.343	0.341	0.360	0.347	0.339	0.330	9	AVG
Safrole			0.251	0.275	0.266	0.279	0.270	0.272	0.269	4	AVG
2-Methylnaphthalene	0.662	0.642	0.706	0.755	0.725	0.751	0.723	0.718	0.710	6	AVG
1-Methylnaphthalene	0.676	0.616	0.654	0.688	0.662	0.686	0.658	0.647	0.661	4	AVG

+ %RSD is less than or equal to 20%; however, value rounds to 20.

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.

FORM VI SV-1

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/20/16 07/21/16

Calibration Times: 20:46 00:04

LAB FILE ID: RRF0.5 = gg0898.d RRF1 = gg0897.d RRF5 = gg0896.d RRF15 = gg0895.d
RRF30 = gg0891.d RRF50 = gg0894.d RRF80 = gg0893.d RRF120 = gg0892.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
Hexachlorocyclopentadiene			0.199	0.225	0.236	0.236	0.234	0.218	0.225	6	AVG
1,2,4,5-Tetrachlorobenzene		0.461	0.430	0.462	0.450	0.459	0.458	0.456	0.454	2	AVG
cis-Isosafrole			0.419	0.449	0.447	0.452	0.461	0.460	0.448	3	AVG
2,4,6-Trichlorophenol		0.219	0.268	0.320	0.314	0.332	0.333	0.326	0.302	14	AVG
2,4,5-Trichlorophenol		0.216	0.286	0.361	0.360	0.364	0.369	0.367	0.332	18	AVG
trans-Isosafrole			0.427	0.477	0.469	0.486	0.476	0.476	0.468	5	AVG
Isosafrole			0.425	0.472	0.465	0.480	0.474	0.473	0.465	4	AVG
1,1'-Biphenyl		1.146	1.243	1.431	1.498	1.438	1.439	1.394	1.370	9	AVG
2-Chloronaphthalene		1.051	1.026	1.060	1.129	1.101	1.347	1.036	1.107	10	AVG
1-Chloronaphthalene		1.067	1.032	1.152	0.995	1.051	1.032	1.057	1.055	5	AVG
Diphenyl ether		0.714	0.746	0.770	0.763	0.760	0.764	0.738	0.751	3	AVG
2-Nitroaniline		0.242	0.293	0.363	0.364	0.395	0.402	0.389	0.350	17	AVG
1,4-Naphthoquinone			0.389	0.461	0.470	0.491	0.475	0.462	0.458	8	AVG
1,4-Dinitrobenzene			0.114	0.144	0.152	0.179	0.185	0.187	0.160	18	AVG
Dimethylphthalate			1.339	1.357	1.325	1.356	1.322	1.278	1.329	2	AVG
1,3-Dinitrobenzene			0.155	0.195	0.197	0.217	0.223	0.220	0.201	13	AVG
2,6-Dinitrotoluene		0.203	0.253	0.307	0.294	0.310	0.309	0.303	0.283	14	AVG
Acenaphthylene	1.418	1.512	1.582	1.755	1.700	1.736	1.715	1.667	1.636	7	AVG
3-Nitroaniline		0.209	0.291	0.342	0.337	0.356	0.356	0.348	0.320	17	AVG
Acenaphthene	1.093	1.169	1.124	1.200	1.173	1.167	1.166	1.127	1.152	3	AVG
2,4-Dinitrophenol			0.062	0.090	0.093	0.115	0.126	0.132	0.103	25	1STDEG
4-Nitrophenol			0.158	0.199	0.198	0.218	0.216	0.213	0.200	11	AVG
Pentachlorobenzene		0.454	0.383	0.411	0.396	0.404	0.405	0.397	0.407	6	AVG
2,4-Dinitrotoluene			0.303	0.386	0.383	0.411	0.412	0.401	0.382	11	AVG
2,4_2,6-Dinitrotoluenes			0.278	0.346	0.338	0.360	0.361	0.352	0.339	9	AVG
Dibenzofuran		1.671	1.614	1.693	1.624	1.654	1.629	1.579	1.638	2	AVG
1-Naphthylamine			1.190	1.338	1.336	1.334	1.330	1.271	1.300	5	AVG
2,3,4,6-Tetrachlorophenol		0.184	0.226	0.252	0.257	0.269	0.269	0.270	0.247	13	AVG
2-Naphthylamine			1.214	1.333	1.314	1.326	1.286	1.213	1.281	4	AVG
Diethylphthalate			1.218	1.345	1.270	1.320	1.303	1.264	1.287	4	AVG
Thionazin			0.241	0.240	0.228	0.237	0.231	0.250	0.238	3	AVG
Fluorene	1.279	1.304	1.337	1.426	1.370	1.372	1.366	1.318	1.346	3	AVG
4-Chlorophenyl-phenylether		0.687	0.629	0.639	0.626	0.630	0.619	0.613	0.635	4	AVG
5-Nitro-o-toluidine		0.266	0.337	0.381	0.376	0.390	0.384	0.378	0.359	12	AVG
4-Nitroaniline		0.284	0.346	0.383	0.369	0.389	0.377	0.368	0.359	10	AVG
4,6-Dinitro-2-methylphenol			0.050	0.070	0.081	0.101	0.109	0.109	0.087	28	1STDEG
N-Nitrosodiphenylamine (1)	0.497	0.537	0.604	0.644	0.646	0.671	0.666	0.651	0.614	10	AVG
NDPA as diphenylamine	0.497	0.537	0.604	0.644	0.646	0.671	0.666	0.651	0.614	10	AVG
1,2-Diphenylhydrazine		0.764	0.836	0.898	0.907	0.929	0.915	0.876	0.875	7	AVG
Tetraethyldithiopyrophosphate			0.107	0.120	0.129	0.132	0.129	0.125	0.124	7	AVG
1,3,5-Trinitrobenzene			0.031	0.045	0.050	0.071	0.075	0.078	0.058	33	1STDEG
Diallate (peak 1)			0.357	0.412	0.416	0.420	0.414	0.394	0.402	6	AVG
Phorate		0.400	0.482	0.564	0.568	0.599	0.584	0.740	0.563	19	AVG
Phenacetin		0.286	0.346	0.402	0.403	0.435	0.423	0.417	0.387	14	AVG
4-Bromophenyl-phenylether			0.166	0.176	0.174	0.180	0.179	0.177	0.176	3	AVG
Diallate (peak 2)			0.368	0.402	0.387	0.407	0.408	0.394	0.394	4	AVG
Diallate trans/cis			0.359	0.410	0.411	0.418	0.413	0.394	0.401	5	AVG
Hexachlorobenzene	0.179	0.170	0.180	0.180	0.176	0.181	0.181	0.178	0.178	2	AVG
Dimethoate			0.281	0.333	0.337	0.348	0.336	0.319	0.326	7	AVG
Pentachlorophenol			0.064	0.089	0.097	0.109	0.114	0.113	0.098	19	AVG
4-Aminobiphenyl		0.285	0.336	0.377	0.350	0.366	0.335		0.342	9	AVG
Pentachloronitrobenzene			0.058	0.069	0.066	0.074	0.072	0.070	0.068	8	AVG

(1) Cannot be separated from Diphenylamine
4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/20/16 07/21/16

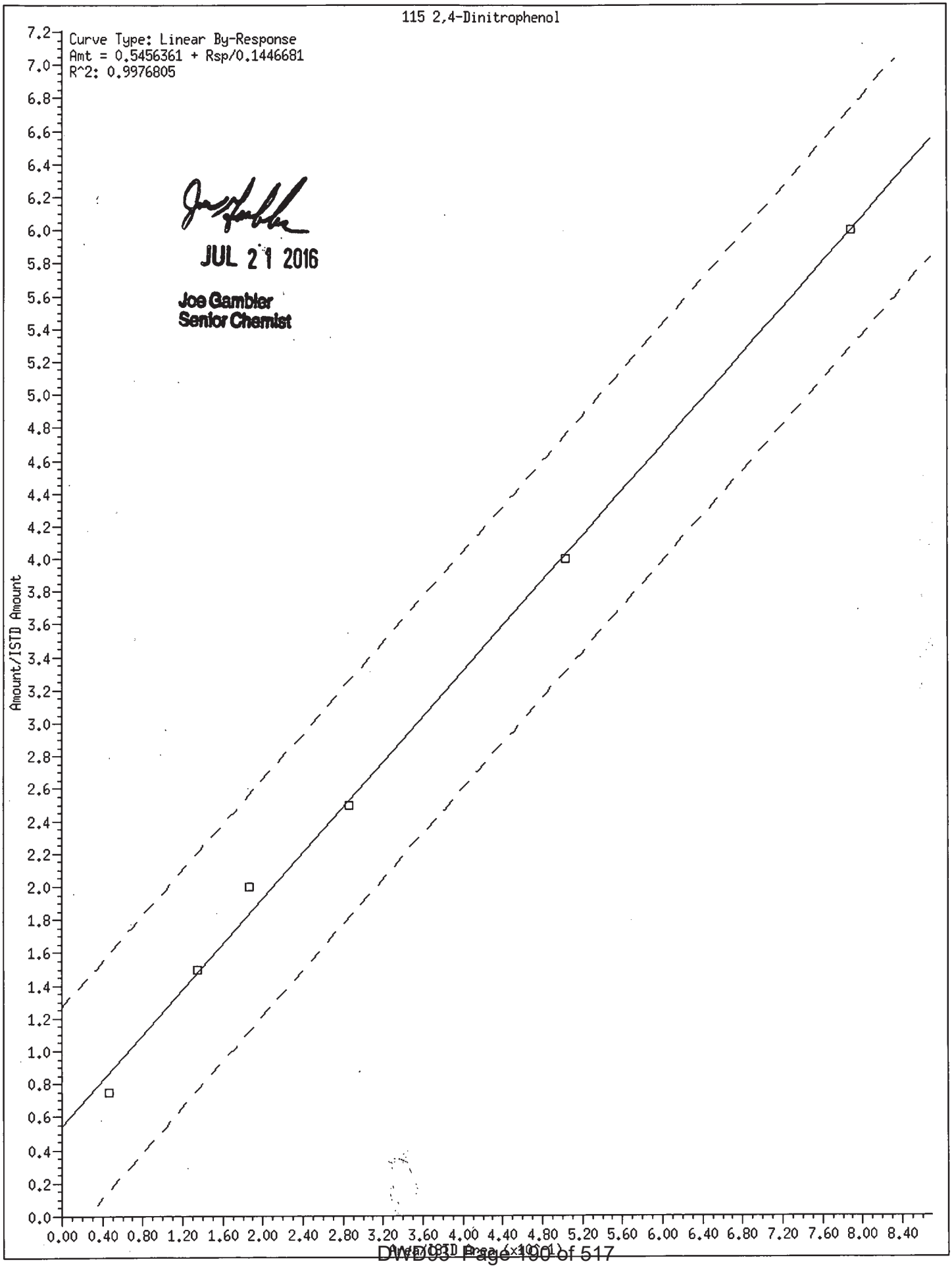
Calibration Times: 20:46 00:04

LAB FILE ID: RRF0.5 = gg0898.d RRF1 = gg0897.d RRF5 = gg0896.d RRF15 = gg0895.d
RRF30 = gg0891.d RRF50 = gg0894.d RRF80 = gg0893.d RRF120 = gg0892.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD	
Pronamide		0.192	0.255	0.294	0.292	0.324	0.311	0.310	0.282	16	AVG	
Dinoseb			0.063	0.092	0.108	0.141	0.151	0.159	0.119	32	1STDEG	
Phenanthrene	1.098	1.135	1.038	1.069	1.078	1.114	1.090	1.058	1.085	3	AVG	
Anthracene	0.908	0.929	0.998	1.067	1.080	1.119	1.107	1.074	1.035	8	AVG	
Carbazole		0.863	0.956	1.037	1.037	1.094	1.062	1.026	1.011	8	AVG	
Methyl parathion			0.147	0.198	0.228	0.251	0.240	0.229	0.216	18	AVG	
Di-n-butylphthalate			1.009	1.143	1.200	1.269	1.247	1.202	1.178	8	AVG	
Parathion			0.087	0.123	0.138	0.159	0.158	0.156	0.137	21	1STDEG	
4-Nitroquinoline-1-oxide				0.056	0.075	0.095	0.100	0.103	0.086	23	1STDEG	
Octachlorostyrene			0.059	0.059	0.066	0.066	0.066	0.061	0.063	6	AVG	
Isodrin		0.085	0.100	0.111	0.111	0.119	0.117	0.113	0.108	11	AVG	
Fluoranthene	0.945	0.936	1.011	1.134	1.132	1.208	1.177	1.149	1.086	10	AVG	
Benzidine			0.539	0.663	0.716	0.718	0.675	0.627	0.656	10	AVG	
Pyrene	1.118	1.142	1.053	1.077	1.101	1.128	1.120	1.088	1.104	3	AVG	
p-Dimethylaminoazobenzene		0.106	0.143	0.170	0.189	0.201	0.203	0.200	0.173	21	1STDEG	
Chlorobenzilate		0.162	0.244	0.296	0.308	0.329	0.327	0.315	0.283	21	1STDEG	
3,3'-Dimethylbenzidine			0.406	0.501	0.584	0.594	0.582	0.568	0.539	14	AVG	
Butylbenzylphthalate			0.394	0.467	0.495	0.518	0.513	0.494	0.480	10	AVG	
2-Acetylaminofluorene			0.196	0.305	0.345	0.406	0.405	0.408	0.344	24	1STDEG	
3,3'-Dichlorobenzidine			0.285	0.318	0.340	0.373	0.366	0.356	0.340	10	AVG	
4,4'-Methylenebis(2-chloroanil			0.144	0.167	0.175	0.193	0.191	0.185	0.176	10	AVG	
Benzo(a)anthracene	0.645	0.751	0.859	0.995	0.983	1.039	1.039	1.009	0.915	16	AVG	
Chrysene	0.795	0.865	0.907	0.913	0.915	0.960	0.931	0.903	0.899	6	AVG	
bis(2-Ethylhexyl)phthalate			0.526	0.627	0.661	0.708	0.706	0.683	0.652	11	AVG	
6-Methylchrysene			0.546	0.627	0.652	0.692	0.687	0.672	0.646	8	AVG	
Di-n-octylphthalate			0.944	1.342	1.405	1.631	1.641	1.636	1.433	19	AVG	
Benzo(b)fluoranthene	0.793	0.932	1.019	1.252	1.241	1.251	1.277	1.358	1.141	18	AVG	
7,12-Dimethylbenz[a]anthracene		0.348	0.458	0.566	0.571	0.635	0.629	0.623	0.547	20	AVG	+
Benzo(k)fluoranthene	0.907	1.005	1.183	1.237	1.206	1.347	1.310	1.195	1.174	13	AVG	
Benzo(a)pyrene	0.878	0.896	0.939	1.096	1.112	1.191	1.203	1.178	1.061	13	AVG	
3-Methylcholanthrene		0.317	0.383	0.444	0.455	0.501	0.499	0.502	0.443	16	AVG	
Dibenz(a,h)acridine			0.656	0.781	0.797	0.877	0.886	0.880	0.813	11	AVG	
Dibenz(a,j)acridine			0.729	0.841	0.856	0.932	0.930	0.902	0.865	9	AVG	
Indeno(1,2,3-cd)pyrene	0.741	0.773	1.008	1.138	1.149	1.219	1.215	1.178	1.053	18	AVG	
Dibenz(a,h)anthracene	0.602	0.697	0.862	0.969	0.987	1.036	1.031	1.015	0.900	18	AVG	
Benzo(g,h,i)perylene	0.600	0.705	0.834	0.925	0.939	0.996	1.001	0.977	0.872	17	AVG	
Total PAHs	0.903	0.940	0.964	1.118	1.122	1.187	1.200	1.186	1.078	11	AVG	
2-Fluorophenol			1.382	1.522	1.491	1.535	1.449	1.441	1.470	4	AVG	
Phenol-d6			1.919	2.200	2.124	2.133	2.065	2.034	2.079	5	AVG	
Nitrobenzene-d5			0.380	0.435	0.424	0.444	0.431	0.420	0.422	5	AVG	
2-Fluorobiphenyl			1.208	1.283	1.243	1.250	1.254	1.203	1.240	2	AVG	
2,4,6-Tribromophenol			0.111	0.121	0.129	0.132	0.133	0.136	0.127	7	AVG	
Terphenyl-d14			0.677	0.728	0.743	0.775	0.763	0.740	0.738	5	AVG	
								Average %RSD	9			

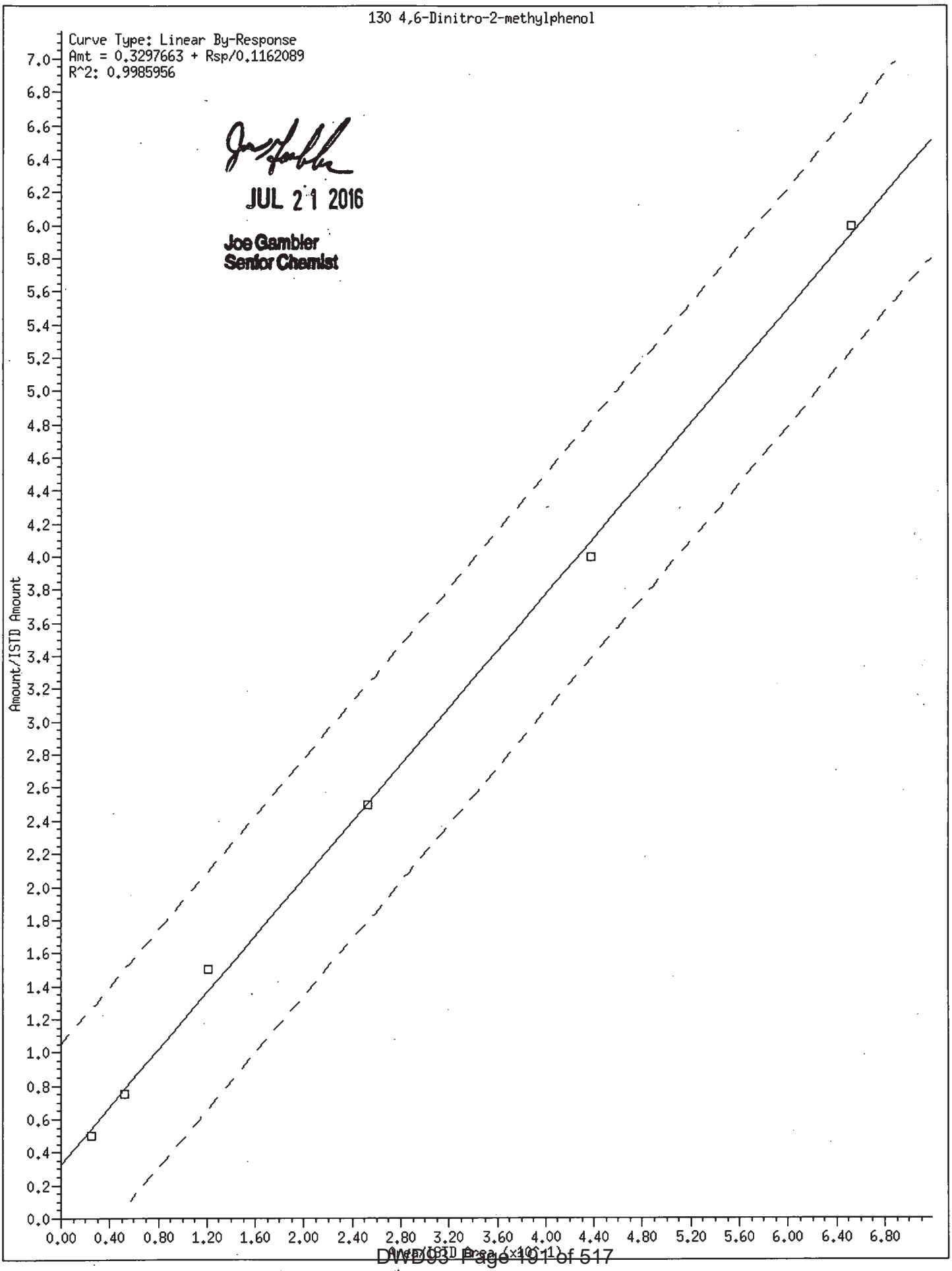
+ %RSD is less than or equal to 20%; however, value rounds to 20.

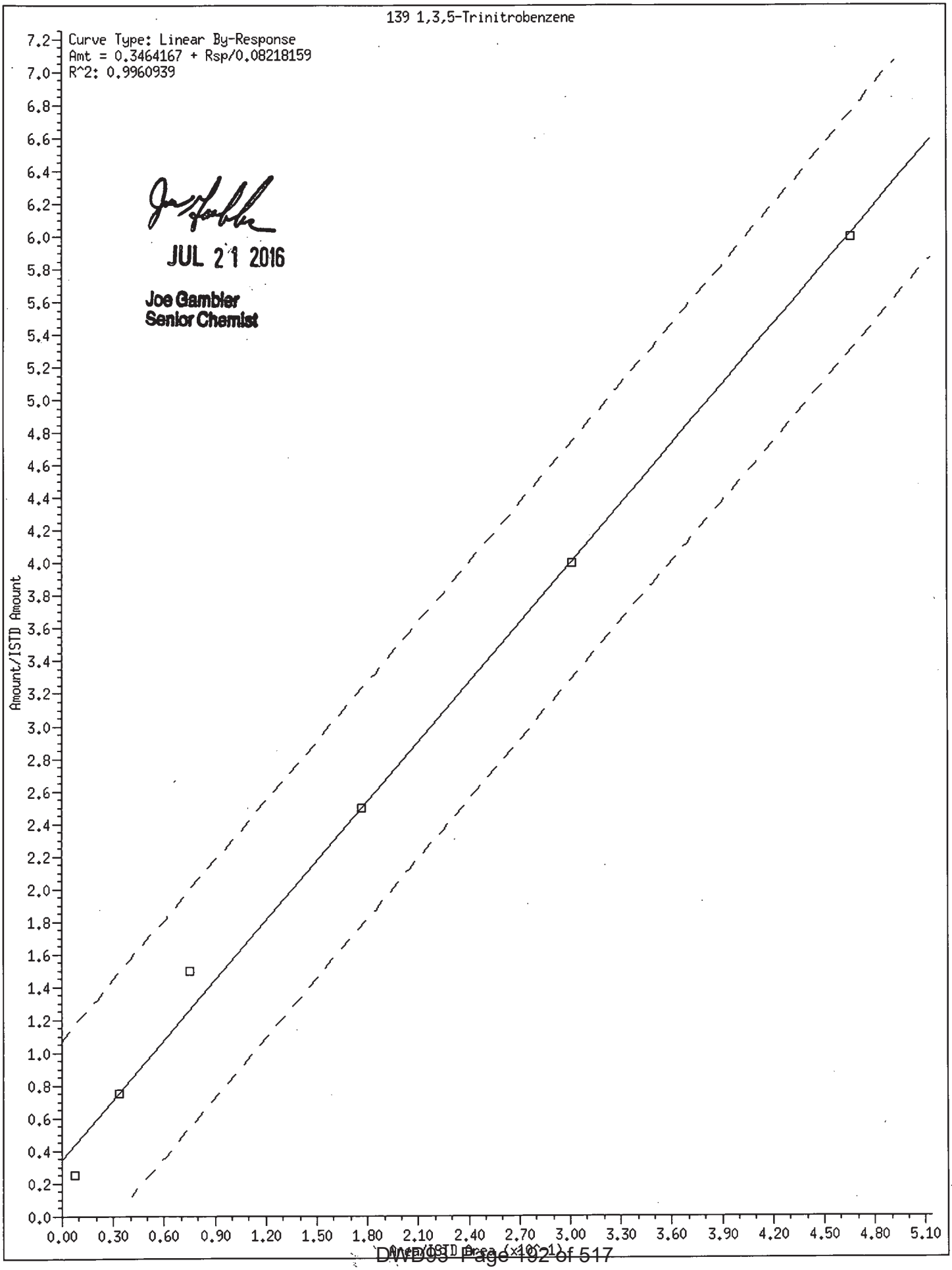
4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

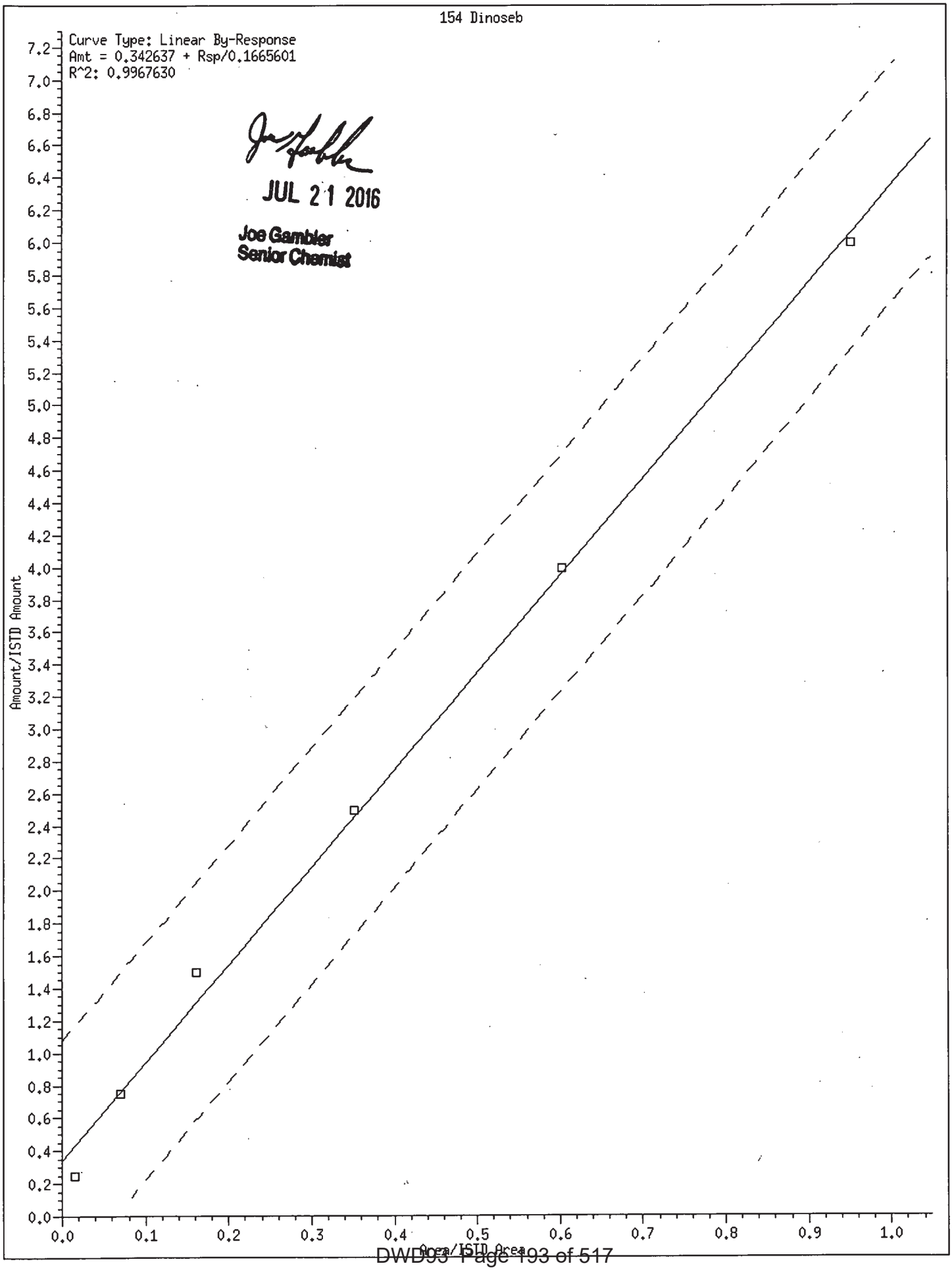


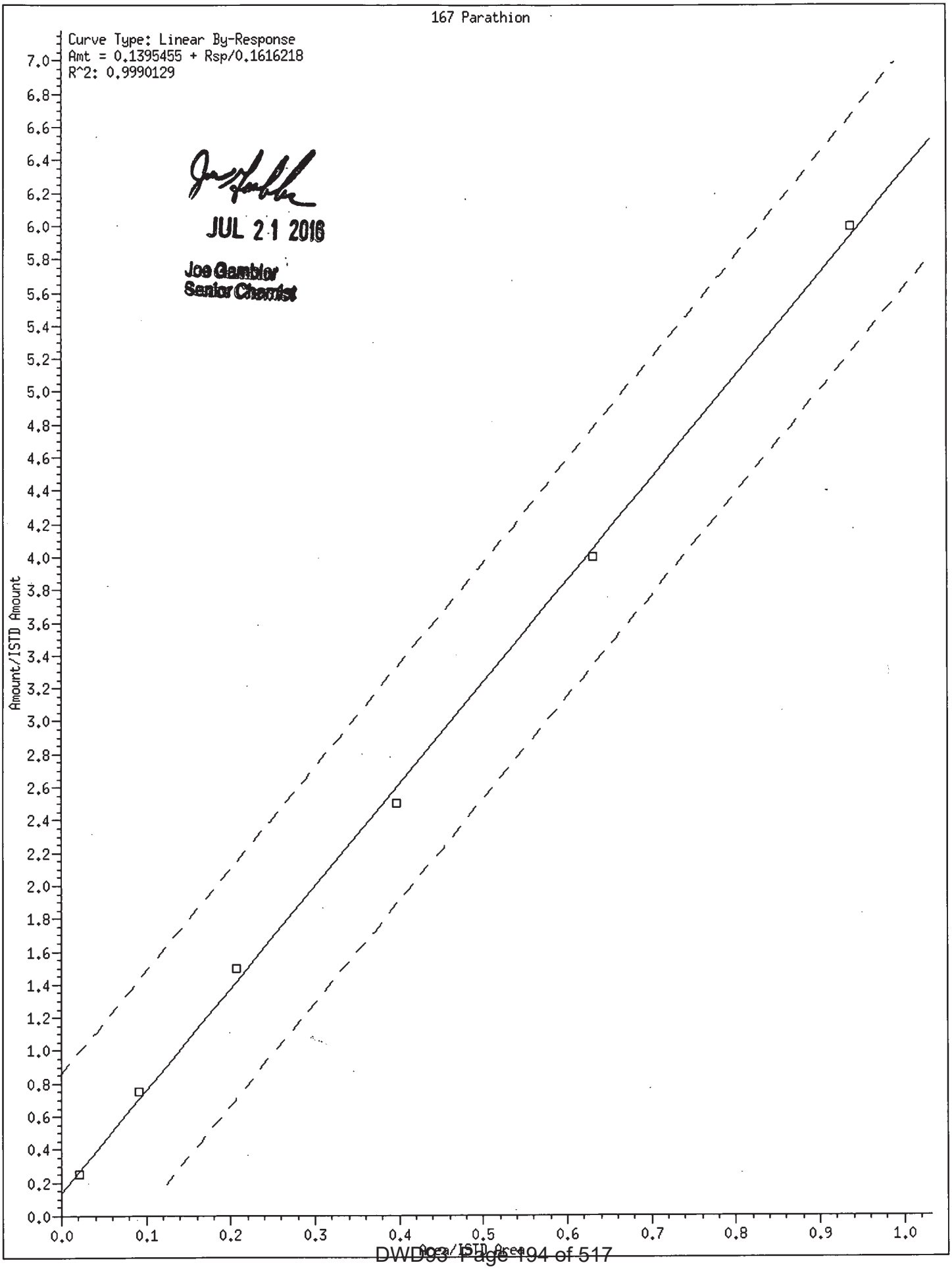
JUL 21 2016

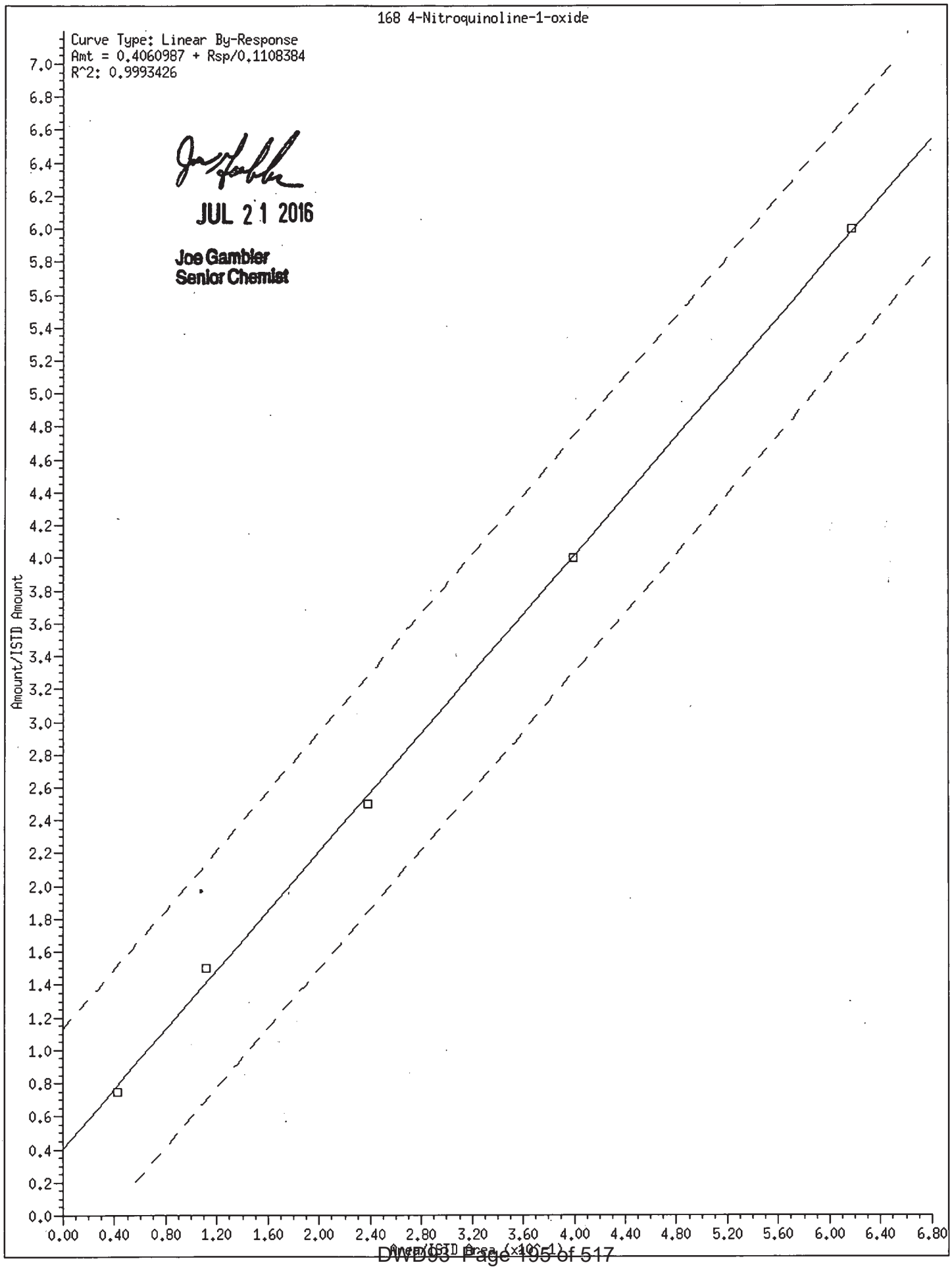
Joe Gambler
Senior Chemist

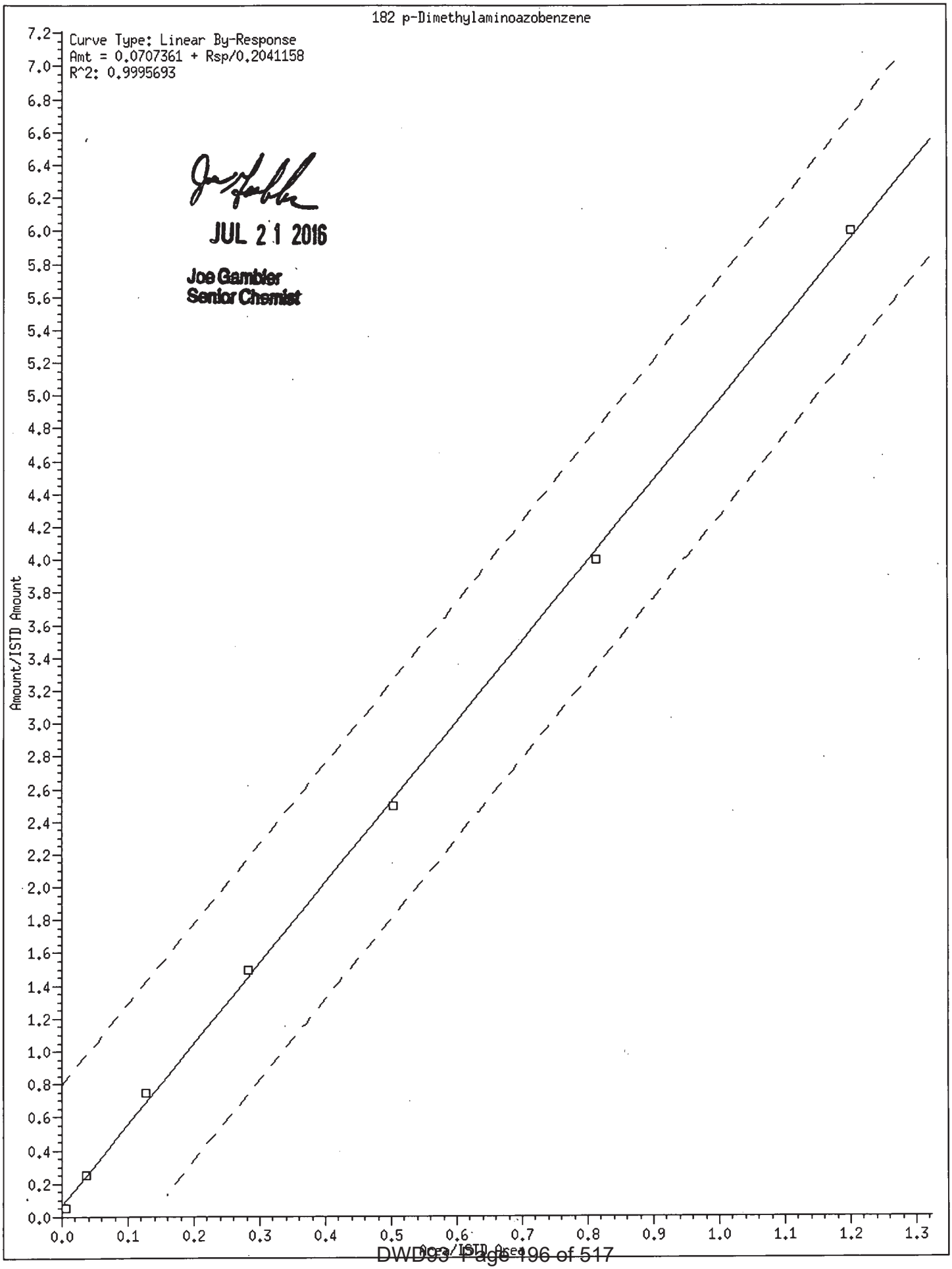

130 4,6-Dinitro-2-methylphenol
Curve Type: Linear By-Response
Amt = 0.3297663 + Rsp/0.1162089
R^2: 0.9985956
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area (x10^1)


139 1,3,5-Trinitrobenzene
Curve Type: Linear By-Response
Amt = 0.3464167 + Rsp/0.08218159
R^2: 0.9960939
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Amt/ISTD Area (x10^-1)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
5.6
5.8
6.0
6.2
6.4
6.6
6.8
7.0
7.2
0.00
0.30
0.60
0.90
1.20
1.50
1.80
2.10
2.40
2.70
3.00
3.30
3.60
3.90
4.20
4.50
4.80
5.10


154 Dinoseb
Curve Type: Linear By-Response
Amt = 0.342637 + Rsp/0.1665601
R^2: 0.9967630
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
5.6
5.8
6.0
6.2
6.4
6.6
6.8
7.0
7.2

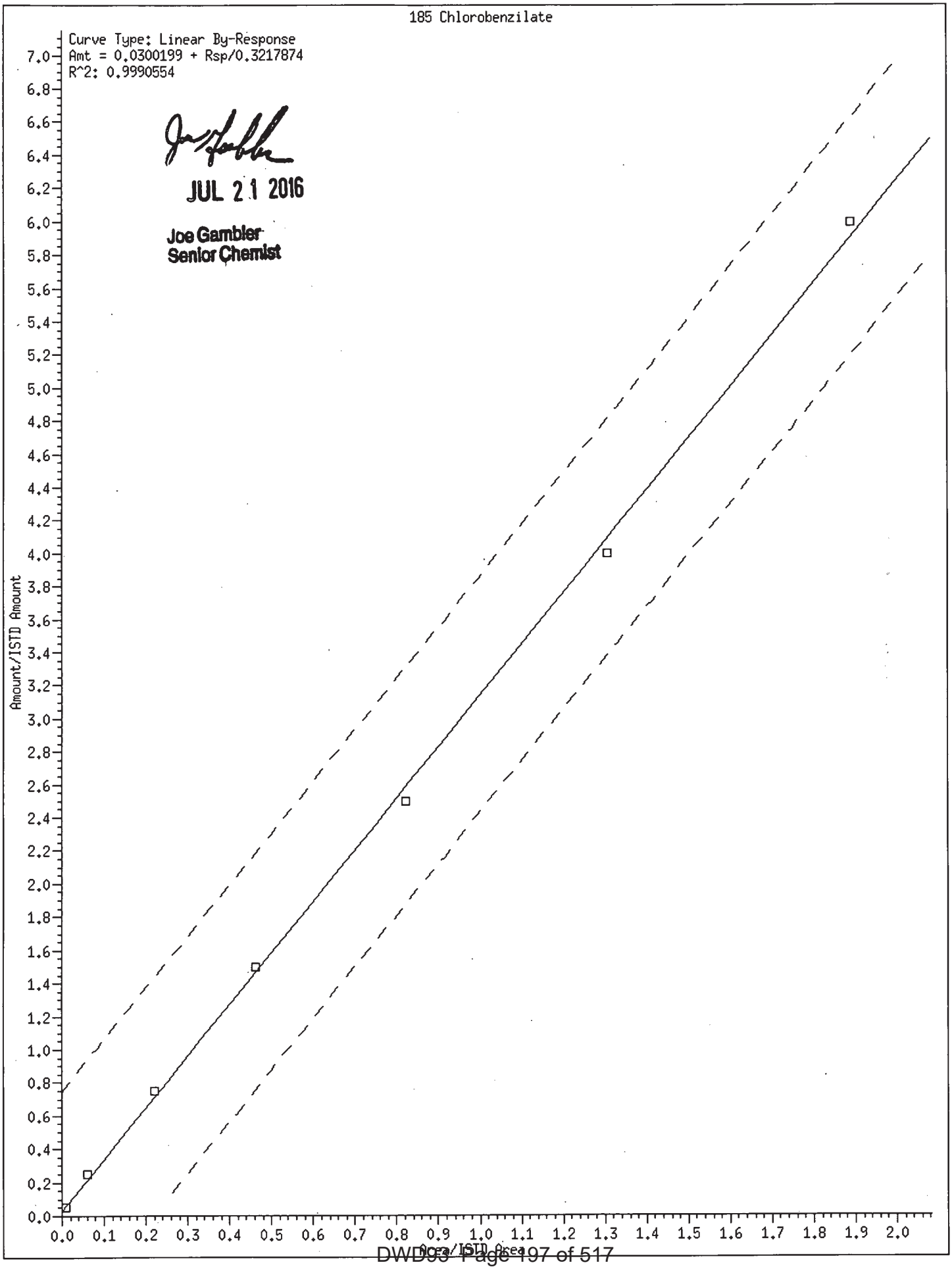

167 Parathion
Curve Type: Linear By-Response
Amt = 0.1395455 + Rsp/0.1616218
R^2: 0.9990129
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area

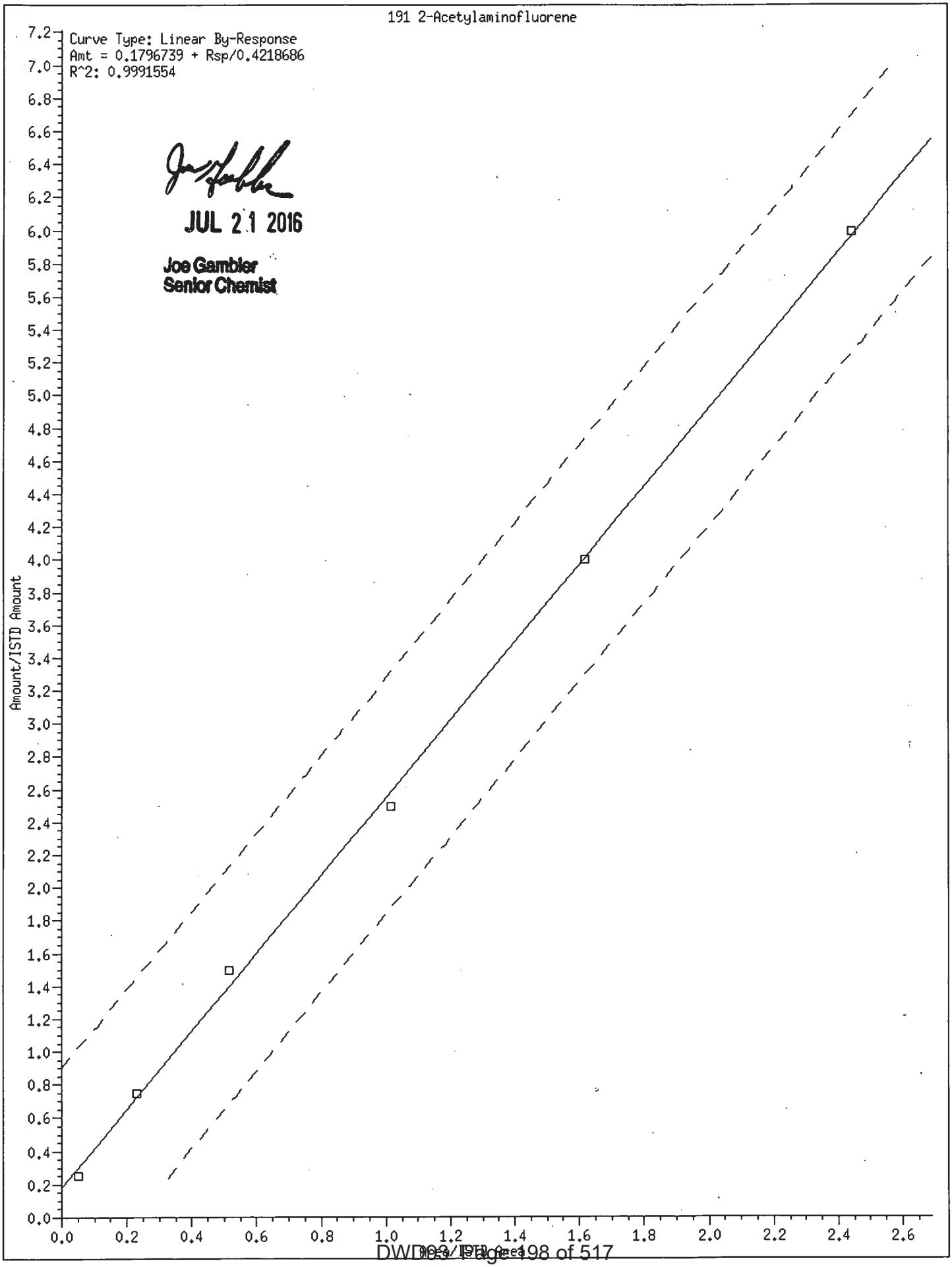

168 4-Nitroquinoline-1-oxide
Curve Type: Linear By-Response
Amt = 0.4060987 + Rsp/0.1108384
R^2: 0.9993426
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Amount/ISTD Area (x10^-1)



JUL 21 2016

Joe Gambler
Senior Chemist


185 Chlorobenzilate
Curve Type: Linear By-Response
Amt = 0.0300199 + Rsp/0.3217874
R^2: 0.9990554
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area


191 2-Acetylaminofluorene
Curve Type: Linear By-Response
Amt = 0.1796739 + Rsp/0.4218686
R^2: 0.9991554
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
7.2
7.0
6.8
6.6
6.4
6.2
6.0
5.8
5.6
5.4
5.2
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul20a.b/gg0891.d SSTD030
/chem/HP11165.i/16jul20a.b/gg0892.d SSTD120
/chem/HP11165.i/16jul20a.b/gg0893.d SSTD080
/chem/HP11165.i/16jul20a.b/gg0894.d SSTD050
/chem/HP11165.i/16jul20a.b/gg0895.d SSTD015
/chem/HP11165.i/16jul20a.b/gg0896.d SSTD005
/chem/HP11165.i/16jul20a.b/gg0897.d SSTD001
/chem/HP11165.i/16jul20a.b/gg0898.d SSTD00.5

Area Summary

File ID:

Internal Standard Name	gg0891.d	gg0892.d	gg0893.d	gg0894.d	gg0895.d	gg0896.d	gg0897.d	gg0898.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	89898	92332	89613	85684	79652	83810	77440	78639	84634	7	Yes
Naphthalene-d8	419518	421461	406187	392556	378222	384594	349941	345011	387186	7	Yes
Acenaphthene-d10	254767	254729	244247	245550	235991	244841	215823	218446	239299	6	Yes
Phenanthrene-d10	472419	463068	444518	445691	450216	472389	428377	448021	453087	3	Yes
Pyrene-d10	513581	498078	476140	488147	500626	538614	483759	498728	499709	4	Yes
Perylene-d12	383235	350597	342491	355342	367063	422732	359197	365172	368229	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	gg0891.d	gg0892.d	gg0893.d	gg0894.d	gg0895.d	gg0896.d	gg0897.d	gg0898.d	Avg. RT
1,4-Dichlorobenzene-d4	5.540	5.540	5.540	5.539	5.534	5.534	5.534	5.534	5.537
Naphthalene-d8	6.775	6.775	6.775	6.775	6.769	6.769	6.769	6.769	6.772
Acenaphthene-d10	8.486	8.492	8.487	8.486	8.486	8.487	8.481	8.486	8.486
Phenanthrene-d10	9.939	9.945	9.939	9.939	9.933	9.934	9.934	9.933	9.937
Pyrene-d10	11.327	11.328	11.328	11.327	11.322	11.322	11.322	11.322	11.325
Perylene-d12	13.962	13.969	13.963	13.962	13.963	13.963	13.963	13.963	13.963

Comments: _____

_____

Report generated on 07/21/2016 at 05:42

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
1,4-Dioxane	50.00	51.18	2	30	YES
N-Nitrosodimethylamine	50.00	48.23	-4	30	YES
Pyridine	50.00	54.41	9	30	YES
2-Picoline	50.00	52.10	4	30	YES
N-Nitrosomethylethylamine	50.00	41.89	-16	30	YES
Methyl methanesulfonate	50.00	57.63	15	30	YES
N-Nitrosodiethylamine	50.00	50.46	1	30	YES
Ethyl methanesulfonate	50.00	52.87	6	30	YES
Phenol	50.00	51.79	4	30	YES
Aniline	50.00	50.84	2	30	YES
bis(2-Chloroethyl)ether	50.00	50.45	1	30	YES
2-Chlorophenol	50.00	52.38	5	30	YES
1,3-Dichlorobenzene	50.00	53.39	7	30	YES
1,4-Dichlorobenzene	50.00	52.55	5	30	YES
Benzyl alcohol	50.00	54.75	10	30	YES
1,2-Dichlorobenzene	50.00	53.35	7	30	YES
Indene	50.00	52.42	5	30	YES
2-Methylphenol	50.00	56.01	12	30	YES
2,2'-oxybis(1-Chloropropane	50.00	55.51	11	30	YES
bis(2-Chloroisopropyl)ether	50.00	55.51	11	30	YES
N-Nitrosopyrrolidine	50.00	52.73	5	30	YES
Acetophenone	50.00	54.50	9	30	YES
4-Methylphenol	50.00	54.16	8	30	YES
N-Nitroso-di-n-propylamine	50.00	52.69	5	30	YES
N-Nitrosomorpholine	50.00	50.48	1	30	YES
o-Toluidine	50.00	51.47	3	30	YES
Hexachloroethane	50.00	54.25	9	30	YES
Nitrobenzene	50.00	50.06	0	30	YES
N-Nitrosopiperidine	50.00	50.22	0	30	YES
Isophorone	50.00	49.84	0	30	YES
2-Nitrophenol	50.00	53.35	7	30	YES
2,4-Dimethylphenol	50.00	50.53	1	30	YES
bis(2-Chloroethoxy)methane	50.00	52.04	4	30	YES
Benzoic acid	100.00	92.71	-7	30	YES
O,O,O-Triethylphosphorothio	50.00	50.50	1	30	YES
2,4-Dichlorophenol	50.00	53.05	6	30	YES
1,2,4-Trichlorobenzene	50.00	53.35	7	30	YES

NC = Could not calculate

Comments: _____

JUL 21 2016
Joe Gambler
Senior Chemist

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
Naphthalene	50.00	52.14	4	30	YES
4-Chloroaniline	50.00	51.81	4	30	YES
2,6-Dichlorophenol	50.00	53.11	6	30	YES
Hexachloropropene	50.00	62.20	24	30	YES
Hexachlorobutadiene	50.00	53.14	6	30	YES
Quinoline	50.00	50.90	2	30	YES
N-Nitrosodi-n-butylamine	50.00	40.11	-20	30	YES
4-Chloro-3-methylphenol	50.00	53.76	8	30	YES
Safrole	50.00	51.03	2	30	YES
2-Methylnaphthalene	50.00	50.91	2	30	YES
1-Methylnaphthalene	50.00	51.92	4	30	YES
Hexachlorocyclopentadiene	100.00	85.59	-14	30	YES
1,2,4,5-Tetrachlorobenzene	50.00	53.53	7	30	YES
2,4,6-Trichlorophenol	50.00	56.55	13	30	YES
2,4,5-Trichlorophenol	50.00	56.44	13	30	YES
trans-Isosafrole	44.00	53.87	22	30	YES
1,1'-Biphenyl	50.00	55.31	11	30	YES
2-Chloronaphthalene	50.00	54.24	8	30	YES
Isosafrole	50.00	53.87	8	30	YES
1-Chloronaphthalene	50.00	51.08	2	30	YES
Diphenyl ether	50.00	53.70	7	30	YES
2-Nitroaniline	50.00	56.42	13	30	YES
1,4-Naphthoquinone	62.50	62.80	0	30	YES
1,4-Dinitrobenzene	50.00	52.12	4	30	YES
Dimethylphthalate	50.00	51.84	4	30	YES
1,3-Dinitrobenzene	50.00	54.64	9	30	YES
2,6-Dinitrotoluene	50.00	56.51	13	30	YES
Acenaphthylene	50.00	48.66	-3	30	YES
3-Nitroaniline	50.00	56.60	13	30	YES
Acenaphthene	50.00	54.76	10	30	YES
2,4-Dinitrophenol	100.00	87.54	-12	30	YES
4-Nitrophenol	50.00	54.10	8	30	YES
Pentachlorobenzene	50.00	51.79	4	30	YES
2,4-Dinitrotoluene	50.00	54.82	10	30	YES
Dibenzofuran	50.00	52.06	4	30	YES
1-Naphthylamine	100.00	98.88	-1	30	YES
2,3,4,6-Tetrachlorophenol	50.00	61.84	24	30	YES

NC = Could not calculate

Comments: _____

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
2-Naphthylamine	100.00	92.85	-7	30	YES
Diethylphthalate	50.00	52.97	6	30	YES
Thionazin	50.00	52.97	6	30	YES
Fluorene	50.00	54.85	10	30	YES
4-Chlorophenyl-phenylether	50.00	51.37	3	30	YES
5-Nitro-o-toluidine	50.00	55.75	12	30	YES
4-Nitroaniline	50.00	53.32	7	30	YES
4,6-Dinitro-2-methylphenol	50.00	46.81	-6	30	YES
N-Nitrosodiphenylamine	50.00	53.47	7	30	YES
1,2-Diphenylhydrazine	50.00	53.97	8	30	YES
Tetraethyldithiopyrophospha	50.00	50.87	2	30	YES
1,3,5-Trinitrobenzene	50.00	43.76	-12	30	YES
Phorate	50.00	52.42	5	30	YES
Phenacetin	50.00	53.28	7	30	YES
4-Bromophenyl-phenylether	50.00	52.16	4	30	YES
Hexachlorobenzene	50.00	51.43	3	30	YES
Dimethoate	50.00	48.35	-3	30	YES
Pentachlorophenol	50.00	58.38	17	30	YES
4-Aminobiphenyl	50.00	115.44	131	30	NO
Pentachloronitrobenzene	50.00	53.75	7	30	YES
Pronamide	50.00	55.61	11	30	YES
Dinoseb	50.00	46.40	-7	30	YES
Phenanthrene	50.00	51.37	3	30	YES
Anthracene	50.00	54.22	8	30	YES
Carbazole	50.00	53.06	6	30	YES
Methyl parathion	50.00	52.13	4	30	YES
Di-n-butylphthalate	50.00	54.10	8	30	YES
Parathion	50.00	53.22	6	30	YES
4-Nitroquinoline-1-oxide	600.00	714.03	19	30	YES
Isodrin	50.00	54.38	9	30	YES
Fluoranthene	50.00	54.33	9	30	YES
Benzidine	250.00	269.50	8	30	YES
Pyrene	50.00	51.50	3	30	YES
p-Dimethylaminoazobenzene	50.00	58.54	17	30	YES
Chlorobenzilate	50.00	52.15	4	30	YES
3,3'-Dimethylbenzidine	100.00	116.69	17	30	YES
Butylbenzylphthalate	50.00	55.94	12	30	YES

NC = Could not calculate

Comments:

V-AP9 COMPONENT

JM6-546

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
2-Acetylaminofluorene	50.00	50.94	2	30	YES
3,3'-Dichlorobenzidine	50.00	52.45	5	30	YES
Benzo(a)anthracene	50.00	57.94	16	30	YES
Chrysene	50.00	55.49	11	30	YES
4,4'-Methylenebis(2-chloroa	50.00	51.96	4	30	YES
bis(2-Ethylhexyl)phthalate	50.00	55.56	11	30	YES
6-Methylchrysene	50.00	53.18	6	30	YES
Di-n-octylphthalate	50.00	61.11	22	30	YES
Benzo(b)fluoranthene	50.00	60.57	21	30	YES
7,12-Dimethylbenz[a]anthrac	50.00	59.41	19	30	YES
Benzo(k)fluoranthene	50.00	62.34	25	30	YES
Benzo(a)pyrene	50.00	58.92	18	30	YES
3-Methylcholanthrene	50.00	74.36	49	30	NO ✓
Dibenz(a,h)acridine	50.00	57.26	15	30	YES
Dibenz(a,j)acridine	50.00	52.87	6	30	YES
Indeno(1,2,3-cd)pyrene	50.00	61.74	23	30	YES
Dibenz(a,h)anthracene	50.00	63.31	27	30	YES
Benzo(g,h,i)perylene	50.00	63.15	26	30	YES

NC = Could not calculate

Comments:

✓ - < 50% Report OK

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
Benzaldehyde	50.00	50.57	1	30	YES
Caprolactam	50.00	47.22	-6	30	YES
Atrazine	50.00	51.94	4	30	YES

NC = Could not calculate

Comments: _____

JUL 21 2016
Joe Gambler
Senior Chemist

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/22/16 07/22/16

Calibration Times: 17:19 19:31

LAB FILE ID: RRF5 = gg1007.d RRF15 = gg1006.d

RRF30 = gg1005.d RRF50 = gg1004.d RRF80 = gg1003.d RRF120 = gg1002.d

COMPOUND	RRF	RRF	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	RRF	% RSD	CAL. METHOD
2-Chlorobenzaldehyde			0.238	0.279	0.260	0.271	0.276	0.280	0.268	6	AVG
								Average %RSD		3	

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul22.b/gg1002.d SSTD120
/chem/HP11165.i/16jul22.b/gg1003.d SSTD080
/chem/HP11165.i/16jul22.b/gg1004.d SSTD050
/chem/HP11165.i/16jul22.b/gg1005.d SSTD030
/chem/HP11165.i/16jul22.b/gg1006.d SSTD015
/chem/HP11165.i/16jul22.b/gg1007.d SSTD005

Area Summary

	File ID:								
Internal Standard Name	gg1002.d	gg1003.d	gg1004.d	gg1005.d	gg1006.d	gg1007.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	84035	84333	84637	83121	79154	81222	82750	3	Yes
Naphthalene-d8	387752	386749	386529	370115	354411	358021	373930	4	Yes
Acenaphthene-d10	246238	249766	241773	235462	224936	224346	237087	5	Yes
Phenanthrene-d10	493512	490455	498003	469039	459482	464737	479205	3	Yes
Pyrene-d10	576966	562787	574197	537584	520738	535196	551245	4	Yes
Perylene-d12	464758	454238	456965	427684	417395	440518	443593	4	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

	File ID:						
Internal Standard Name	gg1002.d	gg1003.d	gg1004.d	gg1005.d	gg1006.d	gg1007.d	Avg. RT
1,4-Dichlorobenzene-d4	5.481	5.481	5.481	5.481	5.481	5.481	5.481
Naphthalene-d8	6.716	6.716	6.716	6.716	6.716	6.716	6.716
Acenaphthene-d10	8.433	8.433	8.434	8.434	8.428	8.428	8.432
Phenanthrene-d10	9.880	9.880	9.881	9.881	9.881	9.881	9.880
Pyrene-d10	11.269	11.268	11.269	11.269	11.269	11.269	11.269
Perylene-d12	13.904	13.904	13.904	13.904	13.904	13.904	13.904

Comments: _____

Report generated on 07/22/2016 at 22:30

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/22/16 07/22/16

Calibration Times: 20:26 22:38

LAB FILE ID: RRF5 = gg1014.d RRF15 = gg1013.d
RRF30 = gg1012.d RRF50 = gg1011.d RRF80 = gg1010.d RRF120 = gg1009.d

COMPOUND	RRF	RRF	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	RRF	% RSD	CAL. METHOD
2-Chlorobenzalmalononitrile			0.355	0.352	0.373	0.377	0.387	0.392	0.373	4	AVG
								Average %RSD		5	

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul22.b/gg1009.d SSTD120
/chem/HP11165.i/16jul22.b/gg1010.d SSTD080
/chem/HP11165.i/16jul22.b/gg1011.d SSTD050
/chem/HP11165.i/16jul22.b/gg1012.d SSTD030
/chem/HP11165.i/16jul22.b/gg1013.d SSTD015
/chem/HP11165.i/16jul22.b/gg1014.d SSTD005

Area Summary

File ID:

Internal Standard Name	gg1009.d	gg1010.d	gg1011.d	gg1012.d	gg1013.d	gg1014.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	81870	87578	86043	88513	84209	88140	86059	3	Yes
Naphthalene-d8	366876	391629	381410	395332	368577	398783	383768	4	Yes
Acenaphthene-d10	233392	245967	240224	253992	234165	254384	243687	4	Yes
Phenanthrene-d10	476525	493086	500370	520337	470165	514256	495790	4	Yes
Pyrene-d10	532125	547150	567228	593301	541358	575357	559420	4	Yes
Perylene-d12	426619	420326	436822	449769	424682	427280	430916	2	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	gg1009.d	gg1010.d	gg1011.d	gg1012.d	gg1013.d	gg1014.d	Avg. RT
1,4-Dichlorobenzene-d4	5.481	5.481	5.481	5.481	5.481	5.481	5.481
Naphthalene-d8	6.716	6.716	6.716	6.716	6.716	6.716	6.716
Acenaphthene-d10	8.428	8.428	8.433	8.428	8.428	8.428	8.429
Phenanthrene-d10	9.880	9.881	9.880	9.881	9.880	9.880	9.880
Pyrene-d10	11.269	11.269	11.268	11.269	11.269	11.269	11.269
Perylene-d12	13.904	13.904	13.904	13.904	13.904	13.904	13.904

Comments: _____

_____

Report generated on 07/22/2016 at 23:04

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 15:52

Lab File ID: gg0571.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,4-Dioxane	0.623	0.599	28.830	30.0	-4
N-Nitrosodimethylamine	0.969	0.917	28.390	30.0	-5
Pyridine	1.689	1.543	27.400	30.0	-9
2-Picoline	1.731	1.520	26.340	30.0	-12
N-Nitrosomethylethylamine	0.893	0.684	22.980	30.0	-23
Methyl methanesulfonate	0.896	0.696	23.300	30.0	-22
N-Nitrosodiethylamine	0.858	0.777	27.160	30.0	-9
Ethyl methanesulfonate	0.847	0.750	26.570	30.0	-11
Phenol	2.564	2.207	25.830	30.0	-14
Aniline	2.898	2.639	27.320	30.0	-9
a-methylstyrene	1.627	1.631	30.080	30.0	0
bis(2-Chloroethyl)ether	1.825	1.663	27.330	30.0	-9
2-Chlorophenol	1.532	1.419	27.790	30.0	-7
1,3-Dichlorobenzene	1.566	1.519	29.110	30.0	-3
1,4-Dichlorobenzene	1.638	1.575	28.850	30.0	-4
Benzyl alcohol	1.188	1.160	29.310	30.0	-2
1,2-Dichlorobenzene	1.590	1.467	27.680	30.0	-8
Indene	2.798	2.636	28.270	30.0	-6
2-Methylphenol	1.592	1.576	29.690	30.0	-1
2,2'-oxybis(1-Chloropropane)	2.032	1.854	27.380	30.0	-9
bis(2-Chloroisopropyl)ether	2.032	1.854	27.380	30.0	-9
N-Nitrosopyrrolidine	0.949	0.899	28.440	30.0	-5
Acetophenone	2.437	2.379	29.300	30.0	-2
4-Methylphenol	1.896	1.698	26.870	30.0	-10
Total Cresols	1.742	1.637	56.560	60.0	-6
N-Nitroso-di-n-propylamine	1.586	1.357	25.670	30.0	-14
N-Nitrosomorpholine	1.128	0.969	25.790	30.0	-14
o-Toluidine	2.780	2.547	27.490	30.0	-8
Hexachloroethane	0.600	0.548	27.400	30.0	-9
Nitrobenzene	0.492	0.428	26.100	30.0	-13
N-Nitrosopiperidine	0.204	0.192	28.300	30.0	-6
Isophorone	0.903	0.828	27.510	30.0	-8
2-Nitrophenol	0.205	0.190	27.840	30.0	-7
2,4-Dimethylphenol	0.410	0.388	28.400	30.0	-5
O,O,O-Triethylphosphorothioate	0.186	0.197	31.710	30.0	6
bis(2-Chloroethoxy)methane	0.513	0.488	28.560	30.0	-5

FORM VII SV-1

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 15:52

Lab File ID: gg0571.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Benzoic acid	0.411	0.339	33.050	40.0	-17
1,2,3,4-Tetrahydronaphthalene	0.580	0.560	29.000	30.0	-3
2,4-Dichlorophenol	0.308	0.314	30.560	30.0	2
1,2,4-Trichlorobenzene	0.315	0.319	30.410	30.0	1
Naphthalene	1.088	1.030	28.410	30.0	-5
4-Chloroaniline	0.475	0.461	29.130	30.0	-3
2,6-Dichlorophenol	0.308	0.300	29.300	30.0	-2
Hexachloropropene	0.156	0.154	29.750	30.0	-1
Hexachlorobutadiene	0.153	0.162	31.830	30.0	6
Quinoline	0.766	0.710	27.800	30.0	-7
Caprolactam	0.168	0.160	28.420	30.0	-5
N-Nitrosodi-n-butylamine	0.433	0.286	19.800	30.0	-34
4-Chloro-3-methylphenol	0.387	0.356	27.580	30.0	-8
Safrole	0.296	0.297	30.150	30.0	0
2-Methylnaphthalene	0.797	0.742	27.930	30.0	-7
1-Methylnaphthalene	0.736	0.686	27.960	30.0	-7
Hexachlorocyclopentadiene	0.216	0.188	26.040	30.0	-13
1,2,4,5-Tetrachlorobenzene	0.470	0.486	31.070	30.0	4
cis-Isosafrole	0.479	0.426	4.540	5.1	-11
2,4,6-Trichlorophenol	0.358	0.347	29.090	30.0	-3
2,4,5-Trichlorophenol	0.393	0.371	28.370	30.0	-5
trans-Isosafrole	0.530	0.682	32.000	24.9	29
Isosafrole	0.522	0.638	36.530	30.0	22
1,1'-Biphenyl	1.504	1.405	28.040	30.0	-7
2-Chloronaphthalene	1.149	1.279	33.410	30.0	11
1-Chloronaphthalene	1.107	1.092	29.590	30.0	-1
Diphenyl ether	0.801	0.729	27.320	30.0	-9
2-Nitroaniline	0.400	0.372	27.860	30.0	-7
1,4-Naphthoquinone	0.512	0.424	24.830	30.0	-17
1,4-Dinitrobenzene	0.221	0.196	26.580	30.0	-11
Dimethylphthalate	1.389	1.243	26.850	30.0	-10
1,3-Dinitrobenzene	0.250	0.226	27.040	30.0	-10
2,6-Dinitrotoluene	0.323	0.299	27.770	30.0	-7
Acenaphthylene	1.831	1.624	26.620	30.0	-11
3-Nitroaniline	0.359	0.338	28.200	30.0	-6
Acenaphthene	1.231	1.071	26.100	30.0	-13

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 15:52

Lab File ID: gg0571.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2,4-Dinitrophenol	0.234	0.192	32.940	40.0	-18
4-Nitrophenol	0.217	0.152	21.060	30.0	-30
Pentachlorobenzene	0.420	0.457	32.670	30.0	9
2,4-Dinitrotoluene	0.454	0.403	26.630	30.0	-11
2,4_2,6-Dinitrotoluenes	0.394	0.351	54.400	60.0	-9
Dibenzofuran	1.734	1.569	27.150	30.0	-10
1-Naphthylamine	1.385	1.242	26.900	30.0	-10
2,3,4,6-Tetrachlorophenol	0.311	0.298	28.760	30.0	-4
2-Naphthylamine	1.365	1.235	27.150	30.0	-10
Diethylphthalate	1.367	1.197	26.260	30.0	-12
Thionazin	0.280	0.246	26.260	30.0	-12
Fluorene	1.413	1.319	28.000	30.0	-7
4-Chlorophenyl-phenylether	0.663	0.648	29.320	30.0	-2
5-Nitro-o-toluidine	0.436	0.381	26.180	30.0	-13
4-Nitroaniline	0.419	0.361	25.850	30.0	-14
4,6-Dinitro-2-methylphenol	0.147	0.133	27.110	30.0	-10
N-Nitrosodiphenylamine (1)	0.658	0.607	27.700	30.0	-8
NDPA as diphenylamine	0.658	0.607	27.700	30.0	-8
1,2-Diphenylhydrazine	0.900	0.731	24.360	30.0	-19
Tetraethyldithiopyrophosphate	0.123	0.101	24.450	30.0	-18
1,3,5-Trinitrobenzene	0.087	0.088	30.350	30.0	1
Diallate (peak 1)	0.405	0.336	20.700	24.9	-17
Phorate	0.536	0.476	26.620	30.0	-11
Phenacetin	0.428	0.358	25.090	30.0	-16
4-Bromophenyl-phenylether	0.175	0.189	32.410	30.0	8
Diallate (peak 2)	0.394	0.320	4.140	5.1	-19
Diallate trans/cis	0.403	0.334	24.840	30.0	-17
Hexachlorobenzene	0.176	0.197	33.540	30.0	12
Dimethoate	0.364	0.314	25.850	30.0	-14
Pentachlorophenol	0.130	0.114	26.250	30.0	-12
4-Aminobiphenyl	0.580	0.340	17.600	30.0	-41
Pentachloronitrobenzene	0.073	0.069	28.160	30.0	-6
Pronamide	0.315	0.277	26.360	30.0	-12
Dinoseb	0.189	0.183	29.180	30.0	-3
Phenanthrene	1.138	1.049	27.650	30.0	-8
Anthracene	1.109	1.052	28.460	30.0	-5

(1) Cannot be Separated from Diphenylamine

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 15:52

Lab File ID: gg0571.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Carbazole	1.092	0.997	27.390	30.0	-9
Methyl parathion	0.258	0.224	25.980	30.0	-13
Di-n-butylphthalate	1.246	1.080	26.000	30.0	-13
Parathion	0.162	0.144	26.680	30.0	-11
4-Nitroquinoline-1-oxide	0.117	0.071	18.190	30.0	-39
Octachlorostyrene	0.061	0.073	35.900	30.0	20
Isodrin	0.117	0.110	28.310	30.0	-6
Fluoranthene	1.189	1.164	29.370	30.0	-2
Benzidine	0.809	0.676	75.160	90.0	-16
Pyrene	1.184	1.032	26.140	30.0	-13
p-Dimethylaminoazobenzene	0.202	0.193	28.690	30.0	-4
Chlorobenzilate	0.325	0.253	23.380	30.0	-22
3,3'-Dimethylbenzidine	0.651	0.638	29.390	30.0	-2
Butylbenzylphthalate	0.518	0.429	24.840	30.0	-17
2-Acetylaminofluorene	0.478	0.397	24.900	30.0	-17
3,3'-Dichlorobenzidine	0.376	0.383	30.550	30.0	2
4,4'-Methylenebis(2-chloroanil	0.197	0.186	28.350	30.0	-5
Benzo(a)anthracene	1.013	0.961	28.450	30.0	-5
Chrysene	1.014	0.938	27.760	30.0	-7
bis(2-Ethylhexyl)phthalate	0.715	0.578	24.270	30.0	-19
6-Methylchrysene	0.701	0.686	29.370	30.0	-2
Di-n-octylphthalate	1.589	1.224	23.130	30.0	-23
Benzo(b)fluoranthene	1.262	1.106	26.290	30.0	-12
7,12-Dimethylbenz[a]anthracene	0.589	0.576	29.380	30.0	-2
Benzo(k)fluoranthene	1.244	1.238	29.860	30.0	0
Benzo(a)pyrene	1.181	1.108	28.160	30.0	-6
3-Methylcholanthrene	0.520	0.472	27.230	30.0	-9
Dibenz(a,h)acridine	0.898	0.826	27.610	30.0	-8
Dibenz(a,j)acridine	0.951	0.936	29.500	30.0	-2
Indeno(1,2,3-cd)pyrene	1.207	1.207	30.000	30.0	0
Dibenz(a,h)anthracene	1.037	1.009	29.190	30.0	-3
Benzo(g,h,i)perylene	1.030	1.017	29.630	30.0	-1
Total PAHs	1.127	0.981	505.980	540.0	-6
2-Fluorophenol	1.496	1.408	56.490	60.0	-6
Phenol-d6	2.214	1.946	52.730	60.0	-12

FORM VII SV-1

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 15:52

Lab File ID: gg0571.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Nitrobenzene-d5	0.472	0.410	52.060	60.0	-13
2-Fluorobiphenyl	1.288	1.204	56.060	60.0	-7
2,4,6-Tribromophenol	0.142	0.166	70.030	60.0	17
Terphenyl-d14	0.732	0.716	58.670	60.0	-2
			Average %Drift:		10

FORM VII SV-1

Continuing Calibration
Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jun07.b/gf0201.d **
/chem/HP11165.i/16jun07.b/gf0202.d
/chem/HP11165.i/16jun07.b/gf0203.d
/chem/HP11165.i/16jun07.b/gf0204.d
/chem/HP11165.i/16jun07.b/gf0205.d
/chem/HP11165.i/16jun07.b/gf0206.d
/chem/HP11165.i/16jun07.b/gf0207.d
/chem/HP11165.i/16jun07.b/gf0208.d

** indicates the Mid Level Calibration Standard.

Mid Level Calibration Standard is used for comparison.

Current Continuing Calibration Standard:

/chem/HP11165.i/16jul13a.b/gg0571.d

Area Summary

File ID:

Internal Standard Name	gg0571.d	ICAL Area	Low Limit	High Limit	In Spec
1,4-Dichlorobenzene-d4	76961	70096	35048	140192	Yes
Naphthalene-d8	327649	296116	148058	592232	Yes
Acenaphthene-d10	225360	192522	96261	385044	Yes
Phenanthrene-d10	439277	374023	187012	748046	Yes
Pyrene-d10	514259	404786	202393	809572	Yes
Perylene-d12	424255	301130	150565	602260	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

RT Summary

File ID:

Internal Standard Name	gg0571.d	ICAL RT	In Spec
1,4-Dichlorobenzene-d4	4.693	5.528	No
Naphthalene-d8	5.928	6.763	No
Acenaphthene-d10	7.616	8.475	No
Phenanthrene-d10	9.039	9.922	No
Pyrene-d10	10.392	11.310	No
Perylene-d12	12.898	13.939	No

A "No" indicates the retention time is greater than 30 seconds from the RT of the referenced standard.

Comments: * column maintenance
APB 10206 7/13/16

Report generated on 07/13/2016 at 18:25

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 16:52

Lab File ID: gg0572.d Init. Calib. Date(s): 06/28/16 06/28/16

Init. Calib. Times(s): 07:48 09:58

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzalmalononitrile	0.375	0.355	47.280	50.0	-5
			Average %Drift:		5

FORM VII SV-1

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/13/16 Time: 17:15

Lab File ID: gg0573.d Init. Calib. Date(s): 07/05/16 07/05/16

Init. Calib. Times(s): 07:13 09:20

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzaldehyde	0.257	0.910	53.040	15.0	254
			Average %Drift:		254

FORM VII SV-1

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/14/16 Time: 07:18

Lab File ID: gg0611.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2,4-Dinitrophenol	0.234	0.185	31.610	40.0	-21
4-Nitrophenol	0.217	0.163	22.560	30.0	-25
Pentachlorobenzene	0.420	0.439	31.380	30.0	5
2,4-Dinitrotoluene	0.454	0.409	27.010	30.0	-10
2,4_2,6-Dinitrotoluenes	0.394	0.359	55.800	60.0	-7
Dibenzofuran	1.734	1.572	27.210	30.0	-9
1-Naphthylamine	1.385	1.246	27.000	30.0	-10
2,3,4,6-Tetrachlorophenol	0.311	0.285	27.570	30.0	-8
2-Naphthylamine	1.365	1.203	26.460	30.0	-12
Diethylphthalate	1.367	1.241	27.230	30.0	-9
Thionazin	0.280	0.267	28.600	30.0	-5
Fluorene	1.413	1.334	28.320	30.0	-6
4-Chlorophenyl-phenylether	0.663	0.642	29.050	30.0	-3
5-Nitro-o-toluidine	0.436	0.385	26.500	30.0	-12
4-Nitroaniline	0.419	0.346	24.770	30.0	-17
4,6-Dinitro-2-methylphenol	0.147	0.138	28.120	30.0	-6
N-Nitrosodiphenylamine (1)	0.658	0.630	28.730	30.0	-4
NDPA as diphenylamine	0.658	0.630	28.730	30.0	-4
1,2-Diphenylhydrazine	0.900	0.820	27.340	30.0	-9
Tetraethyldithiopyrophosphate	0.123	0.114	27.740	30.0	-8
1,3,5-Trinitrobenzene	0.087	0.080	27.450	30.0	-9
Diallate (peak 1)	0.405	0.368	22.670	24.9	-9
Phorate	0.536	0.534	29.860	30.0	0
Phenacetin	0.428	0.382	26.730	30.0	-11
4-Bromophenyl-phenylether	0.175	0.192	32.860	30.0	10
Diallate (peak 2)	0.394	0.367	4.760	5.1	-7
Diallate trans/cis	0.403	0.368	27.430	30.0	-9
Hexachlorobenzene	0.176	0.193	32.860	30.0	10
Dimethoate	0.364	0.344	28.320	30.0	-6
Pentachlorophenol	0.130	0.092	21.240	30.0	-29
4-Aminobiphenyl	0.580	0.310	16.060	30.0	-46
Pentachloronitrobenzene	0.073	0.074	30.240	30.0	1
Pronamide	0.315	0.285	27.120	30.0	-10
Dinoseb	0.189	0.183	29.110	30.0	-3
Phenanthrene	1.138	1.046	27.570	30.0	-8
Anthracene	1.109	1.079	29.190	30.0	-3

(1) Cannot be Separated from Diphenylamine

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/14/16 Time: 07:18

Lab File ID: gg0611.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Carbazole	1.092	0.992	27.250	30.0	-9
Methyl parathion	0.258	0.241	27.970	30.0	-7
Di-n-butylphthalate	1.246	1.139	27.430	30.0	-9
Parathion	0.162	0.148	27.370	30.0	-9
4-Nitroquinoline-1-oxide	0.117	0.069	17.700	30.0	-41
Octachlorostyrene	0.061	0.071	34.950	30.0	17
Isodrin	0.117	0.113	29.030	30.0	-3
Fluoranthene	1.189	1.153	29.080	30.0	-3
Benzidine	0.809	0.694	77.190	90.0	-14
Pyrene	1.184	1.050	26.590	30.0	-11
p-Dimethylaminoazobenzene	0.202	0.198	29.440	30.0	-2
Chlorobenzilate	0.325	0.280	25.860	30.0	-14
3,3'-Dimethylbenzidine	0.651	0.675	31.130	30.0	4
Butylbenzylphthalate	0.518	0.442	25.590	30.0	-15
2-Acetylaminofluorene	0.478	0.427	26.800	30.0	-11
3,3'-Dichlorobenzidine	0.376	0.379	30.200	30.0	1
4,4'-Methylenebis(2-chloroanil	0.197	0.187	28.480	30.0	-5
Benzo(a)anthracene	1.013	0.975	28.860	30.0	-4
Chrysene	1.014	0.941	27.840	30.0	-7
bis(2-Ethylhexyl)phthalate	0.715	0.613	25.700	30.0	-14
6-Methylchrysene	0.701	0.695	29.760	30.0	-1
Di-n-octylphthalate	1.589	1.341	25.320	30.0	-16
Benzo(b)fluoranthene	1.262	1.102	26.200	30.0	-13
7,12-Dimethylbenz[a]anthracene	0.589	0.572	29.140	30.0	-3
Benzo(k)fluoranthene	1.244	1.241	29.920	30.0	0
Benzo(a)pyrene	1.181	1.116	28.370	30.0	-5
3-Methylcholanthrene	0.520	0.477	27.530	30.0	-8
Dibenz(a,h)acridine	0.898	0.855	28.560	30.0	-5
Dibenz(a,j)acridine	0.951	0.893	28.140	30.0	-6
Indeno(1,2,3-cd)pyrene	1.207	1.142	28.380	30.0	-5
Dibenz(a,h)anthracene	1.037	0.984	28.470	30.0	-5
Benzo(g,h,i)perylene	1.030	0.973	28.350	30.0	-6
Total PAHs	1.127	1.022	505.460	540.0	-6
2-Fluorophenol	1.496	1.529	61.340	60.0	2
Phenol-d6	2.214	2.122	57.510	60.0	-4

FORM VII SV-1

7C cont

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/14/16 Time: 07:18

Lab File ID: gg0611.d Init. Calib. Date(s): 06/07/16 06/07/16

Init. Calib. Times(s): 09:32 12:39

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Nitrobenzene-d5	0.472	0.450	57.170	60.0	-5
2-Fluorobiphenyl	1.288	1.208	56.250	60.0	-6
2,4,6-Tribromophenol	0.142	0.158	66.680	60.0	11
Terphenyl-d14	0.732	0.727	59.550	60.0	-1
			Average %Drift:		7

Continuing Calibration
Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jun07.b/gf0201.d **
/chem/HP11165.i/16jun07.b/gf0202.d
/chem/HP11165.i/16jun07.b/gf0203.d
/chem/HP11165.i/16jun07.b/gf0204.d
/chem/HP11165.i/16jun07.b/gf0205.d
/chem/HP11165.i/16jun07.b/gf0206.d
/chem/HP11165.i/16jun07.b/gf0207.d
/chem/HP11165.i/16jun07.b/gf0208.d

** indicates the Mid Level Calibration Standard.

Mid Level Calibration Standard is used for comparison.

Current Continuing Calibration Standard:

/chem/HP11165.i/16jul14.b/gg0611.d

Area Summary

File ID:

Internal Standard Name	gg0611.d	ICAL Area	Low Limit	High Limit	In Spec
1,4-Dichlorobenzene-d4	72908	70096	35048	140192	Yes
Naphthalene-d8	324916	296116	148058	592232	Yes
Acenaphthene-d10	221258	192522	96261	385044	Yes
Phenanthrene-d10	417817	374023	187012	748046	Yes
Pyrene-d10	473282	404786	202393	809572	Yes
Perylene-d12	378568	301130	150565	602260	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

RT Summary

File ID:

Internal Standard Name	gg0611.d	ICAL RT	In Spec	
1,4-Dichlorobenzene-d4	4.675	5.528	No	*
Naphthalene-d8	5.910	6.763	No	*
Acenaphthene-d10	7.604	8.475	No	*
Phenanthrene-d10	9.027	9.922	No	*
Pyrene-d10	10.380	11.310	No	*
Perylene-d12	12.886	13.939	No	*

A "No" indicates the retention time is greater than 30 seconds from the RT of the referenced standard.

Comments: * column maintenance

BB 10208
7/14/16

Report generated on 07/14/2016 at 08:55

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/14/16 Time: 09:26

Lab File ID: gg0612.d Init. Calib. Date(s): 06/28/16 06/28/16

Init. Calib. Times(s): 07:48 09:58

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzalmalononitrile	0.375	0.376	50.120	50.0	0
			Average %Drift:		0

JM6/546
7-14-16

FORM VII SV-1

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/14/16 Time: 09:49

Lab File ID: gg0613.d Init. Calib. Date(s): 07/05/16 07/05/16

Init. Calib. Times(s): 07:13 09:20

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzaldehyde	0.257	0.272	52.800	50.0	6
			Average %Drift:		6

OM6/546
7-14-16

FORM VII SV-1

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7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 04:09

Lab File ID: gg1201.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,4-Dioxane	0.664	0.588	26.570	30.0	-11
N-Nitrosodimethylamine	1.155	0.999	25.950	30.0	-13
Pyridine	1.788	1.653	27.730	30.0	-8
2-Picoline	1.870	1.791	28.730	30.0	-4
N-Nitrosomethylethylamine	0.872	0.804	27.680	30.0	-8
Methyl methanesulfonate	0.855	0.833	29.210	30.0	-3
N-Nitrosodiethylamine	0.842	0.813	28.950	30.0	-4
Ethyl methanesulfonate	0.835	0.842	30.240	30.0	1
Phenol	2.454	2.487	30.410	30.0	1
Aniline	2.810	2.793	29.810	30.0	-1
a-methylstyrene	1.562	1.669	32.050	30.0	7
bis(2-Chloroethyl)ether	1.834	1.784	29.190	30.0	-3
2-Chlorophenol	1.499	1.534	30.700	30.0	2
1,3-Dichlorobenzene	1.538	1.567	30.580	30.0	2
1,4-Dichlorobenzene	1.592	1.572	29.620	30.0	-1
Benzyl alcohol	1.100	1.184	32.290	30.0	8
1,2-Dichlorobenzene	1.497	1.516	30.380	30.0	1
Indene	2.710	2.878	31.860	30.0	6
2-Methylphenol	1.527	1.588	31.200	30.0	4
2,2'-oxybis(1-Chloropropane)	2.277	2.372	31.250	30.0	4
bis(2-Chloroisopropyl)ether	2.277	2.372	31.250	30.0	4
N-Nitrosopyrrolidine	0.954	0.967	30.390	30.0	1
Acetophenone	2.319	2.570	33.250	30.0	11
4-Methylphenol	1.798	1.899	31.680	30.0	6
Total Cresols	1.685	1.743	62.880	60.0	5
N-Nitroso-di-n-propylamine	1.484	1.529	30.910	30.0	3
N-Nitrosomorpholine	1.132	1.155	30.610	30.0	2
o-Toluidine	2.776	2.794	30.190	30.0	1
Hexachloroethane	0.606	0.601	29.730	30.0	-1
Nitrobenzene	0.440	0.434	29.630	30.0	-1
N-Nitrosopiperidine	0.196	0.190	29.090	30.0	-3
Isophorone	0.842	0.821	29.250	30.0	-3
2-Nitrophenol	0.150	0.167	33.310	30.0	11
2,4-Dimethylphenol	0.366	0.387	31.760	30.0	6
O,O,O-Triethylphosphorothioate	0.168	0.167	29.810	30.0	-1
bis(2-Chloroethoxy)methane	0.490	0.476	29.170	30.0	-3

FORM VII SV-1

JMG/8/16
7-25-2016

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 04:09

Lab File ID: gg1201.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Benzoic acid	0.273	0.281	41.190	40.0	3
1,2,3,4-Tetrahydronaphthalene	0.529	0.562	31.870	30.0	6
2,4-Dichlorophenol	0.270	0.285	31.750	30.0	6
1,2,4-Trichlorobenzene	0.284	0.286	30.180	30.0	1
Naphthalene	1.056	1.042	29.590	30.0	-1
4-Chloroaniline	0.454	0.466	30.780	30.0	3
2,6-Dichlorophenol	0.264	0.274	31.140	30.0	4
Hexachloropropene	0.131	0.124	28.510	30.0	-5
Hexachlorobutadiene	0.138	0.140	30.530	30.0	2
Quinoline	0.726	0.719	29.700	30.0	-1
Caprolactam	0.141	0.148	31.280	30.0	4
N-Nitrosodi-n-butylamine	0.383	0.389	30.470	30.0	2
4-Chloro-3-methylphenol	0.330	0.345	31.370	30.0	5
Safrole	0.269	0.272	30.380	30.0	1
2-Methylnaphthalene	0.710	0.743	31.390	30.0	5
1-Methylnaphthalene	0.661	0.679	30.820	30.0	3
Hexachlorocyclopentadiene	0.225	0.187	24.940	30.0	-17
1,2,4,5-Tetrachlorobenzene	0.454	0.446	29.500	30.0	-2
cis-Isosafrole	0.448	0.410	4.660	5.1	-9
2,4,6-Trichlorophenol	0.302	0.319	31.680	30.0	6
2,4,5-Trichlorophenol	0.332	0.351	31.760	30.0	6
trans-Isosafrole	0.468	0.457	24.320	24.9	-2
Isosafrole	0.465	0.449	28.980	30.0	-3
1,1'-Biphenyl	1.370	1.477	32.350	30.0	8
2-Chloronaphthalene	1.107	1.256	34.030	30.0	13
1-Chloronaphthalene	1.055	1.053	29.940	30.0	0
Diphenyl ether	0.751	0.747	29.830	30.0	-1
2-Nitroaniline	0.350	0.370	31.700	30.0	6
1,4-Naphthoquinone	0.458	0.443	29.000	30.0	-3
1,4-Dinitrobenzene	0.160	0.168	31.510	30.0	5
Dimethylphthalate	1.329	1.317	29.720	30.0	-1
1,3-Dinitrobenzene	0.201	0.214	31.900	30.0	6
2,6-Dinitrotoluene	0.283	0.301	31.890	30.0	6
Acenaphthylene	1.636	1.684	30.890	30.0	3
3-Nitroaniline	0.320	0.350	32.850	30.0	10
Acenaphthene	1.152	1.162	30.240	30.0	1

FORM VII SV-1

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 04:09

Lab File ID: gg1201.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2,4-Dinitrophenol	0.103	0.117	43.400	40.0	8
4-Nitrophenol	0.200	0.201	30.160	30.0	1
Pentachlorobenzene	0.407	0.422	31.120	30.0	4
2,4-Dinitrotoluene	0.382	0.393	30.850	30.0	3
2,4_2,6-Dinitrotoluenes	0.339	0.347	62.740	60.0	5
Dibenzofuran	1.638	1.605	29.410	30.0	-2
1-Naphthylamine	1.300	1.311	30.260	30.0	1
2,3,4,6-Tetrachlorophenol	0.247	0.265	32.210	30.0	7
2-Naphthylamine	1.281	1.325	31.030	30.0	3
Diethylphthalate	1.287	1.311	30.550	30.0	2
Thionazin	0.238	0.229	28.840	30.0	-4
Fluorene	1.346	1.395	31.090	30.0	4
4-Chlorophenyl-phenylether	0.635	0.622	29.400	30.0	-2
5-Nitro-o-toluidine	0.359	0.382	31.930	30.0	6
4-Nitroaniline	0.359	0.381	31.790	30.0	6
4,6-Dinitro-2-methylphenol	0.087	0.091	29.960	30.0	0
N-Nitrosodiphenylamine (1)	0.614	0.630	30.750	30.0	2
NDPA as diphenylamine	0.614	0.630	30.750	30.0	2
1,2-Diphenylhydrazine	0.875	0.827	28.340	30.0	-6
Tetraethyldithiopyrophosphate	0.124	0.122	29.480	30.0	-2
1,3,5-Trinitrobenzene	0.058	0.061	29.070	30.0	-3
Diallate (peak 1)	0.402	0.377	23.330	24.9	-6
Phorate	0.563	0.557	29.710	30.0	-1
Phenacetin	0.387	0.385	29.850	30.0	0
4-Bromophenyl-phenylether	0.176	0.178	30.380	30.0	1
Diallate (peak 2)	0.394	0.375	4.850	5.1	-5
Diallate trans/cis	0.401	0.377	28.180	30.0	-6
Hexachlorobenzene	0.178	0.187	31.430	30.0	5
Dimethoate	0.326	0.322	29.630	30.0	-1
Pentachlorophenol	0.098	0.101	31.200	30.0	4
4-Aminobiphenyl	0.342	0.332	29.160	30.0	-3
Pentachloronitrobenzene	0.068	0.071	31.300	30.0	4
Pronamide	0.282	0.295	31.330	30.0	4
Dinoseb	0.119	0.127	29.770	30.0	-1
Phenanthrene	1.085	1.078	29.820	30.0	-1
Anthracene	1.035	1.069	30.980	30.0	3

(1) Cannot be Separated from Diphenylamine

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 04:09

Lab File ID: gg1201.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Carbazole	1.011	0.996	29.580	30.0	-1
Methyl parathion	0.216	0.207	28.810	30.0	-4
Di-n-butylphthalate	1.178	1.104	28.100	30.0	-6
Parathion	0.137	0.124	25.820	30.0	-14
4-Nitroquinoline-1-oxide	0.086	0.059	24.040	30.0	-20
Octachlorostyrene	0.063	0.068	32.510	30.0	8
Isodrin	0.108	0.108	29.940	30.0	0
Fluoranthene	1.087	1.139	31.440	30.0	5
Benzidine	0.656	0.695	95.290	90.0	6
Pyrene	1.104	1.087	29.560	30.0	-1
p-Dimethylaminoazobenzene	0.173	0.175	27.070	30.0	-10
Chlorobenzilate	0.283	0.299	28.510	30.0	-5
3,3'-Dimethylbenzidine	0.539	0.564	31.380	30.0	5
Butylbenzylphthalate	0.480	0.482	30.110	30.0	0
2-Acetylaminofluorene	0.344	0.340	27.800	30.0	-7
3,3'-Dichlorobenzidine	0.340	0.338	29.910	30.0	0
4,4'-Methylenebis(2-chloroanil	0.176	0.173	29.510	30.0	-2
Benzo(a)anthracene	0.915	0.983	32.230	30.0	7
Chrysene	0.899	0.905	30.210	30.0	1
bis(2-Ethylhexyl)phthalate	0.652	0.615	28.310	30.0	-6
6-Methylchrysene	0.646	0.675	31.330	30.0	4
Di-n-octylphthalate	1.433	1.269	26.570	30.0	-11
Benzo(b)fluoranthene	1.140	1.170	30.770	30.0	3
7,12-Dimethylbenz[a]anthracene	0.547	0.528	28.940	30.0	-4
Benzo(k)fluoranthene	1.174	1.065	27.220	30.0	-9
Benzo(a)pyrene	1.061	1.019	28.810	30.0	-4
3-Methylcholanthrene	0.443	0.421	28.520	30.0	-5
Dibenz(a,h)acridine	0.813	0.745	27.510	30.0	-8
Dibenz(a,j)acridine	0.865	0.756	26.230	30.0	-13
Indeno(1,2,3-cd)pyrene	1.053	1.085	30.930	30.0	3
Dibenz(a,h)anthracene	0.900	0.924	30.810	30.0	3
Benzo(g,h,i)perylene	0.872	0.902	31.030	30.0	3
Total PAHs	1.077	0.996	547.820	540.0	1
2-Fluorophenol	1.470	1.440	58.770	60.0	-2
Phenol-d6	2.079	2.067	59.640	60.0	-1

FORM VII SV-1

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 04:09

Lab File ID: gg1201.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Nitrobenzene-d5	0.422	0.419	59.510	60.0	-1
2-Fluorobiphenyl	1.240	1.228	59.420	60.0	-1
2,4,6-Tribromophenol	0.127	0.147	69.680	60.0	16
Terphenyl-d14	0.738	0.765	62.180	60.0	4
			Average	%Drift:	4

FORM VII SV-1

Continuing Calibration
Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul20a.b/gg0891.d **
/chem/HP11165.i/16jul20a.b/gg0892.d
/chem/HP11165.i/16jul20a.b/gg0893.d
/chem/HP11165.i/16jul20a.b/gg0894.d
/chem/HP11165.i/16jul20a.b/gg0895.d
/chem/HP11165.i/16jul20a.b/gg0896.d
/chem/HP11165.i/16jul20a.b/gg0897.d
/chem/HP11165.i/16jul20a.b/gg0898.d

** indicates the Mid Level Calibration Standard.

Mid Level Calibration Standard is used for comparison.

Current Continuing Calibration Standard:

/chem/HP11165.i/16jul25.b/gg1201.d

Area Summary

File ID:

Internal Standard Name	gg1201.d	ICAL Area	Low Limit	High Limit	In Spec
1,4-Dichlorobenzene-d4	93191	89898	44949	179796	Yes
Naphthalene-d8	435090	419518	209759	839036	Yes
Acenaphthene-d10	282209	254767	127384	509534	Yes
Phenanthrene-d10	550553	472419	236210	944838	Yes
Pyrene-d10	604101	513581	256790	1027162	Yes
Perylene-d12	499845	383235	191618	766470	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

RT Summary

File ID:

Internal Standard Name	gg1201.d	ICAL RT	In Spec
1,4-Dichlorobenzene-d4	5.481	5.540	Yes
Naphthalene-d8	6.716	6.775	Yes
Acenaphthene-d10	8.434	8.486	Yes
Phenanthrene-d10	9.886	9.939	Yes
Pyrene-d10	11.269	11.327	Yes
Perylene-d12	13.904	13.962	Yes

A "No" indicates the retention time is greater than 30 seconds from the RT of the referenced standard.

Comments: _____

JM6/346
7-25-16

Report generated on 07/25/2016 at 04:38

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 04:41

Lab File ID: gg1202.d Init. Calib. Date(s): 07/22/16 07/22/16

Init. Calib. Times(s): 17:19 19:31

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzaldehyde	0.268	0.258	48.260	50.0	-3
			Average %Drift:		3

JMG/SYL
7-25-16

FORM VII SV-1

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7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/25/16 Time: 05:07

Lab File ID: gg1203.d Init. Calib. Date(s): 07/22/16 07/22/16

Init. Calib. Times(s): 20:26 22:38

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzalmalononitrile	0.373	0.373	50.070	50.0	0
			Average %Drift:		0

SMO/SMO
7-25-16

FORM VII SV-1

page 1 of 1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg0571.d Date Analyzed: 07/13/16

Instrument ID: HP11165 Time Analyzed: 15:52

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	76961	4.693	327649	5.928	225360	7.616
UPPER LIMIT	153922	5.193	655298	6.428	450720	8.116
LOWER LIMIT	38481	4.193	163825	5.428	112680	7.116
LLI SAMPLE NO.						
01 SBLKWN194	68385	4.692	288828	5.928	194637	7.616
02 194WNLCS	68966	4.698	286387	5.928	189824	7.622
03 SBLKLB194	70903	4.698	286378	5.928	186831	7.616
04 194LBLCS	77620	4.698	330230	5.928	218013	7.622
05 194LBLCS1	67951	4.698	281673	5.928	186540	7.616
06 194LBLCSD1	65362	4.699	278868	5.928	178592	7.616
07 194LBLCS2	67201	4.698	273823	5.928	174967	7.616
08 194LBLCSD2	71460	4.693	298363	5.928	186312	7.616
09 8468616	69443	4.698	293263	5.928	184181	7.616
10 8468616MS	74341	4.698	317825	5.928	202773	7.622
11 8468616MSD	71820	4.698	304471	5.933	190739	7.622
12 8444067RE	74048	4.698	319957	5.928	197985	7.616
13 8457189	70845	4.698	300220	5.934	190427	7.622
14 8457193	73626	4.698	308386	5.934	199610	7.622
15 8457197	154540*	4.698	676758*	5.933	443652	7.622
16 8457201	79186	4.704	326496	5.934	201896	7.622
17 8457205	74343	4.704	316797	5.934	197077	7.622

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg0571.d Date Analyzed: 07/13/16

Instrument ID: HP11165 Time Analyzed: 15:52

	IS4(PHN)		IS5(PYR)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	439277	9.039	514259	10.392	424255	12.898
UPPER LIMIT	878554	9.539	1028518	10.892	848510	13.398
LOWER LIMIT	219639	8.539	257130	9.892	212128	12.398
LLI SAMPLE NO.						
01 SBLKWN194	389732	9.033	452483	10.392	397166	12.892
02 194WNLCS	359078	9.039	420016	10.392	343229	12.898
03 SBLKLB194	382867	9.033	445387	10.392	355285	12.892
04 194LBLCS	409213	9.039	459744	10.392	347139	12.898
05 194LBLCS1	374372	9.033	432168	10.392	346160	12.892
06 194LBLCSD1	356304	9.034	416985	10.392	326145	12.892
07 194LBLCS2	364226	9.033	421248	10.392	325736	12.892
08 194LBLCSD2	376841	9.033	444285	10.392	355980	12.892
09 8468616	348459	9.033	362124	10.392	267522	12.904
10 8468616MS	367220	9.039	378228	10.392	280431	12.904
11 8468616MSD	350804	9.039	364297	10.398	274058	12.904
12 8444067RE	339719	9.039	336912	10.392	246040	12.904
13 8457189	338119	9.039	351821	10.398	255594	12.904
14 8457193	366120	9.039	399937	10.398	282072	12.904
15 8457197	777711	9.045	777677	10.398	478627	12.910
16 8457201	350705	9.045	354278	10.398	258918	12.910
17 8457205	331862	9.045	338431	10.404	246806	12.916

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg0571.d Date Analyzed: 07/13/16

Instrument ID: HP11165 Time Analyzed: 15:52

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	76961	4.693	327649	5.928	225360	7.616
UPPER LIMIT	153922	5.193	655298	6.428	450720	8.116
LOWER LIMIT	38481	4.193	163825	5.428	112680	7.116
LLI SAMPLE NO.						
18 8457209	73242	4.704	310060	5.934	194839	7.628
19 8466599	68823	4.704	296231	5.940	198813	7.628
20 8466599MS	78563	4.704	338958	5.939	215748	7.627
21 8466599MSD	82168	4.704	352766	5.939	224162	7.628
22 8466590	71498	4.704	308170	5.933	205250	7.627

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg0571.d Date Analyzed: 07/13/16

Instrument ID: HP11165 Time Analyzed: 15:52

	IS4(PHN)		IS5(PYR)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	439277	9.039	514259	10.392	424255	12.898
UPPER LIMIT	878554	9.539	1028518	10.892	848510	13.398
LOWER LIMIT	219639	8.539	257130	9.892	212128	12.398
LLI SAMPLE NO.						
18 8457209	339511	9.045	342092	10.404	250895	12.916
19 8466599	377032	9.051	404141	10.404	274433	12.916
20 8466599MS	396801	9.057	401150	10.410	268580	12.915
21 8466599MSD	411584	9.057	422947	10.410	295677	12.916
22 8466590	391108	9.051	432344	10.404	307553	12.915

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg0611.d Date Analyzed: 07/14/16

Instrument ID: HP11165 Time Analyzed: 07:18

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	72908	4.675	324916	5.910	221258	7.604
UPPER LIMIT	145816	5.175	649832	6.410	442516	8.104
LOWER LIMIT	36454	4.175	162458	5.410	110629	7.104
LLI SAMPLE NO.						
01 8457197RE	155267*	4.675	658427*	5.910	414034	7.598
02 8466587	69069	4.675	309226	5.904	203848	7.598
03 8466593	76434	4.675	334619	5.904	221258	7.598
04 8466602	69872	4.675	307511	5.910	208686	7.598
05 8466605	71407	4.675	311188	5.904	203714	7.598
06 8466587DL	72203	4.669	318707	5.904	215477	7.598
07 8466596DL	75327	4.669	316675	5.904	205580	7.598

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg0611.d Date Analyzed: 07/14/16

Instrument ID: HP11165 Time Analyzed: 07:18

	IS4(PHN)		IS5(PYR)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	417817	9.027	473282	10.380	378568	12.886
UPPER LIMIT	835634	9.527	946564	10.880	757136	13.386
LOWER LIMIT	208909	8.527	236641	9.880	189284	12.386
LLI SAMPLE NO.						
01 8457197RE	757101	9.022	809547	10.374	514387	12.886
02 8466587	390939	9.028	445001	10.380	342884	12.880
03 8466593	427699	9.022	485187	10.375	370082	12.880
04 8466602	412308	9.022	469103	10.380	355533	12.880
05 8466605	387020	9.028	448551	10.380	344525	12.880
06 8466587DL	420076	9.022	501256	10.375	402999	12.880
07 8466596DL	387315	9.051	445037	10.380	353184	12.880

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1201.d Date Analyzed: 07/25/16

Instrument ID: HP11165 Time Analyzed: 04:09

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	93191	5.481	435090	6.716	282209	8.434
UPPER LIMIT	186382	5.981	870180	7.216	564418	8.934
LOWER LIMIT	46596	4.981	217545	6.216	141105	7.934
LLI SAMPLE NO.						
01 SBLKWB204	79982	5.481	353619	6.716	219922	8.428
02 204WBLCS	86142	5.481	399715	6.716	254134	8.434
03 204WBLCSD	83292	5.481	362740	6.716	220126	8.434
04 SBLKLA205	82733	5.481	365030	6.716	224942	8.428
05 205LALCS	93725	5.481	427327	6.716	275050	8.434
06 205LALCS2	83954	5.481	367450	6.716	227553	8.428
07 205LALCSD2	89397	5.481	387236	6.716	239714	8.428
08 205LALCS3	88895	5.481	391014	6.716	245561	8.428
09 205LALCSD3	85543	5.481	388849	6.716	243230	8.428
10 8457197RE	103361	5.481	455022	6.716	275501	8.428
11 8457197RE	94632	5.481	432382	6.716	260156	8.428
12 8457197MSDSD	82307	5.481	371080	6.716	224407	8.433
13 8480581	101945	5.481	463640	6.716	291188	8.434
14 SBLKWL204	99515	5.481	460026	6.716	288974	8.433
15 204WLLCS	93709	5.481	430733	6.722	265315	8.433
16 8466599RE	91247	5.481	418491	6.716	264202	8.434
17 8466599RE	98087	5.487	442779	6.722	273908	8.434

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1201.d Date Analyzed: 07/25/16

Instrument ID: HP11165 Time Analyzed: 04:09

	IS4(PHN)		IS5(PYR)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	550553	9.886	604101	11.269	499845	13.904
UPPER LIMIT	1101106	10.386	1208202	11.769	999690	14.404
LOWER LIMIT	275277	9.386	302051	10.769	249923	13.404
LLI SAMPLE NO.						
01 SBLKWB204	425805	9.881	477404	11.269	385863	13.898
02 204WBLCS	466086	9.886	489016	11.269	336673	13.898
03 204WBLCSD	419942	9.880	470139	11.269	366848	13.904
04 SBLKLA205	457184	9.881	506904	11.269	377973	13.898
05 205LALCS	515431	9.881	566365	11.269	398232	13.904
06 205LALCS2	458116	9.880	494043	11.263	357056	13.898
07 205LALCSD2	476401	9.881	519109	11.263	374079	13.898
08 205LALCS3	504958	9.880	555555	11.269	400003	13.898
09 205LALCSD3	480779	9.880	523148	11.269	377071	13.898
10 8457197RE	501656	9.880	536415	11.269	394789	13.898
11 8457197RE	476052	9.881	508706	11.269	370863	13.904
12 8457197MSDSD	407089	9.880	428640	11.269	311683	13.910
13 8480581	547779	9.880	591931	11.269	448358	13.904
14 SBLKWL204	527419	9.880	562609	11.269	407895	13.904
15 204WLLCS	468574	9.886	505752	11.269	356501	13.904
16 8466599RE	491845	9.881	529914	11.269	371805	13.904
17 8466599RE	507000	9.886	533897	11.269	393630	13.904

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1201.d Date Analyzed: 07/25/16

Instrument ID: HP11165 Time Analyzed: 04:09

		IS1(DCB)			IS2(NPT)			IS3(ANT)		
		AREA	#	RT	#	AREA	#	RT	#	AREA	#	RT	#
	12 HOUR STD	93191		5.481		435090		6.716		282209		8.434	
	UPPER LIMIT	186382		5.981		870180		7.216		564418		8.934	
	LOWER LIMIT	46596		4.981		217545		6.216		141105		7.934	
	LLI SAMPLE NO.												
18	8466599MSDSD	100532		5.487		497323		6.722		277724		8.433	
19	8466587RE	95084		5.487		434711		6.716		267415		8.428	
20	8466590RE	88940		5.481		405369		6.716		253060		8.433	

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1201.d Date Analyzed: 07/25/16

Instrument ID: HP11165 Time Analyzed: 04:09

		IS4(PHN)		IS5(PYR)		IS6(PRY)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	550553	9.886	604101	11.269	499845	13.904
	UPPER LIMIT	1101106	10.386	1208202	11.769	999690	14.404
	LOWER LIMIT	275277	9.386	302051	10.769	249923	13.404
	LLI SAMPLE NO.						
18	8466599MSDSD	519526	9.886	568063	11.274	425002	13.904
19	8466587RE	507354	9.886	540400	11.269	388595	13.904
20	8466590RE	486169	9.880	529979	11.269	372439	13.904

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

Preparation and Run Logs

Semivolatiles by GC/MS

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16jun07\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jmg00346	GF0200.D	DFTPP1116	06/07/2016	09:16		
jmg00346	GF0201.D	STD1526	06/07/2016	09:32		
jmg00346	GF0202.D	STD1526	06/07/2016	09:59		
jmg00346	GF0203.D	STD1526	06/07/2016	10:25		
jmg00346	GF0204.D	STD1526	06/07/2016	10:51		
jmg00346	GF0205.D	STD1526	06/07/2016	11:20		
jmg00346	GF0206.D	STD1526	06/07/2016	11:47		
jmg00346	GF0207.D	STD1526	06/07/2016	12:13		
jmg00346	GF0208.D	STD1526	06/07/2016	12:39		
jmg00346	GF0209.D	MDL1526	06/07/2016	13:06		
jmg00346	GF0210.D	MDLPAH1526	06/07/2016	13:32		
jmg00346	GF0211.D	ICV1376	06/07/2016	14:00		
jmg00346	GF0212.D	ICVBAS0716	06/07/2016	14:28		

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16jun28\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jmg00346	GF1000.D	DFTPP1116	06/28/2016	07:05		
jmg00346	GF1001.D	STD1526	06/28/2016	07:22		
jmg00346	GF1002.D	TRG1586	06/28/2016	07:48		
jmg00346	GF1003.D	TRG1586	06/28/2016	08:14		
jmg00346	GF1004.D	TRG1586	06/28/2016	08:40		
jmg00346	GF1005.D	TRG1586	06/28/2016	09:07		
jmg00346	GF1006.D	TRG1586	06/28/2016	09:32		
jmg00346	GF1007.D	TRG1586	06/28/2016	09:58		
jmg00346	GF1008.D	TRGMDL1586	06/28/2016	10:25		
jmg00346	GF1009.D	SBLKWA178	06/28/2016	10:51	16178WAA	
jmg00346	GF1010.D	178WALCS	06/28/2016	11:18	16178WAA	
jmg00346	GF1011.D	178WALCSD	06/28/2016	11:44	16178WAA	
jmg00346	GF1012.D	8438378	06/28/2016	12:10	16178WAA	
jmg00346	GF1013.D	8438379	06/28/2016	12:37	16178WAA	
jmg00346	GF1014.D	8442829	06/28/2016	13:03	16178WAA	
jmg00346	GF1015.D	8442830	06/28/2016	13:29	16178WAA	
jmg00346	GF1016.D	8442831	06/28/2016	13:56	16178WAA	
jmg00346	GF1017.D	8444113	06/28/2016	14:22	16178WAA	
jmg00346	GF1018.D	8444115	06/28/2016	14:48	16178WAA	
jmg00346	GF1019.D	8444116	06/28/2016	15:15	16178WAA	
jmg00346	GF1020.D	8445666	06/28/2016	15:41	16178WAA	
jmg00346	GF1021.D	8445667	06/28/2016	16:07	16178WAA	

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16jul05\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jmg00346	GG0162.D	TRG1566	07/05/2016	06:47		
jmg00346	GG0163.D	CBZ1876	07/05/2016	07:13		
jmg00346	GG0164.D	CBZ1876	07/05/2016	07:38		
jmg00346	GG0165.D	CBZ1876	07/05/2016	08:04		
jmg00346	GG0166.D	CBZ1876	07/05/2016	08:29		
jmg00346	GG0167.D	CBZ1876	07/05/2016	08:55		
jmg00346	GG0168.D	CBZ1876	07/05/2016	09:20		
jmg00346	GG0169.D	CBZMDL1876	07/05/2016	09:46		

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16jul13a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
apb10206	GG0570.D	DFTPP1816	07/13/2016	15:36		
apb10206	GG0571.D	STD1886	07/13/2016	15:52		
apb10206	GG0571a.D	STD1886	07/13/2016	16:24		
apb10206	GG0572.D	TRG1566	07/13/2016	16:52		
apb10206	GG0573.D	CBZ1876	07/13/2016	17:15		
apb10206	GG0574.D	SBLKWN194	07/13/2016	17:49	16194WAN	
apb10206	GG0575.D	194WNLCS	07/13/2016	18:11	16194WAN	
apb10206	GG0576.D	194WNLCS	07/13/2016	18:34	16194WAN	
apb10206	GG0577.D	194WNLCSD	07/13/2016	18:58	16194WAN	
apb10206	GG0578.D	SBLKLB194	07/13/2016	19:21	16194SLB	
apb10206	GG0579.D	194LBLCS	07/13/2016	19:44	16194SLB	
apb10206	GG0584.D	8468616	07/13/2016	21:41	16194SLB	
apb10206	GG0585.D	8468616	07/13/2016	22:05	16194SLB	
apb10206	GG0586.D	8468616	07/13/2016	22:28	16194SLB	
apb10206	GG0587.D	8444067RE	07/13/2016	22:53	16194SLB	
apb10206	GG0588.D	8457189	07/13/2016	23:17	16194SLB	
apb10206	GG0589.D	8457193	07/13/2016	23:42	16194SLB	
apb10206	GG0590.D	8457197	07/14/2016	00:07	16194SLB	
apb10206	GG0591.D	8457201	07/14/2016	00:32	16194SLB	
apb10206	GG0592.D	8457205	07/14/2016	00:57	16194SLB	
apb10206	GG0593.D	8457209	07/14/2016	01:22	16194SLB	
apb10206	GG0594.D	8466599	07/14/2016	01:48	16194WAN	
apb10206	GG0595.D	8466599	07/14/2016	02:13	16194WAN	
apb10206	GG0596.D	8466599	07/14/2016	02:39	16194WAN	
apb10206	GG0597.D	8466587	07/14/2016	03:04	16194WAN	
apb10206	GG0598.D	8466590	07/14/2016	03:30	16194WAN	
apb10206	GG0599.D	8466593	07/14/2016	03:56	16194WAN	

SAMPLE INFORMATION SUMMARY

BATCH: /chem/HP11165.i/16jul14.b

Data File	Injection Date	Sample Type	Dil Factor	Inst ID	Method	Method Batch
gg0610.d	14-JUL-2016 06:45	DFTPP	1.00	HP11165	gcdft7_d.m	16jul14.b
gg0611.d	14-JUL-2016 07:18	Continuing Cal	1.00	HP11165	m8270d.m	16jul14.b
gg0612.d	14-JUL-2016 09:26	Continuing Cal	1.00	HP11165	m8270d.m	16jul14.b
gg0613.d	14-JUL-2016 09:49	Continuing Cal	1.00	HP11165	m8270d.m	16jul14.b
gg0614.d	14-JUL-2016 10:14	Unknown	1.00	HP11165	m8270d.m	16jul14.b
gg0615.d	14-JUL-2016 10:37	Unknown	10.00	HP11165	m8270d.m	16jul14.b

Data File	Matrix	Fraction	Lab Sample ID	Lab Prep Batch	Client Sample ID	Client Sample Group
gg0610.d	LIQUID	SV	DFTPP	16jul14	DFTPP	16jul14
gg0611.d	LIQUID	SV	SSTD030	16jul14	SSTD030	16jul14
gg0612.d	LIQUID	SV	TRG1586	16jul14	SSTD050	16jul14
gg0613.d	LIQUID	SV	CBZ1876	16jul14	SSTD050	16jul14
gg0614.d	SOLID	SV	8457197RE	16194SLB	13C-1RE	16jul14
gg0615.d	LIQUID	SV	8466587	16194WAN	EG055	16jul14

Data File	Compound Sublist	Spike List File	Sample Ref #	QC Group Ref #	Init Cal Ref #	Batch Ref #
gg0610.d	all.sub		201645398	201645399	200002637	201645397
gg0611.d	all1-b.sub		201645461	201645399	201611061	201645460
gg0612.d	trg.sub		201645583	201645399	201611061	201645460
gg0613.d	bnz.sub		201645712	201645399	201611061	201645460
gg0614.d	19863.sub		201645759	201645399	201611061	201645460
gg0615.d	7791.sub		201645772	201645399	201611061	201645460

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16ju120a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
whs02991	GG0880.D	DFTPP1816	07/20/2016	17:52		
whs02991	GG0881.D	STD1886	07/20/2016	18:11		
whs02991	GG0882.D	BAS1166	07/20/2016	18:38		
whs02991	gg0890.D	DFTPP1816	07/20/2016	20:26		
whs02991	gg0891.D	STD1886	07/20/2016	20:46		
whs02991	gg0892.D	STD1886	07/20/2016	21:24		
whs02991	gg0893.D	STD1886	07/20/2016	21:50		
whs02991	gg0894.D	STD1886	07/20/2016	22:18		
whs02991	gg0895.D	STD1886	07/20/2016	22:44		
whs02991	gg0896.D	STD1886	07/20/2016	23:11		
whs02991	gg0897.D	STD1886	07/20/2016	23:37		
whs02991	gg0898.D	STD1886	07/21/2016	00:04		
whs02991	gg0899.D	MDL1886	07/21/2016	00:30		
whs02991	gg0900.D	MDLPAH1886	07/21/2016	00:56		
whs02991	gg0901.D	ICV1376	07/21/2016	01:23		
whs02991	gg0903.D	BAS1166	07/21/2016	01:49		
whs02991	gg0904.D	BAS1166	07/21/2016	02:16		
whs02991	gg0905.D	BAS1166	07/21/2016	02:43		
whs02991	gg0906.D	BAS1166	07/21/2016	03:09		
whs02991	gg0907.D	BAS1166	07/21/2016	03:36		
whs02991	gg0908.D	BAS1166	07/21/2016	04:02		
whs02991	gg0909.D	BAS1166	07/21/2016	04:29		
whs02991	gg0902.D	ICVBAS0716	07/21/2016	04:55		

SAMPLE INFORMATION SUMMARY

BATCH: /chem/HP11165.i/16jul22.b

Data File	Injection Date	Sample Type	Dil Factor	Inst ID	Method	Method Batch
gg0800.d	22-JUL-2016 16:14	DFTPP	1.00	HP11165	gcdft7_d.m	16jul22.b
gg0800z.d	22-JUL-2016 16:25	DFTPP	1.00	HP11165	gcdft7_d.m	16jul22.b
gg1000.d	22-JUL-2016 16:25	DFTPP	1.00	HP11165	gcdft7_d.m	16jul22.b
gg1001.d	22-JUL-2016 16:42	Continuing Cal	1.00	HP11165	m8270d.m	16jul22.b
gg0801.d	22-JUL-2016 16:42	Continuing Cal	1.00	HP11165	m8270d.m	16jul22.b
gg0802.d	22-JUL-2016 17:19	Cal Level 8	1.00	HP11165	m8270d.m	16jul22.b
gg1002.d	22-JUL-2016 17:19	Cal Level 8	1.00	HP11165	m8270d.m	16jul22.b
gg0803.d	22-JUL-2016 17:45	Cal Level 7	1.00	HP11165	m8270d.m	16jul22.b
gg1003.d	22-JUL-2016 17:45	Cal Level 7	1.00	HP11165	m8270d.m	16jul22.b
gg1004.d	22-JUL-2016 18:11	Cal Level 6	1.00	HP11165	m8270d.m	16jul22.b
gg0804.d	22-JUL-2016 18:11	Cal Level 6	1.00	HP11165	m8270d.m	16jul22.b
gg0805.d	22-JUL-2016 18:38	Cal Level 5	1.00	HP11165	m8270d.m	16jul22.b
gg1005.d	22-JUL-2016 18:38	Cal Level 5	1.00	HP11165	m8270d.m	16jul22.b
gg1006.d	22-JUL-2016 19:05	Cal Level 4	1.00	HP11165	m8270d.m	16jul22.b

Data File	Matrix	Fraction	Lab Sample ID	Lab Prep Batch	Client Sample ID	Client Sample Group
gg0800.d	LIQUID	SV	DFTPP1116	16jul22	DFTPP	16jul22
gg0800z.d	LIQUID	SV	DFTPP1116	16jul22	DFTPP	16jul22
gg1000.d	LIQUID	SV	DFTPP1116	16jul22	DFTPP	16jul22
gg1001.d	LIQUID	SV	STD1806	16jul22	SSTD030	16jul22
gg0801.d	LIQUID	SV	STD1806	16jul22	SSTD030	16jul22
gg0802.d	LIQUID	SV	CBZ1876	16jul22	SSTD120	16jul22
gg1002.d	LIQUID	SV	CBZ1876	16jul22	SSTD120	16jul22
gg0803.d	LIQUID	SV	CBZ1876	16jul22	SSTD080	16jul22
gg1003.d	LIQUID	SV	CBZ1876	16jul22	SSTD080	16jul22
gg1004.d	LIQUID	SV	CBZ1876	16jul22	SSTD050	16jul22
gg0804.d	LIQUID	SV	CBZ1876	16jul22	SSTD050	16jul22
gg0805.d	LIQUID	SV	CBZ1876	16jul22	SSTD030	16jul22
gg1005.d	LIQUID	SV	CBZ1876	16jul22	SSTD030	16jul22
gg1006.d	LIQUID	SV	CBZ1876	16jul22	SSTD015	16jul22

Data File	Compound Sublist	Spike List File	Sample Ref #	QC Group Ref #	Init Cal Ref #	Batch Ref #
gg0800.d	all.sub		201652414	201652415	200002637	201652413
gg0800z.d	all.sub		201652440	201652441	200002637	201652413
gg1000.d	all.sub		201652647	201652655	200002637	201652413
gg1001.d	all1-b.sub		201652667	201652655	201650855	201652679
gg0801.d	all1-b.sub		201652545	201652441	201650855	201652544
gg0802.d	bnz.sub		201652568	201652441	201650855	201652544
gg1002.d	bnz.sub		201652671	201652655	201650855	201652679
gg0803.d	bnz.sub		201652580	201652441	201650855	201652544
gg1003.d	bnz.sub		201652673	201652655	201650855	201652679
gg1004.d	bnz.sub		201652675	201652655	201650855	201652679
gg0804.d	bnz.sub		201652597	201652441	201650855	201652544
gg0805.d	bnz.sub		201652665	201652655	201650855	201652544
gg1005.d	bnz.sub		201652677	201652655	201650855	201652679
gg1006.d	bnz.sub		201652698	201652655	201650855	201652679

SAMPLE INFORMATION SUMMARY

BATCH: /chem/HP11165.i/16jul22.b

Data File	Injection Date	Sample Type	Dil Factor	Inst ID	Method	Method Batch
gg1007.d	22-JUL-2016 19:31	Cal Level 3	1.00	HP11165	m8270d.m	16jul22.b
gg1008.d	22-JUL-2016 19:59	MDL/LOQ	1.00	HP11165	m8270d.m	16jul22.b
gg1009.d	22-JUL-2016 20:26	Cal Level 8	1.00	HP11165	m8270d.m	16jul22.b
gg1010.d	22-JUL-2016 20:52	Cal Level 7	1.00	HP11165	m8270d.m	16jul22.b
gg1011.d	22-JUL-2016 21:19	Cal Level 6	1.00	HP11165	m8270d.m	16jul22.b
gg1012.d	22-JUL-2016 21:46	Cal Level 5	1.00	HP11165	m8270d.m	16jul22.b
gg1013.d	22-JUL-2016 22:12	Cal Level 4	1.00	HP11165	m8270d.m	16jul22.b
gg1014.d	22-JUL-2016 22:38	Cal Level 3	1.00	HP11165	m8270d.m	16jul22.b
gg1015.d	22-JUL-2016 23:05	MDL/LOQ	1.00	HP11165	m8270d.m	16jul22.b

Data File	Matrix	Fraction	Lab Sample ID	Lab Prep Batch	Client Sample ID	Client Sample Group
gg1007.d	LIQUID	SV	CBZ1876	16jul22	SSTD005	16jul22
gg1008.d	LIQUID	SV	CBZMDL1876	16jul22	SSTD001	16jul22
gg1009.d	LIQUID	SV	TRG1586	16jul22	SSTD120	16jul22
gg1010.d	LIQUID	SV	TRG1586	16jul22	SSTD080	16jul22
gg1011.d	LIQUID	SV	TRG1586	16jul22	SSTD050	16jul22
gg1012.d	LIQUID	SV	TRG1586	16jul22	SSTD030	16jul22
gg1013.d	LIQUID	SV	TRG1586	16jul22	SSTD015	16jul22
gg1014.d	LIQUID	SV	TRG1586	16jul22	SSTD005	16jul22
gg1015.d	LIQUID	SV	TRGMDL1586	16jul22	SSTD001	16jul22

Data File	Compound Sublist	Spike List File	Sample Ref #	QC Group Ref #	Init Cal Ref #	Batch Ref #
gg1007.d	bnz.sub		201652713	201652655	201650855	201652679
gg1008.d	bnz.sub		201652728	201652655	201650855	201652679
gg1009.d	trg.sub		201652754	201652655	201650855	201652679
gg1010.d	trg.sub		201652772	201652655	201650855	201652679
gg1011.d	trg.sub		201652848	201652655	201650855	201652679
gg1012.d	trg.sub		201652885	201652655	201650855	201652679
gg1013.d	trg.sub		201652909	201652655	201650855	201652679
gg1014.d	trg.sub		201652922	201652655	201650855	201652679
gg1015.d	trg.sub		201652936	201652655	201650855	201652679

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16jul25\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jmg00346	GG1200.D	DFTPP1116	07/25/2016	03:40		
jmg00346	GG1201.D	STD1806	07/25/2016	04:09		
jmg00346	GG1202.D	CBZ1876	07/25/2016	04:41		
jmg00346	GG1203.D	TRG1586	07/25/2016	05:07		
jmg00346	GG1204.D	BAS1116	07/25/2016	05:34		
jmg00346	GG1205.D	SBLKWB204	07/25/2016	06:03	16204WAB	
jmg00346	GG1206.D	204WBLCS	07/25/2016	06:29	16204WAB	
jmg00346	GG1207.D	204WBLCSD	07/25/2016	06:56	16204WAB	
jmg00346	GG1208.D	SBLKLA205	07/25/2016	07:24	16205SLA	
jmg00346	GG1209.D	205LALCS	07/25/2016	07:52	16205SLA	
jmg00346	GG1210.D	205LALCS2	07/25/2016	08:19	16205SLA	
jmg00346	GG1211.D	205LALCSD2	07/25/2016	08:46	16205SLA	
jmg00346	GG1212.D	205LALCS3	07/25/2016	09:12	16205SLA	
jmg00346	GG1213.D	205LALCSD3	07/25/2016	09:39	16205SLA	
jmg00346	GG1214.D	8457197RE	07/25/2016	10:06	16205SLA	5
jmg00346	GG1215.D	8457197RE	07/25/2016	10:33	16205SLA	5
jmg00346	GG1216.D	8457197RE	07/25/2016	10:59	16205SLA	5

Organic Extraction Batchlog Assigned to: 6740 Jessica Cook Reviewed by: APB 10206 Start Date: 7/13/16 Start time: 9:00

16194SLB026 Tech 1: KL10217 Tech 2:

Dept: 26 Prep Analysis: 10813 BNA Soil Microwave APP IX SVOA 8270D (microwave)

QC	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8468616MSD	3509-MSD	30.0	SS1616526A	1.0	MS1618126A	1.0	1	Z	Z	099a	Small Gray Rock
8468616MS	3509-MS	30.0	SS1616526A		MS1618126A	1.0	1	Z	Z	099a	↓
BLANKA	SBLKLB194	30.0	SS1616526A				1	Z	Z		Na2SO4
LCSA	194LBLCS	30.0	SS1616526A		MS1618126A	1.0	1	Z	Z		
LCSALT	194LBLCS	30.0	SS1616526A		MS1602726A	1.0	1	Z	Z		
LCSCS	194LBLCS	30.0	SS1616526A		MS1617326A	1.0	1	Z	Z		
LCSDALT	194LBLCSD	30.0	SS1616526A		MS1602726A	1.0	1	Z	Z		
LCSDCS	194LBLCSD	30.0	SS1616526A	↓	MS1617326A	1.0	1	Z	Z		↓

Solvent Used	Lot No.
1:1 Methylene Chloride/Acetone	185062816A
Methylene Chloride	163582
Sodium Sulfate	16190A

Spike Solutions: Witness: JCC0740

MS1602726A ALTIMONT SPECIALS SPIKE
MS1617326A CS LCS SPIKE
MS1618126A LCS SPIKE MIX #1
SS1616526A BNA SURROGATE STANDARD

Sample #		Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1	8444067 R	D22B1	30.1	SS1616526A	1.0	1	Z	Z	020A	Sandy; Gray	10726	19863	07/18/2016	N
2	8457189	13A-1	30.0	SS1616526A		5	Z	Z	020A	Sandy; Gray	10726	19863	07/25/2016	N
3	8457193	13B-1	30.0	SS1616526A		5	Z	Z	020A	Sandy; Gray	10726	19863	07/25/2016	N
4	8457197	13C-1	30.0	SS1616526A		5	Z	Z	020A	Sandy; Gray	10726	19863	07/25/2016	N
5	8457201	12A-1	30.1	SS1616526A		1	Z	Z	020A	Sandy; Gray	10726	19863	07/25/2016	N
6	8457205	12B-1	30.1	SS1616526A		1	Z	Z	020A	Sandy; Gray	10726	19863	07/25/2016	N
7	8457209	12C-1	30.0	SS1616526A		1	Z	Z	020A	Sandy; Gray	10726	19863	07/25/2016	N
8	8468616	3509-	30.2	SS1616526A	↓	1	Z	Z	099a	Small Gray Rock	10726	1591	07/15/2016	N

N/A

Rack ID:	—	Work Station	Micro	Micro Temp 100? ✓
Internal Standard	LC19796Y	Balance #	17609	

S-bath ID 6 98 C S-bath ID — C N-Evap C M-vap C 16194SLB026

Documented temps are NIST corrected.

DF = Dilution Factor FV = Final Volume

Organic Extraction Batchlog Assigned to: 1429 David Hershey Reviewed by: SMG 7-25-16 Start Date: 7-24-16 Start time: 22:30

16205SLA026 Tech 1: DH 1429 Tech 2: _____

Dept: 26 Prep Analysis: 10813 BNA Soil Microwave APP IX SVOA 8270D (microwave)

QC	Sample Code	Amt	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8457197MSD	13C-1MSD	30.1	SS1619426A	1	~~MS1618126A~~ (3)	1	1	Z	Z	20A	
8457197MS	13C-1MS	30.2	SS1619426A	1	~~MS1618126A~~ (3)	1	1	Z	Z	20A	
BLANKA	SBLKLA205	30.0	SS1619426A	1	(3)	—	1	Z	Z		
LCSA	205LALCS	30.0	SS1619426A	1	~~MS1618126A~~	1	1	Z	Z		
LCSALT	205LALCS	30.0	SS1619426A	1	MS1602726A	1	1	Z	Z		
LCSCS	205LALCS	30.0	SS1619426A	1	MS1617326A	1	1	Z	Z		
LCSDALT	205LALCSD	30.0	SS1619426A	1	MS1602726A	1	1	Z	Z		
LCSDCS	205LALCSD	30.0	SS1619426A	1	MS1617326A	1	1	Z	Z		

Solvent Used	Lot No.
1:1 Methylene Chloride/Acetone	185062816A
Methylene Chloride	1C3D3C
Sodium Sulfate	162034
	—

NA

7-24-16 DH 1429

MS16204126A (3) combined

Spike Solutions: Witness: _____

MS1602726A	ALTIMONT SPECIALS SPIKE
MS1617326A	CS LCS SPIKE
~~MS1618126A~~	LCS SPIKE MIX #1
SS1619426A	BNA SURROGATE STANDARD

Sample #	Sample Code	Amt	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1 8457197 R	13C-1	30.2	SS1619426A	1	1	Z	Z	20A	powdery Blue Soil	10726	19863	07/25/2016	N

DWD93 Page 252 of 517

NA

DH 1429

7-24-16

Rack ID:		Work Station		Micro Temp 100?	
Internal Standard	LL19796V	Balance #			

S-bath ID 6	95 C	S-bath ID	C	N-Evap	C	M-vap	C	16205SLA026

Documented temps are NIST corrected.

DF = Dilution Factor FV = Final Volume

Explosives Data

Case Narrative/Conformance Summary

Explosives

eurofins | Lancaster Laboratories Environmental

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Pesticide Residue Analysis

Fraction: Explosives

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8457191	DU-1-3-A		X	1	Unspiked
8457195	DU-1-3-B		X	1	
8457199	DU-1-3-C		X	1	
8457203	DU-1-2-A		X	1	
8457207	DU-1-2-B		X	1	
8457211	DU-1-2-C		X	1	
8457213	DU-1-12-40mm-SS		X	1	
8457214	DU-1-12-40mm-SSD		X	1	
8457216	Exp/Perchlorate Blank		X	1	Blank
8469770	DU-1-3-A MS		X	1	Matrix Spike
8469771	DU-1-3-A MSD		X	1	Matrix Spike Duplicate

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: 161960014A (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457213-8457214, 8457216, 8469770-8469771, UNSPK: 8469770-8457191)
The recovery(ies) for the following analyte(s) in the LCS exceeds the acceptance window indicating a positive bias: 1,3-Dinitrobenzene, 2,6-Dinitrotoluene, 2-Amino-4,6-Dinitrotoluene, 4-Amino-2,6-Dinitrotoluene, 4-Nitrotoluene, RDX

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Pesticide Residue Analysis

Fraction: Explosives

Since the recovery is high and no analytes are detected above the quantitation limit, the data is reported.

MS/MSD

Please note that US EPA Methods for organic compounds do not require action by the laboratory based on out-of-specification MS/MSD results.

Batch#: 161960014A (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457213-8457214, 8457216, 8469770-8469771, UNSPK: 8469770-8457191)
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: 1,3,5-Trinitrobenzene, 2,4,6-Trinitrotoluene, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, 2-Nitrotoluene, 3-Nitrotoluene, 4-Nitrotoluene, Nitrobenzene, Tetryl
Refer to the QC Summary forms for more information.

Surrogate

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

Batch#: 161960014A (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457213-8457214, 8457216, 8469770-8469771, UNSPK: 8469770-8457191)
The recovery(ies) for the following surrogate(s) exceeds the acceptance window: 3,4-Dinitrotoluene (LCS196Q)

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

(Sample number(s): 8457203: Analysis: 13413)
The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.
This sample was used for the ISM triplicate. The individual %RSD is included in the data package for review.

(Sample number(s): 8457207, 8457211, 8457213-8457214, 8457216, 8469770-8469771: Analysis: 13413)
The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.
The response for a target analyte(s) in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Pesticide Residue Analysis

Fraction: Explosives

(Sample number(s): 8457191, 8457195, 8457199: Analysis: 13413)
The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Explosives

eurofins | Lancaster Laboratories Environmental

Quality Control Reference List
Pesticide Residue Analysis

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Fraction: Explosives

Analysis	Batch Number	Sample Number	Analysis Date
Nitroaromatics/Amines 8330B(s)	161960014A	PBLK14196	08/20/2016 05:49:00
		LCS196Q	08/17/2016 09:55:00
		8457191 UNSPK	08/20/2016 07:14:00
		8457195	08/20/2016 07:57:00
		8457199	08/20/2016 08:39:00
		8457203	08/20/2016 09:21:00
		8457207	08/20/2016 12:11:00
		8457211	08/20/2016 12:54:00
		8457213	08/20/2016 13:36:00
		8457214	08/20/2016 14:19:00
		8457216	08/20/2016 15:01:00
		8469770 MS	08/20/2016 15:44:00
		8469771 MSD	08/20/2016 16:26:00

Fraction: Explosives

13413: Nitroaromatics/Amines 8330B(s) Analyte Name	Default MDL	Default LOQ	Units
HMX	210	300	ug/kg
Nitroglycerin	800	2,400	ug/kg
PETN	800	2,400	ug/kg
RDX	40	120	ug/kg
1,3,5-Trinitrobenzene	40	120	ug/kg
Tetryl	100	300	ug/kg
1,3-Dinitrobenzene	40	120	ug/kg
2,4,6-Trinitrotoluene	44	120	ug/kg
Nitrobenzene	100	300	ug/kg
4-Amino-2,6-Dinitrotoluene	41	120	ug/kg
2-Amino-4,6-Dinitrotoluene	41	120	ug/kg
2,6-Dinitrotoluene	110	120	ug/kg
2,4-Dinitrotoluene	40	120	ug/kg
2-Nitrotoluene	75	120	ug/kg
4-Nitrotoluene	110	120	ug/kg
3-Nitrotoluene	110	120	ug/kg

Quality Control Summary
Method Blank
Pesticide Residue Analysis
SDG: DWD93
Matrix: SOLID

Fraction: Explosives

161960014A / PBLK14196 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
HMX	08/20/16	N.D.	ug/kg	210	300
Nitroglycerin	08/20/16	N.D.	ug/kg	800	2400
PETN	08/20/16	N.D.	ug/kg	800	2400
RDX	08/20/16	N.D.	ug/kg	40	120
1,3,5-Trinitrobenzene	08/20/16	N.D.	ug/kg	40	120
Tetryl	08/20/16	N.D.	ug/kg	100	300
1,3-Dinitrobenzene	08/20/16	N.D.	ug/kg	40	120
2,4,6-Trinitrotoluene	08/20/16	N.D.	ug/kg	44	120
4-Amino-2,6-Dinitrotoluene	08/20/16	N.D.	ug/kg	41	120
2-Amino-4,6-Dinitrotoluene	08/20/16	N.D.	ug/kg	41	120
2,4-Dinitrotoluene	08/20/16	N.D.	ug/kg	40	120
2,6-Dinitrotoluene	08/20/16	N.D.	ug/kg	110	120
Nitrobenzene	08/20/16	N.D.	ug/kg	100	300
2-Nitrotoluene	08/20/16	N.D.	ug/kg	75	120
3-Nitrotoluene	08/20/16	N.D.	ug/kg	110	120
4-Nitrotoluene	08/20/16	N.D.	ug/kg	110	120

Quality Control Summary
Surrogates
Pesticide Residue Analysis
SDG: DWD93
Matrix: SOLID

Fraction: Explosives

161960014A	3,4-Dinitrotoluene	
	Spike Added	1000 ug/kg
Sample	% Recovery	Limits
PBLK14196	77	62 - 133
LCS196Q	195 *	62 - 133
8457191 UNSPK	99	62 - 133
8457195	86	62 - 133
8457199	82	62 - 133
8457203	81	62 - 133
8457207	85	62 - 133
8457211	100	62 - 133
8457213	81	62 - 133
8457214	81	62 - 133
8457216	121	62 - 133
8469770 MS	128	62 - 133
8469771 MSD	107	62 - 133

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

Pesticide Residue Analysis

Fraction: Explosives

UNSPK: 8457191 MS: 8469770 MSD: 8469771 **Analyte**	Batch: **161960014A** (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457213-8457214, 8457216, 8469770-8469771)								
	Spike Added ug/kg MS/MSD	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
HMX	1930 / 1940	N.D.	2434.22	2300.13	126	119	29-148	6	50
Nitroglycerin	19400	N.D.	10872.22	10856.52	56	56	45-137	0	50
PETN	19500	N.D.	13735.35	13998.16	70	72	36-143	2	50
RDX	1930 / 1940	N.D.	1509.7	1415.93	78	73	45-145	6	50
1,3,5-Trinitrobenzene	1940	N.D.	333.97	359.69	17 *	19 *	48-141	7	50
Tetryl	1950	N.D.	511.15	541.62	26 *	28 *	38-152	6	50
1,3-Dinitrobenzene	1940	N.D.	1818.14	1797.68	94	93	54-140	1	50
2,4,6-Trinitrotoluene	1940 / 1950	N.D.	629.41	665.93	32 *	34 *	47-140	6	50
2,4-Dinitrotoluene	1940	N.D.	698.05	662.18	36 *	34 *	52-137	5	50
2,6-Dinitrotoluene	1940 / 1950	N.D.	3122.31	3166.23	161 *	162 *	51-138	1	50
2-Amino-4,6-Dinitrotoluene	1940	N.D.	1985.87	1928.24	102	99	43-141	3	50
2-Nitrotoluene	1940	N.D.	938.21	981.44	48 *	51 *	57-135	5	50
3-Nitrotoluene	1940	N.D.	1038.99	1034.57	54 *	53 *	57-135	0	50
4-Amino-2,6-Dinitrotoluene	1930	N.D.	2313.13	2232.68	120	116	42-138	4	50
4-Nitrotoluene	1940 / 1950	N.D.	3058.3	3239.62	158 *	166 *	53-133	6	50
Nitrobenzene	1940	N.D.	954.47	902.81	49 *	47 *	64-138	6	50

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD93
Matrix: SOLID

Pesticide Residue Analysis

Fraction: Explosives

LCS: LCS196Q	Batch: **161960014A** (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457213-8457214, 8457216, 8469770-8469771)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
HMX	1953	2519.25	NA	129	NA	29-148	NA	NA
Nitroglycerin	9766	7034.87	NA	72	NA	45-137	NA	NA
PETN	9766	7621.5	NA	78	NA	36-143	NA	NA
RDX	1953	6013.57	NA	308 *	NA	45-145	NA	NA
1,3,5-Trinitrobenzene	1953	1720.72	NA	88	NA	48-141	NA	NA
Tetryl	1953	945.07	NA	48	NA	38-152	NA	NA
1,3-Dinitrobenzene	1953	3490.42	NA	179 *	NA	54-140	NA	NA
2,4,6-Trinitrotoluene	1953	1361.01	NA	70	NA	47-140	NA	NA
2,4-Dinitrotoluene	1953	1416.97	NA	73	NA	52-137	NA	NA
2,6-Dinitrotoluene	1953	6442.47	NA	330 *	NA	51-138	NA	NA
2-Amino-4,6-Dinitrotoluene	1953	3312.22	NA	170 *	NA	43-141	NA	NA
2-Nitrotoluene	1953	1550.87	NA	79	NA	57-135	NA	NA
3-Nitrotoluene	1953	1641.22	NA	84	NA	57-135	NA	NA
4-Amino-2,6-Dinitrotoluene	1953	6975.87	NA	357 *	NA	42-138	NA	NA
4-Nitrotoluene	1953	4117.11	NA	211 *	NA	53-133	NA	NA
Nitrobenzene	1953	1558.64	NA	80	NA	64-138	NA	NA

Triplicate summary form

Sample #	8457203	8457203DUP	8457203Trip			
compound	result (ug/kg) trial1	result (ug/kg) trial2	result (ug/kg) trial3	AVERAGE	std dev	%rsd
4-AM-2,6-DNT	0	0	0	0	0	#DIV/0!
2-AM-4,6-DNT	0	0	0	0	0	#DIV/0!
1,3-DNB	0	0	0	0	0	#DIV/0!
2,4-DNT	0	0	0	0	0	#DIV/0!
2,6-DNT	0	0	0	0	0	#DIV/0!
HMX	0	0	0	0	0	#DIV/0!
Nitrobenzene	0	0	0	0	0	#DIV/0!
2-NT	0	0	0	0	0	#DIV/0!
3-NT	0	0	0	0	0	#DIV/0!
4-NT	0	0	0	0	0	#DIV/0!
RDX	0	0	0	0	0	#DIV/0!
1,3,5-TNB	0	0	0	0	0	#DIV/0!
2,4,6-TNT	0	0	0	0	0	#DIV/0!
Nitroglycerin	0	0	0	0	0	#DIV/0!
PETN	0	0	0	0	0	#DIV/0!
Tetryl	0	0	0	0	0	#DIV/0!
3,5-DNA	0	0	0	0	0	#DIV/0!

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621101

GC Column (1) : CHROMPACK ID: 100 (mm) Update File:

Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT (3) Level 3 RT	RT WINDOW FROM	TO
RDX	4.37	4.38	4.34	4.35	4.37	4.37	4.27	4.47
1,3,5-Trinitrobenzene	5.08	5.08	5.03	5.06	5.06	5.06	4.96	5.16
1,3-DNB	7.38	7.39	7.28	7.18	7.39	7.39	7.29	7.49
3,5-Dinitroaniline	7.76	7.78	7.66	7.40	7.52	7.52	7.19	7.86
Nitrobenzene	8.26	8.27	8.12	7.95	8.19	8.19	8.05	8.33
Tetryl	8.26	8.27	8.12	7.95	8.19	8.19	8.05	8.33
2,4,6-Trinitrotoluene	8.81	8.82	8.67	8.51	8.75	8.75	8.65	8.85
Tetryl breakdown	10.45	10.00	9.80	9.61	9.85	9.85	9.73	9.97
4-Amino-2,6-dinitrotoluene	10.72	10.75	10.53	10.47	10.79	10.79	10.65	10.94
2-Amino-4,6-dinitrotoluene	11.25	11.28	11.12	10.73	11.15	11.15	11.00	11.29
3,4-Dinitrotoluene	11.25	11.28	11.12	10.73	11.15	11.15	10.91	11.39
2,6-Dinitrotoluene	12.03	12.08	11.94	11.50	12.06	12.06	11.92	12.20
2,4-Dinitrotoluene	12.79	12.82	12.67	12.25	12.80	12.80	12.66	12.94
2-Nitrotoluene	14.65	14.71	14.18	14.07	14.68	14.68	14.54	14.82
4-Nitrotoluene	16.28	16.24	15.74	15.63	16.26	16.26	16.09	16.42
3-Nitrotoluene	17.05	17.06	16.54	16.43	17.08	17.08	16.92	17.24

(3) Jessica L. Miller
Senior Chemist

JUL 3 1 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621101

GC Column (1) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	%RSD
RDX	1.51E+02	9.26E+01	8.77E+01	8.83E+01	8.78E+01	1.02E+02	27
1,3,5-Trinitrobenzene	2.05E+02	1.88E+02	1.94E+02	1.99E+02	1.97E+02	1.96E+02	3
1,3-DNB	2.91E+02	2.50E+02	2.54E+02	2.41E+02	1.64E+02	2.40E+02	19
3,5-Dinitroaniline	2.68E+02	2.24E+02	2.25E+02	2.69E+02	2.32E+02	2.44E+02	9
Nitrobenzene	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15
Tetryl	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15
2,4,6-Trinitrotoluene	2.55E+02	1.98E+02	2.02E+02	2.13E+02	2.02E+02	2.14E+02	11
Tetryl breakdown	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15
4-Amino-2,6-dinitrotoluene	1.57E+02	1.29E+02	1.24E+02	1.24E+02	8.77E+01	1.24E+02	20
2-Amino-4,6-dinitrotoluene	3.92E+02	3.09E+02	3.29E+02	3.01E+02	3.26E+02	3.31E+02	11
3,4-Dinitrotoluene	3.89E+02	3.07E+02	3.27E+02	2.99E+02	3.24E+02	3.29E+02	11
2,6-Dinitrotoluene	2.01E+02	1.39E+02	1.34E+02	1.29E+02	1.24E+02	1.45E+02	22
2,4-Dinitrotoluene	3.50E+02	2.69E+02	2.85E+02	2.53E+02	2.56E+02	2.83E+02	14
2-Nitrotoluene	1.97E+02	1.24E+02	1.13E+02	1.14E+02	1.12E+02	1.32E+02	28
4-Nitrotoluene	1.34E+02	9.88E+01	9.34E+01	9.37E+01	9.09E+01	1.02E+02	18
3-Nitrotoluene	1.66E+02	1.22E+02	1.26E+02	1.25E+02	1.24E+02	1.33E+02	14

Average % RSD: 16

JUL 3 1 2016

File Name: V:\CP12\12eexp1621101.CAL
Version: 74

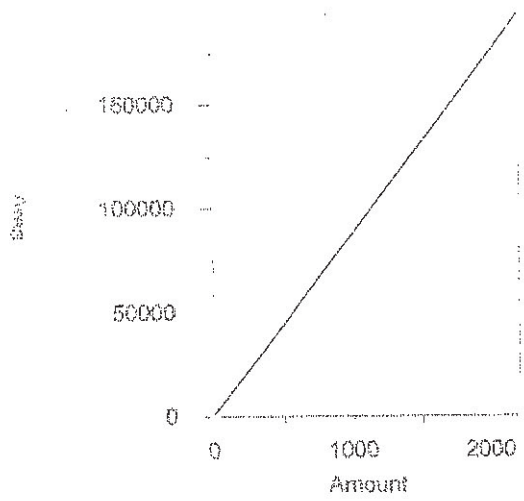
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 RDX



Expected retention time: 4.371 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

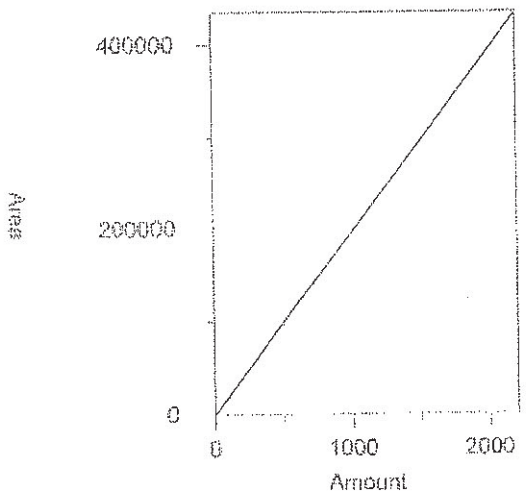
Single peak quantification by area

$Y = 87.2768\ X + 860.4011$

Linear fit with equal weighting
Coefficient of determination: 0.9999437
Average error: 5.910%
Average CF: 101.5227
RSD: 27.484%

Level	Amount	Response	Cal Factor	Error, %	Source	Dat
1	25.1	3797.655	151.301	24.470	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND	7/3
2	100.4	9299.011	92.61963	-3.367	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND	7/3
3	502	44005.84	87.66103	-1.494	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND	7/3
4	1004	88628.66	88.27555	0.161	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND	7/3
5	2008	176214.8	87.75637	0.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND	7/3

2 1,3,5-TNB



Expected retention time: 5.055 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

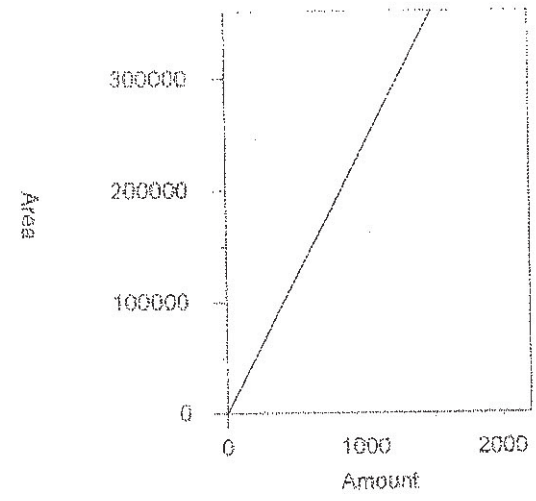
Single peak quantification by area

Y = 196.4074 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9999138
Average error: 2.287%
Average CF: 196.4074
RSD: 3.199%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5135.729	204.8147	4.281	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	18825.87	187.6956	-4.436	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	97235.12	193.8886	-1.282	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	199124.8	198.5292	1.080	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	395400.6	197.109	0.357	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

3 1,3-DNB



Expected retention time: 7.389 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

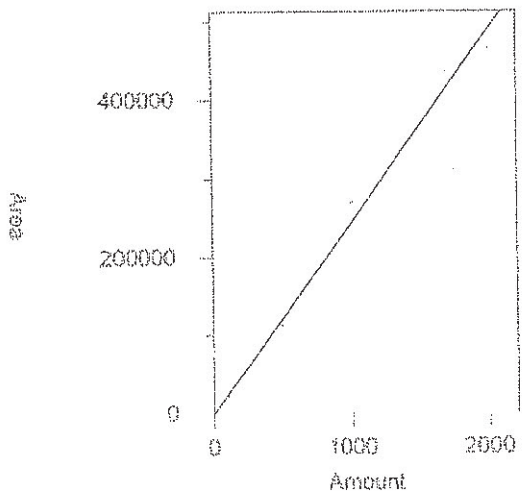
Single peak quantification by area

Y = 239.9322 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.6936649
Average error: 12.712%
Average CF: 239.9322
RSD: 19.431%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	7278.833	290.5722	21.106	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.2	25099.51	250.4941	4.402	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501	127354.2	254.2	5.947	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1002	241194.4	240.713	0.325	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2004	328018	163.6816	-31.780	Manual

4 3,5-dinitroaniline



Expected retention time: 7.524 minutes
Search window: 0.339 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

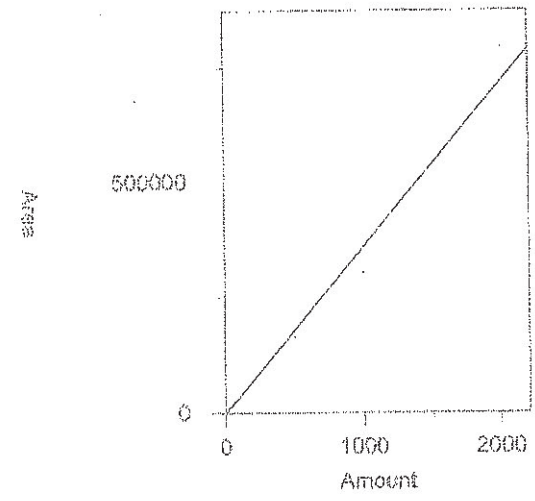
Single peak quantification by area

Y = 243.6005 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9915071
Average error: 8.231%
Average CF: 243.6005
RSD: 9.493%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	6729.358	268.1019	10.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	22465	223.755	-8.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	112746.7	224.595	-7.802	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	270302	269.2251	10.519	Manual
5	2008	466510	232.3257	-4.628	Manual

5 Nitrobenzene



Expected retention time: 8.186 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

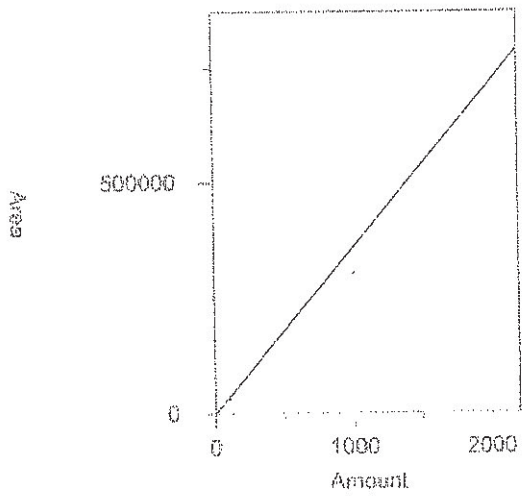
Single peak quantification by area

Y = 357.7505 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 357.7505
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	10846	432.5424	20.906	Manual	7/31/2016 1:44:38 PM
2	100.3	33073	329.7408	-7.829	Manual	7/31/2016 12:56:30 PM
3	501.5	164995	329.003	-8.036	Manual	7/31/2016 1:02:59 PM
4	1003	302870	301.9641	-15.594	Manual	7/31/2016 1:15:46 PM
5	2006	793378	395.5025	10.553	Manual	7/31/2016 2:08:12 PM

6 Tetryl



Expected retention time: 8.187 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

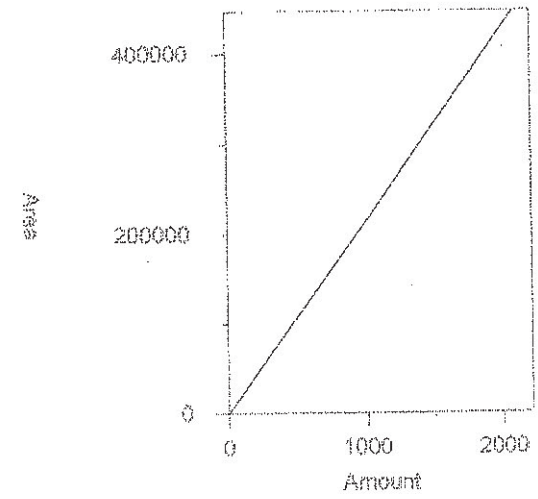
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:40 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:33 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:04 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:50 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:14 PM

7 2,4,6-TNT



Expected retention time: 8.747 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

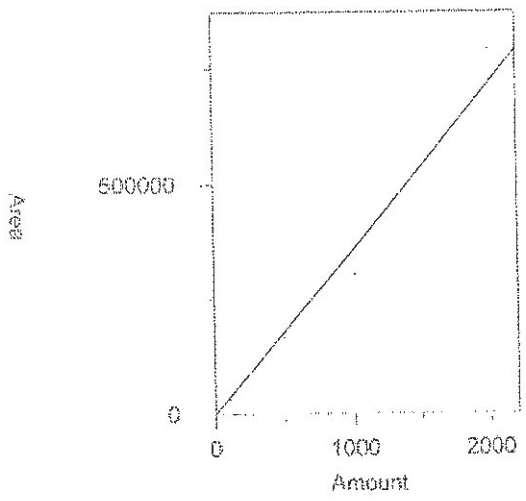
Single peak quantification by area

Y = 214.0261 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9945887
Average error: 7.605%
Average CF: 214.0261
RSD: 10.933%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	6399.85	254.7204	19.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	19912.04	198.1297	-7.427	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	101539.5	202.0686	-5.587	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	213954.5	212.89	-0.531	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	406666.3	202.3215	-5.469	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

8 Tetryl breakdown



Expected retention time: 9.85 minutes
Search window: 0.121 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

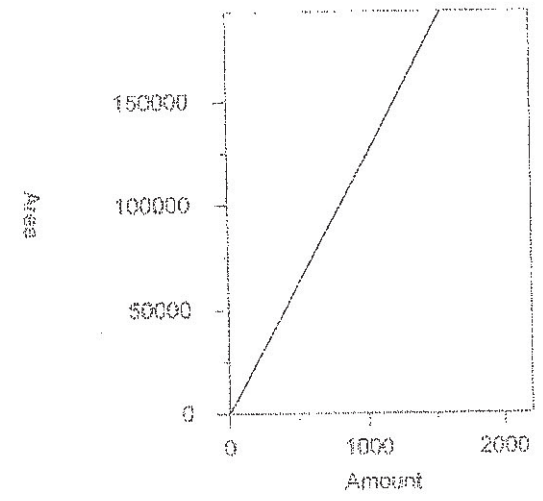
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:44 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:41 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:09 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:57 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:16 PM

9 4-Am-2,6-DNT



Expected retention time: 10.794 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

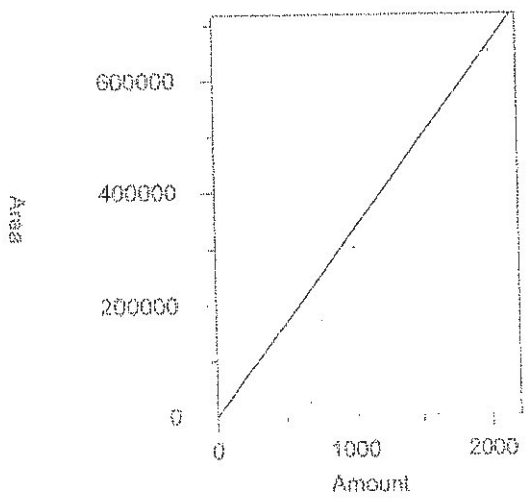
Single peak quantification by area

Y = 124.411 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.7492826
Average error: 12.083%
Average CF: 124.411
RSD: 19.915%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	3946	157.3679	26.490	Manual
2	100.3	12938.61	128.9991	3.688	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	62410.41	124.4475	0.029	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	123909	123.5384	-0.701	Manual
5	2006	175931	87.70239	-29.506	Manual

10 2-Am-4,6-DNT



Expected retention time: 11.146 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

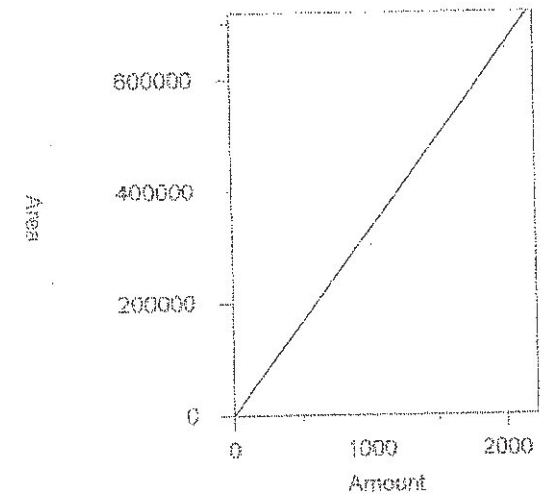
Single peak quantification by area

Y = 331.455 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 331.455
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	9800	391.6084	18.148	Manual
2	100.1	30903.33	308.7246	-6.858	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	164855.9	329.3824	-0.625	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	301678	301.3766	-9.075	Manual
5	2002	653018	326.1828	-1.591	Manual

11 3,4-Dinitrotoluene



Expected retention time: 11.147 minutes
Search window: 0.242 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

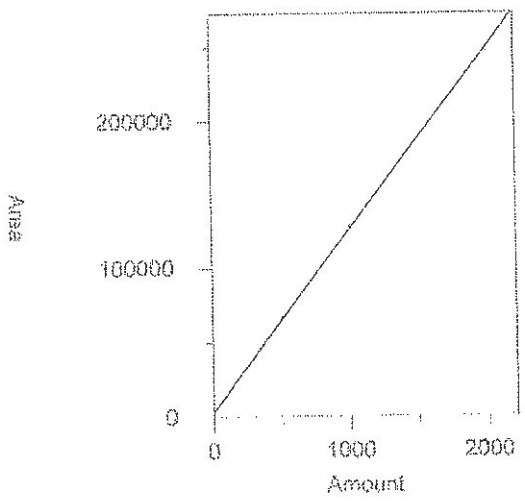
Single peak quantification by area

Y = 329.1532 X + 0

Average CF fit witb equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 329.1532
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.2	9800	388.8889	18.148	Manual	7/31/2016 2:12:02 PM
2	100.8	30903.33	306.5807	-6.858	Manual	7/31/2016 2:04:36 PM
3	504	164855.9	327.0951	-0.625	Manual	7/31/2016 2:04:39 PM
4	1008	301678	299.2837	-9.075	Manual	7/31/2016 2:09:50 PM
5	2016	653018	323.9177	-1.591	Manual	7/31/2016 2:08:35 PM

12 2,6-DNT



Expected retention time: 12.062 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

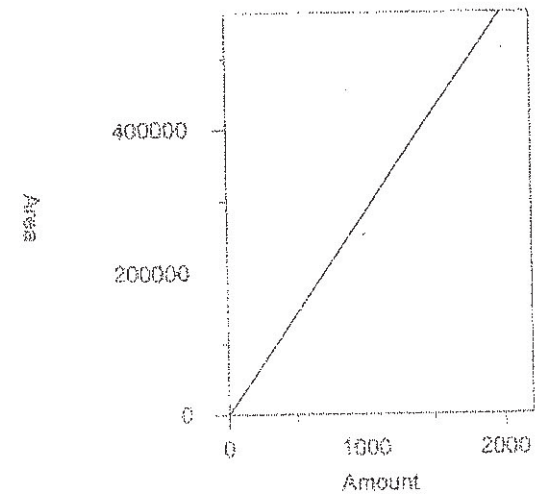
Single peak quantification by area

Y = 122.7019 X + 3330.402

Linear fit with equal weighting
Coefficient of determination: 0.9995252
Average error: 7.593%
Average CF: 145.3016
RSD: 21.987%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5052.243	201.4853	-21.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	13962.72	139.2096	-10.709	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	67079.15	133.757	3.413	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	128937.6	128.5519	2.007	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	247749	123.504	-0.690	Manual

13 2,4-DNT



Expected retention time: 12.798 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

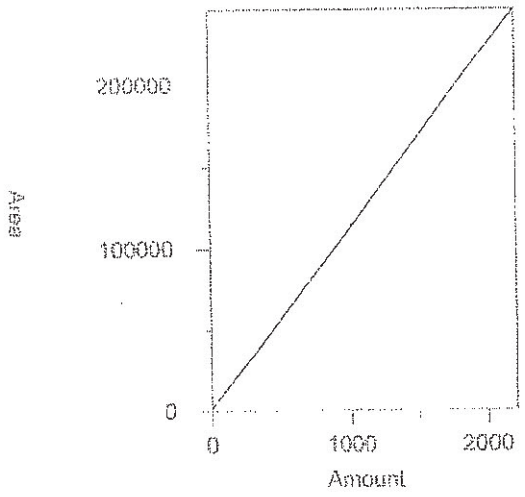
Single peak quantification by area

Y = 282.5082 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9784554
Average error: 9.870%
Average CF: 282.5082
RSD: 14.055%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	8756.587	349.9136	23.860	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	26893.81	268.6694	-4.899	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	142549.9	284.815	0.817	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	253228.9	252.9759	-10.454	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	512846.5	256.1671	-9.324	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

14 2-NT



Expected retention time: 14.682 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

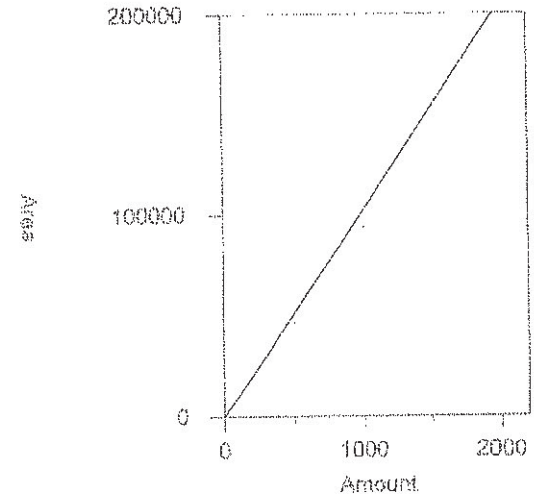
Single peak quantification by area

Y = 110.8549 X + 1788.915

Linear fit with equal weighting
Coefficient of determination: 0.999931
Average error: 2.804%
Average CF: 131.8325
RSD: 27.773%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	4943.087	196.7398	8.066	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	12460.69	123.987	-3.628	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	56837.48	113.1094	-1.141	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	114344.8	113.7759	1.013	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	224216.7	111.5506	-0.174	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

15 4-NT



Expected retention time: 16.256 minutes
Search window: 0.162 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

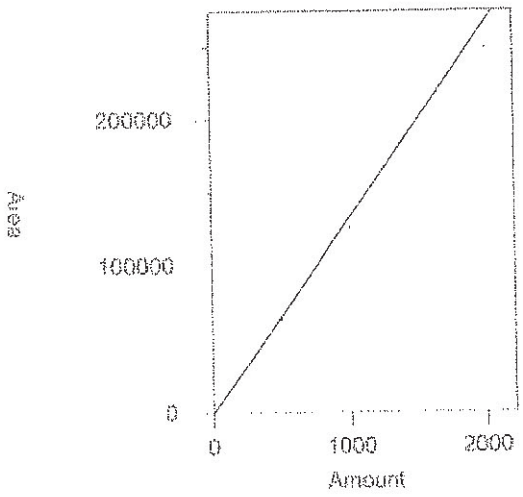
Single peak quantification by area

Y = 102.163 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9720693
Average error: 12.509%
Average CF: 102.163
RSD: 17.707%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	3356.179	134.1131	31.274	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	9887.746	98.77869	-3.313	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	46749.97	93.40653	-8.571	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	93749.27	93.65562	-8.327	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	181903.8	90.86104	-11.063	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

16 3-NT



Expected retention time:	17.078 minutes
Search window:	0.162 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 132.7551\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9910454
Average error:	10.013%
Average CF:	132.7551
RSD:	14.037%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4166.31	165.9884	25.034	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	12271.74	122.2285	-7.929	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	63316.97	126.1294	-4.991	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	125734.3	125.2334	-5.666	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2008	249384.6	124.1955	-6.448	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories
Contract:
Lab Code: Case No.: SAS No.: SDG No.:
Instrument: X6329B
Calibration File: 12EEXP1621101B
GC Column (2) : CHROMPACK ID: 100 (mm)
Update File:
Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	~~MIDPOINT~~ levels RT	RT WINDOW FROM	TO
HMX	2.73	2.71	2.71	2.70	2.70	2.70	2.60	2.80
Nitroglycerin	9.49	9.51	9.35	9.21	9.47	9.47	9.28	9.66
3,4-Dinitrotoluene	11.38	11.41	11.25	10.85	11.27	11.27	10.98	11.55
PETN	18.12	18.11	17.55	17.46	18.14	18.14	17.86	18.43

Jessica L. Miller
Senior Chemist

JUL 3 1 2016

6E
INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621101B

GC Column (2) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	2.23E+03	1.12E+03	8.95E+02	8.46E+02	8.22E+02	1.18E+03	51
Nitroglycerin	3.08E+02	2.75E+02	2.99E+02	2.75E+02	2.83E+02	2.88E+02	5
3,4-Dinitrotoluene	2.16E+03	2.09E+03	2.23E+03	2.30E+03	2.50E+03	2.26E+03	7
PETN	2.50E+02	2.73E+02	3.10E+02	2.56E+02	2.58E+02	2.70E+02	9
					Average % RSD:		18

linear

JUL 3 1 2016

File Name: V:\CP12\12eexp1621101b.CAL
Version: 32

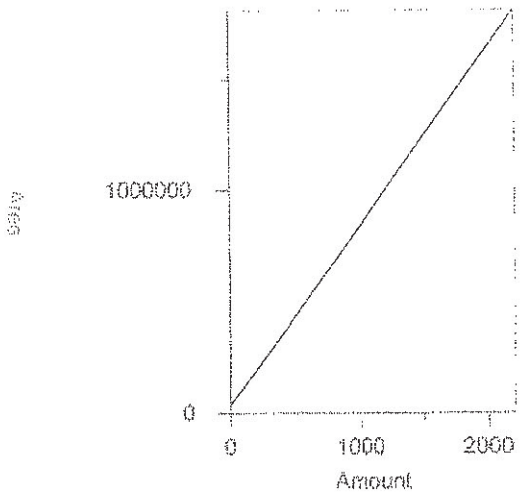
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 2.698 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

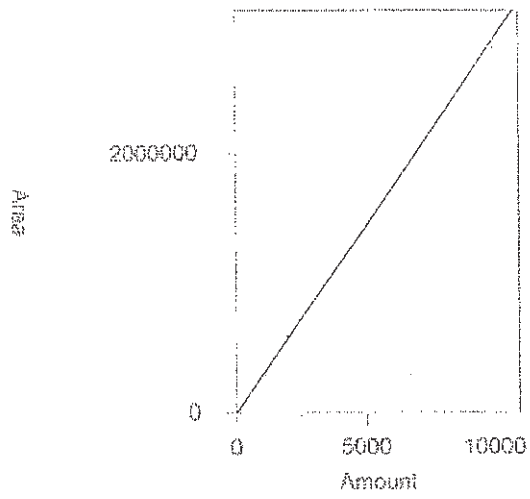
Single peak quantification by area

Y = 805.2766 X + 37388.52

Linear fit with equal weighting
Coefficient of determination: 0.9999336
Average error: 2.045%
Average CF: 1182.899
RSD: 50.515%

Level	Amount	Response	Cal Factor	Error, %	Source	D
1	25.015	55800.27	2230.672	-3.011	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND	7/
2	100.06	112141	1120.738	-4.937	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND	7/
3	500.3	447552.8	894.5689	1.655	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND	7/
4	1000.6	846707.3	846.1996	0.422	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0007.BND	7/
5	2001.2	1645620	822.3167	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0008.BND	7/

2 Nitroglycerin



Expected retention time: 9.466 minutes
Search window: 0.19 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

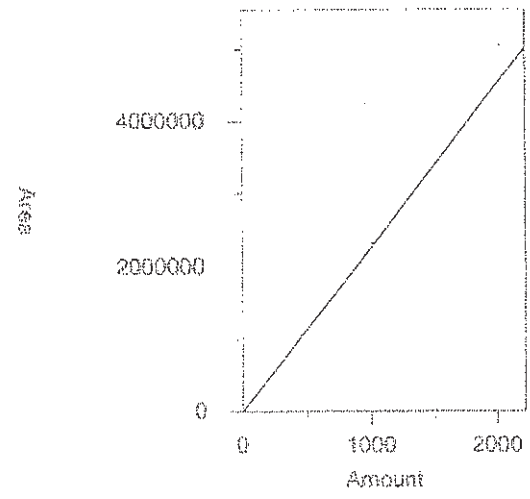
Single peak quantification by area

Y = 287.855 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9984417
Average error: 4.349%
Average CF: 287.855
RSD: 5.225%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	149840.5	308.4725	7.162	Manual	7/31/2016 2:13:36 PM
2	1063.86	292352.8	274.8038	-4.534	Manual	7/31/2016 2:13:45 PM
3	1947.18	581299.4	298.534	3.710	Manual	7/31/2016 2:13:49 PM
4	4857.82	1335512	274.92	-4.494	Manual	7/31/2016 2:13:56 PM
5	9956.51	2813161	282.5449	-1.845	Manual	7/31/2016 2:14:00 PM

3 3,4-Dinitrotoluene



Expected retention time: 11.266 minutes
Search window: 0.286 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

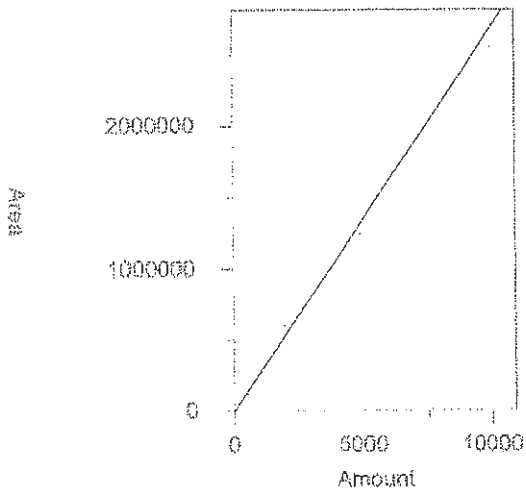
Single peak quantification by area

Y = 2258.673 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9853915
Average error: 5.118%
Average CF: 2258.673
RSD: 7.001%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	54453.62	2160.858	-4.331	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND
2	100.8	210800.4	2091.274	-7.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND
3	504	1126383	2234.887	-1.053	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND
4	1008	2321369	2302.946	1.960	Manual
5	2016	5046855	2503.4	10.835	Manual

4 PETN



Expected retention time:	18.141 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 269.6573\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9940489
Average error:	6.588%
Average CF:	269.6573
RSD:	9.016%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	121312.6	250.289	-7.183	Manual	7/31/2016 2:14:24 PM
2	1061.44	290126.8	273.3332	1.363	Manual	7/31/2016 2:14:29 PM
3	1942.16	602831.4	310.3922	15.106	Manual	7/31/2016 2:14:32 PM
4	4845.76	1240206	255.9363	-5.088	Manual	7/31/2016 2:14:37 PM
5	9931.88	2565758	258.3356	-4.199	Manual	7/31/2016 2:14:44 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621109

GC Column (1): CHROMPACK ID: 100 (mm) Update File: 12EEXP16211009.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
RDX			4.12			4.12	4.02	4.22
1,3,5-Trinitrobenzene			4.78			4.78	4.68	4.88
1,3-DNB			6.93			6.93	6.83	7.03
3,5-Dinitroaniline			7.29			7.29	6.96	7.63
Nitrobenzene			7.77			7.77	7.63	7.91
Tetryl			7.77			7.77	7.63	7.91
2,4,6-Trinitrotoluene			8.28			8.28	8.18	8.38
Tetryl breakdown			9.35			9.35	9.22	9.47
4-Amino-2,6-dinitrotoluene			10.12			10.12	9.98	10.26
2-Amino-4,6-dinitrotoluene			10.62			10.62	10.48	10.76
3,4-Dinitrotoluene			10.63			10.63	10.38	10.87
2,6-Dinitrotoluene			11.37			11.37	11.23	11.52
2,4-Dinitrotoluene			12.05			12.05	11.91	12.19
2-Nitrotoluene			13.87			13.87	13.73	14.02
4-Nitrotoluene			15.37			15.37	15.20	15.53
3-Nitrotoluene			16.13			16.13	15.97	16.30

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RT Update

File used: 12EEXP16211009.0030

Applies to: 12EEXP16211009.0001 →

James H. Place
Senior Chemist

AUG 23 2016

Audited By: Jessica L. Weiss
Senior Chemist

AUG 23 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621109

GC Column (1) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS						%RSD	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN		
RDX	1.51E+02	9.26E+01	8.77E+01	8.83E+01	8.78E+01	1.02E+02	27	Linear
1,3,5-Trinitrobenzene	2.05E+02	1.88E+02	1.94E+02	1.99E+02	1.97E+02	1.96E+02	3	
1,3-DNB	2.91E+02	2.50E+02	2.54E+02	2.41E+02	1.64E+02	2.40E+02	19	
3,5-Dinitroaniline	2.68E+02	2.24E+02	2.25E+02	2.69E+02	2.32E+02	2.44E+02	9	
Nitrobenzene	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
Tetryl	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
2,4,6-Trinitrotoluene	2.55E+02	1.98E+02	2.02E+02	2.13E+02	2.02E+02	2.14E+02	11	
Tetryl breakdown	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
4-Amino-2,6-dinitrotoluene	1.57E+02	1.29E+02	1.24E+02	1.24E+02	8.77E+01	1.24E+02	20	
2-Amino-4,6-dinitrotoluene	3.92E+02	3.09E+02	3.29E+02	3.01E+02	3.26E+02	3.31E+02	11	
3,4-Dinitrotoluene	3.89E+02	3.07E+02	3.27E+02	2.99E+02	3.24E+02	3.29E+02	11	
2,6-Dinitrotoluene	2.01E+02	1.39E+02	1.34E+02	1.29E+02	1.24E+02	1.45E+02	22	Linear
2,4-Dinitrotoluene	3.50E+02	2.69E+02	2.85E+02	2.53E+02	2.56E+02	2.83E+02	14	
2-Nitrotoluene	1.97E+02	1.24E+02	1.13E+02	1.14E+02	1.12E+02	1.32E+02	28	Linear
4-Nitrotoluene	1.34E+02	9.88E+01	9.34E+01	9.37E+01	9.09E+01	1.02E+02	18	
3-Nitrotoluene	1.66E+02	1.22E+02	1.26E+02	1.25E+02	1.24E+02	1.33E+02	14	

Coelute

Average % RSD: 16

James H. Place
Senior Chemist

AUG 2 3 2016

File Name: V:\CP12\12eexp1621109.CAL
Version: 1

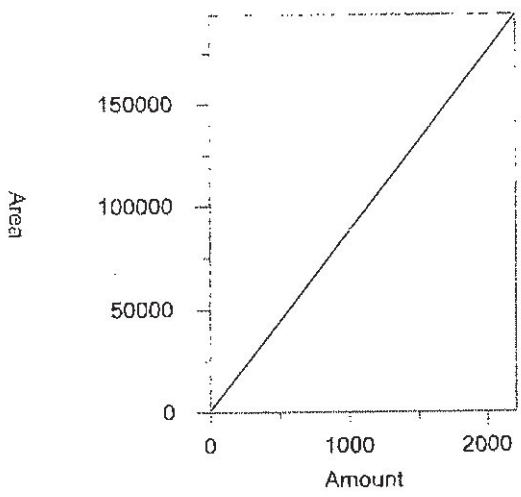
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 RDX



Expected retention time: 4.118 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

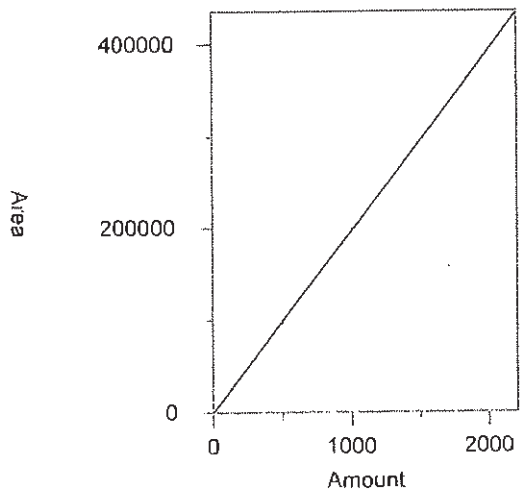
Single peak quantification by area

$Y = 87.2768\ X + 860.4011$

Linear fit with equal weighting
Coefficient of determination: 0.9999437
Average error: 5.910%
Average CF: 101.5227
RSD: 27.484%

Level	Amount	Response	Cal Factor	Error, %	Source	Dat
1	25.1	3797.655	151.301	24.470	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND	7/3
2	100.4	9299.011	92.61963	-3.367	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND	7/3
3	502	44005.84	87.66103	-1.494	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND	7/3
4	1004	88628.66	88.27555	0.161	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND	7/3
5	2008	176214.8	87.75637	0.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND	7/3

2 1,3,5-TNB



Expected retention time: 4.781 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

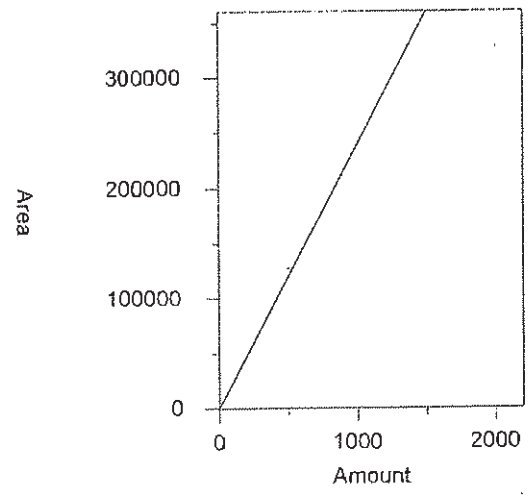
Single peak quantification by area

Y = 196.4074 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9999138
Average error: 2.287%
Average CF: 196.4074
RSD: 3.199%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5135.729	204.8147	4.281	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	18825.87	187.6956	-4.436	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	97235.12	193.8886	-1.282	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	199124.8	198.5292	1.080	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	395400.6	197.109	0.357	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

3 1,3-DNB



Expected retention time: 6.93 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

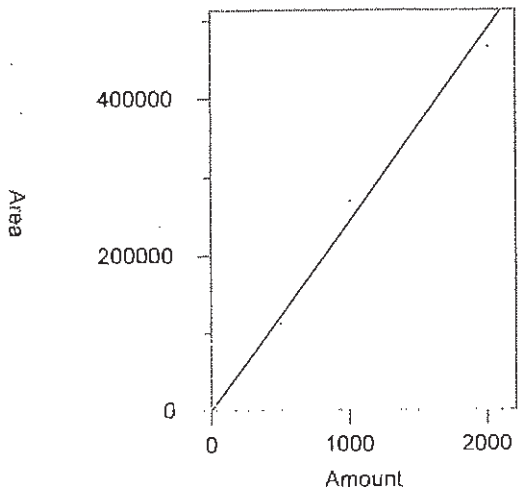
Single peak quantification by area

Y = 239.9322 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.6936649
Average error: 12.712%
Average CF: 239.9322
RSD: 19.431%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	7278.833	290.5722	21.106	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.2	25099.51	250.4941	4.402	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501	127354.2	254.2	5.947	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1002	241194.4	240.713	0.325	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2004	328018	163.6816	-31.780	Manual

4 3,5-dinitroaniline



Expected retention time: 7.294 minutes
Search window: 0.339 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

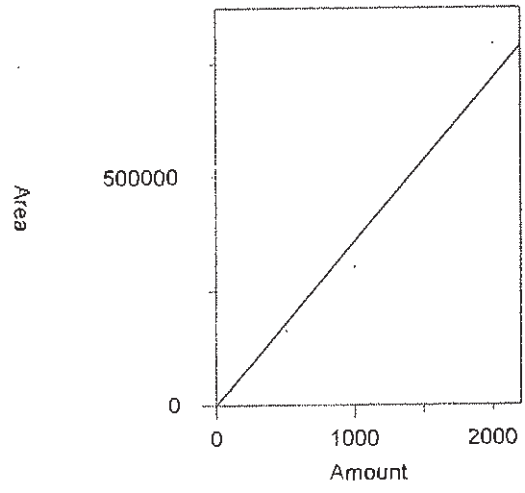
Single peak quantification by area

Y = 243.6005 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9915071
Average error: 8.231%
Average CF: 243.6005
RSD: 9.493%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	6729.358	268.1019	10.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	22465	223.755	-8.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	112746.7	224.595	-7.802	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	270302	269.2251	10.519	Manual
5	2008	466510	232.3257	-4.628	Manual

5 Tetryl



Expected retention time: 7.768 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

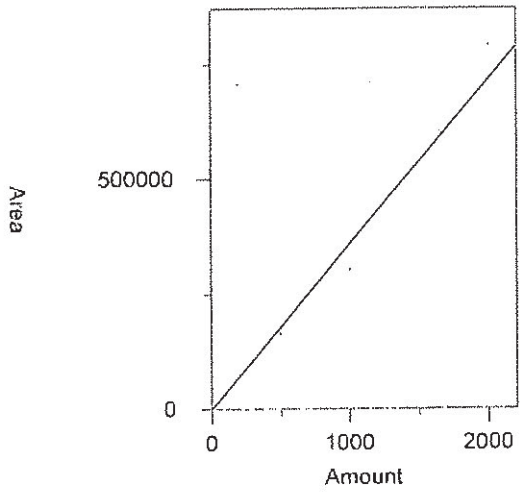
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:40 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:33 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:04 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:50 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:14 PM

6 Nitrobenzene



Expected retention time: 7.769 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

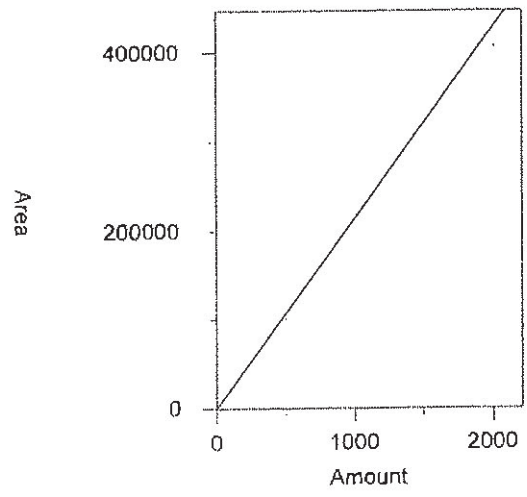
Single peak quantification by area

Y = 357.7505 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 357.7505
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	10846	432.5424	20.906	Manual	7/31/2016 1:44:38 PM
2	100.3	33073	329.7408	-7.829	Manual	7/31/2016 12:56:30 PM
3	501.5	164995	329.003	-8.036	Manual	7/31/2016 1:02:59 PM
4	1003	302870	301.9641	-15.594	Manual	7/31/2016 1:15:46 PM
5	2006	793378	395.5025	10.553	Manual	7/31/2016 2:08:12 PM

7 2,4,6-TNT



Expected retention time: 8.277 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

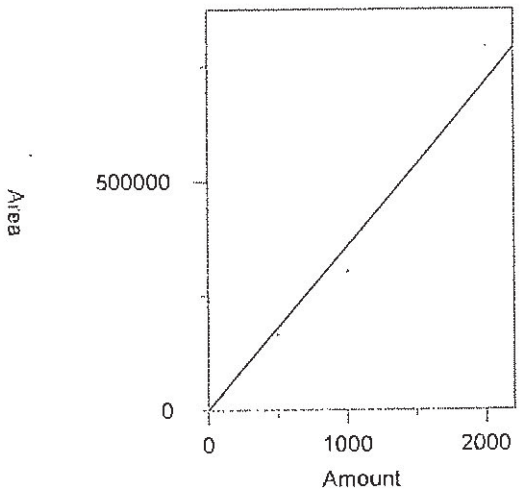
Single peak quantification by area

Y = 214.0261 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9945887
Average error: 7.605%
Average CF: 214.0261
RSD: 10.933%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	6399.85	254.7204	19.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	19912.04	198.1297	-7.427	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	101539.5	202.0686	-5.587	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	213954.5	212.89	-0.531	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	406666.3	202.3215	-5.469	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

8 Tetryl breakdown



Expected retention time: 9.345 minutes
Search window: 0.121 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

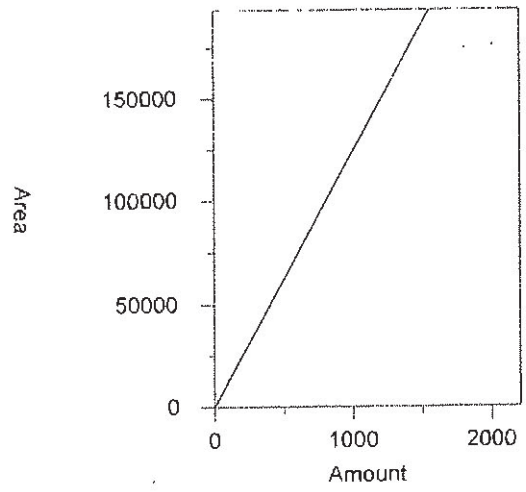
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:44 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:41 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:09 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:57 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:16 PM

9 4-Am-2,6-DNT



Expected retention time: 10.118 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

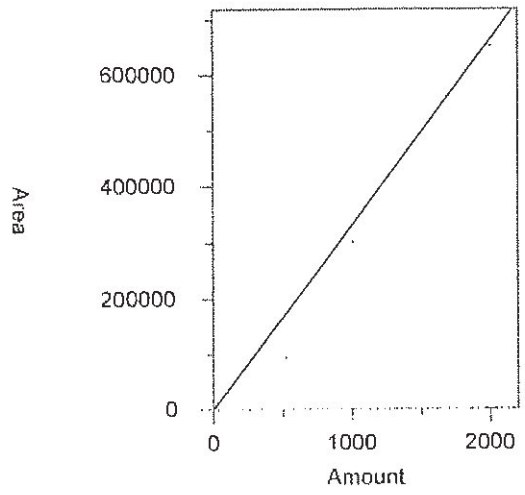
Single peak quantification by area

Y = 124.411 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.7492826
Average error: 12.083%
Average CF: 124.411
RSD: 19.915%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	3946	157.3679	26.490	Manual
2	100.3	12938.61	128.9991	3.688	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	62410.41	124.4475	0.029	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	123909	123.5384	-0.701	Manual
5	2006	175931	87.70239	-29.506	Manual

10 2-Am-4,6-DNT



Expected retention time: 10.62 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

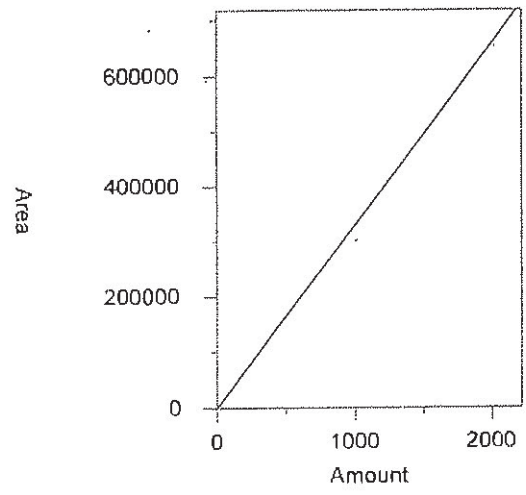
Single peak quantification by area

Y = 331.455 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 331.455
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	9800	391.6084	18.148	Manual
2	100.1	30903.33	308.7246	-6.858	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	164855.9	329.3824	-0.625	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	301678	301.3766	-9.075	Manual
5	2002	653018	326.1828	-1.591	Manual

11 3,4-Dinitrotoluene



Expected retention time: 10.625 minutes
Search window: 0.242 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

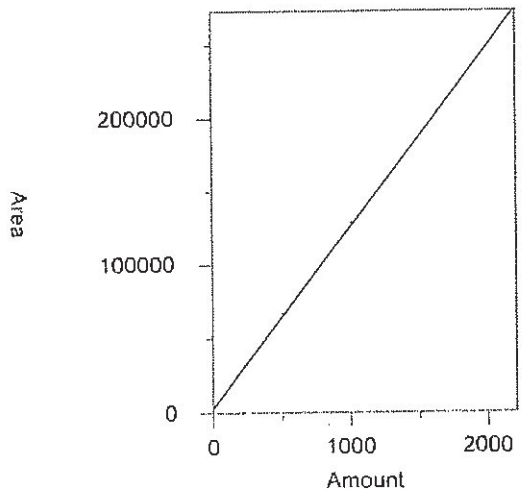
Single peak quantification by area

Y = 329.1532 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 329.1532
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.2	9800	388.8889	18.148	Manual	7/31/2016 2:12:02 PM
2	100.8	30903.33	306.5807	-6.858	Manual	7/31/2016 2:04:36 PM
3	504	164855.9	327.0951	-0.625	Manual	7/31/2016 2:04:39 PM
4	1008	301678	299.2837	-9.075	Manual	7/31/2016 2:09:50 PM
5	2016	653018	323.9177	-1.591	Manual	7/31/2016 2:08:35 PM

12 2,6-DNT



Expected retention time: 11.373 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

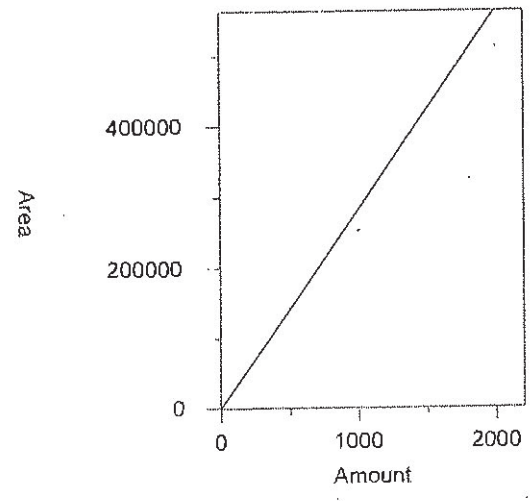
Single peak quantification by area

Y = 122.7019 X + 3330.402

Linear fit with equal weighting
Coefficient of determination: 0.9995252
Average error: 7.593%
Average CF: 145.3016
RSD: 21.987%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5052.243	201.4853	-21.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	13962.72	139.2096	-10.709	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	67079.15	133.757	3.413	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	128937.6	128.5519	2.007	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	247749	123.504	-0.690	Manual

13 2,4-DNT



Expected retention time: 12.052 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

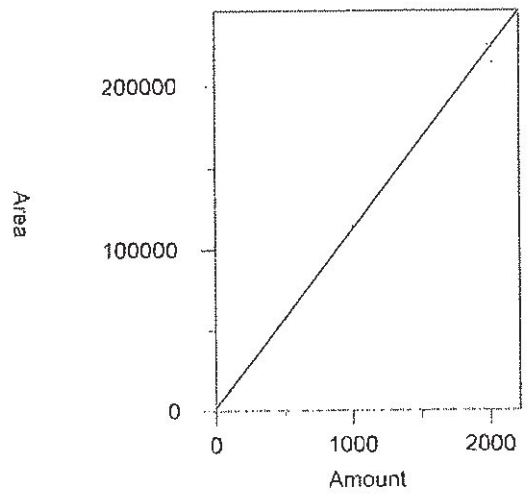
Single peak quantification by area

Y = 282.5082 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9784554
Average error: 9.870%
Average CF: 282.5082
RSD: 14.055%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	8756.587	349.9136	23.860	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	26893.81	268.6694	-4.899	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	142549.9	284.815	0.817	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	253228.9	252.9759	-10.454	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	512846.5	256.1671	-9.324	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

14 2-NT



Expected retention time: 13.874 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

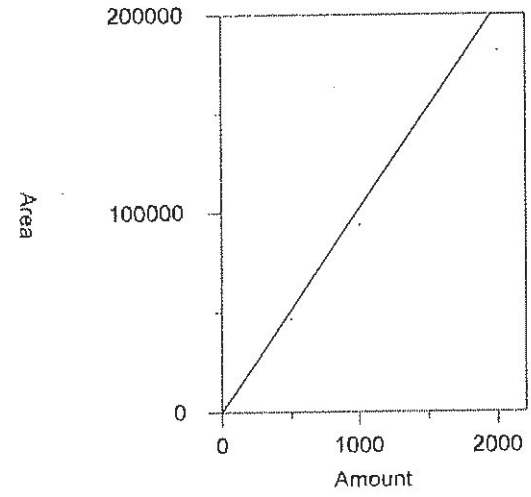
Single peak quantification by area

Y = 110.8549 X + 1788.915

Linear fit with equal weighting
Coefficient of determination: 0.999931
Average error: 2.804%
Average CF: 131.8325
RSD: 27.773%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	4943.087	196.7398	8.066	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	12460.69	123.987	-3.628	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	56837.48	113.1094	-1.141	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	114344.8	113.7759	1.013	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	224216.7	111.5506	-0.174	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

15 4-NT



Expected retention time: 15.366 minutes
Search window: 0.162 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

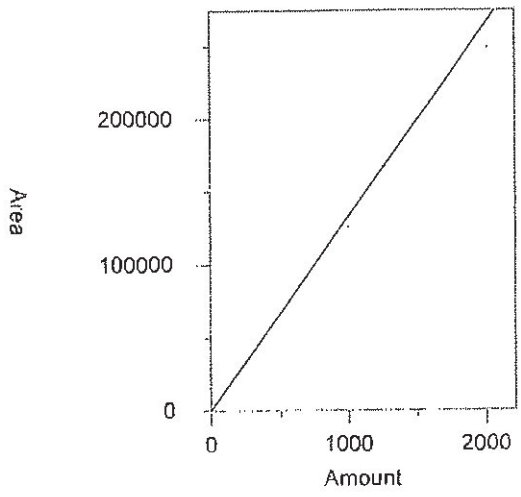
Single peak quantification by area

Y = 102.163 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9720693
Average error: 12.509%
Average CF: 102.163
RSD: 17.707%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	3356.179	134.1131	31.274	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	9887.746	98.77869	-3.313	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	46749.97	93.40653	-8.571	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	93749.27	93.65562	-8.327	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	181903.8	90.86104	-11.063	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

16 3-NT



Expected retention time:	16.134 minutes
Search window:	0.162 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 132.7551\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9910454
Average error:	10.013%
Average CF:	132.7551
RSD:	14.037%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4166.31	165.9884	25.034	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	12271.74	122.2285	-7.929	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	63316.97	126.1294	-4.991	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	125734.3	125.2334	-5.666	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2008	249384.6	124.1955	-6.448	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621109B

GC Column (2): CHROMPACK ID: 100 (mm) Update File: 12EEXP16211009B.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			2.56			2.56	2.46	2.66
Nitroglycerin			8.91			8.91	8.72	9.10
3,4-Dinitrotoluene			10.73			10.73	10.44	11.02
PETN			17.03			17.03	16.74	17.31

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621109B

GC Column (2) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	%RSD
HMX	2.23E+03	1.12E+03	8.95E+02	8.46E+02	8.22E+02	1.18E+03	51
Nitroglycerin	3.08E+02	2.75E+02	2.99E+02	2.75E+02	2.83E+02	2.88E+02	5
3,4-Dinitrotoluene	2.16E+03	2.09E+03	2.23E+03	2.30E+03	2.50E+03	2.26E+03	7
PETN	2.50E+02	2.73E+02	3.10E+02	2.56E+02	2.58E+02	2.70E+02	9

Average % RSD: 18

Linear

James H. Place
Senior Chemist

AUG 2 3 2016

File Name: V:\CP12\12eexp1621109B.CAL
Version: 1

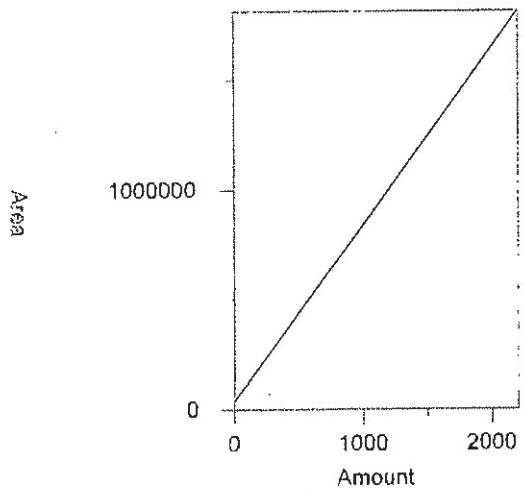
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 2.563 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

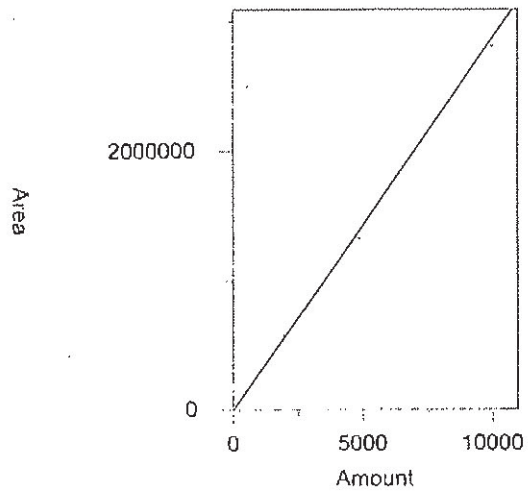
Single peak quantification by area

Y = 805.2766 X + 37388.52

Linear fit with equal weighting
Coefficient of determination: 0.9999336
Average error: 2.045%
Average CF: 1182.899
RSD: 50.515%

Level	Amount	Response	Cal Factor	Error, %	Source	D
1	25.015	55800.27	2230.672	-3.011	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND	7/
2	100.06	112141	1120.738	-4.937	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND	7/
3	500.3	447552.8	894.5689	1.655	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND	7/
4	1000.6	846707.3	846.1996	0.422	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0007.BND	7/
5	2001.2	1645620	822.3167	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0008.BND	7/

2 Nitroglycerin



Expected retention time: 8.911 minutes
Search window: 0.19 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

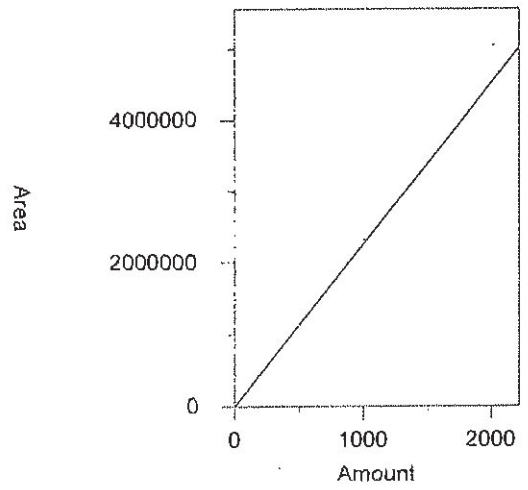
Single peak quantification by area

Y = 287.855 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9984417
Average error: 4.349%
Average CF: 287.855
RSD: 5.225%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	149840.5	308.4725	7.162	Manual	7/31/2016 2:13:36 PM
2	1063.86	292352.8	274.8038	-4.534	Manual	7/31/2016 2:13:45 PM
3	1947.18	581299.4	298.534	3.710	Manual	7/31/2016 2:13:49 PM
4	4857.82	1335512	274.92	-4.494	Manual	7/31/2016 2:13:56 PM
5	9956.51	2813161	282.5449	-1.845	Manual	7/31/2016 2:14:00 PM

3 3,4-Dinitrotoluene



Expected retention time: 10.729 minutes
Search window: 0.286 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

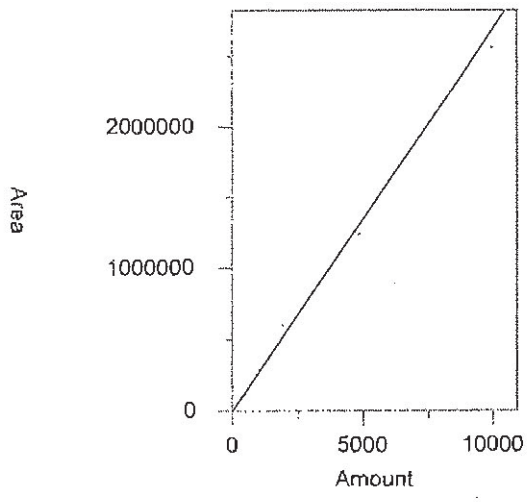
Single peak quantification by area

Y = 2258.673 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9853915
Average error: 5.118%
Average CF: 2258.673
RSD: 7.001%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	54453.62	2160.858	-4.331	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND
2	100.8	210800.4	2091.274	-7.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND
3	504	1126383	2234.887	-1.053	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND
4	1008	2321369	2302.946	1.960	Manual
5	2016	5046855	2503.4	10.835	Manual

4 PETN



Expected retention time:	17.025 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 269.6573\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9940489
Average error:	6.588%
Average CF:	269.6573
RSD:	9.016%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	121312.6	250.289	-7.183	Manual	7/31/2016 2:14:24 PM
2	1061.44	290126.8	273.3332	1.363	Manual	7/31/2016 2:14:29 PM
3	1942.16	602831.4	310.3922	15.106	Manual	7/31/2016 2:14:32 PM
4	4845.76	1240206	255.9363	-5.088	Manual	7/31/2016 2:14:37 PM
5	9931.88	2565758	258.3356	-4.199	Manual	7/31/2016 2:14:44 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621101

GC Column (3) : CAPCELL CN ID: 250 (mm) Update File:

Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	~~MIDPOINT~~ RT Level 5	RT WINDOW FROM	TO
HMX	3.90	3.91	3.90	3.89	3.90	3.90	3.80	4.00
RDX	4.75	4.80	4.78	4.79	4.82	4.82	4.72	4.92
3,5-Dinitroaniline	10.39	10.38	10.31	10.12	10.48	10.48	10.38	10.58
Nitrobenzene	11.75	11.82	11.81	11.29	11.90	11.90	11.74	12.06
2-Amino-4,6-dinitrotoluene	15.60	15.60	15.15	14.97	15.66	15.66	15.50	15.82
4-Amino-2,6-dinitrotoluene	15.60	15.60	15.15	14.97	15.66	15.66	15.50	15.82
1,3-DNB	17.51	17.39	17.15	17.02	17.46	17.46	17.31	17.61
2-Nitrotoluene	22.31	22.39	21.74	21.76	22.40	22.40	22.14	22.66
3-Nitrotoluene	25.77	25.59	24.91	24.98	25.55	25.55	25.29	25.81
4-Nitrotoluene	25.77	25.59	24.91	24.98	25.55	25.55	25.29	25.81
1,3,5-Trinitrobenzene	27.44	27.27	26.80	26.84	27.07	27.07	26.87	27.27
2,6-Dinitrotoluene	28.68	28.27	27.36	27.50	28.46	28.46	28.16	28.76
3,4-Dinitrotoluene	31.44	31.10	30.67	30.76	31.25	31.25	31.07	31.43
2,4-Dinitrotoluene	33.00	32.66	32.54	32.60	32.76	32.76	32.65	32.87
Tetryl	33.59	33.62	33.66	33.70	33.79	33.79	33.69	33.89
2,4,6-Trinitrotoluene	34.79	34.58	34.68	34.71	34.76	34.76	34.66	34.86

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6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

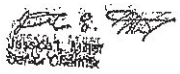
Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621101

GC Column (3) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	3.96E+01	9.40E+01	9.37E+01	9.77E+01	9.27E+01	8.35E+01	30
RDX	1.69E+02	1.30E+02	1.19E+02	1.12E+02	1.08E+02	1.28E+02	19
3,5-Dinitroaniline	4.07E+02	2.49E+02	2.31E+02	2.24E+02	2.20E+02	2.66E+02	30
Nitrobenzene	2.82E+02	1.82E+02	1.69E+02	1.63E+02	1.61E+02	1.91E+02	27
2-Amino-4,6-dinitrotoluene	4.76E+02	4.01E+02	3.66E+02	3.61E+02	3.53E+02	3.91E+02	13
4-Amino-2,6-dinitrotoluene	4.75E+02	4.00E+02	3.65E+02	3.61E+02	3.52E+02	3.91E+02	13
1,3-DNB	4.35E+02	3.22E+02	3.11E+02	3.01E+02	2.94E+02	3.33E+02	17
2-Nitrotoluene	2.33E+02	1.14E+02	1.12E+02	1.10E+02	1.06E+02	1.35E+02	41
3-Nitrotoluene	2.85E+02	1.90E+02	1.85E+02	1.66E+02	1.85E+02	2.02E+02	23
4-Nitrotoluene	2.86E+02	1.91E+02	1.86E+02	1.66E+02	1.86E+02	2.03E+02	23
1,3,5-Trinitrobenzene	2.59E+02	2.13E+02	2.26E+02	2.24E+02	2.57E+02	2.36E+02	9
2,6-Dinitrotoluene	2.34E+02	1.31E+02	1.41E+02	1.17E+02	1.29E+02	1.51E+02	32
3,4-Dinitrotoluene	1.93E+02	1.79E+02	1.05E+02	1.10E+02	1.16E+02	1.41E+02	30
2,4-Dinitrotoluene	1.67E+02	2.74E+02	2.59E+02	2.60E+02	2.57E+02	2.43E+02	18
Tetryl	1.65E+01	1.41E+02	1.57E+02	1.52E+02	1.58E+02	1.25E+02	49
2,4,6-Trinitrotoluene	1.04E+02	2.73E+02	2.09E+02	2.00E+02	1.95E+02	1.96E+02	31

Average % RSD: 25



JUL 3 1 2016

File Name: V:\CP12\12cexp1621101.CAL
Version: 40

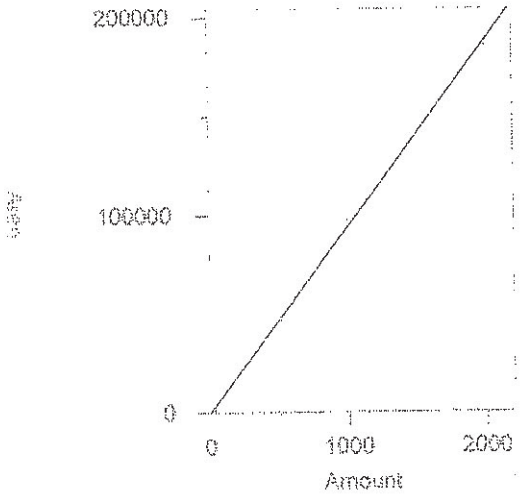
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 3.9 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

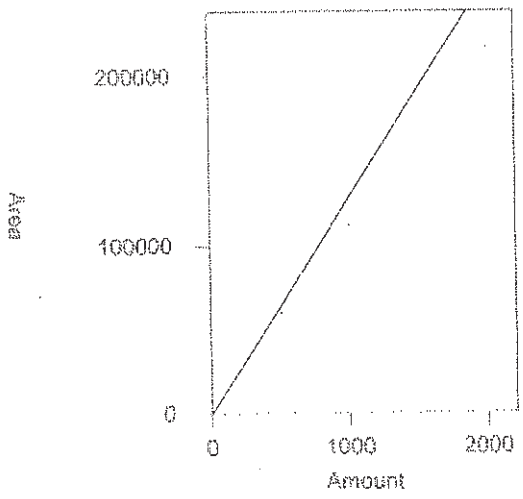
Single peak quantification by area

Y = 93.47101 X + 286.7556

Linear fit with equal weighting
Coefficient of determination: 0.9990436
Average error: 14.065%
Average CF: 83.52895
RSD: 29.509%

Level	Amount	Response	Cal Factor	Error, %	Source	Date
1	25.015	989.8299	39.56945	-62.291	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND	7/31/
2	100.06	9409.896	94.04254	-2.382	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND	7/31/
3	500.3	46854.54	93.65289	-0.416	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND	7/31/
4	1000.6	97772.98	97.71435	4.220	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND	7/31/
5	2001.2	185442.2	92.6655	-1.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND	7/31/

2 RDX



Expected retention time: 4.818 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

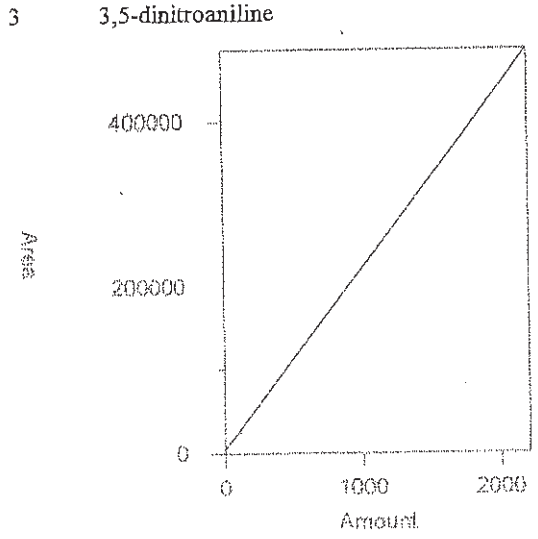
Single peak quantification by area

Y = 127.61 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9412987
Average error: 13.641%
Average CF: 127.61
RSD: 19.226%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4240.228	168.9334	32.383	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.4	13032.28	129.8036	1.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502	59883.89	119.2906	-6.519	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	112280.9	111.8336	-12.363	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	217243.5	108.189	-15.219	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

3 3,5-dinitroaniline



Expected retention time: 10.48 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

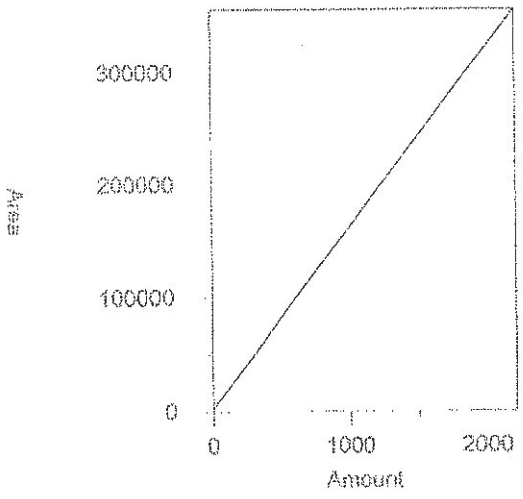
Single peak quantification by area

Y = 217.7032 X + 5084.649

Linear fit with equal weighting
Coefficient of determination: 0.9999126
Average error: 2.576%
Average CF: 266.3089
RSD: 29.810%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	10213	406.8924	-3.185	Manual
2	100.4	25039	249.1932	-7.138	Manual
3	502	116177.5	231.4293	1.579	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	225267.2	224.3697	0.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	441077.2	219.66	-0.261	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

4 Nitrobenzene



Expected retention time: 11.899 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

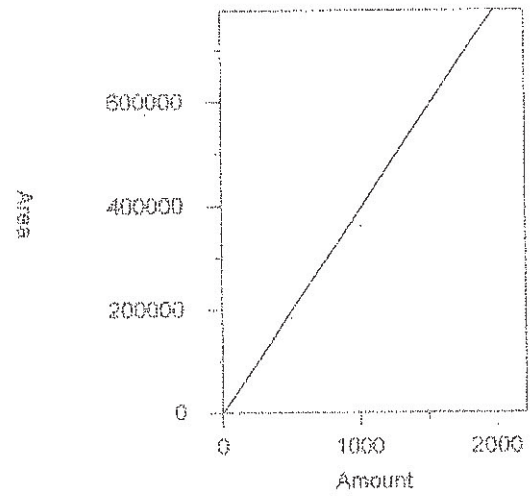
Single peak quantification by area

Y = 159.699 X + 3133.753

Linear fit with equal weighting
Coefficient of determination: 0.9999601
Average error: 1.494%
Average CF: 191.2579
RSD: 26.891%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	7074	282.1136	-0.899	Manual
2	100.3	18226	181.7148	-4.833	Manual
3	501.5	84554.1	168.6024	1.600	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1003	163200.3	162.7122	-0.068	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2006	323260	161.1466	-0.071	Manual

5 4-Am-2,6-DNT



Expected retention time: 15.658 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

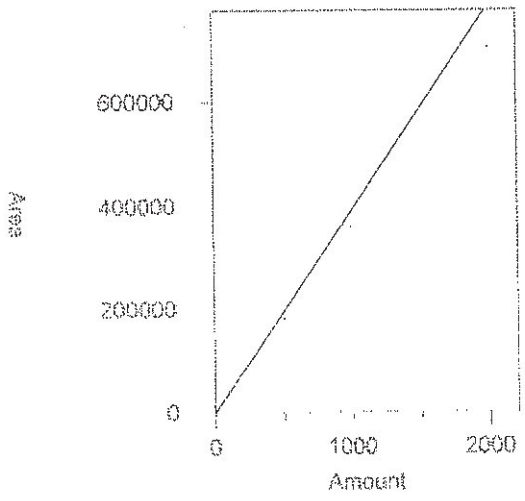
Single peak quantification by area

Y = 390.6894 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 390.6894
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	11912.02	475.0556	21.594	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	40161.76	400.4164	2.490	Manual
3	501.5	183130.3	365.1651	-6.533	Manual
4	1003	361759.3	360.6773	-7.682	Manual
5	2006	706378	352.1326	-9.869	Manual

6 2-Am-4,6-DNT



Expected retention time: 15.659 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

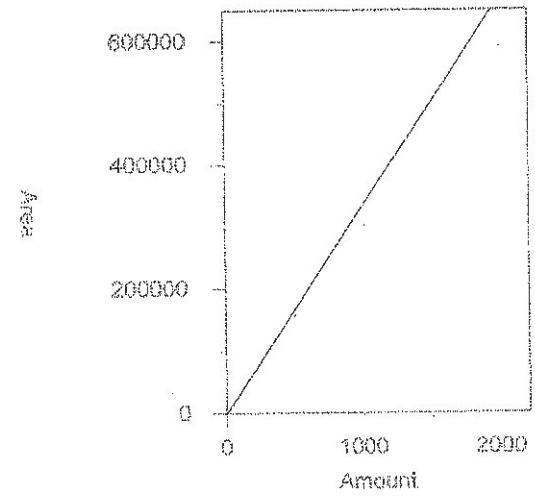
Single peak quantification by area

Y = 391.47 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 391.47
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	11912.02	476.0048	21.594	Manual
2	100.1	40161.76	401.2164	2.490	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	183130.3	365.8947	-6.533	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	361759.3	361.3979	-7.682	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	706378	352.8362	-9.869	Manual

7 1,3-DNB



Expected retention time: 17.458 minutes
Search window: 0.15 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

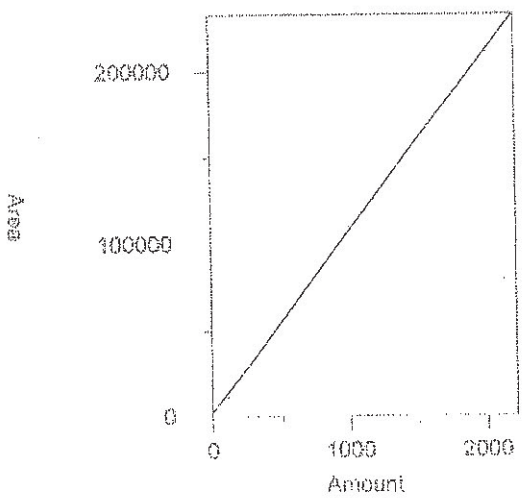
Single peak quantification by area

Y = 332.8964 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9687725
Average error: 12.247%
Average CF: 332.8964
RSD: 17.407%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	10892.23	434.8196	30.617	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.2	32300.18	322.3571	-3.166	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	156048.5	311.4741	-6.435	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	302065.9	301.463	-9.442	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	589914.3	294.3684	-11.574	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

8 2-NT



Expected retention time: 22.399 minutes
Search window: 0.26 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

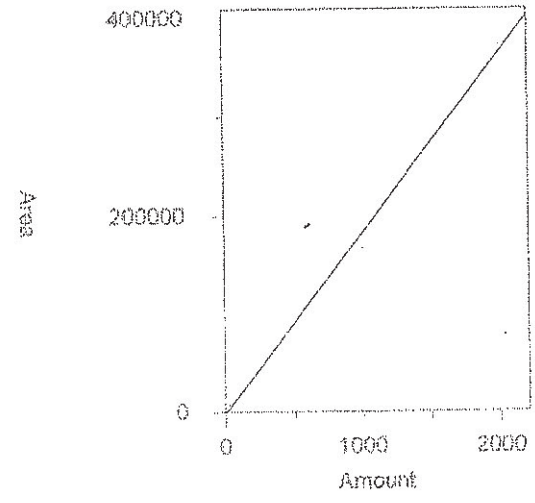
Single peak quantification by area

Y = 104.7342 X + 2906.16

Linear fit with equal weighting
Coefficient of determination: 0.9996743
Average error: 4.859%
Average CF: 134.8939
RSD: 40.815%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	5859.8	233.2259	5.818	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0004.BND
2	100.5	11450.75	113.9378	-14.750	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0005.BND
3	502.5	56340.11	112.1196	1.450	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0006.BND
4	1005	110084.5	109.5368	1.775	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0007.BND
5	2010	212355.5	105.6495	-0.500	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0008.BND

9 4-NT



Expected retention time: 25.552 minutes
Search window: 0.26 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

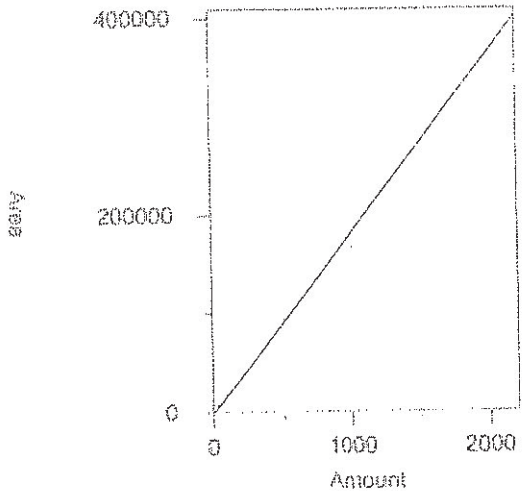
Single peak quantification by area

Y = 182.9801 X + -1257.135

Linear fit with equal weighting
Coefficient of determination: 0.9965405
Average error: 28.124%
Average CF: 202.9486
RSD: 23.343%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	7158	286.034	115.476	Manual
2	100.1	19112	190.9291	12.034	Manual
3	500.5	92873	185.5604	2.822	Manual
4	1001	166606.3	166.4398	-8.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0007.BND
5	2002	371931	185.7797	1.880	Manual

10 3-NT



Expected retention time:	25.553 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

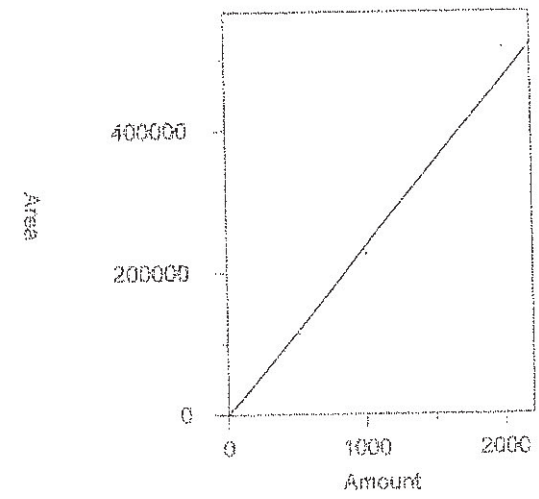
Single peak quantification by area

Y = 182.4333 X + -1257.155

Linear fit with equal weighting	
Coefficient of determination:	0.9965405
Average error:	28.125%
Average CF:	202.3422
RSD:	23.343%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.1	7158	285.1793	115.478	Manual	7/31/2016 4:56:35 PM
2	100.4	19112	190.3586	12.034	Manual	7/31/2016 4:57:30 PM
3	502	92873	185.006	2.822	Manual	7/31/2016 4:58:26 PM
4	1004	166606.3	165.9425	-8.411	Manual	7/31/2016 4:59:44 PM
5	2008	371931	185.2246	1.880	Manual	7/31/2016 5:01:09 PM

11 1,3,5-TNB



Expected retention time:	27.071 minutes
Search window:	0.2 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

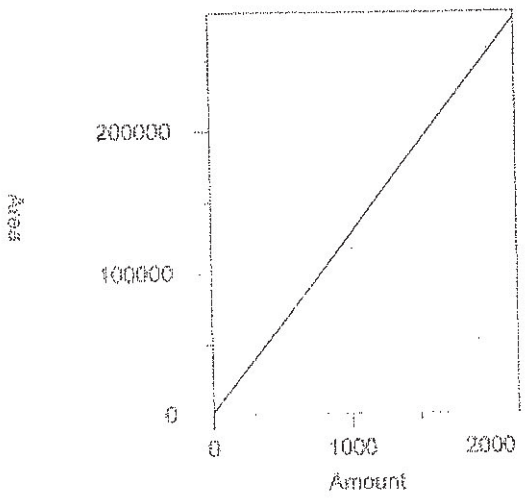
Single peak quantification by area

Y = 235.9349 X + 0

Average CF fit with equal weighting, forced to origin	
Coefficient of determination:	0.9885247
Average error:	7.520%
Average CF:	235.9349
RSD:	8.821%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	6493	258.9432	9.752	Manual	7/31/2016 4:56:40 PM
2	100.3	21403	213.3898	-9.556	Manual	7/31/2016 4:57:36 PM
3	501.5	113282	225.8863	-4.259	Manual	7/31/2016 4:58:49 PM
4	1003	224845	224.1725	-4.985	Manual	7/31/2016 4:59:49 PM
5	2006	516109	257.2827	9.048	Manual	7/31/2016 5:01:21 PM

12 2,6-DNT



Expected retention time:	27.933 minutes
Search window:	0.3 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

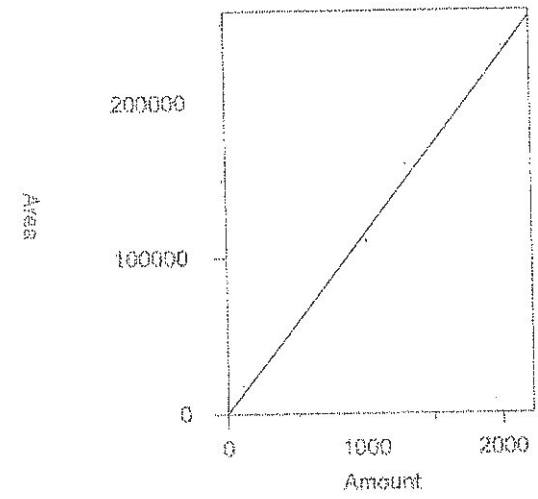
Single peak quantification by area

Y = 126.3104 X + 1347.232

Linear fit with equal weighting	
Coefficient of determination:	0.9962553
Average error:	11.138%
Average CF:	150.5242
RSD:	31.661%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5878.026	234.4178	30.204	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	13104	130.6481	-6.508	Manual
3	501.5	70879	141.334	9.564	Manual
4	1003	117796	117.4437	-7.998	Manual
5	2006	258328	128.7777	1.414	Manual

13 3,4-Dinitrotoluene



Expected retention time:	31.249 minutes
Search window:	0.18 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

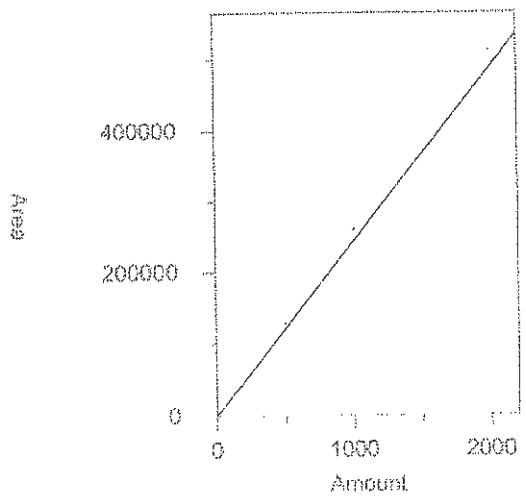
Single peak quantification by area

Y = 114.3201 X + 746.6834

Linear fit with equal weighting	
Coefficient of determination:	0.99705
Average error:	19.245%
Average CF:	140.6028
RSD:	29.730%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	4864	193.0159	34.085	Manual
2	100.8	18007.12	178.642	46.755	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	504	52826.8	104.8151	-9.487	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1008	110945	110.0645	-4.342	Manual
5	2016	234816.3	116.4763	1.557	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

14 2,4-DNT



Expected retention time: 32.757 minutes
Search window: 0.11 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

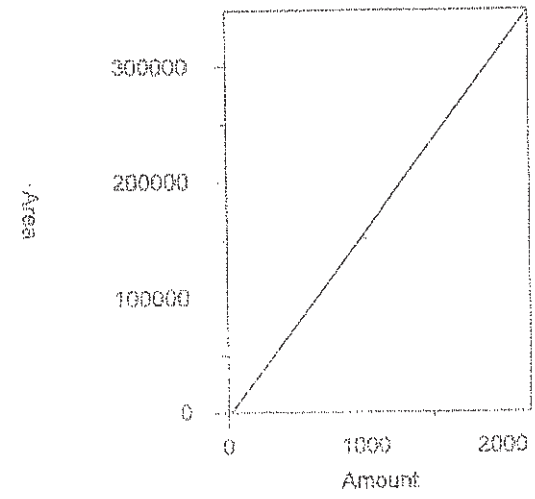
Single peak quantification by area

Y = 243.4707 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9938254
Average error: 12.519%
Average CF: 243.4707
RSD: 17.720%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	4186	167.2727	-31.297	Manual
2	100.1	27446.51	274.1909	12.618	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	129449.5	258.6404	6.231	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	260610.7	260.3503	6.933	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	514312.1	256.8991	5.515	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

15 Tetryl



Expected retention time: 33.791 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

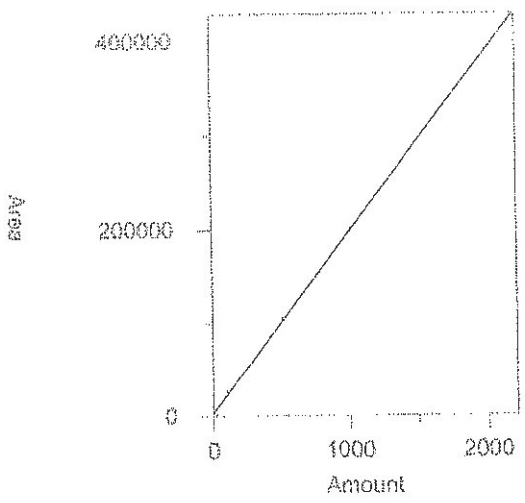
Single peak quantification by area

Y = 159.0213 X + -2990.364

Linear fit with equal weighting
Coefficient of determination: 0.9996614
Average error: 14.566%
Average CF: 124.8977
RSD: 48.832%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	413	16.48703	-58.414	Manual
2	100.2	14106.57	140.7841	8.985	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	78577.62	156.8416	2.476	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	152437.5	152.1332	-2.502	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	317118.5	158.2428	0.453	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

16 2,4,6-TNT



Expected retention time:	34.758 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 193.2523 X + 4592.776

Linear fit with equal weighting	
Coefficient of determination:	0.9992185
Average error:	18.224%
Average CF:	196.0521
RSD:	30.652%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	2622	104.3582	-72.249	Manual
2	100.5	27397.48	272.6118	14.087	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	104806.1	208.5694	3.052	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	201209.6	200.2086	1.206	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	390970.8	194.5128	-0.524	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621101B

GC Column (4) : CAPCELL CN ID: 250 (mm) Update File:

Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS					MIDPOINT (3 levels) RT	RT WINDOW	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5		FROM	TO
HMX	4.05	4.05	4.04	4.03	4.03	4.03	3.93	4.13
Nitroglycerin	8.90	8.92	8.81	8.65	8.86	8.86	8.76	8.96
PETN	24.02	24.00	23.34	23.38	23.99	23.99	23.78	24.20

JUL 31 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621101B

GC Column (4) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	4.80E+02	4.51E+02	4.42E+02	4.55E+02	4.31E+02	4.52E+02	4
Nitroglycerin	1.89E+02	1.64E+02	1.58E+02	1.61E+02	1.55E+02	1.65E+02	8
PETN	1.48E+02	1.34E+02	1.25E+02	1.18E+02	1.06E+02	1.26E+02	13

Average % RSD: 8

File Name: V:\CP12\12cexp1621101B.CAL
Version: 24

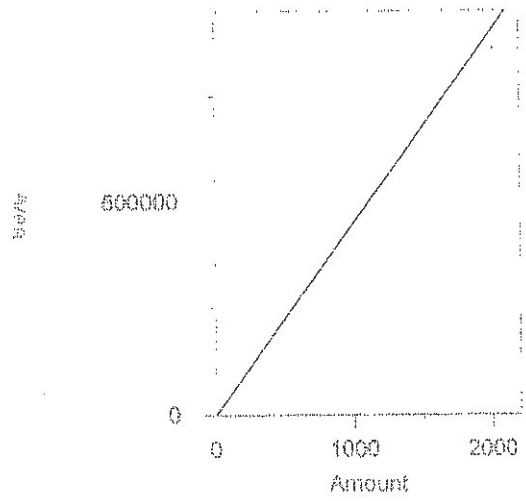
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 4.031 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

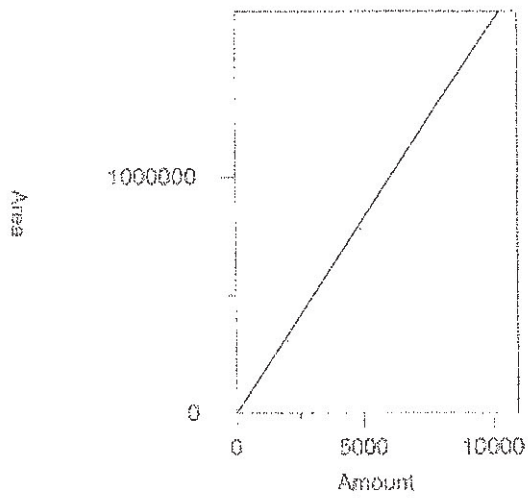
Single peak quantification by area

$Y = 451.6414\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9963331
Average error: 2.773%
Average CF: 451.6414
RSD: 4.021%

Level	Amount	Response	Cal Factor	Error, %	Source	Da
1	25.015	11994.8	479.5043	6.169	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0004.BND	7/3
2	100.06	45101.28	450.7424	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0005.BND	7/3
3	500.3	221258	442.2507	-2.079	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0006.BND	7/3
4	1000.6	455362.5	455.0894	0.763	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0007.BND	7/3
5	2001.2	861757.3	430.6203	-4.654	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0008.BND	7/3

2 Nitroglycerin



Expected retention time: 8.858 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

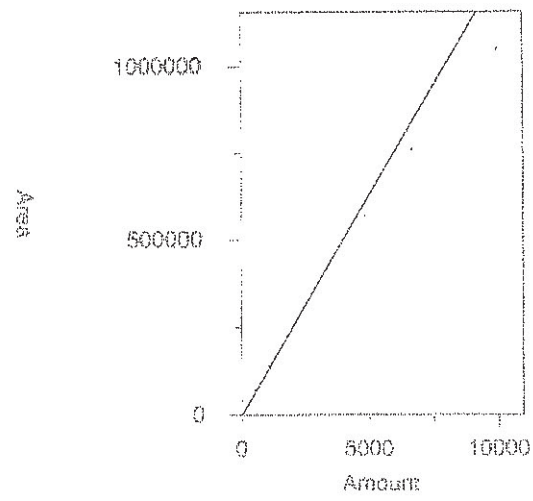
Single peak quantification by area

$Y = 165.3441\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9924413
Average error: 5.680%
Average CF: 165.3441
RSD: 8.174%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	91720.05	188.8215	14.199	Manual	7/31/2016 4:55:02 PM
2	1063.86	174175.5	163.7203	-0.982	Manual	7/31/2016 4:55:07 PM
3	1947.18	307368	157.8529	-4.531	Manual	7/31/2016 4:55:10 PM
4	4857.82	782708.9	161.1235	-2.553	Manual	7/31/2016 4:55:14 PM
5	9956.51	1545275	155.2025	-6.134	Manual	7/31/2016 4:55:19 PM

3 PETN



Expected retention time: 23.992 minutes
Search window: 0.21 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

Single peak quantification by area

$Y = 126.0229\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9349322
Average error: 9.436%
Average CF: 126.0229
RSD: 12.677%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	71685	147.8987	17.359	Manual	7/31/2016 5:05:51 PM
2	1061.44	142101	133.8757	6.231	Manual	7/31/2016 5:06:02 PM
3	1942.16	242496.5	124.8592	-0.923	Manual	7/31/2016 4:55:35 PM
4	4845.76	570434	117.7182	-6.590	Manual	7/31/2016 4:55:42 PM
5	9931.88	1050426	105.7631	-16.076	Manual	7/31/2016 4:55:46 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621109

GC Column (3) : CAPCELL CN ID: 250 (mm) Update File: 12CEXP16211009.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			3.98			3.98	3.88	4.08
RDX			4.90			4.90	4.80	5.00
3,5-Dinitroaniline			10.64			10.64	10.54	10.74
Nitrobenzene			12.12			12.12	11.96	12.28
2-Amino-4,6-dinitrotoluene			15.97			15.97	15.81	16.13
4-Amino-2,6-dinitrotoluene			15.97			15.97	15.81	16.13
1,3-DNB			17.83			17.83	17.68	17.98
2-Nitrotoluene			23.00			23.00	22.74	23.26
3-Nitrotoluene			26.43			26.43	26.17	26.69
4-Nitrotoluene			26.43			26.43	26.17	26.69
1,3,5-Trinitrobenzene			27.82			27.82	27.62	28.02
2,6-Dinitrotoluene			29.13			29.13	28.83	29.43
3,4-Dinitrotoluene			31.70			31.70	31.58	31.88
2,4-Dinitrotoluene			33.09			33.09	32.98	33.20
Tetryl			34.02			34.02	33.92	34.12
2,4,6-Trinitrotoluene			34.99			34.99	34.89	35.09

Coelute

RT Update

File used : 12CEXP16211009.0030

Applies to : 12CEXP16211009.0001 →

James H. Place
Senior Chemist

AUG 23 2016

Audited By

Jessica L. Miller
Senior Chemist

AUG 23 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621109

GC Column (3) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS						%RSD	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN		
HMX	3.96E+01	9.40E+01	9.37E+01	9.77E+01	9.27E+01	8.35E+01	30	Linear
RDX	1.69E+02	1.30E+02	1.19E+02	1.12E+02	1.08E+02	1.28E+02	19	
3,5-Dinitroaniline	4.07E+02	2.49E+02	2.31E+02	2.24E+02	2.20E+02	2.66E+02	30	Linear
Nitrobenzene	2.82E+02	1.82E+02	1.69E+02	1.63E+02	1.61E+02	1.91E+02	27	
2-Amino-4,6-dinitrotoluene	4.76E+02	4.01E+02	3.66E+02	3.61E+02	3.53E+02	3.91E+02	13	
4-Amino-2,6-dinitrotoluene	4.75E+02	4.00E+02	3.65E+02	3.61E+02	3.52E+02	3.91E+02	13	
1,3-DNB	4.35E+02	3.22E+02	3.11E+02	3.01E+02	2.94E+02	3.33E+02	17	
2-Nitrotoluene	2.33E+02	1.14E+02	1.12E+02	1.10E+02	1.06E+02	1.35E+02	41	
3-Nitrotoluene	2.85E+02	1.90E+02	1.85E+02	1.66E+02	1.85E+02	2.02E+02	23	Linear
4-Nitrotoluene	2.86E+02	1.91E+02	1.86E+02	1.66E+02	1.86E+02	2.03E+02	23	
1,3,5-Trinitrobenzene	2.59E+02	2.13E+02	2.26E+02	2.24E+02	2.57E+02	2.36E+02	9	
2,6-Dinitrotoluene	2.34E+02	1.31E+02	1.41E+02	1.17E+02	1.29E+02	1.51E+02	32	
3,4-Dinitrotoluene	1.93E+02	1.79E+02	1.05E+02	1.10E+02	1.16E+02	1.41E+02	30	Linear
2,4-Dinitrotoluene	1.67E+02	2.74E+02	2.59E+02	2.60E+02	2.57E+02	2.43E+02	18	
Tetryl	1.65E+01	1.41E+02	1.57E+02	1.52E+02	1.58E+02	1.25E+02	49	
2,4,6-Trinitrotoluene	1.04E+02	2.73E+02	2.09E+02	2.00E+02	1.95E+02	1.96E+02	31	Linear

Coelute

Average % RSD: 25

James H. Place
Senior Chemist

AUG 2 3 2016

File Name: V:\CP12\12Cexp1621109.CAL
Version: 1

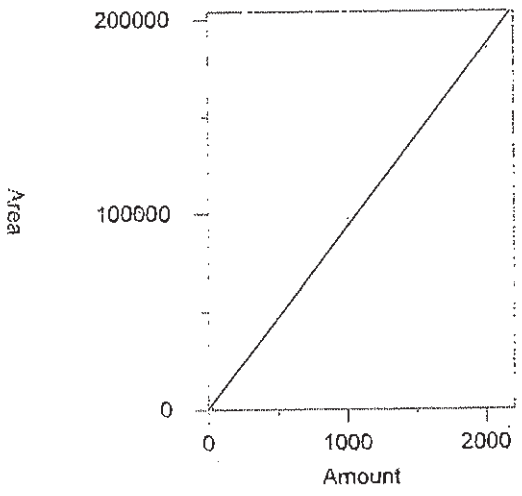
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time:	3.984 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

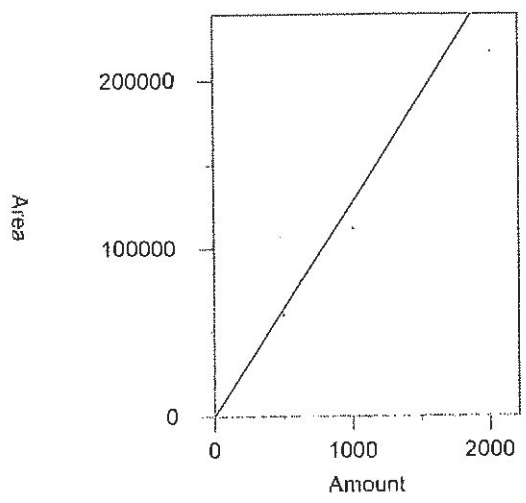
Y = 93.47101 X + 286.7556

Linear fit with equal weighting

Coefficient of determination:	0.9990436
Average error:	14.065%
Average CF:	83.52895
RSD:	29.509%

Level	Amount	Response	Cal Factor	Error, %	Source	Date
1	25.015	989.8299	39.56945	-62.291	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND	7/31/
2	100.06	9409.896	94.04254	-2.382	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND	7/31/
3	500.3	46854.54	93.65289	-0.416	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND	7/31/
4	1000.6	97772.98	97.71435	4.220	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND	7/31/
5	2001.2	185442.2	92.6655	-1.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND	7/31/

2 RDX



Expected retention time: 4.897 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

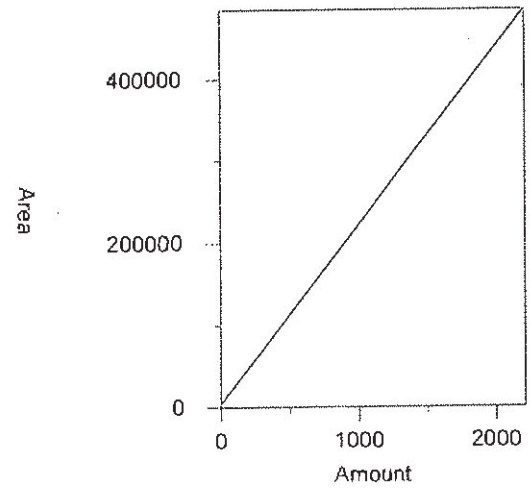
Single peak quantification by area

Y = 127.61 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9412987
Average error: 13.641%
Average CF: 127.61
RSD: 19.226%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4240.228	168.9334	32.383	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.4	13032.28	129.8036	1.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502	59883.89	119.2906	-6.519	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	112280.9	111.8336	-12.363	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	217243.5	108.189	-15.219	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

3 3,5-dinitroaniline



Expected retention time: 10.644 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

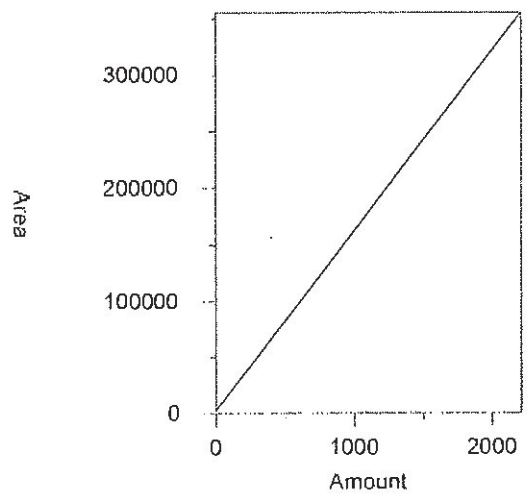
Single peak quantification by area

Y = 217.7032 X + 5084.649

Linear fit with equal weighting
Coefficient of determination: 0.9999126
Average error: 2.576%
Average CF: 266.3089
RSD: 29.810%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	10213	406.8924	-3.185	Manual
2	100.4	25019	249.1932	-7.138	Manual
3	502	116177.5	231.4293	1.579	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	225267.2	224.3697	0.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	441077.2	219.66	-0.261	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

4 Nitrobenzene



Expected retention time: 12.121 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

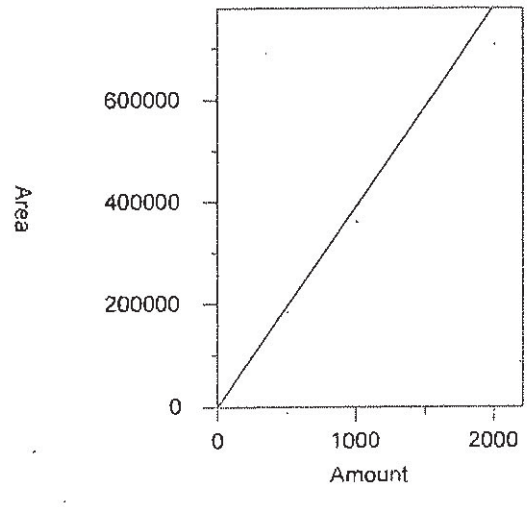
Single peak quantification by area

Y = 159.699 X + 3133.753

Linear fit with equal weighting
Coefficient of determination: 0.9999601
Average error: 1.494%
Average CF: 191.2579
RSD: 26.891%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	7074	282.1136	-0.899	Manual
2	100.3	18226	181.7148	-4.833	Manual
3	501.5	84554.1	168.6024	1.600	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1003	163200.3	162.7122	-0.068	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2006	323260	161.1466	-0.071	Manual

5 4-Am-2,6-DNT



Expected retention time: 15.967 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

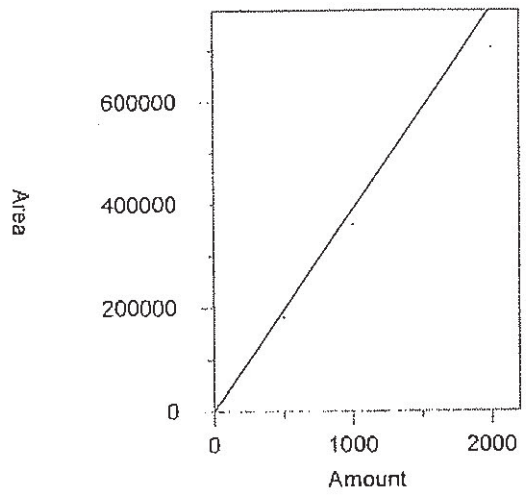
Single peak quantification by area

Y = 390.6894 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 390.6894
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	11912.02	475.0556	21.594	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	40161.76	400.4164	2.490	Manual
3	501.5	183130.3	365.1651	-6.533	Manual
4	1003	361759.3	360.6773	-7.682	Manual
5	2006	706378	352.1326	-9.869	Manual

6 2-Am-4,6-DNT



Expected retention time:	15.968 minutes
Search window:	0.16 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

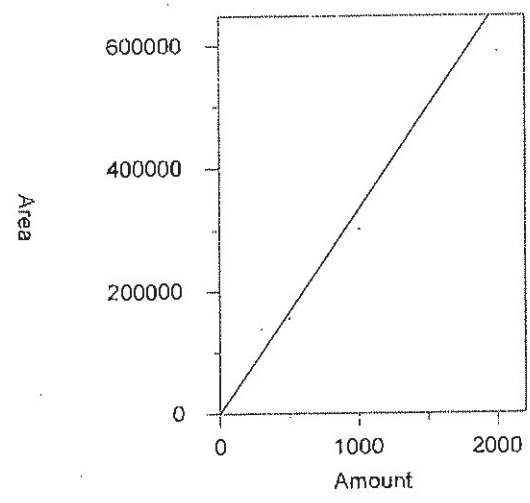
Y = 391.47 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9783103
Average error:	9.634%
Average CF:	391.47
RSD:	12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	11912.02	476.0048	21.594	Manual
2	100.1	40161.76	401.2164	2.490	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	183130.3	365.8947	-6.533	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	361759.3	361.3979	-7.682	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	706378	352.8362	-9.869	Manual

7 1,3-DNB



Expected retention time:	17.826 minutes
Search window:	0.15 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

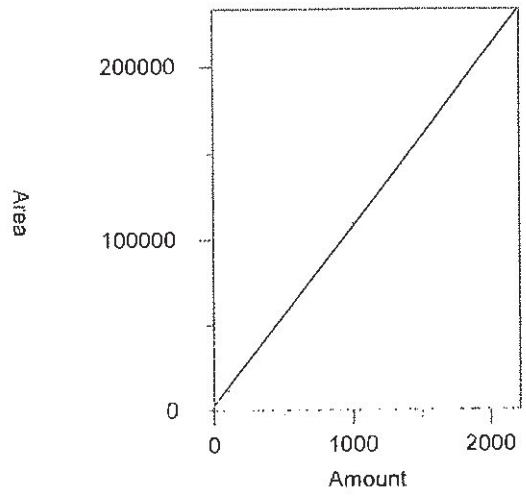
Y = 332.8964 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9687725
Average error:	12.247%
Average CF:	332.8964
RSD:	17.407%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	10892.23	434.8196	30.617	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.2	32300.18	322.3571	-3.166	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	156048.5	311.4741	-6.435	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	302065.9	301.463	-9.442	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	589914.3	294.3684	-11.574	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

8 2-NT



Expected retention time:	22.997 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

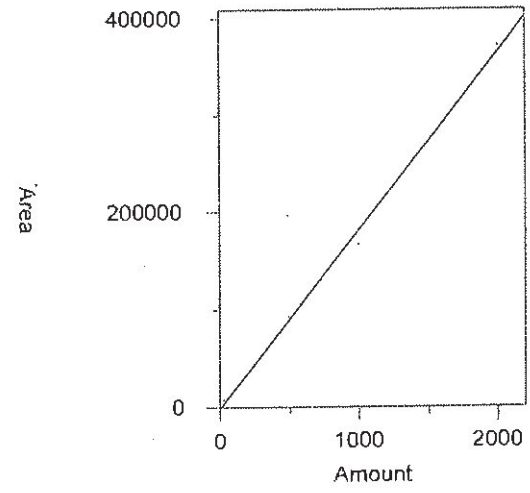
Single peak quantification by area

Y = 104.7342 X + 2906.16

Linear fit with equal weighting	
Coefficient of determination:	0.9996743
Average error:	4.859%
Average CF:	134.8939
RSD:	40.815%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	5859.8	233.2259	5.818	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.5	11450.75	113.9378	-14.750	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	56340.11	112.1196	1.450	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	110084.5	109.5368	1.775	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	212355.5	105.6495	-0.500	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

9 4-NT



Expected retention time:	26.432 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

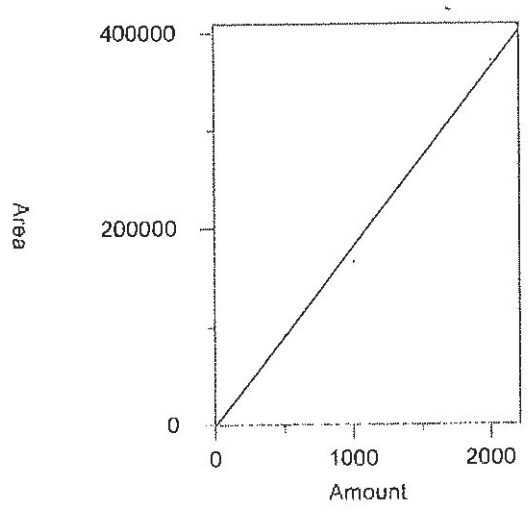
Single peak quantification by area

Y = 182.9801 X + -1257.135

Linear fit with equal weighting	
Coefficient of determination:	0.9965405
Average error:	28.124%
Average CF:	202.9486
RSD:	23.343%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	7158	286.034	115.476	Manual
2	100.1	19112	190.9291	12.034	Manual
3	500.5	92873	185.5604	2.822	Manual
4	1001	166606.3	166.4398	-8.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	371931	185.7797	1.880	Manual

10 3-NT



Expected retention time: 26.433 minutes
Search window: 0.26 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

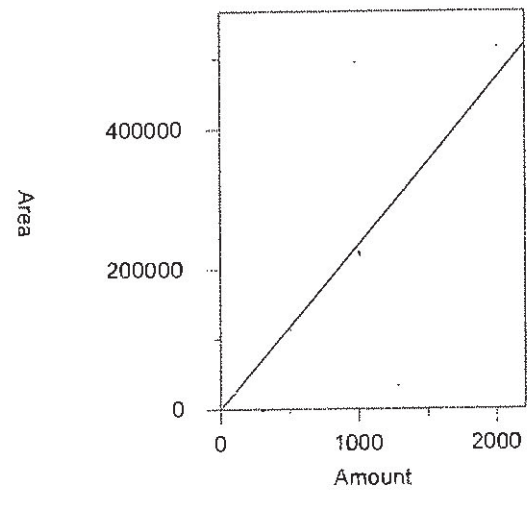
Single peak quantification by area

Y = 182.4333 X + -1257.155

Linear fit with equal weighting
Coefficient of determination: 0.9965405
Average error: 28.125%
Average CF: 202.3422
RSD: 23.343%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.1	7158	285.1793	115.478	Manual	7/31/2016 4:56:35 PM
2	100.4	19112	190.3586	12.034	Manual	7/31/2016 4:57:30 PM
3	502	92873	185.006	2.822	Manual	7/31/2016 4:58:26 PM
4	1004	166606.3	165.9425	-8.411	Manual	7/31/2016 4:59:44 PM
5	2008	371931	185.2246	1.880	Manual	7/31/2016 5:01:09 PM

11 1,3,5-TNB



Expected retention time: 27.825 minutes
Search window: 0.2 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

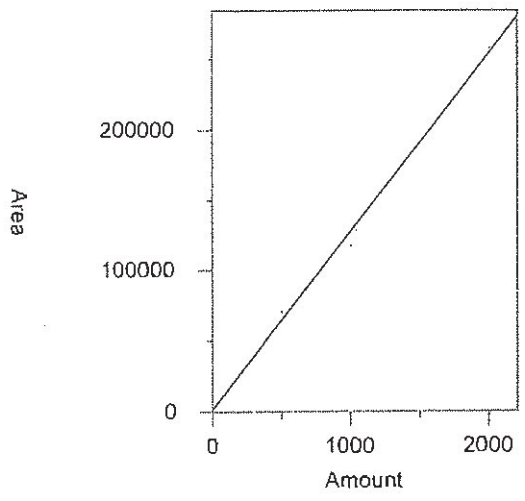
Single peak quantification by area

Y = 235.9349 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9885247
Average error: 7.520%
Average CF: 235.9349
RSD: 8.821%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	6493	258.9432	9.752	Manual	7/31/2016 4:56:40 PM
2	100.3	21403	213.3898	-9.556	Manual	7/31/2016 4:57:36 PM
3	501.5	113282	225.8863	-4.259	Manual	7/31/2016 4:58:49 PM
4	1003	224845	224.1725	-4.985	Manual	7/31/2016 4:59:49 PM
5	2006	516109	257.2827	9.048	Manual	7/31/2016 5:01:21 PM

12 2,6-DNT



Expected retention time:	29.135 minutes
Search window:	0.3 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

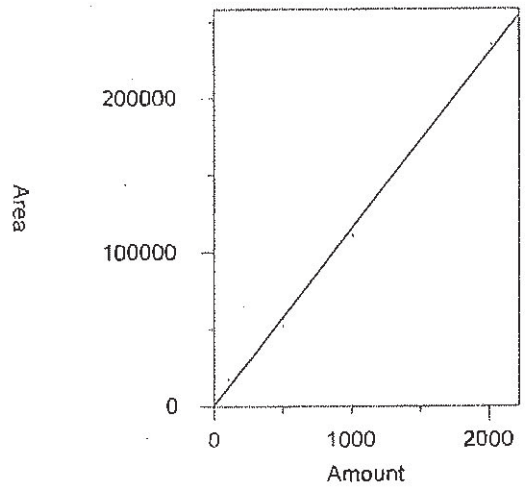
Single peak quantification by area

Y = 126.3104 X + 1347.232

Linear fit with equal weighting	
Coefficient of determination:	0.9962553
Average error:	11.138%
Average CF:	150.5242
RSD:	31.661%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5878.026	234.4178	30.204	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	13104	130.6481	-6.508	Manual
3	501.5	70879	141.334	9.564	Manual
4	1003	117796	117.4437	-7.998	Manual
5	2006	258328	128.7777	1.414	Manual

13 3,4-Dinitrotoluene



Expected retention time:	31.699 minutes
Search window:	0.18 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

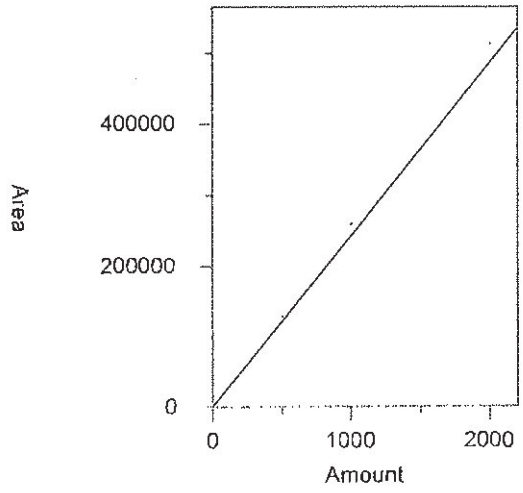
Single peak quantification by area

Y = 114.3201 X + 746.6834

Linear fit with equal weighting	
Coefficient of determination:	0.99705
Average error:	19.245%
Average CF:	140.6028
RSD:	29.730%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	4864	193.0159	34.085	Manual
2	100.8	18007.12	178.642	46.755	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	504	52826.8	104.8151	-9.487	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1008	110945	110.0645	-4.342	Manual
5	2016	234816.3	116.4763	1.557	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

14 2,4-DNT



Expected retention time: 33.09 minutes
Search window: 0.11 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

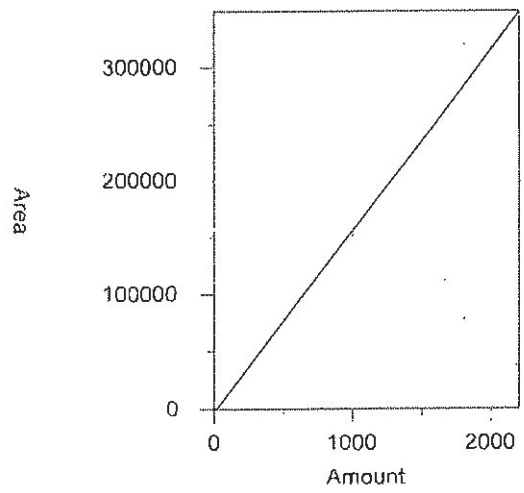
Single peak quantification by area

Y = 243.4707 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9938254
Average error: 12.519%
Average CF: 243.4707
RSD: 17.720%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	4186	167.2727	-31.297	Manual
2	100.1	27446.51	274.1909	12.618	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	129449.5	258.6404	6.231	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	260610.7	260.3503	6.933	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	514312.1	256.8991	5.515	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

15 Tetryl



Expected retention time: 34.024 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

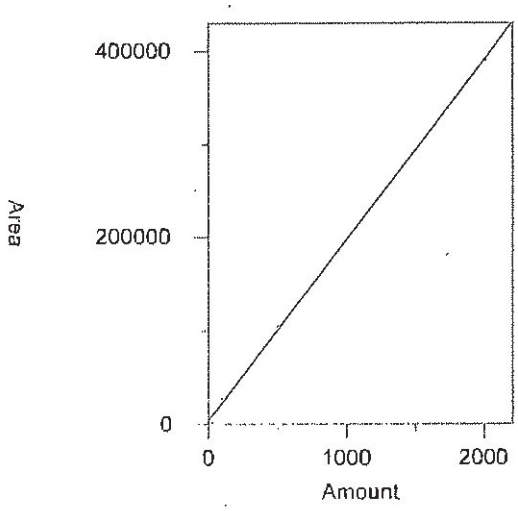
Single peak quantification by area

Y = 159.0213 X + -2990.364

Linear fit with equal weighting
Coefficient of determination: 0.9996614
Average error: 14.566%
Average CF: 124.8977
RSD: 48.832%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	413	16.48703	-58.414	Manual
2	100.2	14106.57	140.7841	8.985	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	78577.62	156.8416	2.476	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	152437.5	152.1332	-2.502	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	317118.5	158.2428	0.453	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

16 2,4,6-TNT



Expected retention time:	34.994 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 193.2523 X + 4592.776

Linear fit with equal weighting	
Coefficient of determination:	0.9992185
Average error:	18.224%
Average CF:	196.0521
RSD:	30.652%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	2622	104.3582	-72.249	Manual
2	100.5	27397.48	272.6118	14.087	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	104806.1	208.5694	3.052	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	201209.6	200.2086	1.206	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	390970.8	194.5128	-0.524	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621109B

GC Column (4) : CAPCELL CN ID: 250 (mm) Update File: 12CEXP16211009B.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS					MIDPOINT	RT WINDOW	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	RT	FROM	TO
HMX			4.13			4.13	4.03	4.23
Nitroglycerin			9.11			9.11	9.01	9.21
PETN			24.68			24.68	24.47	24.89

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621109B

GC Column (4) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	4.80E+02	4.51E+02	4.42E+02	4.55E+02	4.31E+02	4.52E+02	4
Nitroglycerin	1.89E+02	1.64E+02	1.58E+02	1.61E+02	1.55E+02	1.65E+02	8
PETN	1.48E+02	1.34E+02	1.25E+02	1.18E+02	1.06E+02	1.26E+02	13
						Average % RSD:	8

File Name: V:\CP12\12Cexp1621109B.CAL
Version: 1

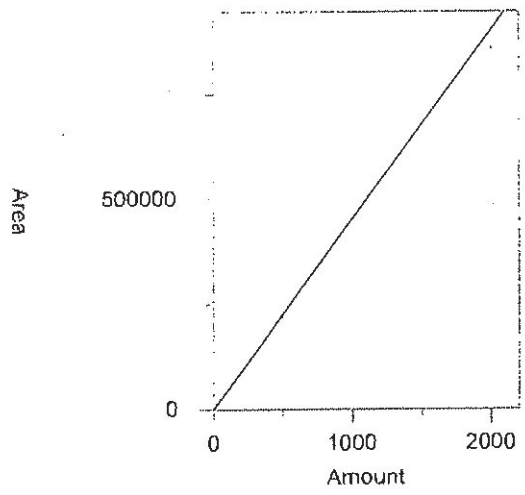
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 4.13 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

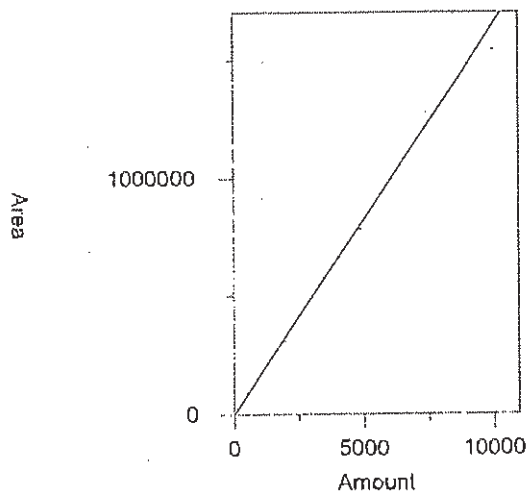
Single peak quantification by area

Y = 451.6414 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9963331
Average error: 2.773%
Average CF: 451.6414
RSD: 4.021%

Level	Amount	Response	Cal Factor	Error, %	Source	Da
1	25.015	11994.8	479.5043	6.169	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp1621001B.0004.BND	7/3
2	100.06	45101.28	450.7424	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp1621001B.0005.BND	7/3
3	500.3	221258	442.2507	-2.079	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp1621001B.0006.BND	7/3
4	1000.6	455362.5	455.0894	0.763	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp1621001B.0007.BND	7/3
5	2001.2	861757.3	430.6203	-4.654	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp1621001B.0008.BND	7/3

2 Nitroglycerin



Expected retention time: 9.109 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

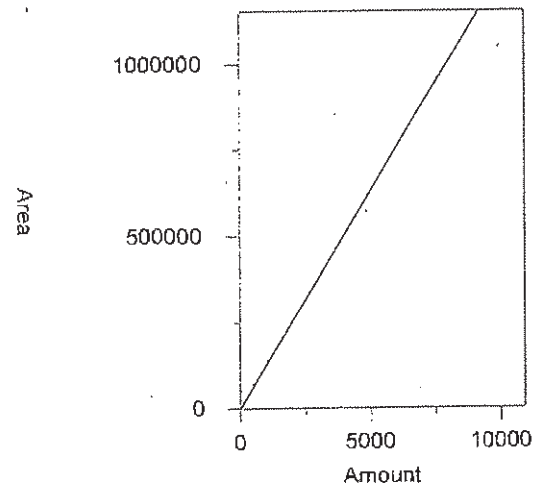
Single peak quantification by area

Y = 165.3441 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9924413
Average error: 5.680%
Average CF: 165.3441
RSD: 8.174%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	91720.05	188.8215	14.199	Manual	7/31/2016 4:55:02 PM
2	1063.86	174175.5	163.7203	-0.982	Manual	7/31/2016 4:55:07 PM
3	1947.18	307368	157.8529	-4.531	Manual	7/31/2016 4:55:10 PM
4	4857.82	782708.9	161.1235	-2.553	Manual	7/31/2016 4:55:14 PM
5	9956.51	1545275	155.2025	-6.134	Manual	7/31/2016 4:55:19 PM

3 PETN



Expected retention time: 24.68 minutes
Search window: 0.21 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

Single peak quantification by area

Y = 126.0229 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9349322
Average error: 9.436%
Average CF: 126.0229
RSD: 12.677%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	71685	147.8987	17.359	Manual	7/31/2016 5:05:51 PM
2	1061.44	142101	133.8757	6.231	Manual	7/31/2016 5:06:02 PM
3	1942.16	242496.5	124.8592	-0.923	Manual	7/31/2016 4:55:35 PM
4	4845.76	570434	117.7182	-6.590	Manual	7/31/2016 4:55:42 PM
5	9931.88	1050426	105.7631	-16.076	Manual	7/31/2016 4:55:46 PM

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 07/29/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 22:30

Lab File ID: 12EEXP16211001.0010.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: IC83XAA Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621101

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.35	4.27	4.47	507.99	500.00	2
1,3,5-Trinitrobenzene	5.05	4.96	5.16	501.46	501.00	0
1,3-DNB	7.33	7.29	7.49	499.04	501.00	0
3,5-Dinitroaniline	7.59	7.19	7.86	466.31	502.00	-7
Nitrobenzene	8.20	8.05	8.33	444.28	500.00	-11
2,4,6-Trinitrotoluene	8.75	8.65	8.85	464.63	500.00	-7
4-Amino-2,6-dinitrotoluene	10.71	10.65	10.94	455.19	500.00	-9
2-Amino-4,6-dinitrotoluene	11.20	11.00	11.29	450.91	500.00	-10
2,6-Dinitrotoluene	12.04	11.92	12.20	486.41	500.00	-3
2,4-Dinitrotoluene	12.78	12.66	12.94	443.25	502.00	-12
2-Nitrotoluene	14.67	14.54	14.82	477.94	501.00	-5
4-Nitrotoluene	16.24	16.09	16.42	433.09	500.50	-13
3-Nitrotoluene	17.07	16.92	17.24	425.94	501.00	-15

Compounds 13 Average of %D: 7

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 07/29/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 22:30

Lab File ID: 12EEXP16211001B.0010.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: IC83XAA Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621101B

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.69	2.60	2.80	506.95	500.80	1
Nitroglycerin	9.45	9.28	9.66	1807.07	2012.00	-10
3,4-Dinitrotoluene	11.33	10.98	11.55	468.07	504.00	-7
PETN	18.13	17.86	18.43	1885.54	2000.00	-6

Compounds 4 Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 07/29/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 22:30

Lab File ID: 12CEXP16211001.0010.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: IC83XAA Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621101

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.90	3.80	4.00	492.11	500.80	-2
RDX	4.81	4.72	4.92	433.85	500.00	-13
3,5-Dinitroaniline	10.46	10.38	10.58	493.71	502.00	-2
Nitrobenzene	11.88	11.74	12.06	497.37	500.00	-1
4-Amino-2,6-dinitrotoluene	15.61	15.50	15.82	455.40	500.00	-9
1,3-DNB	17.45	17.31	17.61	470.57	501.00	-6
2-Nitrotoluene	22.46	22.14	22.66	504.31	501.00	1
4-Nitrotoluene	25.70	25.29	25.81	366.85	500.50	-27
1,3,5-Trinitrobenzene	27.25	26.87	27.27	381.54	501.00	-24
2,6-Dinitrotoluene	28.46	28.16	28.76	440.09	500.00	-12
3,4-Dinitrotoluene	31.26	31.07	31.43	539.44	504.00	7
2,4-Dinitrotoluene	32.79	32.65	32.87	527.30	502.00	5
Tetryl	33.83	33.69	33.89	505.98	500.00	1
2,4,6-Trinitrotoluene	34.79	34.66	34.86	485.55	500.00	-3

Compounds 14 Average of %D: 8

7E
CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories
Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B
Date Analyzed: 07/29/16

GC Column (4) : CAPCELL CN ID: 250 (mm)
Time Analyzed: 22:30

Lab File ID: 12CEXP16211001B.0010.RAW
Initial Calibration: 12CEXP1621101B

Lab Standard ID: IC83XAA
Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621101B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.04	3.93	4.13	477.03	500.80	-5
Nitroglycerin	8.87	8.76	8.96	1731.56	2012.00	-14
PETN	24.07	23.78	24.20	1884.72	2000.00	-6

Average of %D: 8

Compounds 3

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/20/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 3:00

Lab File ID: 12EEXP16211009.0019.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MO Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.16	4.02	4.22	484.56	502.00	-3
1,3,5-Trinitrobenzene	4.82	4.68	4.88	492.68	501.50	-2
1,3-DNB	7.00	6.83	7.03	521.74	501.00	4
3,5-Dinitroaniline	7.37	6.96	7.63	444.24	502.00	-12
Tetryl	7.84	7.63	7.91	455.14	501.00	-9
2,4,6-Trinitrotoluene	8.36	8.18	8.38	480.12	502.50	-4
4-Amino-2,6-dinitrotoluene	10.22	9.98	10.26	432.76	501.50	-14
2-Amino-4,6-dinitrotoluene	10.73	10.48	10.76	462.85	500.50	-8
2,6-Dinitrotoluene	11.50	11.23	11.52	499.20	501.50	0
2,4-Dinitrotoluene	12.18	11.91	12.19	456.69	500.50	-9
2-Nitrotoluene	14.03	13.73	14.02	487.60	502.50	-3
4-Nitrotoluene	15.53	15.20	15.53	438.74	500.50	-12
3-Nitrotoluene	16.31	15.97	16.30	477.75	502.00	-5

Compounds 13 Average of %D: 7

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/20/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 3:00

Lab File ID: 12EEXP16211009B.0019.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MO Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.58	2.46	2.66	466.45	500.30	-7
Nitroglycerin	8.99	8.72	9.10	1667.88	1947.18	-14
3,4-Dinitrotoluene	10.85	10.44	11.02	460.53	504.00	-9
PETN	17.20	16.74	17.31	1946.42	1942.16	0

Compounds 4 Average of %D: 8

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/20/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 10:46

Lab File ID: 12EEXP16211009.0030.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.12	4.02	4.22	510.98	502.00	2
1,3,5-Trinitrobenzene	4.78	4.68	4.88	516.99	501.50	3
1,3-DNB	6.93	6.83	7.03	563.69	501.00	13
3,5-Dinitroaniline	7.29	6.96	7.63	399.11	502.00	-20
Tetryl	7.77	7.63	7.91	458.95	501.00	-8
2,4,6-Trinitrotoluene	8.28	8.18	8.38	476.27	502.50	-5
4-Amino-2,6-dinitrotoluene	10.12	9.98	10.26	422.46	501.50	-16
2-Amino-4,6-dinitrotoluene	10.62	10.48	10.76	468.16	500.50	-6
2,6-Dinitrotoluene	11.37	11.23	11.52	489.31	501.50	-2
2,4-Dinitrotoluene	12.05	11.91	12.19	451.88	500.50	-10
2-Nitrotoluene	13.87	13.73	14.02	474.40	502.50	-6
4-Nitrotoluene	15.37	15.20	15.53	422.26	500.50	-16
3-Nitrotoluene	16.13	15.97	16.30	472.06	502.00	-6

Compounds 13 Average of %D: 9

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/20/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 10:46

Lab File ID: 12EEXP16211009B.0030.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.56	2.46	2.66	516.86	500.30	3
Nitroglycerin	8.91	8.72	9.10	1716.50	1947.18	-12
3,4-Dinitrotoluene	10.73	10.44	11.02	469.99	504.00	-7
PETN	17.03	16.74	17.31	1949.67	1942.16	0

Compounds 4 Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/20/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 18:34

Lab File ID: 12EEXP16211009.0041.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.09	4.02	4.22	474.39	502.00	-5
1,3,5-Trinitrobenzene	4.74	4.68	4.88	489.43	501.50	-2
1,3-DNB	6.87	6.83	7.03	563.81	501.00	13
3,5-Dinitroaniline	7.20	6.96	7.63	375.37	502.00	-25
Tetryl	7.67	7.63	7.91	461.74	501.00	-8
2,4,6-Trinitrotoluene	8.17	8.18	8.38	494.94	502.50	-2
4-Amino-2,6-dinitrotoluene	10.05	9.98	10.26	344.94	501.50	-31
2-Amino-4,6-dinitrotoluene	10.48	10.48	10.76	491.54	500.50	-2
2,6-Dinitrotoluene	11.22	11.23	11.52	465.59	501.50	-7
2,4-Dinitrotoluene	11.88	11.91	12.19	473.35	500.50	-5
2-Nitrotoluene	13.68	13.73	14.02	475.42	502.50	-5
4-Nitrotoluene	15.15	15.20	15.53	375.21	500.50	-25
3-Nitrotoluene	15.90	15.97	16.30	513.58	502.00	2

Compounds 13 Average of %D: 10

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories
Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B
Date Analyzed: 08/20/16

GC Column (2) : CHROMPACK ID: 100 (mm)
Time Analyzed: 18:34

Lab File ID: 12EEXP16211009B.0041.RAW
Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MQ
Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.55	2.46	2.66	525.99	500.30	5
Nitroglycerin	8.80	8.72	9.10	1808.20	1947.18	-7
3,4-Dinitrotoluene	10.59	10.44	11.02	504.52	504.00	0
PETN	16.79	16.74	17.31	2106.00	1942.16	8

Compounds 4 Average of %D: 5

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/20/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 3:00

Lab File ID: 12CEXP16211009.0019.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MO Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.96	3.88	4.08	584.90	500.30	17
RDX	4.86	4.80	5.00	485.93	502.00	-3
3,5-Dinitroaniline	10.59	10.54	10.74	506.55	502.00	1
Nitrobenzene	12.06	11.96	12.28	478.83	501.50	-5
4-Amino-2,6-dinitrotoluene	15.92	15.81	16.13	489.66	501.50	-2
1,3-DNB	17.75	17.68	17.98	471.65	501.00	-6
2-Nitrotoluene	23.00	22.74	23.26	453.07	502.50	-10
4-Nitrotoluene	26.43	26.17	26.69	238.60	500.50	-52
1,3,5-Trinitrobenzene	27.69	27.63	28.03	332.59	501.50	-34
2,6-Dinitrotoluene	29.06	28.84	29.44	422.44	501.50	-16
3,4-Dinitrotoluene	31.62	31.13	31.49	510.49	504.00	1
2,4-Dinitrotoluene	33.05	32.98	33.20	518.26	500.50	4
Tetryl	34.00	33.67	33.87	553.71	501.00	11
2,4,6-Trinitrotoluene	34.96	34.61	34.81	515.38	502.50	3

Compounds 14 Average of %D: 12

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/20/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 3:00

Lab File ID: 12CEXP16211009B.0019.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MO Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.11	4.03	4.23	471.57	500.30	-6
Nitroglycerin	9.06	9.01	9.21	1680.88	1947.18	-14
PETN	24.60	23.85	24.27	1608.91	1942.16	-17

Compounds 3 Average of %D: 12

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/20/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 10:46

Lab File ID: 12CEXP16211009.0030.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.98	3.88	4.08	578.19	500.30	16
RDX	4.90	4.80	5.00	489.76	502.00	-2
3,5-Dinitroaniline	10.64	10.54	10.74	495.98	502.00	-1
Nitrobenzene	12.12	11.96	12.28	473.62	501.50	-6
4-Amino-2,6-dinitrotoluene	15.97	15.81	16.13	496.18	501.50	-1
1,3-DNB	17.83	17.68	17.98	472.54	501.00	-6
2-Nitrotoluene	23.00	22.74	23.26	465.22	502.50	-7
4-Nitrotoluene	26.43	26.17	26.69	219.81	500.50	-56
1,3,5-Trinitrobenzene	27.82	27.63	28.03	330.59	501.50	-34
2,6-Dinitrotoluene	29.13	28.84	29.44	371.62	501.50	-26
3,4-Dinitrotoluene	31.70	31.13	31.49	521.55	504.00	3
2,4-Dinitrotoluene	33.09	32.98	33.20	525.00	500.50	5
Tetryl	34.02	33.67	33.87	557.03	501.00	11
2,4,6-Trinitrotoluene	34.99	34.61	34.81	513.67	502.50	2

Compounds 14 Average of %D: 13

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/20/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 10:46

Lab File ID: 12CEXP16211009B.0030.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.13	4.03	4.23	476.68	500.30	-5
Nitroglycerin	9.11	9.01	9.21	1741.21	1947.18	-11
PETN	24.68	23.85	24.27	1567.45	1942.16	-19

Compounds 3 Average of %D: 12

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/20/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 18:34

Lab File ID: 12CEXP16211009.0041.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.00	3.88	4.08	586.01	500.30	17
RDX	4.90	4.80	5.00	508.19	502.00	1
3,5-Dinitroaniline	10.64	10.54	10.74	508.14	502.00	1
Nitrobenzene	12.12	11.96	12.28	473.99	501.50	-5
4-Amino-2,6-dinitrotoluene	15.98	15.81	16.13	495.95	501.50	-1
1,3-DNB	17.81	17.68	17.98	474.65	501.00	-5
2-Nitrotoluene	22.97	22.74	23.26	486.89	502.50	-3
4-Nitrotoluene	26.34	26.17	26.69	113.11	500.50	-77
1,3,5-Trinitrobenzene	27.69	27.63	28.03	304.74	501.50	-39
2,6-Dinitrotoluene	28.61	28.84	29.44	295.01	501.50	-41
3,4-Dinitrotoluene	31.73	31.13	31.49	515.67	504.00	2
2,4-Dinitrotoluene	33.03	32.98	33.20	495.74	500.50	-1
Tetryl	33.98	33.67	33.87	523.40	501.00	4
2,4,6-Trinitrotoluene	34.95	34.61	34.81	503.35	502.50	0

Compounds 14 Average of %D: 14

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/20/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 18:34

Lab File ID: 12CEXP16211009B.0041.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.14	4.03	4.23	478.66	500.30	-4
Nitroglycerin	9.11	9.01	9.21	1691.25	1947.18	-13
PETN	24.53	23.85	24.27	977.97	1942.16	-50

Compounds 3 Average of %D: 22

Eurofins Lancaster Laboratories
Pesticide Residue Analysis
Runlog for 12EEXP16211001
Instrument CP12--X6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211001.0001	CONDITIONER		7/29/16 16:08	1621099999	1.00
1566	12EEXP16211001.0002	3,4-DNT	AA	7/29/16 16:50	1621099999	1.00
1566	12EEXP16211001.0003	3,5-DNA	AA	7/29/16 17:33	1621099999	1.00
1566	12EEXP16211001.0004	833011624C	83301AA	7/29/16 18:15	1621099999	1.00
1566	12EEXP16211001.0005	833021624C	83302AA	7/29/16 18:58	1621099999	1.00
1566	12EEXP16211001.0006	833031624C	83303AA	7/29/16 19:40	1621099999	1.00
1566	12EEXP16211001.0007	833041624C	83304AA	7/29/16 20:23	1621099999	1.00
1566	12EEXP16211001.0008	833051624C	83305AA	7/29/16 21:05	1621099999	1.00
1566	12EEXP16211001.0009	MD83X1624C	MD83XAA	7/29/16 21:48	1621099999	1.00
1566	12EEXP16211001.0010	IC83X1624C	IC83XAA	7/29/16 22:30	1621099999	1.00
1566	12EEXP16211001.0011	BLANKA 7/5/16 RI	PBLK27187	7/29/16 23:13	161870027A	40.00
1566	12EEXP16211001.0012	MDL1 7/5/16 RI		7/29/16 23:55	161870027A	40.00
1566	12EEXP16211001.0013	MDL2 7/5/16 RI		7/30/16 0:37	161870027A	40.00
1566	12EEXP16211001.0014	MDL3 7/5/16 RI		7/30/16 1:20	161870027A	40.00
1566	12EEXP16211001.0015	MDL4 7/5/16 RI		7/30/16 2:02	161870027A	40.00
1566	12EEXP16211001.0016	MDL5 7/5/16 RI		7/30/16 2:45	161870027A	40.00
1566	12EEXP16211001.0017	MDL6 7/5/16 RI		7/30/16 3:27	161870027A	40.00
1566	12EEXP16211001.0018	MDL7 7/5/16 RI		7/30/16 4:10	161870027A	40.00
1566	12EEXP16211001.0019	MDL8 7/5/16 RI		7/30/16 4:52	161870027A	40.00
1566	12EEXP16211001.0020	MDL9 7/5/16		7/30/16 5:35	161870027A	40.00
1566	12EEXP16211001.0021	833031624C	83303KN	7/30/16 6:17	1621099999	1.00
1566	12EEXP16211001.0022	MDL10 7/5/16 RI		7/30/16 7:00	161870027A	40.00
1566	12EEXP16211001.0023	MDL11 7/5/16		7/30/16 7:42	161870027A	40.00
1566	12EEXP16211001.0024	MDL12 7/5/16		7/30/16 8:25	161870027A	40.00
1566	12EEXP16211001.0025	MDL13 7/5/16		7/30/16 9:07	161870027A	40.00
1566	12EEXP16211001.0026	MDL14 7/5/16		7/30/16 9:50	161870027A	40.00
1566	12EEXP16211001.0027	BLANKA 7/6/16	PBLK22187	7/30/16 10:32	161870022A	10.00
1566	12EEXP16211001.0028	MDL1 7/6/16		7/30/16 11:14	161870022A	10.00
1566	12EEXP16211001.0029	MDL2 7/6/16		7/30/16 11:57	161870022A	10.00
1566	12EEXP16211001.0030	MDL3 7/6/16		7/30/16 12:39	161870022A	10.00
1566	12EEXP16211001.0031	MDL4 7/6/16		7/30/16 13:22	161870022A	10.00
1566	12EEXP16211001.0032	833031624C	83303KN	7/30/16 14:04	1621099999	1.00
1566	12EEXP16211001.0033	MDL5 7/6/16		7/30/16 14:47	161870022A	10.00
1566	12EEXP16211001.0034	MDL6 7/6/16		7/30/16 15:29	161870022A	10.00
1566	12EEXP16211001.0035	MDL7 7/6/16		7/30/16 16:12	161870022A	10.00
1566	12EEXP16211001.0036	PETN1 7/6/16		7/30/16 16:54	161870022A	10.00
1566	12EEXP16211001.0037	PETN2 7/6/16		7/30/16 17:37	161870022A	10.00
1566	12EEXP16211001.0038	PETN3 7/6/16		7/30/16 18:19	161870022A	10.00
1566	12EEXP16211001.0039	PETN4 7/6/16		7/30/16 19:02	161870022A	10.00
1566	12EEXP16211001.0040	PETN5 7/6/16		7/30/16 19:44	161870022A	10.00
1566	12EEXP16211001.0041	PETN6 7/6/16		7/30/16 20:27	161870022A	10.00
1566	12EEXP16211001.0042	PETN7 7/6/16		7/30/16 21:09	161870022A	10.00
1566	12EEXP16211001.0043	833031624C	83303KN	7/30/16 21:52	1621099999	1.00

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Pesticide Residue Analysis
Runlog for 12EEXP16211009 .
Instrument CP12--X6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211009.0001	CONDITIONER		8/19/16 14:16	1623199999	1.00
1566	12EEXP16211009.0002	CONDITIONER		8/19/16 14:58	1623199999	1.00
1566	12EEXP16211009.0003	CONDITIONER		8/19/16 15:41	1623199999	1.00
1566	12EEXP16211009.0004	CONDITIONER		8/19/16 16:23	1623199999	1.00
1566	12EEXP16211009.0005	CONDITIONER		8/19/16 17:05	1623199999	1.00
1566	12EEXP16211009.0006	CONDITIONER		8/19/16 17:48	1623199999	1.00
1566	12EEXP16211009.0007	CONDITIONER		8/19/16 18:30	1623199999	1.00
1566	12EEXP16211009.0008	833031624D	83303MN	8/19/16 19:13	1623199999	1.00
1566	12EEXP16211009.0009	BLANKA 7/13/16 RI	PBLK12195	8/19/16 19:55	161950012A	40.00
1566	12EEXP16211009.0010	ISMLCS 7/13/16 RI	LCS12195	8/19/16 20:38	161950012A	40.00
1566	12EEXP16211009.0011	LCSA 7/13/16 RI	LCS12195	8/19/16 21:20	161950012A	40.00
1566	12EEXP16211009.0012	8454723 RI	D9104	8/19/16 22:03	161950012A	40.00
1566	12EEXP16211009.0013	8454723 RI	D9104DUP	8/19/16 22:45	161950012A	40.00
1566	12EEXP16211009.0014	8454723MS RI	D9104MS	8/19/16 23:27	161950012A	40.00
1566	12EEXP16211009.0015	8454727 RI	D9108	8/20/16 0:10	161950012A	40.00
1566	12EEXP16211009.0016	8454731 RI	D9112	8/20/16 0:52	161950012A	40.00
1566	12EEXP16211009.0017	8454739 RI	D9120	8/20/16 1:35	161950012A	40.00
1566	12EEXP16211009.0018	8454739MS RI	D9120MS	8/20/16 2:17	161950012A	40.00
1566	12EEXP16211009.0019	833031624D	83303MO	8/20/16 3:00	1623199999	1.00
1566	12EEXP16211009.0020	8454739MSD RI	D9120MSD	8/20/16 3:42	161950012A	40.00
1566	12EEXP16211009.0021	8454743 RI	D9124	8/20/16 4:24	161950012A	40.00
1566	12EEXP16211009.0022	8454746 RI	D9127	8/20/16 5:07	161950012A	40.00
1566	12EEXP16211009.0023	BLANKA 7/14/16 RI	PBLK14196	8/20/16 5:49	161960014A	40.00
1566	12EEXP16211009.0024	LCSA 7/14/16 RI	LCS14196	8/20/16 6:32	161960014A	40.00
1566	12EEXP16211009.0025	8457191 RI	13A-3	8/20/16 7:14	161960014A	40.00
1566	12EEXP16211009.0026	8457195 RI	13B-3	8/20/16 7:57	161960014A	40.00
1566	12EEXP16211009.0027	8457199 RI	13C-3	8/20/16 8:39	161960014A	40.00
1566	12EEXP16211009.0028	8457203 RI	12A-3	8/20/16 9:21	161960014A	40.00
1566	12EEXP16211009.0029	8457203 RI	12A-3DUP	8/20/16 10:04	161960014A	40.00
1566	12EEXP16211009.0030	833031624D	83303MP	8/20/16 10:46	1623199999	1.00
1566	12EEXP16211009.0031	8457203MS RI	12A-3MS	8/20/16 11:29	161960014A	40.00
1566	12EEXP16211009.0032	8457207 RI	12B-3	8/20/16 12:11	161960014A	40.00
1566	12EEXP16211009.0033	8457211 RI	12C-3	8/20/16 12:54	161960014A	40.00
1566	12EEXP16211009.0034	8457213 RI	40MMS	8/20/16 13:36	161960014A	40.00
1566	12EEXP16211009.0035	8457214 RI	40MMD	8/20/16 14:19	161960014A	40.00
1566	12EEXP16211009.0036	8457216 RI	D92B2	8/20/16 15:01	161960014A	40.00
1566	12EEXP16211009.0037	8469770MS RI	13A-3	8/20/16 15:44	161960014A	40.00
1566	12EEXP16211009.0038	8469771MSD RI	13A-3	8/20/16 16:26	161960014A	40.00
1566	12EEXP16211009.0039	BLANKA 7/19/16 RI	PBLK23201	8/20/16 17:09	162010023A	40.00
1566	12EEXP16211009.0040	ISMLCS 7/19/16 RI	LCS23201	8/20/16 17:51	162010023A	40.00
1566	12EEXP16211009.0041	833031624D	83303MQ	8/20/16 18:34	1623199999	1.00
1566	12EEXP16211009.0042	LCSA 7/19/16 RI	LCS23201	8/20/16 19:16	162010023A	40.00
1566	12EEXP16211009.0043	8471036 RI	D9404	8/20/16 19:58	162010023A	40.00
1566	12EEXP16211009.0044	8471036 RI	D9404DUP	8/20/16 20:41	162010023A	40.00
1566	12EEXP16211009.0045	8471044 RI	D9412	8/20/16 21:23	162010023A	40.00
1566	12EEXP16211009.0046	8471051 RI	D9416	8/20/16 22:06	162010023A	40.00
1566	12EEXP16211009.0047	8471052MS RI	D9416	8/20/16 22:48	162010023A	40.00
1566	12EEXP16211009.0048	8471053MSD RI	D9416	8/20/16 23:31	162010023A	40.00
1566	12EEXP16211009.0049	8471057 RI	D9420	8/21/16 0:13	162010023A	40.00
1566	12EEXP16211009.0050	8471061 RI	D9424	8/21/16 0:56	162010023A	40.00
1566	12EEXP16211009.0051	8471065 RI	D9428	8/21/16 1:38	162010023A	40.00
1566	12EEXP16211009.0052	833031624D	83303MR	8/21/16 2:21	1623199999	1.00
1566	12EEXP16211009.0053	8471069 RI	D9432	8/21/16 3:03	162010023A	40.00
1566	12EEXP16211009.0054	8471073 RI	D9436	8/21/16 3:45	162010023A	40.00
1566	12EEXP16211009.0055	8471076 RI	D9439	8/21/16 4:28	162010023A	40.00
1566	12EEXP16211009.0056	BLANKA 8/18/16	PBLK30231	8/21/16 5:10	162310030A	40.00

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211009.0057	LCSA 8/18/16	LCS30231	8/21/16 5:53	162310030A	40.00
1566	12EEXP16211009.0058	LCSDA 8/18/16	LCSD30231	8/21/16 6:35	162310030A	40.00
1566	12EEXP16211009.0059	8505584	E9516	8/21/16 7:18	162310030A	40.00
1566	12EEXP16211009.0060	SS1619724A		8/21/16 8:00	162310030A	100.00
1566	12EEXP16211009.0061	833031624D	83303MS	8/21/16 8:43	1623199999	1.00

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Pesticide Residue Analysis
Runlog for 12CEXP16211001
Instrument C12C--Y6329A

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Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12CEXP16211001.0001	CONDITIONER		7/29/16 16:08	1621099999	1.00
1566	12CEXP16211001.0002	3,4-DNT	AA	7/29/16 16:50	1621099999	1.00
1566	12CEXP16211001.0003	3,5-DNA	AA	7/29/16 17:33	1621099999	1.00
1566	12CEXP16211001.0004	833011624C	83301AA	7/29/16 18:15	1621099999	1.00
1566	12CEXP16211001.0005	833021624C	83302AA	7/29/16 18:58	1621099999	1.00
1566	12CEXP16211001.0006	833031624C	83303AA	7/29/16 19:40	1621099999	1.00
1566	12CEXP16211001.0007	833041624C	83304AA	7/29/16 20:23	1621099999	1.00
1566	12CEXP16211001.0008	833051624C	83305AA	7/29/16 21:05	1621099999	1.00
1566	12CEXP16211001.0009	MD83X1624C	MD83XAA	7/29/16 21:48	1621099999	1.00
1566	12CEXP16211001.0010	IC83X1624C	IC83XAA	7/29/16 22:30	1621099999	1.00
1566	12CEXP16211001.0011	BLANKA 7/5/16 RI	PBLK27187	7/29/16 23:13	161870027A	40.00
1566	12CEXP16211001.0012	MDL1 7/5/16 RI		7/29/16 23:55	161870027A	40.00
1566	12CEXP16211001.0013	MDL2 7/5/16 RI		7/30/16 0:37	161870027A	40.00
1566	12CEXP16211001.0014	MDL3 7/5/16 RI		7/30/16 1:20	161870027A	40.00
1566	12CEXP16211001.0015	MDL4 7/5/16 RI		7/30/16 2:02	161870027A	40.00
1566	12CEXP16211001.0016	MDL5 7/5/16 RI		7/30/16 2:45	161870027A	40.00
1566	12CEXP16211001.0017	MDL6 7/5/16 RI		7/30/16 3:27	161870027A	40.00
1566	12CEXP16211001.0018	MDL7 7/5/16 RI		7/30/16 4:10	161870027A	40.00
1566	12CEXP16211001.0019	MDL8 7/5/16 RI		7/30/16 4:52	161870027A	40.00
1566	12CEXP16211001.0020	MDL9 7/5/16		7/30/16 5:35	161870027A	40.00
1566	12CEXP16211001.0021	833031624C	83303KN	7/30/16 6:17	1621099999	1.00
1566	12CEXP16211001.0022	MDL10 7/5/16 RI		7/30/16 7:00	161870027A	40.00
1566	12CEXP16211001.0023	MDL11 7/5/16		7/30/16 7:42	161870027A	40.00
1566	12CEXP16211001.0024	MDL12 7/5/16		7/30/16 8:25	161870027A	40.00
1566	12CEXP16211001.0025	MDL13 7/5/16		7/30/16 9:07	161870027A	40.00
1566	12CEXP16211001.0026	MDL14 7/5/16		7/30/16 9:50	161870027A	40.00
1566	12CEXP16211001.0027	BLANKA 7/6/16	PBLK22187	7/30/16 10:32	161870022A	10.00
1566	12CEXP16211001.0028	MDL1 7/6/16		7/30/16 11:14	161870022A	10.00
1566	12CEXP16211001.0029	MDL2 7/6/16		7/30/16 11:57	161870022A	10.00
1566	12CEXP16211001.0030	MDL3 7/6/16		7/30/16 12:39	161870022A	10.00
1566	12CEXP16211001.0031	MDL4 7/6/16		7/30/16 13:22	161870022A	10.00
1566	12CEXP16211001.0032	833031624C	83303KN	7/30/16 14:04	1621099999	1.00
1566	12CEXP16211001.0033	MDL5 7/6/16		7/30/16 14:47	161870022A	10.00
1566	12CEXP16211001.0034	MDL6 7/6/16		7/30/16 15:29	161870022A	10.00
1566	12CEXP16211001.0035	MDL7 7/6/16		7/30/16 16:12	161870022A	10.00
1566	12CEXP16211001.0036	PETN1 7/6/16		7/30/16 16:54	161870022A	10.00
1566	12CEXP16211001.0037	PETN2 7/6/16		7/30/16 17:37	161870022A	10.00
1566	12CEXP16211001.0038	PETN3 7/6/16		7/30/16 18:19	161870022A	10.00
1566	12CEXP16211001.0039	PETN4 7/6/16		7/30/16 19:02	161870022A	10.00
1566	12CEXP16211001.0040	PETN5 7/6/16		7/30/16 19:44	161870022A	10.00
1566	12CEXP16211001.0041	PETN6 7/6/16		7/30/16 20:27	161870022A	10.00
1566	12CEXP16211001.0042	PETN7 7/6/16		7/30/16 21:09	161870022A	10.00
1566	12CEXP16211001.0043	833031624C	83303KN	7/30/16 21:52	1621099999	1.00

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Pesticide Residue Analysis
Runlog for 12CEXP16211009
Instrument C12C--Y6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

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1566	12CEXP16211009.0001	CONDITIONER		8/19/16 14:16	1623199999	1.00
1566	12CEXP16211009.0002	CONDITIONER		8/19/16 14:58	1623199999	1.00
1566	12CEXP16211009.0003	CONDITIONER		8/19/16 15:41	1623199999	1.00
1566	12CEXP16211009.0004	CONDITIONER		8/19/16 16:23	1623199999	1.00
1566	12CEXP16211009.0005	CONDITIONER		8/19/16 17:05	1623199999	1.00
1566	12CEXP16211009.0006	CONDITIONER		8/19/16 17:48	1623199999	1.00
1566	12CEXP16211009.0007	CONDITIONER		8/19/16 18:30	1623199999	1.00
1566	12CEXP16211009.0008	833031624D	83303MN	8/19/16 19:13	1623199999	1.00
1566	12CEXP16211009.0009	BLANKA 7/13/16 RI	PBLK12195	8/19/16 19:55	161950012A	40.00
1566	12CEXP16211009.0010	ISMLCS 7/13/16 RI	LCS12195	8/19/16 20:38	161950012A	40.00
1566	12CEXP16211009.0011	LCSA 7/13/16 RI	LCS12195	8/19/16 21:20	161950012A	40.00
1566	12CEXP16211009.0012	8454723 RI	D9104	8/19/16 22:03	161950012A	40.00
1566	12CEXP16211009.0013	8454723 RI	D9104DUP	8/19/16 22:45	161950012A	40.00
1566	12CEXP16211009.0014	8454723MS RI	D9104MS	8/19/16 23:27	161950012A	40.00
1566	12CEXP16211009.0015	8454727 RI	D9108	8/20/16 0:10	161950012A	40.00
1566	12CEXP16211009.0016	8454731 RI	D9112	8/20/16 0:52	161950012A	40.00
1566	12CEXP16211009.0017	8454739 RI	D9120	8/20/16 1:35	161950012A	40.00
1566	12CEXP16211009.0018	8454739MS RI	D9120MS	8/20/16 2:17	161950012A	40.00
1566	12CEXP16211009.0019	833031624D	83303MO	8/20/16 3:00	1623199999	1.00
1566	12CEXP16211009.0020	8454739MSD RI	D9120MSD	8/20/16 3:42	161950012A	40.00
1566	12CEXP16211009.0021	8454743 RI	D9124	8/20/16 4:24	161950012A	40.00
1566	12CEXP16211009.0022	8454746 RI	D9127	8/20/16 5:07	161950012A	40.00
1566	12CEXP16211009.0023	BLANKA 7/14/16 RI	PBLK14196	8/20/16 5:49	161960014A	40.00
1566	12CEXP16211009.0024	LCSA 7/14/16 RI	LCS14196	8/20/16 6:32	161960014A	40.00
1566	12CEXP16211009.0025	8457191 RI	13A-3	8/20/16 7:14	161960014A	40.00
1566	12CEXP16211009.0026	8457195 RI	13B-3	8/20/16 7:57	161960014A	40.00
1566	12CEXP16211009.0027	8457199 RI	13C-3	8/20/16 8:39	161960014A	40.00
1566	12CEXP16211009.0028	8457203 RI	12A-3	8/20/16 9:21	161960014A	40.00
1566	12CEXP16211009.0029	8457203 RI	12A-3DUP	8/20/16 10:04	161960014A	40.00
1566	12CEXP16211009.0030	833031624D	83303MP	8/20/16 10:46	1623199999	1.00
1566	12CEXP16211009.0031	8457203MS RI	12A-3MS	8/20/16 11:29	161960014A	40.00
1566	12CEXP16211009.0032	8457207 RI	12B-3	8/20/16 12:11	161960014A	40.00
1566	12CEXP16211009.0033	8457211 RI	12C-3	8/20/16 12:54	161960014A	40.00
1566	12CEXP16211009.0034	8457213 RI	40MMS	8/20/16 13:36	161960014A	40.00
1566	12CEXP16211009.0035	8457214 RI	40MMD	8/20/16 14:19	161960014A	40.00
1566	12CEXP16211009.0036	8457216 RI	D92B2	8/20/16 15:01	161960014A	40.00
1566	12CEXP16211009.0037	8469770MS RI	13A-3	8/20/16 15:44	161960014A	40.00
1566	12CEXP16211009.0038	8469771MSD RI	13A-3	8/20/16 16:26	161960014A	40.00
1566	12CEXP16211009.0039	BLANKA 7/19/16 RI	PBLK23201	8/20/16 17:09	162010023A	40.00
1566	12CEXP16211009.0040	ISMLCS 7/19/16 RI	LCS23201	8/20/16 17:51	162010023A	40.00
1566	12CEXP16211009.0041	833031624D	83303MQ	8/20/16 18:34	1623199999	1.00
1566	12CEXP16211009.0042	LCSA 7/19/16 RI	LCS23201	8/20/16 19:16	162010023A	40.00
1566	12CEXP16211009.0043	8471036 RI	D9404	8/20/16 19:58	162010023A	40.00
1566	12CEXP16211009.0044	8471036 RI	D9404DUP	8/20/16 20:41	162010023A	40.00
1566	12CEXP16211009.0045	8471044 RI	D9412	8/20/16 21:23	162010023A	40.00
1566	12CEXP16211009.0046	8471051 RI	D9416	8/20/16 22:06	162010023A	40.00
1566	12CEXP16211009.0047	8471052MS RI	D9416	8/20/16 22:48	162010023A	40.00
1566	12CEXP16211009.0048	8471053MSD RI	D9416	8/20/16 23:31	162010023A	40.00
1566	12CEXP16211009.0049	8471057 RI	D9420	8/21/16 0:13	162010023A	40.00
1566	12CEXP16211009.0050	8471061 RI	D9424	8/21/16 0:56	162010023A	40.00
1566	12CEXP16211009.0051	8471065 RI	D9428	8/21/16 1:38	162010023A	40.00
1566	12CEXP16211009.0052	833031624D	83303MR	8/21/16 2:21	1623199999	1.00
1566	12CEXP16211009.0053	8471069 RI	D9432	8/21/16 3:03	162010023A	40.00
1566	12CEXP16211009.0054	8471073 RI	D9436	8/21/16 3:45	162010023A	40.00
1566	12CEXP16211009.0055	8471076 RI	D9439	8/21/16 4:28	162010023A	40.00
1566	12CEXP16211009.0056	BLANKA 8/18/16	PBLK30231	8/21/16 5:10	162310030A	40.00

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12CEXP16211009.0057	LCSA 8/18/16	LCS30231	8/21/16 5:53	162310030A	40.00
1566	12CEXP16211009.0058	LCSDA 8/18/16	LCSD30231	8/21/16 6:35	162310030A	40.00
1566	12CEXP16211009.0059	8505584	E9516	8/21/16 7:18	162310030A	40.00
1566	12CEXP16211009.0060	SS1619724A		8/21/16 8:00	162310030A	100.00
1566	12CEXP16211009.0061	833031624D	83303MS	8/21/16 8:43	1623199999	1.00

Preparation and Run Logs

Explosives

Organic Extraction Batchlog Assigned to: 1429 David Hershey Reviewed by: JM 7/15 Start Date: 7/14/16 Start time: 21:30

161960014A Tech 1: D. Hern Tech 2: —

Dept: 24 Prep Analysis: 13433 Nitroaromatic/Amine Ext 8330B Nitroaromatics/Amines 8330B(s)

QC	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8457203DUP1	12A-3DUP	10.36	SS1618224A	0.1	—		40	Z	Z	315c	
8457203 Dup2	12A-3MS	10.21	SS1618224A		—		40	Z	Z	315b	
8469770MS	13A-3	10.37	SS1618224A		MS1618724B	2	40	Z	Z	315A	
8469771MSD	13A-3	10.35	SS1618224A		MS1618724B	2	40	Z	Z	315A	
BLANKA	PBLK14196	10.0	SS1618224A		—		40	Z	Z		
ISMLCS	LCS14196	10.24	SS1618224A		—		40	Z	Z		
LCSA	LCS14196	10.0	SS1618224A		MS1618724B	2	40	Z	Z		
LCSDDIA	LCSD14196	10.0	SS1618224A		ST1614624A ST1614624B	.18 .18	40	Z	Z		
LCSDIA	LCS14196	10.0	SS1618224A	↓	ST1614624A ST1614624B	.18 .18	40	Z	Z		

Solvent Used	Lot No.
Acetonitrile	157773
CaCl2 Sol'n	142907d616A
Syringe Filter	9734955
	—

Start Time: 21:40
Stop Time: 15:30

Spike Solutions: Witness: HA

ST1614624A 2,4-Diamino-6-nitrotoluene
ST1614624B 2,6-Diamino-4-nitrotoluene
MS1618724B 8330B EXPLOSIVE LOD SPIKE
SS1618224A 8330B SURROGATE

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	Sample #	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1	8457191BKG	13A-3	10.12	SS1618224A	0.1	40	Z	Z	315A	Soil;Brown	13413	19865	07/25/2016	N
2	8457195	13B-3	10.11	SS1618224A		40	Z	Z	315A	Soil;Brown	13413	19865	07/25/2016	N
3	8457199	13C-3	10.39	SS1618224A		40	Z	Z	315A	Soil;Brown	13413	19865	07/25/2016	N
4	8457203	12A-3	10.28	SS1618224A		40	Z	Z	315a	Soil;Brown	13413	19865	07/25/2016	N
5	8457207	12B-3	10.35	SS1618224A		40	Z	Z	315a	Soil;Brown	13413	19865	07/25/2016	N
6	8457211	12C-3	10.02	SS1618224A		40	Z	Z	315a	Soil;Brown	13413	19865	07/25/2016	N
7	8457213	40MMS	10.09	SS1618224A		40	Z	Z	315a	Soil;Brown	13413	19865	07/25/2016	N
8	8457214	40MMD	10.29	SS1618224A		40	Z	Z	315A	Soil;Brown	13413	19865	07/25/2016	N
9	8457216	D92B2	10.18	SS1618224A		40	Z	Z	315A	Soil;Brown	13413	19865	07/25/2016	N

8469769BKG 10.1 ↓ ↓ 40 ↓ 315A ↓ (3) DH 1424 7-14-16 DH HM 7/14/16

Rack ID:		Work Station		Micro Temp 100?	
Internal Standard		Balance #			

S-bath ID	C	S-bath ID	C	N-Evap	C	M-vap	C	161960014A

Documented temps are NIST corrected.

DF = Dilution Factor FV = Final Volume

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010629 | Revision: 2 | Historical Reference: Form 6103

Effective date: Feb 5, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
Metals Blank (A)	13588												7-13-16	10:45		8457215 96A
	13564													10:46		8457216 96A
Sand Blank (A)	2203													↓		↓
8457190 8469769	13588				34	NA	NA	↑	↑	SOIL	X	X		1050		
8457191	13564	3.10	3.09	y	~~2036~~			421.06	45.01	Sticks				1052		
	2203				1			↓	↓					↓		
8469768	13588				34			↑	↑	SOIL				1100		
8469770 8469776	13564	3.05	3.04	y	~~2036~~			421.06	45.01	Sticks				1105		
	2203				1			↓	↓					↓		
8469768	13588				34			↑	↑	SOIL				1110		
8469771	13564	3.13	3.13	y	~~2036~~			421.06	45.01	Sticks				1115		
	2203				1			↓	↓					↓		
8457194	13588				34			459.81	64.43					1120		
8457195	13564	3.11	3.11	y	36									1125		
	2203				1			↓	↓							

Reviewed by: _____ Date: _____

DWD93 Page 352 of 357

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 6103

Effective date: Feb 5, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8457198	13588				34	X	X	421.59	79.97	SOIL	X	X	2/5/16	1125	[illegible]	
8457199	13564	3.24	3.24	Y	36	X	X	"	"	STICKS				1129		
	2203				1	X	X	"	"	↓						
8457202	13588				34	X	X	450.89	50.33	SOIL				1135		
8457203	13564	3.33	3.33	Y	36	X	X	"	"	STICKS				1153		
	2203				1	X	X	"	"	↓						
8457204	13588				34	X	X	468.12	34.70	SOIL				1158		
8457207	12564	3.20	3.19	Y	36	X	X	"	"	STICKS				1204		
	2203				1	X	X	"	"	↓						
8457210	13588				34	X	X	267.98	27.80	SOIL				1215		
8457211	12564	3.39	3.38	Y	36	X	X	"	"	~~ROOTS~~				1220		
	2203				1	X	X	"	"	STICKS 7.54g 05/3.80						
	13588				~~34 SOIL 1.5g~~	X	X	↑	↑	SOIL						
8457213	12564	3.04	3.04	Y	36	X	X	295.27	3.75	roots				1230		
	2203				1	X	X	1	↓		↓	↓	↓		↓	

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-R-QM-FOR-9010629 | Revision: 2 | Historical Reference: Form 5103

Effective date: Feb 6, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
	13588					NA	NA	300.91	124	SOIL	X	X	7-13-16	1240	SJ 880	
8457214	13564	3.15	3.15	y	36	↓	↓	↓	↓	roots	X	X		↓		
	2203										X	X				
Metals Blank (B)	13588										X	X		1243		8457215 96B
	13564										X	X		1250		8457216 96B
Sand Blank (B)	2203										X	X				↓
8457215	13588				20						X	X		1244		Metals Blank
	12564				20						X	X		1251		Sand Blank
8457216	2203				↓	↓	↓				X	X	↓		↓	↓
	13588															
	12564															
	2203															
	13588															
	12564															
	2203															

Reviewed by: _____ Date: _____

Perchlorate Data

Case Narrative/Conformance Summary

Perchlorate

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Pesticide Residue Analysis

Fraction: Perchlorate

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8457191	DU-1-3-A		X	1	Unspiked
8457195	DU-1-3-B		X	1	
8457199	DU-1-3-C		X	1	
8457203	DU-1-2-A		X	1	
8457207	DU-1-2-B		X	1	
8457211	DU-1-2-C		X	1	
8457216	Exp/Perchlorate Blank		X	1	Blank
8469770	DU-1-3-A MS		X	1	Matrix Spike
8469771	DU-1-3-A MSD		X	1	Matrix Spike Duplicate

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: 161970016A (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457216, 8469770-8469771, UNSPK: 8469770-8457191)
The recovery(ies) for the following analyte(s) in the LCS is below the acceptance window:
Perchlorate in Soil LC/MS/MS

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Pesticide Residue Analysis

Fraction: Perchlorate

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

(Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457216, 8469770-8469771: Analysis: 06557)
The stated QC limits are advisory.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Perchlorate

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Quality Control Reference List
Pesticide Residue Analysis

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Fraction: Perchlorate

Analysis	Batch Number	Sample Number	Analysis Date
Perchlorate in Soil LC/MS/MS	161970016A	PBLK16197	07/18/2016 12:34:00
		LCS16197	07/18/2016 13:00:00
		8457191 UNSPK	07/18/2016 16:11:00
		8457195	07/18/2016 16:49:00
		8457199	07/18/2016 17:14:00
		8457203	07/18/2016 17:27:00
		8457207	07/18/2016 17:40:00
		8457211	07/18/2016 17:52:00
		8457216	07/18/2016 18:05:00
		8469770 MS	07/18/2016 16:23:00
		8469771 MSD	07/18/2016 16:36:00
Perchlorate in Soil LC/MS/MS	162020019A	PBLK19202	07/27/2016 16:36:00
		LCS19202	07/27/2016 17:02:00
		8457216	07/27/2016 17:14:00
		8457216 DUP	07/27-2016 17:27:00

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LOQ/MDL Summary
Pesticide Residue Analysis

SDG: DWD93

Fraction: Perchlorate

06557: Perchlorate in Soil LC/MS/MS Analyte Name	Default MDL	Default LOQ	Units
Perchlorate in Soil LC/MS/MS	2.1	5.0	ug/kg

Quality Control Summary
Method Blank
Pesticide Residue Analysis
SDG: DWD93
Matrix: SOLID

Fraction: Perchlorate

161970016A / PBLK16197 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Perchlorate in Soil LC/MS/MS	07/18/16	N.D.	ug/kg	2.1	5.0

162020019A / PBLK19202 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Perchlorate in Soil LC/MS/MS	07/27/16	N.D.	ug/kg	2.1	5.0

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Quality Control Summary
Matrix Spike/Matrix Spike Duplicate

SDG: DWD93
Matrix: SOLID

Pesticide Residue Analysis

Fraction: Perchlorate

UNSPK: 8457191 MS: 8469770 MSD: 8469771 **Analyte**	Batch: **161970016A** (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457216, 8469770-8469771)								
	Spike Added ug/kg	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Perchlorate in Soil LC/MS/MS	100	N.D.	94.66	95.26	95	95	70-130	1	15

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD93
Matrix: SOLID

Pesticide Residue Analysis

Fraction: Perchlorate

LCS: LCS16197	Batch: **161970016A** (Sample number(s): 8457191, 8457195, 8457199, 8457203, 8457207, 8457211, 8457216, 8469770-8469771)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Perchlorate in Soil LC/MS/MS	100	59.17	NA	59 *	NA	80-120	NA	NA

LCS: LCS19202	Batch: **162020019A** (Sample number(s): 8457216)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Perchlorate in Soil LC/MS/MS	100	101.85	NA	102	NA	80-120	NA	NA

Quant Calibration Report (ISTD)

Batch Info

Batch Data Path D:\MassHunter\Data\perchlorate\QuantResults\ms5p20016.batch.xml

Analysis Time	2016-07-19 08:41	**Analyst Name**	Administrator
Report Time	2016-07-19 08:42	**Reporter Name**	Administrator
Last Calib Update	2016-07-19 08:37	**Batch State**	ResultsDirty

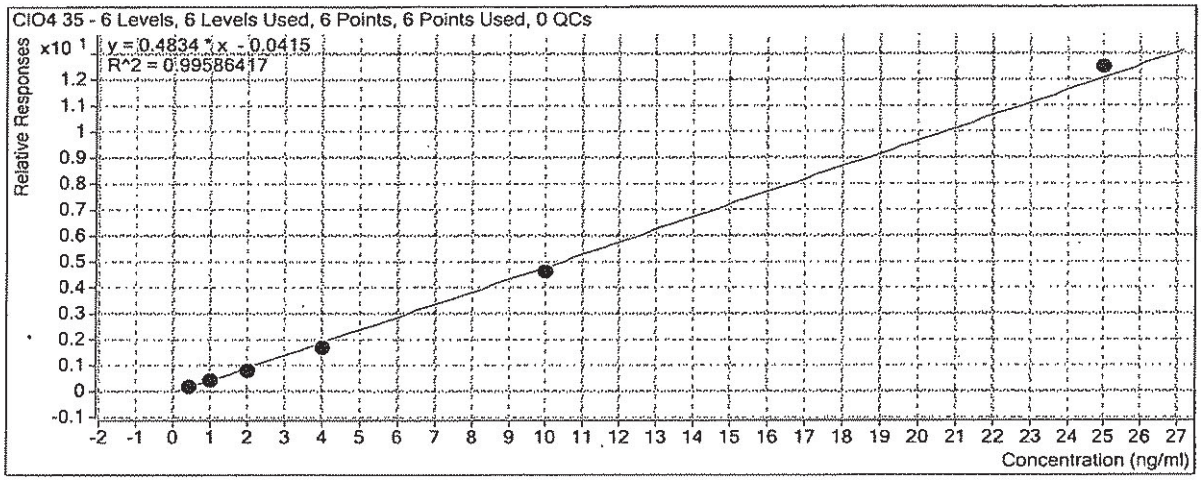
Calibration Info

ISTD Compound *ClO4 18*

25171

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20016004.d	Calibration	L1	☑	22036	10.0000	2203.6130
ms5p20016005.d	Calibration	L2	☑	23308	10.0000	2330.7835
ms5p20016006.d	Calibration	L3	☑	25664	10.0000	2566.3604
ms5p20016007.d	Calibration	L4	☑	27501	10.0000	2750.1220
ms5p20016008.d	Calibration	L5	☑	27269	10.0000	2726.9297
ms5p20016009.d	Calibration	L6	☑	25247	10.0000	2524.6893

Target Compound *ClO4 35*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20016004.d	Calibration	L1	☑	4208	0.4000	4.7742
ms5p20016005.d	Calibration	L2	☑	10659	1.0000	4.5732
ms5p20016006.d	Calibration	L3	☑	20511	2.0000	3.9961
ms5p20016007.d	Calibration	L4	☑	46386	4.0000	4.2167
ms5p20016008.d	Calibration	L5	☑	126143	10.0000	4.6258
ms5p20016009.d	Calibration	L6	☑	315245	25.0000	4.9946

ION RATIO USING LEVEL 4

3.17

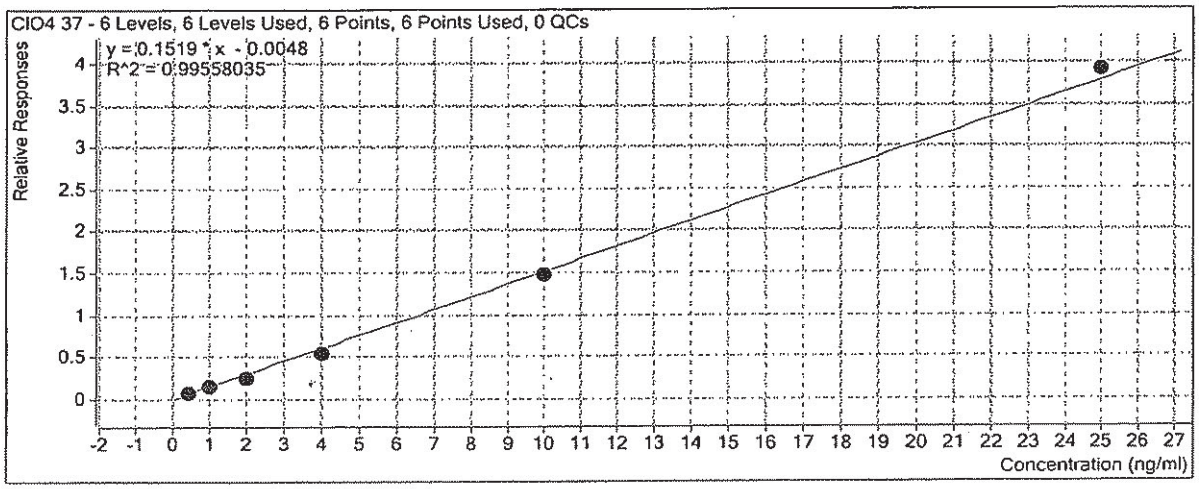
Valerie L. Tomayko
Principal Specialist

JUL 20 2016

2/5/16

Quant Calibration Report (ISTD)

Target Compound *ClO4 37*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20016004.d	Calibration	L1	☑	1486	0.4000	1.6855
ms5p20016005.d	Calibration	L2	☑	3649	1.0000	1.5656
ms5p20016006.d	Calibration	L3	☑	6557	2.0000	1.2775
ms5p20016007.d	Calibration	L4	☑	14621	4.0000	1.3291
ms5p20016008.d	Calibration	L5	☑	40204	10.0000	1.4743
ms5p20016009.d	Calibration	L6	☑	99128	25.0000	1.5705

Quant Calibration Report (ISTD)

Batch Info

Batch Data Path	D:\MassHunter\Data\perchlorate\QuantResults\ms5p20916.batch.xml		
Analysis Time	2016-07-28 07:35	**Analyst Name**	Administrator
Report Time	2016-07-28 07:36	**Reporter Name**	Administrator
Last Calib Update	2016-07-28 07:32	**Batch State**	ResultsDirty

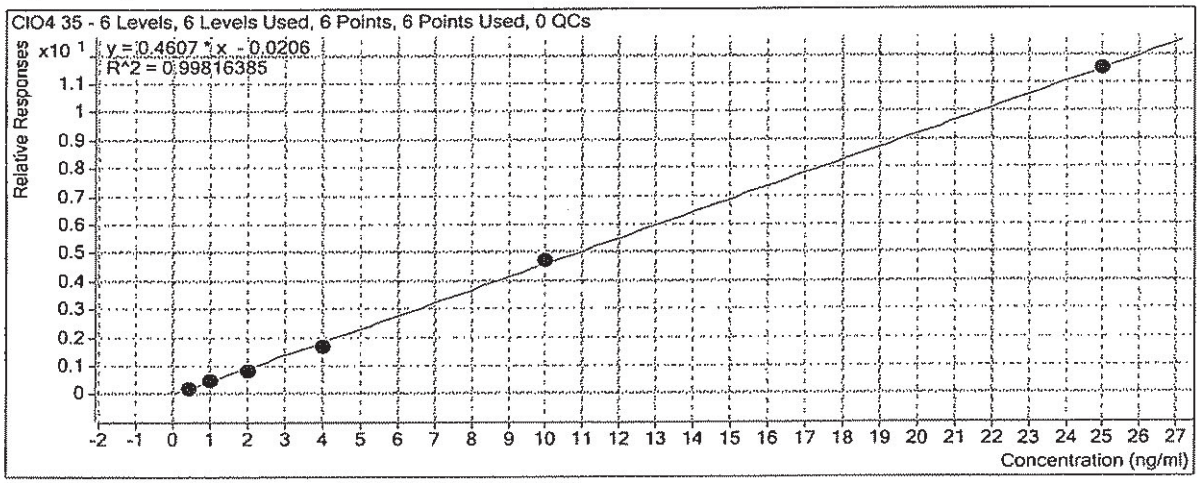
Calibration Info

22934

ISTD Compound *ClO4 18*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20916004.d	Calibration	L1	☑	23578	10.0000	2357.7939
ms5p20916005.d	Calibration	L2	☑	23125	10.0000	2312.5308
ms5p20916006.d	Calibration	L3	☑	23602	10.0000	2360.1881
ms5p20916007.d	Calibration	L4	☑	24113	10.0000	2411.3007
ms5p20916008.d	Calibration	L5	☑	21819	10.0000	2181.9279
ms5p20916009.d	Calibration	L6	☑	21365	10.0000	2136.4740

Target Compound *ClO4 35*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20916004.d	Calibration	L1	☑	4273	0.4000	4.5308
ms5p20916005.d	Calibration	L2	☑	10642	1.0000	4.6017
ms5p20916006.d	Calibration	L3	☑	19137	2.0000	4.0542
ms5p20916007.d	Calibration	L4	☑	40391	4.0000	4.1877
ms5p20916008.d	Calibration	L5	☑	103637	10.0000	4.7498
ms5p20916009.d	Calibration	L6	☑	246392	25.0000	4.6131

ION RATIO USING LEVEL 4

2.97

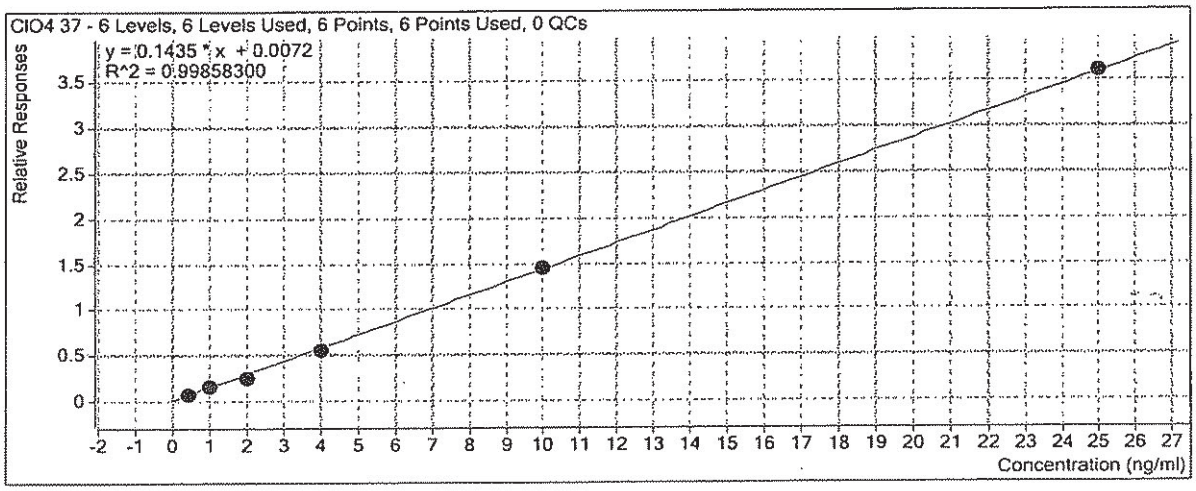
Susan M. Goshert
Susan M. Goshert
Manager

JUL 28 2016

7/28/16

Quant Calibration Report (ISTD)

Target Compound *ClO4 37*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20916004.d	Calibration	L1	☑	1583	0.4000	1.6781
ms5p20916005.d	Calibration	L2	☑	3802	1.0000	1.6441
ms5p20916006.d	Calibration	L3	☑	6072	2.0000	1.2863
ms5p20916007.d	Calibration	L4	☑	13605	4.0000	1.4105
ms5p20916008.d	Calibration	L5	☑	31796	10.0000	1.4572
ms5p20916009.d	Calibration	L6	☑	77248	25.0000	1.4463

QQQ Autotune Report

Instrument Name	Instrument 1	**MS Model**	G6410A
Tune Date & Time	2016-07-18 09:40		
Data Path	D:\MassHunter\Tune\QQQ\atunes.TUNE.XML		
Ion Source	ESI		
Ionization Mode	ESI		

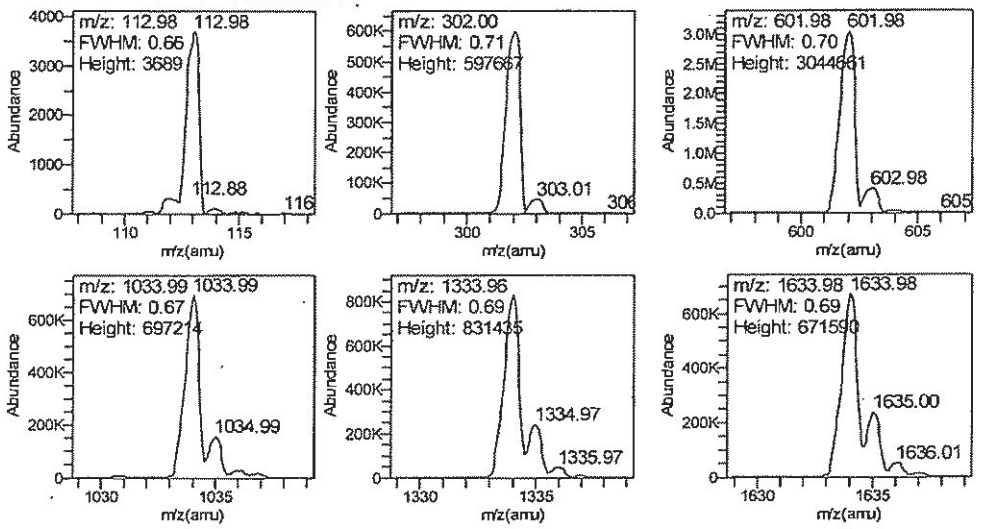
Source Parameters

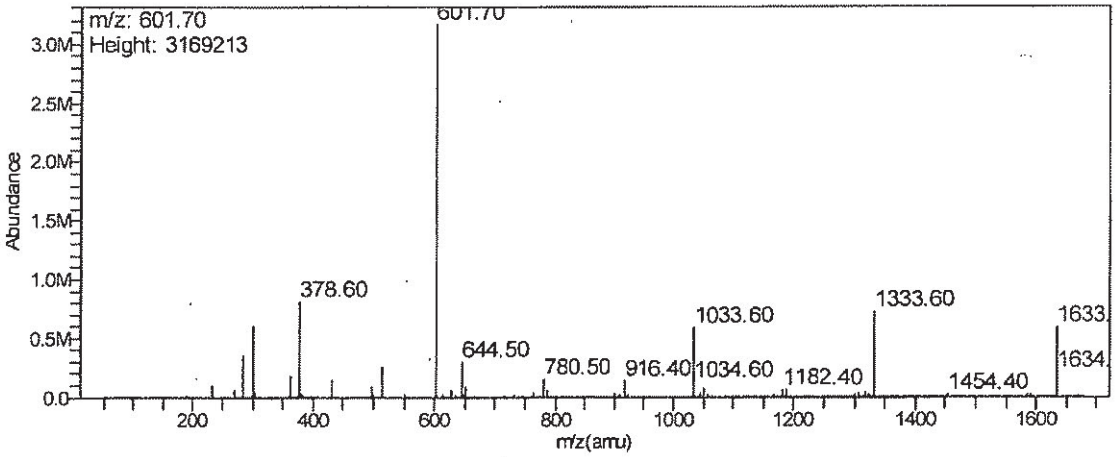
Parameter	Value
Gas Temp	350
Gas Flow	10
Nebulizer	30
Capillary	4000

QQQ Autotune Report

Negative Results

Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Unit*

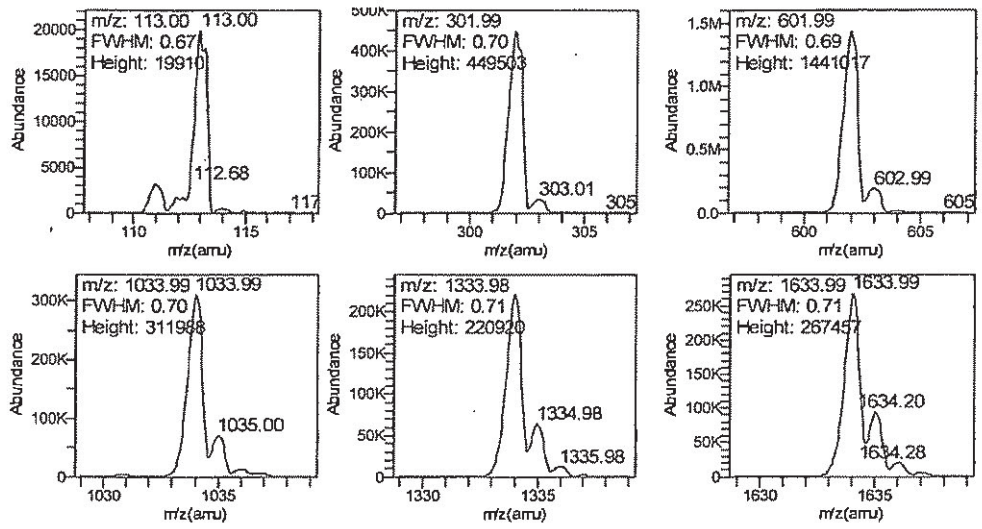


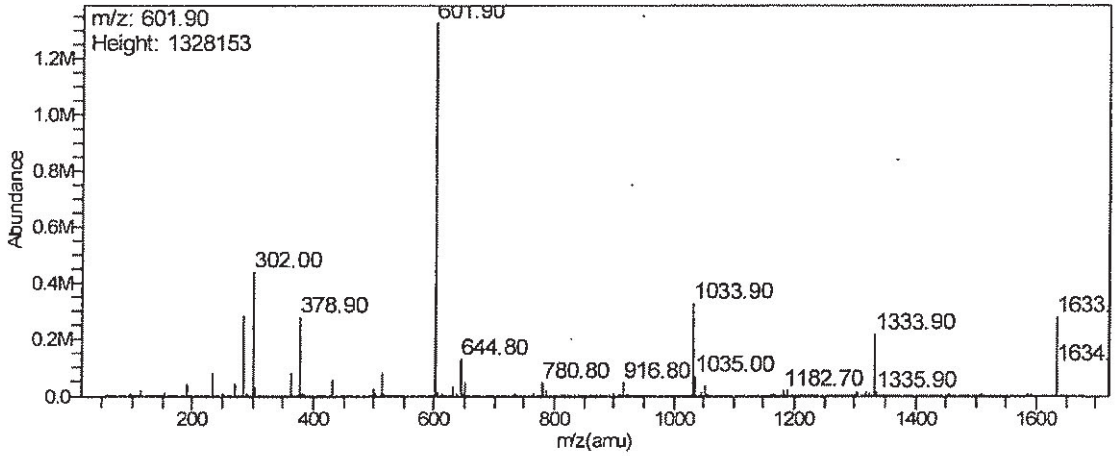


m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.98	112.99	0.66	0.70	3689
301.99	302.00	0.71	0.70	597667
601.98	601.98	0.70	0.70	3044661
1033.98	1033.99	0.67	0.70	697214
1333.98	1333.97	0.69	0.70	831435
1634.00	1633.95	0.69	0.70	671590

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Unit*

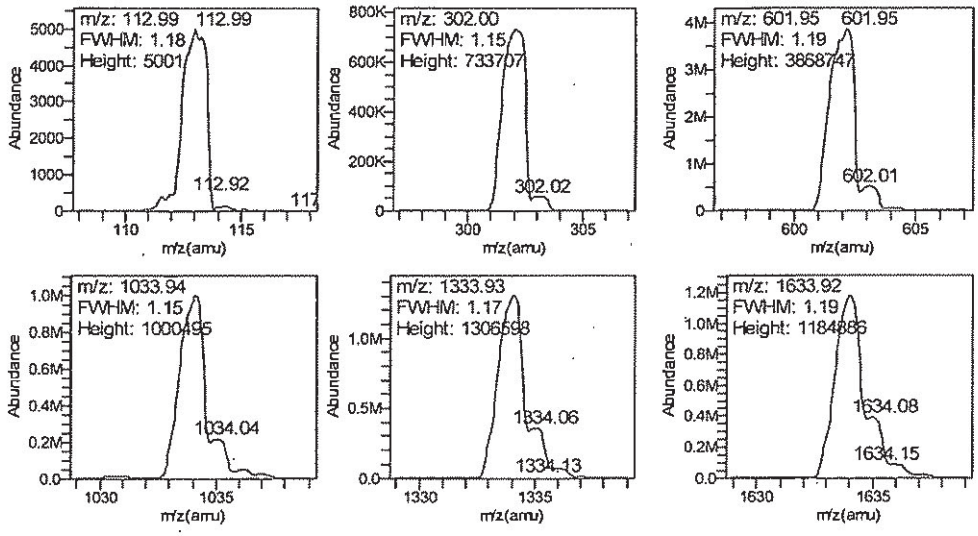




m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.01	112.99	0.67	0.70	19910
301.99	302.00	0.70	0.70	449503
601.98	601.98	0.69	0.70	1441017
1033.99	1033.99	0.70	0.70	311988
1333.99	1333.97	0.71	0.70	220920
1634.00	1633.95	0.71	0.70	267457

QQQ Autotune Report

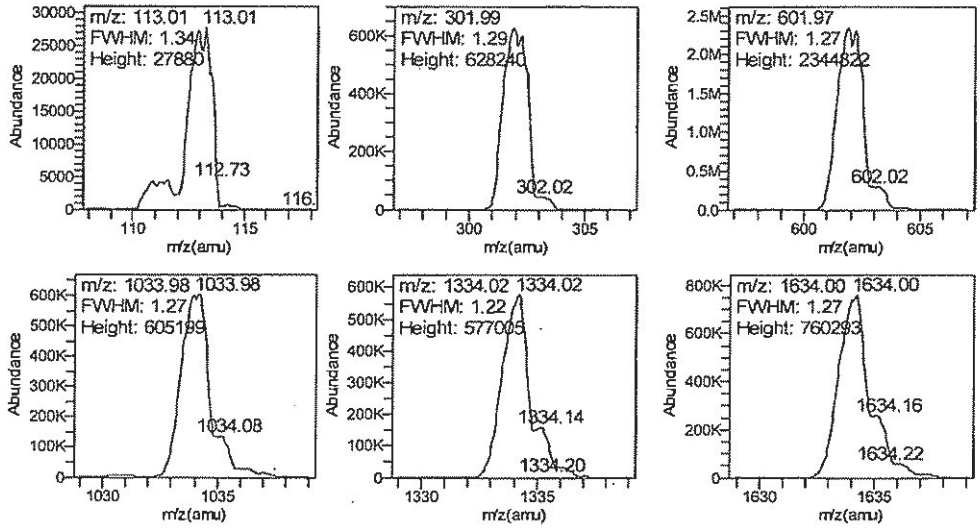
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.00	112.99	1.18	1.20	5001
302.00	302.00	1.15	1.20	733707
601.95	601.98	1.19	1.20	3868747
1033.93	1033.99	1.15	1.20	1000495
1333.94	1333.97	1.17	1.20	1306599
1633.93	1633.95	1.19	1.20	1184886

QQQ Autotune Report

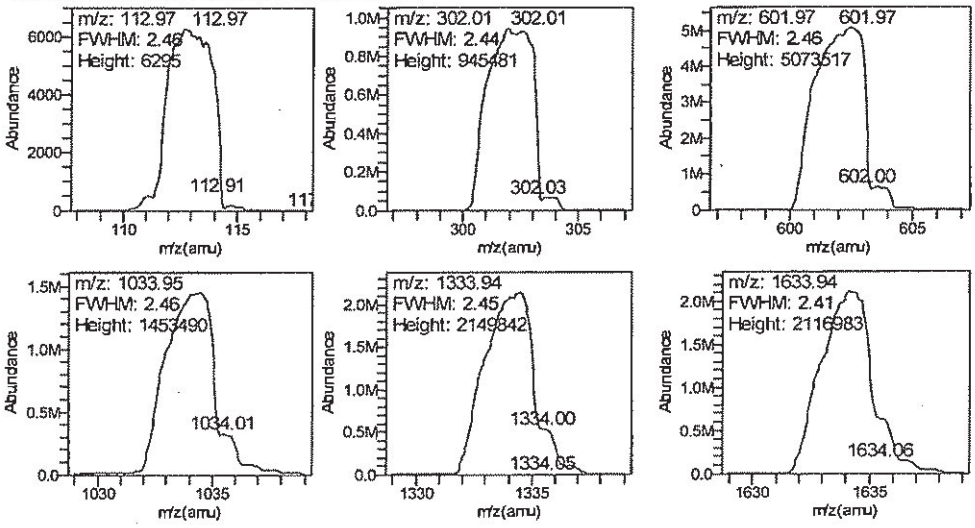
Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.01	112.99	1.34	1.20	27880
301.99	302.00	1.29	1.20	628240
601.96	601.98	1.27	1.20	2344822
1033.98	1033.99	1.27	1.20	605199
1334.03	1333.97	1.22	1.20	577005
1634.01	1633.95	1.27	1.20	760293

QQQ Autotune Report

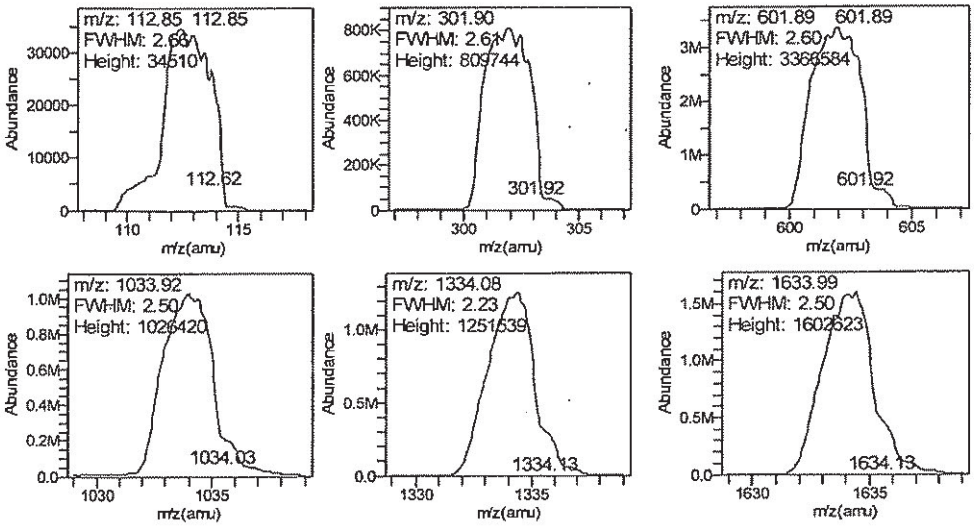
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.97	112.99	2.46	2.50	6295
302.01	302.00	2.44	2.50	945481
601.97	601.98	2.46	2.50	5073517
1033.94	1033.99	2.46	2.50	1453490
1333.95	1333.97	2.45	2.50	2149843
1633.95	1633.95	2.42	2.50	2116983

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.85	112.99	2.66	2.50	34510
301.90	302.00	2.60	2.50	809744
601.89	601.98	2.60	2.50	3366584
1033.91	1033.99	2.50	2.50	1026420
1334.09	1333.97	2.23	2.50	1251539
1634.00	1633.95	2.51	2.50	1602624

QQQ Autotune Report

Negative Parameters

Tune Parameters

Parameter	Setting
Fragmentor	135.00
Skimmer	15.00
Octopole DC	5.00
Octopole RF	600.00
Lens1	0.00
Lens2 DC	2.20
Lens2 RF Enable	1.00
Lens2 RF	318.00
Lens2 RF Phase	-108.00
MS1 DC	-3.00
MS1 PostFilter	-2.00
MS1 Axis Offset	0.79
MS1 Axis Gain	-29.05
MS1 Width Offset	0.03
MS1 Width Gain	31.40
MS1 Heater	100.00
MS2 DC	12.00
MS2 PreFilter	27.00
MS2 Axis Offset	0.70
MS2 Axis Gain	15.95
MS2 Width Offset	0.12
MS2 Width Gain	18.60
MS2 Heater	100.00
Cell Entry	0.00
Hexapole DC	0.00
Hexapole RF	400.00
Hexapole Accel	7.00
Cell Exit	8.00
Collision Gas	1.00
Iris	400.00
HED	10.00
EMV	1320.00
Collision Energy	0.00
Lens2 DC RF Off	25.00

Dynamic Ramp Tables

Lens2 DC

m/z	Setting
112.99	0.70
302.00	1.20
601.98	1.90
1033.99	3.00
1333.97	3.80
1633.95	4.50

Lens2 RF

m/z	Setting
112.99	87.00
302.00	116.00
601.98	161.00
1033.99	227.00
1333.97	272.00
1633.95	318.00

MS1 Axis Offset

m/z	Setting
112.99	0.79
302.00	0.83
601.98	0.83
1033.99	0.82
1333.97	0.78
1633.95	0.79

MS1 Width Offset

m/z	Setting
112.99	0.03
302.00	0.07
601.98	0.09
1033.99	0.06
1333.97	0.06
1633.95	0.03

MS2 Axis Offset

m/z	Setting
112.99	0.70
302.00	0.73
601.98	0.74
1033.99	0.73
1333.97	0.69
1633.95	0.70

MS2 Width Offset

m/z	Setting
112.99	0.12
302.00	0.13
601.98	0.13
1033.99	0.14
1333.97	0.13
1633.95	0.12

MS1 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	-29.05	0.79	31.40	0.03
Wide	-29.40	0.99	31.60	0.42
Widest	-29.65	1.42	32.00	1.39

QQQ Autotune Report

MS2 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	15.95	0.70	18.60	0.12
Wide	15.70	0.94	19.00	0.57
Widest	15.55	1.30	19.30	1.54

QQQ Autotune Report

Instrument Name	Instrument 1	**MS Model**	G6410A
Tune Date & Time	2016-07-27 13:19		
Data Path	D:\MassHunter\Tune\QQQ\atunes.TUNE.XML		
Ion Source	ESI		
Ionization Mode	ESI		

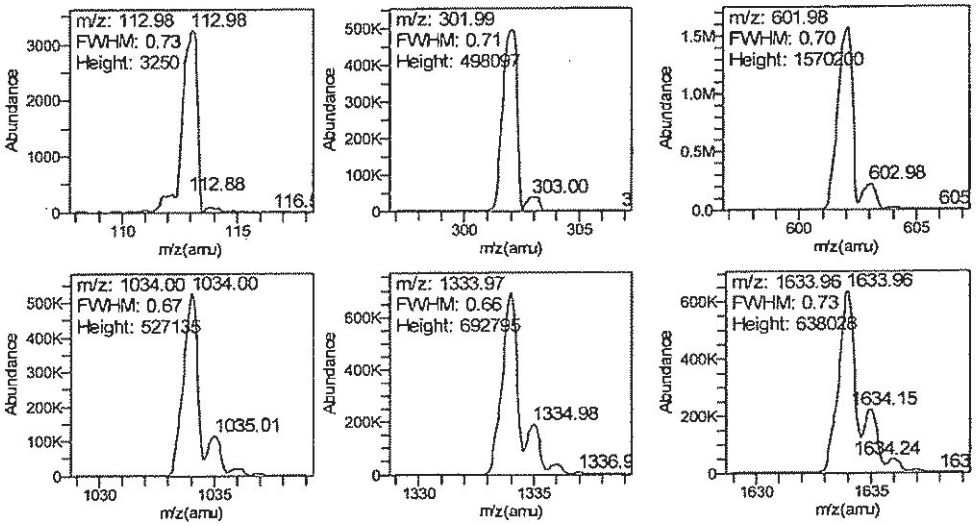
Source Parameters

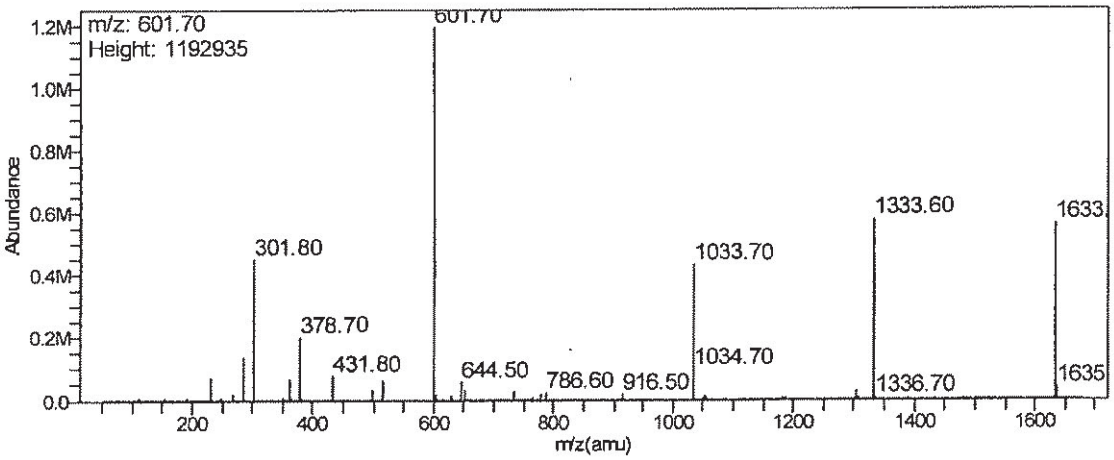
Parameter	Value
Gas Temp	350
Gas Flow	10
Nebulizer	30
Capillary	4000

QQQ Autotune Report

Negative Results

Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Unit*

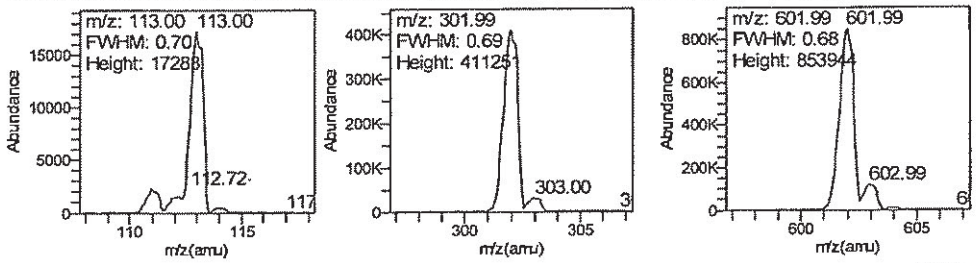


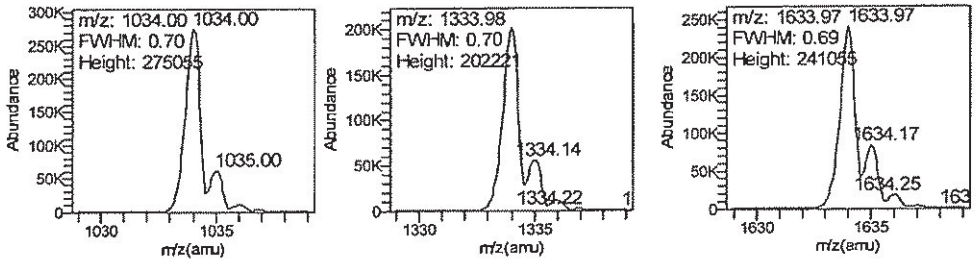


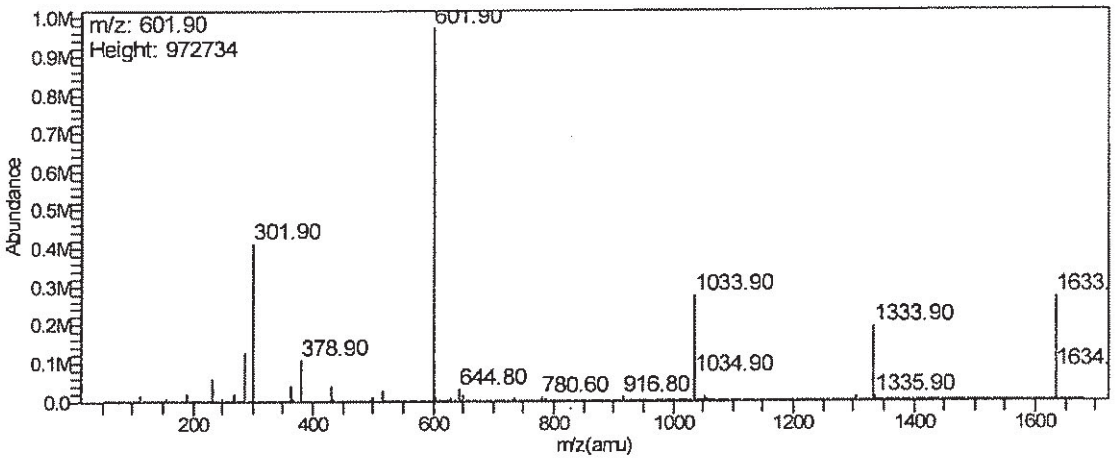
m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.98	112.99	0.73	0.70	3250
301.98	302.00	0.71	0.70	498097
601.98	601.98	0.70	0.70	1570200
1034.00	1033.99	0.66	0.70	527135
1333.98	1333.97	0.66	0.70	692795
1633.98	1633.95	0.73	0.70	638028

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Unit*



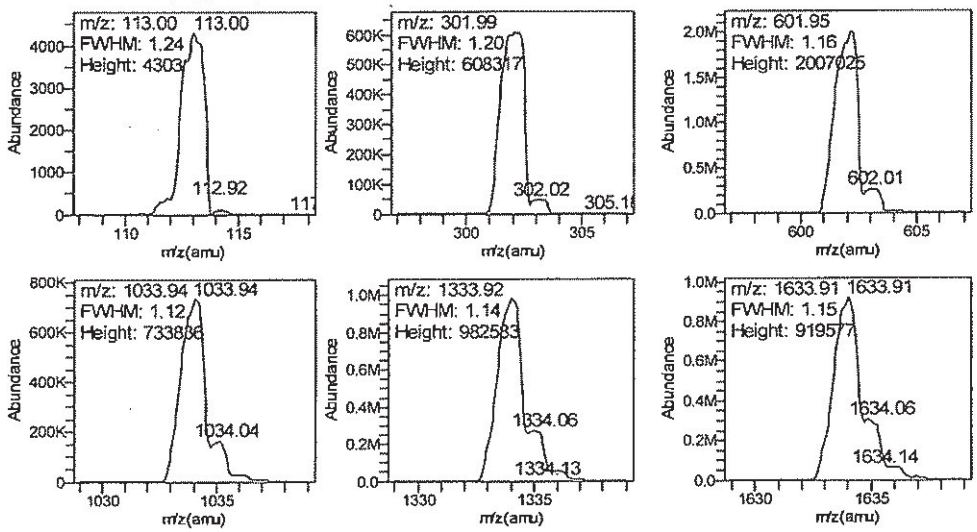




m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.00	112.99	0.70	0.70	17288
301.99	302.00	0.69	0.70	411251
601.99	601.98	0.68	0.70	853944
1033.99	1033.99	0.70	0.70	275055
1333.99	1333.97	0.70	0.70	202221
1633.98	1633.95	0.69	0.70	241055

QQQ Autotune Report

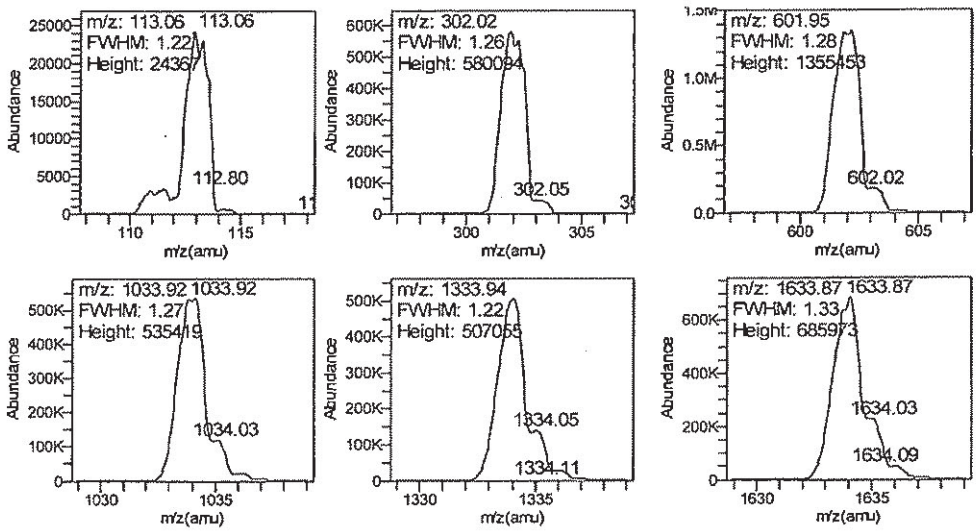
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.00	112.99	1.24	1.20	4303
301.99	302.00	1.20	1.20	608317
601.95	601.98	1.16	1.20	2007025
1033.94	1033.99	1.12	1.20	733836
1333.94	1333.97	1.14	1.20	982583
1633.92	1633.95	1.16	1.20	919577

QQQ Autotune Report

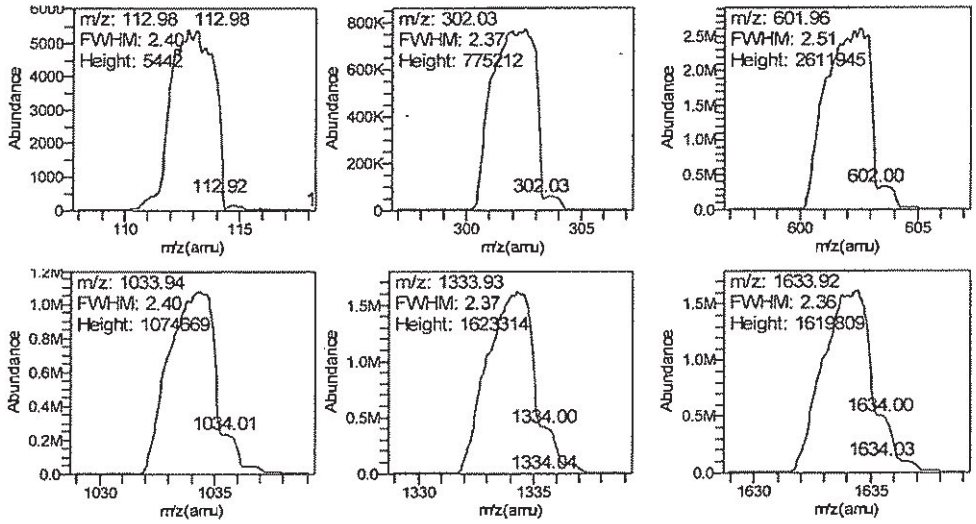
Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.06	112.99	1.22	1.20	24367
302.01	302.00	1.26	1.20	580094
601.95	601.98	1.28	1.20	1355453
1033.92	1033.99	1.27	1.20	535419
1333.95	1333.97	1.22	1.20	507055
1633.88	1633.95	1.33	1.20	685973

QQQ Autotune Report

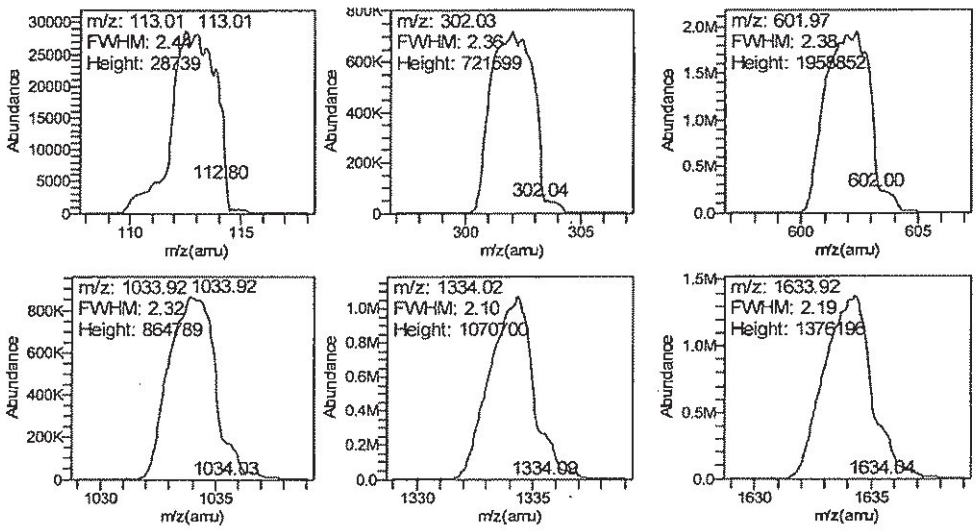
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.98	112.99	2.40	2.50	5442
302.02	302.00	2.37	2.50	775212
601.96	601.98	2.51	2.50	2611945
1033.94	1033.99	2.40	2.50	1074669
1333.94	1333.97	2.37	2.50	1623314
1633.93	1633.95	2.36	2.50	1619810

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.01	112.99	2.44	2.50	28739
302.02	302.00	2.36	2.50	721599
601.97	601.98	2.38	2.50	1958852
1033.92	1033.99	2.32	2.50	864789
1334.04	1333.97	2.10	2.50	1070700
1633.94	1633.95	2.19	2.50	1376196

QQQ Autotune Report

Negative Parameters

Tune Parameters

Parameter	Setting
Fragmentor	135.00
Skimmer	15.00
Octopole DC	5.00
Octopole RF	600.00
Lens1	0.00
Lens2 DC	2.00
Lens2 RF Enable	1.00
Lens2 RF	318.00
Lens2 RF Phase	-108.00
MS1 DC	-3.00
MS1 PostFilter	-2.00
MS1 Axis Offset	0.80
MS1 Axis Gain	-29.10
MS1 Width Offset	0.06
MS1 Width Gain	31.50
MS1 Heater	100.00
MS2 DC	12.00
MS2 PreFilter	27.00
MS2 Axis Offset	0.70
MS2 Axis Gain	15.85
MS2 Width Offset	0.14
MS2 Width Gain	18.50
MS2 Heater	100.00
Cell Entry	0.00
Hexapole DC	0.00
Hexapole RF	400.00
Hexapole Accel	7.00
Cell Exit	8.00
Collision Gas	1.00
Iris	175.00
HED	10.00
EMV	1300.00
Collision Energy	0.00
Lens2 DC RF Off	28.00

Dynamic Ramp Tables

Lens2 DC

m/z	Setting
112.99	0.70
302.00	1.20
601.98	2.00
1033.99	3.10
1333.97	3.90
1633.95	4.70

Lens2 RF

m/z	Setting
112.99	87.00
302.00	116.00
601.98	161.00
1033.99	227.00
1333.97	272.00
1633.95	318.00

MS1 Axis Offset

m/z	Setting
112.99	0.80
302.00	0.83
601.98	0.84
1033.99	0.84
1333.97	0.80
1633.95	0.80

MS1 Width Offset

m/z	Setting
112.99	0.06
302.00	0.04
601.98	0.06
1033.99	0.02
1333.97	0.02
1633.95	0.06

MS2 Axis Offset

m/z	Setting
112.99	0.70
302.00	0.73
601.98	0.75
1033.99	0.75
1333.97	0.72
1633.95	0.70

MS2 Width Offset

m/z	Setting
112.99	0.14
302.00	0.13
601.98	0.13
1033.99	0.15
1333.97	0.16
1633.95	0.14

MS1 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	-29.10	0.80	31.50	0.06
Wide	-29.45	1.00	31.50	0.43
Widest	-29.70	1.41	32.00	1.33

QQQ Autotune Report

MS2 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	15.85	0.70	18.50	0.14
Wide	15.35	0.98	19.00	0.55
Widest	15.10	1.37	19.30	1.39

Continuing Calibration Method 6850

Run # ms5p20016

		Found ug/L	Added ug/L	%D	
MS5P20016010					
RT (min)					
1.84	perchlorate	3.7	4	-8%	ICV
MS5P20016021					
RT (min)					
1.84	perchlorate	0.43	0.4	7%	
MS5P20016032					
RT (min)					
1.84	perchlorate	3.6	4	-10%	
MS5P20016043					
RT (min)					
1.84	perchlorate	0.45	0.4	13%	
MS5P20016046					
RT (min)					
1.84	perchlorate	3.6	4	-10%	

entered by [signature] 7/29/16

verified by [signature] 7/30/16

Continuing Calibration Method 6850

Run # ms5p20916

MS5P20916010		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.83	perchlorate	4.4	4	10%	ICV

MS5P20916021		Found	Added	
RT (min)		ug/L	ug/L	%D
1.82	perchlorate	0.46	0.4	15%

MS5P20916027		Found	Added	
RT (min)		ug/L	ug/L	%D
1.83	perchlorate	3.8	4	-5%

entered by _____ 7/28/16

verified by _____ Susan M. Gasker Manager

JUL 28 2016

Worklist Report

Worklist Path:	D:\MassHunter\Worklists\ms5p20016.wkl

Worklist Run Parameters

Operator Name:	---
Run Type:	Standard Start
Part of Method to Run:	Acquisition Only
Execution for Acquisition-DA:	Synchronous
Acquisition Method Path:	D:\MassHunter\methods
DA Method Path:	D:\MassHunter\methods
Data File Path:	D:\MassHunter\data
Pre-Worklist Script:	---
Post-Worklist Script:	---
Acquisition Clean Up Script:	---
Overlapped Injection:	Yes
Clear sample selection after run:	Yes
Wait Time for Ready(Min):	10
Threshold Disk Value(MB):	10240
Comment:	---

Worklist Table

Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Dilution	Comment
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016001.d	Sample		1	
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016002.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016002a.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016002b.d	Sample		1	
Perc11624a	P1-A3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016003.d	Sample		1	
Perc21624a	P1-A4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016004.d	Calibration	L1	1	

Perc31624a	P1-A5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016005.d	Calibration	L2	1	
Perc41624a	P1-A6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016006.d	Calibration	L3	1	
Perc51624a	P1-A7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016007.d	Calibration	L4	1	
Perc61624a	P1-A8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016008.d	Calibration	L5	1	
Perc71624a	P1-A9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016009.d	Calibration	L6	1	
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016010.d	Sample		1	
BLANKA	P1-B2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016011.d	Sample		10	161970016A
LCSA	P1-B3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016012.d	Sample		10	161970016A
ISMLCS	P1-B4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016013.d	Sample		10	161970016A
8449088	P1-B5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016014.d	Sample		10	161970016A
8449092	P1-B6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016015.d	Sample		10	161970016A
8449096	P1-B7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016016.d	Sample		10	161970016A
8450971	P1-B8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016017.d	Sample		10	161970016A
8450975	P1-B9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016018.d	Sample		10	161970016A
8450979	P1-C1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016019.d	Sample		10	161970016A
8454723	P1-C2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016020.d	Sample		10	161970016A
lcperc21624a	P1-C3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016021.d	Sample		1	
8454727	P1-C4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016022.d	Sample		10	161970016A
8454731	P1-C5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016023.d	Sample		10	161970016A
8454735	P1-C6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016024.d	Sample		10	161970016A
8454739	P1-C7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016025.d	Sample		10	161970016A
8454743	P1-C8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016026.d	Sample		10	161970016A
8454746	P1-C9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016027.d	Sample		10	161970016A
8457191BKG	P1-D1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016028.d	Sample		10	161970016A
8469770MS	P1-D2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016029.d	Sample		10	161970016A
8469771MSD	P1-D3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016030.d	Sample		10	161970016A
8457195	P1-D4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016031.d	Sample		10	161970016A
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016032.d	Sample		1	
8457199	P1-D6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016033.d	Sample		10	161970016A
8457203	P1-D7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016034.d	Sample		10	161970016A
8457207	P1-D8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016035.d	Sample		10	161970016A
8457211	P1-D9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016036.d	Sample		10	161970016A

8457216	P1-E1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016037.d	Sample		10	161970016A
BLANKA	P1-E2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016038.d	Sample		10	161970017A
LCSA	P1-E3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016039.d	Sample		10	161970017A
8466272	P1-E4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016040.d	Sample		10	161970017A
8466273BKG	P1-E5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016041.d	Sample		10	161970017A
8466273MS	P1-E6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016042.d	Sample		10	161970017A
lcperc21624a	P1-C3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016043.d	Sample		1	
8466273MSD	P1-E8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016044.d	Sample		10	161970017A
8466274	P1-E9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016045.d	Sample		10	161970017A
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20016046.d	Sample		1	
SCP_InstrumentStandby(){Acquisition : AcqEngSystem : SCP_System}							

Worklist Report

Worklist Path:	D:\MassHunter\Worklists\ms5p20916.wkl

Worklist Run Parameters

Operator Name:	---
Run Type:	**Standard Start**
Part of Method to Run:	**Acquisition Only**
Execution for Acquisition-DA:	**Synchronous**
Acquisition Method Path:	**D:\MassHunter\methods**
DA Method Path:	**D:\MassHunter\methods**
Data File Path:	**D:\MassHunter\data**
Pre-Worklist Script:	---
Post-Worklist Script:	---
Acquisition Clean Up Script:	---
Overlapped Injection:	**Yes**
Clear sample selection after run:	**Yes**
Wait Time for Ready(Min):	**10**
Threshold Disk Value(MB):	**10240**
Comment:	---

Worklist Table

Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Dilution	Comment
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916001.d	Sample		1	
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916002.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916002a.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916002b.d	Sample		1	
Perc11624a	P1-A3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916003.d	Sample		1	
Perc21624a	P1-A4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916004.d	Calibration	L1	1	

Perc31624a	P1-A5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916005.d	Calibration	L2	1	
Perc41624a	P1-A6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916006.d	Calibration	L3	1	
Perc51624a	P1-A7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916007.d	Calibration	L4	1	
Perc61624a	P1-A8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916008.d	Calibration	L5	1	
Perc71624a	P1-A9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916009.d	Calibration	L6	1	
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916010.d	Sample		1	
BLANKA	P1-B2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916011.d	Sample		10	162020019A
LCSA	P1-B3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916012.d	Sample		10	162020019A
ISMLCS	P1-B4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916013.d	Sample		10	162020019A
8457216	P1-B5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916014.d	Sample		10	162020019A
8457216DUP	P1-B6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916015.d	Sample		10	162020019A
8471036	P1-B7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916016.d	Sample		10	162020019A
8474724	P1-B8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916017.d	Sample		10	162020019A
8474728	P1-B9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916018.d	Sample		10	162020019A
8474735BKG	P1-C1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916019.d	Sample		10	162020019A
8474736MS	P1-C2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916020.d	Sample		10	162020019A
lcperc21624a	P1-C3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916021.d	Sample		1	
8474737MSD	P1-C4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916022.d	Sample		10	162020019A
8474741	P1-C5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916023.d	Sample		10	162020019A
8474745	P1-C6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916024.d	Sample		10	162020019A
8474749	P1-C7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916025.d	Sample		10	162020019A
8474754	P1-C8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916026.d	Sample		10	162020019A
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916027.d	Sample		1	
SCP_InstrumentStandby(){Acquisition : AcqEngSystem : SCP_System}							

Preparation and Run Logs

Perchlorate

Organic Extraction Batchlog Assigned to: 300 Maria Davenport Reviewed by: JSR Start Date: 7-16-16 Start time: 07:25

161970016A Tech 1: MD300 Tech 2:

Dept: 24 Prep Analysis: 06568 Perchlorate Soil Prep — Perchlorate in Soil LC/MS/MS

QC	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8469770MS	13A-3	1.00	IN160192 4B	0.1			10	Z	Z	305A	Soil; Brown
8469771MSD	13A-3	1.03	IN160192 4B	0.1			10	Z	Z	305A	Soil; Brown
BLANKA	PBLK16197	1.01	IS160262 4A	0.02			10	Z	Z	N/A	
ISMLCS	LCS16197	1.03	IS160262 4A	0.02			10	Z	Z	N/A	#10
LCSA	LCS16197	1.00	IN160192 4B	0.1			10	Z	Z	N/A	
			IS160262 4A	0.02							

Note: .02mls Int. Std. is added to 2mls of extract

Solvent Used	Lot No.
Ottawa Sand	213240-AG
Syringe Filter	9660528

IS160262 4A Perchlorate Int. Std.
IN160192 4B Perchlorate Intern.

Sample #	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
18449088	D19A3	1.01	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/20/2016	N
28449092	D19B3	1.04	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/20/2016	N
38449096	D19C3	1.01	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/20/2016	N
48450971	15A-3	1.00	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/21/2016	N
58450975	15B-3	1.04	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/21/2016	N
68450979	15C-3	1.03	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/21/2016	N
78454723	D9104	1.04	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/22/2016	N
88454727	D9108	1.03	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/22/2016	N
98454731	D9112	1.03	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/22/2016	N
108454735	D9116	1.02	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/22/2016	N
118454739	D9120	1.04	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/22/2016	N
128454743	D9124	1.03	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/22/2016	N
138454746	D9127	1.01	IS160262 4A	0.02	10	Z	Z	096a	Soil;Brown	06557		07/22/2016	N
148457191BKG	13A-3	1.01	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/25/2016	N
158457195	13B-3	1.04	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/25/2016	N
168457199	13C-3	1.02	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/25/2016	N
178457203	12A-3	1.04	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/25/2016	N
188457207	12B-3	1.04	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/25/2016	N
198457211	12C-3	1.03	IS160262 4A	0.02	10	Z	Z	305a	Soil;Brown	06557		07/25/2016	N
208457216	D92B2	1.03	IS160262 4A	0.02	10	Z	Z	305A	Soil;Brown	06557		07/25/2016	N

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Rack ID:		Work Station		Micro Temp 100?
Internal Standard		Balance #	17609	

DF = Dilution Factor FV = Final Volume

Page 1 of 1

Sonic bath 17489

S-bath ID	C	S-bath ID	C	N-Evap	C	M-vap	C	161970016A

Documented temps are NIST corrected.

centrifuge #8

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 6103

Effective date: Feb 6, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
Metals BLANK (A)	13588										X	X	7/8/16	1005	[illegible]	8471075 96A
	13564										|	|	|	1010	|	8471076 96A
SAND BLANK (A)	2203										|	|	|	↓	|	
8471035	13588				34	NA	ND	47.23	31.45	SOIL	X	Y		1015		
8471036	13564	4.06	4.06	Y	36	|	|	↓	↓	ROCKS STICKS	|	|	|	1020	|	
	2203				↓	|	|	↓	↓	↓	|	|	|	↓	|	
8471039	13588				34	|	|	48.52	38.06	|	|	|	|	1025	|	
8471040	12564	4.24	4.24	Y	36	|	|	↓	↓	|	|	|	|	1030	|	
	2203				↓	|	|	↓	↓	|	|	|	|	↓	|	
8471043	13588				34	|	|	49.54	30.54	|	|	|	|	1035	|	
8471044	12564	4.17	4.17	Y	36	|	|	↓	↓	|	|	|	|	1040	|	
	2203				↓	|	|	↓	↓	|	|	|	|	↓	|	
8471047	13588				34	|	|	41.85	47.35	|	|	|	|	1045	|	
8471050 8471051	12564	4.15	4.14	Y	36	|	|	↑	|	|	|	|	|	1048	|	
	2203				↓	|	|	↓	↓	↓	|	|	↓	↓	↓	

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 6103

Effective date: Feb 6, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
	13588					NA	NA	300.91	124	SOIL	X	X	7-13-16	1240	[illegible]	
8457214	13564	3.15	3.15	y	36	↓	↓	↓	↓	roots	X	X	↓	↓	↓	
	2203										X	X		↓		
Metals Blank (B)	13588										X	X		1243		8457215 96B
	13564										X	X		1250		8457216 96B
Sand Blank (B)	2203										X	X				↓
8457215	13588				20						X	X		1244		Metals Blank
	12564				20						X	X		1251		Sand Blank
8457216	2203				↓	↓	↓				X	X	↓		↓	↓
	13588															
	12564															
	2203															
	13588															
	12564															
	2203															

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010629 | Revision: 2 | Historical Reference: Form 5103

Effective date: Feb 5 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
Metals Blank (A)	13588												7/13/16	10:45		8457215 96A
	13564													10:46		8457216 96A
Sand Blank (A)	2203													↓		↓
8457190 8469769	13588				34	MH	MA	↑	↑	SOIL	X	X		1050		
8457191	13564	3.10	3.09	y	2036			421.06	45.01	STICKS				1052		
	2203				1 2204			↓	↓					↓		
8469768 7	13588				34			↑	↑	SOILS				1100		
8469766 70	12564	3.05	3.04	y	2036			421.06	45.01	STICKS				1105		
	2203				1 2204			↓	↓					↓		
8469768	13588				34			↑	↑	SOIL				1110		
8469771	12564	3.13	3.13	y	2036			421.06	45.01	STICKS				1115		
	2203				1 2204			↓	↓					↓		
8457194	13588				34			429.81	64.43					1120		
8457195	12564	3.11	3.11	y	2036			↓	↓					1125		
	2203				1			↓	↓							

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 5103

Effective date: Feb 5, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish #	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8449091	13588				34	N/A		373.75	30.70	woods	✓	✓	7/7/16	1000	BL 189	
8449092	13564	4.38	4.38	Y	36					sticks	X	X	"	"	"	
	2203	"	"	"	36					leaves	X	X				
8449095	13588				34			300.73	47.90		✓	✓	7/7/16	1010	BL 189	
8449096	13564	4.26	4.26	Y	36						X	X				
	2203	"	"	"	36						X	X				
8450970	13588				34			281.80	55.00		✓	✓	7/7/16	1020	BL 189	
8450971	12564	4.41	4.41	Y	36						X	X				
	2203	"	"	"	36						X	X				
8450974	13588				34			289.28	40.60		✓	✓	7/7/16	1030	BL 189	
8450975	12564	4.10	4.08	Y	36						X	X				
	2203	"	"	"	36						X	X				
8450978	13588				34			216.37	39.30		✓	✓	7/7/16	1035	BL 189	
8450979	12564	4.13	4.12	Y	36						X	X				
	2203	"	"	"	36						X	X				

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 6103

Effective date: Feb 5, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8457198	13588				34	X	X	421.59	79.97	SOIL	X	X	4/3/16	1125	[illegible]	
8457199	13564	3.24	3.24	Y	36	X	X	"	"	STICKS				1129		
	2203				1	X	X	"	"	↓						
8457202	13588				34	X	X	450.89	52.33	SOIL				1135		
8457203	13564	3.33	3.33	Y	36	X	X	"	"	STICKS				1153		
	2203				1	X	X	"	"	↓						
8457204	13588				34	X	X	468.12	34.70	SOIL				1158		
8457207	12564	3.20	3.19	Y	36	X	X	"	"	STICKS				1204		
	2203				1	X	X	"	"	↓						
8457210	13588				34	X	X	207.98	27.80	SOIL				1215		
8457211	12564	3.39	3.38	Y	36	X	X	"	"	~~ROOTS~~				1220		
	2203				1	X	X	"	"	STICKS TOTAL 0.53.80						
	13588				~~34 SOIL~~	X	X	?	↑	SOIL						
8457213	12564	3.04	3.04	Y	36	X	X	385.27	3.75	ROOTS				1230		
	2203				1	X	X	↓	↓		↓	↓	↓		↓	

Reviewed by: _____ Date: _____

Organic Extraction Batchlog Assigned to: 300 Maria Davenport Reviewed by: _____ Start Date: 7-27-16 Start time: 09:55

162020019A Tech 1: MD300 Tech 2: _____

Dept: 24 Prep Analysis: 06568 Perchlorate Soil Prep — Perchlorate in Soil LC/MS/MS

QC	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8457216DUP	D92B2DUP	1.01	IS1602624A	0.02			10	Z	Z	96B	Soil;Brown
8474736MS	D9612	1.00	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	305A	Soil;Brown
8474737MSD	D9612	1.04	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	305A	Soil;Brown
BLANKA	PBLK19202	1.00	IS1602624A	0.02			10	Z	Z	N/A	
ISMLCS	LCS19202	1.01	IS1602624A	0.02			10	Z	Z	N/A	#1
LCSA	LCS19202	1.01	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	N/A	

Solvent Used	Lot No.
Ottawa Sand	213240-AG
Syringe Filter	9734955

IS1602624A Perchlorate Int. Std.
IN1601924B Perchlorate Interm.

Note: .02mls Int. Std is added to 2mls of extract

Sample #	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1 8457216 R	D92B2	1.00	IS1602624A	0.02	10	Z	Z	96A	Soil;Brown	06557		07/25/2016	N
2 8471036 R	D9404	1.00	IS1602624A	0.02	10	Z	Z	305b	Soil;Brown	06557		08/02/2016	N
3 8474724	D9604	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
4 8474728	D9608	1.04	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
5 8474735BKG	D9612	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
6 8474741	D9616	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
7 8474745	D9620	1.01	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
8 8474749	D9624	1.01	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
9 8474754	D9629	1.04	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N

DWD93 Page 403 of 517

7-27-16
MD300
N/A

Rack ID:		Work Station		Micro Temp 100?
Internal Standard		Balance #	13	

DF = Dilution Factor FV = Final Volume Page 1 of 1

sonic bath 17489

S-bath ID	C	S-bath ID	C	N-Evap	C	M-vap	C	162020019A

Documented temps are NIST corrected.
centrifuge #8

Metals in Solid Data

Case Narrative/Conformance Summary

Metals in Solid

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

ICP Metals

Fraction: Metals in Solid

Sample #	Client ID	Matrix Liquid	Matrix Solid	Comments
8457189	DU-1-3-A		X	
8457190	DU-1-3-A		X	Background/Unspiked
8457193	DU-1-3-B		X	
8457194	DU-1-3-B		X	
8457197	DU-1-3-C		X	
8457198	DU-1-3-C		X	
8457201	DU-1-2-A		X	
8457202	DU-1-2-A		X	
8457205	DU-1-2-B		X	
8457206	DU-1-2-B		X	
8457209	DU-1-2-C		X	
8457210	DU-1-2-C		X	
8457215	Metals Blank		X	Blank
8469767	DU-1-3-A MS		X	Matrix Spike
8469768	DU-1-3-A MSD		X	Matrix Spike Duplicate
8469769	DU-1-3-A DUP		X	Duplicate

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

ICP Metals

Fraction: Metals in Solid

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

Method Blank

For noncompliant preparation/method blanks, corrective action is not required if the sample is ND or > 10 times the blank concentration, unless otherwise specified in the method or by the client.

MS/MSD

Method defined actions are taken for any failed matrix QC.

Batch#: 162010637002A (Sample number(s): 8457190, 8457194, 8457198, 8457202, 8457206, 8457210, 8457215, 8469767-8469769, UNSPK: 8469767-8457190, BKG: 8469769-8457190)
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: Thallium
Refer to the QC Summary forms for more information.

Batch#: 162010637002 (Sample number(s): 8457190, 8457194, 8457198, 8457202, 8457206, 8457210, 8457215, 8469767-8469769, UNSPK: 8469767-8457190, BKG: 8469769-8457190)
The relative percent difference(s) for the following analyte(s) in the MS/MSD is outside the acceptance window: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc
The recovery(ies) for the following analyte(s) in the MS is outside the acceptance window: Iron
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: Aluminum
Refer to the QC Summary forms for more information.

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Refer to analysis run log for samples requiring dilutions.

The instrument detection limits (IDLs) are used for determining the U flags on the initial and continuing calibration blanks. The highest IDL is selected when multiple instruments are used for an analysis. The method detection limits (MDLs) are used for determining all other U flags.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

ICP Metals

Fraction: Metals in Solid

Abbreviation Key

BKG – Background	AF - Cold Vapor Atomic Fluorescence
DUP – Duplicate	U - Below MDL
MS - Matrix Spike	B - Below LOQ
MSD - Matrix Spike Dup	N - Matrix Spike out of specifications
B – Blank	* - Duplicate out of specifications
Q - Laboratory Control Sample	E - Matrix Effects exist as proven by Serial Dilution or Spiked Dilution
Y - Laboratory Control Sample Duplicate	A - Post Digestion Spike
P - ICP Atomic Emission Spectrometer	L - Serial Dilution
MS - ICP Mass Spectrometry	R - Internal Standard Relative Intensity OOS
CV - Cold Vapor	NR - Not Required

Sample Data

Metals in Solid

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457189 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.034	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457190BKG % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1030			P
7440-36-0	Antimony	0.67	U		P
7440-38-2	Arsenic	0.92	U		P
7440-39-3	Barium	3.5			P
7440-41-7	Beryllium	0.064	U		P
7440-43-9	Cadmium	0.047	U		P
7440-70-2	Calcium	196			P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	0.11	U		P
7440-50-8	Copper	0.74	B		P
7439-89-6	Iron	499			P
7439-92-1	Lead	6.9			P
7439-95-4	Magnesium	76.5			P
7439-96-5	Manganese	14.8			P
7440-02-0	Nickel	0.39	B		P
7440-09-7	Potassium	33.0	B		P
7782-49-2	Selenium	0.86	U		P
7440-22-4	Silver	0.14	U		P
7440-23-5	Sodium	26.9	B		P
7440-28-0	Thallium	0.028	U		MS
7440-62-2	Vanadium	3.0			P
7440-66-6	Zinc	2.9	B		P

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence
NR = Not Required

CONCENTRATION QUALIFIERS:
U = Below MDL,
B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457193 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.034	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457194 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	994			P
7440-36-0	Antimony	0.60	U		P
7440-38-2	Arsenic	0.84	U		P
7440-39-3	Barium	3.6			P
7440-41-7	Beryllium	0.058	U		P
7440-43-9	Cadmium	0.042	U		P
7440-70-2	Calcium	187			P
7440-47-3	Chromium	1.7	B		P
7440-48-4	Cobalt	0.10	U		P
7440-50-8	Copper	0.72	B		P
7439-89-6	Iron	478			P
7439-92-1	Lead	6.4			P
7439-95-4	Magnesium	74.7			P
7439-96-5	Manganese	13.9			P
7440-02-0	Nickel	0.43	B		P
7440-09-7	Potassium	33.0	B		P
7782-49-2	Selenium	0.78	U		P
7440-22-4	Silver	0.13	U		P
7440-23-5	Sodium	27.8	B		P
7440-28-0	Thallium	0.025	U		MS
7440-62-2	Vanadium	3.0			P
7440-66-6	Zinc	2.5	B		P

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence
NR = Not Required

CONCENTRATION QUALIFIERS:
U = Below MDL,
B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457197 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.036	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457198 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	822			P
7440-36-0	Antimony	0.69	U		P
7440-38-2	Arsenic	0.96	U		P
7440-39-3	Barium	2.7			P
7440-41-7	Beryllium	0.066	U		P
7440-43-9	Cadmium	0.049	U		P
7440-70-2	Calcium	182			P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	0.12	U		P
7440-50-8	Copper	0.73	B		P
7439-89-6	Iron	430			P
7439-92-1	Lead	6.2			P
7439-95-4	Magnesium	62.6			P
7439-96-5	Manganese	14.0			P
7440-02-0	Nickel	0.39	B		P
7440-09-7	Potassium	25.0	B		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	23.7	U		P
7440-28-0	Thallium	0.029	U		MS
7440-62-2	Vanadium	2.9			P
7440-66-6	Zinc	2.1	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457201 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.017	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457202 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	823			P
7440-36-0	Antimony	0.61	U		P
7440-38-2	Arsenic	0.84	U		P
7440-39-3	Barium	6.7			P
7440-41-7	Beryllium	0.058	U		P
7440-43-9	Cadmium	0.043	U		P
7440-70-2	Calcium	414			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	0.10	U		P
7440-50-8	Copper	1.4	B		P
7439-89-6	Iron	477			P
7439-92-1	Lead	5.4			P
7439-95-4	Magnesium	70.6			P
7439-96-5	Manganese	21.7			P
7440-02-0	Nickel	0.31	B		P
7440-09-7	Potassium	34.2	B		P
7782-49-2	Selenium	0.78	U		P
7440-22-4	Silver	0.13	U		P
7440-23-5	Sodium	21.3	B		P
7440-28-0	Thallium	0.025	U		MS
7440-62-2	Vanadium	1.9			P
7440-66-6	Zinc	2.6	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457205 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.026	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457206 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	840			P
7440-36-0	Antimony	0.63	U		P
7440-38-2	Arsenic	0.87	U		P
7440-39-3	Barium	4.0			P
7440-41-7	Beryllium	0.060	U		P
7440-43-9	Cadmium	0.044	U		P
7440-70-2	Calcium	392			P
7440-47-3	Chromium	1.3	B		P
7440-48-4	Cobalt	0.11	U		P
7440-50-8	Copper	1.4	B		P
7439-89-6	Iron	481			P
7439-92-1	Lead	5.3			P
7439-95-4	Magnesium	71.6			P
7439-96-5	Manganese	20.6			P
7440-02-0	Nickel	0.33	B		P
7440-09-7	Potassium	33.6	B		P
7782-49-2	Selenium	0.81	U		P
7440-22-4	Silver	0.14	U		P
7440-23-5	Sodium	21.5	U		P
7440-28-0	Thallium	0.026	U		MS
7440-62-2	Vanadium	1.9			P
7440-66-6	Zinc	2.6	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457209 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.027	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457210 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	776			P
7440-36-0	Antimony	0.54	U		P
7440-38-2	Arsenic	0.75	U		P
7440-39-3	Barium	3.3			P
7440-41-7	Beryllium	0.052	U		P
7440-43-9	Cadmium	0.038	U		P
7440-70-2	Calcium	359			P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	0.093	U		P
7440-50-8	Copper	1.5	B		P
7439-89-6	Iron	444			P
7439-92-1	Lead	5.3			P
7439-95-4	Magnesium	63.6			P
7439-96-5	Manganese	19.5			P
7440-02-0	Nickel	0.30	B		P
7440-09-7	Potassium	24.5	B		P
7782-49-2	Selenium	0.70	U		P
7440-22-4	Silver	0.12	U		P
7440-23-5	Sodium	18.5	U		P
7440-28-0	Thallium	0.022	U		MS
7440-62-2	Vanadium	1.7			P
7440-66-6	Zinc	3.1	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8457215 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6.3	U		P
7440-36-0	Antimony	0.51	U		P
7440-38-2	Arsenic	0.70	U		P
7440-39-3	Barium	0.64	B		P
7440-41-7	Beryllium	0.049	U		P
7440-43-9	Cadmium	0.036	U		P
7440-70-2	Calcium	4.1	U		P
7440-47-3	Chromium	0.10	U		P
7440-48-4	Cobalt	0.087	U		P
7440-50-8	Copper	0.17	U		P
7439-89-6	Iron	3.0	U		P
7439-92-1	Lead	0.42	B		P
7439-95-4	Magnesium	1.4	U		P
7439-96-5	Manganese	0.060	U		P
7440-02-0	Nickel	0.22	U		P
7440-09-7	Potassium	17.3	U		P
7782-49-2	Selenium	0.65	U		P
7440-22-4	Silver	0.11	U		P
7440-23-5	Sodium	17.3	U		P
7440-28-0	Thallium	0.021	U		MS
7440-62-2	Vanadium	0.10	U		P
7440-66-6	Zinc	0.49	U		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8469767MS % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1610			P
7440-36-0	Antimony	39.3			P
7440-38-2	Arsenic	11.5			P
7440-39-3	Barium	171			P
7440-41-7	Beryllium	4.2			P
7440-43-9	Cadmium	4.2			P
7440-70-2	Calcium	540			P
7440-47-3	Chromium	18.7			P
7440-48-4	Cobalt	42.3			P
7440-50-8	Copper	22.5			P
7439-89-6	Iron	635			P
7439-92-1	Lead	19.9			P
7439-95-4	Magnesium	285			P
7439-96-5	Manganese	53.7			P
7440-02-0	Nickel	42.9			P
7440-09-7	Potassium	873			P
7782-49-2	Selenium	10.2			P
7440-22-4	Silver	3.9			P
7440-23-5	Sodium	791			P
7440-28-0	Thallium	0.47			MS
7440-62-2	Vanadium	47.3			P
7440-66-6	Zinc	44.7			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8469768MSD % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1490			P
7440-36-0	Antimony	31.2			P
7440-38-2	Arsenic	8.8			P
7440-39-3	Barium	136			P
7440-41-7	Beryllium	3.3			P
7440-43-9	Cadmium	3.3			P
7440-70-2	Calcium	446			P
7440-47-3	Chromium	15.0			P
7440-48-4	Cobalt	33.4			P
7440-50-8	Copper	18.0			P
7439-89-6	Iron	554			P
7439-92-1	Lead	17.0			P
7439-95-4	Magnesium	221			P
7439-96-5	Manganese	43.2			P
7440-02-0	Nickel	34.0			P
7440-09-7	Potassium	695			P
7782-49-2	Selenium	8.6			P
7440-22-4	Silver	3.1			P
7440-23-5	Sodium	632			P
7440-28-0	Thallium	0.39			MS
7440-62-2	Vanadium	37.7			P
7440-66-6	Zinc	35.3			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8469769DUP % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/01/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	976			P
7440-36-0	Antimony	0.49	U		P
7440-38-2	Arsenic	0.68	U		P
7440-39-3	Barium	3.4			P
7440-41-7	Beryllium	0.047	U		P
7440-43-9	Cadmium	0.035	U		P
7440-70-2	Calcium	186			P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	0.085	U		P
7440-50-8	Copper	0.85	B		P
7439-89-6	Iron	486			P
7439-92-1	Lead	7.8			P
7439-95-4	Magnesium	73.0			P
7439-96-5	Manganese	13.7			P
7440-02-0	Nickel	0.41	B		P
7440-09-7	Potassium	31.9	B		P
7782-49-2	Selenium	0.63	U		P
7440-22-4	Silver	0.11	U		P
7440-23-5	Sodium	25.1	B		P
7440-28-0	Thallium	0.020	U		MS
7440-62-2	Vanadium	3.2			P
7440-66-6	Zinc	2.7	B		P

Comments:

_____
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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

Quality Control and Calibration Summary Forms

Metals in Solid

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD93
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Aluminum	162010637002	8457190BKG
Antimony		8457194
Arsenic		8457198
Barium		8457202
Beryllium		8457206
Cadmium		8457210
Calcium		8457215
Chromium		8469767MS
Cobalt		8469768MSD
Copper		8469769DUP
Iron		P20137BB
Lead		P20137BQ
Magnesium		
Manganese		
Nickel		
Potassium		
Selenium		
Silver		
Sodium		
Vanadium		
Zinc		

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD93
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Thallium	162010637002	8457190BKG
		8457194
		8457198
		8457202
		8457206
		8457210
		8457215
		8469767MS
		8469768MSD
		8469769DUP
		P20137BB
		P20137BQ

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD93
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Mercury	162010638001	8457189
		8457193
		8457197
		8457201
		8457205
		8457209
		*72661BKG
		*72661MS
		*72661MSD
		*72661DUP
		P20138AB
		P20138AQ

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: P
Run Name: 1620209T71
Calibration Date(s): 7/20/2016 - 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration			Continuing Calibration					
		True	Found	%R(1)	True	Found	%R(2)	True	Found	%R(2)
Aluminum		30000.0	29775.02	99.3	25000.0	24853.53	99.4	25000.0	24960.21	99.8
Antimony		600.0	625.21	104.2	500.0	514.24	102.8	500.0	511.05	102.2
Arsenic		600.0	590.56	98.4	500.0	492.52	98.5	500.0	500.16	100.0
Barium		600.0	602.22	100.4	500.0	487.68	97.5	500.0	495.67	99.1
Beryllium		600.0	576.24	96.0	500.0	474.84	95.0	500.0	479.90	96.0
Cadmium		600.0	600.82	100.1	500.0	502.61	100.5	500.0	502.61	100.5
Calcium		30000.0	29226.48	97.4	25000.0	24786.55	99.1	25000.0	24732.15	98.9
Chromium		600.0	600.18	100.0	500.0	489.08	97.8	500.0	496.83	99.4
Cobalt		600.0	578.27	96.4	500.0	489.11	97.8	500.0	488.57	97.7
Copper		600.0	597.06	99.5	500.0	497.42	99.5	500.0	505.61	101.1
Iron		30000.0	29590.26	98.6	25000.0	24905.39	99.6	25000.0	24828.43	99.3
Lead		600.0	580.95	96.8	500.0	491.95	98.4	500.0	490.64	98.1
Magnesium		30000.0	29598.68	98.7	25000.0	24964.72	99.9	25000.0	24832.33	99.3
Manganese		600.0	593.43	98.9	500.0	491.76	98.4	500.0	496.33	99.3
Nickel		600.0	579.05	96.5	500.0	488.19	97.6	500.0	490.56	98.1
Potassium		30000.0	29667.91	98.9	25000.0	24353.45	97.4	25000.0	24526.12	98.1
Selenium		600.0	586.38	97.7	500.0	485.46	97.1	500.0	479.94	96.0
Silver		600.0	594.58	99.1	500.0	491.87	98.4	500.0	494.81	99.0
Sodium		30000.0	28479.39	94.9	25000.0	24064.66	96.3	25000.0	23831.23	95.3
Vanadium		600.0	634.06	105.7	500.0	518.40	103.7	500.0	525.58	105.1
Zinc		600.0	589.81	98.3	500.0	492.35	98.5	500.0	491.40	98.3

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: P
Run Name: 1620209T71
Calibration Date(s): 7/20/2016 - 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum					25000.0	25156.24	100.6			
Antimony					500.0	517.41	103.5			
Arsenic					500.0	502.03	100.4			
Barium					500.0	498.62	99.7			
Beryllium					500.0	478.13	95.6			
Cadmium					500.0	505.70	101.1			
Calcium					25000.0	24716.74	98.9			
Chromium					500.0	495.80	99.2			
Cobalt					500.0	490.20	98.0			
Copper					500.0	504.40	100.9			
Iron					25000.0	24944.21	99.8			
Lead					500.0	488.60	97.7			
Magnesium					25000.0	24893.90	99.6			
Manganese					500.0	493.05	98.6			
Nickel					500.0	491.75	98.4			
Potassium					25000.0	24697.09	98.8			
Selenium					500.0	480.88	96.2			
Silver					500.0	491.51	98.3			
Sodium					25000.0	23385.54	93.5			
Vanadium					500.0	522.35	104.5			
Zinc					500.0	494.10	98.8			

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: P
Run Name: 1620305T73
Calibration Date(s): 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony		600.0	606.53	101.1	500.0	498.54	99.7	500.0	495.11	99.0
Arsenic										
Barium										
Beryllium										
Cadmium		600.0	595.47	99.2	500.0	498.10	99.6	500.0	497.93	99.6
Calcium										
Chromium										
Cobalt		600.0	586.03	97.7	500.0	498.14	99.6	500.0	498.74	99.7
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: P
Run Name: 1620305T73
Calibration Date(s): 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony					500.0	502.31	100.5			
Arsenic										
Barium										
Beryllium										
Cadmium					500.0	503.54	100.7			
Calcium										
Chromium										
Cobalt					500.0	500.11	100.0			
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: MS
Run Name: 1620401E05
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration			Continuing Calibration					
		True	Found	%R(1)	True	Found	%R(2)	True	Found	%R(2)
Thallium	203	50.0	49.41	98.8	25.0	25.74	103.0	25.0	24.99	100.0

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: MS
Run Name: 1620401E05
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Thallium	203				25.0	25.55	102.2			

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: MS
Run Name: 1620405E03
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

		Initial Calibration			Continuing Calibration					
Analyte	Mass	True	Found	%R(1)	True	Found	%R(2)	True	Found	%R(2)
Thallium	203	50.0	50.63	101.3	25.0	24.45	97.8	25.0	25.28	101.1

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: CV
Run Name: 1620203M08
Calibration Date(s): 07/20/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury		2.5	2.68	107.2	1.0	1.02	102.0	1.0	1.00	100.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD93

Method: CV
Run Name: 1620203M08
Calibration Date(s): 07/20/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury					1.0	1.02	102.0	1.0	1.01	101.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD93

Method: P
Run Name: 1620209T71
Calibration Date(s): 7/20/2016 - 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum		400.0	367.97	92.0	378.74	94.7
Antimony		40.0	53.34	133.4	49.61	124.0
Arsenic		40.0	30.82	77.1	29.28	73.2
Barium		10.0	10.34	103.4	10.25	102.5
Beryllium		10.0	9.38	93.8	9.33	93.3
Cadmium		10.0	8.86	88.6	9.07	90.7
Calcium		400.0	396.38	99.1	400.58	100.1
Chromium		30.0	29.65	98.8	29.97	99.9
Cobalt		10.0	9.01	90.1	9.32	93.2
Copper		20.0	20.91	104.6	20.51	102.6
Iron		400.0	401.94	100.5	390.51	97.6
Lead		30.0	35.82	119.4	36.89	123.0
Magnesium		200.0	201.04	100.5	200.13	100.1
Manganese		10.0	10.37	103.7	10.25	102.5
Nickel		20.0	20.42	102.1	20.20	101.0
Potassium		1000.0	969.39	96.9	942.57	94.3
Selenium		40.0	29.38	73.5	32.43	81.1
Silver		10.0	10.27	102.7	9.73	97.3
Sodium		2000.0	1838.39	91.9	1807.56	90.4
Vanadium		10.0	9.98	99.8	10.01	100.1
Zinc		40.0	38.44	96.1	38.36	95.9

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD93

Method: P
Run Name: 1620305T73
Calibration Date(s): 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum						
Antimony		40.0	43.85	109.6	41.15	102.9
Arsenic						
Barium						
Beryllium						
Cadmium		10.0	9.88	98.8	9.84	98.4
Calcium						
Chromium						
Cobalt		10.0	10.27	102.7	10.17	101.7
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Vanadium						
Zinc						

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD93

Method: MS
Run Name: 1620401E05
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Thallium	203	1.0	1.16	116.0	1.36	136.0

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD93

Method: MS
Run Name: 1620405E03
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Thallium	203	1.0	1.15	115.0	1.10	110.0

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD93

Method: CV
Run Name: 1620203M08
Calibration Date(s): 07/20/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Mercury		0.2	0.22	110.0		

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD93

Method: P
Run Name: 1620209T71
Calibration Date(s): 07/20/2016 - 07/21/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Aluminum		-58.5	B	33.4	U	33.4	U	33.4	U		8.700	U	162010637002
Antimony		9.9	B	6.4	U	7.1	B	9.6	B		0.725	B	162010637002
Arsenic		4.7	U	-11.1	B	4.7	U	-7.3	B		0.970	U	162010637002
Barium		0.33	U	0.33	U	0.33	U	0.33	U		0.061	B	162010637002
Beryllium		0.67	U	0.67	U	0.67	U	0.67	U		0.067	U	162010637002
Cadmium		-1.3	B	-1.1	B	-1.2	B	-1.1	B				
Calcium		33.4	U	33.4	U	33.4	U	33.4	U		7.151	B	162010637002
Chromium		0.79	U	0.79	U	-0.91	B	0.79	U		0.140	U	162010637002
Cobalt		-1.0	B	-1.3	B	-0.78	B	-1.2	B				
Copper		1.7	U	1.7	U	1.7	U	1.7	U		0.230	U	162010637002
Iron		33.4	U	33.4	U	33.4	U	33.4	U		4.100	U	162010637002
Lead		3.7	B	4.6	B	5.2	B	7.7	B		0.550	U	162010637002
Magnesium		16.7	U	16.7	U	16.7	U	18.3	B		2.395	B	162010637002
Manganese		0.83	U	0.83	U	0.83	U	0.83	U		0.083	U	162010637002
Nickel		0.94	U	0.94	U	0.94	U	0.94	U		0.300	U	162010637002
Potassium		83.4	U	83.4	U	-84.4	B	83.4	U		23.900	U	162010637002
Selenium		10.0	U	10.0	U	10.0	U	10.0	U		-1.337	B	162010637002
Silver		0.91	U	0.91	U	0.91	U	0.91	U		0.150	U	162010637002
Sodium		167	U	167	U	167	U	167	U		23.900	U	162010637002
Vanadium		-0.68	B	0.58	U	0.58	U	0.58	U		0.140	U	162010637002
Zinc		2.0	U	2.0	U	2.0	U	2.0	U		0.680	U	162010637002

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below IDL/MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD93

Method: P
Run Name: 1620305T73
Calibration Date(s): 07/21/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Aluminum													
Antimony		6.4	U	6.4	U	6.4	U	6.4	B				
Arsenic													
Barium													
Beryllium													
Cadmium		-0.44	B	-0.50	B	-0.55	B	0.36	U		0.049	U	162010637002
Calcium													
Chromium													
Cobalt		0.75	U	0.75	U	0.75	U	0.75	U		0.120	U	162010637002
Copper													
Iron													
Lead													
Magnesium													
Manganese													
Nickel													
Potassium													
Selenium													
Silver													
Sodium													
Vanadium													
Zinc													

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below IDL/MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD93

Method: MS
Run Name: 1620401E05
Calibration Date(s): 07/22/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Thallium	203	0.062	B	0.070	B	0.053	B	0.049	U	203	0.029	U	162010637002A

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below IDL/MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD93

Method: MS
Run Name: 1620405E03
Calibration Date(s): 07/22/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Thallium	203	0.049	U	0.049	U	0.049	U						

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below IDL/MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD93

Method: CV
Run Name: 1620203M08
Calibration Date(s): 07/20/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Mercury		0.050	U	0.050	U	0.050	U	0.050	U		0.010	U	162010638001

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below IDL/MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD93

Method: CV
Run Name: 1620203M08
Calibration Date(s): 07/20/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Mercury				0.050	U								

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence	U= Below IDL/MDL B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 4A
ICP-AES INTERFERENCE CHECK SAMPLE
SDG No.: DWD93

Instrument ID: 16315
Run Name: 1620209T71
Concentration Units: ug/L

Analyte	True		Initial Found				Final Found			
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Sol. A	%R	Sol. AB	%R
Aluminum	500000	500000	500112	100.0	498092.9	99.6	502572	100.5	499666.2	99.9
Antimony	0	600	13		647.6	107.9	11		638.2	106.4
Arsenic	0	100	-17		80.0	80.0	-19		88.3	88.3
Barium	0	500	4		513.9	102.8	4		517.5	103.5
Beryllium	0	500	-1		511.1	102.2	-1		515.5	103.1
Cadmium	0	1000	0		958.5	95.9	0		966.8	96.7
Calcium	500000	500000	507765	101.6	507507.0	101.5	506136	101.2	506599.8	101.3
Chromium	0	500	0		496.0	99.2	-1		501.9	100.4
Cobalt	0	500	-2		460.1	92.0	0		462.1	92.4
Copper	0	500	3		524.4	104.9	3		529.1	105.8
Iron	200000	200000	199021	99.5	198871.5	99.4	199784	99.9	199306.2	99.7
Lead	0	50	4		54.4	108.8	4		52.7	105.4
Magnesium	500000	500000	490357	98.1	494888.3	99.0	494089	98.8	490635.5	98.1
Manganese	0	500	1		490.4	98.1	1		495.3	99.1
Nickel	0	1000	-1		918.0	91.8	-1		915.7	91.6
Potassium	0	0	71		13.2		23		29.3	
Selenium	0	550	14		566.6	103.0	21		569.9	103.6
Silver	0	200	1		220.6	110.3	0		222.3	111.2
Sodium	0	0	412		410.8		377		369.7	
Vanadium	0	500	-1		539.5	107.9	-1		540.7	108.1
Zinc	0	1000	4		1029.1	102.9	4		1029.0	102.9

Control Limits: All Metals 80%-120%

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QUALITY ASSURANCE SUMMARY
FORM 4A
ICP-AES INTERFERENCE CHECK SAMPLE
SDG No.: DWD93

Instrument ID: 18255
Run Name: 1620305T73
Concentration Units: ug/L

Analyte	True		Initial Found				Final Found			
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Sol. A	%R	Sol. AB	%R
Aluminum	500000	500000	502403	100.5	501423.9	100.3	503723	100.7	502355.5	100.5
Antimony	0	600	4		630.5	105.1	7		643.8	107.3
Arsenic										
Barium										
Beryllium										
Cadmium	0	1000	-2		955.1	95.5	-1		960.0	96.0
Calcium	500000	500000	500313	100.1	501626.2	100.3	501625	100.3	500668.1	100.1
Chromium										
Cobalt	0	500	2		469.3	93.9	2		468.8	93.8
Copper										
Iron	200000	200000	199014	99.5	199153.7	99.6	199858	99.9	199215.7	99.6
Lead										
Magnesium	500000	500000	486146	97.2	482838.4	96.6	488820	97.8	484390.4	96.9
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

Control Limits: All Metals 80%-120%

QUALITY ASSURANCE SUMMARY
FORM 4B
ICP-MS INTERFERENCE CHECK SAMPLE
SDG No.: DWD93

Instrument ID: 19204
Run Name: 1620401E05
Concentration Units: ug/L

Analyte	Mass	True		Found			
		Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R
Aluminum	27	100000	100000	108226	108.2	105230.6	105.2
Calcium	44	300000	300000	283233	94.4	270444.3	90.1
Carbon	13	20000	20000	NA		NA	
Chloride	37	100000	100000	NA		NA	
Iron	57	250000	250000	264545	105.8	257434.8	103.0
Magnesium	24	100000	100000	107491	107.5	105510.8	105.5
Molybdenum	98	2000	2000	2025	101.3	2046.1	102.3
Phosphorus	31	10000	10000	NA		NA	
Potassium	39	100000	100000	110619	110.6	107226.8	107.2
Sodium	23	250000	250000	242187	96.9	235294.5	94.1
Sulfur	34	10000	10000	NA		NA	
Thallium	203	0	0	0		0.0	
Titanium	47	2000	2000	2293	114.7	2227.2	111.4

Control Limits: All Metals 80%-120%

QUALITY ASSURANCE SUMMARY
FORM 4B
ICP-MS INTERFERENCE CHECK SAMPLE
SDG No.: DWD93

Instrument ID: 19204
Run Name: 1620401E05
Concentration Units: ug/L

Analyte	Mass	True		Found			
		Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R
Aluminum	27	100000	100000	108247	108.2	109405.8	109.4
Calcium	44	300000	300000	283621	94.5	283016.8	94.3
Carbon	13	20000	20000	NA		NA	
Chloride	37	100000	100000	NA		NA	
Iron	57	250000	250000	262870	105.1	267725.2	107.1
Magnesium	24	100000	100000	105999	106.0	107471.1	107.5
Molybdenum	98	2000	2000	2006	100.3	1980.3	99.0
Phosphorus	31	10000	10000	NA		NA	
Potassium	39	100000	100000	111579	111.6	111967.7	112.0
Sodium	23	250000	250000	239278	95.7	242344.6	96.9
Sulfur	34	10000	10000	NA		NA	
Thallium	203	0	0	0		0.0	
Titanium	47	2000	2000	2292	114.6	2377.6	118.9

Control Limits: All Metals 80%-120%

QUALITY ASSURANCE SUMMARY
FORM 4B
ICP-MS INTERFERENCE CHECK SAMPLE
SDG No.: DWD93

Instrument ID: 11332
Run Name: 1620405E03
Concentration Units: ug/L

Analyte	Mass	True		Found			
		Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R
Aluminum	27	100000	100000	85910	85.9	88060.0	88.1
Calcium	44	300000	300000	262500	87.5	269000.0	89.7
Carbon	13	20000	20000	NA		NA	
Chloride	37	100000	100000	NA		NA	
Iron	57	250000	250000	206200	82.5	214700.0	85.9
Magnesium	24	100000	100000	90220	90.2	92430.0	92.4
Molybdenum	98	2000	2000	1805	90.3	1819.0	91.0
Phosphorus	31	10000	10000	NA		NA	
Potassium	39	100000	100000	91230	91.2	93120.0	93.1
Sodium	23	250000	250000	235000	94.0	244400.0	97.8
Sulfur	34	10000	10000	NA		NA	
Thallium	203	0	0	0		0.0	
Titanium	47	2000	2000	2022	101.1	2049.0	102.5

Control Limits: All Metals 80%-120%

QUALITY ASSURANCE SUMMARY
FORM 4B
ICP-MS INTERFERENCE CHECK SAMPLE
SDG No.: DWD93

Instrument ID: 11332
Run Name: 1620405E03
Concentration Units: ug/L

Analyte	Mass	True		Found			
		Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R
Aluminum	27	100000	100000	88040	88.0	86740.0	86.7
Calcium	44	300000	300000	268800	89.6	269500.0	89.8
Carbon	13	20000	20000	NA		NA	
Chloride	37	100000	100000	NA		NA	
Iron	57	250000	250000	215200	86.1	213600.0	85.4
Magnesium	24	100000	100000	91600	91.6	90840.0	90.8
Molybdenum	98	2000	2000	1837	91.9	1829.0	91.5
Phosphorus	31	10000	10000	NA		NA	
Potassium	39	100000	100000	93820	93.8	92420.0	92.4
Sodium	23	250000	250000	241500	96.6	241700.0	96.7
Sulfur	34	10000	10000	NA		NA	
Thallium	203	0	0	0		0.0	
Titanium	47	2000	2000	2046	102.3	2044.0	102.2

Control Limits: All Metals 80%-120%

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: *72661BKG Matrix Spike Lab Sample ID: *72661MS Matrix Spike Duplicate Lab Sample ID: *72661MSD
Batch Number(s): 162010638001

		BKG Sample		MS Sample		MSD Sample		MS Spike	MSD Spike		MS		MSD				Control Limit		
Analyte	Mass	Result	C	Result	C	Result	C	Added	Added	Units	%R	Q	%R	Q	RPD	Q	%R	RPD	M
Mercury		0.0423	B	0.2111		0.2122		0.1584	0.1625	MG/KG	107		105		1		80 - 120	20	CV

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8457190BKG Matrix Spike Lab Sample ID: 8469767MS Matrix Spike Duplicate Lab Sample ID: 8469768MSD
Batch Number(s): 162010637002

		BKG Sample		MS Sample		MSD Sample		MS Spike	MSD Spike		MS		MSD				Control Limit		
Analyte	Mass	Result	C	Result	C	Result	C	Added	Added	Units	%R	Q	%R	Q	RPD	Q	%R	RPD	M
Aluminum		1025.1181		1611.7437		1492.8190		168.0672	136.0544	MG/KG	349		344		8			20	P
Antimony		0.6667	U	39.2689		31.2102		42.0168	34.0136	MG/KG	93		92		23	*	75 - 125	20	P
Arsenic		0.9238	U	11.4697		8.7871		12.6050	10.2041	MG/KG	91		86		26	*	75 - 125	20	P
Barium		3.4838		170.9513		136.4789		168.0672	136.0544	MG/KG	100		98		22	*	75 - 125	20	P
Beryllium		0.0638	U	4.1697		3.3231		4.2017	3.4014	MG/KG	99		98		23	*	75 - 125	20	P
Cadmium		0.0467	U	4.1815		3.3102		4.2017	3.4014	MG/KG	100		97		23	*	75 - 125	20	P
Calcium		196.3524		540.4798		445.7272		336.1345	272.1088	MG/KG	102		92		19		75 - 125	20	P
Chromium		1.7552	B	18.7244		15.0279		16.8067	13.6054	MG/KG	101		98		22	*	75 - 125	20	P
Cobalt		0.1143	U	42.3319		33.4415		42.0168	34.0136	MG/KG	101		98		23	*	75 - 125	20	P
Copper		0.7371	B	22.5168		17.9741		21.0084	17.0068	MG/KG	104		101		22	*	75 - 125	20	P
Iron		498.6571		634.8193		554.4156		84.0336	68.0272	MG/KG	162		82		14			20	P
Lead		6.8810		19.9294		16.9524		12.6050	10.2041	MG/KG	104		99		16		75 - 125	20	P
Magnesium		76.4781		285.3437		220.9735		168.0672	136.0544	MG/KG	124		106		25	*	75 - 125	20	P
Manganese		14.8048		53.7126		43.2000		42.0168	34.0136	MG/KG	93		83		22	*	75 - 125	20	P
Nickel		0.3886	B	42.9403		33.9891		42.0168	34.0136	MG/KG	101		99		23	*	75 - 125	20	P
Potassium		32.9657	B	872.6798		694.8197		840.3361	680.2721	MG/KG	100		97		23	*	75 - 125	20	P
Selenium		0.8571	U	10.2168		8.5776		12.6050	10.2041	MG/KG	81		84		17		75 - 125	20	P
Silver		0.1429	U	3.8664		3.0762		4.2017	3.4014	MG/KG	92		90		23	*	75 - 125	20	P
Sodium		26.8781	B	790.9630		632.1048		840.3361	680.2721	MG/KG	91		89		22	*	75 - 125	20	P
Thallium	203	0.0276	U	0.4657		0.3907		0.3361	0.2721	MG/KG	139	N	144	N	18		75 - 125	20	MS
Vanadium		2.9562		47.3101		37.7279		42.0168	34.0136	MG/KG	106		102		23	*	75 - 125	20	P
Zinc		2.8686	B	44.7336		35.3347		42.0168	34.0136	MG/KG	100		95		23	*	75 - 125	20	P

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 5B
POST DIGEST SPIKE SAMPLE RECOVERY
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8457190BKG Post Digest Spike Lab Sample ID: 8457190A
Batch Number(s): 162010637002
Concentration Units: UG/L

Analyte	Mass	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Thallium	203		0.9511	B	0.1450	U	1.0000	95		MS

Comments:

Note: Results shown are reported on an as-received basis.

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: *72661BKG Duplicate Lab Sample ID: *72661DUP
Batch Number(s): 162010638001
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Mercury			0.0423	B	0.0435	B	3		CV

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
* = Duplicate Out of Spec

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8457190BKG Duplicate Lab Sample ID: 8469769DUP
Batch Number(s): 162010637002
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			1025.1181		976.2979		5		P
Antimony			0.6667	U	0.4930	U			P
Arsenic			0.9238	U	0.6831	U			P
Barium		1.0	3.4838		3.4134		2		P
Beryllium			0.0638	U	0.0472	U			P
Cadmium			0.0467	U	0.0345	U			P
Calcium		38.1	196.3524		185.9338		5		P
Chromium			1.7552	B	1.8493	B	5		P
Cobalt			0.1143	U	0.0845	U			P
Copper			0.7371	B	0.8542	B	15		P
Iron			498.6571		486.3324		3		P
Lead		2.9	6.8810		7.7704		12		P
Magnesium		19.0	76.4781		73.0458		5		P
Manganese			14.8048		13.6725		8		P
Nickel			0.3886	B	0.4070	B	5		P
Potassium			32.9657	B	31.9289	B	3		P
Selenium			0.8571	U	0.6338	U			P
Silver			0.1429	U	-0.1063	B	-200		P
Sodium			26.8781	B	25.0599	B	7		P
Thallium	203		0.0276	U	0.0204	U			MS
Vanadium		1.0	2.9562		3.1725		7		P
Zinc			2.8686	B	2.7190	B	5		P

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ

FLAGS:
* = Duplicate Out of Spec

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QUALITY ASSURANCE SUMMARY
FORM 7
LABORATORY CONTROL SAMPLE
SDG No.: DWD93
Matrix: SOIL

Analyte	Mass	Batch Number	Units	True	Found	C	Control Limits (%)	%R	M	In Spec
Aluminum		162010637002	MG/KG	200.000	200.339		80 - 120	100	P	Yes
Antimony		162010637002	MG/KG	50.000	51.730		80 - 120	103	P	Yes
Arsenic		162010637002	MG/KG	15.000	14.946		80 - 120	100	P	Yes
Barium		162010637002	MG/KG	200.000	195.957		80 - 120	98	P	Yes
Beryllium		162010637002	MG/KG	5.000	4.840		80 - 120	97	P	Yes
Cadmium		162010637002	MG/KG	5.000	4.974		80 - 120	99	P	Yes
Calcium		162010637002	MG/KG	400.000	400.490		80 - 120	100	P	Yes
Chromium		162010637002	MG/KG	20.000	19.487		80 - 120	97	P	Yes
Cobalt		162010637002	MG/KG	50.000	49.941		80 - 120	100	P	Yes
Copper		162010637002	MG/KG	25.000	24.972		80 - 120	100	P	Yes
Iron		162010637002	MG/KG	100.000	99.160		80 - 120	99	P	Yes
Lead		162010637002	MG/KG	15.000	15.059		80 - 120	100	P	Yes
Magnesium		162010637002	MG/KG	200.000	201.466		80 - 120	101	P	Yes
Manganese		162010637002	MG/KG	50.000	49.277		80 - 120	99	P	Yes
Mercury		162010638001	MG/KG	0.100	0.104		80 - 120	104	CV	Yes
Nickel		162010637002	MG/KG	50.000	50.367		80 - 120	101	P	Yes
Potassium		162010637002	MG/KG	1000.000	967.948		80 - 120	97	P	Yes
Selenium		162010637002	MG/KG	15.000	13.874		80 - 120	92	P	Yes
Silver		162010637002	MG/KG	5.000	4.719		80 - 120	94	P	Yes
Sodium		162010637002	MG/KG	1000.000	913.428		80 - 120	91	P	Yes
Thallium	203	162010637002	MG/KG	0.200	0.197	B	80 - 120	99	MS	Yes
Vanadium		162010637002	MG/KG	50.000	51.111		80 - 120	102	P	Yes
Zinc		162010637002	MG/KG	50.000	49.113		80 - 120	98	P	Yes

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 9
SERIAL DILUTIONS
SDG No.: DWD93
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8457190BKG Serial Dilution Lab Sample ID: 8457190L
Batch Number(s): 162010637002
Concentration Units: UG/L

Analyte	Mass	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Diff.	Q	M
Aluminum		10763.7400		10933.5500		2		P
Antimony		7.0000	U	35.0000	U			P
Arsenic		9.7000	U	48.5000	U			P
Barium		36.5800		37.0500	B	1		P
Beryllium		0.6700	U	3.3500	U			P
Cadmium		0.4900	U	2.4500	U			P
Calcium		2061.7000		2077.1000		1		P
Chromium		18.4300	B	15.2500	B	17		P
Cobalt		1.2000	U	6.0000	U			P
Copper		7.7400	B	11.5000	U	100		P
Iron		5235.9000		5295.3000		1		P
Lead		72.2500		87.8000	B	22		P
Magnesium		803.0200		811.6500	B	1		P
Manganese		155.4500		153.9000		1		P
Nickel		4.0800	B	15.0000	U	100		P
Potassium		346.1400	B	1195.0000	U	100		P
Selenium		9.0000	U	45.0000	U			P
Silver		1.5000	U	7.5000	U			P
Sodium		282.2200	B	1195.0000	U	100		P
Thallium	203	0.1450	U	0.7250	U			MS
Vanadium		31.0400		31.0000	B	0		P
Zinc		30.1200	B	34.0000	U	100		P

NOTE: An E in column Q indicates the presence of a chemical or physical interference in the matrix when the % difference is greater than 10%. This applies only when (I) is greater than or equal to 50x MDL for ICP, 100x MDL for ICP-MS (6020), 50x MDL for ICP-MS (200.8), or 25x MDL for GFAA.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
E = Matrix Effects exist as proven by Serial Dilution or Spiked Dilution

Method: P
Instrument ID: 16315
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Aluminum	308.21		33.4
Antimony	206.83		5.1
Arsenic	189.04		4.7
Barium	455.40		0.33
Beryllium	313.04		0.67
Cadmium	226.50		0.33
Calcium	317.93		33.4
Chromium	267.72		0.79
Cobalt	228.62		0.34
Copper	327.40		1.7
Iron	261.19		33.4
Lead	220.35		3.6
Magnesium	285.21		16.7
Manganese	257.61		0.83
Nickel	231.60		0.94
Potassium	766.49		83.4
Selenium	196.09		10.0
Silver	328.06		0.91
Sodium	589.59		167
Vanadium	292.40		0.58
Zinc	213.86		2.0

Comments:
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: P
Instrument ID: 18255
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Aluminum			
Antimony	206.83		6.4
Arsenic			
Barium			
Beryllium			
Cadmium	226.50		0.36
Calcium			
Chromium			
Cobalt	228.62		0.75
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

Comments:
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10
INSTRUMENT DETECTION LIMITS (QUARTERLY)
SDG No.: DWD93

Method: MS
Instrument ID: 11332
Date: 07/2016

Analyte	MASS (amu)	Background	IDL (UG/L)
Thallium	203		0.040

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: MS
Instrument ID: 19204
Date: 07/2016

Analyte	MASS (amu)	Background	IDL (UG/L)
Thallium	203		0.049

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: CV
Instrument ID: 19302
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Mercury			0.050

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10 MDL
METHOD DETECTION LIMITS (ANNUALLY)
SDG No.: DWD93
Matrix: SOIL

Method: P
Date: 06/2016

Analyte	Wavelength (nm)	Background	LOQ (UG/L)	MDL (UG/L)
Aluminum	308.21		400	86.8
Antimony	206.83		40.0	7.0
Arsenic	189.04		40.0	9.7
Barium	455.40		10.0	0.33
Beryllium	313.04		10.0	0.67
Cadmium	226.50		10.0	0.49
Calcium	317.93		400	56.6
Chromium	267.72		30.0	1.4
Cobalt	228.62		10.0	1.2
Copper	327.40		20.0	2.3
Iron	261.19		400	41.2
Lead	220.35		30.0	5.5
Magnesium	285.21		200	19.0
Manganese	257.61		10.0	0.83
Nickel	231.60		20.0	3.0
Potassium	766.49		1000	239
Selenium	196.09		40.0	9.0
Silver	328.06		10.0	1.5
Sodium	589.59		2000	239
Vanadium	292.40		10.0	1.4
Zinc	213.86		40.0	6.8

The LOQ/MDL must be adjusted for % Solids and Sample Weight for samples reporting in mg/kg and ug/L.

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10 MDL
METHOD DETECTION LIMITS (ANNUALLY)
SDG No.: DWD93
Matrix: SOIL

Method: MS
Date: 06/2016

Analyte	Mass	Background	LOQ (UG/L)	MDL (UG/L)
Thallium	203		1.0	0.15

The LOQ/MDL must be adjusted for % Solids and Sample Weight for samples reporting in mg/kg and ug/L.

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10 MDL
METHOD DETECTION LIMITS (ANNUALLY)
SDG No.: DWD93
Matrix: SOIL

Method: CV
Date: 07/2015

Analyte	Wavelength (nm)	Background	LOQ (UG/L)	MDL (UG/L)
Mercury			0.60	0.060

The LOQ/MDL must be adjusted for % Solids and Sample Weight for samples reporting in mg/kg and ug/L.

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD93

Instrument ID: 16315
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: AL	CA	FE	MG	CR
Aluminum	308.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.83	-0.0000920	0.0000000	0.0000000	0.0000000	0.0059790
Arsenic	189.04	0.0000000	0.0000000	-0.0000350	0.0000000	0.0000000
Barium	455.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0001450	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.62	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	327.40	0.0000000	0.0000160	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0001770	0.0000000	0.0000430	0.0000000	0.0000000
Magnesium	285.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.09	-0.0000480	0.0000000	0.0000590	0.0000000	0.0000000
Silver	328.06	0.0000000	0.0000000	-0.0002470	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.86	0.0000000	0.0000000	0.0001050	0.0000000	0.0000000

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD93

Instrument ID: 16315
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: MO	NI	SI	TI	V
Aluminum	308.21	0.0071670	0.0000000	0.0000000	0.0000000	0.0580000
Antimony	206.83	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	455.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.62	0.0000000	0.0000000	0.0000000	0.0023980	0.0000000
Copper	327.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0001830	0.0000000	0.0000000
Magnesium	285.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0010560	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.09	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.06	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	-0.0201140	0.0000000	0.0000000	0.0003000	0.0000000
Zinc	213.86	0.0000000	0.0054550	0.0000000	0.0000000	0.0000000

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD93

Instrument ID: 16315
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: W	ZR	--	--	--
Aluminum	308.21	0.0000000	0.0000000			
Antimony	206.83	0.0000000	0.0000000			
Arsenic	189.04	0.0000000	0.0000000			
Barium	455.40	0.0000000	0.0003160			
Beryllium	313.04	0.0000000	0.0000000			
Cadmium	226.50	0.0000000	0.0000000			
Chromium	267.72	0.0000000	0.0000000			
Cobalt	228.62	0.0000000	0.0000000			
Copper	327.40	0.0000000	0.0000000			
Lead	220.35	0.0000000	0.0000000			
Magnesium	285.21	0.0000000	0.0000000			
Manganese	257.61	0.0000000	0.0000000			
Nickel	231.60	0.0000000	0.0000000			
Potassium	766.49	0.0000000	0.0000000			
Selenium	196.09	0.0000000	0.0000000			
Silver	328.06	0.0000000	0.0067370			
Vanadium	292.40	0.0000000	0.0000000			
Zinc	213.86	0.0000000	0.0000000			

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD93

Instrument ID: 18255
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: AL	CA	FE	MG	CR
Antimony	206.83	0.0000000	0.0000000	0.0000650	0.0000000	0.0091000
Cadmium	226.50	0.0000000	0.0000000	0.0000500	0.0000000	0.0000000
Cobalt	228.62	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD93

Instrument ID: 18255
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: SN	TI	V	--	--
Antimony	206.83	-0.0210000	0.0000000	-0.0042860		
Cadmium	226.50	0.0000000	0.0000000	0.0000000		
Cobalt	228.62	0.0000000	0.0021110	0.0000000		

Comments:

QUALITY ASSURANCE SUMMARY
FORM 12
LINEAR RANGES
SDG No.: DWD93

Method: P
Instrument ID: 16315
Date: 07/2016

Analyte	Wavelength (nm)	Integration Time (Sec.)	Concentration (ug/L)
Aluminum	308.21	10.00	600000.0
Antimony	206.83	10.00	20000.0
Arsenic	189.04	10.00	20000.0
Barium	455.4	10.00	5000.0
Beryllium	313.04	10.00	10000.0
Cadmium	226.5	10.00	20000.0
Calcium	317.93	10.00	600000.0
Chromium	267.72	10.00	20000.0
Cobalt	228.62	10.00	20000.0
Copper	327.4	10.00	20000.0
Iron	261.19	10.00	300000.0
Lead	220.35	10.00	20000.0
Magnesium	285.21	10.00	600000.0
Manganese	257.61	10.00	20000.0
Nickel	231.6	10.00	20000.0
Potassium	766.49	10.00	500000.0
Selenium	196.09	10.00	20000.0
Silver	328.06	10.00	10000.0
Sodium	589.59	10.00	500000.0
Vanadium	292.4	10.00	20000.0
Zinc	213.86	10.00	20000.0

Comments:
_____
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 12
LINEAR RANGES
SDG No.: DWD93

Method: P
Instrument ID: 18255
Date: 07/2016

Analyte	Wavelength (nm)	Integration Time (Sec.)	Concentration (ug/L)
Aluminum			
Antimony	206.83	10.00	20000.0
Arsenic			
Barium			
Beryllium			
Cadmium	226.5	10.00	20000.0
Calcium			
Chromium			
Cobalt	228.62	10.00	20000.0
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

Comments:
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 15
ICP-MS TUNE
SDG No.: DWD93
Matrix: SOIL

Instrument ID: 11332
Date: 07/22/2016

Analyte	Mass	Avg. Measured Mass (amu)	Avg. Peak Width at 5% Peak Height (amu)	%RSD
Lithium	6.000	6.00	0.65	1.9
Magnesium	24.000	23.90	0.65	4.3
Rhodium	103.000	103.05	0.65	1.9
Indium	115.000	115.05	0.65	1.2
Cerium	140.000	140.05	0.65	1.8
Lead	208.000	208.00	0.60	2.0
Uranium	238.000	237.95	0.60	1.4

Comments:

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Tune Report

Batch Folder D:\Agilent\ICPMH\1\DATA\~EPATUNE.b
Report Comment ICP-MS #19204 (E05) Daily Tune Check
Instrument Name G3281A JP12071581

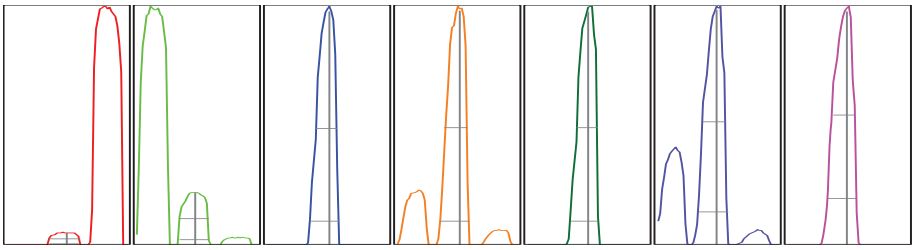
[No Gas]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
6		2718	2717.78			NaN	-	
24		6193	6192.93			NaN	-	
103		19513	19512.66			NaN	-	
115		21201	21201.33			NaN	-	
140		22824	22823.70			NaN	-	
208		11605	11605.35			NaN	-	
238		26256	26255.65			NaN	-	

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
6	1.93	5.00				
24	1.75	5.00				
103	2.81	5.00				
115	3.01	5.00				
140	4.49	5.00				
208	3.75	5.00				
238	4.04	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
6	2658	2777	2667	2737	2749
24	6061	6115	6237	6338	6213
103	18581	19459	19902	19755	19866
115	20159	21058	21415	21666	21708
140	21252	22444	23114	23898	23411
208	10851	11690	11728	11789	11968
238	24529	25963	26725	26966	27095

Integration Time [sec] 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
6	398.14	6.00	5.9 - 6.1		0.72	0.785	0.900	
24	972.29	23.95	23.9 - 24.1		0.68	0.741	0.900	
103	3758.98	103.05	102.9 - 103.1		0.52	0.690	0.900	
115	4058.42	115.05	114.9 - 115.1		0.54	0.686	0.900	
140	4467.41	140.00	139.9 - 140.1		0.51	0.677	0.900	
208	2226.42	207.95	207.9 - 208.1		0.54	0.695	0.900	
238	4917.16	237.95	237.9 - 238.1		0.55	0.702	0.900	

X = 10 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 260.8 **Y Axis** Linear

Tune Parameters
Plasma Paramters

RF Power	1600 W	Carrier Gas	0.25 L/min	S/C Temp	20 ℃
RF Matching	0.80 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.80 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Tune Report

Extract 1		0.0 V	Omega Lens		6.1 V	Deflect		16.8 V	
Extract 2		-160.0 V	Cell Entrance		-30 V	Plate Bias		-40 V	
Mass	**Peak Height**	**Axis (Actual)**	**Axis (Required)**	**Axis (Flag)**	**W-50%**	**W-X% (Actual)**	**W-X% (Required)**	**W-X% (Flag)**	
Omega Bias		-75 V	Cell Exit			-50 V			

Cell Parameters

OctP Bias	-6.0 V	He Flow	0.0 mL/min	Energy Discrimination	5.0 V
OctP RF	200 V	H2 Flow	0.0 mL/min		
Use Gas	false	3rd Gas Flow	0 %		

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QUALITY ASSURANCE SUMMARY
FORM 16
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
SDG No.: DWD93

Instrument ID: 19204
Run Name: 1620401E05

Start Date: 07/22/2016
End Date: 07/22/2016

Standard	Elements Applies to	Standard	Elements Applies to
BI-1-209	TL		

Lab Sample ID	Time	Internal Standards %RI For: Element BI-1-209	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
S0	02:34	100													
S	02:35	97													
CCS	02:37	101													
CCS	02:39	98													
ICV	02:41	102													
ICB	02:43	103													
LLC	02:45	106													
ICSA	02:46	96													
ICSAB	02:48	97													
ZZZZZZ	02:50														
CCV	02:52	103													
CCB	02:54	104													
P20137BB	02:55	112													
P20137BQ	02:57	112													
8457190BKG	02:59	117													
ZZZZZZ	03:01														
8469769DUP	03:03	115													
ZZZZZZ	03:05														
ZZZZZZ	03:06														
8457190L	03:08	110													
8457194	03:10	113													
8457198	03:12	111													
CCV	03:14	106													
CCB	03:15	105													
8457202	03:17	114													
8457206	03:19	113													
8457210	03:21	113													
8457215	03:23	111													
LLC	03:24	105													
ICSA	03:26	95													
ICSAB	03:28	96													
ZZZZZZ	03:30														
CCV	03:32	107													

LEGEND:
BKG = Background
DUP = Duplicate
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike

FLAG:
R = Internal Standard Relative Intensity OOS

INTERNAL STANDARD ELEMENTS:
BE = Beryllium
BI = Bismuth
GE = Germanium
HO = Holmium
IN = Indium
LI = Lithium
SC = Scandium
TB = Terbium
Y = Yttrium

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QUALITY ASSURANCE SUMMARY
FORM 16
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
SDG No.: DWD93

Instrument ID: 19204 Start Date: 07/22/2016
Run Name: 1620401E05 End Date: 07/22/2016

Standard	Elements Applies to	Standard	Elements Applies to
BI-1-209	TL		

Lab Sample ID	Time	Internal Standards %RI For: Element BI-1-209	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
CCB	03:34	107													

LEGEND:
BKG = Background MS = Matrix Spike
DUP = Duplicate MSD = Matrix Spike Duplicate
L = Serial Dilution A = Post Digest Spike
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate
FLAG:
R = Internal Standard Relative Intensity OOS

INTERNAL STANDARD ELEMENTS:
BE = Beryllium LI = Lithium
BI = Bismuth SC = Scandium
GE = Germanium TB = Terbium
HO = Holmium Y = Yttrium
IN = Indium

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QUALITY ASSURANCE SUMMARY
FORM 16
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
SDG No.: DWD93

Instrument ID: 11332
Run Name: 1620405E03

Start Date: 07/22/2016
End Date: 07/22/2016

Standard	Elements Applies to	Standard	Elements Applies to
BI-1-209	TL		

Lab Sample ID	Time	Internal Standards %RI For: Element BI-1-209	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
S0	11:01	100													
S	11:03	93													
CCS	11:04	95													
CCS	11:06	97													
ICV	11:08	96													
ICB	11:10	96													
LLC	11:11	99													
ICSA	11:13	88													
ICSAB	11:15	86													
ZZZZZZ	11:17														
CCV	11:18	97													
CCB	11:20	95													
P20137BQ	11:22	103													
8457190A	11:23	106													
8469767MS	11:25	100													
8469768MSD	11:27	104													
ZZZZZZ	11:29														
LLC	11:30	97													
ICSA	11:32	88													
ICSAB	11:34	88													
ZZZZZZ	11:36														
CCV	11:37	94													
CCB	11:39	95													

LEGEND:
BKG = Background
DUP = Duplicate
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike

FLAG:
R = Internal Standard Relative Intensity OOS

INTERNAL STANDARD ELEMENTS:
BE = Beryllium
BI = Bismuth
GE = Germanium
HO = Holmium
IN = Indium
LI = Lithium
SC = Scandium
TB = Terbium
Y = Yttrium

Preparation and Run Logs

Metals in Solid

Method: P
Batch Number: 162010637002

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8457194	07/20/2016	1.16	100
8457198	07/20/2016	1.01	100
8457202	07/20/2016	1.15	100
8457206	07/20/2016	1.11	100
8457210	07/20/2016	1.29	100
8457215	07/20/2016	1.38	100
8457190BKG	07/20/2016	1.05	100
8469769DUP	07/20/2016	1.42	100
8469768MSD	07/20/2016	1.47	100
8469767MS	07/20/2016	1.19	100
P20137BB	07/20/2016	1.00	100
P20137BQ	07/20/2016	1.00	100

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

Method: MS
Batch Number: 162010637002

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8457194	07/20/2016	1.16	100
8457198	07/20/2016	1.01	100
8457202	07/20/2016	1.15	100
8457206	07/20/2016	1.11	100
8457210	07/20/2016	1.29	100
8457215	07/20/2016	1.38	100
8457190BKG	07/20/2016	1.05	100
8469769DUP	07/20/2016	1.42	100
8469768MSD	07/20/2016	1.47	100
8469767MS	07/20/2016	1.19	100
P20137BB	07/20/2016	1.00	100
P20137BQ	07/20/2016	1.00	100

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

Method: CV
Batch Number: 162010638001

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8457189	07/20/2016	0.65	100
8457193	07/20/2016	0.60	100
8457197	07/20/2016	0.60	100
8457201	07/20/2016	0.61	100
8457205	07/20/2016	0.63	100
8457209	07/20/2016	0.64	100
*72661BKG	07/20/2016	0.63	100
*72661DUP	07/20/2016	0.64	100
*72661MSD	07/20/2016	0.62	100
*72661MS	07/20/2016	0.63	100
P20138AB	07/20/2016	0.60	100
P20138AQ	07/20/2016	1.00	100

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD93

Method: P
Instrument ID: 16315
Run Name: 1620209T71

Run Start Date: 07/20/2016
Run End Date: 07/21/2016

Lab Sample ID	D/F	Time	Analytes																															
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN									
S0	1.00	23:51	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
S	1.00	23:54	X						X				X		X				X			X												
S	1.00	23:57			X	X	X	X			X	X		X		X		X		X	X				X									
S	1.00	00:00		X						X														X										
ICV	1.00	00:03	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
ICB	1.00	00:07	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
LLC	1.00	00:10	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
ICSA	1.00	00:13	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
ICSAB	1.00	00:16	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
CCV	1.00	00:19	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
CCB	1.00	00:23	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
P20137BB	1.00	00:26	X	X	X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
P20137BQ	1.00	00:29	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
8457190BKG	1.00	00:32	X		X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8457190A	1.00	00:35																																
8469769DUP	1.00	00:38	X		X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8469767MS	1.00	00:41	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
8469768MSD	1.00	00:44	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
8457190L	5.00	00:48	X		X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8457194	1.00	00:51	X		X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8457198	1.00	00:54	X	X	X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
CCV	1.00	00:57	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
CCB	1.00	01:00	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
8457202	1.00	01:03	X	X	X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8457206	1.00	01:06	X		X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8457210	1.00	01:09	X	X	X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
8457215	1.00	01:12	X		X	X	X		X	X		X	X	X	X	X		X	X	X	X	X		X	X									
LLC	1.00	01:15	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
ICSA	1.00	01:19	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
ICSAB	1.00	01:22	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
CCV	1.00	01:25	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									
CCB	1.00	01:28	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X									

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD93

Method: P
Instrument ID: 18255
Run Name: 1620305T73

Run Start Date: 07/21/2016
Run End Date: 07/21/2016

Lab Sample ID	D/F	Time	Analytes																																
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN										
S0	1.00	18:22		X				X			X																								
S	1.00	18:25																																	
S	1.00	18:28						X			X																								
S	1.00	18:32		X																															
ICV	1.00	18:35		X				X			X																								
ICB	1.00	18:39		X				X			X																								
LLC	1.00	18:42		X				X			X																								
ICSA	1.00	18:45		X				X			X																								
ICSAB	1.00	18:49		X				X			X																								
CCV	1.00	18:52		X				X			X																								
CCB	1.00	18:56		X				X			X																								
P20137BB	1.00	18:59						X			X																								
P20137BQ	1.00	19:02																																	
8457190BKG	1.00	19:06		X				X			X																								
8457190A	1.00	19:09																																	
8469769DUP	1.00	19:12		X				X			X																								
8469767MS	1.00	19:15		X																															
8469768MSD	1.00	19:19		X																															
8457190L	5.00	19:22		X				X			X																								
8457194	1.00	19:26		X				X			X																								
8457198	1.00	19:29						X			X																								
CCV	1.00	19:32		X				X			X																								
CCB	1.00	19:35		X				X			X																								
8457202	1.00	19:39						X			X																								
8457206	1.00	19:42		X				X			X																								
8457210	1.00	19:45						X			X																								
8457215	1.00	19:49		X				X			X																								
LLC	1.00	19:52		X				X			X																								
ICSA	1.00	19:55		X				X			X																								
ICSAB	1.00	19:59		X				X			X																								
CCV	1.00	20:02		X				X			X																								
CCB	1.00	20:06		X				X			X																								

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- A = Post Digest Spike
- L = Serial Dilution
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD93

Method: MS
Instrument ID: 19204
Run Name: 1620401E05

Run Start Date: 07/22/2016
Run End Date: 07/22/2016

Lab Sample ID	D/F	Time	Analytes																												
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	02:34																					X									
S	1.00	02:35																					X									
CCS	1.00	02:37																					X									
CCS	1.00	02:39																					X									
ICV	1.00	02:41																					X									
ICB	1.00	02:43																					X									
LLC	1.00	02:45																					X									
ICSA	1.00	02:46																					X									
ICSAB	1.00	02:48																					X									
ZZZZZZ	1.00	02:50																														
CCV	1.00	02:52																					X									
CCB	1.00	02:54																					X									
P20137BB	2.00	02:55																					X									
P20137BQ	2.00	02:57																														
8457190BKG	2.00	02:59																					X									
ZZZZZZ	2.00	03:01																														
8469769DUP	2.00	03:03																					X									
ZZZZZZ	2.00	03:05																														
ZZZZZZ	2.00	03:06																														
8457190L	10.00	03:08																					X									
8457194	2.00	03:10																					X									
8457198	2.00	03:12																					X									
CCV	1.00	03:14																					X									
CCB	1.00	03:15																					X									
8457202	2.00	03:17																					X									
8457206	2.00	03:19																					X									
8457210	2.00	03:21																					X									
8457215	2.00	03:23																					X									
LLC	1.00	03:24																					X									
ICSA	1.00	03:26																					X									
ICSAB	1.00	03:28																					X									
ZZZZZZ	1.00	03:30																														
CCV	1.00	03:32																					X									
CCB	1.00	03:34																					X									

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- A = Post Digest Spike
- L = Serial Dilution
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD93

Method: MS
Instrument ID: 11332
Run Name: 1620405E03

Run Start Date: 07/22/2016
Run End Date: 07/22/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	NG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	11:01																					X									
S	1.00	11:03																					X									
CCS	1.00	11:04																					X									
CCS	1.00	11:06																					X									
ICV	1.00	11:08																					X									
ICB	1.00	11:10																					X									
LLC	1.00	11:11																					X									
ICSA	1.00	11:13																					X									
ICSAB	1.00	11:15																					X									
ZZZZZZ	1.00	11:17																														
CCV	1.00	11:18																					X									
CCB	1.00	11:20																					X									
P20137BQ	2.00	11:22																					X									
8457190A	2.00	11:23																					X									
8469767MS	2.00	11:25																					X									
8469768MSD	2.00	11:27																					X									
ZZZZZZ	10.00	11:29																														
LLC	1.00	11:30																					X									
ICSA	1.00	11:32																					X									
ICSAB	1.00	11:34																					X									
ZZZZZZ	1.00	11:36																														
CCV	1.00	11:37																					X									
CCB	1.00	11:39																					X									

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- A = Post Digest Spike
- L = Serial Dilution
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD93

Method: CV
Instrument ID: 19302
Run Name: 1620203M08

Run Start Date: 07/20/2016
Run End Date: 07/20/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	10:32															X															
S0.2	1.00	10:34															X															
S0.5	1.00	10:36															X															
S1.0	1.00	10:38															X															
S2.5	1.00	10:40															X															
S5.0	1.00	10:42															X															
ICV	1.00	10:44															X															
ICB	1.00	10:46															X															
CRA	1.00	10:48															X															
CCV	1.00	10:50															X															
CCB	1.00	10:52															X															
ZZZZZZ	1.00	10:54																														
ZZZZZZ	1.00	10:56																														
ZZZZZZ	1.00	10:58																														
ZZZZZZ	1.00	11:00																														
ZZZZZZ	1.00	11:02																														
ZZZZZZ	1.00	11:04																														
ZZZZZZ	1.00	11:06																														
ZZZZZZ	1.00	11:08																														
ZZZZZZ	1.00	11:10																														
ZZZZZZ	1.00	11:12																														
CCV	1.00	11:14															X															
CCB	1.00	11:16															X															
ZZZZZZ	1.00	11:18																														
ZZZZZZ	1.00	11:20																														
ZZZZZZ	1.00	11:22																														
ZZZZZZ	1.00	11:24																														
ZZZZZZ	5.00	11:26																														
P20138AB	1.00	11:28															X															
P20138AQ	1.00	11:30															X															
*72661BKG	1.00	11:32															X															
*72661A	1.00	11:34																														
*72661DUP	1.00	11:36															X															
CCV	1.00	11:38															X															
CCB	1.00	11:40															X															
*72661MS	1.00	11:42															X															
*72661MSD	1.00	11:44															X															
8457189	1.00	11:47															X															

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD93

Method: CV
Instrument ID: 19302
Run Name: 1620203M08

Run Start Date: 07/20/2016
Run End Date: 07/20/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
8457193	1.00	11:49															X															
8457197	1.00	11:51															X															
8457201	1.00	11:53															X															
8457205	1.00	11:55															X															
8457209	1.00	11:57															X															
ZZZZZZ	1.00	11:59																														
ZZZZZZ	1.00	12:01																														
CCV	1.00	12:03															X															
CCB	1.00	12:05															X															

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

Instrumental Wet Chemistry Data

Case Narrative/Conformance Summary

Instrumental Wet Chemistry

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8457189	DU-1-3-A		X	1	
8457193	DU-1-3-B		X	1	
8457197	DU-1-3-C		X	1	
8457201	DU-1-2-A		X	1	
8457205	DU-1-2-B		X	1	
8457209	DU-1-2-C		X	1	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

All QC is within specification.

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Abbreviation Key

U = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
R = Matrix Spike (MS)	MDL = Method Detection Limit
M = Matrix Spike Duplicate (MSD)	ND = Not Detected

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	NA = Not Applicable
HS = High Spike	ME = Method
LS = Low Spike	CO = Colorimetric
SS = Soluble Spike	G = Gravimetric
IS = Insoluble Spike	IR = Infrared Spectrophotometry
ISD = Insoluble Spike Duplicate	MTR = Meter
PDS = Post Digestion Spike	OD = Oven Dried
* = Out of Specification	TI = Titration
V = Visual	TOC = Total Organic Carbon
AK = Alpkem	IC = Ion Chromatography
TC = Total Carbon	RA = Rapid Analyzer

Quality Control and Calibration Summary Forms

Instrumental Wet Chemistry

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Quality Control Reference List
Instrumental Water Quality

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Fraction: Instrumental Wet Chemistry

Analysis	Batch Number	Sample Number	Analysis Date
Total Cyanide (solid)	16195102201A	P19502AB	07/13/2016 16:01:00
		P19502AQ	07/13/2016 16:00:00
		8457189 UNSPK/BKG	07/13/2016 16:02:00
		8457189 DUP	07/13/2016 16:03:00
		8457189 MS	07/13/2016 16:04:00
		8457193	07/13/2016 16:05:00
		8457197	07/13/2016 16:07:00
		8457201	07/13/2016 16:08:00
		8457205	07/13/2016 16:09:00
		8457209	07/13/2016 16:10:00

Quality Control Summary
Method Blank
Instrumental Water Quality
SDG: DWD93
Matrix: SOLID

Fraction: Instrumental Wet Chemistry

16195102201A / P19502AB Parameter	ME	Analysis Date	Blank Results	Units	MDL	LOQ
Total Cyanide (solid)	AK	07/13/16	N.D.	mg/kg	0.18	0.50

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

UNSPK: 8457189 MS: 8457189	Batch: **16195102201A** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)									
Parameter	**ME**	**Spike Added mg/kg**	**Unspiked Conc mg/kg**	**MS Conc mg/kg**	**MSD Conc mg/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Total Cyanide (solid)	AK	4.95	N.D.	5.31	NA	107	NA	41-145	NA	NA

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

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Quality Control Summary
Duplicate

SDG: DWD93
Matrix: SOLID

Instrumental Water Quality
Fraction: Instrumental Wet Chemistry

BKG: 8457189 DUP: 8457189	Batch: **16195102201A** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)				
Parameter	**ME**	**Unspiked Conc mg/kg**	**DUP Conc mg/kg**	**%RPD**	**%RPD Limits**
Total Cyanide (solid)	AK	N.D.	N.D.	0 (1)	20

Comments:
(1) The sample and/or duplicate result is less than five times the LOQ.
* = Out of Specification

Results are being reported on an as received basis.

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Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD93
Matrix: SOLID

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

LCS: P19502AQ	Batch: **16195102201A** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)								
Parameter	**ME**	**Spike Added mg/kg**	**LCS Conc mg/kg**	**LCSD Conc mg/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Total Cyanide (solid)	AK	10	10.68	NA	107	NA	90-110	NA	NA

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Quality Control Summary
Initial And Continuing Calibration
Instrumental Analysis/TCN

SDG: DWD93

Instrument ID: 09037
Calibration Date: 07/13/2016

Analysis	AUTO CAL1	AUTO CAL2	AUTO CAL3	AUTO CAL4	AUTO CAL5	AUTO CAL6	CC
Total Cyanide	0.3951	0.4372	0.5966	0.8587	1.3816	2.1469	1.0000

Acceptance Range:
ICV/CCV: +/- 10%
ICB/CCB: < MDL

Concentration units: mg/L

Batch Numbers: 16195102201A
Run Start Dates: 07/13/2016
Run Names: 1619502C01

	Total Cyanide		
Sample	True	Result	%Rec
ICV	0.15	0.14890	99
ICB	0	ND	NA
CCV2	0.15	0.14480	97
CCB 1	0	ND	NA

* = Out of Specifications

Fraction: Instrumental Wet Chemistry

05895: Total Cyanide (solid) Analyte Name	Default MDL	Default LOQ	Units
Total Cyanide (solid)	0.18	0.50	mg/kg

Wet Chemistry Data

Case Narrative/Conformance Summary

Wet Chemistry

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Water Quality

Fraction: Wet Chemistry

Sample #	Client ID	Matrix Liquid	Matrix Solid	Comments
8457189	DU-1-3-A		X	
8457193	DU-1-3-B		X	
8457197	DU-1-3-C		X	
8457201	DU-1-2-A		X	
8457205	DU-1-2-B		X	
8457209	DU-1-2-C		X	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Water Quality

Fraction: Wet Chemistry

SAMPLE ANALYSIS:

Samples	Hexavalent Chromium (SOLIDS)	Oxidation Reduction Potential	pH
8457189	DF10	DF1	DF1
8457193	DF20	DF1	DF1
8457197	DF20	DF1	DF1
8457201	DF10	DF1	DF1
8457205	DF10	DF1	DF1
8457209	DF10	DF1	DF1

No problems were encountered with the analysis of the samples.

(Sample number(s): 8457189: Analysis: 00394)
The pH was measured in water at 21.4 C.

(Sample number(s): 8457193, 8457197: Analysis: 00394)
The pH was measured in water at 21.1 C.

(Sample number(s): 8457201, 8457205, 8457209: Analysis: 00394)
The pH was measured in water at 20.9 C.

(Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209: Analysis: 00425)
Reporting limits were raised due to interference from the sample matrix.

Abbreviation Key

U = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
R = Matrix Spike (MS)	MDL = Method Detection Limit
M = Matrix Spike Duplicate (MSD)	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	NA = Not Applicable
HS = High Spike	ME = Method
LS = Low Spike	CO = Colorimetric
SS = Soluble Spike	G = Gravimetric
IS = Insoluble Spike	IR = Infrared Spectrophotometry
ISD = Insoluble Spike Duplicate	MTR = Meter
PDS = Post Digestion Spike	OD = Oven Dried
* = Out of Specification	TI = Titration
V = Visual	TOC = Total Organic Carbon
AK = Alpkem	IC = Ion Chromatography
TC = Total Carbon	RA = Rapid Analyzer

QC Summary

Wet Chemistry

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Quality Control Reference List
Water Quality

CLIENT: CH2M Hill, Inc.
SDG: DWD93

Fraction: Wet Chemistry

Analysis	Batch Number	Sample Number	Analysis Date
Hexavalent Chromium (SOLIDS)	16194042501A	P194042B	07/13/2016 21:15:00
		P194042Q	07/13/2016 21:15:00
		8457189	07/13/2016 21:15:00
		8457193	07/13/2016 21:15:00
		8457197	07/13/2016 21:15:00
		8457201	07/13/2016 21:15:00
		8457205	07/13/2016 21:15:00
		8457209	07/13/2016 21:15:00
Oxidation Reduction Potential	16200182101A	P200182Q	07/18/2016 11:00:00
		8457189	07/18/2016 11:00:00
		8457193	07/18/2016 11:00:00
		8457197	07/18/2016 11:00:00
		8457201	07/18/2016 11:00:00
		8457205	07/18/2016 11:00:00
		8457209	07/18/2016 11:00:00
pH	16200039401A	P200039Q	07/18/2016 11:00:00
		8457189	07/18/2016 11:00:00
		8457193	07/18/2016 11:00:00
		8457197	07/18/2016 11:00:00
		8457201	07/18/2016 11:00:00
		8457205	07/18/2016 11:00:00
		8457209	07/18/2016 11:00:00

Quality Control Summary
Method Blank
Water Quality
SDG: DWD93
Matrix: SOLID

Fraction: Wet Chemistry

16194042501A / P194042B Parameter	ME	Analysis Date	Blank Results	Units	MDL	LOQ
Hexavalent Chromium (SOLIDS)	CO	07/13/16	N.D.	mg/kg	0.50	1.5

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD93
Matrix: SOLID

Water Quality
Fraction: Wet Chemistry

LCS: P194042Q	Batch: **16194042501A** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)								
Parameter	**ME**	**Spike Added mg/kg**	**LCS Conc mg/kg**	**LCSD Conc mg/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Hexavalent Chromium (SOLIDS)	CO	5.00	4.47	NA	89	NA	80-120	NA	NA

LCS: P200039Q	Batch: **16200039401A** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)								
Parameter	**ME**	**Spike Added Std. Units**	**LCS Conc Std. Units**	**LCSD Conc Std. Units**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
pH	MTR	7.00	7.06	NA	101	NA	95-105	NA	NA

LCS: P200182Q	Batch: **16200182101A** (Sample number(s): 8457189, 8457193, 8457197, 8457201, 8457205, 8457209)								
Parameter	**ME**	**Spike Added mV**	**LCS Conc mV**	**LCSD Conc mV**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Oxidation Reduction Potential	TI	427	427	NA	100	NA	98-102	NA	NA

Fraction: Wet Chemistry

00425: Hexavalent Chromium (SOLIDS) Analyte Name	Default MDL	Default LOQ	Units
Hexavalent Chromium (SOLIDS)	0.50	1.5	mg/kg

01821: Oxidation Reduction Potential Analyte Name	Default MDL	Default LOQ	Units
Oxidation Reduction Potential	10.0	10.0	mV

00394: pH Analyte Name	Default MDL	Default LOQ	Units
pH	0.0100	0.0100	Std. Units

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
8457189	13A-1
8457190	13A-2BKG
8457191	13A-3BKG
8457192	13A-4
8457193	13B-1
8457194	13B-2
8457195	13B-3
8457196	13B-4
8457197	13C-1
8457198	13C-2
8457199	13C-3
8457200	13C-4
8457201	12A-1
8457202	12A-2
8457203	12A-3
8457204	12A-4
8457205	12B-1
8457206	12B-2
8457207	12B-3
8457208	12B-4
8457209	12C-1
8457210	12C-2
8457211	12C-3
8457212	12C-4
8457213	40MMS
8457214	40MMD
8469767	13A-2MS
8469768	13A-2MSD
8469769	13A-2DUP
8469770	13A-3MS
8469771	13A-3MSD

COMMENTS:

Method defined actions are taken for any failed matrix QC.

Laboratory Compliance Quality Control

Analysis Name	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 16232820002A	Sample number(s): 8457189-8457214, 8457189-8457214, 8469767-8469771				
Moisture	100		99-101		
Moisture	100		99-101		
Moisture Duplicate	100		99-101		

MOISTURE

Sample Matrix Quality Control

Analysis Name	BKG Conc	DUP Conc	RPD	RPD Max
Batch number: 16232820002A	Sample number(s):	8457189-8457214, 8457189-8457214, 8469767-8469771		
Moisture	7.0	7.7	8*	5
Moisture	7.1	7.7	8*	5
Moisture Duplicate	7.0	7.7	8*	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 16232820002

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
8457189BKG	A	00111	1.0876	9.2411	9.6775	7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457189DUP	A	00111	1.0812	9.4647	9.8198	7.67	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457190BKG	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457191BKG	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457192	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457193	A	00111	1.0825	8.3963	8.7453	8.74	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457194	A	00118				8.74	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457195	A	00118				8.74	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457196	A	00118				8.74	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457197	A	00111	1.0623	6.7989	7.2942	8.34	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457198	A	00118				8.34	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457199	A	00118				8.34	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457200	A	00118				8.34	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457201	A	00111	1.0756	7.5710	8.0097	8.41	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457202	A	00118				8.41	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457203	A	00118				8.41	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457204	A	00118				8.41	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457205	A	00111	1.0426	6.6218	7.0851	8.75	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457206	A	00118				8.75	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457207	A	00118				8.75	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457208	A	00118				8.75	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457209	A	00111	1.0741	6.8883	7.4158	7.94	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457210	A	00118				7.94	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457211	A	00118				7.94	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457212	A	00118				7.94	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457213	A	00111	1.0734	5.9654	7.0127	0.44	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8457214	A	00111	1.0719	6.2657	7.3109	0.43	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8469767MS	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8469768MSD	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8469769DUP	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8469769DUP	A	00121	1.0812	9.4647	9.8198	7.67	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8469770MS	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8469771MSD	A	00118				7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
LCS 89.5% Std.		00111	1.0962	5.0226	1.6254	89.46	8/19/16 (1201/SWF)	8/22/16 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Woodbine Phase III MEC RFI
Sand, Soil and Water Samples
Collected on 07/11/16

SDG# DWD94

GROUP	SAMPLE NUMBERS
1681897	8471033-8471076

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** 09/09/2016

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DWD94 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Woodbine Phase III MEC RFI

Lab Sample Number	Client Sample ID	Collection Date	Date Received
8471033	TB-09	07/11/2016 08:00	07/12/2016 09:30
8471034	DU-1-13-A	07/11/2016 09:00	07/12/2016 09:30
8471035	DU-1-13-A	07/11/2016 09:00	07/12/2016 09:30
8471036	DU-1-13-A	07/11/2016 09:00	07/12/2016 09:30
8471037	DU-1-13-A	07/11/2016 09:00	07/12/2016 09:30
8471038	DU-1-13-B	07/11/2016 10:00	07/12/2016 09:30
8471039	DU-1-13-B	07/11/2016 10:00	07/12/2016 09:30
8471040	DU-1-13-B	07/11/2016 10:00	07/12/2016 09:30
8471041	DU-1-13-B	07/11/2016 10:00	07/12/2016 09:30
8471042	DU-1-13-C	07/11/2016 11:00	07/12/2016 09:30
8471043	DU-1-13-C	07/11/2016 11:00	07/12/2016 09:30
8471044	DU-1-13-C	07/11/2016 11:00	07/12/2016 09:30
8471045	DU-1-13-C	07/11/2016 11:00	07/12/2016 09:30
8471046	DU-1-14-A	07/11/2016 12:00	07/12/2016 09:30
8471047	DU-1-14-A	07/11/2016 12:00	07/12/2016 09:30
8471048	DU-1-14-A MS	07/11/2016 12:00	07/12/2016 09:30
8471049	DU-1-14-A MSD	07/11/2016 12:00	07/12/2016 09:30
8471050	DU-1-14-A DUP	07/11/2016 12:00	07/12/2016 09:30
8471051	DU-1-14-A	07/11/2016 12:00	07/12/2016 09:30
8471052	DU-1-14-A MS	07/11/2016 12:00	07/12/2016 09:30
8471053	DU-1-14-A MSD	07/11/2016 12:00	07/12/2016 09:30
8471054	DU-1-14-A	07/11/2016 12:00	07/12/2016 09:30
8471055	DU-1-14-B	07/11/2016 13:00	07/12/2016 09:30
8471056	DU-1-14-B	07/11/2016 13:00	07/12/2016 09:30
8471057	DU-1-14-B	07/11/2016 13:00	07/12/2016 09:30
8471058	DU-1-14-B	07/11/2016 13:00	07/12/2016 09:30
8471059	DU-1-14-C	07/11/2016 14:00	07/12/2016 09:30
8471060	DU-1-14-C	07/11/2016 14:00	07/12/2016 09:30
8471061	DU-1-14-C	07/11/2016 14:00	07/12/2016 09:30
8471062	DU-1-14-C	07/11/2016 14:00	07/12/2016 09:30
8471063	DU-1-1-A	07/11/2016 15:00	07/12/2016 09:30
8471064	DU-1-1-A	07/11/2016 15:00	07/12/2016 09:30
8471065	DU-1-1-A	07/11/2016 15:00	07/12/2016 09:30
8471066	DU-1-1-A	07/11/2016 15:00	07/12/2016 09:30
8471067	DU-1-1-B	07/11/2016 16:00	07/12/2016 09:30
8471068	DU-1-1-B	07/11/2016 16:00	07/12/2016 09:30
8471069	DU-1-1-B	07/11/2016 16:00	07/12/2016 09:30
8471070	DU-1-1-B	07/11/2016 16:00	07/12/2016 09:30
8471071	DU-1-1-C	07/11/2016 17:00	07/12/2016 09:30
8471072	DU-1-1-C	07/11/2016 17:00	07/12/2016 09:30
8471073	DU-1-1-C	07/11/2016 17:00	07/12/2016 09:30
8471074	DU-1-1-C	07/11/2016 17:00	07/12/2016 09:30
8471075	Metals Blank		07/12/2016 09:30

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Lab Sample Number	Client Sample ID	Collection Date	Date Received
8471076	Exp/Perchlorate Blank		07/12/2016 09:30

Sample pH Log

SDG: DWD94

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	Res. Cl. Present?	Corrective Substance	CS Lot #	Record Date	Employee
8471033	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA	7/18/2016 1:52:10PM	3231

Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

11997 VOCs- 5ml Water by 8260C

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

11995 VOCs- Solid by 8260C

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

10638 Hg - SW, 7471B - U4
00159 Mercury

The solution resulting from the mercury digestion is analyzed by Cold Vapor AA.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 7471B, February 2007

01643 Aluminum
06944 Antimony
06935 Arsenic
06946 Barium
06947 Beryllium
06949 Cadmium
01650 Calcium
06951 Chromium
06952 Cobalt
06953 Copper
01654 Iron
06955 Lead
01657 Magnesium
06958 Manganese
06961 Nickel
01662 Potassium
06936 Selenium
06966 Silver
01667 Sodium
06971 Vanadium
06972 Zinc

The solution resulting from the metals digestion is analyzed by Trace ICP.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 6010C, February 2007.

06145 Thallium

The solution resulting from the metals digestion is analyzed by ICP/MS.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 6020A, February 2007.

10637 ICP/ICPMS-SW, 3050B - U4

The sample is digested with nitric acid, hydrochloric acid and hydrogen peroxide.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3050B, December 1996

13433 Nitroaromatic/Amine Ext 8330B

The sample is extracted with acetonitrile in a vial using a chilled ultrasonic bath. The vial is centrifuged and the acetonitrile removed. The extract is brought to volume with calcium chloride solution and filtered prior to analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8330B, Revision 2, October 2006.

13413 Nitroaromatics/Amines 8330B(s)

The sample is extracted into acetonitrile using an ultrasonic bath. The extract is analyzed using High Performance Liquid Chromatography (HPLC) with UV detection at two wavelengths for optimum sensitivity for all target compounds 214 and 254 nm. Confirmation of presumptive peaks is performed on a second column at the same two wavelengths.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8330B, Revision 2, October 2006.

06568 Perchlorate Soil Prep

Water samples are filtered through a 0.45-um syringe filter, followed by direct injection into a LC/MS/MS system followed by multiple reaction monitoring. Quantitation is performed using an isotopic internal standard.

Reference: Test Methods for Evaluating Solid Waste, EPA SW-846, Method 6850, 1/2007.

06557 Perchlorate in Soil LC/MS/MS

Soil samples are extracted with water, then filtered through a 0.45-um syringe filter and analyzed by LC/MS/MS. Quantitation is performed using an isotopic internal standard.

Reference: Test Methods for Evaluating Solid Waste, EPA SW-846, Method 6850, 1/2007.

10726 SVOA 8270D (microwave)

The sample extract is analyzed by capillary column Gas Chromatography/Mass Spectrometry.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8270D, February 2007.

10813 BNA Soil Microwave APP IX

The sample aliquot is extracted using microwave extraction with 1:1 methylene chloride and acetone. The extract is concentrated prior to analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3546, Revision 0, February 2007.

05895 Total Cyanide (solid)

During the distillation step, complex cyanides are converted to hydrogen cyanide which readily reacts with chloramine T. Simple cyanides are converted to cyanogen chloride by reaction with chloramine T. This reacts with pyridine and barbituric acid to give a red colored complex determined colorimetrically.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9012B Rev. 2, November 2004.

05896 Cyanide Solid Distillation

The sample is acidified and distilled. Cyanide is released as hydrogen cyanide and is absorbed in a sodium hydroxide solution.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9012B Rev. 2, November 2004.

00394 pH

A 1:1 slurry is prepared. The activity of hydrogen ions in the supernatant is measured using a glass electrode and a reference electrode.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9045D Modified, November 2004.

00425 Hexavalent Chromium (SOLIDS)

The filtrate from method #7825 is analyzed colorimetrically using diphenylcarbazide to produce a red-violet color. The absorbance is read at 540 nm and compared to a standard curve.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 7196A, July 1992.

01821 Oxidation Reduction Potential

The oxidation-reduction potential is measured using a platinum electrode and a reference electrode. The potential reported is the electromotive force between the platinum electrode and the reference electrode, referred to the standard hydrogen scale.

Reference: Annual Book of ASTM Standards, Method D 1498

07825 Hexavalent Cr (Extraction)

The sample is digested using a 3% sodium carbonate - 2% sodium hydroxide solution and then filtered through a 0.45 micron filter.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3060A, December 1996

00111 Moisture
00118 Moisture
00121 Moisture Duplicate

A well-mixed sample is placed in a tared container and dried to a constant weight in an oven at 103-105C. The increase in weight is the total solids.

Reference: Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998, Method 2540 G-1997

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: September 02, 2016

Project: Woodbine Phase III MEC RFI

Submittal Date: 07/12/2016
Group Number: 1681897
SDG: DWD94
PO Number: 10381-7-113967
Release Number: DWD94
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
TB-09 Water	8471033
DU-1-13-A Composite Soil	8471034
DU-1-13-A Composite Soil	8471035
DU-1-13-A Composite Soil	8471036
DU-1-13-A Composite Soil	8471037
DU-1-13-B Composite Soil	8471038
DU-1-13-B Composite Soil	8471039
DU-1-13-B Composite Soil	8471040
DU-1-13-B Composite Soil	8471041
DU-1-13-C Composite Soil	8471042
DU-1-13-C Composite Soil	8471043
DU-1-13-C Composite Soil	8471044
DU-1-13-C Composite Soil	8471045
DU-1-14-A Composite Soil	8471046
DU-1-14-A Composite Soil	8471047
DU-1-14-A MS Composite Soil	8471048
DU-1-14-A MSD Composite Soil	8471049
DU-1-14-A DUP Composite Soil	8471050
DU-1-14-A Composite Soil	8471051
DU-1-14-A MS Composite Soil	8471052
DU-1-14-A MSD Composite Soil	8471053
DU-1-14-A Composite Soil	8471054
DU-1-14-B Composite Soil	8471055
DU-1-14-B Composite Soil	8471056
DU-1-14-B Composite Soil	8471057
DU-1-14-B Composite Soil	8471058
DU-1-14-C Composite Soil	8471059
DU-1-14-C Composite Soil	8471060
DU-1-14-C Composite Soil	8471061
DU-1-14-C Composite Soil	8471062

DU-1-1-A Composite Soil	8471063
DU-1-1-A Composite Soil	8471064
DU-1-1-A Composite Soil	8471065
DU-1-1-A Composite Soil	8471066
DU-1-1-B Composite Soil	8471067
DU-1-1-B Composite Soil	8471068
DU-1-1-B Composite Soil	8471069
DU-1-1-B Composite Soil	8471070
DU-1-1-C Composite Soil	8471071
DU-1-1-C Composite Soil	8471072
DU-1-1-C Composite Soil	8471073
DU-1-1-C Composite Soil	8471074
Metals Blank Grab Sand	8471075
Exp/Perchlorate Blank Grab Sand	8471076

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Sherrill
Electronic Copy To	CH2M Hill, Inc.	Attn: Chemistry Mailbox
Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Stinnett

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Sample Description: TB-09 Water
Woodbine Phase III MEC RFI

LL Sample # WW 8471033
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 08:00

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9401 SDG#: DWD94-01TB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/l		ug/l	ug/l	
11997	4-Methyl-2-pentanone	108-10-1	3	U	3	10	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	L161991AA	07/17/2016 20:19	Christopher G Torres	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L161991AA	07/17/2016 20:19	Christopher G Torres	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471034
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9402 SDG#: DWD94-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	260	U	260	1,300	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	1,300	U	1,300	3,900	5
10726	Quinoline	91-22-5	260	U	260	1,300	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0395	J	0.0096	0.0964	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.18	U	0.18	0.51	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	527		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.1	U	5.1	15.4	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	6.80		0.0100	0.0100	1
	The pH was measured in water at 21 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	2.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 02:18	William H Saadeh	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471034
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9402 SDG#: DWD94-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:45	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 11:50	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471035
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9403 SDG#: DWD94-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,310		6.51	30.0	1
06944	Antimony	7440-36-0	0.525	U	0.525	3.00	1
06935	Arsenic	7440-38-2	0.728	U	0.728	3.00	1
06946	Barium	7440-39-3	8.42		0.0248	0.750	1
06947	Beryllium	7440-41-7	0.0653	J	0.0503	0.750	1
06949	Cadmium	7440-43-9	0.0503	J	0.0368	0.750	1
01650	Calcium	7440-70-2	2,620		4.25	30.0	1
06951	Chromium	7440-47-3	2.85		0.105	2.25	1
06952	Cobalt	7440-48-4	0.0900	U	0.0900	0.750	1
06953	Copper	7440-50-8	1.30	J	0.236	2.06	1
01654	Iron	7439-89-6	1,200		3.09	30.0	1
06955	Lead	7439-92-1	5.32		0.565	3.08	1
01657	Magnesium	7439-95-4	963		1.43	15.0	1
06958	Manganese	7439-96-5	55.1		0.0623	0.750	1
06961	Nickel	7440-02-0	1.02	J	0.225	1.50	1
01662	Potassium	7440-09-7	83.2		17.9	75.0	1
06936	Selenium	7782-49-2	0.675	U	0.675	3.00	1
06966	Silver	7440-22-4	0.113	U	0.113	0.750	1
01667	Sodium	7440-23-5	24.0	J	17.9	150	1
06971	Vanadium	7440-62-2	2.83		0.105	0.750	1
06972	Zinc	7440-66-6	12.3		0.510	3.00	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0218	U	0.0218	0.150	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 07:57	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471035
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9403 SDG#: DWD94-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 07:57	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 11:51	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/21/2016 11:14	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:00	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471036
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9404 SDG#: DWD94-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	42	U	42	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	42	U	42	120	1
13413	1,3-Dinitrobenzene	99-65-0	41	U	41	120	1
13413	2,4-Dinitrotoluene	121-14-2	41	U	41	120	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	120	1
13413	HM	2691-41-0	220	U	220	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	810	U	810	2,400	1
13413	2-Nitrotoluene	88-72-2	76	U	76	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	810	U	810	2,400	1
13413	RD	121-82-4	41	U	41	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	41	U	41	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	45	U	45	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.2	U	2.2	5.1	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	2.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/20/2016 19:58	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162020019A	07/27/2016 17:40	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	2	162020019A	07/27/2016 09:55	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471036
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9404 SDG#: DWD94-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-13-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471037
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 09:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9405 SDG#: DWD94-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	11	U	11	36	3.47
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 16:16	Jennifer Howe	3.47
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 22:01	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-13-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471038
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 10:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9406 SDG#: DWD94-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	260	U	260	1,300	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	1,300	U	1,300	3,800	5
10726	Quinoline	91-22-5	260	U	260	1,300	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0269	J	0.0095	0.0946	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.18	U	0.18	0.51	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	512		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.1	U	5.1	15.4	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	6.89		0.0100	0.0100	1
	The pH was measured in water at 21 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	2.4		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 02:43	William H Saadeh	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471038
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 10:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9406 SDG#: DWD94-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:47	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 11:54	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471039
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 10:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9407 SDG#: DWD94-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,440		8.81	40.6	1
06944	Antimony	7440-36-0	0.710	U	0.710	4.06	1
06935	Arsenic	7440-38-2	0.984	U	0.984	4.06	1
06946	Barium	7440-39-3	9.02		0.0335	1.01	1
06947	Beryllium	7440-41-7	0.0741	J	0.0680	1.01	1
06949	Cadmium	7440-43-9	0.0497	U	0.0497	1.01	1
01650	Calcium	7440-70-2	3,280		5.74	40.6	1
06951	Chromium	7440-47-3	3.09		0.142	3.04	1
06952	Cobalt	7440-48-4	0.122	U	0.122	1.01	1
06953	Copper	7440-50-8	1.01	J	0.218	1.90	1
01654	Iron	7439-89-6	1,130		4.18	40.6	1
06955	Lead	7439-92-1	4.97		0.522	2.85	1
01657	Magnesium	7439-95-4	1,320		1.93	20.3	1
06958	Manganese	7439-96-5	60.2		0.0842	1.01	1
06961	Nickel	7440-02-0	0.928	J	0.304	2.03	1
01662	Potassium	7440-09-7	86.2	J	24.2	101	1
06936	Selenium	7782-49-2	0.913	U	0.913	4.06	1
06966	Silver	7440-22-4	0.152	U	0.152	1.01	1
01667	Sodium	7440-23-5	27.0	J	24.2	203	1
06971	Vanadium	7440-62-2	3.18		0.142	1.01	1
06972	Zinc	7440-66-6	11.1		0.690	4.06	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0294	U	0.0294	0.203	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.4		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:00	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471039
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 10:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9407 SDG#: DWD94-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:00	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 11:54	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/21/2016 11:17	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:05	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471040
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 10:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9408 SDG#: DWD94-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	42	U	42	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	42	U	42	120	1
13413	1,3-Dinitrobenzene	99-65-0	41	U	41	120	1
13413	2,4-Dinitrotoluene	121-14-2	41	U	41	120	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	120	1
13413	HM	2691-41-0	220	U	220	310	1
13413	Nitrobenzene	98-95-3	100	U	100	310	1
13413	Nitroglycerin	55-63-0	820	U	820	2,500	1
13413	2-Nitrotoluene	88-72-2	77	U	77	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	820	U	820	2,500	1
13413	RD	121-82-4	41	U	41	120	1
13413	Tetryl	479-45-8	100	U	100	310	1
13413	1,3,5-Trinitrobenzene	99-35-4	41	U	41	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	45	U	45	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	SW-846 6850 1/2007		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.2	U	2.2	5.1	1
	The stated QC limits are advisory.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.4		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/17/2016 11:19	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 20:45	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471041
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 10:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9409 SDG#: DWD94-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	5	U	5	17	1.61
	The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken: The sample was re-analyzed and the QC is again outside of the acceptance limits, indicating a matrix effect. The data is reported from the initial trial.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.4		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 14:00	Jennifer Howe	1.61
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 22:03	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471042
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9410 SDG#: DWD94-10

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	260	U	260	1,300	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	1,300	U	1,300	3,900	1
10726	Quinoline	91-22-5	260	U	260	1,300	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0488	J	0.0101	0.101	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.19	J	0.18	0.51	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	526		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	10.3	U	10.3	30.9	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	6.98		0.0100	0.0100	1
	The pH was measured in water at 21.4 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	2.9		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 03:08	William H Saadeh	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471042
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9410 SDG#: DWD94-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:49	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 11:55	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471043
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9411 SDG#: DWD94-11

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,370		8.68	40.0	1
06944	Antimony	7440-36-0	0.700	U	0.700	4.00	1
06935	Arsenic	7440-38-2	0.970	U	0.970	4.00	1
06946	Barium	7440-39-3	8.08		0.0330	1.00	1
06947	Beryllium	7440-41-7	0.0690	J	0.0670	1.00	1
06949	Cadmium	7440-43-9	0.0620	J	0.0490	1.00	1
01650	Calcium	7440-70-2	3,900		5.66	40.0	1
06951	Chromium	7440-47-3	3.10		0.140	3.00	1
06952	Cobalt	7440-48-4	0.120	U	0.120	1.00	1
06953	Copper	7440-50-8	2.14		0.221	1.92	1
01654	Iron	7439-89-6	1,100		4.12	40.0	1
06955	Lead	7439-92-1	7.86		0.529	2.89	1
01657	Magnesium	7439-95-4	1,500		1.90	20.0	1
06958	Manganese	7439-96-5	55.4		0.0830	1.00	1
06961	Nickel	7440-02-0	1.05	J	0.300	2.00	1
01662	Potassium	7440-09-7	92.1	J	23.9	100	1
06936	Selenium	7782-49-2	0.900	U	0.900	4.00	1
06966	Silver	7440-22-4	0.150	U	0.150	1.00	1
01667	Sodium	7440-23-5	26.5	J	23.9	200	1
06971	Vanadium	7440-62-2	3.10		0.140	1.00	1
06972	Zinc	7440-66-6	8.69		0.680	4.00	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0290	U	0.0290	0.200	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:09	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471043
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9411 SDG#: DWD94-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:09	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 11:57	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:27	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 11:57	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:07	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471044
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9412 SDG#: DWD94-12

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	40	U	40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	40	U	40	120	1
13413	1,3-Dinitrobenzene	99-65-0	39	U	39	120	1
13413	2,4-Dinitrotoluene	121-14-2	39	U	39	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	99	U	99	300	1
13413	Nitroglycerin	55-63-0	790	U	790	2,400	1
13413	2-Nitrotoluene	88-72-2	74	U	74	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	790	U	790	2,400	1
13413	RD	121-82-4	39	U	39	120	1
13413	Tetryl	479-45-8	99	U	99	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	39	U	39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	43	U	43	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.2	U	2.2	5.1	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	2.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/20/2016 21:23	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 21:10	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471044
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9412 SDG#: DWD94-12

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-13-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471045
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 11:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9413 SDG#: DWD94-13

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	14	1.39
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 14:23	Jennifer Howe	1.39
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 21:51	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002A	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471046
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9414 SDG#: DWD94-14

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	170	U	170	850	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	850	U	850	2,600	1
10726	Quinoline	91-22-5	170	U	170	850	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0658	J	0.0102	0.102	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	J	0.18	0.51	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	561		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	5.1	U	5.1	15.4	10
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	5.90		0.0100	0.0100	1
	The pH was measured in water at 21.4 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	2.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 03:32	William H Saadeh	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471046
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9414 SDG#: DWD94-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:55	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 11:56	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	10
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471047
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9415 SDG#: DWD94-15B G

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	3,320		6.94	32.0	1
06944	Antimony	7440-36-0	0.560	U	0.560	3.20	1
06935	Arsenic	7440-38-2	0.776	U	0.776	3.20	1
06946	Barium	7440-39-3	10.3		0.0264	0.800	1
06947	Beryllium	7440-41-7	0.0712	J	0.0536	0.800	1
06949	Cadmium	7440-43-9	0.0392	U	0.0392	0.800	1
01650	Calcium	7440-70-2	517		4.53	32.0	1
06951	Chromium	7440-47-3	3.01		0.112	2.40	1
06952	Cobalt	7440-48-4	0.0960	U	0.0960	0.800	1
06953	Copper	7440-50-8	0.643	J	0.233	2.03	1
01654	Iron	7439-89-6	1,300		3.29	32.0	1
06955	Lead	7439-92-1	4.88		0.557	3.04	1
01657	Magnesium	7439-95-4	199		1.52	16.0	1
06958	Manganese	7439-96-5	71.8		0.0664	0.800	1
06961	Nickel	7440-02-0	1.26	J	0.240	1.60	1
01662	Potassium	7440-09-7	77.9	J	19.1	80.0	1
06936	Selenium	7782-49-2	0.720	U	0.720	3.20	1
06966	Silver	7440-22-4	0.120	U	0.120	0.800	1
01667	Sodium	7440-23-5	19.1	U	19.1	160	1
06971	Vanadium	7440-62-2	3.17		0.112	0.800	1
06972	Zinc	7440-66-6	3.52		0.544	3.20	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0232	U	0.0232	0.160	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 07:39	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471047
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9415 SDG#: DWD94-15B G

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 07:39	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 11:38	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 10:56	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 11:38	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 14:49	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471048
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9415 SDG#: DWD94-15MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	4,010	8.15	37.6	1
06944	Antimony	7440-36-0	42.8	0.657	3.76	1
06935	Arsenic	7440-38-2	14.1	0.911	3.76	1
06946	Barium	7440-39-3	199	0.0310	0.939	1
06947	Beryllium	7440-41-7	4.76	0.0629	0.939	1
06949	Cadmium	7440-43-9	4.78	0.0460	0.939	1
01650	Calcium	7440-70-2	911	5.31	37.6	1
06951	Chromium	7440-47-3	21.7	0.131	2.82	1
06952	Cobalt	7440-48-4	47.7	0.113	0.939	1
06953	Copper	7440-50-8	25.4	0.229	1.99	1
01654	Iron	7439-89-6	1,410	3.87	37.6	1
06955	Lead	7439-92-1	18.9	0.547	2.98	1
01657	Magnesium	7439-95-4	409	1.78	18.8	1
06958	Manganese	7439-96-5	117	0.0779	0.939	1
06961	Nickel	7440-02-0	49.1	0.282	1.88	1
01662	Potassium	7440-09-7	1,040	22.4	93.9	1
06936	Selenium	7782-49-2	13.0	0.845	3.76	1
06966	Silver	7440-22-4	4.74	0.141	0.939	1
01667	Sodium	7440-23-5	962	22.4	188	1
06971	Vanadium	7440-62-2	51.2	0.131	0.939	1
06972	Zinc	7440-66-6	51.3	0.639	3.76	1
	SW-846 6020A		mg/kg	mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.385	0.0272	0.188	2
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	2.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 07:48	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471048
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9415 SDG#: DWD94-15MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 07:48	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/21/2016 11:05	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 14:54	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471049
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9415 SDG#: DWD94-15MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	4,130	8.71	40.1	1
06944	Antimony	7440-36-0	45.4	0.702	4.01	1
06935	Arsenic	7440-38-2	14.7	0.973	4.01	1
06946	Barium	7440-39-3	214	0.0331	1.00	1
06947	Beryllium	7440-41-7	5.11	0.0672	1.00	1
06949	Cadmium	7440-43-9	5.10	0.0492	1.00	1
01650	Calcium	7440-70-2	956	5.68	40.1	1
06951	Chromium	7440-47-3	23.2	0.140	3.01	1
06952	Cobalt	7440-48-4	50.9	0.120	1.00	1
06953	Copper	7440-50-8	26.2	0.231	2.01	1
01654	Iron	7439-89-6	1,480	4.13	40.1	1
06955	Lead	7439-92-1	19.1	0.552	3.01	1
01657	Magnesium	7439-95-4	426	1.91	20.1	1
06958	Manganese	7439-96-5	123	0.0833	1.00	1
06961	Nickel	7440-02-0	52.1	0.301	2.01	1
01662	Potassium	7440-09-7	1,110	24.0	100	1
06936	Selenium	7782-49-2	14.5	0.903	4.01	1
06966	Silver	7440-22-4	5.10	0.151	1.00	1
01667	Sodium	7440-23-5	1,030	24.0	201	1
06971	Vanadium	7440-62-2	54.7	0.140	1.00	1
06972	Zinc	7440-66-6	54.8	0.682	4.01	1
	SW-846 6020A		mg/kg	mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.407	0.0291	0.201	2
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	2.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 07:51	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471049
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9415 SDG#: DWD94-15MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 07:51	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/21/2016 11:08	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 14:56	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A DUP Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471050
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9415 SDG#: DWD94-15DUP

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	3,480		8.71	40.1	1
06944	Antimony	7440-36-0	0.702	U	0.702	4.01	1
06935	Arsenic	7440-38-2	0.973	U	0.973	4.01	1
06946	Barium	7440-39-3	10.8		0.0331	1.00	1
06947	Beryllium	7440-41-7	0.0763	J	0.0672	1.00	1
06949	Cadmium	7440-43-9	0.0492	U	0.0492	1.00	1
01650	Calcium	7440-70-2	544		5.68	40.1	1
06951	Chromium	7440-47-3	3.17		0.140	3.01	1
06952	Cobalt	7440-48-4	0.120	U	0.120	1.00	1
06953	Copper	7440-50-8	0.660	J	0.226	1.97	1
01654	Iron	7439-89-6	1,380		4.13	40.1	1
06955	Lead	7439-92-1	5.07		0.541	2.95	1
01657	Magnesium	7439-95-4	206		1.91	20.1	1
06958	Manganese	7439-96-5	75.9		0.0833	1.00	1
06961	Nickel	7440-02-0	1.39	J	0.301	2.01	1
01662	Potassium	7440-09-7	79.5	J	24.0	100	1
06936	Selenium	7782-49-2	0.903	U	0.903	4.01	1
06966	Silver	7440-22-4	0.151	U	0.151	1.00	1
01667	Sodium	7440-23-5	24.0	U	24.0	201	1
06971	Vanadium	7440-62-2	3.41		0.140	1.00	1
06972	Zinc	7440-66-6	4.10		0.682	4.01	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0291	U	0.0291	0.201	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.3		0.50	0.50	1
00121	Moisture Duplicate	n.a.	2.5		0.50	0.50	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A DUP Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471050
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9415 SDG#: DWD94-15DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 07:45	Eric L Eby	1
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 07:45	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 11:44	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:02	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 11:44	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 14:52	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471051
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9416 SDG#: DWD94-16B G

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	800	U	800	2,400	1
13413	2-Nitrotoluene	88-72-2	75	U	75	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	800	U	800	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.1	U	2.1	5.1	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	2.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/20/2016 22:06	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 21:23	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471051
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9416 SDG#: DWD94-16B G

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471052
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9416 SDG#: DWD94-16MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg	ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	2,800	40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	2,500	40	120	1
13413	1,3-Dinitrobenzene	99-65-0	5,300	39	120	1
13413	2,4-Dinitrotoluene	121-14-2	1,400	39	120	1
13413	2,6-Dinitrotoluene	606-20-2	6,700	110	120	1
13413	HM	2691-41-0	2,400	210	290	1
13413	Nitrobenzene	98-95-3	1,200	98	290	1
13413	Nitroglycerin	55-63-0	18,000	780	2,300	1
13413	2-Nitrotoluene	88-72-2	2,100	73	120	1
13413	3-Nitrotoluene	99-08-1	2,000	110	120	1
13413	4-Nitrotoluene	99-99-0	4,400	110	120	1
13413	PETN	78-11-5	21,000	780	2,300	1
13413	RD	121-82-4	4,700	39	120	1
13413	Tetryl	479-45-8	360	98	290	1
13413	1,3,5-Trinitrobenzene	99-35-4	1,200	39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	1,300	43	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.					
Perchlorate	**SW-846 6850 1/2007**		ug/kg	ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	100	2.1	5.1	1
	The stated QC limits are advisory.					
Wet Chemistry	**SM 2540 G-1997**		%	%	%	
00118	Moisture	n.a.	2.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/20/2016 22:48	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 21:35	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471052
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9416 SDG#: DWD94-16MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471053
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9416 SDG#: DWD94-16MSD

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	2,800		40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	2,700		40	120	1
13413	1,3-Dinitrobenzene	99-65-0	5,200		39	120	1
13413	2,4-Dinitrotoluene	121-14-2	1,400		39	120	1
13413	2,6-Dinitrotoluene	606-20-2	7,200		110	120	1
13413	HM	2691-41-0	2,400		210	300	1
13413	Nitrobenzene	98-95-3	1,500		99	300	1
13413	Nitroglycerin	55-63-0	18,000		790	2,400	1
13413	2-Nitrotoluene	88-72-2	2,100		74	120	1
13413	3-Nitrotoluene	99-08-1	2,100		110	120	1
13413	4-Nitrotoluene	99-99-0	4,400		110	120	1
13413	PETN	78-11-5	22,000		790	2,400	1
13413	RD	121-82-4	4,800		39	120	1
13413	Tetryl	479-45-8	240	J	99	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	1,200		39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	1,300		43	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	98		2.1	5.1	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	2.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/20/2016 23:31	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 21:48	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471053
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9416 SDG#: DWD94-16MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-14-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471054
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 12:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9417 SDG#: DWD94-17

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	5	U	5	18	1.72
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 13:15	Jennifer Howe	1.72
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 22:04	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471055
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9418 SDG#: DWD94-18

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	170	U	170	860	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	860	U	860	2,600	1
10726	Quinoline	91-22-5	170	U	170	860	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0596	J	0.0103	0.103	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	J	0.18	0.51	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	584		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	10.3	U	10.3	30.9	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	6.01		0.0100	0.0100	1
	The pH was measured in water at 21.6 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	3.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 03:57	William H Saadeh	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471055
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9418 SDG#: DWD94-18

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:57	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 11:57	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471056
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9419 SDG#: DWD94-19

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	3,470		8.44	38.9	1
06944	Antimony	7440-36-0	0.681	U	0.681	3.89	1
06935	Arsenic	7440-38-2	0.943	U	0.943	3.89	1
06946	Barium	7440-39-3	11.3		0.0321	0.973	1
06947	Beryllium	7440-41-7	0.0807	J	0.0652	0.973	1
06949	Cadmium	7440-43-9	0.0477	U	0.0477	0.973	1
01650	Calcium	7440-70-2	502		5.50	38.9	1
06951	Chromium	7440-47-3	3.40		0.136	2.92	1
06952	Cobalt	7440-48-4	0.117	U	0.117	0.973	1
06953	Copper	7440-50-8	0.655	J	0.199	1.73	1
01654	Iron	7439-89-6	1,420		4.01	38.9	1
06955	Lead	7439-92-1	4.24		0.476	2.60	1
01657	Magnesium	7439-95-4	200		1.85	19.5	1
06958	Manganese	7439-96-5	78.7		0.0807	0.973	1
06961	Nickel	7440-02-0	1.48	J	0.292	1.95	1
01662	Potassium	7440-09-7	76.2	J	23.2	97.3	1
06936	Selenium	7782-49-2	0.875	U	0.875	3.89	1
06966	Silver	7440-22-4	0.146	U	0.146	0.973	1
01667	Sodium	7440-23-5	23.2	U	23.2	195	1
06971	Vanadium	7440-62-2	3.44		0.136	0.973	1
06972	Zinc	7440-66-6	3.67	J	0.661	3.89	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0282	U	0.0282	0.195	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	3.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:12	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471056
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9419 SDG#: DWD94-19

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:12	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 12:00	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:30	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 12:00	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:09	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471057
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9420 SDG#: DWD94-20

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	120	U	120	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	810	U	810	2,400	1
13413	2-Nitrotoluene	88-72-2	76	U	76	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	810	U	810	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.2	U	2.2	5.2	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	3.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/21/2016 00:13	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 22:01	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471057
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9420 SDG#: DWD94-20

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-14-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471058
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 13:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9421 SDG#: DWD94-21

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	6	U	6	19	1.85
	The secondary vial was analyzed and no valid data was collected during re-analysis. Therefore the matrix effects observed in the initial analysis could not be confirmed. The values reported here are from the initial analysis.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	3.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 13:38	Jennifer Howe	1.85
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 22:06	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471059
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9422 SDG#: DWD94-22

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	170	U	170	850	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	850	U	850	2,500	1
10726	Quinoline	91-22-5	170	U	170	850	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0734	J	0.0102	0.102	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	J	0.18	0.49	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	569		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	2.6	U	2.6	7.7	5
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	5.86		0.0100	0.0100	1
	The pH was measured in water at 21.5 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	2.2		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 09:21	Joseph M Gambler	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471059
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9422 SDG#: DWD94-22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:59	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 11:59	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	5
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471060
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9423 SDG#: DWD94-23

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	3,450		8.00	36.8	1
06944	Antimony	7440-36-0	0.645	U	0.645	3.68	1
06935	Arsenic	7440-38-2	0.894	U	0.894	3.68	1
06946	Barium	7440-39-3	10.6		0.0304	0.921	1
06947	Beryllium	7440-41-7	0.0765	J	0.0617	0.921	1
06949	Cadmium	7440-43-9	0.0451	U	0.0451	0.921	1
01650	Calcium	7440-70-2	529		5.21	36.8	1
06951	Chromium	7440-47-3	3.09		0.129	2.76	1
06952	Cobalt	7440-48-4	0.111	U	0.111	0.921	1
06953	Copper	7440-50-8	0.639	J	0.231	2.00	1
01654	Iron	7439-89-6	1,360		3.80	36.8	1
06955	Lead	7439-92-1	4.96		0.551	3.01	1
01657	Magnesium	7439-95-4	200		1.75	18.4	1
06958	Manganese	7439-96-5	74.3		0.0765	0.921	1
06961	Nickel	7440-02-0	1.39	J	0.276	1.84	1
01662	Potassium	7440-09-7	75.1	J	22.0	92.1	1
06936	Selenium	7782-49-2	0.829	U	0.829	3.68	1
06966	Silver	7440-22-4	0.138	U	0.138	0.921	1
01667	Sodium	7440-23-5	22.0	U	22.0	184	1
06971	Vanadium	7440-62-2	3.32		0.129	0.921	1
06972	Zinc	7440-66-6	3.64	J	0.626	3.68	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0267	U	0.0267	0.184	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.2		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:15	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471060
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9423 SDG#: DWD94-23

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:15	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 12:03	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:33	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 12:03	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:11	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471061
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9424 SDG#: DWD94-24

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	810	U	810	2,400	1
13413	2-Nitrotoluene	88-72-2	76	U	76	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	810	U	810	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.1	U	2.1	5.1	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	2.2		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/21/2016 00:56	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 22:14	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471061
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9424 SDG#: DWD94-24

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-14-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471062
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 14:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9425 SDG#: DWD94-25

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	25	U	25	84	8.2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	2.2		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 17:50	Jennifer Howe	8.2
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 22:08	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471063
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9426 SDG#: DWD94-26

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	1,300	U	1,300	6,300	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	6,300	U	6,300	19,000	5
10726	Quinoline	91-22-5	1,300	U	1,300	6,300	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0302	J	0.0101	0.101	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.18	U	0.18	0.50	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	605		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	10.1	U	10.1	30.2	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.81		0.0100	0.0100	1
	The pH was measured in water at 21.5 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	0.81		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 09:46	Joseph M Gambler	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471063
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9426 SDG#: DWD94-26

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 09:01	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 12:02	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471064
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9427 SDG#: DWD94-27

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	915		7.42	34.2	1
06944	Antimony	7440-36-0	0.598	U	0.598	3.42	1
06935	Arsenic	7440-38-2	0.829	U	0.829	3.42	1
06946	Barium	7440-39-3	2.16		0.0282	0.854	1
06947	Beryllium	7440-41-7	0.0572	U	0.0572	0.854	1
06949	Cadmium	7440-43-9	0.0419	U	0.0419	0.854	1
01650	Calcium	7440-70-2	35.0		4.84	34.2	1
06951	Chromium	7440-47-3	1.96	J	0.120	2.56	1
06952	Cobalt	7440-48-4	0.103	U	0.103	0.854	1
06953	Copper	7440-50-8	0.506	J	0.202	1.75	1
01654	Iron	7439-89-6	469		3.52	34.2	1
06955	Lead	7439-92-1	7.32		0.482	2.63	1
01657	Magnesium	7439-95-4	45.5		1.62	17.1	1
06958	Manganese	7439-96-5	15.7		0.0709	0.854	1
06961	Nickel	7440-02-0	0.504	J	0.256	1.71	1
01662	Potassium	7440-09-7	24.9	J	20.4	85.4	1
06936	Selenium	7782-49-2	0.769	U	0.769	3.42	1
06966	Silver	7440-22-4	0.135	J	0.128	0.854	1
01667	Sodium	7440-23-5	20.4	U	20.4	171	1
06971	Vanadium	7440-62-2	4.39		0.120	0.854	1
06972	Zinc	7440-66-6	1.25	J	0.581	3.42	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0248	U	0.0248	0.171	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	0.81		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:18	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471064
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9427 SDG#: DWD94-27

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:18	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 12:06	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:36	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 12:06	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:12	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471065
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9428 SDG#: DWD94-28

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	40	U	40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	40	U	40	120	1
13413	1,3-Dinitrobenzene	99-65-0	39	U	39	120	1
13413	2,4-Dinitrotoluene	121-14-2	39	U	39	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	200	U	200	290	1
13413	Nitrobenzene	98-95-3	97	U	97	290	1
13413	Nitroglycerin	55-63-0	770	U	770	2,300	1
13413	2-Nitrotoluene	88-72-2	72	U	72	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	770	U	770	2,300	1
13413	RD	121-82-4	39	U	39	120	1
13413	Tetryl	479-45-8	97	U	97	290	1
13413	1,3,5-Trinitrobenzene	99-35-4	39	U	39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	42	U	42	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.1	U	2.1	5.0	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	0.81		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/21/2016 01:38	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 22:26	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471065
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9428 SDG#: DWD94-28

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471066
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 15:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9429 SDG#: DWD94-29

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	5	U	5	15	1.5
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	0.81		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 18:13	Jennifer Howe	1.5
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 21:54	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

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Analysis Report

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471067
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9430 SDG#: DWD94-30

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	840	U	840	4,200	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	4,200	U	4,200	13,000	5
10726	Quinoline	91-22-5	840	U	840	4,200	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0320	J	0.0094	0.0945	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.18	U	0.18	0.50	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	609		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	2.5	U	2.5	7.6	5
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.74		0.0100	0.0100	1
	The pH was measured in water at 21.5 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	0.76		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 10:11	Joseph M Gambler	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471067
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9430 SDG#: DWD94-30

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 09:03	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 12:03	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182101A	07/18/2016 11:00	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	5
00394	pH	SW-846 9045D modified	1	16200039401A	07/18/2016 11:00	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471068
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9431 SDG#: DWD94-31

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	779		8.75	40.3	1
06944	Antimony	7440-36-0	0.705	U	0.705	4.03	1
06935	Arsenic	7440-38-2	0.977	U	0.977	4.03	1
06946	Barium	7440-39-3	1.80		0.0333	1.01	1
06947	Beryllium	7440-41-7	0.0675	U	0.0675	1.01	1
06949	Cadmium	7440-43-9	0.0494	U	0.0494	1.01	1
01650	Calcium	7440-70-2	27.5	J	5.70	40.3	1
06951	Chromium	7440-47-3	1.78	J	0.141	3.02	1
06952	Cobalt	7440-48-4	0.121	U	0.121	1.01	1
06953	Copper	7440-50-8	0.432	J	0.221	1.92	1
01654	Iron	7439-89-6	435		4.15	40.3	1
06955	Lead	7439-92-1	6.48		0.528	2.88	1
01657	Magnesium	7439-95-4	36.7		1.91	20.2	1
06958	Manganese	7439-96-5	14.7		0.0836	1.01	1
06961	Nickel	7440-02-0	0.473	J	0.302	2.02	1
01662	Potassium	7440-09-7	24.9	J	24.1	101	1
06936	Selenium	7782-49-2	0.907	U	0.907	4.03	1
06966	Silver	7440-22-4	0.151	U	0.151	1.01	1
01667	Sodium	7440-23-5	24.1	U	24.1	202	1
06971	Vanadium	7440-62-2	3.99		0.141	1.01	1
06972	Zinc	7440-66-6	1.17	J	0.685	4.03	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0292	U	0.0292	0.202	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	0.76		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:22	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471068
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9431 SDG#: DWD94-31

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:22	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 12:15	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:39	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 12:15	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:14	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471069
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9432 SDG#: DWD94-32

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	800	U	800	2,400	1
13413	2-Nitrotoluene	88-72-2	75	U	75	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	800	U	800	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.1	U	2.1	5.0	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	0.76		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/21/2016 03:03	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 22:39	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471069
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9432 SDG#: DWD94-32

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471070
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 16:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9433 SDG#: DWD94-33

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	15	1.49
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	0.76		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 15:31	Jennifer Howe	1.49
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:09	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 21:58	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471071
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9434 SDG#: DWD94-34

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	840	U	840	4,200	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	4,200	U	4,200	13,000	5
10726	Quinoline	91-22-5	840	U	840	4,200	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0220	J	0.0093	0.0931	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.18	U	0.18	0.50	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	592		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	2.5	U	2.5	7.6	5
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.77		0.0100	0.0100	1
	The pH was measured in water at 21.1 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	0.81		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 10:37	Joseph M Gambler	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471071
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9434 SDG#: DWD94-34

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 09:05	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 12:04	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102A	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	5
00394	pH	SW-846 9045D modified	1	16200039402A	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471072
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9435 SDG#: DWD94-35

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	846		8.03	37.0	1
06944	Antimony	7440-36-0	0.647	U	0.647	3.70	1
06935	Arsenic	7440-38-2	0.897	U	0.897	3.70	1
06946	Barium	7440-39-3	1.99		0.0305	0.925	1
06947	Beryllium	7440-41-7	0.0620	U	0.0620	0.925	1
06949	Cadmium	7440-43-9	0.0453	U	0.0453	0.925	1
01650	Calcium	7440-70-2	30.2	J	5.24	37.0	1
06951	Chromium	7440-47-3	1.77	J	0.129	2.77	1
06952	Cobalt	7440-48-4	0.111	U	0.111	0.925	1
06953	Copper	7440-50-8	0.527	J	0.209	1.82	1
01654	Iron	7439-89-6	438		3.81	37.0	1
06955	Lead	7439-92-1	6.34		0.500	2.72	1
01657	Magnesium	7439-95-4	40.1		1.76	18.5	1
06958	Manganese	7439-96-5	13.9		0.0768	0.925	1
06961	Nickel	7440-02-0	0.485	J	0.277	1.85	1
01662	Potassium	7440-09-7	25.0	J	22.1	92.5	1
06936	Selenium	7782-49-2	0.832	U	0.832	3.70	1
06966	Silver	7440-22-4	0.139	U	0.139	0.925	1
01667	Sodium	7440-23-5	22.1	U	22.1	185	1
06971	Vanadium	7440-62-2	4.00		0.129	0.925	1
06972	Zinc	7440-66-6	1.52	J	0.629	3.70	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0268	U	0.0268	0.185	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	0.81		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:25	Eric L Eby	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471072
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9435 SDG#: DWD94-35

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06955	Lead	SW-846 6010C	1	162040637005	07/27/2016 08:25	Eric L Eby	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/22/2016 12:18	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:42	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/22/2016 12:18	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:16	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471073
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9436 SDG#: DWD94-36

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		**ug/kg**		**ug/kg**	**ug/kg**	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	810	U	810	2,400	1
13413	2-Nitrotoluene	88-72-2	76	U	76	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	810	U	810	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	**SW-846 6850 1/2007**		**ug/kg**		**ug/kg**	**ug/kg**	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.1	U	2.1	5.0	1
	The stated QC limits are advisory.						
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00118	Moisture	n.a.	0.81		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/21/2016 03:45	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 22:52	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471073
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9436 SDG#: DWD94-36

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-1-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8471074
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/11/2016 17:00 by JC

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9437 SDG#: DWD94-37

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	4	U	4	14	1.43
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	0.81		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161951AA	07/13/2016 15:53	Jennifer Howe	1.43
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619441856	07/12/2016 22:10	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619441856	07/12/2016 21:56	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820002B	08/19/2016 21:47	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: Metals Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8471075
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: n.a.

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9438 SDG#: DWD94-38BL

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	8.59	U	8.59	39.6	1
06944	Antimony	7440-36-0	0.693	U	0.693	3.96	1
06935	Arsenic	7440-38-2	0.960	U	0.960	3.96	1
06946	Barium	7440-39-3	0.0485	J	0.0327	0.990	1
06947	Beryllium	7440-41-7	0.0663	U	0.0663	0.990	1
06949	Cadmium	7440-43-9	0.0485	U	0.0485	0.990	1
01650	Calcium	7440-70-2	5.60	U	5.60	39.6	1
06951	Chromium	7440-47-3	0.139	U	0.139	2.97	1
06952	Cobalt	7440-48-4	0.119	U	0.119	0.990	1
06953	Copper	7440-50-8	0.207	U	0.207	1.80	1
01654	Iron	7439-89-6	4.08	U	4.08	39.6	1
06955	Lead	7439-92-1	0.545	U	0.545	2.97	1
01657	Magnesium	7439-95-4	1.88	U	1.88	19.8	1
06958	Manganese	7439-96-5	0.0822	U	0.0822	0.990	1
06961	Nickel	7440-02-0	0.297	U	0.297	1.98	1
01662	Potassium	7440-09-7	23.7	U	23.7	99.0	1
06936	Selenium	7782-49-2	0.891	U	0.891	3.96	1
06966	Silver	7440-22-4	0.149	U	0.149	0.990	1
01667	Sodium	7440-23-5	23.7	U	23.7	198	1
06971	Vanadium	7440-62-2	0.139	U	0.139	0.990	1
06972	Zinc	7440-66-6	0.673	U	0.673	3.96	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0287	U	0.0287	0.198	2

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was collected following the protocol specified by each method listed in the Laboratory Sample Analysis Record.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06944	Antimony	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06935	Arsenic	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06946	Barium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06947	Beryllium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06949	Cadmium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
01650	Calcium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06951	Chromium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06952	Cobalt	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06953	Copper	SW-846 6010C	1	162040637005	07/27/2016 08:28	Eric L Eby	1
01654	Iron	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1

*=This limit was used in the evaluation of the final result

Sample Description: Metals Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8471075
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: n.a.

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9438 SDG#: DWD94-38BL

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06955	Lead	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
01657	Magnesium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06958	Manganese	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06961	Nickel	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
01662	Potassium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06936	Selenium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06966	Silver	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
01667	Sodium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06971	Vanadium	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06972	Zinc	SW-846 6010C	1	162010637003	07/21/2016 11:45	Joanne M Gates	1
06145	Thallium	SW-846 6020A	1	162010637003A	07/25/2016 15:18	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162010637003	07/20/2016 05:42	James L Mertz	1
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	2	162040637005	07/26/2016 07:40	Ann Borg	1

*=This limit was used in the evaluation of the final result

Sample Description: Exp/Perchlorate Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8471076
LL Group # 1681897
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: n.a.

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/12/2016 09:30
Reported: 09/02/2016 09:29

D9439 SDG#: DWD94-39BL

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	41	U	41	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	41	U	41	120	1
13413	1,3-Dinitrobenzene	99-65-0	40	U	40	120	1
13413	2,4-Dinitrotoluene	121-14-2	40	U	40	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	300	1
13413	Nitrobenzene	98-95-3	100	U	100	300	1
13413	Nitroglycerin	55-63-0	800	U	800	2,400	1
13413	2-Nitrotoluene	88-72-2	75	U	75	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	800	U	800	2,400	1
13413	RD	121-82-4	40	U	40	120	1
13413	Tetryl	479-45-8	100	U	100	300	1
13413	1,3,5-Trinitrobenzene	99-35-4	40	U	40	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	44	U	44	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits. The response for a target analyte s in the continuing calibration verification standard is outside the QC acceptance limits. The analysis was not repeated because the sample extracts were past the method holding time.						
Perchlorate	SW-846 6850 1/2007		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.1	U	2.1	5.0	1
	The stated QC limits are advisory.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was collected following the protocol specified by each method listed in the Laboratory Sample Analysis Record.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	08/21/2016 04:28	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010001A	07/19/2016 23:05	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010001A	07/19/2016 07:00	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010023A	07/19/2016 21:00	David V Hershey Jr	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		MDL**	LOQ
	ug/kg		ug/kg	ug/kg
Batch number: A161951AA	Sample number s : 8471037,8471041,8471045,8471054,8471058,8471062,8471066,8471070,8471074			
4-Methyl-2-pentanone	3	U	3	10
	ug/l		ug/l	ug/l
Batch number: L161991AA	Sample number s : 8471033			
4-Methyl-2-pentanone	3	U	3	10
	ug/kg		ug/kg	ug/kg
Batch number: 16205SLC026	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071			
2-Chlorobenzaldehyde	33	U	33	170
2-Chlorobenzalmalononitrile	170	U	170	500
Quinoline	33	U	33	170
Batch number: 162010023A	Sample number s : 8471036,8471040,8471044,8471051-8471053,8471057,8471061,8471065,8471069,8471073,8471076			
4-Amino-2,6-Dinitrotoluene	41	U	41	120
2-Amino-4,6-Dinitrotoluene	41	U	41	120
1,3-Dinitrobenzene	40	U	40	120
2,4-Dinitrotoluene	40	U	40	120
2,6-Dinitrotoluene	110	U	110	120
HM	210	U	210	300
Nitrobenzene	100	U	100	300
Nitroglycerin	800	U	800	2,400
2-Nitrotoluene	75	U	75	120
3-Nitrotoluene	110	U	110	120
4-Nitrotoluene	110	U	110	120
PETN	800	U	800	2,400
RD	40	U	40	120
Tetryl	100	U	100	300
1,3,5-Trinitrobenzene	40	U	40	120
2,4,6-Trinitrotoluene	44	U	44	120
Batch number: 162010001A	Sample number s : 8471040,8471044,8471051-8471053,8471057,8471061,8471065,8471069,8471073,8471076			
Perchlorate in Soil LC/MS/MS	2.1	U	2.1	5.0
Batch number: 162020019A	Sample number s : 8471036			
Perchlorate in Soil LC/MS/MS	2.1	U	2.1	5.0
	mg/kg		mg/kg	mg/kg

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 09/02/2016 09:29

Group Number: 1681897

Method Blank continued

Analysis Name	Result		MDL**	LOQ
	mg/kg		mg/kg	mg/kg
Batch number: 162010637003	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075			
Aluminum	8.68	U	8.68	40.0
Antimony	0.700	U	0.700	4.00
Arsenic	0.970	U	0.970	4.00
Barium	0.0650	J	0.0330	1.00
Beryllium	0.0670	U	0.0670	1.00
Cadmium	0.0490	U	0.0490	1.00
Calcium	5.85	J	5.66	40.0
Chromium	0.140	U	0.140	3.00
Cobalt	0.120	U	0.120	1.00
Iron	4.12	U	4.12	40.0
Lead	0.550	U	0.550	3.00
Magnesium	1.90	U	1.90	20.0
Manganese	0.0830	U	0.0830	1.00
Nickel	0.300	U	0.300	2.00
Potassium	23.9	U	23.9	100
Selenium	0.900	U	0.900	4.00
Silver	0.150	U	0.150	1.00
Sodium	23.9	U	23.9	200
Vanadium	0.140	U	0.140	1.00
Zinc	0.680	U	0.680	4.00
Batch number: 162010637003A	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075			
Thallium	0.0290	U	0.0290	0.200
Batch number: 162040637005	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075			
Copper	0.230	U	0.230	2.00
Lead	0.550	U	0.550	3.00
Batch number: 162110638002	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071			
Mercury	0.0100	U	0.0100	0.100
Batch number: 16202102201A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071			
Total Cyanide solid	0.18	U	0.18	0.50
Batch number: 16201042501A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071			
Hexavalent Chromium SOLIDS	0.50	U	0.50	1.5

LCS/LCSD

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: A161951AA	Sample number s : 8471037,8471041,8471045,8471054,8471058,8471062,8471066,8471070,8471074								
4-Methyl-2-pentanone	100	108.14	100	111.53	108	112	50-120	3	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: L161991AA	Sample number s : 8471033								
4-Methyl-2-pentanone	100	90.99			91		47-133		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 16205SLC026	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071								
2-Chlorobenzaldehyde	1666.67	1600.59	1666.67	1567.97	96	94	58-114	2	30
2-Chlorobenzalmalononitrile	1666.67	1082.25	1666.67	1304.89	65	78	70-130	19	30
Quinoline	1666.67	1701.84			102		80-119		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010023A	Sample number s : 8471036,8471040,8471044,8471051-8471053,8471057,8471061,8471065,8471069,8471073,8471076								
4-Amino-2,6-Dinitrotoluene	1957	2314.71			118		42-138		
2-Amino-4,6-Dinitrotoluene	1957	2108.47			108		43-141		
1,3-Dinitrobenzene	1957	2777.55			142		54-140		
2,4-Dinitrotoluene	1957	878.17			45		52-137		
2,6-Dinitrotoluene	1957	2272.09			116		51-138		
HM	1957	1175.77			60		29-148		
Nitrobenzene	1957	917.55			47		64-138		
Nitroglycerin	9785	5915.19			60		45-137		
2-Nitrotoluene	1957	1691.68			86		57-135		
3-Nitrotoluene	1957	977.33			50		57-135		
4-Nitrotoluene	1957	3484.41			178		53-133		
PETN	9785	4435.75			45		36-143		
RD	1957	2045.48			105		45-145		
Tetryl	1957	84.68			4		38-152		
1,3,5-Trinitrobenzene	1957	410.5			21		48-141		
2,4,6-Trinitrotoluene	1957	539.19			28		47-140		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010001A	Sample number s : 8471040,8471044,8471051-8471053,8471057,8471061,8471065,8471069,8471073,8471076								
Perchlorate in Soil LC/MS/MS	100	54.23			54		80-120		
Batch number: 162020019A	Sample number s : 8471036								
Perchlorate in Soil LC/MS/MS	100	101.85			102		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010637003	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075								
Aluminum	200	194.05			97		80-120		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

LCS/LCSD continued

Analysis Name	LCS Spike Added mg/kg	LCS Conc mg/kg	LCSD Spike Added mg/kg	LCSD Conc mg/kg	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Antimony	50	49.9			100		80-120		
Arsenic	15	15.72			105		80-120		
Barium	200	202.66			101		80-120		
Beryllium	5.00	5.02			100		80-120		
Cadmium	5.00	5.18			104		80-120		
Calcium	400	402.28			101		80-120		
Chromium	20	20.19			101		80-120		
Cobalt	50	51.21			102		80-120		
Iron	100	117.88			118		80-120		
Magnesium	200	200.3			100		80-120		
Manganese	50	50.91			102		80-120		
Nickel	50	51.61			103		80-120		
Potassium	1000	990.86			99		80-120		
Selenium	15	15.64			104		80-120		
Silver	5.00	5.17			103		80-120		
Sodium	1000	1012.9			101		80-120		
Vanadium	50	51.12			102		80-120		
Zinc	50	51.5			103		80-120		
Batch number: 162010637003A	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075								
Thallium	0.200	0.190			95		80-120		
Batch number: 162040637005	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075								
Copper	25	25.83			103		80-120		
Lead	15	16.08			107		80-120		
Batch number: 162110638002	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071								
Mercury	0.100	0.0994			99		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16202102201A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071								
Total Cyanide solid	10	9.79			98		90-110		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16201042501A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071								
Hexavalent Chromium SOLIDS	5.00	4.72			94		80-120		
	m	m	m	m					
Batch number: 16200182101A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067								
Oxidation Reduction Potential	427	427			100		98-102		
Batch number: 16200182102A	Sample number s : 8471071								
Oxidation Reduction Potential	427	426			100		98-102		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

LCS/LCSD continued

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	Std. Units	Std. Units	Std. Units	Std. Units					
Batch number: 16200039401A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067								
pH	7.00	7.06			101		95-105		
Batch number: 16200039402A	Sample number s : 8471071								
pH	7.00	7.05			101		95-105		
	%	%	%	%					
Batch number: 16232820002A	Sample number s : 8471034-8471045								
Moisture	89.5	89.46			100		99-101		
Moisture	89.5	89.46			100		99-101		
Batch number: 16232820002B	Sample number s : 8471046-8471074								
Moisture	89.5	89.46			100		99-101		
Moisture	89.5	89.46			100		99-101		
Moisture Duplicate	89.5	89.46			100		99-101		

MS/MSD

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc		MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l		ug/l	ug/l	ug/l	ug/l					
Batch number: L161991AA	Sample number s : 8471033 UNSP : P475451										
4-Methyl-2-pentanone	3	U	100	81.91	100	88.09	82	88	47-133	7	30
	ug/kg		ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 16205SLC026	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 UNSP : P472665										
Quinoline	160	U	1651.25	1015.7	1644.2	820 U	62	0	80-119	200	30
	ug/kg		ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010023A	Sample number s : 8471036,8471040,8471044,8471051-8471053,8471057,8471061,8471065,8471069,8471073,8471076 UNSP : 8471051										
4-Amino-2,6-Dinitrotoluene	40	U	1920	2771	1930	2730.29	144	141	42-138	1	50
2-Amino-4,6-Dinitrotoluene	40	U	1920	2475.77	1930	2664.35	129	138	43-141	7	50
1,3-Dinitrobenzene	39	U	1910	5222.77	1930	5119.33	273	265	54-140	2	50
2,4-Dinitrotoluene	39	U	1920	1324.64	1930	1335.97	69	69	52-137	1	50
2,6-Dinitrotoluene	110	U	1910	6532.71	1930	7041.82	342	365	51-138	8	50
HM	210	U	1910	2300.86	1930	2360.21	120	122	29-148	3	50
Nitrobenzene	97	U	1920	1200.66	1940	1489.2	63	77	64-138	21	50
Nitroglycerin	780	U	21100	17230.34	21300	17712.04	82	83	45-137	3	50
2-Nitrotoluene	73	U	1920	2042.44	1930	2087.14	106	108	57-135	2	50

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

MS/MSD continued

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc ug/kg	MS Spike Added ug/kg	MS Conc ug/kg	MSD Spike Added ug/kg	MSD Conc ug/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
3-Nitrotoluene	110 U	1920	1965.05	1930	2096.01	102	109	57-135	6	50
4-Nitrotoluene	110 U	1910	4282.05	1930	4252.97	224	220	53-133	1	50
PETN	780 U	21100	20966.73	21300	21367.34	99	100	36-143	2	50
RD	39 U	1920	4613.15	1930	4690.35	240	243	45-145	2	50
Tetryl	97 U	1910	351.34	1930	237.14	18	12	38-152	39	50
1,3,5-Trinitrobenzene	39 U	1910	1204.41	1930	1204.42	63	62	48-141	0	50
2,4,6-Trinitrotoluene	43 U	1910	1243.15	1930	1245.17	65	65	47-140	0	50
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010001A	Sample number s : 8471040,8471044,8471051-8471053,8471057,8471061,8471065,8471069,8471073,8471076 UNSP : 8471051									
Perchlorate in Soil LC/MS/MS	2.1 U	100	100.06	100	95.58	100	96	70-130	5	15
Batch number: 162020019A	Sample number s : 8471036 UNSP : P474735									
Perchlorate in Soil LC/MS/MS	2.1 U	100	91.08	100	99.39	91	99	70-130	9	15
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010637003	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075 UNSP : 8471047									
Aluminum	3246.72	183.49	3916.48	196.08	4033.56	365 2	401 2	75-125	3	20
Antimony	0.547 U	45.87	41.86	49.02	44.31	91	90	75-125	6	20
Arsenic	0.758 U	13.76	13.76	14.71	14.34	100	98	75-125	4	20
Barium	10.03	183.49	194.9	196.08	208.64	101	101	75-125	7	20
Beryllium	0.0695	4.59	4.66	4.90	5.00	100	100	75-125	7	20
Cadmium	0.0383 U	4.59	4.67	4.90	4.99	102	102	75-125	7	20
Calcium	504.71	366.97	889.65	392.16	933.61	105	109	75-125	5	20
Chromium	2.94	18.35	21.17	19.61	22.65	99	101	75-125	7	20
Cobalt	0.0938 U	45.87	46.58	49.02	49.76	102	102	75-125	7	20
Iron	1270.72	91.74	1376.99	98.04	1444.03	116 2	177 2	75-125	5	20
Magnesium	194.02	183.49	399.77	196.08	416.2	112	113	75-125	4	20
Manganese	70.12	45.87	113.99	49.02	120.32	96	102	75-125	5	20
Nickel	1.24	45.87	47.93	49.02	50.93	102	101	75-125	6	20
Potassium	76.15	917.43	1012.13	980.39	1085.36	102	103	75-125	7	20
Selenium	0.703 U	13.76	12.75	14.71	14.18	93	96	75-125	11	20
Silver	0.117 U	4.59	4.63	4.90	4.99	101	102	75-125	7	20
Sodium	18.7 U	917.43	939.69	980.39	1009.04	102	103	75-125	7	20
Vanadium	3.10	45.87	50.04	49.02	53.43	102	103	75-125	7	20
Zinc	3.44	45.87	50.11	49.02	53.58	102	102	75-125	7	20
Batch number: 162010637003A	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075 UNSP : 8471047									
Thallium	0.0227 U	0.367	0.376	0.392	0.397	102	101	75-125	6	20
Batch number: 162040637005	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075 UNSP : 8471047									

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

MS/MSD continued

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Copper	0.628	24.27	24.83	24.51	25.59	100	102	75-125	3	20
Lead	4.77	14.56	18.47	14.71	18.69	94	95	75-125	1	20
Batch number: 162110638002	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 UNSP : P472644									
Mercury	0.0336	0.163	0.198	0.155	0.187	101	99	80-120	6	20
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16202102201A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 UNSP : 8471034									
Total Cyanide solid	0.18 U	4.90	4.86			99		41-145		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16201042501A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 UNSP : P480313									
Hexavalent Chromium SOLIDS	0.538	40	37.71			93		75-125		

Laboratory Duplicate

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Batch number: 162010637003	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075 B G: 8471047			
Aluminum	3246.72	3398.84	5	20
Antimony	0.547 U	0.686 U	0 1	20
Arsenic	0.758 U	0.951 U	0 1	20
Barium	10.03	10.59	5	20
Beryllium	0.0695	0.0745	7 1	20
Cadmium	0.0383 U	0.0480 U	0 1	20
Calcium	504.71	531.69	5	20
Chromium	2.94	3.10	5 1	20
Cobalt	0.0938 U	0.118 U	0 1	20
Iron	1270.72	1349.68	6	20
Magnesium	194.02	201.59	4	20
Manganese	70.12	74.18	6	20
Nickel	1.24	1.36	10 1	20
Potassium	76.15	77.65	2 1	20
Selenium	0.703 U	0.882 U	0 1	20
Silver	0.117 U	0.147 U	0 1	20

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

Laboratory Duplicate continued

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/kg	mg/kg		
Sodium	18.7 U	23.4 U	0 1	20
Vanadium	3.10	3.33	7 1	20
Zinc	3.44	4.01	15 1	20
Batch number: 162010637003A	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075 B G: 8471047			
Thallium	0.0227 U	0.0284 U	0 1	20
Batch number: 162040637005	Sample number s : 8471035,8471039,8471043,8471047-8471050,8471056,8471060,8471064,8471068,8471072,8471075 B G: 8471047			
Copper	0.628	0.645	3 1	20
Lead	4.77	4.95	4 1	20
Batch number: 162110638002	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 B G: P472644			
Mercury	0.0336	0.0259	26 1	20
	mg/kg	mg/kg		
Batch number: 16202102201A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 B G: 8471034			
Total Cyanide solid	0.18 U	0.18 U	0 1	20
	mg/kg	mg/kg		
Batch number: 16201042501A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067,8471071 B G: P480313			
Hexavalent Chromium SOLIDS	0.538	0.50 U	200 1	20
	m	m		
Batch number: 16200182101A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067 B G: P454729			
Oxidation Reduction Potential	504.5	484.5	4	5
Batch number: 16200182102A	Sample number s : 8471071 B G: P472669			
Oxidation Reduction Potential	594.5	602.5	1	5
	Std. Units	Std. Units		
Batch number: 16200039401A	Sample number s : 8471034,8471038,8471042,8471046,8471055,8471059,8471063,8471067 B G: P454721			
pH	7.89	7.66	3	3
Batch number: 16200039402A	Sample number s : 8471071 B G: P472657			
pH	4.42	4.47	1	3
	%	%		
Batch number: 16232820002A	Sample number s : 8471034-8471045 B G: P457189			

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

Laboratory Duplicate continued

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc %	DUP Conc %	DUP RPD	DUP RPD Max
Moisture	7.05	7.67	8	5
Moisture	7.05	7.67	8	5
Batch number: 16232820002B	Sample number s : 8471046-8471074 B G: 8471046, P471046			
Moisture	2.31	2.49	7 1	5
Moisture	2.31	2.49	8 1	5
Moisture Duplicate	2.31	2.49	7 1	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: A161951AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8471037	104	97	106	89
8471041	108	103	104	78
8471045	105	101	110	79
8471054	105	101	112	77
8471058	112	110	103	67
8471062	105	101	100	88
8471066	107	103	109	86
8471070	106	102	109	89
8471074	105	102	113	85
Blank	101	99	100	94
LCS	101	100	100	99
LCSD	101	100	101	100
Limits:	50-141	54-135	52-141	50-131

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: L161991AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8471033	101	100	99	96
Blank	103	103	97	99
LCS	101	101	99	100
MS	103	103	99	99
MSD	102	101	99	99
Limits:	80-116	77-113	80-113	78-113

Analysis Name: SVOA 8270D microwave
Batch number: 16205SLC026

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1681897
Reported: 09/02/2016 09:29

Surrogate Quality Control continued

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8471034	76	78	90	71	80	78
8471038	73	76	83	73	77	77
8471042	92	98	101	89	97	97
8471046	92	98	107	92	100	99
8471055	91	97	105	91	99	96
8471059	75	90	87	92	96	93
8471063	62	77	77	82	65	81
8471067	59	75	80	80	65	77
8471071	64	82	99	90	77	92
Blank	86	93	117	89	98	103
LCS	96	101	124	91	97	100
LCSD	90	98	125	92	100	105
MS	92	94	106	89	94	93
MSD	73	75	81	72	74	72
Limits:	58-122	57-126	35-136	54-123	63-117	59-129

Analysis Name: Nitroaromatics/Amines 8330B s
Batch number: 162010023A

	3,4-Dinitrotoluene
8471036	65
8471040	79
8471044	110
8471051	103
8471052	88
8471053	126
8471057	52
8471061	50
8471065	72
8471069	67
8471073	86
8471076	92
Blank	99
LCS	82
MS	88
MSD	126
Limits:	62-133

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # 11372 Group # 1681897 Sample # 8471033-76

COC # 5032227

Client Information

Client: CH2MHILL

Project Name/#: DOW WOODBINE

Project Manager: MERK STERRILL

Sampler: J. Crostic M. Burlington

State where samples were collected: Georgia

For Compliance: Yes ☐ No ☐

Acct. #:

PWSID #:

P.O. #:

Quote #:

Matrix

Tissue ☐ | Ground ☐ | Surface ☐

Sediment ☐ | Potable ☐ | NPDES ☐

Soil ☒ | Water | Other: QC

Analysis Requested

Preservation Codes: H

Total # of Containers: 2

VOC in water

Sample Identification	Collected Date	Collected Time	Grab	Composite	Total # of Containers	VOC in water	VOC in soil	SVOC	Hex Chromium	Cyanide	Mercury	Metals	Perchlorate	Explosives	Moisture	pH 1:1 soil
TB-09	7/11	0800	X		2	X										
DU-1-13-A		0900		X	6		X	X	X	X	X	X	X	X	X	
DU-1-13-B		1000		X	6		X	X	X	X	X	X	X	X	X	
DU-1-13-C		1100		X	6		X	X	X	X	X	X	X	X	X	
DU-1-14-A		1200		X	6		X	X	X	X	X	X	X	X	X	
DU-1-14-B		1300		X	6		X	X	X	X	X	X	X	X	X	
DU-1-14-C		1400		X	6		X	X	X	X	X	X	X	X	X	
DU-1-1-A		1500		X	6		X	X	X	X	X	X	X	X	X	
DU-1-1-B		1600		X	6		X	X	X	X	X	X	X	X	X	
DU-1-1-C		1700		X	6		X	X	X	X	X	X	X	X	X	

For Lab Use Only

FSC:

SCR#:

Preservation Codes

H=HCl T=Thiosulfate

N=HNO_3 B=NaOH

S=H_2SO_4 O=Other

Remarks

Turnaround Time (TAT) Requested (please circle)

Standard Rush

(Rush TAT is subject to laboratory approval and surcharge.)

Date results are needed: _____

E-mail address: _____

Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

Relinquished by	Date	Time	Received by	Date	Time
J. Crostic	7/11	1900			

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx ✓ Other _____

Temperature upon receipt 2.3 °C

GH 168197

Natalie Luciano

From: Mark.Stinnett@CH2M.com
Sent: Tuesday, July 12, 2016 4:15 PM
To: Natalie Luciano
Subject: RE: TB sets for Woodbine Special Event. MS/MSD sets for DU

Importance: High

Natalie,

Sorry for my delayed response. For the designated MS/MSD set let's use the '**DU-1-14-A**' sample.

Mark



Mark Stinnett
Project Chemist-CH2M HILL/GNV
GNV CHEM GROUP
Gainesville-Florida, USA
352-384-7180 Direct
352-335-7991 Switchboard
352-335-2959 Fax
mstinnet@ch2m.com

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From: Natalie Luciano [mailto:NatalieLuciano@eurofinsUS.com]
Sent: Tuesday, July 12, 2016 11:25 AM
To: Stinnett, Mark/GNV <Mark.Stinnett@CH2M.com>
Subject: RE: TB sets for Woodbine Special Event. MS/MSD sets for DU [EXTERNAL]

Mark,

We will be doing the MS/MSD on the explosives, perchlorate, and metals 6010 to meet the 8330 method requirements for ISM. Since we don't have full triplicate volume we are only doing the parameters necessary to meet the method requirements as MS/MSD. I just wanted to clarify that so there won't be any confusion.

Also, can you do the same for the attached COC (samples received today). I just need you to pick one sample for us to do the MS/MSD on the 8330 method required parameters.

Thanks!
Natalie Luciano
Senior Specialist, Environmental Client Services
Phone: +1 717-556-7258

Look for Eurofins Lancaster Laboratories Environmental at these upcoming conferences and industry events.

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Sample Administration Receipt Documentation Log

Doc Log ID: 153431

Group Number(s): 1681897

Client: Ch2m Hill

Delivery and Receipt Information

Delivery Method:	Fed Ex	Arrival Timestamp:	07/12/2016 9:30
Number of Packages:	1	Number of Projects:	1
State/Province of Origin:	GA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Joseph Huber (7831) at 10:18 on 07/12/2016

Samples Chilled Details

Thermometer Types: *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT121	2.3	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
µg	microgram(s)	**mg**	milligram(s)
mL	milliliter(s)	**L**	liter(s)
m3	cubic meter(s)	**µL**	microliter(s)
		pg/L	picogram/liter

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank
C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

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Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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Volatiles by GC/MS Data

Case Narrative/Conformance Summary

Volatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

GC/MS Volatiles

Fraction: Volatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8471033	TB-09	X		1	Trip Blank
8471037	DU-1-13-A		X	3.47	
8471041	DU-1-13-B		X	1.61	
8471045	DU-1-13-C		X	1.39	
8471054	DU-1-14-A		X	1.72	
8471058	DU-1-14-B		X	1.85	
8471062	DU-1-14-C		X	8.2	
8471066	DU-1-1-A		X	1.5	
8471070	DU-1-1-B		X	1.49	
8471074	DU-1-1-C		X	1.43	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

(Sample number(s): 8471041, 8471045, 8471054, 8471058, 8471062, 8471066, 8471070, 8471074: Analysis: 11995)
The VOA soil weight is outside the acceptable weight range.
See the VOA Prep Summary Sheet for the affected sample(s).

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

GC/MS Volatiles

Fraction: Volatiles by GC/MS

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

SAMPLE ANALYSIS:

(Sample number(s): 8471045, 8471054, 8471062, 8471066, 8471070, 8471074: Analysis: 11995)
The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken: since this internal standard was not used to quantitate any target analytes, the data is reported.

(Sample number(s): 8471058: Analysis: 11995)
The secondary vial was analyzed and no valid data was collected during re-analysis. Therefore the matrix effects observed in the initial analysis could not be confirmed. The values reported here are from the initial analysis.

(Sample number(s): 8471041: Analysis: 11995)
The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken: The sample was re-analyzed and the QC is again outside of the acceptance limits, indicating a matrix effect. The data is reported from the initial trial.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Volatiles by GC/MS

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Quality Control Reference List
GC/MS Volatiles

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Fraction: Volatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
4-Methyl-2-pentanone 8260C	A161951AA	VBLKA48	07/13/2016 08:17:00
		LCSA48	07/13/2016 10:59:00
		LCDA48	07/13/2016 11:25:00
		8471037	07/13/2016 16:16:00
		8471041	07/13/2016 14:00:00
		8471045	07/13/2016 14:23:00
		8471054	07/13/2016 13:15:00
		8471058	07/13/2016 13:38:00
		8471062	07/13/2016 17:50:00
		8471066	07/13/2016 18:13:00
		8471070	07/13/2016 15:31:00
		8471074	07/13/2016 15:53:00
4-Methyl-2-pentanone 8260C	L161991AA	VBLKL35	07/17/2016 18:05:00
		LCSL35	07/17/2016 17:43:00
		8471033	07/17/2016 20:19:00

Fraction: Volatiles by GC/MS

A161951AA / VBLKA48 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
4-Methyl-2-pentanone	07/13/16	N.D.	ug/kg	3	10

Fraction: Volatiles by GC/MS

L161991AA / VBLKL35 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
4-Methyl-2-pentanone	07/17/16	N.D.	ug/l	3	10

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DWD94
Matrix: SOLID

Fraction: Volatiles by GC/MS

A161951AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg	Spike Added	50 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKA48	99	54 - 135	94	50 - 131	101	50 - 141	100	52 - 141
LCSA48	100	54 - 135	99	50 - 131	101	50 - 141	100	52 - 141
LCDA48	100	54 - 135	100	50 - 131	101	50 - 141	101	52 - 141
8471037	97	54 - 135	89	50 - 131	104	50 - 141	106	52 - 141
8471041	103	54 - 135	78	50 - 131	108	50 - 141	104	52 - 141
8471045	101	54 - 135	79	50 - 131	105	50 - 141	110	52 - 141
8471054	101	54 - 135	77	50 - 131	105	50 - 141	112	52 - 141
8471058	110	54 - 135	67	50 - 131	112	50 - 141	103	52 - 141
8471062	101	54 - 135	88	50 - 131	105	50 - 141	100	52 - 141
8471066	103	54 - 135	86	50 - 131	107	50 - 141	109	52 - 141
8471070	102	54 - 135	89	50 - 131	106	50 - 141	109	52 - 141
8471074	102	54 - 135	85	50 - 131	105	50 - 141	113	52 - 141

Quality Control Summary
Surrogates
GC/MS Volatiles
SDG: DWD94
Matrix: LIQUID

Fraction: Volatiles by GC/MS

L161991AA	1,2-Dichloroethane-d4		4-Bromofluorobenzene		Dibromofluoromethane		Toluene-d8	
	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l	Spike Added	50 ug/l
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
VBLKL35	103	77 - 113	99	78 - 113	103	80 - 116	97	80 - 113
LCSL35	101	77 - 113	100	78 - 113	101	80 - 116	99	80 - 113
8471033	100	77 - 113	96	78 - 113	101	80 - 116	99	80 - 113

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD94
Matrix: SOLID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSA48 LCSD: LCDA48 **Analyte**	Batch: **A161951AA** (Sample number(s): 8471037, 8471041, 8471045, 8471054, 8471058, 8471062, 8471066, 8471070, 8471074)							
	Spike Added ug/kg	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
4-Methyl-2-pentanone	100	108.14	111.53	108	112	50-120	3	30

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD94
Matrix: LIQUID

GC/MS Volatiles

Fraction: Volatiles by GC/MS

LCS: LCSL35	Batch: **L161991AA** (Sample number(s): 8471033)							
Analyte	**Spike Added ug/l**	**LCS Conc ug/l**	**LCSD Conc ug/l**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
4-Methyl-2-pentanone	100	90.99	NA	91	NA	47-133	NA	NA

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD94___

Lab File ID: au20t01.d BFB Injection Date: 06/20/16

Instrument ID: HP09685 BFB Injection Time: 08:05

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.74
75	30.0 - 60.0% of mass 95	48.97
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.93
173	Less than 2.0% of mass 174	0.26 (0.34)1
174	Greater than 50.0% of mass 95	77.00
175	5.0 - 9.0% of mass 174	5.63 (7.31)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.51 (99.37)1
177	5.0 - 9.0% of mass 176	5.06 (6.61)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	au20i01.d	06/20/16	08:48
02	VSTD100	au20i02.d	06/20/16	09:12
03	VSTD50	au20i03.d	06/20/16	10:23
04	VSTD20	au20i04.d	06/20/16	10:49
05	VSTD10	au20i05.d	06/20/16	11:14
06	VSTD4	au20i06.d	06/20/16	12:06
07	VSTD1	au20i07.d	06/20/16	12:32
08	VSTD0.5	au20m01.d	06/20/16	12:58
09	LCSAICVC	au20v01.d	06/20/16	13:30
10	LCSA26	au20l01.d	06/20/16	14:36
11	LCDA26	au20l02.d	06/20/16	14:59
12	VBLKA26	au20b01.d	06/20/16	15:21
13	8416938	au20s09.d	06/20/16	15:58
14	8416934	au20s03.d	06/20/16	17:33
15	8416937	au20s04.d	06/20/16	17:55
16	8416945	au20s05.d	06/20/16	18:18
17	8416946	au20s06.d	06/20/16	18:41
18	8419253	au20s07.d	06/20/16	19:04
19	8414856	au20s08.d	06/20/16	19:26

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD94___

Lab File ID: al13t01.d BFB Injection Date: 07/13/16

Instrument ID: HP09685 BFB Injection Time: 06:52

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.44
75	30.0 - 60.0% of mass 95	48.56
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.80
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	80.41
175	5.0 - 9.0% of mass 174	5.67 (7.06)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.60 (96.50)1
177	5.0 - 9.0% of mass 176	5.21 (6.71)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	al13c01.d	07/13/16	07:32
02	VBLKA48	al13b01.d	07/13/16	08:17
03	LCSA48	al13l04.d	07/13/16	10:59
04	LCDA48	al13l05.d	07/13/16	11:25
05	8468616	al13s03.d	07/13/16	12:07
06	8468355	al13s04.d	07/13/16	12:30
07	8471054	al13s06.d	07/13/16	13:15
08	8471058	al13s07.d	07/13/16	13:38
09	8471041	al13s08.d	07/13/16	14:00
10	8471045	al13s09.d	07/13/16	14:23
11	8471070	al13s12.d	07/13/16	15:31
12	8471074	al13s13.d	07/13/16	15:53
13	8471037	al13s14.d	07/13/16	16:16
14	8471041RE	al13s16.d	07/13/16	17:28
15	8471062	al13s17.d	07/13/16	17:50
16	8471066	al13s18.d	07/13/16	18:13

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD94___

Lab File ID: la22t01.d BFB Injection Date: 04/22/16

Instrument ID: HP09915 BFB Injection Time: 09:13

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.66
75	30.0 - 60.0% of mass 95	47.86
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.71
173	Less than 2.0% of mass 174	0.58 (0.66)1
174	Greater than 50.0% of mass 95	87.40
175	5.0 - 9.0% of mass 174	5.94 (6.79)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.17 (95.16)1
177	5.0 - 9.0% of mass 176	5.11 (6.15)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD300	la22i01.d	04/22/16	09:55
02	VSTD100	la22i02.d	04/22/16	10:17
03	VSTD50	la22i03.d	04/22/16	10:39
04	VSTD20	la22i04.d	04/22/16	11:01
05	VSTD10	la22i05.d	04/22/16	11:23
06	VSTD4	la22i06.d	04/22/16	11:45
07	VSTD1	la22i07.d	04/22/16	12:07
08	MDL0.5 - MDL0.5	la22m01.d	04/22/16	12:29
09	LCS01	la22v01.d	04/22/16	12:51
10	VSTD300	la22i11.d	04/22/16	14:05
11	VSTD100	la22i12.d	04/22/16	14:27
12	VSTD50	la22i13.d	04/22/16	14:49
13	VSTD20	la22i14.d	04/22/16	15:11
14	VSTD10	la22i15.d	04/22/16	15:33
15	VSTD4	la22i16.d	04/22/16	15:55
16	MDL001 - MDL001	la22m02.d	04/22/16	16:17
17	LCS02	la22v02.d	04/22/16	16:39

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD94___

Lab File ID: l117t01.d BFB Injection Date: 07/17/16

Instrument ID: HP09915 BFB Injection Time: 16:37

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	17.81
75	30.0 - 60.0% of mass 95	48.49
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	6.86
173	Less than 2.0% of mass 174	0.66 (0.76)1
174	Greater than 50.0% of mass 95	86.65
175	5.0 - 9.0% of mass 174	6.00 (6.93)1
176	Greater than 95.0%, but less than 101.0% of mass 174	82.48 (95.19)1
177	5.0 - 9.0% of mass 176	5.44 (6.60)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	l117c01.d	07/17/16	17:21
02	LCSL35	l117l01.d	07/17/16	17:43
03	VBLKL35	l117b01.d	07/17/16	18:05
04	MDL0.5 - MDL0.5	l117m01.d	07/17/16	19:01
05	8471033	l117s01.d	07/17/16	20:19
06	8472643	l117s02.d	07/17/16	20:41
07	8473236	l117s03.d	07/17/16	21:02
08	8473237	l117s04.d	07/17/16	21:24
09	8474721	l117s05.d	07/17/16	21:46
10	8475459	l117s07.d	07/17/16	22:30
11	8475451	l117s08.d	07/17/16	22:51
12	8475454	l117s11.d	07/17/16	23:57
13	8475455	l117s12.d	07/18/16	00:19
14	8475456	l117s13.d	07/18/16	00:40
15	8475457	l117s14.d	07/18/16	01:02
16	8473234	l117s15.d	07/18/16	01:24
17	8473235	l117s16.d	07/18/16	01:46
18	8469983DL	l117s17.d	07/18/16	02:08
19	8474658	l117s18.d	07/18/16	02:29

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date(s): 06/20/16 06/20/16

Heated Purge: (Y/N) Y Calibration Times: 08:48 12:32

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = au20i07.d RRF 4 = au20i06.d RRF 10= au20i05.d
RRF 20= au20i04.d RRF 50= au20i03.d RRF100= au20i02.d RRF300= au20i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Dichlorodifluoromethane	#0.3015	0.4061	0.4347	0.4374	0.4139	0.3790	0.3721	0.3921	12	AVG #
Chloromethane	#0.3447	0.4453	0.4523	0.4173	0.4163	0.4043	0.3715	0.4074	9	AVG #
Vinyl Chloride	#0.2880	0.3897	0.4136	0.3999	0.3821	0.3636	0.3504	0.3696	11	AVG #
Bromomethane	#0.2231	0.2697	0.2762	0.2688	0.2576	0.2444	0.2169	0.2509	9	AVG #
Chloroethane	#0.1715	0.2217	0.2260	0.2194	0.2097	0.2000	0.1809	0.2042	10	AVG #
Dichlorofluoromethane	0.3851	0.4846	0.5016	0.4950	0.4828	0.4623	0.4563	0.4668	8	AVG
Trichlorofluoromethane	#0.3332	0.4472	0.4646	0.4680	0.4482	0.4096	0.4182	0.4270	11	AVG #
Ethanol	0.1832	0.1707	0.1917	0.1795	0.1769	0.1750	0.1818	0.1798	4	AVG
Freon 123a	0.2483	0.3140	0.3249	0.3171	0.3106	0.3000	0.3009	0.3023	8	AVG
Acrolein	2.4021	2.5457	3.3317	2.7087	2.6390	2.4547	2.5173	2.6570	12	AVG
1,1-Dichloroethene	#0.1624	0.2170	0.2212	0.2280	0.2345	0.2401	0.2326	0.2194	12	AVG #
1,1-Dichloroethene(2)	#0.0795	0.1177	0.1184	0.1226	0.1269	0.1265	0.1221	0.1162	14	AVG #
Acetone	#	1.3648	1.3025	1.3884	1.2412	1.2298	1.2487	1.2959	5	AVG #
Freon 113	#	0.2142	0.2000	0.2274	0.2423	0.2385	0.2319	0.2257	7	AVG #
2-Propanol	0.9644	0.9736	0.9905	1.0054	0.9555	0.9485	1.0546	0.9846	4	AVG
Methyl Iodide	0.3045	0.3904	0.4101	0.4170	0.4287	0.4403	0.4218	0.4018	11	AVG
Carbon Disulfide	#0.5631	0.6775	0.6999	0.7313	0.7775	0.8023	0.7824	0.7191	11	AVG #
Methyl Acetate	#0.1880	0.1928	0.2056	0.1771	0.1902	0.1950	0.1903	0.1913	4	AVG #
Allyl Chloride	0.3026	0.3903	0.4225	0.4162	0.4191	0.4249	0.4101	0.3979	11	AVG
Methylene Chloride	#0.3152	0.2782	0.2730	0.2658	0.2695	0.2770	0.2653	0.2777	6	AVG #
t-Butyl alcohol	1.5669	1.4165	1.4095	1.4042	1.3935	1.4328	1.6033	1.4610	6	AVG
Acrylonitrile	0.0554	0.0927	0.1014	0.0876	0.1013	0.1035	0.1021	0.0920	19	AVG
Methyl Tertiary Butyl Ether	#0.6256	0.6812	0.7136	0.6962	0.7418	0.7734	0.7514	0.7119	7	AVG #
trans-1,2-Dichloroethene	#0.1629	0.2384	0.2466	0.2505	0.2588	0.2682	0.2595	0.2407	15	AVG #
n-Hexane	0.2650	0.4265	0.3194	0.3732	0.4142	0.4110	0.3881	0.3710	16	AVG
1,1-Dichloroethane	#0.3556	0.4482	0.4614	0.4701	0.4818	0.4944	0.4785	0.4557	10	AVG #
di-Isopropyl ether	0.6921	0.7832	0.8484	0.8697	0.9005	0.9307	0.8961	0.8458	10	AVG
2-Chloro-1,3-butadiene		0.3403	0.3562	0.3861	0.4125	0.4290	0.4166	0.3901	9	AVG
Ethyl t-butyl ether	0.5878	0.6774	0.7142	0.7400	0.7689	0.7974	0.7678	0.7219	10	AVG
2-Butanone	#5.3778	5.5432	5.9079	5.9932	5.7792	5.7351	5.9830	5.7599	4	AVG #
cis-1,2-Dichloroethene	#0.2147	0.2639	0.2716	0.2783	0.2879	0.3005	0.2934	0.2729	10	AVG #
2,2-Dichloropropane	0.2106	0.3006	0.3103	0.3371	0.3623	0.3763	0.3666	0.3234	18	AVG
Propionitrile	1.6199	1.7320	1.7848	1.9565	1.7845	1.8265	1.9266	1.8044	6	AVG
Methacrylonitrile	0.0964	0.1016	0.1084	0.0992	0.1112	0.1162	0.1155	0.1069	7	AVG
Bromochloromethane	0.1064	0.1276	0.1385	0.1350	0.1372	0.1443	0.1420	0.1330	10	AVG
Tetrahydrofuran	1.1724	1.5211	1.5964	1.6479	1.6139	1.6360	1.7360	1.5605	12	AVG
Chloroform	#0.3505	0.4241	0.4358	0.4434	0.4544	0.4741	0.4608	0.4347	9	AVG #
1,1,1-Trichloroethane	#0.3137	0.4274	0.3786	0.4061	0.4007	0.4193	0.4129	0.3941	10	AVG #
Cyclohexane	#	0.4357	0.3897	0.4473	0.4847	0.4905	0.4714	0.4532	8	AVG #
Cyclohexane(2)	#	0.3584	0.3235	0.3751	0.4008	0.4034	0.3926	0.3756	8	AVG #
Cyclohexane(3)	#	0.1307	0.1149	0.1351	0.1464	0.1472	0.1446	0.1365	9	AVG #
1,1-Dichloropropene	0.2488	0.3298	0.3293	0.3588	0.3795	0.3962	0.3884	0.3473	15	AVG
Carbon Tetrachloride	#0.1802	0.2618	0.2580	0.2905	0.3194	0.3373	0.3430	0.2843	20	AVG #
Isobutyl Alcohol	0.4537	0.4876	0.4729	0.4960	0.4858	0.4892	0.5813	0.4952	8	AVG
Benzene	#1.0591	1.0676	1.0493	1.0817	1.1002	1.1301	1.0920	1.0828	3	AVG #
1,2-Dichloroethane	#0.3559	0.3433	0.3403	0.3384	0.3492	0.3571	0.3510	0.3479	2	AVG #
1,2-Dichloroethane(2)	#0.0836	0.0280	0.0309	0.0315	0.0317	0.0332	0.0332	0.0389	51	AVG #<-
t-Amyl methyl ether	0.5453	0.6221	0.6535	0.6637	0.7052	0.7391	0.7281	0.6653	10	AVG
n-Heptane		0.4539	0.3277	0.3804	0.4334	0.4308	0.3947	0.4035	11	AVG
n-Butanol		0.3671	0.3752	0.4078	0.4078	0.4315	0.5268	0.4194	14	AVG
Trichloroethene	#0.1915	0.2524	0.2448	0.2633	0.2741	0.2851	0.2829	0.2563	13	AVG #
Methylcyclohexane	#0.3180	0.4777	0.5098	0.4992	0.5058	0.5050	0.5200	0.4765	15	AVG #

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date(s): 06/20/16 06/20/16

Heated Purge: (Y/N) Y Calibration Times: 08:48 12:32

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = au20i07.d RRF 4 = au20i06.d RRF 10= au20i05.d
RRF 20= au20i04.d RRF 50= au20i03.d RRF100= au20i02.d RRF300= au20i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Dichloropropane	#0.2283	0.2616	0.2721	0.2831	0.2954	0.3045	0.3019	0.2781	10	AVG #
Methyl Methacrylate	0.1288	0.1602	0.1738	0.1690	0.1936	0.2033	0.2122	0.1773	16	AVG
1,4-Dioxane	0.1229	0.1384	0.1470	0.1632	0.1530	0.1618	0.1818	0.1526	12	AVG
Dibromomethane	0.1386	0.1458	0.1526	0.1533	0.1616	0.1683	0.1697	0.1557	7	AVG
Bromodichloromethane	#0.2211	0.2624	0.2852	0.2990	0.3218	0.3417	0.3524	0.2977	16	AVG #
2-Nitropropane	1.7609	2.0810	2.2922	2.6388	2.8433	2.9702	3.3801	2.5666	22	2NDDEG
cis-1,3-Dichloropropene	#0.2846	0.3452	0.3783	0.4117	0.4489	0.4671	0.4741	0.4014	17	AVG #
4-Methyl-2-pentanone	#0.2068	0.2198	0.2590	0.2159	0.2657	0.2752	0.2759	0.2455	12	AVG #
Toluene	#0.7560	0.8874	0.8576	0.9211	0.9432	0.9638	0.9191	0.8926	8	AVG #
trans-1,3-Dichloropropene	#0.3248	0.4093	0.4524	0.4825	0.5294	0.5601	0.5632	0.4745	18	AVG #
Ethyl Methacrylate		0.3660	0.4073	0.3893	0.4908	0.5152	0.5243	0.4488	15	AVG
1,1,2-Trichloroethane	#0.2905	0.3023	0.3120	0.3081	0.3186	0.3279	0.3261	0.3122	4	AVG #
Tetrachloroethene	#0.2598	0.3623	0.3321	0.3727	0.3864	0.4021	0.3961	0.3588	14	AVG #
1,3-Dichloropropane	0.5018	0.5304	0.5583	0.5384	0.5684	0.5828	0.5684	0.5498	5	AVG
2-Hexanone	#0.1955	0.2066	0.2561	0.2023	0.2549	0.2669	0.2606	0.2347	13	AVG #
Dibromochloromethane	#0.2165	0.2557	0.2852	0.3061	0.3412	0.3658	0.3837	0.3077	20	AVG #
1,2-Dibromoethane	#0.2579	0.2860	0.3072	0.3028	0.3223	0.3377	0.3401	0.3077	10	AVG #
Chlorobenzene	#0.9042	1.0052	0.9846	1.0410	1.0695	1.1016	1.0659	1.0245	6	AVG #
1,1,1,2-Tetrachloroethane	0.2345	0.2750	0.2949	0.3186	0.3492	0.3722	0.3811	0.3179	17	AVG
Ethylbenzene	#1.2977	1.5878	1.5438	1.7403	1.8265	1.9162	1.7982	1.6729	13	AVG #
m+p-Xylene	#0.4795	0.6281	0.6196	0.6907	0.7249	0.7593	0.7180	0.6600	14	AVG #
o-Xylene	#0.4625	0.6030	0.6017	0.6770	0.7168	0.7432	0.7216	0.6465	15	AVG #
Styrene	#0.6754	0.9290	0.9813	1.0954	1.1792	1.2419	1.1979	1.0429	19	AVG #
Bromoform	#0.1436	0.1474	0.1716	0.1769	0.2111	0.2339	0.2632	0.1925	23	2NDDEG #
Isopropylbenzene	#	1.5815	1.4307	1.6569	1.7711	1.8488	1.7304	1.6699	9	AVG #
Cyclohexanone	0.5409	0.6101	0.6740	0.7496	0.7770	0.8206	0.9059	0.7254	17	AVG
1,1,2,2-Tetrachloroethane	#0.7474	0.7754	0.8373	0.7730	0.8265	0.8647	0.8985	0.8176	7	AVG #
Bromobenzene	0.6970	0.7970	0.8020	0.8480	0.8622	0.9139	0.9235	0.8348	9	AVG
trans-1,4-Dichloro-2-butene	0.1944	0.2169	0.2251	0.2132	0.2357	0.2552	0.2636	0.2291	11	AVG
1,2,3-Trichloropropane	0.2162	0.2305	0.2435	0.2209	0.2381	0.2467	0.2548	0.2358	6	AVG
n-Propylbenzene		3.9361	3.3856	3.8815	3.9988	4.2017	3.6867	3.8484	7	AVG
2-Chlorotoluene	0.5984	0.7674	0.7193	0.8021	0.8165	0.8469	0.8257	0.7680	11	AVG
1,3,5-Trimethylbenzene		2.7816	2.4478	2.8063	2.9309	3.0795	2.8518	2.8163	7	AVG
4-Chlorotoluene	0.6272	0.8053	0.7621	0.8281	0.8592	0.8941	0.8712	0.8067	11	AVG
tert-Butylbenzene		0.5948	0.4929	0.5695	0.6116	0.6547	0.6283	0.5920	10	AVG
Pentachloroethane	0.2918	0.3873	0.4509	0.4644	0.4949	0.5369	0.5575	0.4548	20	AVG
1,2,4-Trimethylbenzene		2.8554	2.5291	2.9113	3.0688	3.2519	3.0038	2.9367	8	AVG
sec-Butylbenzene		3.6375	3.0055	3.4821	3.7111	3.9143	3.4622	3.5355	9	AVG
1,3-Dichlorobenzene	#1.3743	1.5803	1.4548	1.6184	1.6810	1.7785	1.6905	1.5968	9	AVG #
p-Isopropyltoluene		3.0890	2.6079	3.0491	3.3204	3.5550	3.1344	3.1260	10	AVG
1,4-Dichlorobenzene	#1.4607	1.6670	1.5209	1.6591	1.7203	1.8160	1.7240	1.6526	7	AVG #
1,2,3-Trimethylbenzene	2.5652	2.9257	3.2590	3.1978	3.1772	3.3435	3.0668	3.0765	9	AVG
Benzyl Chloride	0.1354	0.1932	0.2361	0.2594	0.3234	0.3656	0.4101	0.2747	35	2NDDEG
1,3-Diethylbenzene	1.2868	1.7335	2.0046	1.9770	1.9763	2.0710	1.9646	1.8591	15	AVG
1,4-Diethylbenzene	1.2887	1.8115	2.0572	2.0125	2.0432	2.1507	2.0260	1.9128	15	AVG
n-Butylbenzene		1.6337	1.3216	1.5213	1.6516	1.7524	1.6079	1.5814	9	AVG
1,2-Dichlorobenzene	#1.3661	1.5139	1.4423	1.5534	1.5937	1.6831	1.6460	1.5426	7	AVG #
1,2-Diethylbenzene	1.1358	1.5333	1.7182	1.6667	1.6620	1.7360	1.6657	1.5882	13	AVG
1,2-Dibromo-3-chloropropane	#0.1183	0.1187	0.1357	0.1293	0.1521	0.1648	0.1796	0.1426	17	AVG #
1,3,5-Trichlorobenzene	0.9298	1.2419	1.0502	1.1716	1.2701	1.3590	1.3240	1.1924	13	AVG
1,2,4-Trichlorobenzene	#0.8273	1.0410	0.9037	1.0191	1.1385	1.2409	1.2292	1.0571	15	AVG #
Hexachlorobutadiene		0.5717	0.4320	0.4909	0.5649	0.6053	0.5773	0.5403	12	AVG

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date(s): 06/20/16 06/20/16

Heated Purge: (Y/N) Y Calibration Times: 08:48 12:32

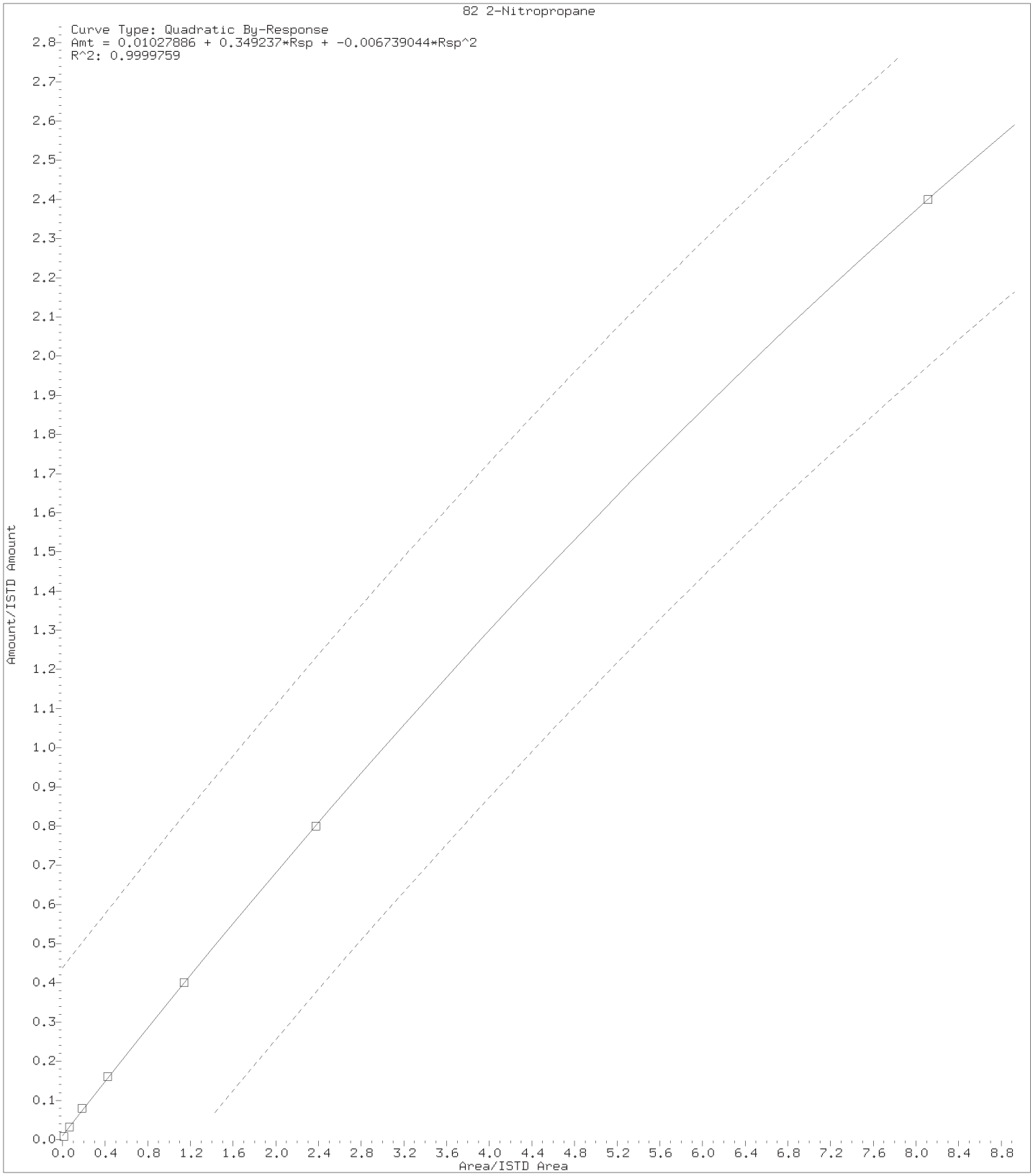
Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = au20i07.d RRF 4 = au20i06.d RRF 10= au20i05.d
RRF 20= au20i04.d RRF 50= au20i03.d RRF100= au20i02.d RRF300= au20i01.d

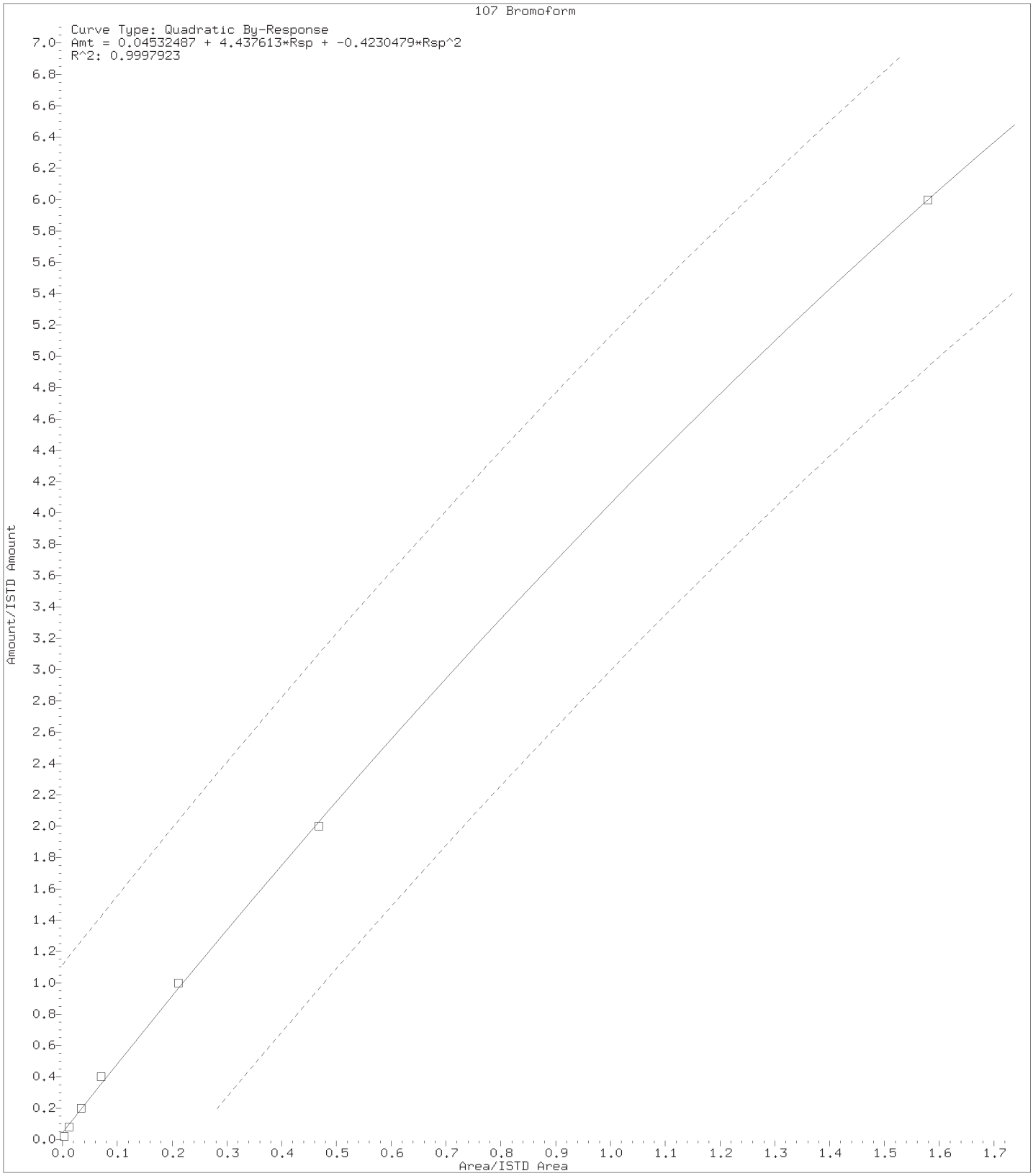
COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Naphthalene	1.6611	2.0874	2.1936	2.3059	2.6972	2.9378	2.8996	2.3975	20	AVG
1,2,3-Trichlorobenzene	0.7448	0.9699	0.8660	0.9346	1.0379	1.1291	1.1252	0.9725	14	AVG
2-Methylnaphthalene	0.3019	0.4877	0.6633	0.7839	1.2435	1.5532	1.5861	0.9456	55	1STDEG
Dibromofluoromethane	0.2254	0.2277	0.2258	0.2276	0.2305	0.2327	0.2331	0.2289	1	AVG
Dibromofluoromethane(2)	0.2327	0.2360	0.2329	0.2343	0.2354	0.2383	0.2383	0.2354	1	AVG
1,2-Dichloroethane-d4	0.0551	0.0551	0.0538	0.0546	0.0543	0.0544	0.0542	0.0545	1	AVG
1,2-Dichloroethane-d4(2)	0.2669	0.2682	0.2655	0.2542	0.2627	0.2630	0.2616	0.2631	2	AVG
1,2-Dichloroethane-d4(3)	0.0347	0.0345	0.0344	0.0340	0.0348	0.0345	0.0346	0.0345	1	AVG
Toluene-d8	1.3834	1.3782	1.3883	1.3847	1.3661	1.3475	1.3044	1.3647	2	AVG
Toluene-d8(2)	0.8882	0.8824	0.8909	0.8905	0.8809	0.8691	0.8385	0.8772	2	AVG
4-Bromofluorobenzene	0.4831	0.4854	0.4866	0.4874	0.4906	0.4859	0.4771	0.4851	1	AVG
4-Bromofluorobenzene(2)	0.3937	0.4007	0.3996	0.3994	0.4034	0.4011	0.3925	0.3986	1	AVG

Average %RSD 11

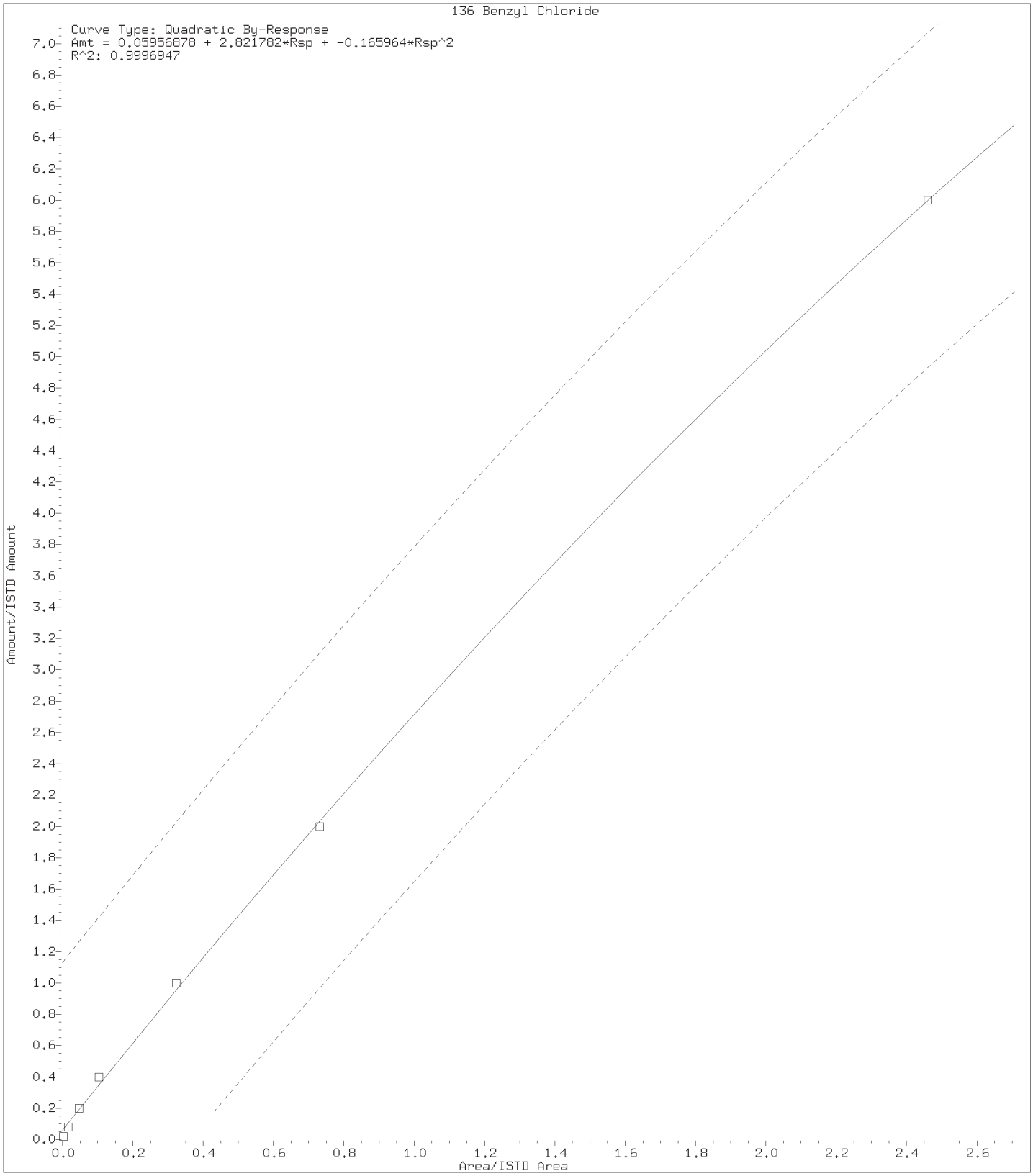
Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.



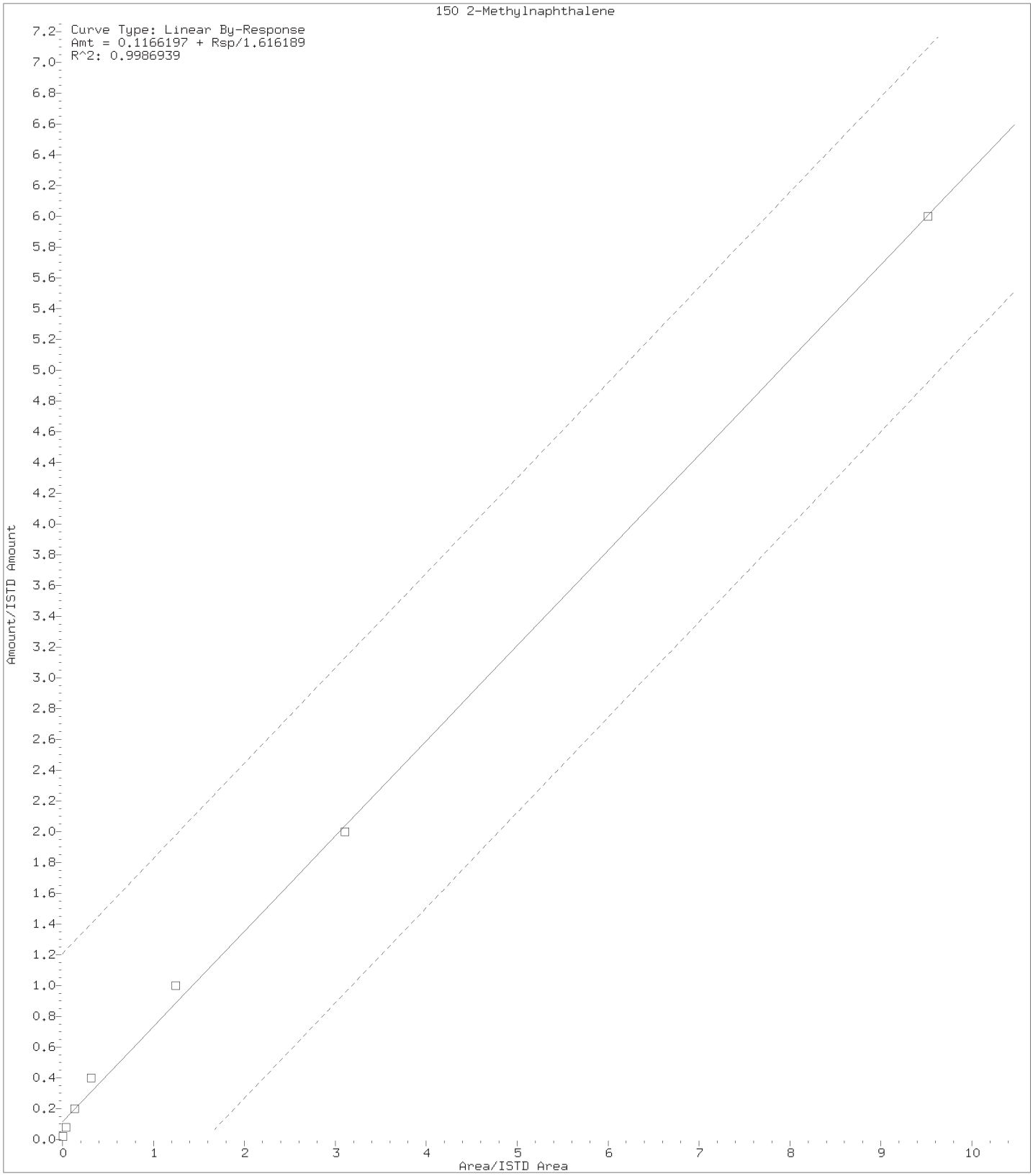
Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002



Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002



Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002



Digitally signed by Sara E. Johnson on 06/21/2016 at 16:45.
Target 3.5 esignature user ID: sej02002

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem2/HP09685.i/16jun20a.b/au20i01.d	VSTD300
/chem2/HP09685.i/16jun20a.b/au20i02.d	VSTD100
/chem2/HP09685.i/16jun20a.b/au20i03.d	VSTD050
/chem2/HP09685.i/16jun20a.b/au20i04.d	VSTD020
/chem2/HP09685.i/16jun20a.b/au20i05.d	VSTD010
/chem2/HP09685.i/16jun20a.b/au20i06.d	VSTD004
/chem2/HP09685.i/16jun20a.b/au20i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	au20i01.d	au20i02.d	au20i03.d	au20i04.d	au20i05.d	au20i06.d	au20i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	112141	118889	117913	89597	109332	104982	108967	108832	9	Yes
Fluorobenzene	1071415	1077063	1094634	1048020	1028410	1037340	1012750	1052805	3	Yes
Chlorobenzene-d5	824113	803173	812973	772869	750874	757792	737599	779913	4	Yes
1,4-Dichlorobenzene-d4	449572	427501	430819	399200	387544	389396	371801	407976	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	au20i01.d	au20i02.d	au20i03.d	au20i04.d	au20i05.d	au20i06.d	au20i07.d	Avg. RT
t-Butyl alcohol-d10	3.951	3.964	3.958	3.964	3.970	3.958	3.957	3.960
Fluorobenzene	7.456	7.449	7.449	7.456	7.456	7.449	7.455	7.453
Chlorobenzene-d5	11.015	11.008	11.008	11.015	11.015	11.008	11.008	11.011
1,4-Dichlorobenzene-d4	12.919	12.919	12.919	12.919	12.919	12.919	12.919	12.919

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 06/20/2016 at 13:53.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 ICV Date: 06/20/16 Time: 13:30

Lab File ID: au20v01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
# Dichlorodifluoromethane	0.3921	0.3638	18.56	20	-7	#
# Chloromethane	0.4074	0.3946	19.37	20	-3	#
# Vinyl Chloride	0.3696	0.3695	19.99	20	0	#
# Bromomethane	0.2509	0.2490	19.84	20	-1	#
# Chloroethane	0.2042	0.2043	20.02	20	0	#
Dichlorofluoromethane	0.4668	0.5158	22.10	20	10	
# Trichlorofluoromethane	0.4270	0.4531	21.22	20	6	#
Ethanol	0.1798	0.1844	1025.73	1000	3	
Freon 123a	0.3023	0.3352	22.18	20	11	
Acrolein	2.6570	2.4149	136.33	150	-9	
# 1,1-Dichloroethene	0.2194	0.2418	22.04	20	10	#
# Acetone	1.2959	1.2141	140.53	150	-6	#
# Freon 113	0.2257	0.2491	22.07	20	10	#
2-Propanol	0.9846	0.9493	144.62	150	-4	
Methyl Iodide	0.4018	0.4114	20.48	20	2	
# Carbon Disulfide	0.7191	0.7407	20.60	20	3	#
# Methyl Acetate	0.1913	0.1927	20.15	20	1	#
Allyl Chloride	0.3979	0.4110	20.66	20	3	
# Methylene Chloride	0.2777	0.2767	19.93	20	0	#
t-Butyl alcohol	1.4610	1.4421	197.42	200	-1	
Acrylonitrile	0.0920	0.0942	102.44	100	2	
# Methyl Tertiary Butyl Ether	0.7119	0.7282	20.46	20	2	#
# trans-1,2-Dichloroethene	0.2407	0.2693	22.37	20	12	#
n-Hexane	0.3710	0.4433	23.89	20	19	
# 1,1-Dichloroethane	0.4557	0.4894	21.48	20	7	#
di-Isopropyl ether	0.8458	0.8881	21.00	20	5	
2-Chloro-1,3-butadiene	0.3901	0.4070	20.87	20	4	
Ethyl t-butyl ether	0.7219	0.7383	20.45	20	2	
# 2-Butanone	5.7599	5.9380	154.64	150	3	#
# cis-1,2-Dichloroethene	0.2729	0.2892	21.20	20	6	#
2,2-Dichloropropane	0.3234	0.3365	20.81	20	4	
Propionitrile	1.8044	1.9077	158.59	150	6	
Methacrylonitrile	0.1069	0.1117	156.67	150	4	
Bromochloromethane	0.1330	0.1381	20.77	20	4	
Tetrahydrofuran	1.5605	1.6311	104.52	100	5	
# Chloroform	0.4347	0.4490	20.66	20	3	#

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 ICV Date: 06/20/16 Time: 13:30

Lab File ID: au20v01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
# 1,1,1-Trichloroethane	0.3941	0.4132	20.97	20	5	#
# Cyclohexane	0.4532	0.5050	22.28	20	11	#
1,1-Dichloropropene	0.3473	0.3671	21.14	20	6	
# Carbon Tetrachloride	0.2843	0.3143	22.11	20	11	#
Isobutyl Alcohol	0.4952	0.5147	519.64	500	4	
# Benzene	1.0828	1.1066	20.44	20	2	#
# 1,2-Dichloroethane	0.3479	0.3457	19.88	20	-1	#
t-Amyl methyl ether	0.6653	0.6716	20.19	20	1	
n-Heptane	0.4035	0.4468	22.15	20	11	
n-Butanol	0.4194	0.4207	1003.18	1000	0	
# Trichloroethene	0.2563	0.2793	21.80	20	9	#
# Methylcyclohexane	0.4765	0.5018	21.06	20	5	#
# 1,2-Dichloropropane	0.2781	0.2947	21.19	20	6	#
Methyl Methacrylate	0.1773	0.1829	20.64	20	3	
1,4-Dioxane	0.1526	0.1626	532.63	500	7	
Dibromomethane	0.1557	0.1574	20.22	20	1	
# Bromodichloromethane	0.2977	0.3111	20.90	20	5	#
2-Nitropropane	2.5666	2.3419	18.87	20	-6	
# cis-1,3-Dichloropropene	0.4014	0.4084	20.35	20	2	#
# 4-Methyl-2-pentanone	0.2455	0.2530	103.07	100	3	#
# Toluene	0.8926	0.9644	21.61	20	8	#
# trans-1,3-Dichloropropene	0.4745	0.4934	20.79	20	4	#
Ethyl Methacrylate	0.4488	0.4612	20.55	20	3	
# 1,1,2-Trichloroethane	0.3122	0.3138	20.10	20	1	#
# Tetrachloroethene	0.3588	0.4004	22.32	20	12	#
1,3-Dichloropropane	0.5498	0.5525	20.10	20	0	
# 2-Hexanone	0.2347	0.2460	104.83	100	5	#
# Dibromochloromethane	0.3077	0.3055	19.85	20	-1	#
# 1,2-Dibromoethane	0.3077	0.3226	20.97	20	5	#
# Chlorobenzene	1.0245	1.0872	21.22	20	6	#
1,1,1,2-Tetrachloroethane	0.3179	0.3264	20.53	20	3	
# Ethylbenzene	1.6729	1.8247	21.81	20	9	#
# m+p-Xylene	0.6600	0.7282	44.13	40	10	#
# o-Xylene	0.6465	0.6974	21.57	20	8	#
# Styrene	1.0429	1.1490	22.04	20	10	#
# Bromoform	0.1925	0.1782	17.97	20	-10	#

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 ICV Date: 06/20/16 Time: 13:30

Lab File ID: au20v01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Isopropylbenzene	1.6699	1.8417	22.06	20	10	#
	Cyclohexanone	0.7254	0.6809	469.33	500	-6	
#	1,1,2,2-Tetrachloroethane	0.8176	0.8075	19.75	20	-1	#
	Bromobenzene	0.8348	0.8656	20.74	20	4	
	trans-1,4-Dichloro-2-butene	0.2291	0.2339	102.07	100	2	
	1,2,3-Trichloropropane	0.2358	0.2401	20.36	20	2	
	n-Propylbenzene	3.8484	4.1950	21.80	20	9	
	2-Chlorotoluene	0.7680	0.8406	21.89	20	9	
	1,3,5-Trimethylbenzene	2.8163	3.0219	21.46	20	7	
	4-Chlorotoluene	0.8067	0.8719	21.62	20	8	
	tert-Butylbenzene	0.5920	0.6353	21.46	20	7	
	Pentachloroethane	0.4548	0.4629	20.36	20	2	
	1,2,4-Trimethylbenzene	2.9367	3.1060	21.15	20	6	
	sec-Butylbenzene	3.5355	3.9235	22.19	20	11	
#	1,3-Dichlorobenzene	1.5968	1.6753	20.98	20	5	#
	p-Isopropyltoluene	3.1260	3.3377	21.35	20	7	
#	1,4-Dichlorobenzene	1.6526	1.7176	20.79	20	4	#
	1,2,3-Trimethylbenzene	3.0765	3.2218	20.94	20	5	
	Benzyl Chloride	0.2747	0.2649	17.83	20	-11	
	1,3-Diethylbenzene	1.8591	1.9511	20.99	20	5	
	1,4-Diethylbenzene	1.9128	2.0763	21.71	20	9	
	n-Butylbenzene	1.5814	1.7128	21.66	20	8	
#	1,2-Dichlorobenzene	1.5426	1.6123	20.90	20	5	#
	1,2-Diethylbenzene	1.5882	1.6740	21.08	20	5	
#	1,2-Dibromo-3-chloropropane	0.1426	0.1341	18.80	20	-6	#
	1,3,5-Trichlorobenzene	1.1924	1.2645	21.21	20	6	
#	1,2,4-Trichlorobenzene	1.0571	1.0995	20.80	20	4	#
	Hexachlorobutadiene	0.5403	0.5927	21.94	20	10	
	Naphthalene	2.3975	2.5002	20.86	20	4	
	1,2,3-Trichlorobenzene	0.9725	0.9948	20.46	20	2	
	2-Methylnaphthalene	0.9456	0.8872	16.81	20	-16	

Average %Drift 6

Compounds with required minimum RRF.
Maximum % Drift = 30 %

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date(s): 04/22/16 04/22/16

Heated Purge: (Y/N) Y Calibration Times: 09:55 12:07

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = la22i07.d RRF 4 = la22i06.d RRF 10= la22i05.d
RRF 20= la22i04.d RRF 50= la22i03.d RRF100= la22i02.d RRF300= la22i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD	
Dichlorodifluoromethane	#0.2870	0.3828	0.3893	0.3614	0.4075	0.3999	0.3699	0.3711	11	AVG	#
Chloromethane	#0.3320	0.3656	0.3714	0.3576	0.4022	0.4037	0.3767	0.3727	7	AVG	#
1,3-Butadiene	1.1325	0.9842	0.5645	0.5365	0.3908	0.3624	0.3065	0.6111	53	AVG	
Vinyl Chloride	#0.2958	0.3515	0.3575	0.3395	0.3770	0.3874	0.3532	0.3517	8	AVG	#
Bromomethane	#0.1986	0.2254	0.2372	0.2241	0.2420	0.2439	0.2250	0.2280	7	AVG	#
Chloroethane	#0.1753	0.1946	0.1922	0.1881	0.2064	0.2045	0.1861	0.1924	6	AVG	#
Dichlorofluoromethane	0.4077	0.4571	0.4349	0.4597	0.4592	0.4732	0.4544	0.4495	5	AVG	
n-Pentane	0.3891	0.4514	0.4094	0.4260	0.4534	0.4467	0.3920	0.4240	7	AVG	
Trichlorofluoromethane	#0.2826	0.3829	0.3851	0.3612	0.4022	0.3985	0.3803	0.3704	11	AVG	#
Ethyl ether	0.2529	0.2516	0.2591	0.2549	0.2699	0.2771	0.2737	0.2627	4	AVG	
Freon 123a	0.2777	0.3271	0.3039	0.3102	0.3135	0.3156	0.3028	0.3072	5	AVG	
Acrolein	2.1334	2.0442	2.2649	2.1023	2.1291	2.0899	2.2077	2.1388	3	AVG	
1,1-Dichloroethene	#0.1775	0.2115	0.2230	0.2222	0.2331	0.2339	0.2314	0.2189	9	AVG	#
1,1-Dichloroethene(2)	#0.0963	0.1136	0.1200	0.1180	0.1248	0.1254	0.1227	0.1173	9	AVG	#
Acetone	#0.8613	0.9062	1.0419	0.9788	0.9942	0.9364	0.9829	0.9574	6	AVG	#
Freon 113	#0.1527	0.2095	0.2284	0.2124	0.2261	0.2282	0.2160	0.2105	13	AVG	#
2-Propanol	0.7482	0.7228	0.6565	0.7423	0.7481	0.7671	0.7543	0.7342	5	AVG	
Methyl Iodide	0.3302	0.3840	0.4083	0.4067	0.4312	0.4400	0.4450	0.4065	10	AVG	
Carbon Disulfide	#0.6244	0.6879	0.7237	0.7328	0.7913	0.7973	0.7889	0.7352	9	AVG	#
Allyl Chloride	0.3373	0.3844	0.4165	0.4337	0.4556	0.4743	0.4591	0.4230	11	AVG	
Methyl Acetate	#0.3003	0.2670	0.2840	0.2884	0.3033	0.3155	0.3059	0.2949	6	AVG	#
Methylene Chloride	#0.2545	0.2542	0.2686	0.2638	0.2799	0.2836	0.2853	0.2700	5	AVG	#
t-Butyl alcohol	1.2726	1.1572	1.1518	1.1610	1.1772	1.2180	1.1969	1.1906	4	AVG	
Acrylonitrile	0.1390	0.1416	0.1550	0.1474	0.1519	0.1499	0.1572	0.1489	5	AVG	
trans-1,2-Dichloroethene	#0.1997	0.2320	0.2535	0.2507	0.2639	0.2709	0.2686	0.2484	10	AVG	#
Methyl Tertiary Butyl Ether	#0.7855	0.7876	0.8575	0.8357	0.8801	0.8958	0.8827	0.8464	5	AVG	#
n-Hexane	0.2773	0.3768	0.3853	0.3997	0.4208	0.4283	0.3998	0.3840	13	AVG	
1,1-Dichloroethane	#0.4097	0.4562	0.4870	0.4994	0.5326	0.5380	0.5292	0.4931	10	AVG	#
di-Isopropyl ether	0.8239	0.8699	0.9588	0.9544	1.0090	1.0226	0.9906	0.9470	8	AVG	
2-Chloro-1,3-butadiene	0.2883	0.3510	0.3935	0.3960	0.4291	0.4363	0.4288	0.3890	14	AVG	
Ethyl t-butyl ether	0.7478	0.7910	0.8677	0.8599	0.9198	0.9351	0.9155	0.8624	8	AVG	
cis-1,2-Dichloroethene	#0.2282	0.2629	0.2815	0.2814	0.2992	0.3037	0.3018	0.2798	10	AVG	#
2-Butanone	#0.1791	0.1803	0.2015	0.1881	0.1977	0.1949	0.2000	0.1917	5	AVG	#
2,2-Dichloropropane	0.2527	0.3028	0.3405	0.3452	0.3810	0.3918	0.3827	0.3424	15	AVG	
Propionitrile	1.4728	1.5239	1.5189	1.5568	1.5326	1.6033	1.5810	1.5413	3	AVG	
Methacrylonitrile	0.1377	0.1399	0.1450	0.1484	0.1526	0.1569	0.1538	0.1477	5	AVG	
Bromochloromethane	0.1237	0.1337	0.1414	0.1410	0.1489	0.1557	0.1543	0.1427	8	AVG	
Tetrahydrofuran	1.0707	1.2371	1.3781	1.3057	1.3311	1.3040	1.3979	1.2892	9	AVG	
Chloroform	#0.3918	0.4166	0.4485	0.4475	0.4724	0.4825	0.4775	0.4481	8	AVG	#
1,1,1-Trichloroethane	#0.3469	0.4069	0.4039	0.3995	0.4047	0.4135	0.4112	0.3981	6	AVG	#
Cyclohexane	#0.3435	0.4453	0.4651	0.4680	0.5054	0.5086	0.4768	0.4589	12	AVG	#
Cyclohexane(2)	#0.3252	0.3422	0.3653	0.3620	0.3916	0.3970	0.3688	0.3646	7	AVG	#
Cyclohexane(3)	#0.0975	0.1254	0.1364	0.1350	0.1453	0.1488	0.1401	0.1327	13	AVG	#
1,1-Dichloropropene	0.2986	0.3360	0.3681	0.3653	0.3979	0.4049	0.3951	0.3665	10	AVG	
Carbon Tetrachloride	#0.2265	0.2631	0.2897	0.3001	0.3298	0.3394	0.3380	0.2981	14	AVG	#
Isobutyl Alcohol	0.4163	0.4107	0.4018	0.4066	0.4148	0.4444	0.4375	0.4189	4	AVG	
Benzene	#0.9229	1.0064	1.0891	1.0779	1.1390	1.1605	1.1245	1.0743	8	AVG	#
1,2-Dichloroethane	#0.3957	0.3778	0.3982	0.3859	0.4022	0.4133	0.4088	0.3974	3	AVG	#
1,2-Dichloroethane(2)	#0.0310	0.0317	0.0355	0.0345	0.0359	0.0368	0.0367	0.0346	7	AVG	#<-
t-Amyl methyl ether	0.7072	0.7066	0.8032	0.8014	0.8459	0.8752	0.8531	0.7989	9	AVG	
n-Heptane	0.3508	0.4281	0.4293	0.4354	0.4536	0.4644	0.4173	0.4255	9	AVG	
n-Butanol	0.2782	0.3017	0.3098	0.3324	0.3411	0.3647	0.3577	0.3265	10	AVG	

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date(s): 04/22/16 04/22/16

Heated Purge: (Y/N) Y Calibration Times: 09:55 12:07

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

LAB FILE ID: RRF 1 = la22i07.d RRF 4 = la22i06.d RRF 10= la22i05.d
RRF 20= la22i04.d RRF 50= la22i03.d RRF100= la22i02.d RRF300= la22i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
Trichloroethene	#0.2264	0.2535	0.2711	0.2713	0.2905	0.2951	0.2924	0.2715	9	AVG #
Methylcyclohexane	#0.3214	0.4266	0.4552	0.4635	0.4851	0.5025	0.4766	0.4473	14	AVG #
Methylcyclohexane(2)	#0.1499	0.1904	0.2036	0.2028	0.2190	0.2257	0.2153	0.2009	13	AVG #
1,2-Dichloropropane	#0.2499	0.2713	0.2981	0.2974	0.3151	0.3226	0.3159	0.2958	9	AVG #
Dibromomethane	0.1636	0.1712	0.1845	0.1791	0.1910	0.1968	0.1970	0.1833	7	AVG
1,4-Dioxane	0.0995	0.1062	0.1079	0.1102	0.1154	0.1198	0.1152	0.1106	6	AVG
Methyl Methacrylate	0.1854	0.2206	0.2502	0.2521	0.2674	0.2811	0.2782	0.2479	14	AVG
Bromodichloromethane	#0.2713	0.2876	0.3258	0.3276	0.3645	0.3795	0.3857	0.3346	13	AVG #
2-Nitropropane	0.0727	0.0753	0.0905	0.0915	0.1008	0.1035	0.1104	0.0921	15	AVG
2-Chloroethyl Vinyl Ether	0.1545	0.1805	0.2061	0.2051	0.2397	0.2485	0.2430	0.2111	17	AVG
cis-1,3-Dichloropropene	#0.3116	0.3583	0.4217	0.4373	0.4785	0.4970	0.4999	0.4292	17	AVG #
4-Methyl-2-pentanone	#0.3178	0.3502	0.4164	0.4053	0.4245	0.4161	0.4228	0.3933	11	AVG #
Toluene	#0.7746	0.8364	0.9016	0.9109	0.9437	0.9433	0.9176	0.8897	7	AVG #
trans-1,3-Dichloropropene	#0.3516	0.4233	0.4915	0.5342	0.5838	0.6087	0.6154	0.5155	19	AVG #
Ethyl Methacrylate	0.4405	0.4863	0.5708	0.5907	0.6250	0.6488	0.6355	0.5711	14	AVG
1,1,2-Trichloroethane	#0.3178	0.3216	0.3508	0.3414	0.3629	0.3646	0.3606	0.3457	6	AVG #
Tetrachloroethene	#0.3081	0.3519	0.3818	0.3816	0.4028	0.4052	0.4049	0.3766	9	AVG #
1,3-Dichloropropane	0.5449	0.5635	0.6223	0.6189	0.6430	0.6520	0.6408	0.6122	7	AVG
2-Hexanone	#0.3130	0.3278	0.3943	0.3980	0.4088	0.4008	0.4016	0.3778	10	AVG #
Dibromochloromethane	#0.2550	0.2765	0.3265	0.3422	0.3723	0.3920	0.4123	0.3395	17	AVG #
1,2-Dibromoethane	#0.3141	0.3392	0.3711	0.3759	0.3934	0.4026	0.4032	0.3713	9	AVG #
1-Chlorohexane	0.4522	0.4760	0.4969	0.5007	0.5275	0.5281	0.5124	0.4991	6	AVG
Chlorobenzene	#0.8769	0.9248	1.0194	1.0239	1.0673	1.0719	1.0638	1.0069	8	AVG #
1,1,1,2-Tetrachloroethane	0.2644	0.2911	0.3278	0.3373	0.3591	0.3713	0.3811	0.3332	13	AVG
Ethylbenzene	#1.3961	1.5924	1.7537	1.7724	1.8530	1.8631	1.7848	1.7165	10	AVG #
m+p-Xylene	#0.5302	0.5986	0.6784	0.6810	0.7111	0.7170	0.6968	0.6590	10	AVG #
o-Xylene	#0.5161	0.5895	0.6670	0.6653	0.6961	0.7083	0.6950	0.6482	11	AVG #
Styrene	#0.7989	0.9728	1.1154	1.1434	1.2039	1.2245	1.1840	1.0918	14	AVG #
Bromoform	#0.1831	0.1832	0.2089	0.2271	0.2540	0.2785	0.3018	0.2338	20	AVG #
Isopropylbenzene	#1.2543	1.5384	1.7097	1.7228	1.7909	1.8006	1.7339	1.6501	12	AVG #
Cyclohexanone	0.4397	0.4358	0.5803	0.5316	0.5203	0.5301	0.5326	0.5100	10	AVG
Bromobenzene	0.7529	0.7988	0.8533	0.8741	0.8985	0.9232	0.9146	0.8593	7	AVG
1,1,2,2-Tetrachloroethane	#0.9259	0.9395	1.0265	1.0311	1.0483	1.0805	1.0366	1.0126	6	AVG #
1,2,3-Trichloropropane	0.2909	0.2784	0.2897	0.2909	0.2957	0.3057	0.2960	0.2925	3	AVG
trans-1,4-Dichloro-2-butene	0.0404	0.0695	0.0962	0.1362	0.1644	0.2064	0.2318	0.1350	52	2NDDEG
n-Propylbenzene	3.1408	3.6653	3.9623	4.0646	4.1491	4.1511	3.7625	3.8422	9	AVG
2-Chlorotoluene	0.6777	0.7158	0.7826	0.8044	0.8207	0.8336	0.8200	0.7793	8	AVG
4-Chlorotoluene	0.6926	0.7664	0.8374	0.8476	0.8696	0.8866	0.8599	0.8229	8	AVG
1,3,5-Trimethylbenzene	2.1318	2.5246	2.7768	2.8631	2.9485	2.9754	2.8303	2.7215	11	AVG
tert-Butylbenzene	0.4613	0.5206	0.5523	0.5832	0.6023	0.6192	0.6041	0.5633	10	AVG
Pentachloroethane	0.3322	0.3941	0.4399	0.4759	0.5118	0.5515	0.5499	0.4650	18	AVG
1,2,4-Trimethylbenzene	2.2913	2.6289	2.8813	2.9487	3.0386	3.0853	2.9358	2.8300	10	AVG
sec-Butylbenzene	2.7720	3.3416	3.5031	3.6472	3.7339	3.7220	3.4234	3.4490	10	AVG
1,3-Dichlorobenzene	#1.4757	1.5232	1.6098	1.6526	1.6892	1.7213	1.6445	1.6166	5	AVG #
p-Isopropyltoluene	2.3507	2.8191	3.0347	3.1655	3.2336	3.2836	3.1108	2.9997	11	AVG
1,4-Dichlorobenzene	#1.5844	1.6105	1.7143	1.7158	1.7446	1.7731	1.6798	1.6889	4	AVG #
1,2,3-Trimethylbenzene	2.6174	2.7684	2.9411	3.0563	3.1132	3.2112	3.0087	2.9595	7	AVG
Benzyl Chloride	1.0881	1.3714	1.6479	1.8342	2.0342	2.1754	2.1461	1.7568	23	2NDDEG
1,3-Diethylbenzene	1.4843	1.7174	1.8059	1.8857	1.9136	1.9595	1.8592	1.8037	9	AVG
1,4-Diethylbenzene	1.5943	1.8034	1.8904	1.9651	1.9762	2.0236	1.9148	1.8811	8	AVG
1,2-Dichlorobenzene	#1.5095	1.5321	1.6250	1.6310	1.6384	1.6651	1.6164	1.6025	4	AVG #
n-Butylbenzene	1.3650	1.5046	1.5472	1.6079	1.6153	1.6132	1.4918	1.5350	6	AVG

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date(s): 04/22/16 04/22/16

Heated Purge: (Y/N) Y Calibration Times: 09:55 12:07

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

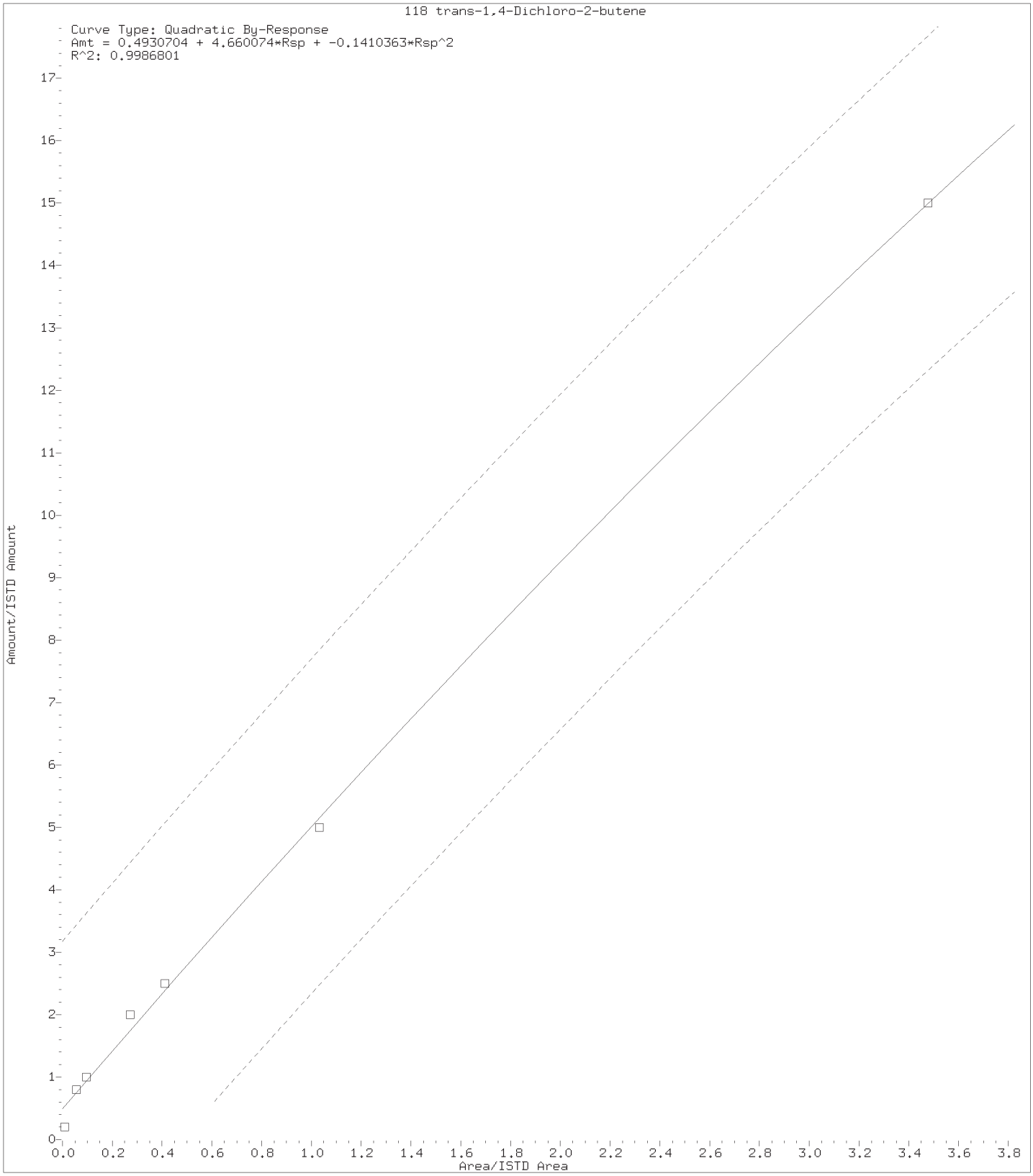
LAB FILE ID: RRF 1 = la22i07.d RRF 4 = la22i06.d RRF 10= la22i05.d
RRF 20= la22i04.d RRF 50= la22i03.d RRF100= la22i02.d RRF300= la22i01.d

COMPOUND	RRF 1	RRF 4	RRF 10	RRF 20	RRF 50	RRF100	RRF300	RRF	% RSD	CAL. METHOD
1,2-Diethylbenzene	1.3225	1.4672	1.5421	1.5992	1.6106	1.6506	1.5771	1.5385	7	AVG
1,2-Dibromo-3-chloropropane	#0.1574	0.1700	0.1944	0.1980	0.2062	0.2228	0.2214	0.1957	13	AVG #
1,3,5-Trichlorobenzene	1.2631	1.1999	1.2685	1.2933	1.3000	1.3228	1.2797	1.2753	3	AVG
1,2,4-Trichlorobenzene	#1.3374	1.2075	1.2395	1.2630	1.2635	1.3040	1.2310	1.2637	4	AVG #
Hexachlorobutadiene	0.6454	0.5291	0.5122	0.5462	0.5263	0.5436	0.4748	0.5397	10	AVG
Naphthalene	3.1904	3.2213	3.4607	3.5124	3.5111	3.6599	3.2750	3.4044	5	AVG
1,2,3-Trichlorobenzene	1.2456	1.1501	1.1979	1.1964	1.1890	1.2328	1.1262	1.1911	4	AVG
2-Methylnaphthalene	2.2999	1.9798	2.0306	2.2775	2.1941	2.4127	1.6627	2.1225	12	AVG
Dibromofluoromethane	0.2376	0.2337	0.2391	0.2342	0.2404	0.2400	0.2377	0.2375	1	AVG
Dibromofluoromethane(2)	0.2444	0.2402	0.2448	0.2387	0.2441	0.2464	0.2436	0.2432	1	AVG
1,2-Dichloroethane-d4	0.0602	0.0599	0.0605	0.0595	0.0603	0.0604	0.0589	0.0600	1	AVG
1,2-Dichloroethane-d4(2)	0.3102	0.3070	0.3092	0.3013	0.3114	0.3084	0.3040	0.3073	1	AVG
1,2-Dichloroethane-d4(3)	0.0385	0.0381	0.0382	0.0376	0.0386	0.0381	0.0375	0.0381	1	AVG
Toluene-d8	1.3085	1.3151	1.3157	1.3199	1.3074	1.3027	1.2919	1.3088	1	AVG
Toluene-d8(2)	0.8506	0.8586	0.8547	0.8598	0.8471	0.8503	0.8445	0.8522	1	AVG
4-Bromofluorobenzene	0.4845	0.4849	0.4902	0.4836	0.4854	0.4830	0.4785	0.4843	1	AVG
4-Bromofluorobenzene(2)	0.4157	0.4147	0.4154	0.4124	0.4125	0.4070	0.4073	0.4121	1	AVG

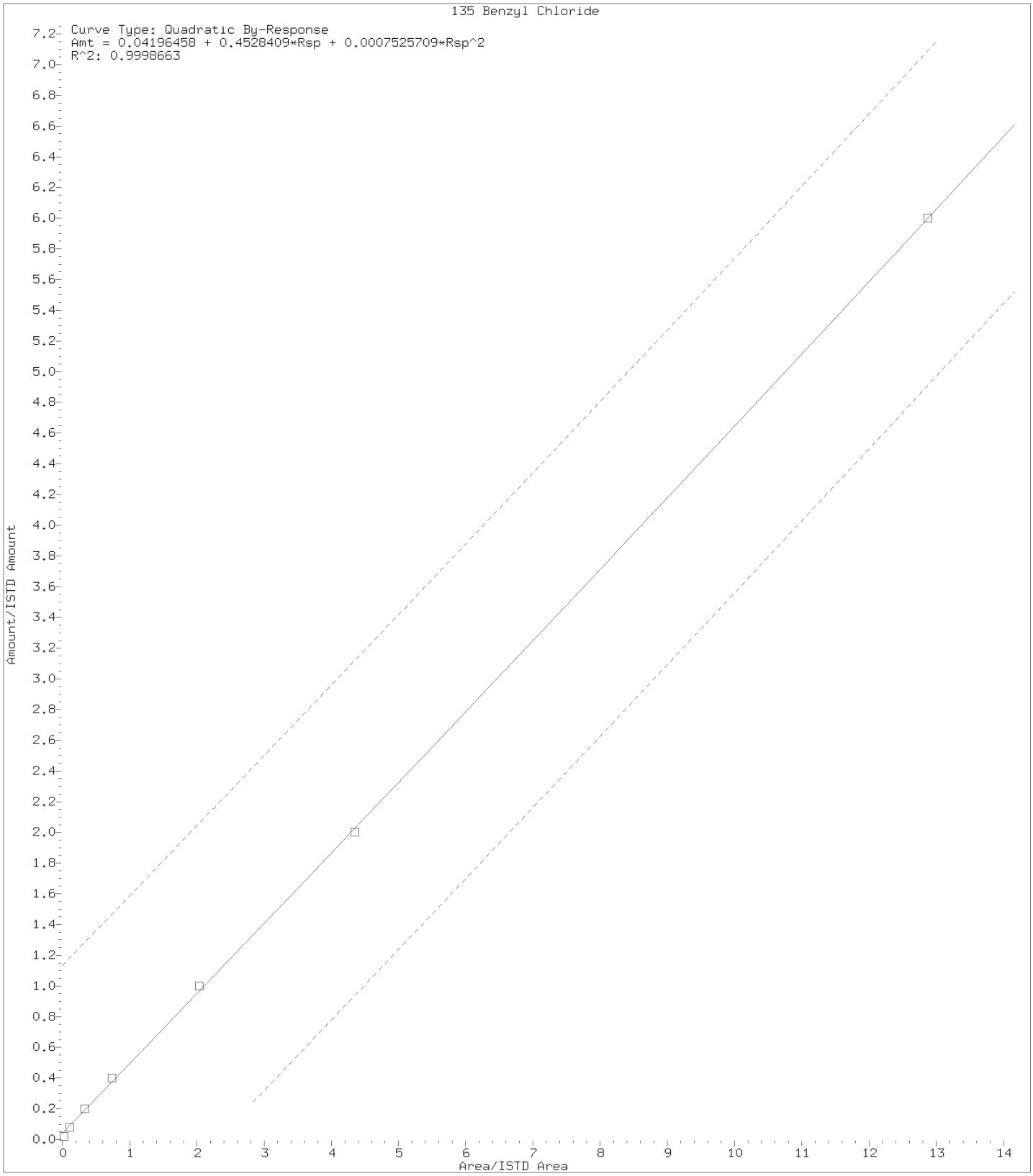
Average %RSD 9

Compounds with required minimum RRF.
All compounds must meet a maximum %RSD of 20.

FORM VI VOA



Digitally signed by Brett W. Kenyon on 04/25/2016 at 16:07.
Target 3.5 esignature user ID: bwk03231



Digitally signed by Brett W. Kenyon on 04/25/2016 at 16:07.
Target 3.5 esignature user ID: bwk03231

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP09915.i/16apr22i.b/la22i01.d	VSTD300
/chem/HP09915.i/16apr22i.b/la22i02.d	VSTD100
/chem/HP09915.i/16apr22i.b/la22i03.d	VSTD050
/chem/HP09915.i/16apr22i.b/la22i04.d	VSTD020
/chem/HP09915.i/16apr22i.b/la22i05.d	VSTD010
/chem/HP09915.i/16apr22i.b/la22i06.d	VSTD004
/chem/HP09915.i/16apr22i.b/la22i07.d	VSTD001

Area Summary

File ID:

Internal Standard Name	la22i01.d	la22i02.d	la22i03.d	la22i04.d	la22i05.d	la22i06.d	la22i07.d	Avg. Area	%RSD	In Spec
t-Butyl alcohol-d10	230813	237588	239110	234793	222755	229317	220884	230751	3	Yes
Fluorobenzene	1256794	1268629	1288793	1295555	1231017	1298555	1242368	1268816	2	Yes
Chlorobenzene-d5	960626	972262	977519	964347	926964	970322	934821	958123	2	Yes
1,4-Dichlorobenzene-d4	517298	509521	514202	499944	492114	506851	490975	504415	2	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	la22i01.d	la22i02.d	la22i03.d	la22i04.d	la22i05.d	la22i06.d	la22i07.d	Avg. RT
t-Butyl alcohol-d10	4.012	3.993	3.990	3.996	3.993	3.993	4.009	3.998
Fluorobenzene	7.510	7.504	7.504	7.507	7.507	7.507	7.510	7.507
Chlorobenzene-d5	11.041	11.041	11.041	11.041	11.041	11.041	11.041	11.041
1,4-Dichlorobenzene-d4	12.938	12.935	12.938	12.935	12.938	12.935	12.935	12.936

* indicates the retention time is greater than 30 seconds from the average RT.

Report generated on 04/22/2016 at 13:38.

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 ICV Date: 04/22/16 Time: 12:51

Lab File ID: la22v01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
# Dichlorodifluoromethane	0.3711	0.3115	16.78	20	-16	#
# Chloromethane	0.3727	0.3338	17.91	20	-10	#
1,3-Butadiene	0.6111	0.5293	17.32	20	-13	
# Vinyl Chloride	0.3517	0.3217	18.29	20	-9	#
# Bromomethane	0.2280	0.2031	17.81	20	-11	#
# Chloroethane	0.1924	0.1731	17.99	20	-10	#
Dichlorofluoromethane	0.4495	0.4047	18.01	20	-10	
n-Pentane	0.4240	0.4263	20.11	20	1	
# Trichlorofluoromethane	0.3704	0.3612	19.50	20	-2	#
Ethyl ether	0.2627	0.2668	20.31	20	2	
Freon 123a	0.3072	0.2804	18.25	20	-9	
Acrolein	2.1388	2.0638	144.74	150	-4	
# 1,1-Dichloroethene	0.2189	0.2240	20.47	20	2	#
# Acetone	0.9574	1.3094	205.15	150	37	#<-
# Freon 113	0.2105	0.2190	20.81	20	4	#
2-Propanol	0.7342	0.7487	152.96	150	2	
Methyl Iodide	0.4065	0.4033	19.84	20	-1	
# Carbon Disulfide	0.7352	0.7026	19.11	20	-4	#
Allyl Chloride	0.4230	0.4568	21.60	20	8	
# Methyl Acetate	0.2949	0.2937	19.92	20	0	#
# Methylene Chloride	0.2700	0.2743	20.32	20	2	#
t-Butyl alcohol	1.1906	1.1915	200.15	200	0	
Acrylonitrile	0.1489	0.1442	96.88	100	-3	
# trans-1,2-Dichloroethene	0.2484	0.2708	21.80	20	9	#
# Methyl Tertiary Butyl Ether	0.8464	0.8425	19.91	20	0	#
n-Hexane	0.3840	0.4115	21.44	20	7	
# 1,1-Dichloroethane	0.4931	0.5078	20.59	20	3	#
di-Isopropyl ether	0.9470	0.9965	21.05	20	5	
2-Chloro-1,3-butadiene	0.3890	0.4414	22.69	20	13	
Ethyl t-butyl ether	0.8624	0.8747	20.28	20	1	
# cis-1,2-Dichloroethene	0.2798	0.2972	21.24	20	6	#
# 2-Butanone	0.1917	0.2181	170.71	150	14	#
2,2-Dichloropropane	0.3424	0.3561	20.80	20	4	
Propionitrile	1.5413	1.6254	158.18	150	5	
Methacrylonitrile	0.1477	0.1546	156.95	150	5	
Bromochloromethane	0.1427	0.1464	20.53	20	3	

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 ICV Date: 04/22/16 Time: 12:51

Lab File ID: la22v01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	$\overline{RRF}$	RRF	ACTUAL CONC.	TRUE CONC.	% DRIFT	
Tetrahydrofuran	1.2892	1.3255	102.81	100	3	
# Chloroform	0.4481	0.4687	20.92	20	5	#
# 1,1,1-Trichloroethane	0.3981	0.4040	20.30	20	1	#
# Cyclohexane	0.4589	0.4841	21.10	20	5	#
1,1-Dichloropropene	0.3665	0.3654	19.93	20	0	
# Carbon Tetrachloride	0.2981	0.3125	20.97	20	5	#
Isobutyl Alcohol	0.4189	0.4211	502.62	500	1	
# Benzene	1.0743	1.1239	20.92	20	5	#
# 1,2-Dichloroethane	0.3974	0.4004	20.15	20	1	#
t-Amyl methyl ether	0.7989	0.8070	20.20	20	1	
n-Heptane	0.4255	0.4381	20.59	20	3	
n-Butanol	0.3265	0.3337	1022.09	1000	2	
# Trichloroethene	0.2715	0.2900	21.37	20	7	#
# Methylcyclohexane	0.4473	0.4906	21.94	20	10	#
# 1,2-Dichloropropane	0.2958	0.3121	21.10	20	6	#
Dibromomethane	0.1833	0.1840	20.07	20	0	
1,4-Dioxane	0.1106	0.1060	479.13	500	-4	
Methyl Methacrylate	0.2479	0.2459	19.84	20	-1	
# Bromodichloromethane	0.3346	0.3385	20.24	20	1	#
2-Nitropropane	0.0921	0.0858	18.63	20	-7	
2-Chloroethyl Vinyl Ether	0.2111	0.2174	20.60	20	3	
# cis-1,3-Dichloropropene	0.4292	0.4456	20.76	20	4	#
# 4-Methyl-2-pentanone	0.3933	0.4092	104.03	100	4	#
# Toluene	0.8897	0.9420	21.17	20	6	#
# trans-1,3-Dichloropropene	0.5155	0.5416	21.01	20	5	#
Ethyl Methacrylate	0.5711	0.6002	21.02	20	5	
# 1,1,2-Trichloroethane	0.3457	0.3536	20.46	20	2	#
# Tetrachloroethene	0.3766	0.3996	21.22	20	6	#
1,3-Dichloropropane	0.6122	0.6201	20.26	20	1	
# 2-Hexanone	0.3778	0.4137	109.50	100	10	#
# Dibromochloromethane	0.3395	0.3374	19.87	20	-1	#
# 1,2-Dibromoethane	0.3713	0.3836	20.66	20	3	#
1-Chlorohexane	0.4991	0.5187	20.78	20	4	
# Chlorobenzene	1.0069	1.0463	20.78	20	4	#
1,1,1,2-Tetrachloroethane	0.3332	0.3426	20.57	20	3	
# Ethylbenzene	1.7165	1.8147	21.14	20	6	#

Compounds with required minimum RRF.
Maximum % Drift = 30 %

INITIAL CALIBRATION VERIFICATION

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 ICV Date: 04/22/16 Time: 12:51

Lab File ID: la22v01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	$\overline{RRF}$	RRF	CONC.	CONC.	DRIFT	
# m+p-Xylene	0.6590	0.7026	42.65	40	7	#
# o-Xylene	0.6482	0.6768	20.88	20	4	#
# Styrene	1.0918	1.1651	21.34	20	7	#
# Bromoform	0.2338	0.2201	18.83	20	-6	#
# Isopropylbenzene	1.6501	1.7896	21.69	20	8	#
Cyclohexanone	0.5100	0.4286	420.13	500	-16	
Bromobenzene	0.8593	0.8833	20.56	20	3	
# 1,1,2,2-Tetrachloroethane	1.0126	1.0072	19.89	20	-1	#
1,2,3-Trichloropropane	0.2925	0.2953	20.19	20	1	
trans-1,4-Dichloro-2-butene	0.1350	0.1304	84.95	100	-15	
n-Propylbenzene	3.8422	4.0837	21.26	20	6	
2-Chlorotoluene	0.7793	0.8185	21.01	20	5	
4-Chlorotoluene	0.8229	0.8474	20.60	20	3	
1,3,5-Trimethylbenzene	2.7215	2.9057	21.35	20	7	
tert-Butylbenzene	0.5633	0.5909	20.98	20	5	
Pentachloroethane	0.4650	0.4842	20.82	20	4	
1,2,4-Trimethylbenzene	2.8300	2.9549	20.88	20	4	
sec-Butylbenzene	3.4490	3.6765	21.32	20	7	
# 1,3-Dichlorobenzene	1.6166	1.6408	20.30	20	1	#
p-Isopropyltoluene	2.9997	3.1165	20.78	20	4	
# 1,4-Dichlorobenzene	1.6889	1.7215	20.39	20	2	#
1,2,3-Trimethylbenzene	2.9595	3.1291	21.15	20	6	
Benzyl Chloride	1.7568	1.7737	18.18	20	-9	
1,3-Diethylbenzene	1.8037	1.8905	20.96	20	5	
1,4-Diethylbenzene	1.8811	2.0058	21.33	20	7	
# 1,2-Dichlorobenzene	1.6025	1.6168	20.18	20	1	#
n-Butylbenzene	1.5350	1.5804	20.59	20	3	
1,2-Diethylbenzene	1.5385	1.6189	21.05	20	5	
# 1,2-Dibromo-3-chloropropane	0.1957	0.1875	19.15	20	-4	#
1,3,5-Trichlorobenzene	1.2753	1.2558	19.69	20	-2	
# 1,2,4-Trichlorobenzene	1.2637	1.2019	19.02	20	-5	#
Hexachlorobutadiene	0.5397	0.4853	17.99	20	-10	
Naphthalene	3.4044	3.2790	19.26	20	-4	
1,2,3-Trichlorobenzene	1.1911	1.1001	18.47	20	-8	
2-Methylnaphthalene	2.1225	1.6045	15.12	20	-24	

Average %Drift 5

Compounds with required minimum RRF.
Maximum % Drift = 30 %

Lancaster Laboratories

Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem2/HP09685.i/16jun20a.b/au20i07.d
/chem2/HP09685.i/16jun20a.b/au20i06.d
/chem2/HP09685.i/16jun20a.b/au20i05.d
/chem2/HP09685.i/16jun20a.b/au20i04.d
/chem2/HP09685.i/16jun20a.b/au20i03.d
/chem2/HP09685.i/16jun20a.b/au20i02.d
/chem2/HP09685.i/16jun20a.b/au20i01.d

File /chem2/HP09685.i/16jun20a.b/au20i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem2/HP09685.i/16jul13a.b/al13c01.d

RT Summary

Internal Standard Name	File ID: al13c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	3.952	3.958	Yes
Fluorobenzene	7.450	7.449	Yes
Chlorobenzene-d5	11.009	11.008	Yes
1,4-Dichlorobenzene-d4	12.919	12.919	Yes

A "No" indicates the retention time is greater than 30 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: al13c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	89829	117913	58956	235826	Yes
Fluorobenzene	1157082	1094634	547317	2189268	Yes
Chlorobenzene-d5	861112	812973	406486	1625946	Yes
1,4-Dichlorobenzene-d4	470565	430819	215410	861638	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 07/13/2016 at 09:01

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date: 07/13/16 Time: 07:32

Lab File ID: al13c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Dichlorodifluoromethane	0.3921	0.3834	48.89	50	-2	#
# Chloromethane	0.4074	0.3780	46.39	50	-7	#
# Vinyl Chloride	0.3696	0.3495	47.27	50	-5	#
# Bromomethane	0.2509	0.2451	48.83	50	-2	#
# Chloroethane	0.2042	0.1999	48.95	50	-2	#
# Trichlorofluoromethane	0.4270	0.4363	51.09	50	2	#
Ethanol	0.1798	0.1773	2465.32	2500	-1	
Acrolein	2.6570	3.6034	678.09	500	36	<-
# 1,1-Dichloroethene	0.2194	0.2347	53.49	50	7	#
# 1,1-Dichloroethene(2)	0.1162	0.1278	54.99	50	10	#
# Acetone	1.2959	1.6278	125.61	100	26	#<-
# Freon 113	0.2257	0.2497	55.30	50	11	#
2-Propanol	0.9846	1.2032	305.50	250	22	<-
Methyl Iodide	0.4018	0.4291	53.39	50	7	
# Carbon Disulfide	0.7191	0.7685	53.43	50	7	#
# Methyl Acetate	0.1913	0.1855	48.50	50	-3	#
Allyl Chloride	0.3979	0.4362	54.81	50	10	
# Methylene Chloride	0.2777	0.2741	49.35	50	-1	#
t-Butyl alcohol	1.4610	1.5479	264.88	250	6	
Acrylonitrile	0.0920	0.0985	53.53	50	7	
# Methyl Tertiary Butyl Ether	0.7119	0.7035	49.41	50	-1	#
# trans-1,2-Dichloroethene	0.2407	0.2669	55.45	50	11	#
n-Hexane	0.3710	0.4204	56.65	50	13	
# 1,1-Dichloroethane	0.4557	0.5043	55.33	50	11	#
di-Isopropyl ether	0.8458	0.9153	54.11	50	8	
2-Chloro-1,3-butadiene	0.3901	0.4300	55.11	50	10	
Ethyl t-butyl ether	0.7219	0.7513	52.03	50	4	
# 2-Butanone	5.7599	7.6063	132.06	100	32	#<-
# cis-1,2-Dichloroethene	0.2729	0.2990	54.78	50	10	#
2,2-Dichloropropane	0.3234	0.3810	58.91	50	18	
Propionitrile	1.8044	2.3548	326.26	250	31	<-
Methacrylonitrile	0.1069	0.1063	124.21	125	-1	
Bromochloromethane	0.1330	0.1460	54.86	50	10	
Tetrahydrofuran	1.5605	2.0520	131.50	100	31	<-
# Chloroform	0.4347	0.4831	55.57	50	11	#
# 1,1,1-Trichloroethane	0.3941	0.4243	53.83	50	8	#

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date: 07/13/16 Time: 07:32

Lab File ID: al13c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Cyclohexane	0.4532	0.5058	55.80	50	12	#
# Cyclohexane(2)	0.3756	0.4161	55.39	50	11	#
# Cyclohexane(3)	0.1365	0.1508	55.24	50	10	#
1,1-Dichloropropene	0.3473	0.4003	57.64	50	15	
# Carbon Tetrachloride	0.2843	0.3546	62.35	50	25	#<-
Isobutyl Alcohol	0.4952	0.6448	813.73	625	30	<-
# Benzene	1.0828	1.1399	52.63	50	5	#
# 1,2-Dichloroethane	0.3479	0.3671	52.76	50	6	#
# 1,2-Dichloroethane(2)	0.0389	0.0323	41.56	50	-17	#<-
t-Amyl methyl ether	0.6653	0.6866	51.60	50	3	
n-Heptane	0.4035	0.4785	59.30	50	19	
n-Butanol	0.4194	0.4918	1466.01	1250	17	
# Trichloroethene	0.2563	0.2901	56.59	50	13	#
# Methylcyclohexane	0.4765	0.5315	55.77	50	12	#
# 1,2-Dichloropropane	0.2781	0.3046	54.76	50	10	#
Methyl Methacrylate	0.1773	0.1809	51.01	50	2	
1,4-Dioxane	0.1526	0.1971	807.14	625	29	<-
Dibromomethane	0.1557	0.1666	53.51	50	7	
# Bromodichloromethane	0.2977	0.3410	57.28	50	15	#
2-Nitropropane	2.5666	4.1548	143.02	100	43	<-
# cis-1,3-Dichloropropene	0.4014	0.4503	56.09	50	12	#
# 4-Methyl-2-pentanone	0.2455	0.2564	104.44	100	4	#
# Toluene	0.8926	0.9804	54.92	50	10	#
# trans-1,3-Dichloropropene	0.4745	0.5376	56.65	50	13	#
Ethyl Methacrylate	0.4488	0.4642	51.71	50	3	
# 1,1,2-Trichloroethane	0.3122	0.3233	51.77	50	4	#
# Tetrachloroethene	0.3588	0.4246	59.17	50	18	#
1,3-Dichloropropane	0.5498	0.5686	51.71	50	3	
# 2-Hexanone	0.2347	0.2432	103.61	100	4	#
# Dibromochloromethane	0.3077	0.3593	58.38	50	17	#
# 1,2-Dibromoethane	0.3077	0.3208	52.13	50	4	#
# Chlorobenzene	1.0245	1.1276	55.03	50	10	#
1,1,1,2-Tetrachloroethane	0.3179	0.3765	59.21	50	18	
# Ethylbenzene	1.6729	1.9293	57.66	50	15	#
# m+p-Xylene	0.6600	0.7743	117.31	100	17	#
# o-Xylene	0.6465	0.7537	58.29	50	17	#

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date: 07/13/16 Time: 07:32

Lab File ID: al13c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Styrene	1.0429	1.2291	58.93	50	18	#
# Bromoform	0.1925	0.2212	50.30	50	1	#
# Isopropylbenzene	1.6699	1.9121	57.25	50	15	#
Cyclohexanone	0.7254	0.8253	711.05	625	14	
# 1,1,2,2-Tetrachloroethane	0.8176	0.7987	48.85	50	-2	#
Bromobenzene	0.8348	0.8986	53.82	50	8	
trans-1,4-Dichloro-2-butene	0.2291	0.2348	128.06	125	2	
1,2,3-Trichloropropane	0.2358	0.2312	49.02	50	-2	
n-Propylbenzene	3.8484	4.2175	54.80	50	10	
2-Chlorotoluene	0.7680	0.8527	55.51	50	11	
1,3,5-Trimethylbenzene	2.8163	3.0846	54.76	50	10	
4-Chlorotoluene	0.8067	0.8905	55.19	50	10	
tert-Butylbenzene	0.5920	0.6529	55.14	50	10	
Pentachloroethane	0.4548	0.5420	59.59	50	19	
1,2,4-Trimethylbenzene	2.9367	3.2298	54.99	50	10	
sec-Butylbenzene	3.5355	3.9747	56.21	50	12	
# 1,3-Dichlorobenzene	1.5968	1.7594	55.09	50	10	#
p-Isopropyltoluene	3.1260	3.5611	56.96	50	14	
# 1,4-Dichlorobenzene	1.6526	1.8076	54.69	50	9	#
1,2,3-Trimethylbenzene	3.0765	3.3843	55.00	50	10	
Benzyl Chloride	0.2747	0.3259	48.07	50	-4	
1,3-Diethylbenzene	1.8591	2.1347	57.41	50	15	
1,4-Diethylbenzene	1.9128	2.2072	57.70	50	15	
n-Butylbenzene	1.5814	1.7767	56.17	50	12	
# 1,2-Dichlorobenzene	1.5426	1.6688	54.09	50	8	#
1,2-Diethylbenzene	1.5882	1.7965	56.56	50	13	
# 1,2-Dibromo-3-chloropropane	0.1426	0.1436	50.34	50	1	#
1,3,5-Trichlorobenzene	1.1924	1.3693	57.42	50	15	
# 1,2,4-Trichlorobenzene	1.0571	1.2112	57.29	50	15	#
Hexachlorobutadiene	0.5403	0.6642	61.47	50	23	<-
Naphthalene	2.3975	2.6975	56.26	50	13	
1,2,3-Trichlorobenzene	0.9725	1.1078	56.96	50	14	
2-Methylnaphthalene	0.9456	1.2454	44.36	50	-11	
Dibromofluoromethane	0.2289	0.2337	51.03	50	2	
Dibromofluoromethane(2)	0.2354	0.2393	50.82	50	2	

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09685 Calibration Date: 07/13/16 Time: 07:32

Lab File ID: al13c01.d Init. Calib. Date(s): 06/20/16 06/20/16

Matrix: (soil/water) SOIL Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,2-Dichloroethane-d4	0.0545	0.0539	49.48	50	-1
1,2-Dichloroethane-d4(2)	0.2631	0.2670	50.73	50	1
1,2-Dichloroethane-d4(3)	0.0345	0.0336	48.66	50	-3
Toluene-d8	1.3647	1.3586	49.78	50	0
Toluene-d8(2)	0.8772	0.8753	49.89	50	0
4-Bromofluorobenzene	0.4851	0.4852	50.01	50	0
4-Bromofluorobenzene(2)	0.3986	0.4110	51.55	50	3

Average %Drift 11

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

Lancaster Laboratories
Continuing Calibration Internal Standard Check

Initial Calibration Standards:

/chem/HP09915.i/16apr22i.b/la22i07.d
/chem/HP09915.i/16apr22i.b/la22i06.d
/chem/HP09915.i/16apr22i.b/la22i05.d
/chem/HP09915.i/16apr22i.b/la22i04.d
/chem/HP09915.i/16apr22i.b/la22i03.d
/chem/HP09915.i/16apr22i.b/la22i02.d
/chem/HP09915.i/16apr22i.b/la22i01.d

File /chem/HP09915.i/16apr22i.b/la22i03.d is Mid Level Calibration Standard used for comparison.

Current Continuing Calibration Standard:

/chem/HP09915.i/16jul17a.b/ll17c01.d

RT Summary

Internal Standard Name	File ID: ll17c01.d	ICAL RT	In Spec
t-Butyl alcohol-d10	3.999	3.990	Yes
Fluorobenzene	7.514	7.504	Yes
Chlorobenzene-d5	11.044	11.041	Yes
1,4-Dichlorobenzene-d4	12.938	12.938	Yes

A "No" indicates the retention time is greater than 30 seconds from the referenced ICAL standard.

Area Summary

Internal Standard Name	File ID: ll17c01.d	ICAL Area	Low Limit	High Limit	In Spec
t-Butyl alcohol-d10	175380	239110	119555	478220	Yes
Fluorobenzene	1095780	1288793	644396	2577586	Yes
Chlorobenzene-d5	855915	977519	488760	1955038	Yes
1,4-Dichlorobenzene-d4	468605	514202	257101	1028404	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

Comments: _____

report generated on 07/17/2016 at 18:29

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/17/16 Time: 17:21

Lab File ID: l117c01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

	COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT	
#	Dichlorodifluoromethane	0.3711	0.2878	38.77	50	-22	#<-
#	Chloromethane	0.3727	0.3246	43.55	50	-13	#
#	Vinyl Chloride	0.3517	0.3013	42.83	50	-14	#
#	Bromomethane	0.2280	0.2041	44.76	50	-10	#
#	Chloroethane	0.1924	0.1660	43.12	50	-14	#
#	Trichlorofluoromethane	0.3704	0.3306	44.62	50	-11	#
	Freon 123a	0.3072	0.2602	42.35	50	-15	
	Acrolein	2.1388	2.1368	499.52	500	0	
#	1,1-Dichloroethene	0.2189	0.1999	45.66	50	-9	#
#	1,1-Dichloroethene(2)	0.1173	0.1049	44.73	50	-11	#
#	Acetone	0.9574	0.8724	91.12	100	-9	#
#	Freon 113	0.2105	0.1948	46.27	50	-7	#
	2-Propanol	0.7342	0.5691	193.78	250	-22	<-
	Methyl Iodide	0.4065	0.3854	47.40	50	-5	
#	Carbon Disulfide	0.7352	0.6987	47.52	50	-5	#
	Allyl Chloride	0.4230	0.3972	46.95	50	-6	
#	Methyl Acetate	0.2949	0.2408	40.83	50	-18	#
#	Methylene Chloride	0.2700	0.2401	44.47	50	-11	#
	t-Butyl alcohol	1.1906	1.0828	227.36	250	-9	
	Acrylonitrile	0.1489	0.1300	43.65	50	-13	
#	trans-1,2-Dichloroethene	0.2484	0.2300	46.28	50	-7	#
#	Methyl Tertiary Butyl Ether	0.8464	0.7398	43.70	50	-13	#
	n-Hexane	0.3840	0.3229	42.05	50	-16	
#	1,1-Dichloroethane	0.4931	0.4346	44.06	50	-12	#
	di-Isopropyl ether	0.9470	0.8435	44.54	50	-11	
	2-Chloro-1,3-butadiene	0.3890	0.3832	49.26	50	-1	
	Ethyl t-butyl ether	0.8624	0.7598	44.05	50	-12	
#	cis-1,2-Dichloroethene	0.2798	0.2602	46.49	50	-7	#
#	2-Butanone	0.1917	0.1610	83.99	100	-16	#
	2,2-Dichloropropane	0.3424	0.3196	46.67	50	-7	
	Propionitrile	1.5413	1.4896	241.61	250	-3	
	Methacrylonitrile	0.1477	0.1310	110.83	125	-11	
	Bromochloromethane	0.1427	0.1357	47.56	50	-5	
	Tetrahydrofuran	1.2892	1.3101	101.62	100	2	
#	Chloroform	0.4481	0.4201	46.87	50	-6	#
#	1,1,1-Trichloroethane	0.3981	0.3479	43.70	50	-13	#

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/17/16 Time: 17:21

Lab File ID: l117c01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Cyclohexane	0.4589	0.4001	43.59	50	-13	#
# Cyclohexane(2)	0.3646	0.3268	44.82	50	-10	#
# Cyclohexane(3)	0.1327	0.1182	44.56	50	-11	#
1,1-Dichloropropene	0.3665	0.3298	44.99	50	-10	
# Carbon Tetrachloride	0.2981	0.2807	47.08	50	-6	#
Isobutyl Alcohol	0.4189	0.3829	571.37	625	-9	
# Benzene	1.0743	0.9820	45.70	50	-9	#
# 1,2-Dichloroethane	0.3974	0.3407	42.87	50	-14	#
# 1,2-Dichloroethane(2)	0.0346	0.0306	44.20	50	-12	#<-
t-Amyl methyl ether	0.7989	0.7295	45.65	50	-9	
n-Heptane	0.4255	0.3510	41.24	50	-18	
n-Butanol	0.3265	0.3032	1160.57	1250	-7	
# Trichloroethene	0.2715	0.2474	45.57	50	-9	#
# Methylcyclohexane	0.4473	0.4099	45.82	50	-8	#
# Methylcyclohexane(2)	0.2009	0.1837	45.70	50	-9	#
# 1,2-Dichloropropane	0.2958	0.2658	44.94	50	-10	#
Dibromomethane	0.1833	0.1630	44.47	50	-11	
1,4-Dioxane	0.1106	0.0990	559.60	625	-10	
Methyl Methacrylate	0.2479	0.2170	43.78	50	-12	
# Bromodichloromethane	0.3346	0.3076	45.96	50	-8	#
2-Nitropropane	0.0921	0.0833	90.46	100	-10	
2-Chloroethyl Vinyl Ether	0.2111	0.1986	47.06	50	-6	
# cis-1,3-Dichloropropene	0.4292	0.4083	47.57	50	-5	#
# 4-Methyl-2-pentanone	0.3933	0.3597	91.46	100	-9	#
# Toluene	0.8897	0.7871	44.23	50	-12	#
# trans-1,3-Dichloropropene	0.5155	0.4816	46.72	50	-7	#
Ethyl Methacrylate	0.5711	0.5136	44.97	50	-10	
# 1,1,2-Trichloroethane	0.3457	0.2981	43.12	50	-14	#
# Tetrachloroethene	0.3766	0.3379	44.86	50	-10	#
1,3-Dichloropropane	0.6122	0.5220	42.63	50	-15	
# 2-Hexanone	0.3778	0.3260	86.29	100	-14	#
# Dibromochloromethane	0.3395	0.3255	47.93	50	-4	#
# 1,2-Dibromoethane	0.3713	0.3206	43.17	50	-14	#
1-Chlorohexane	0.4991	0.4257	42.65	50	-15	
# Chlorobenzene	1.0069	0.8869	44.04	50	-12	#
1,1,1,2-Tetrachloroethane	0.3332	0.3126	46.92	50	-6	

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/17/16 Time: 17:21

Lab File ID: l117c01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

			ACTUAL	TRUE	%	
COMPOUND	RRF	RRF50	CONC.	CONC.	DRIFT	
# Ethylbenzene	1.7165	1.5393	44.84	50	-10	#
# m+p-Xylene	0.6590	0.5950	90.29	100	-10	#
# o-Xylene	0.6482	0.5941	45.83	50	-8	#
# Styrene	1.0918	1.0138	46.43	50	-7	#
# Bromoform	0.2338	0.2386	51.04	50	2	#
# Isopropylbenzene	1.6501	1.5198	46.05	50	-8	#
Bromobenzene	0.8593	0.7377	42.92	50	-14	
# 1,1,2,2-Tetrachloroethane	1.0126	0.8653	42.72	50	-15	#
1,2,3-Trichloropropane	0.2925	0.2370	40.52	50	-19	
trans-1,4-Dichloro-2-butene	0.1350	0.2247	153.35	125	23	<-
n-Propylbenzene	3.8422	3.3295	43.33	50	-13	
2-Chlorotoluene	0.7793	0.6755	43.34	50	-13	
4-Chlorotoluene	0.8229	0.7035	42.75	50	-15	
1,3,5-Trimethylbenzene	2.7215	2.3934	43.97	50	-12	
tert-Butylbenzene	0.5633	0.4951	43.95	50	-12	
Pentachloroethane	0.4650	0.4433	47.66	50	-5	
1,2,4-Trimethylbenzene	2.8300	2.4592	43.45	50	-13	
sec-Butylbenzene	3.4490	3.0076	43.60	50	-13	
# 1,3-Dichlorobenzene	1.6166	1.3736	42.49	50	-15	#
p-Isopropyltoluene	2.9997	2.6427	44.05	50	-12	
# 1,4-Dichlorobenzene	1.6889	1.4107	41.76	50	-16	#
1,2,3-Trimethylbenzene	2.9595	2.6064	44.03	50	-12	
Benzyl Chloride	1.7568	1.6543	39.66	50	-21	<-
1,3-Diethylbenzene	1.8037	1.6059	44.52	50	-11	
1,4-Diethylbenzene	1.8811	1.6448	43.72	50	-13	
# 1,2-Dichlorobenzene	1.6025	1.3480	42.06	50	-16	#
n-Butylbenzene	1.5350	1.3001	42.35	50	-15	
1,2-Diethylbenzene	1.5385	1.3554	44.05	50	-12	
# 1,2-Dibromo-3-chloropropane	0.1957	0.1699	43.40	50	-13	#
1,3,5-Trichlorobenzene	1.2753	1.0737	42.10	50	-16	
# 1,2,4-Trichlorobenzene	1.2637	1.0270	40.64	50	-19	#
Hexachlorobutadiene	0.5397	0.4219	39.09	50	-22	<-
Naphthalene	3.4044	2.8108	41.28	50	-17	
1,2,3-Trichlorobenzene	1.1911	0.9579	40.21	50	-20	
2-Methylnaphthalene	2.1225	1.5247	35.92	50	-28	<-
Dibromofluoromethane	0.2375	0.2408	50.68	50	1	

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP09915 Calibration Date: 07/17/16 Time: 17:21

Lab File ID: l117c01.d Init. Calib. Date(s): 04/22/16 04/22/16

Matrix: (soil/water) WATER Level: (low/med) LOW GC Column: Rxi-624Sil .25

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
Dibromofluoromethane(2)	0.2432	0.2446	50.30	50	1
1,2-Dichloroethane-d4	0.0600	0.0595	49.58	50	-1
1,2-Dichloroethane-d4(2)	0.3073	0.2976	48.41	50	-3
1,2-Dichloroethane-d4(3)	0.0381	0.0374	49.18	50	-2
Toluene-d8	1.3088	1.2840	49.05	50	-2
Toluene-d8(2)	0.8522	0.8439	49.51	50	-1
4-Bromofluorobenzene	0.4843	0.4804	49.59	50	-1
4-Bromofluorobenzene(2)	0.4121	0.4238	51.42	50	3

Average %Drift 11

Compounds with required minimum RRF.
All compounds must meet a maximum % Drift of 20.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD94___

Lab File ID (Standard): al13c01.d Date Analyzed: 07/13/16

Instrument ID: HP09685 Time Analyzed: 07:32

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	89829	3.952	1157082	7.450	861112	11.008	470565	12.919
UPPER LIMIT	179658	4.452	2314164	7.950	1722224	11.508	941130	13.419
LOWER LIMIT	44914	3.452	578541	6.950	430556	10.508	235282	12.419
LAB SAMPLE ID								
01 VBLKA48	83164	3.970	1103328	7.456	803107	11.014	398175	12.919
02 LCSA48	106964	3.951	1188417	7.449	874073	11.008	467247	12.919
03 LCDA48	111699	3.964	1190646	7.450	868728	11.008	464393	12.919
04 8468616	105744	3.952	1100990	7.450	774051	11.008	370313	12.919
05 8468355	79962	3.964	1109678	7.456	782743	11.014	349001	12.919
06 8471054	37243 *	3.964	1014454	7.456	634380	11.015	205098 *	12.919
07 8471058	10651 *	3.958	164575*	7.456	107244 *	11.014	29720 *	12.925
08 8471041	23988 *	3.964	461073*	7.456	312023 *	11.015	106920 *	12.919
09 8471045	39420 *	3.958	1032342	7.456	666564	11.015	223846 *	12.919
10 8471070	45145	3.964	982807	7.456	645849	11.015	233818 *	12.919
11 8471074	53467	3.976	969526	7.456	607714	11.014	206593 *	12.918
12 8471037	57745	3.964	992251	7.450	676791	11.014	281226	12.919
13 8471041RE	46478	3.964	532049*	7.450	385119 *	11.008	159458 *	12.919
14 8471062	42973 *	3.958	984467	7.450	715690	11.008	316470	12.919
15 8471066	51432	3.982	937145	7.456	605833	11.014	208913 *	12.919

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_DWD94___

Lab File ID (Standard): ll17c01.d Date Analyzed: 07/17/16

Instrument ID: HP09915 Time Analyzed: 17:21

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1(TBA)		IS2(FBZ)		IS3(CBZ)		IS4(DCB)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	175380	3.999	1095780	7.514	855915	11.044	468605	12.938
UPPER LIMIT	350760	4.499	2191560	8.014	1711830	11.544	937210	13.438
LOWER LIMIT	87690	3.499	547890	7.014	427958	10.544	234302	12.438
LAB SAMPLE ID								
01 LCSL35	174366	3.999	1068546	7.514	827369	11.044	447666	12.938
02 VBLKL35	144945	4.006	1007488	7.514	783060	11.044	419764	12.938
03 MDL0.5 - MD	223623	3.999	1268027	7.510	943406	11.041	502978	12.938
04 8471033	208576	3.996	1263843	7.507	952030	11.041	494153	12.938
05 8472643	153782	4.018	1013670	7.520	788558	11.044	428261	12.938
06 8473236	151412	4.002	989285	7.513	763984	11.044	414557	12.938
07 8473237	156830	4.009	1014354	7.520	777622	11.044	418619	12.938
08 8474721	155285	4.012	975592	7.517	752973	11.044	409865	12.938
09 8475459	150069	4.006	981496	7.514	753180	11.044	402776	12.938
10 8475451	152943	4.022	985251	7.517	756332	11.044	404072	12.938
11 8475454	160040	4.015	989937	7.513	762938	11.044	408618	12.938
12 8475455	154233	4.002	971505	7.514	746784	11.044	400953	12.938
13 8475456	152294	4.002	982636	7.514	759655	11.044	407733	12.938
14 8475457	149020	4.012	983213	7.517	758502	11.044	408595	12.938
15 8473234	152252	4.018	995271	7.520	758562	11.044	408930	12.938
16 8473235	146947	4.015	956052	7.517	738705	11.044	393541	12.938
17 8469983DL	143508	4.015	976065	7.517	748724	11.041	405734	12.938
18 8474658	149184	4.012	989881	7.517	774431	11.044	412044	12.938

IS1 (TBA)=t-Butyl alcohol-d10
IS2 (FBZ)=Fluorobenzene
IS3 (CBZ)=Chlorobenzene-d5
IS4 (DCB)=1,4-Dichlorobenzene-d4

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

Preparation and Run Logs

Volatiles by GC/MS

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09685 **HP #22**

Data Directory Path is - d:\data\16JUN20A\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	AU20T01.D	BFB50NG	06/20/2016	08:05		
JKH09052	AU20X01.D	BLK	06/20/2016	08:20		
JKH09052	AU20I01.D	VSTD300	06/20/2016	08:48		
JKH09052	AU20I02.D	VSTD100	06/20/2016	09:12		
JKH09052	AU20I03.D	VSTD050	06/20/2016	10:23		
JKH09052	AU20I04.D	VSTD020	06/20/2016	10:49		
JKH09052	AU20I05.D	VSTD010	06/20/2016	11:14		
JKH09052	AU20I06.D	VSTD004	06/20/2016	12:06		
JKH09052	AU20I07.D	VSTD001	06/20/2016	12:32		
JKH09052	AU20M01.D	VSTD0.5	06/20/2016	12:58		
JKH09052	AU20V01.D	LCSAICVC	06/20/2016	13:30		
jkh09052	AU20L01.D	LCSA26	06/20/2016	14:36	A161721AA	
jkh09052	AU20L02.D	LCDA26	06/20/2016	14:59	A161721AA	
jkh09052	AU20B01.D	VBLKA26	06/20/2016	15:21	A161721AA	
jkh09052	AU20S09.D	8416938	06/20/2016	15:58	A161721AA	
jkh09052	AU20X02.D	VBLKA26	06/20/2016	16:25	A161721AA	
jkh09052	AU20X03.D	VBLKA26	06/20/2016	16:48	A161721AA	
jkh09052	AU20S03.D	8416934	06/20/2016	17:33	A161721AA	
jkh09052	AU20S04.D	8416937	06/20/2016	17:55	A161721AA	
jkh09052	AU20S05.D	8416945	06/20/2016	18:18	A161721AA	
jkh09052	AU20S06.D	8416946	06/20/2016	18:41	A161721AA	
jkh09052	AU20S07.D	8419253	06/20/2016	19:04	A161721AA	
jkh09052	AU20S08.D	8414856	06/20/2016	19:26	A161721AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09685 **HP #22**

Data Directory Path is - d:\data\16jul13a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
jkh09052	AL13T01.D	BFB 50 NG	07/13/2016	06:52	A161901AA	
JKH09052	AL13X00.D	VBLKA48	07/13/2016	07:08	A161951AA	
JKH09052	AL13C01.D	VSTD050	07/13/2016	07:32	A161951AA	
JKH09052	AL13X01.D	VBLKA48	07/13/2016	07:54	A161951AA	
JKH09052	AL13B01.D	VBLKA48	07/13/2016	08:17	A161951AA	
JKH09052	AL13L01.D	LCSA48	07/13/2016	09:04	A161951AA	
JKH09052	AL13L02.D	LCDA48	07/13/2016	09:29	A161951AA	
JKH09052	AL13L03.D	LCDA48	07/13/2016	09:57	A161951AA	
JKH09052	AL13L04.D	LCSA48	07/13/2016	10:59	A161951AA	
JKH09052	AL13L05.D	LCDA48	07/13/2016	11:25	A161951AA	
JKH09052	AL13S03.D	8468616	07/13/2016	12:07	A161951AA	
JKH09052	AL13S04.D	8468355	07/13/2016	12:30	A161951AA	
JKH09052	AL13S05.D	8471037	07/13/2016	12:53	A161951AA	
JKH09052	AL13S06.D	8471054	07/13/2016	13:15	A161951AA	
JKH09052	AL13S07.D	8471058	07/13/2016	13:38	A161951AA	
JKH09052	AL13S08.D	8471041	07/13/2016	14:00	A161951AA	
JKH09052	AL13S09.D	8471045	07/13/2016	14:23	A161951AA	
JKH09052	AL13S10.D	8471062	07/13/2016	14:45	A161951AA	
JKH09052	AL13S11.D	8471066	07/13/2016	15:08	A161951AA	
JKH09052	AL13S12.D	8471070	07/13/2016	15:31	A161951AA	
JKH09052	AL13S13.D	8471074	07/13/2016	15:53	A161951AA	
JKH09052	AL13S14.D	8471037	07/13/2016	16:16	A161951AA	
JKH09052	AL13S15.D	8471058RE	07/13/2016	16:38	A161951AA	
JKH09052	AL13S16.D	8471041RE	07/13/2016	17:28	A161951AA	
JKH09052	AL13S17.D	8471062RE	07/13/2016	17:50	A161951AA	
JKH09052	AL13S18.D	8471066	07/13/2016	18:13	A161951AA	

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09915 **HP #23**

Data Directory Path is - d:\data\16APR22I\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
BWK03231	LA22T01.D	50NGBFB	04/22/2016	09:13		
BWK03231	LA22X01.D	BLK	04/22/2016	09:33		
BWK03231	LA22I01.D	VSTD300	04/22/2016	09:55		
BWK03231	LA22I02.D	VSTD100	04/22/2016	10:17		
BWK03231	LA22I03.D	VSTD050	04/22/2016	10:39		
BWK03231	LA22I04.D	VSTD020	04/22/2016	11:01		
BWK03231	LA22I05.D	VSTD010	04/22/2016	11:23		
BWK03231	LA22I06.D	VSTD004	04/22/2016	11:45		
BWK03231	LA22I07.D	VSTD001	04/22/2016	12:07		
BWK03231	LA22M01.D	MDL0.5	04/22/2016	12:29		
BWK03231	LA22V01.D	LCS01	04/22/2016	12:51		
BWK03231	LA22X02.D	BLK	04/22/2016	13:43		
BWK03231	LA22I11.D	VSTD300	04/22/2016	14:05		
BWK03231	LA22I12.D	VSTD100	04/22/2016	14:27		
BWK03231	LA22I13.D	VSTD050	04/22/2016	14:49		
BWK03231	LA22I14.D	VSTD020	04/22/2016	15:11		
BWK03231	LA22I15.D	VSTD010	04/22/2016	15:33		
BWK03231	LA22I16.D	VSTD004	04/22/2016	15:55		
BWK03231	LA22M02.D	MDL001	04/22/2016	16:17		
BWK03231	LA22V02.D	LCS02	04/22/2016	16:39		

Lancaster Laboratories
Volatiles
Runlog for Agilent GC/MS System HP09915 **HP #23**

Data Directory Path is - d:\data\16JUL17A\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
CGT03258	LL17T01.D	50NGBFB	07/17/2016	16:37		
CGT03258	LL17B00.D	VBLKL35	07/17/2016	17:00	L161991AA	
CGT03258	LL17C01.D	VSTD050	07/17/2016	17:21	L161991AA	
CGT03258	LL17L01.D	LCSL35	07/17/2016	17:43	L161991AA	
CGT03258	LL17B01.D	VBLKL35	07/17/2016	18:05	L161991AA	
CGT03258	LL17M01.D	MDL0.5	07/17/2016	19:01	L161991AA	
CGT03258	LL17S01.D	8471033	07/17/2016	20:19	L161991AA	
CGT03258	LL17S02.D	8472643	07/17/2016	20:41	L161991AA	
CGT03258	LL17S03.D	8473236	07/17/2016	21:02	L161991AA	
CGT03258	LL17S04.D	8473237	07/17/2016	21:24	L161991AA	
CGT03258	LL17S05.D	8474721	07/17/2016	21:46	L161991AA	
CGT03258	LL17S06.D	8475383	07/17/2016	22:08	L161991AA	
CGT03258	LL17S07.D	8475459	07/17/2016	22:30	L161991AA	
CGT03258	LL17S08.D	8475451	07/17/2016	22:51	L161991AA	
CGT03258	LL17S09.D	8475452MS	07/17/2016	23:13	L161991AA	
CGT03258	LL17S10.D	8475453MSD	07/17/2016	23:35	L161991AA	
CGT03258	LL17S11.D	8475454	07/17/2016	23:57	L161991AA	
CGT03258	LL17S12.D	8475455	07/18/2016	00:19	L161991AA	
CGT03258	LL17S13.D	8475456	07/18/2016	00:40	L161991AA	
CGT03258	LL17S14.D	8475457	07/18/2016	01:02	L161991AA	
CGT03258	LL17S15.D	8473234	07/18/2016	01:24	L161991AA	
CGT03258	LL17S16.D	8473235	07/18/2016	01:46	L161991AA	
CGT03258	LL17S17.D	8469983DL	07/18/2016	02:08	L161991AA	10
CGT03258	LL17S18.D	8474658	07/18/2016	02:29	L161991AA	10
CGT03258	LL17S19.D	8474658DL	07/18/2016	02:51	L161991AA	100
CGT03258	LL17S20.D	8475384	07/18/2016	03:13	L161991AA	50
CGT03258	LL17S21.D	8475384DL	07/18/2016	03:35	L161991AA	500

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VOA Prep Summary by SDG: DWD94

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
8471037	150A	07320	16691580	Y	07/11/16 09:00	07/12/16 22:09	32.48 g	33.92 g	1.44 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471037	150B	07320	16691579	N	07/11/16 09:00	07/12/16 22:09	31.54 g	33.52 g	1.98 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471037	169A	07578	16691210	N	07/11/16 09:00	07/12/16 22:01	29.86 g	32.68 g	2.82 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471041	150A	07320	16691574	N	07/11/16 10:00	07/12/16 22:09	32.27 g	34.75 g	2.48 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471041	150B	07320	16691573	Y	07/11/16 10:00	07/12/16 22:09	32.49 g	35.59 g	3.10 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471041	169A	07578	16691208	N	07/11/16 10:00	07/12/16 22:03	29.83 g	32.46 g	2.63 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471045	150A	07320	16691540	N	07/11/16 11:00	07/12/16 22:10	32.59 g	33.75 g	1.16 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471045	150B	07320	16691532	Y	07/11/16 11:00	07/12/16 22:10	32.54 g	36.14 g	3.60 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471045	169A	07578	16691211	N	07/11/16 11:00	07/12/16 21:51	29.65 g	32.05 g	2.40 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471054	150A	07320	16691571	N	07/11/16 12:00	07/12/16 22:09	32.51 g	35.30 g	2.79 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471054	150B	07320	16691572	Y	07/11/16 12:00	07/12/16 22:09	32.46 g	35.36 g	2.90 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471054	169A	07578	16691207	N	07/11/16 12:00	07/12/16 22:04	29.60 g	31.35 g	1.75 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471058	150A	07320	16691565	N	07/11/16 13:00	07/12/16 22:09	32.47 g	34.91 g	2.44 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471058	150B	07320	16691566	Y	07/11/16 13:00	07/12/16 22:09	32.45 g	35.16 g	2.71 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471058	169A	07578	16691218	N	07/11/16 13:00	07/12/16 22:06	29.65 g	32.49 g	2.84 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471062	150A	07320	16691575	N	07/11/16 14:00	07/12/16 22:09	32.40 g	34.86 g	2.46 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471062	150B	07320	16691581	Y	07/11/16 14:00	07/12/16 22:09	32.44 g	33.05 g	0.61 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471062	169A	07578	16691202	N	07/11/16 14:00	07/12/16 22:08	29.60 g	32.60 g	3.00 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471066	150A	07320	16691598	N	07/11/16 15:00	07/12/16 22:10	32.53 g	36.22 g	3.69 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471066	150B	07320	16691597	Y	07/11/16 15:00	07/12/16 22:10	32.07 g	35.40 g	3.33 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471066	169A	07578	16691212	N	07/11/16 15:00	07/12/16 21:54	29.56 g	33.33 g	3.77 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8471070	150A	07320	16691586	N	07/11/16 16:00	07/12/16 22:10	32.44 g	32.46 g	0.02 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471070	150B	07320	16691585	Y	07/11/16 16:00	07/12/16 22:09	32.39 g	35.75 g	3.36 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471070	169A	07578	16691209	N	07/11/16 16:00	07/12/16 21:58	29.75 g	33.09 g	3.34 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

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VOA Prep Summary by SDG: DWD94

21 - GC/MS Volatiles

Sample Number	Bottle Code	Prep Analysis#	Vial ID	Used for Analysis?	Collected	Prepared	Initial Weight	Final Weight	Net soil weight	Weight requirement	Meets require-ments?	Preserv. lot #	Preservative (volume)	Final Extraction Vol (mL)	Problem Codes
8471074	150A	07320	16691592	Y	07/11/16 17:00	07/12/16 22:10	32.50 g	36.00 g	3.50 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471074	150B	07320	16691591	N	07/11/16 17:00	07/12/16 22:10	32.44 g	35.54 g	3.10 g	4.50 g - 5.50 g	N	9-08-15	DI Water (5 mL)	5.000	A,D
8471074	169A	07578	16691201	N	07/11/16 17:00	07/12/16 21:56	29.76 g	33.08 g	3.32 g	4.50 g - 5.50 g	N	1616701	MeOH w/surrogate (5 mL)	5.000	A,D
8480313	014A	07579	16692704	N	07/15/16 14:00	07/15/16 14:00	29.64 g	34.71 g	5.07 g	4.50 g - 5.50 g	Y	15080109	MeOH (5 mL)	5.000	
8480313	093A	02392	16692707	Y	07/15/16 14:00	07/15/16 14:00	33.39 g	38.52 g	5.13 g	4.50 g - 5.50 g	Y	2EL0328	NaHSO4 (5 mL)	5.000	
8480313	093B	02392	16692706	N	07/15/16 14:00	07/15/16 14:00	32.98 g	38.48 g	5.50 g	4.50 g - 5.50 g	Y	2EL0328	NaHSO4 (5 mL)	5.000	

Final Extraction Vol (mL) = Preservative Vol + Added MeOH (if applicable)

KEY to problem codes:

A = wt. does not meet requirements B = vial leaked C# where # = volume of MeOH added in mL due to sample not covered/matrix (lot #)
D = sampler not full E = effervescence observed F = pH >= 2 G = headspace in container

Semivolatiles by GC/MS Data

Case Narrative/Conformance Summary

Semivolatiles by GC/MS

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8471034	DU-1-13-A		X	5	
8471038	DU-1-13-B		X	5	
8471042	DU-1-13-C		X	1	
8471046	DU-1-14-A		X	1	
8471055	DU-1-14-B		X	1	
8471059	DU-1-14-C		X	1	
8471063	DU-1-1-A		X	5	
8471067	DU-1-1-B		X	5	
8471071	DU-1-1-C		X	5	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: 16205SLC026 (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)
The recovery(ies) for the following analyte(s) in the LCS is below the acceptance window:
2-Chlorobenzalmalononitrile

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

(Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071: Analysis: 10726)
The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

SAMPLE ANALYSIS:

Reporting limits were raised due to interference from the sample matrix.

No other problems were encountered with the analysis of the samples.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Semivolatiles by GC/MS

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Quality Control Reference List
GC/MS Semivolatiles

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Fraction: Semivolatiles by GC/MS

Analysis	Batch Number	Sample Number	Analysis Date
SVOA 8270D (microwave)	16205SLC026	SBLKLC205	07/26/2016 22:37:00
		205LCLCS	07/26/2016 23:01:00
		205LCLCS1	07/26/2016 23:26:00
		205LCLCSD1	07/26/2016 23:51:00
		205LCLCS2	07/27/2016 00:15:00
		205LCLCSD2	07/27/2016 00:40:00
		8471034	07/27/2016 02:18:00
		8471038	07/27/2016 02:43:00
		8471042	07/27/2016 03:08:00
		8471046	07/27/2016 03:32:00
		8471055	07/27/2016 03:57:00
		8471059	07/27/2016 09:21:00
		8471063	07/27/2016 09:46:00
		8471067	07/27/2016 10:11:00
		8471071	07/27/2016 10:37:00

Fraction: Semivolatiles by GC/MS

10726: SVOA 8270D (microwave) Analyte Name	Default MDL	Default LOQ	Units
2-Chlorobenzaldehyde	33	170	ug/kg
Quinoline	33	170	ug/kg
2-Chlorobenzalmalononitrile	170	500	ug/kg

Quality Control Summary
Method Blank
GC/MS Semivolatiles
SDG: DWD94
Matrix: SOLID

Fraction: Semivolatiles by GC/MS

16205SLC026 / SBLKLC205 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
2-Chlorobenzaldehyde	07/26/16	N.D.	ug/kg	33	170
Quinoline	07/26/16	N.D.	ug/kg	33	170
2-Chlorobenzalmalononitrile	07/26/16	N.D.	ug/kg	170	500

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Quality Control Summary
Surrogates
GC/MS Semivolatiles
SDG: DWD94
Matrix: SOLID

Fraction: Semivolatiles by GC/MS

16205SLC026	2,4,6-Tribromophenol		2-Fluorobiphenyl		2-Fluorophenol		Nitrobenzene-d5		Phenol-d6		Terphenyl-d14	
	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg	Spike Added	6666.667 ug/kg	Spike Added	3333.333 ug/kg
Sample	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits	% Recovery	Limits
SBLKLC205	117	35 - 136	98	63 - 117	93	57 - 126	89	54 - 123	86	58 - 122	103	59 - 129
205LCLCS	124	35 - 136	97	63 - 117	101	57 - 126	91	54 - 123	96	58 - 122	100	59 - 129
205LCLCSD2	125	35 - 136	100	63 - 117	98	57 - 126	92	54 - 123	90	58 - 122	105	59 - 129
8471034	90	35 - 136	80	63 - 117	78	57 - 126	71	54 - 123	76	58 - 122	78	59 - 129
8471038	83	35 - 136	77	63 - 117	76	57 - 126	73	54 - 123	73	58 - 122	77	59 - 129
8471042	101	35 - 136	97	63 - 117	98	57 - 126	89	54 - 123	92	58 - 122	97	59 - 129
8471046	107	35 - 136	100	63 - 117	98	57 - 126	92	54 - 123	92	58 - 122	99	59 - 129
8471055	105	35 - 136	99	63 - 117	97	57 - 126	91	54 - 123	91	58 - 122	96	59 - 129
8471059	87	35 - 136	96	63 - 117	90	57 - 126	92	54 - 123	75	58 - 122	93	59 - 129
8471063	77	35 - 136	65	63 - 117	77	57 - 126	82	54 - 123	62	58 - 122	81	59 - 129
8471067	80	35 - 136	65	63 - 117	75	57 - 126	80	54 - 123	59	58 - 122	77	59 - 129
8471071	99	35 - 136	77	63 - 117	82	57 - 126	90	54 - 123	64	58 - 122	92	59 - 129

GC/MS Semivolatiles

Fraction: Semivolatiles by GC/MS

LCS: 205LCLCS	Batch: **16205SLC026** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Quinoline	1666.67	1701.84	NA	102	NA	80-119	NA	NA

LCS: 205LCLCS1 LCSD: 205LCLCSD1	Batch: **16205SLC026** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
2-Chlorobenzaldehyde	1666.67	1600.59	1567.97	96	94	58-114	2	30

LCS: 205LCLCS2 LCSD: 205LCLCSD2	Batch: **16205SLC026** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
2-Chlorobenzalmalononitrile	1666.67	1082.25	1304.89	65 *	78	70-130	19	30

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0890.d DFTPP Injection Date: 07/20/16

Instrument ID: HP11165 DFTPP Injection Time: 20:26

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	50.3
68	Less than 2.0% of mass 69	0.93 (1.59)1
69	Mass 69 relative abundance	58.5
70	Less than 2.0% of mass 69	0.44 (0.75)1
127	10.0 - 80.00% of mass 198	56.7
197	Less than 2.0% of mass 198	0.19
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.19
275	10.0 - 60.0% of mass 198	22.2
365	Greater than 1.00% of mass 198	2.12
441	Present, and less than mass 443	7.94
442	Greater than 50.00% of mass 198	50.4
443	15.00 - 24.00% of mass 442	9.23 (18.3)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1886 - SSTD30	gg0891.d	07/20/16	20:46
02	STD1886 - SSTD120	gg0892.d	07/20/16	21:24
03	STD1886 - SSTD80	gg0893.d	07/20/16	21:50
04	STD1886 - SSTD50	gg0894.d	07/20/16	22:18
05	STD1886 - SSTD15	gg0895.d	07/20/16	22:44
06	STD1886 - SSTD5	gg0896.d	07/20/16	23:11
07	STD1886 - SSTD1	gg0897.d	07/20/16	23:37
08	STD1886 - SSTD.5	gg0898.d	07/21/16	00:04
09	MDL1886 - SSTD00.5	gg0899.d	07/21/16	00:30
10	MDLPAH1886 - SSTD00.1	gg0900.d	07/21/16	00:56
11	ICV1376 - SSTD050	gg0901.d	07/21/16	01:23
12	BAS1166 - SSTD120	gg0903.d	07/21/16	01:49
13	BAS1166 - SSTD80	gg0904.d	07/21/16	02:16
14	BAS1166 - SSTD50	gg0905.d	07/21/16	02:43
15	BAS1166 - SSTD30	gg0906.d	07/21/16	03:09
16	BAS1166 - SSTD15	gg0907.d	07/21/16	03:36
17	BAS1166 - SSTD5	gg0908.d	07/21/16	04:02
18	BAS1166 - SSTD001	gg0909.d	07/21/16	04:29

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg0890.d DFTPP Injection Date: 07/20/16

Instrument ID: HP11165 DFTPP Injection Time: 20:26

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	50.3
68	Less than 2.0% of mass 69	0.93 (1.59)1
69	Mass 69 relative abundance	58.5
70	Less than 2.0% of mass 69	0.44 (0.75)1
127	10.0 - 80.00% of mass 198	56.7
197	Less than 2.0% of mass 198	0.19
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.19
275	10.0 - 60.0% of mass 198	22.2
365	Greater than 1.00% of mass 198	2.12
441	Present, and less than mass 443	7.94
442	Greater than 50.00% of mass 198	50.4
443	15.00 - 24.00% of mass 442	9.23 (18.3)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
19	ICVBAS0716 - SSTD050	gg0902.d	07/21/16	04:55

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1000.d DFTPP Injection Date: 07/22/16

Instrument ID: HP11165 DFTPP Injection Time: 16:25

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	46.0
68	Less than 2.0% of mass 69	0.88 (1.65)1
69	Mass 69 relative abundance	53.4
70	Less than 2.0% of mass 69	0.33 (0.63)1
127	10.0 - 80.00% of mass 198	56.0
197	Less than 2.0% of mass 198	0.0
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.38
275	10.0 - 60.0% of mass 198	24.4
365	Greater than 1.00% of mass 198	2.86
441	Present, and less than mass 443	9.14
442	Greater than 50.00% of mass 198	58.7
443	15.00 - 24.00% of mass 442	10.7 (18.3)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD30	gg1001.d	07/22/16	16:42
02	CBZ1876 - SSTD120	gg1002.d	07/22/16	17:19
03	CBZ1876 - SSTD80	gg1003.d	07/22/16	17:45
04	CBZ1876 - SSTD50	gg1004.d	07/22/16	18:11
05	CBZ1876 - SSTD30	gg1005.d	07/22/16	18:38
06	CBZ1876 - SSTD15	gg1006.d	07/22/16	19:05
07	CBZ1876 - SSTD5	gg1007.d	07/22/16	19:31
08	CBZMDL1876 - SSTD001	gg1008.d	07/22/16	19:59
09	TRG1586 - SSTD120	gg1009.d	07/22/16	20:26
10	TRG1586 - SSTD80	gg1010.d	07/22/16	20:52
11	TRG1586 - SSTD50	gg1011.d	07/22/16	21:19
12	TRG1586 - SSTD30	gg1012.d	07/22/16	21:46
13	TRG1586 - SSTD15	gg1013.d	07/22/16	22:12
14	TRG1586 - SSTD5	gg1014.d	07/22/16	22:38
15	TRGMDL1586 - SSTD001	gg1015.d	07/22/16	23:05

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1350.d DFTPP Injection Date: 07/26/16

Instrument ID: HP11165 DFTPP Injection Time: 20:58

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	41.1
68	Less than 2.0% of mass 69	0.74 (1.54)1
69	Mass 69 relative abundance	48.2
70	Less than 2.0% of mass 69	0.26 (0.55)1
127	10.0 - 80.00% of mass 198	53.1
197	Less than 2.0% of mass 198	0.34
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.53
275	10.0 - 60.0% of mass 198	23.6
365	Greater than 1.00% of mass 198	2.77
441	Present, and less than mass 443	8.74
442	Greater than 50.00% of mass 198	58.5
443	15.00 - 24.00% of mass 442	10.4 (17.8)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1886 - SSTD30	gg1351.d	07/26/16	21:14
02	CBZ1876 - SSTD50	gg1352.d	07/26/16	21:47
03	TRG1586 - SSTD50	gg1353.d	07/26/16	22:12
04	SBLKLC205	gg1354.d	07/26/16	22:37
05	205LCLCS	gg1355.d	07/26/16	23:01
06	205LCLCS1	gg1356.d	07/26/16	23:26
07	205LCLCSD1	gg1357.d	07/26/16	23:51
08	205LCLCS2	gg1358.d	07/27/16	00:15
09	205LCLCSD2	gg1359.d	07/27/16	00:40
10	8472665	gg1360.d	07/27/16	01:04
11	8472665MS	gg1361.d	07/27/16	01:29
12	8472665MSD	gg1362.d	07/27/16	01:53
13	8471034	gg1363.d	07/27/16	02:18
14	8471038	gg1364.d	07/27/16	02:43
15	8471042	gg1365.d	07/27/16	03:08
16	8471046	gg1366.d	07/27/16	03:32
17	8471055	gg1367.d	07/27/16	03:57

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1400.d DFTPP Injection Date: 07/27/16

Instrument ID: HP11165 DFTPP Injection Time: 05:14

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	42.5
68	Less than 2.0% of mass 69	0.51 (1.04)1
69	Mass 69 relative abundance	49.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	10.0 - 80.00% of mass 198	54.3
197	Less than 2.0% of mass 198	0.21
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.77
275	10.0 - 60.0% of mass 198	22.8
365	Greater than 1.00% of mass 198	2.48
441	Present, and less than mass 443	8.16
442	Greater than 50.00% of mass 198	55.2
443	15.00 - 24.00% of mass 442	11.1 (20.2)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	STD1886 - SSTD30	gg1401.d	07/27/16	05:29
02	CBZ1876 - SSTD50	gg1402.d	07/27/16	06:03
03	TRG1586 - SSTD50	gg1403.d	07/27/16	06:27
04	SBLKLA208	gg1404.d	07/27/16	06:51
05	208LALCS	gg1405.d	07/27/16	07:16
06	8486520	gg1406.d	07/27/16	07:41
07	8486520MS	gg1407.d	07/27/16	08:06
08	8486520MSD	gg1408.d	07/27/16	08:30
09	8486523	gg1409.d	07/27/16	08:55
10	8471059	gg1410.d	07/27/16	09:21
11	8471063	gg1411.d	07/27/16	09:46
12	8471067	gg1412.d	07/27/16	10:11
13	8471071	gg1413.d	07/27/16	10:37
14	8472644	gg1414.d	07/27/16	11:02
15	8472653	gg1415.d	07/27/16	11:27
16	8472657	gg1416.d	07/27/16	11:52
17	8472661	gg1417.d	07/27/16	12:17
18	8472669	gg1418.d	07/27/16	12:41

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID: gg1400.d DFTPP Injection Date: 07/27/16

Instrument ID: HP11165 DFTPP Injection Time: 05:14

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.00% of mass 198	42.5
68	Less than 2.0% of mass 69	0.51 (1.04)1
69	Mass 69 relative abundance	49.2
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	10.0 - 80.00% of mass 198	54.3
197	Less than 2.0% of mass 198	0.21
198	Base peak, 100% relative abundance	100.0
199	5.00 to 9.00% of mass 198	6.77
275	10.0 - 60.0% of mass 198	22.8
365	Greater than 1.00% of mass 198	2.48
441	Present, and less than mass 443	8.16
442	Greater than 50.00% of mass 198	55.2
443	15.00 - 24.00% of mass 442	11.1 (20.2)2

1-Value is % mass 69 2-Value is % mass of 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED

FORM V SV

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/20/16 07/21/16

Calibration Times: 20:46 00:04

JUL 21 2016

Joe Gambler
Senior Chemist

LAB FILE ID:RRF0.5 = gg0898.d RRF1 = gg0897.d RRF5 = gg0896.d RRF15 = gg0895.d
RRF30 = gg0891.d RRF50 = gg0894.d RRF80 = gg0893.d RRF120 = gg0892.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
1,4-Dioxane			0.631	0.708	0.681	0.676	0.647	0.641	0.664	4	AVG
N-Nitrosodimethylamine				1.148	1.185	1.138	1.173	1.132	1.155	2	AVG
Pyridine			1.257	1.843	1.943	2.003	1.780	1.903	1.788	15	AVG
2-Picoline			1.756	1.891	1.904	1.913	1.864	1.895	1.870	3	AVG
N-Nitrosomethylethylamine			0.806	0.902	0.890	0.902	0.865	0.866	0.872	4	AVG
Methyl methanesulfonate			0.832	0.893	0.856	0.870	0.845	0.835	0.855	3	AVG
N-Nitrosodiethylamine		0.717	0.808	0.879	0.879	0.902	0.867	0.843	0.842	7	AVG
Ethyl methanesulfonate		0.776	0.766	0.888	0.862	0.889	0.834	0.830	0.835	6	AVG
Phenol		2.107	2.357	2.668	2.553	2.600	2.477	2.417	2.454	8	AVG
Aniline		2.479	2.719	3.028	2.922	2.972	2.789	2.761	2.810	7	AVG
a-methylstyrene			1.346	1.539	1.699	1.666	1.632	1.492	1.562	8	AVG
bis(2-Chloroethyl)ether		1.926	1.738	1.929	1.842	1.832	1.787	1.786	1.834	4	AVG
2-Chlorophenol		1.295	1.438	1.589	1.533	1.582	1.528	1.527	1.499	7	AVG
1,3-Dichlorobenzene		1.486	1.524	1.629	1.547	1.571	1.508	1.498	1.538	3	AVG
1,4-Dichlorobenzene		1.644	1.541	1.679	1.585	1.617	1.551	1.526	1.592	4	AVG
Benzyl alcohol		0.829	1.002	1.095	1.239	1.226	1.209	1.099	1.100	13	AVG
1,2-Dichlorobenzene		1.431	1.477	1.553	1.526	1.550	1.479	1.461	1.497	3	AVG
Indene			2.430	2.615	2.978	2.869	2.808	2.560	2.710	8	AVG
2-Methylphenol	1.216	1.371	1.475	1.689	1.615	1.664	1.593	1.594	1.527	11	AVG
2,2'-oxybis(1-Chloropropane)		2.070	2.311	2.439	2.393	2.332	2.217	2.181	2.277	6	AVG
bis(2-Chloroisopropyl)ether		2.070	2.311	2.439	2.393	2.332	2.217	2.181	2.277	6	AVG
N-Nitrosopyrrolidine		0.781	0.886	1.063	0.988	1.015	0.978	0.969	0.954	10	AVG
Acetophenone		1.711	1.988	2.537	2.657	2.535	2.404	2.399	2.319	15	AVG
4-Methylphenol		1.458	1.729	1.813	1.920	1.961	1.875	1.833	1.798	9	AVG
Total Cresols		1.414	1.602	1.751	1.768	1.812	1.734	1.713	1.685	8	AVG
N-Nitroso-di-n-propylamine		1.312	1.444	1.614	1.543	1.559	1.481	1.434	1.484	7	AVG
N-Nitrosomorpholine			1.074	1.229	1.157	1.172	1.084	1.073	1.132	6	AVG
o-Toluidine		2.487	2.745	3.019	2.873	2.895	2.738	2.677	2.776	6	AVG
Hexachloroethane			0.560	0.631	0.615	0.623	0.612	0.597	0.606	4	AVG
Nitrobenzene		0.395	0.422	0.464	0.444	0.467	0.451	0.435	0.440	6	AVG
N-Nitrosopiperidine		0.181	0.194	0.203	0.192	0.206	0.199	0.195	0.196	4	AVG
Isophorone		0.726	0.829	0.879	0.863	0.890	0.859	0.847	0.842	7	AVG
2-Nitrophenol		0.100	0.120	0.152	0.154	0.178	0.176	0.171	0.150	20	AVG +
2,4-Dimethylphenol	0.292	0.319	0.354	0.392	0.390	0.408	0.391	0.380	0.366	11	AVG
O,O,O-Triethylphosphorothioate			0.163	0.175	0.169	0.172	0.167	0.164	0.168	3	AVG
bis(2-Chloroethoxy)methane		0.481	0.479	0.521	0.491	0.497	0.483	0.477	0.490	3	AVG
Benzoic acid			0.185	0.243	0.268	0.307	0.315	0.319	0.273	19	AVG
1,2,3,4-Tetrahydronaphthalene			0.484	0.501	0.576	0.561	0.552	0.500	0.529	7	AVG
2,4-Dichlorophenol		0.211	0.256	0.288	0.277	0.289	0.287	0.279	0.270	11	AVG
1,2,4-Trichlorobenzene			0.277	0.291	0.279	0.294	0.283	0.279	0.284	2	AVG
Naphthalene	1.153	1.033	1.016	1.081	1.050	1.067	1.037	1.012	1.056	4	AVG
4-Chloroaniline		0.407	0.449	0.478	0.464	0.477	0.457	0.449	0.454	5	AVG
2,6-Dichlorophenol		0.211	0.264	0.280	0.268	0.284	0.272	0.272	0.264	9	AVG
Hexachloropropene			0.121	0.130	0.129	0.137	0.134	0.134	0.131	4	AVG
Hexachlorobutadiene	0.145	0.132	0.131	0.139	0.137	0.142	0.140	0.137	0.138	4	AVG
Quinoline			0.730	0.758	0.717	0.744	0.711	0.694	0.726	3	AVG
Caprolactam			0.117	0.142	0.149	0.154	0.147	0.141	0.141	9	AVG
N-Nitrosodi-n-butylamine		0.322	0.368	0.401	0.399	0.414	0.396		0.383	9	AVG
4-Chloro-3-methylphenol		0.280	0.302	0.343	0.341	0.360	0.347	0.339	0.330	9	AVG
Safrole			0.251	0.275	0.266	0.279	0.270	0.272	0.269	4	AVG
2-Methylnaphthalene	0.662	0.642	0.706	0.755	0.725	0.751	0.723	0.718	0.710	6	AVG
1-Methylnaphthalene	0.676	0.616	0.654	0.688	0.662	0.686	0.658	0.647	0.661	4	AVG

+ %RSD is less than or equal to 20%; however, value rounds to 20.

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.

FORM VI SV-1

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/20/16 07/21/16

Calibration Times: 20:46 00:04

LAB FILE ID: RRF0.5 = gg0898.d RRF1 = gg0897.d RRF5 = gg0896.d RRF15 = gg0895.d
RRF30 = gg0891.d RRF50 = gg0894.d RRF80 = gg0893.d RRF120 = gg0892.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD
Hexachlorocyclopentadiene			0.199	0.225	0.236	0.236	0.234	0.218	0.225	6	AVG
1,2,4,5-Tetrachlorobenzene		0.461	0.430	0.462	0.450	0.459	0.458	0.456	0.454	2	AVG
cis-Isosafrole			0.419	0.449	0.447	0.452	0.461	0.460	0.448	3	AVG
2,4,6-Trichlorophenol		0.219	0.268	0.320	0.314	0.332	0.333	0.326	0.302	14	AVG
2,4,5-Trichlorophenol		0.216	0.286	0.361	0.360	0.364	0.369	0.367	0.332	18	AVG
trans-Isosafrole			0.427	0.477	0.469	0.486	0.476	0.476	0.468	5	AVG
Isosafrole			0.425	0.472	0.465	0.480	0.474	0.473	0.465	4	AVG
1,1'-Biphenyl		1.146	1.243	1.431	1.498	1.438	1.439	1.394	1.370	9	AVG
2-Chloronaphthalene		1.051	1.026	1.060	1.129	1.101	1.347	1.036	1.107	10	AVG
1-Chloronaphthalene		1.067	1.032	1.152	0.995	1.051	1.032	1.057	1.055	5	AVG
Diphenyl ether		0.714	0.746	0.770	0.763	0.760	0.764	0.738	0.751	3	AVG
2-Nitroaniline		0.242	0.293	0.363	0.364	0.395	0.402	0.389	0.350	17	AVG
1,4-Naphthoquinone			0.389	0.461	0.470	0.491	0.475	0.462	0.458	8	AVG
1,4-Dinitrobenzene			0.114	0.144	0.152	0.179	0.185	0.187	0.160	18	AVG
Dimethylphthalate			1.339	1.357	1.325	1.356	1.322	1.278	1.329	2	AVG
1,3-Dinitrobenzene			0.155	0.195	0.197	0.217	0.223	0.220	0.201	13	AVG
2,6-Dinitrotoluene		0.203	0.253	0.307	0.294	0.310	0.309	0.303	0.283	14	AVG
Acenaphthylene	1.418	1.512	1.582	1.755	1.700	1.736	1.715	1.667	1.636	7	AVG
3-Nitroaniline		0.209	0.291	0.342	0.337	0.356	0.356	0.348	0.320	17	AVG
Acenaphthene	1.093	1.169	1.124	1.200	1.173	1.167	1.166	1.127	1.152	3	AVG
2,4-Dinitrophenol			0.062	0.090	0.093	0.115	0.126	0.132	0.103	25	1STDEG
4-Nitrophenol			0.158	0.199	0.198	0.218	0.216	0.213	0.200	11	AVG
Pentachlorobenzene		0.454	0.383	0.411	0.396	0.404	0.405	0.397	0.407	6	AVG
2,4-Dinitrotoluene			0.303	0.386	0.383	0.411	0.412	0.401	0.382	11	AVG
2,4_2,6-Dinitrotoluenes			0.278	0.346	0.338	0.360	0.361	0.352	0.339	9	AVG
Dibenzofuran		1.671	1.614	1.693	1.624	1.654	1.629	1.579	1.638	2	AVG
1-Naphthylamine			1.190	1.338	1.336	1.334	1.330	1.271	1.300	5	AVG
2,3,4,6-Tetrachlorophenol		0.184	0.226	0.252	0.257	0.269	0.269	0.270	0.247	13	AVG
2-Naphthylamine			1.214	1.333	1.314	1.326	1.286	1.213	1.281	4	AVG
Diethylphthalate			1.218	1.345	1.270	1.320	1.303	1.264	1.287	4	AVG
Thionazin			0.241	0.240	0.228	0.237	0.231	0.250	0.238	3	AVG
Fluorene	1.279	1.304	1.337	1.426	1.370	1.372	1.366	1.318	1.346	3	AVG
4-Chlorophenyl-phenylether		0.687	0.629	0.639	0.626	0.630	0.619	0.613	0.635	4	AVG
5-Nitro-o-toluidine		0.266	0.337	0.381	0.376	0.390	0.384	0.378	0.359	12	AVG
4-Nitroaniline		0.284	0.346	0.383	0.369	0.389	0.377	0.368	0.359	10	AVG
4,6-Dinitro-2-methylphenol			0.050	0.070	0.081	0.101	0.109	0.109	0.087	28	1STDEG
N-Nitrosodiphenylamine (1)	0.497	0.537	0.604	0.644	0.646	0.671	0.666	0.651	0.614	10	AVG
NDPA as diphenylamine	0.497	0.537	0.604	0.644	0.646	0.671	0.666	0.651	0.614	10	AVG
1,2-Diphenylhydrazine		0.764	0.836	0.898	0.907	0.929	0.915	0.876	0.875	7	AVG
Tetraethyldithiopyrophosphate			0.107	0.120	0.129	0.132	0.129	0.125	0.124	7	AVG
1,3,5-Trinitrobenzene			0.031	0.045	0.050	0.071	0.075	0.078	0.058	33	1STDEG
Diallate (peak 1)			0.357	0.412	0.416	0.420	0.414	0.394	0.402	6	AVG
Phorate		0.400	0.482	0.564	0.568	0.599	0.584	0.740	0.563	19	AVG
Phenacetin		0.286	0.346	0.402	0.403	0.435	0.423	0.417	0.387	14	AVG
4-Bromophenyl-phenylether			0.166	0.176	0.174	0.180	0.179	0.177	0.176	3	AVG
Diallate (peak 2)			0.368	0.402	0.387	0.407	0.408	0.394	0.394	4	AVG
Diallate trans/cis			0.359	0.410	0.411	0.418	0.413	0.394	0.401	5	AVG
Hexachlorobenzene	0.179	0.170	0.180	0.180	0.176	0.181	0.181	0.178	0.178	2	AVG
Dimethoate			0.281	0.333	0.337	0.348	0.336	0.319	0.326	7	AVG
Pentachlorophenol			0.064	0.089	0.097	0.109	0.114	0.113	0.098	19	AVG
4-Aminobiphenyl		0.285	0.336	0.377	0.350	0.366	0.335		0.342	9	AVG
Pentachloronitrobenzene			0.058	0.069	0.066	0.074	0.072	0.070	0.068	8	AVG

(1) Cannot be separated from Diphenylamine
4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/20/16 07/21/16

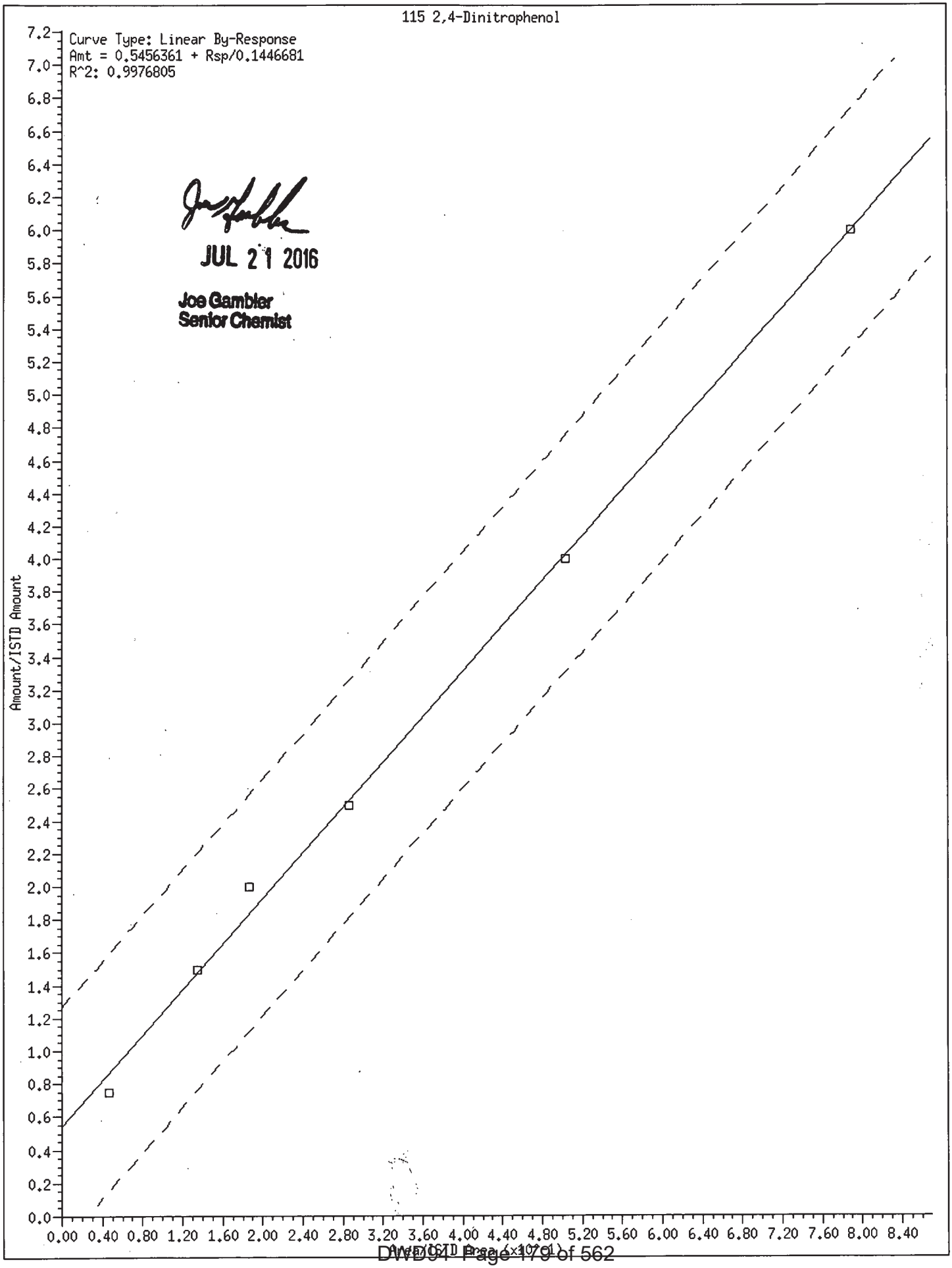
Calibration Times: 20:46 00:04

LAB FILE ID: RRF0.5 = gg0898.d RRF1 = gg0897.d RRF5 = gg0896.d RRF15 = gg0895.d
RRF30 = gg0891.d RRF50 = gg0894.d RRF80 = gg0893.d RRF120 = gg0892.d

COMPOUND	RRF0.5	RRF1	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	$\overline{RRF}$	% RSD	CAL. METHOD	
Pronamide		0.192	0.255	0.294	0.292	0.324	0.311	0.310	0.282	16	AVG	
Dinoseb			0.063	0.092	0.108	0.141	0.151	0.159	0.119	32	1STDEG	
Phenanthrene	1.098	1.135	1.038	1.069	1.078	1.114	1.090	1.058	1.085	3	AVG	
Anthracene	0.908	0.929	0.998	1.067	1.080	1.119	1.107	1.074	1.035	8	AVG	
Carbazole		0.863	0.956	1.037	1.037	1.094	1.062	1.026	1.011	8	AVG	
Methyl parathion			0.147	0.198	0.228	0.251	0.240	0.229	0.216	18	AVG	
Di-n-butylphthalate			1.009	1.143	1.200	1.269	1.247	1.202	1.178	8	AVG	
Parathion			0.087	0.123	0.138	0.159	0.158	0.156	0.137	21	1STDEG	
4-Nitroquinoline-1-oxide				0.056	0.075	0.095	0.100	0.103	0.086	23	1STDEG	
Octachlorostyrene			0.059	0.059	0.066	0.066	0.066	0.061	0.063	6	AVG	
Isodrin		0.085	0.100	0.111	0.111	0.119	0.117	0.113	0.108	11	AVG	
Fluoranthene	0.945	0.936	1.011	1.134	1.132	1.208	1.177	1.149	1.086	10	AVG	
Benzidine			0.539	0.663	0.716	0.718	0.675	0.627	0.656	10	AVG	
Pyrene	1.118	1.142	1.053	1.077	1.101	1.128	1.120	1.088	1.104	3	AVG	
p-Dimethylaminoazobenzene		0.106	0.143	0.170	0.189	0.201	0.203	0.200	0.173	21	1STDEG	
Chlorobenzilate		0.162	0.244	0.296	0.308	0.329	0.327	0.315	0.283	21	1STDEG	
3,3'-Dimethylbenzidine			0.406	0.501	0.584	0.594	0.582	0.568	0.539	14	AVG	
Butylbenzylphthalate			0.394	0.467	0.495	0.518	0.513	0.494	0.480	10	AVG	
2-Acetylaminofluorene			0.196	0.305	0.345	0.406	0.405	0.408	0.344	24	1STDEG	
3,3'-Dichlorobenzidine			0.285	0.318	0.340	0.373	0.366	0.356	0.340	10	AVG	
4,4'-Methylenebis(2-chloroanil			0.144	0.167	0.175	0.193	0.191	0.185	0.176	10	AVG	
Benzo(a)anthracene	0.645	0.751	0.859	0.995	0.983	1.039	1.039	1.009	0.915	16	AVG	
Chrysene	0.795	0.865	0.907	0.913	0.915	0.960	0.931	0.903	0.899	6	AVG	
bis(2-Ethylhexyl)phthalate			0.526	0.627	0.661	0.708	0.706	0.683	0.652	11	AVG	
6-Methylchrysene			0.546	0.627	0.652	0.692	0.687	0.672	0.646	8	AVG	
Di-n-octylphthalate			0.944	1.342	1.405	1.631	1.641	1.636	1.433	19	AVG	
Benzo(b)fluoranthene	0.793	0.932	1.019	1.252	1.241	1.251	1.277	1.358	1.141	18	AVG	
7,12-Dimethylbenz[a]anthracene		0.348	0.458	0.566	0.571	0.635	0.629	0.623	0.547	20	AVG	+
Benzo(k)fluoranthene	0.907	1.005	1.183	1.237	1.206	1.347	1.310	1.195	1.174	13	AVG	
Benzo(a)pyrene	0.878	0.896	0.939	1.096	1.112	1.191	1.203	1.178	1.061	13	AVG	
3-Methylcholanthrene		0.317	0.383	0.444	0.455	0.501	0.499	0.502	0.443	16	AVG	
Dibenz(a,h)acridine			0.656	0.781	0.797	0.877	0.886	0.880	0.813	11	AVG	
Dibenz(a,j)acridine			0.729	0.841	0.856	0.932	0.930	0.902	0.865	9	AVG	
Indeno(1,2,3-cd)pyrene	0.741	0.773	1.008	1.138	1.149	1.219	1.215	1.178	1.053	18	AVG	
Dibenz(a,h)anthracene	0.602	0.697	0.862	0.969	0.987	1.036	1.031	1.015	0.900	18	AVG	
Benzo(g,h,i)perylene	0.600	0.705	0.834	0.925	0.939	0.996	1.001	0.977	0.872	17	AVG	
Total PAHs	0.903	0.940	0.964	1.118	1.122	1.187	1.200	1.186	1.078	11	AVG	
2-Fluorophenol			1.382	1.522	1.491	1.535	1.449	1.441	1.470	4	AVG	
Phenol-d6			1.919	2.200	2.124	2.133	2.065	2.034	2.079	5	AVG	
Nitrobenzene-d5			0.380	0.435	0.424	0.444	0.431	0.420	0.422	5	AVG	
2-Fluorobiphenyl			1.208	1.283	1.243	1.250	1.254	1.203	1.240	2	AVG	
2,4,6-Tribromophenol			0.111	0.121	0.129	0.132	0.133	0.136	0.127	7	AVG	
Terphenyl-d14			0.677	0.728	0.743	0.775	0.763	0.740	0.738	5	AVG	
								Average %RSD	9			

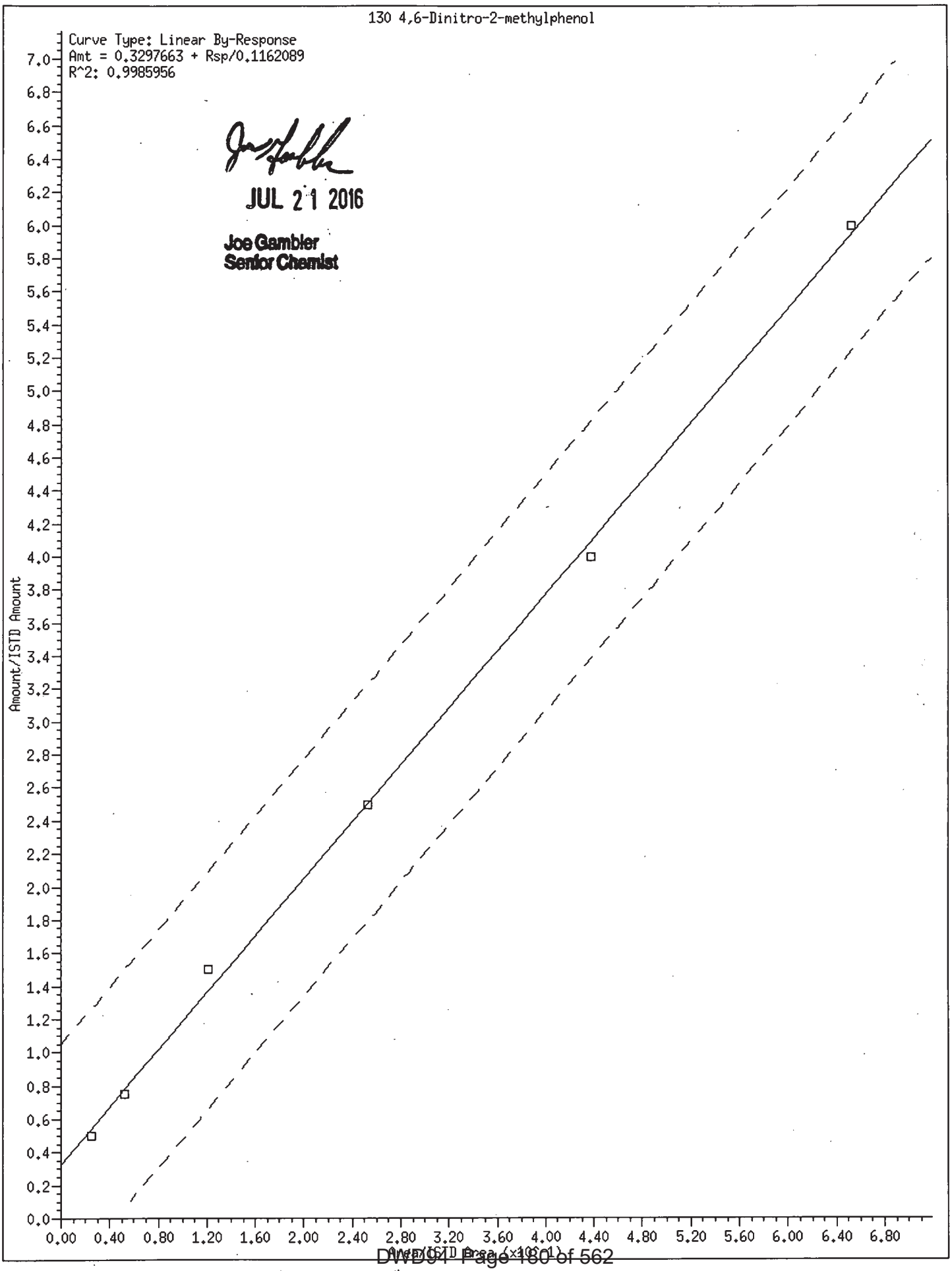
+ %RSD is less than or equal to 20%; however, value rounds to 20.

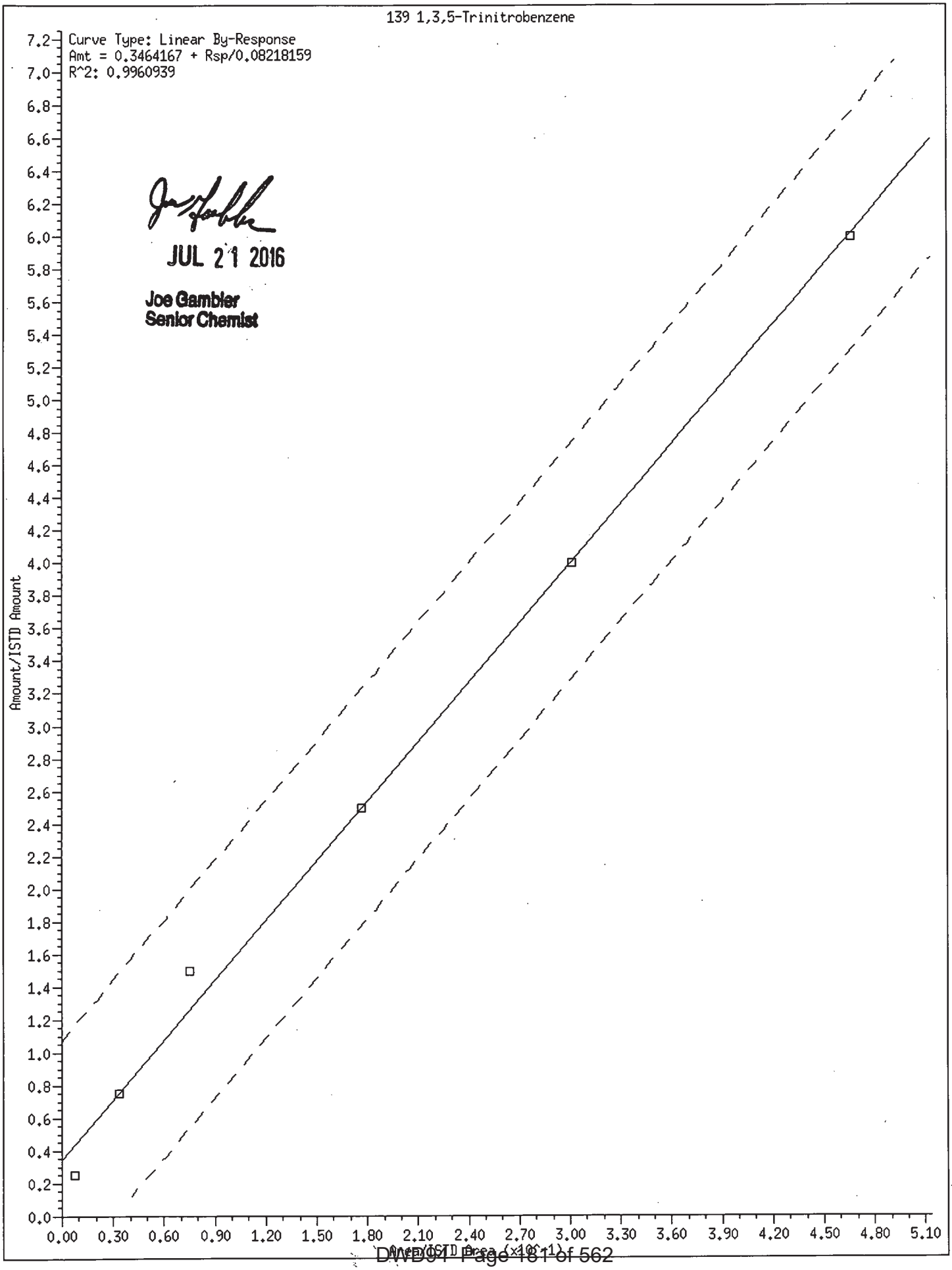
4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

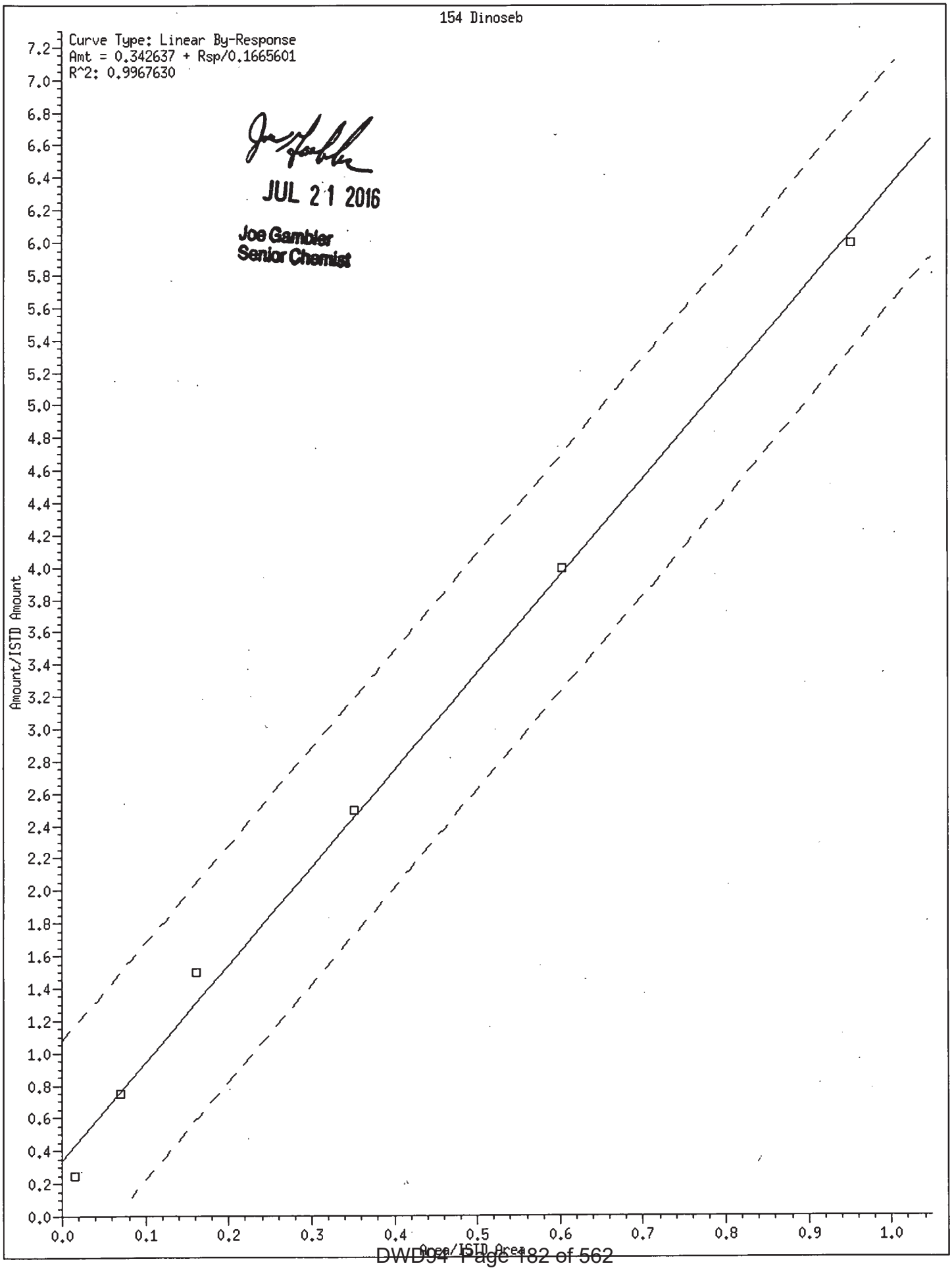


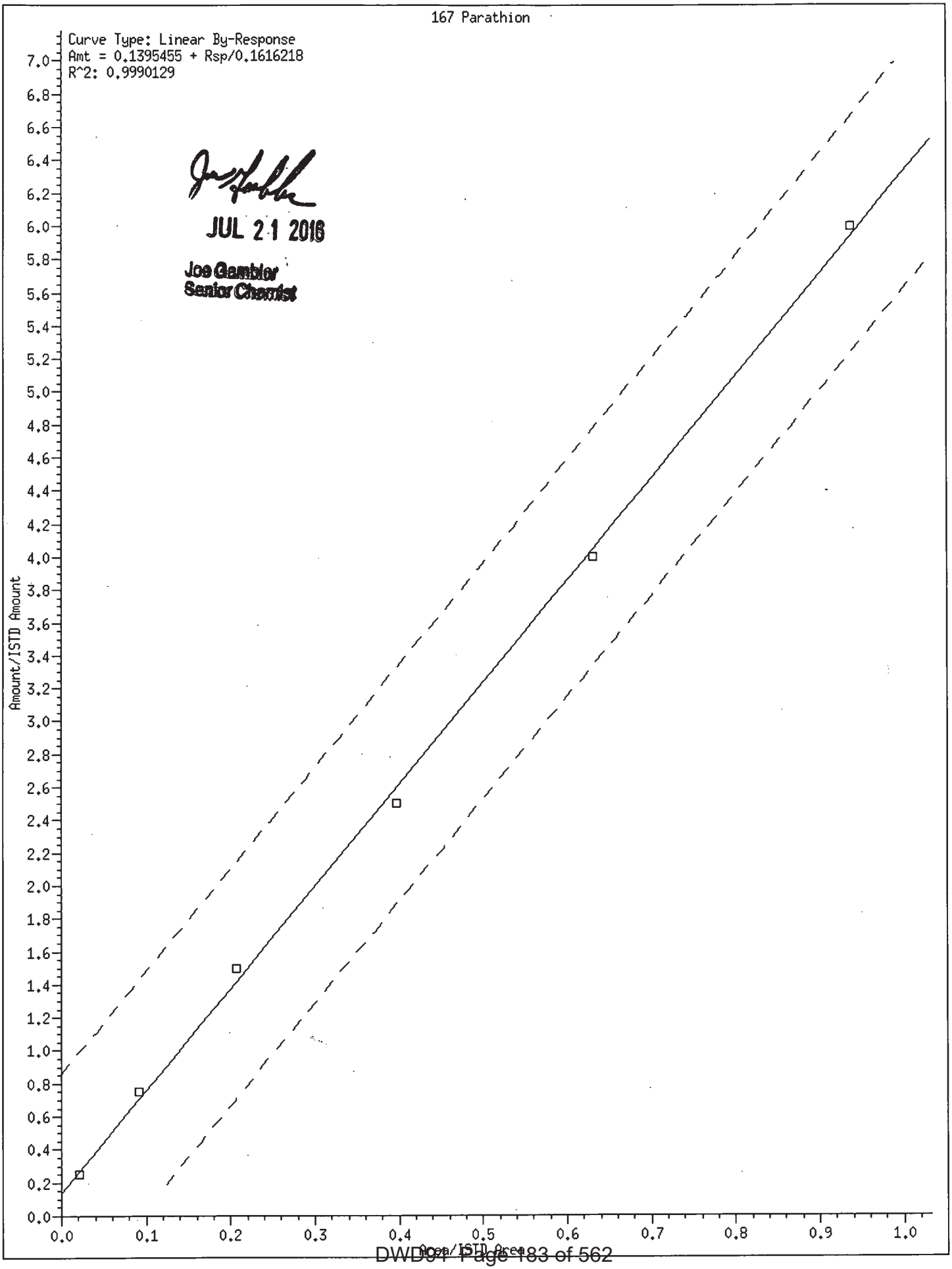
JUL 21 2016

Joe Gambler
Senior Chemist


130 4,6-Dinitro-2-methylphenol
Curve Type: Linear By-Response
Amt = 0.3297663 + Rsp/0.1162089
R^2: 0.9985956
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area (x10^1)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
5.6
5.8
6.0
6.2
6.4
6.6
6.8
7.0
0.00
0.40
0.80
1.20
1.60
2.00
2.40
2.80
3.20
3.60
4.00
4.40
4.80
5.20
5.60
6.00
6.40
6.80

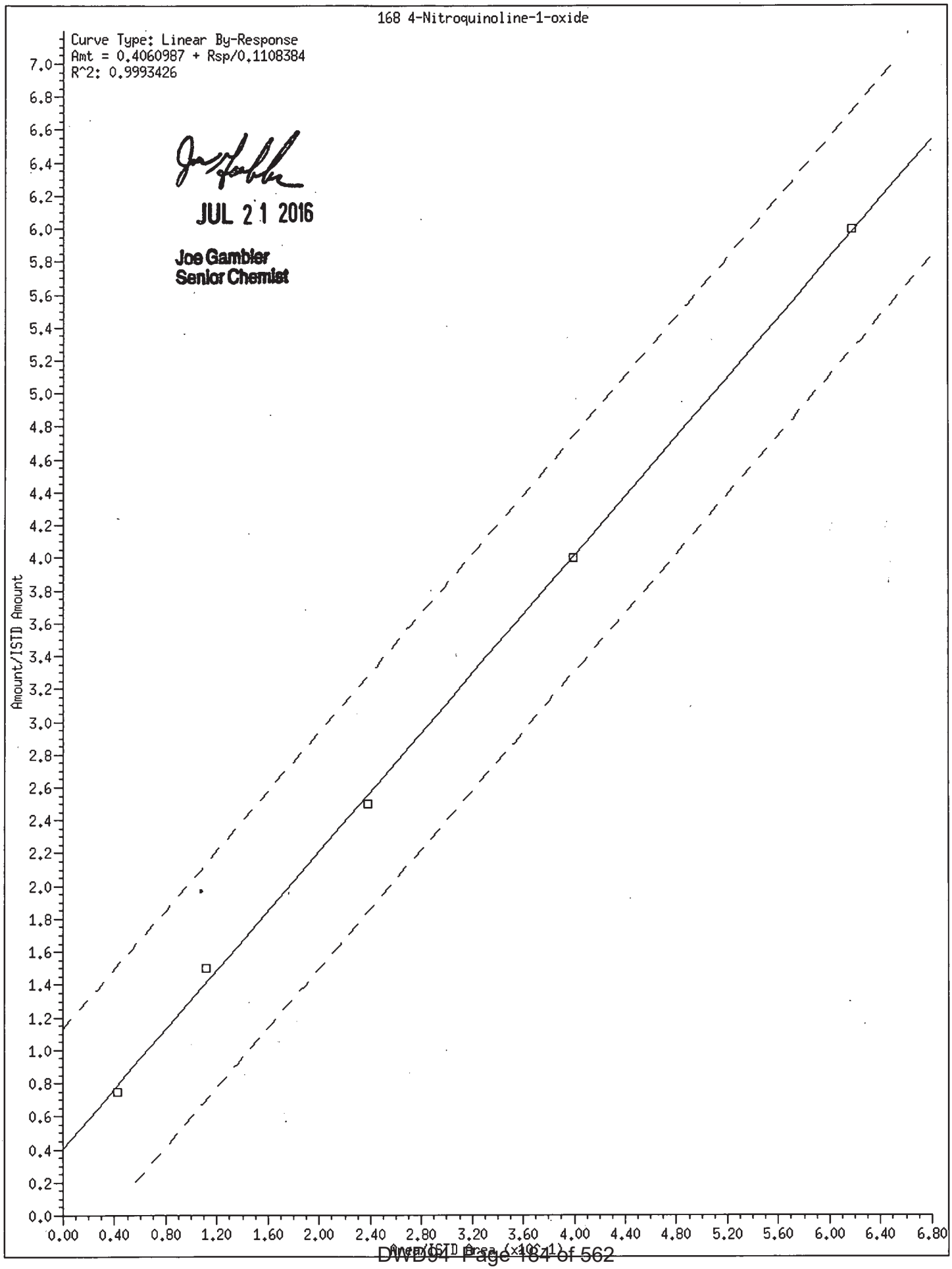

139 1,3,5-Trinitrobenzene
Curve Type: Linear By-Response
Amt = 0.3464167 + Rsp/0.08218159
R^2: 0.9960939
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Amt/ISTD Area (x10^-1)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
5.6
5.8
6.0
6.2
6.4
6.6
6.8
7.0
7.2
0.00
0.30
0.60
0.90
1.20
1.50
1.80
2.10
2.40
2.70
3.00
3.30
3.60
3.90
4.20
4.50
4.80
5.10

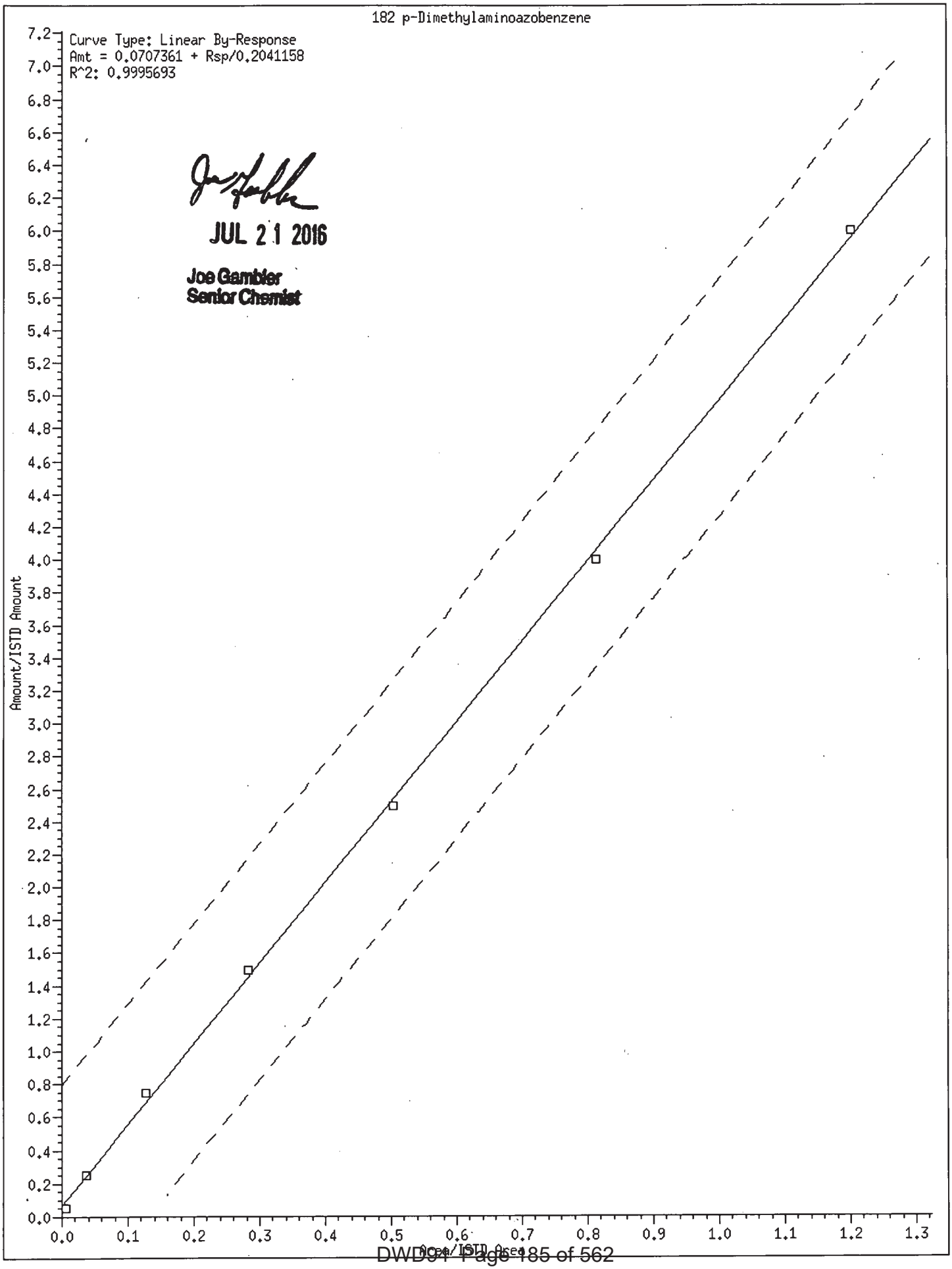

154 Dinoseb
Curve Type: Linear By-Response
Amt = 0.342637 + Rsp/0.1665601
R^2: 0.9967630
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area



JUL 21 2016

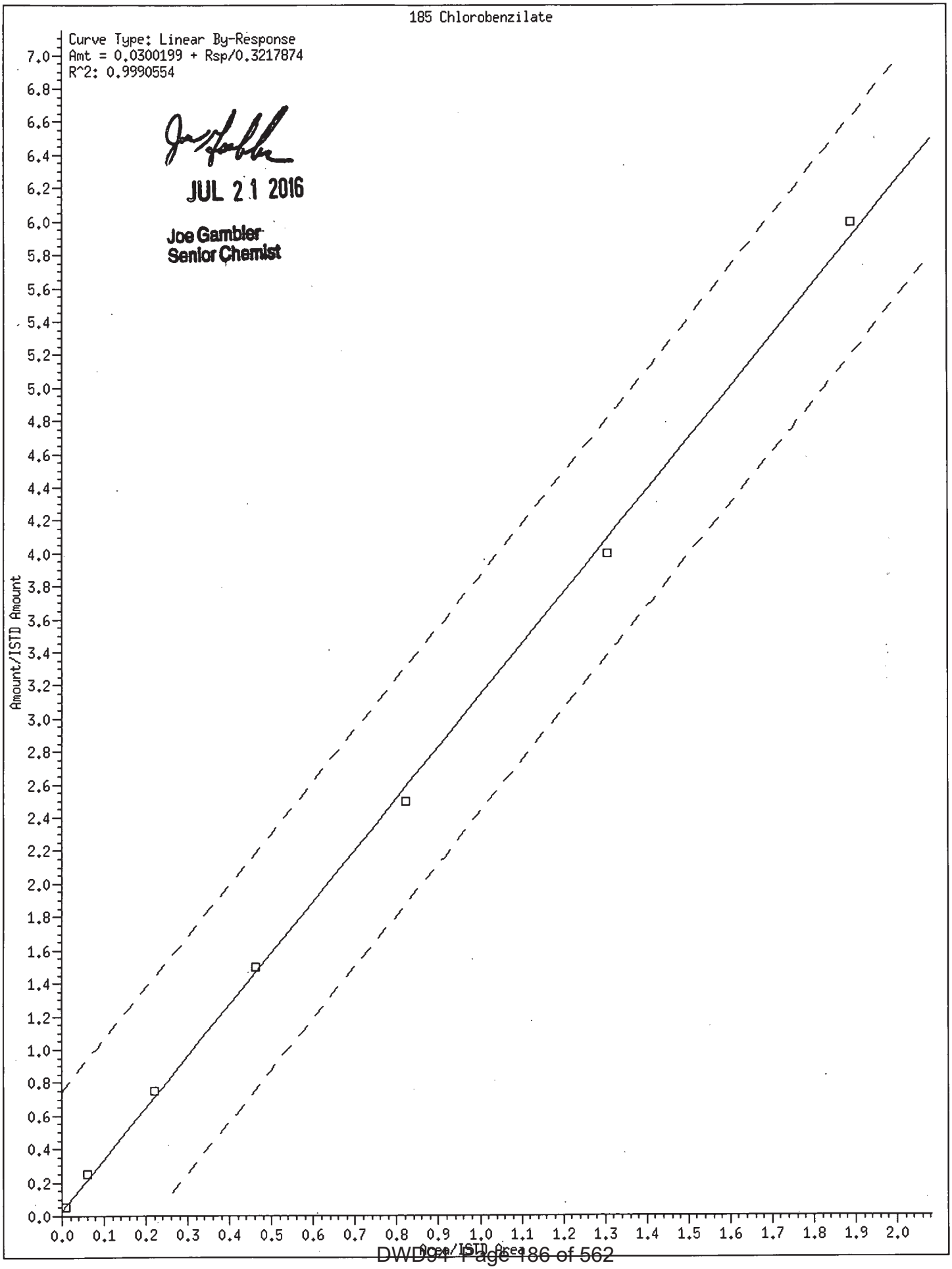
Joe Gambler
Senior Chemist

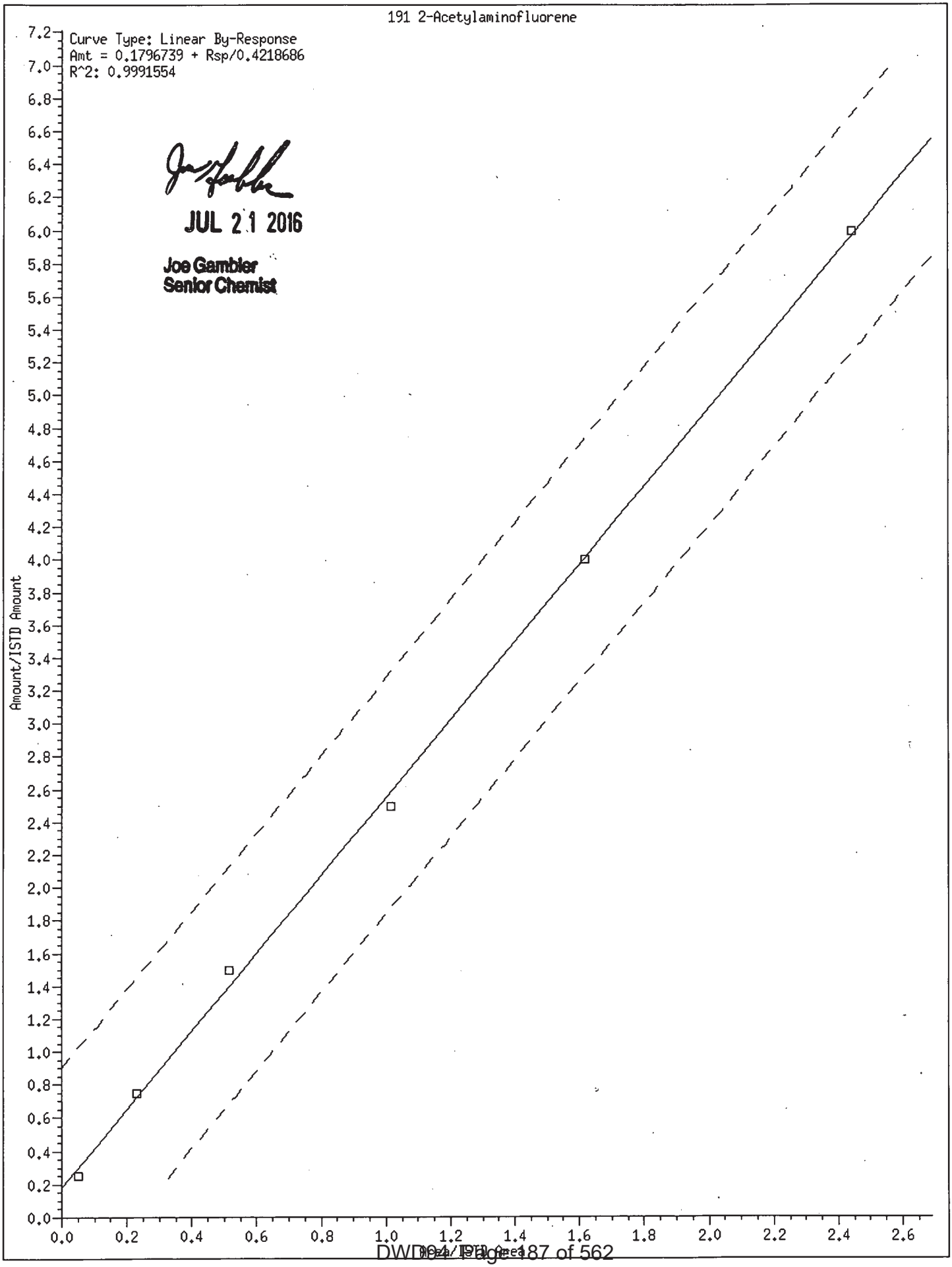

168 4-Nitroquinoline-1-oxide
Curve Type: Linear By-Response
Amt = 0.4060987 + Rsp/0.1108384
R^2: 0.9993426
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Amount/ISTD Area (x10^-1)



JUL 21 2016

Joe Gambler
Senior Chemist


185 Chlorobenzilate
Curve Type: Linear By-Response
Amt = 0.0300199 + Rsp/0.3217874
R^2: 0.9990554
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
Area/ISTD Area


191 2-Acetylaminofluorene
Curve Type: Linear By-Response
Amt = 0.1796739 + Rsp/0.4218686
R^2: 0.9991554
JUL 21 2016
Joe Gambler
Senior Chemist
Amount/ISTD Amount
7.2
7.0
6.8
6.6
6.4
6.2
6.0
5.8
5.6
5.4
5.2
5.0
4.8
4.6
4.4
4.2
4.0
3.8
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul20a.b/gg0891.d SSTD030
/chem/HP11165.i/16jul20a.b/gg0892.d SSTD120
/chem/HP11165.i/16jul20a.b/gg0893.d SSTD080
/chem/HP11165.i/16jul20a.b/gg0894.d SSTD050
/chem/HP11165.i/16jul20a.b/gg0895.d SSTD015
/chem/HP11165.i/16jul20a.b/gg0896.d SSTD005
/chem/HP11165.i/16jul20a.b/gg0897.d SSTD001
/chem/HP11165.i/16jul20a.b/gg0898.d SSTD00.5

Area Summary

File ID:

Internal Standard Name	gg0891.d	gg0892.d	gg0893.d	gg0894.d	gg0895.d	gg0896.d	gg0897.d	gg0898.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	89898	92332	89613	85684	79652	83810	77440	78639	84634	7	Yes
Naphthalene-d8	419518	421461	406187	392556	378222	384594	349941	345011	387186	7	Yes
Acenaphthene-d10	254767	254729	244247	245550	235991	244841	215823	218446	239299	6	Yes
Phenanthrene-d10	472419	463068	444518	445691	450216	472389	428377	448021	453087	3	Yes
Pyrene-d10	513581	498078	476140	488147	500626	538614	483759	498728	499709	4	Yes
Perylene-d12	383235	350597	342491	355342	367063	422732	359197	365172	368229	7	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	gg0891.d	gg0892.d	gg0893.d	gg0894.d	gg0895.d	gg0896.d	gg0897.d	gg0898.d	Avg. RT
1,4-Dichlorobenzene-d4	5.540	5.540	5.540	5.539	5.534	5.534	5.534	5.534	5.537
Naphthalene-d8	6.775	6.775	6.775	6.775	6.769	6.769	6.769	6.769	6.772
Acenaphthene-d10	8.486	8.492	8.487	8.486	8.486	8.487	8.481	8.486	8.486
Phenanthrene-d10	9.939	9.945	9.939	9.939	9.933	9.934	9.934	9.933	9.937
Pyrene-d10	11.327	11.328	11.328	11.327	11.322	11.322	11.322	11.322	11.325
Perylene-d12	13.962	13.969	13.963	13.962	13.963	13.963	13.963	13.963	13.963

Comments: _____

_____

Report generated on 07/21/2016 at 05:42

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
1,4-Dioxane	50.00	51.18	2	30	YES
N-Nitrosodimethylamine	50.00	48.23	-4	30	YES
Pyridine	50.00	54.41	9	30	YES
2-Picoline	50.00	52.10	4	30	YES
N-Nitrosomethylethylamine	50.00	41.89	-16	30	YES
Methyl methanesulfonate	50.00	57.63	15	30	YES
N-Nitrosodiethylamine	50.00	50.46	1	30	YES
Ethyl methanesulfonate	50.00	52.87	6	30	YES
Phenol	50.00	51.79	4	30	YES
Aniline	50.00	50.84	2	30	YES
bis(2-Chloroethyl)ether	50.00	50.45	1	30	YES
2-Chlorophenol	50.00	52.38	5	30	YES
1,3-Dichlorobenzene	50.00	53.39	7	30	YES
1,4-Dichlorobenzene	50.00	52.55	5	30	YES
Benzyl alcohol	50.00	54.75	10	30	YES
1,2-Dichlorobenzene	50.00	53.35	7	30	YES
Indene	50.00	52.42	5	30	YES
2-Methylphenol	50.00	56.01	12	30	YES
2,2'-oxybis(1-Chloropropane	50.00	55.51	11	30	YES
bis(2-Chloroisopropyl)ether	50.00	55.51	11	30	YES
N-Nitrosopyrrolidine	50.00	52.73	5	30	YES
Acetophenone	50.00	54.50	9	30	YES
4-Methylphenol	50.00	54.16	8	30	YES
N-Nitroso-di-n-propylamine	50.00	52.69	5	30	YES
N-Nitrosomorpholine	50.00	50.48	1	30	YES
o-Toluidine	50.00	51.47	3	30	YES
Hexachloroethane	50.00	54.25	9	30	YES
Nitrobenzene	50.00	50.06	0	30	YES
N-Nitrosopiperidine	50.00	50.22	0	30	YES
Isophorone	50.00	49.84	0	30	YES
2-Nitrophenol	50.00	53.35	7	30	YES
2,4-Dimethylphenol	50.00	50.53	1	30	YES
bis(2-Chloroethoxy)methane	50.00	52.04	4	30	YES
Benzoic acid	100.00	92.71	-7	30	YES
O,O,O-Triethylphosphorothio	50.00	50.50	1	30	YES
2,4-Dichlorophenol	50.00	53.05	6	30	YES
1,2,4-Trichlorobenzene	50.00	53.35	7	30	YES

NC = Could not calculate

Comments: _____

JUL 21 2016
Joe Gambler
Senior Chemist

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
Naphthalene	50.00	52.14	4	30	YES
4-Chloroaniline	50.00	51.81	4	30	YES
2,6-Dichlorophenol	50.00	53.11	6	30	YES
Hexachloropropene	50.00	62.20	24	30	YES
Hexachlorobutadiene	50.00	53.14	6	30	YES
Quinoline	50.00	50.90	2	30	YES
N-Nitrosodi-n-butylamine	50.00	40.11	-20	30	YES
4-Chloro-3-methylphenol	50.00	53.76	8	30	YES
Safrole	50.00	51.03	2	30	YES
2-Methylnaphthalene	50.00	50.91	2	30	YES
1-Methylnaphthalene	50.00	51.92	4	30	YES
Hexachlorocyclopentadiene	100.00	85.59	-14	30	YES
1,2,4,5-Tetrachlorobenzene	50.00	53.53	7	30	YES
2,4,6-Trichlorophenol	50.00	56.55	13	30	YES
2,4,5-Trichlorophenol	50.00	56.44	13	30	YES
trans-Isosafrole	44.00	53.87	22	30	YES
1,1'-Biphenyl	50.00	55.31	11	30	YES
2-Chloronaphthalene	50.00	54.24	8	30	YES
Isosafrole	50.00	53.87	8	30	YES
1-Chloronaphthalene	50.00	51.08	2	30	YES
Diphenyl ether	50.00	53.70	7	30	YES
2-Nitroaniline	50.00	56.42	13	30	YES
1,4-Naphthoquinone	62.50	62.80	0	30	YES
1,4-Dinitrobenzene	50.00	52.12	4	30	YES
Dimethylphthalate	50.00	51.84	4	30	YES
1,3-Dinitrobenzene	50.00	54.64	9	30	YES
2,6-Dinitrotoluene	50.00	56.51	13	30	YES
Acenaphthylene	50.00	48.66	-3	30	YES
3-Nitroaniline	50.00	56.60	13	30	YES
Acenaphthene	50.00	54.76	10	30	YES
2,4-Dinitrophenol	100.00	87.54	-12	30	YES
4-Nitrophenol	50.00	54.10	8	30	YES
Pentachlorobenzene	50.00	51.79	4	30	YES
2,4-Dinitrotoluene	50.00	54.82	10	30	YES
Dibenzofuran	50.00	52.06	4	30	YES
1-Naphthylamine	100.00	98.88	-1	30	YES
2,3,4,6-Tetrachlorophenol	50.00	61.84	24	30	YES

NC = Could not calculate

Comments: _____

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
2-Naphthylamine	100.00	92.85	-7	30	YES
Diethylphthalate	50.00	52.97	6	30	YES
Thionazin	50.00	52.97	6	30	YES
Fluorene	50.00	54.85	10	30	YES
4-Chlorophenyl-phenylether	50.00	51.37	3	30	YES
5-Nitro-o-toluidine	50.00	55.75	12	30	YES
4-Nitroaniline	50.00	53.32	7	30	YES
4,6-Dinitro-2-methylphenol	50.00	46.81	-6	30	YES
N-Nitrosodiphenylamine	50.00	53.47	7	30	YES
1,2-Diphenylhydrazine	50.00	53.97	8	30	YES
Tetraethyldithiopyrophospha	50.00	50.87	2	30	YES
1,3,5-Trinitrobenzene	50.00	43.76	-12	30	YES
Phorate	50.00	52.42	5	30	YES
Phenacetin	50.00	53.28	7	30	YES
4-Bromophenyl-phenylether	50.00	52.16	4	30	YES
Hexachlorobenzene	50.00	51.43	3	30	YES
Dimethoate	50.00	48.35	-3	30	YES
Pentachlorophenol	50.00	58.38	17	30	YES
4-Aminobiphenyl	50.00	115.44	131	30	NO
Pentachloronitrobenzene	50.00	53.75	7	30	YES
Pronamide	50.00	55.61	11	30	YES
Dinoseb	50.00	46.40	-7	30	YES
Phenanthrene	50.00	51.37	3	30	YES
Anthracene	50.00	54.22	8	30	YES
Carbazole	50.00	53.06	6	30	YES
Methyl parathion	50.00	52.13	4	30	YES
Di-n-butylphthalate	50.00	54.10	8	30	YES
Parathion	50.00	53.22	6	30	YES
4-Nitroquinoline-1-oxide	600.00	714.03	19	30	YES
Isodrin	50.00	54.38	9	30	YES
Fluoranthene	50.00	54.33	9	30	YES
Benzidine	250.00	269.50	8	30	YES
Pyrene	50.00	51.50	3	30	YES
p-Dimethylaminoazobenzene	50.00	58.54	17	30	YES
Chlorobenzilate	50.00	52.15	4	30	YES
3,3'-Dimethylbenzidine	100.00	116.69	17	30	YES
Butylbenzylphthalate	50.00	55.94	12	30	YES

NC = Could not calculate

Comments:

V-AP9 COMPONENT

JM6-546

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS LAB CODE: LANCAS INSTRUMENT: HP11165

Method: SW-846 8270D File ID: gg0901.d

ICV SAMPLE ID: ICV1376 BATCH: 16JUL20A026 Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
2-Acetylaminofluorene	50.00	50.94	2	30	YES
3,3'-Dichlorobenzidine	50.00	52.45	5	30	YES
Benzo(a)anthracene	50.00	57.94	16	30	YES
Chrysene	50.00	55.49	11	30	YES
4,4'-Methylenebis(2-chloroa	50.00	51.96	4	30	YES
bis(2-Ethylhexyl)phthalate	50.00	55.56	11	30	YES
6-Methylchrysene	50.00	53.18	6	30	YES
Di-n-octylphthalate	50.00	61.11	22	30	YES
Benzo(b)fluoranthene	50.00	60.57	21	30	YES
7,12-Dimethylbenz[a]anthrac	50.00	59.41	19	30	YES
Benzo(k)fluoranthene	50.00	62.34	25	30	YES
Benzo(a)pyrene	50.00	58.92	18	30	YES
3-Methylcholanthrene	50.00	74.36	49	30	NO ✓
Dibenz(a,h)acridine	50.00	57.26	15	30	YES
Dibenz(a,j)acridine	50.00	52.87	6	30	YES
Indeno(1,2,3-cd)pyrene	50.00	61.74	23	30	YES
Dibenz(a,h)anthracene	50.00	63.31	27	30	YES
Benzo(g,h,i)perylene	50.00	63.15	26	30	YES

NC = Could not calculate

Comments:

✓ - < 50% Report OK

Lancaster Laboratories, Inc.
Semi Volatile Initial Calibration Verification

LAB NAME: LANCASTER LABS | LAB CODE: LANCAS | INSTRUMENT: HP11165

Method: SW-846 8270D | File ID: gg0901.d

ICV SAMPLE ID: ICV1376 | BATCH: 16JUL20A026 | Sample Name: SSTD050

COMPOUND NAME	TRUE CONC.	ACTUAL CONC.	% DRIFT	%D window	INSPEC
Benzaldehyde	50.00	50.57	1	30	YES
Caprolactam	50.00	47.22	-6	30	YES
Atrazine	50.00	51.94	4	30	YES

NC = Could not calculate

Comments:

JUL 21 2016
Joe Gambler
Senior Chemist

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/22/16 07/22/16

Calibration Times: 17:19 19:31

LAB FILE ID: RRF5 = gg1007.d RRF15 = gg1006.d

RRF30 = gg1005.d RRF50 = gg1004.d RRF80 = gg1003.d RRF120 = gg1002.d

COMPOUND	RRF	RRF	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	RRF	% RSD	CAL. METHOD
2-Chlorobenzaldehyde			0.238	0.279	0.260	0.271	0.276	0.280	0.268	6	AVG
								Average %RSD		3	

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul22.b/gg1002.d SSTD120
/chem/HP11165.i/16jul22.b/gg1003.d SSTD080
/chem/HP11165.i/16jul22.b/gg1004.d SSTD050
/chem/HP11165.i/16jul22.b/gg1005.d SSTD030
/chem/HP11165.i/16jul22.b/gg1006.d SSTD015
/chem/HP11165.i/16jul22.b/gg1007.d SSTD005

Area Summary

File ID:

Internal Standard Name	gg1002.d	gg1003.d	gg1004.d	gg1005.d	gg1006.d	gg1007.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	84035	84333	84637	83121	79154	81222	82750	3	Yes
Naphthalene-d8	387752	386749	386529	370115	354411	358021	373930	4	Yes
Acenaphthene-d10	246238	249766	241773	235462	224936	224346	237087	5	Yes
Phenanthrene-d10	493512	490455	498003	469039	459482	464737	479205	3	Yes
Pyrene-d10	576966	562787	574197	537584	520738	535196	551245	4	Yes
Perylene-d12	464758	454238	456965	427684	417395	440518	443593	4	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	gg1002.d	gg1003.d	gg1004.d	gg1005.d	gg1006.d	gg1007.d	Avg. RT
1,4-Dichlorobenzene-d4	5.481	5.481	5.481	5.481	5.481	5.481	5.481
Naphthalene-d8	6.716	6.716	6.716	6.716	6.716	6.716	6.716
Acenaphthene-d10	8.433	8.433	8.434	8.434	8.428	8.428	8.432
Phenanthrene-d10	9.880	9.880	9.881	9.881	9.881	9.881	9.880
Pyrene-d10	11.269	11.268	11.269	11.269	11.269	11.269	11.269
Perylene-d12	13.904	13.904	13.904	13.904	13.904	13.904	13.904

Comments: _____

Report generated on 07/22/2016 at 22:30

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date(s): 07/22/16 07/22/16

Calibration Times: 20:26 22:38

LAB FILE ID: RRF5 = gg1014.d RRF15 = gg1013.d
RRF30 = gg1012.d RRF50 = gg1011.d RRF80 = gg1010.d RRF120 = gg1009.d

COMPOUND	RRF	RRF	RRF5	RRF15	RRF30	RRF50	RRF80	RRF120	RRF	% RSD	CAL. METHOD
2-Chlorobenzalmalononitrile			0.355	0.352	0.373	0.377	0.387	0.392	0.373	4	AVG
								Average %RSD		5	

4,6-Dinitro-2-methylphenol and 4-Nitrophenol are at 10 ng/ul in the 5 standard.
Benzidine Levels in the 5,15,30,50,80,120 standards are 15,45,90,150,240,360 ng/ul, respectively.
Benzoic acid and 2,4-Dinitrophenol are at 15 ng/ul, 30 ng/ul,40 ng/ul in the 5,15,30 standards.

Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul22.b/gg1009.d SSTD120
/chem/HP11165.i/16jul22.b/gg1010.d SSTD080
/chem/HP11165.i/16jul22.b/gg1011.d SSTD050
/chem/HP11165.i/16jul22.b/gg1012.d SSTD030
/chem/HP11165.i/16jul22.b/gg1013.d SSTD015
/chem/HP11165.i/16jul22.b/gg1014.d SSTD005

Area Summary

File ID:

Internal Standard Name	gg1009.d	gg1010.d	gg1011.d	gg1012.d	gg1013.d	gg1014.d	Avg. Area	%RSD	In Spec
1,4-Dichlorobenzene-d4	81870	87578	86043	88513	84209	88140	86059	3	Yes
Naphthalene-d8	366876	391629	381410	395332	368577	398783	383768	4	Yes
Acenaphthene-d10	233392	245967	240224	253992	234165	254384	243687	4	Yes
Phenanthrene-d10	476525	493086	500370	520337	470165	514256	495790	4	Yes
Pyrene-d10	532125	547150	567228	593301	541358	575357	559420	4	Yes
Perylene-d12	426619	420326	436822	449769	424682	427280	430916	2	Yes

%RSD of internal standard area is flagged out of spec if greater than 30.

RT Summary

File ID:

Internal Standard Name	gg1009.d	gg1010.d	gg1011.d	gg1012.d	gg1013.d	gg1014.d	Avg. RT
1,4-Dichlorobenzene-d4	5.481	5.481	5.481	5.481	5.481	5.481	5.481
Naphthalene-d8	6.716	6.716	6.716	6.716	6.716	6.716	6.716
Acenaphthene-d10	8.428	8.428	8.433	8.428	8.428	8.428	8.429
Phenanthrene-d10	9.880	9.881	9.880	9.881	9.880	9.880	9.880
Pyrene-d10	11.269	11.269	11.268	11.269	11.269	11.269	11.269
Perylene-d12	13.904	13.904	13.904	13.904	13.904	13.904	13.904

Comments: _____

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Report generated on 07/22/2016 at 23:04

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 21:14

Lab File ID: gg1351.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,4-Dioxane	0.664	0.613	27.720	30.0	-8
N-Nitrosodimethylamine	1.155	1.108	28.770	30.0	-4
Pyridine	1.788	1.582	26.530	30.0	-12
2-Picoline	1.870	1.934	31.020	30.0	3
N-Nitrosomethylethylamine	0.872	0.850	29.240	30.0	-3
Methyl methanesulfonate	0.855	0.789	27.670	30.0	-8
N-Nitrosodiethylamine	0.842	0.849	30.250	30.0	1
Ethyl methanesulfonate	0.835	0.847	30.440	30.0	1
Phenol	2.454	2.568	31.390	30.0	5
Aniline	2.810	2.849	30.410	30.0	1
a-methylstyrene	1.562	1.665	31.970	30.0	7
bis(2-Chloroethyl)ether	1.834	1.749	28.600	30.0	-5
2-Chlorophenol	1.499	1.575	31.520	30.0	5
1,3-Dichlorobenzene	1.538	1.546	30.170	30.0	1
1,4-Dichlorobenzene	1.592	1.581	29.800	30.0	-1
Benzyl alcohol	1.100	1.236	33.710	30.0	12
1,2-Dichlorobenzene	1.497	1.522	30.500	30.0	2
Indene	2.710	2.943	32.580	30.0	9
2-Methylphenol	1.527	1.666	32.720	30.0	9
2,2'-oxybis(1-Chloropropane)	2.277	2.146	28.270	30.0	-6
bis(2-Chloroisopropyl)ether	2.277	2.146	28.270	30.0	-6
N-Nitrosopyrrolidine	0.954	1.037	32.600	30.0	9
Acetophenone	2.319	2.635	34.100	30.0	14
4-Methylphenol	1.798	1.963	32.750	30.0	9
Total Cresols	1.685	1.814	65.480	60.0	9
N-Nitroso-di-n-propylamine	1.484	1.470	29.720	30.0	-1
N-Nitrosomorpholine	1.132	1.121	29.710	30.0	-1
o-Toluidine	2.776	2.856	30.860	30.0	3
Hexachloroethane	0.606	0.600	29.700	30.0	-1
Nitrobenzene	0.440	0.424	28.910	30.0	-4
N-Nitrosopiperidine	0.196	0.194	29.780	30.0	-1
Isophorone	0.842	0.820	29.230	30.0	-3
2-Nitrophenol	0.150	0.186	37.140	30.0	24
2,4-Dimethylphenol	0.366	0.389	31.930	30.0	6
O,O,O-Triethylphosphorothioate	0.168	0.173	30.870	30.0	3
bis(2-Chloroethoxy)methane	0.490	0.469	28.750	30.0	-4

FORM VII SV-1

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 21:14

Lab File ID: gg1351.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Benzoic acid	0.273	0.290	42.590	40.0	6
1,2,3,4-Tetrahydronaphthalene	0.529	0.551	31.240	30.0	4
2,4-Dichlorophenol	0.270	0.293	32.610	30.0	9
1,2,4-Trichlorobenzene	0.284	0.287	30.280	30.0	1
Naphthalene	1.056	1.039	29.510	30.0	-2
4-Chloroaniline	0.454	0.468	30.920	30.0	3
2,6-Dichlorophenol	0.264	0.281	31.920	30.0	6
Hexachloropropene	0.131	0.130	29.770	30.0	-1
Hexachlorobutadiene	0.138	0.139	30.310	30.0	1
Quinoline	0.726	0.743	30.690	30.0	2
Caprolactam	0.141	0.160	34.020	30.0	13
N-Nitrosodi-n-butylamine	0.383	0.398	31.150	30.0	4
4-Chloro-3-methylphenol	0.330	0.354	32.180	30.0	7
Safrole	0.269	0.279	31.100	30.0	4
2-Methylnaphthalene	0.710	0.737	31.130	30.0	4
1-Methylnaphthalene	0.661	0.671	30.440	30.0	1
Hexachlorocyclopentadiene	0.225	0.193	25.770	30.0	-14
1,2,4,5-Tetrachlorobenzene	0.454	0.450	29.750	30.0	-1
cis-Isosafrole	0.448	0.439	5.000	5.1	-2
2,4,6-Trichlorophenol	0.302	0.330	32.850	30.0	9
2,4,5-Trichlorophenol	0.332	0.369	33.370	30.0	11
trans-Isosafrole	0.468	0.456	24.220	24.9	-3
Isosafrole	0.465	0.453	29.210	30.0	-3
1,1'-Biphenyl	1.370	1.496	32.760	30.0	9
2-Chloronaphthalene	1.107	1.217	32.990	30.0	10
1-Chloronaphthalene	1.055	1.066	30.310	30.0	1
Diphenyl ether	0.751	0.746	29.820	30.0	-1
2-Nitroaniline	0.350	0.403	34.570	30.0	15
1,4-Naphthoquinone	0.458	0.458	29.990	30.0	0
1,4-Dinitrobenzene	0.160	0.201	37.640	30.0	25
Dimethylphthalate	1.329	1.325	29.890	30.0	0
1,3-Dinitrobenzene	0.201	0.235	34.990	30.0	17
2,6-Dinitrotoluene	0.283	0.313	33.200	30.0	11
Acenaphthylene	1.636	1.705	31.270	30.0	4
3-Nitroaniline	0.320	0.363	34.050	30.0	13
Acenaphthene	1.152	1.144	29.780	30.0	-1

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 21:14

Lab File ID: gg1351.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2,4-Dinitrophenol	0.103	0.144	50.600	40.0	26
4-Nitrophenol	0.200	0.193	28.850	30.0	-4
Pentachlorobenzene	0.407	0.404	29.780	30.0	-1
2,4-Dinitrotoluene	0.382	0.417	32.760	30.0	9
2,4_2,6-Dinitrotoluenes	0.339	0.365	65.950	60.0	10
Dibenzofuran	1.638	1.627	29.800	30.0	-1
1-Naphthylamine	1.300	1.330	30.710	30.0	2
2,3,4,6-Tetrachlorophenol	0.247	0.280	34.060	30.0	14
2-Naphthylamine	1.281	1.311	30.690	30.0	2
Diethylphthalate	1.287	1.307	30.470	30.0	2
Thionazin	0.238	0.270	33.990	30.0	13
Fluorene	1.346	1.399	31.180	30.0	4
4-Chlorophenyl-phenylether	0.635	0.620	29.330	30.0	-2
5-Nitro-o-toluidine	0.359	0.401	33.510	30.0	12
4-Nitroaniline	0.359	0.388	32.360	30.0	8
4,6-Dinitro-2-methylphenol	0.087	0.111	35.340	30.0	18
N-Nitrosodiphenylamine (1)	0.614	0.638	31.150	30.0	4
NDPA as diphenylamine	0.614	0.638	31.150	30.0	4
1,2-Diphenylhydrazine	0.875	0.791	27.120	30.0	-10
Tetraethyldithiopyrophosphate	0.124	0.118	28.610	30.0	-5
1,3,5-Trinitrobenzene	0.058	0.075	34.430	30.0	15
Diallate (peak 1)	0.402	0.373	23.070	24.9	-7
Phorate	0.563	0.687	36.640	30.0	22
Phenacetin	0.387	0.397	30.730	30.0	2
4-Bromophenyl-phenylether	0.176	0.179	30.530	30.0	2
Diallate (peak 2)	0.394	0.365	4.720	5.1	-8
Diallate trans/cis	0.401	0.371	27.790	30.0	-7
Hexachlorobenzene	0.178	0.183	30.810	30.0	3
Dimethoate	0.326	0.328	30.230	30.0	1
Pentachlorophenol	0.098	0.101	31.200	30.0	4
4-Aminobiphenyl	0.342	0.340	29.900	30.0	0
Pentachloronitrobenzene	0.068	0.071	31.120	30.0	4
Pronamide	0.282	0.295	31.300	30.0	4
Dinoseb	0.119	0.152	34.160	30.0	14
Phenanthrene	1.085	1.060	29.300	30.0	-2
Anthracene	1.035	1.077	31.220	30.0	4

(1) Cannot be Separated from Diphenylamine

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 21:14

Lab File ID: gg1351.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Carbazole	1.011	1.045	31.030	30.0	3
Methyl parathion	0.216	0.246	34.240	30.0	14
Di-n-butylphthalate	1.178	1.213	30.890	30.0	3
Parathion	0.137	0.149	30.390	30.0	1
4-Nitroquinoline-1-oxide	0.086	0.079	29.380	30.0	-2
Octachlorostyrene	0.063	0.073	34.930	30.0	16
Isodrin	0.108	0.109	30.180	30.0	1
Fluoranthene	1.087	1.149	31.730	30.0	6
Benzidine	0.656	0.723	99.140	90.0	10
Pyrene	1.104	1.084	29.470	30.0	-2
p-Dimethylaminoazobenzene	0.173	0.188	29.070	30.0	-3
Chlorobenzilate	0.283	0.308	29.330	30.0	-2
3,3'-Dimethylbenzidine	0.539	0.625	34.790	30.0	16
Butylbenzylphthalate	0.480	0.485	30.310	30.0	1
2-Acetylaminofluorene	0.344	0.407	32.530	30.0	8
3,3'-Dichlorobenzidine	0.340	0.365	32.240	30.0	7
4,4'-Methylenebis(2-chloroanil	0.176	0.182	31.000	30.0	3
Benzo(a)anthracene	0.915	0.989	32.430	30.0	8
Chrysene	0.899	0.935	31.210	30.0	4
bis(2-Ethylhexyl)phthalate	0.652	0.664	30.550	30.0	2
6-Methylchrysene	0.646	0.669	31.090	30.0	4
Di-n-octylphthalate	1.433	1.444	30.230	30.0	1
Benzo(b)fluoranthene	1.140	1.159	30.490	30.0	2
7,12-Dimethylbenz[a]anthracene	0.547	0.572	31.370	30.0	5
Benzo(k)fluoranthene	1.174	1.245	31.820	30.0	6
Benzo(a)pyrene	1.061	1.098	31.020	30.0	3
3-Methylcholanthrene	0.443	0.474	32.120	30.0	7
Dibenz(a,h)acridine	0.813	0.838	30.940	30.0	3
Dibenz(a,j)acridine	0.865	0.888	30.800	30.0	3
Indeno(1,2,3-cd)pyrene	1.053	1.182	33.680	30.0	12
Dibenz(a,h)anthracene	0.900	1.006	33.540	30.0	12
Benzo(g,h,i)perylene	0.872	0.966	33.240	30.0	11
Total PAHs	1.077	1.073	562.460	540.0	4
2-Fluorophenol	1.470	1.447	59.090	60.0	-2
Phenol-d6	2.079	2.060	59.440	60.0	-1

FORM VII SV-1

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 21:14

Lab File ID: gg1351.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Nitrobenzene-d5	0.422	0.405	57.500	60.0	-4
2-Fluorobiphenyl	1.240	1.230	59.520	60.0	-1
2,4,6-Tribromophenol	0.127	0.147	69.540	60.0	16
Terphenyl-d14	0.738	0.743	60.440	60.0	1
			Average %Drift:		6

Continuing Calibration
Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul20a.b/gg0891.d **
/chem/HP11165.i/16jul20a.b/gg0892.d
/chem/HP11165.i/16jul20a.b/gg0893.d
/chem/HP11165.i/16jul20a.b/gg0894.d
/chem/HP11165.i/16jul20a.b/gg0895.d
/chem/HP11165.i/16jul20a.b/gg0896.d
/chem/HP11165.i/16jul20a.b/gg0897.d
/chem/HP11165.i/16jul20a.b/gg0898.d

** indicates the Mid Level Calibration Standard.

Mid Level Calibration Standard is used for comparison.

Current Continuing Calibration Standard:

/chem/HP11165.i/16jul26a.b/gg1351.d

Area Summary

File ID:

Internal Standard Name	gg1351.d	ICAL Area	Low Limit	High Limit	In Spec
1,4-Dichlorobenzene-d4	90932	89898	44949	179796	Yes
Naphthalene-d8	436730	419518	209759	839036	Yes
Acenaphthene-d10	282167	254767	127384	509534	Yes
Phenanthrene-d10	542937	472419	236210	944838	Yes
Pyrene-d10	594103	513581	256790	1027162	Yes
Perylene-d12	460958	383235	191618	766470	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

RT Summary

File ID:

Internal Standard Name	gg1351.d	ICAL RT	In Spec
1,4-Dichlorobenzene-d4	5.334	5.540	Yes
Naphthalene-d8	6.563	6.775	Yes
Acenaphthene-d10	8.275	8.486	Yes
Phenanthrene-d10	9.722	9.939	Yes
Pyrene-d10	11.098	11.327	Yes
Perylene-d12	13.710	13.962	Yes

A "No" indicates the retention time is greater than 30 seconds from the RT of the referenced standard.

Comments: _____

Report generated on 07/26/2016 at 22:13

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 21:47

Lab File ID: gg1352.d Init. Calib. Date(s): 07/22/16 07/22/16

Init. Calib. Times(s): 17:19 19:31

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzaldehyde	0.268	0.278	51.930	50.0	4
			Average %Drift:		4

FORM VII SV-1

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/26/16 Time: 22:12

Lab File ID: gg1353.d Init. Calib. Date(s): 07/22/16 07/22/16

Init. Calib. Times(s): 20:26 22:38

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzalmalononitrile	0.373	0.382	51.220	50.0	2
			Average %Drift:		2

FORM VII SV-1

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 05:29

Lab File ID: gg1401.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
1,4-Dioxane	0.664	0.607	27.420	30.0	-9
N-Nitrosodimethylamine	1.155	1.066	27.690	30.0	-8
Pyridine	1.788	1.705	28.610	30.0	-5
2-Picoline	1.870	1.972	31.640	30.0	5
N-Nitrosomethylethylamine	0.872	0.876	30.150	30.0	0
Methyl methanesulfonate	0.855	0.829	29.080	30.0	-3
N-Nitrosodiethylamine	0.842	0.890	31.680	30.0	6
Ethyl methanesulfonate	0.835	0.878	31.540	30.0	5
Phenol	2.454	2.658	32.490	30.0	8
Aniline	2.810	2.930	31.280	30.0	4
a-methylstyrene	1.562	1.670	32.070	30.0	7
bis(2-Chloroethyl)ether	1.834	1.790	29.280	30.0	-2
2-Chlorophenol	1.499	1.649	33.000	30.0	10
1,3-Dichlorobenzene	1.538	1.595	31.110	30.0	4
1,4-Dichlorobenzene	1.592	1.619	30.510	30.0	2
Benzyl alcohol	1.100	1.355	36.960	30.0	23
1,2-Dichlorobenzene	1.497	1.554	31.150	30.0	4
Indene	2.710	3.012	33.340	30.0	11
2-Methylphenol	1.527	1.717	33.740	30.0	12
2,2'-oxybis(1-Chloropropane)	2.277	2.151	28.330	30.0	-6
bis(2-Chloroisopropyl)ether	2.277	2.151	28.330	30.0	-6
N-Nitrosopyrrolidine	0.954	1.074	33.760	30.0	13
Acetophenone	2.319	2.774	35.890	30.0	20
4-Methylphenol	1.798	2.049	34.180	30.0	14
Total Cresols	1.685	1.883	67.920	60.0	13
N-Nitroso-di-n-propylamine	1.484	1.553	31.390	30.0	5
N-Nitrosomorpholine	1.132	1.159	30.730	30.0	2
o-Toluidine	2.776	2.941	31.780	30.0	6
Hexachloroethane	0.606	0.602	29.790	30.0	-1
Nitrobenzene	0.440	0.422	28.770	30.0	-4
N-Nitrosopiperidine	0.196	0.200	30.690	30.0	2
Isophorone	0.842	0.826	29.420	30.0	-2
2-Nitrophenol	0.150	0.195	39.020	30.0	30
2,4-Dimethylphenol	0.366	0.385	31.570	30.0	5
O,O,O-Triethylphosphorothioate	0.168	0.167	29.860	30.0	0
bis(2-Chloroethoxy)methane	0.490	0.466	28.520	30.0	-5

FORM VII SV-1

JM6/546
7-27-2016

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 05:29

Lab File ID: gg1401.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Benzoic acid	0.273	0.300	43.960	40.0	10
1,2,3,4-Tetrahydronaphthalene	0.529	0.537	30.480	30.0	2
2,4-Dichlorophenol	0.270	0.297	33.060	30.0	10
1,2,4-Trichlorobenzene	0.284	0.282	29.840	30.0	-1
Naphthalene	1.056	1.036	29.420	30.0	-2
4-Chloroaniline	0.454	0.468	30.900	30.0	3
2,6-Dichlorophenol	0.264	0.288	32.640	30.0	9
Hexachloropropene	0.131	0.130	29.890	30.0	0
Hexachlorobutadiene	0.138	0.133	29.040	30.0	-3
Quinoline	0.726	0.751	31.020	30.0	3
Caprolactam	0.141	0.169	35.830	30.0	19
N-Nitrosodi-n-butylamine	0.383	0.292	22.870	30.0	-24
4-Chloro-3-methylphenol	0.330	0.370	33.550	30.0	12
Safrole	0.269	0.269	30.050	30.0	0
2-Methylnaphthalene	0.710	0.731	30.890	30.0	3
1-Methylnaphthalene	0.661	0.670	30.400	30.0	1
Hexachlorocyclopentadiene	0.225	0.196	26.170	30.0	-13
1,2,4,5-Tetrachlorobenzene	0.454	0.432	28.550	30.0	-5
cis-Isosafrole	0.448	0.428	4.870	5.1	-4
2,4,6-Trichlorophenol	0.302	0.335	33.330	30.0	11
2,4,5-Trichlorophenol	0.332	0.371	33.550	30.0	12
trans-Isosafrole	0.468	0.451	23.960	24.9	-4
Isosafrole	0.465	0.447	28.830	30.0	-4
1,1'-Biphenyl	1.370	1.413	30.930	30.0	3
2-Chloronaphthalene	1.107	1.207	32.690	30.0	9
1-Chloronaphthalene	1.055	1.021	29.030	30.0	-3
Diphenyl ether	0.751	0.713	28.500	30.0	-5
2-Nitroaniline	0.350	0.405	34.710	30.0	16
1,4-Naphthoquinone	0.458	0.423	27.690	30.0	-8
1,4-Dinitrobenzene	0.160	0.213	39.890	30.0	33
Dimethylphthalate	1.329	1.331	30.040	30.0	0
1,3-Dinitrobenzene	0.201	0.241	35.950	30.0	20
2,6-Dinitrotoluene	0.283	0.327	34.680	30.0	16
Acenaphthylene	1.636	1.679	30.790	30.0	3
3-Nitroaniline	0.320	0.368	34.470	30.0	15
Acenaphthene	1.152	1.118	29.100	30.0	-3

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 05:29

Lab File ID: gg1401.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
2,4-Dinitrophenol	0.103	0.180	60.810	40.0	52
4-Nitrophenol	0.200	0.229	34.250	30.0	14
Pentachlorobenzene	0.407	0.408	30.050	30.0	0
2,4-Dinitrotoluene	0.382	0.439	34.410	30.0	15
2,4_2,6-Dinitrotoluenes	0.339	0.383	69.090	60.0	15
Dibenzofuran	1.638	1.614	29.560	30.0	-1
1-Naphthylamine	1.300	1.334	30.790	30.0	3
2,3,4,6-Tetrachlorophenol	0.247	0.294	35.790	30.0	19
2-Naphthylamine	1.281	1.318	30.870	30.0	3
Diethylphthalate	1.287	1.381	32.200	30.0	7
Thionazin	0.238	0.265	33.390	30.0	11
Fluorene	1.346	1.345	29.970	30.0	0
4-Chlorophenyl-phenylether	0.635	0.609	28.800	30.0	-4
5-Nitro-o-toluidine	0.359	0.418	34.900	30.0	16
4-Nitroaniline	0.359	0.406	33.880	30.0	13
4,6-Dinitro-2-methylphenol	0.087	0.125	38.860	30.0	30
N-Nitrosodiphenylamine (1)	0.614	0.623	30.400	30.0	1
NDPA as diphenylamine	0.614	0.623	30.400	30.0	1
1,2-Diphenylhydrazine	0.875	0.768	26.320	30.0	-12
Tetraethyldithiopyrophosphate	0.124	0.115	27.970	30.0	-7
1,3,5-Trinitrobenzene	0.058	0.081	36.650	30.0	22
Diallate (peak 1)	0.402	0.359	22.220	24.9	-11
Phorate	0.563	0.689	36.770	30.0	23
Phenacetin	0.387	0.403	31.240	30.0	4
4-Bromophenyl-phenylether	0.176	0.173	29.630	30.0	-1
Diallate (peak 2)	0.394	0.360	4.660	5.1	-9
Diallate trans/cis	0.401	0.359	26.880	30.0	-10
Hexachlorobenzene	0.178	0.176	29.720	30.0	-1
Dimethoate	0.326	0.334	30.750	30.0	2
Pentachlorophenol	0.098	0.115	35.250	30.0	17
4-Aminobiphenyl	0.342	0.364	31.980	30.0	7
Pentachloronitrobenzene	0.068	0.073	31.940	30.0	6
Pronamide	0.282	0.297	31.530	30.0	5
Dinoseb	0.119	0.170	37.550	30.0	25
Phenanthrene	1.085	1.040	28.750	30.0	-4
Anthracene	1.035	1.052	30.480	30.0	2

(1) Cannot be Separated from Diphenylamine

FORM VII SV-1

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 05:29

Lab File ID: gg1401.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Carbazole	1.011	1.034	30.690	30.0	2
Methyl parathion	0.216	0.256	35.660	30.0	19
Di-n-butylphthalate	1.178	1.252	31.870	30.0	6
Parathion	0.137	0.156	31.790	30.0	6
4-Nitroquinoline-1-oxide	0.086	0.082	30.370	30.0	1
Octachlorostyrene	0.063	0.068	32.530	30.0	8
Isodrin	0.108	0.112	31.090	30.0	4
Fluoranthene	1.087	1.163	32.120	30.0	7
Benzidine	0.656	0.710	97.320	90.0	8
Pyrene	1.104	1.087	29.540	30.0	-2
p-Dimethylaminoazobenzene	0.173	0.194	29.940	30.0	0
Chlorobenzilate	0.283	0.319	30.290	30.0	1
3,3'-Dimethylbenzidine	0.539	0.629	35.000	30.0	17
Butylbenzylphthalate	0.480	0.499	31.170	30.0	4
2-Acetylaminofluorene	0.344	0.443	35.070	30.0	17
3,3'-Dichlorobenzidine	0.340	0.370	32.720	30.0	9
4,4'-Methylenebis(2-chloroanil	0.176	0.185	31.610	30.0	5
Benzo(a)anthracene	0.915	1.001	32.820	30.0	9
Chrysene	0.899	0.919	30.670	30.0	2
bis(2-Ethylhexyl)phthalate	0.652	0.707	32.540	30.0	8
6-Methylchrysene	0.646	0.699	32.450	30.0	8
Di-n-octylphthalate	1.433	1.502	31.440	30.0	5
Benzo(b)fluoranthene	1.140	1.267	33.330	30.0	11
7,12-Dimethylbenz[a]anthracene	0.547	0.573	31.430	30.0	5
Benzo(k)fluoranthene	1.174	1.116	28.520	30.0	-5
Benzo(a)pyrene	1.061	1.113	31.450	30.0	5
3-Methylcholanthrene	0.443	0.483	32.750	30.0	9
Dibenz(a,h)acridine	0.813	0.850	31.370	30.0	5
Dibenz(a,j)acridine	0.865	0.874	30.320	30.0	1
Indeno(1,2,3-cd)pyrene	1.053	1.155	32.910	30.0	10
Dibenz(a,h)anthracene	0.900	0.981	32.720	30.0	9
Benzo(g,h,i)perylene	0.872	0.956	32.870	30.0	10
Total PAHs	1.077	1.034	556.760	540.0	3
2-Fluorophenol	1.470	1.491	60.860	60.0	1
Phenol-d6	2.079	2.193	63.290	60.0	5

7C cont
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 05:29

Lab File ID: gg1401.d Init. Calib. Date(s): 07/20/16 07/21/16

Init. Calib. Times(s): 20:46 00:04

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF30	ACTUAL CONC.	TRUE CONC.	% DRIFT
Nitrobenzene-d5	0.422	0.402	57.170	60.0	-5
2-Fluorobiphenyl	1.240	1.177	56.950	60.0	-5
2,4,6-Tribromophenol	0.127	0.153	72.350	60.0	21
Terphenyl-d14	0.738	0.741	60.280	60.0	0
			Average %Drift:		8

FORM VII SV-1

Continuing Calibration
Internal Standard Area and Retention Time Summary

Initial Calibration Standards:

/chem/HP11165.i/16jul20a.b/gg0891.d **
/chem/HP11165.i/16jul20a.b/gg0892.d
/chem/HP11165.i/16jul20a.b/gg0893.d
/chem/HP11165.i/16jul20a.b/gg0894.d
/chem/HP11165.i/16jul20a.b/gg0895.d
/chem/HP11165.i/16jul20a.b/gg0896.d
/chem/HP11165.i/16jul20a.b/gg0897.d
/chem/HP11165.i/16jul20a.b/gg0898.d

** indicates the Mid Level Calibration Standard.

Mid Level Calibration Standard is used for comparison.

Current Continuing Calibration Standard:

/chem/HP11165.i/16jul27.b/gg1401.d

Area Summary

File ID:

Internal Standard Name	gg1401.d	ICAL Area	Low Limit	High Limit	In Spec
1,4-Dichlorobenzene-d4	72939	89898	44949	179796	Yes
Naphthalene-d8	364071	419518	209759	839036	Yes
Acenaphthene-d10	244903	254767	127384	509534	Yes
Phenanthrene-d10	483362	472419	236210	944838	Yes
Pyrene-d10	534070	513581	256790	1027162	Yes
Perylene-d12	422686	383235	191618	766470	Yes

A "No" indicates the internal standard area is outside acceptable QC limits.

RT Summary

File ID:

Internal Standard Name	gg1401.d	ICAL RT	In Spec
1,4-Dichlorobenzene-d4	5.304	5.540	Yes
Naphthalene-d8	6.540	6.775	Yes
Acenaphthene-d10	8.251	8.486	Yes
Phenanthrene-d10	9.698	9.939	Yes
Pyrene-d10	11.075	11.327	Yes
Perylene-d12	13.680	13.962	Yes

A "No" indicates the retention time is greater than 30 seconds from the RT of the referenced standard.

Comments: JM6/346

7-27-2016

Report generated on 07/27/2016 at 06:05

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 06:03

Lab File ID: gg1402.d Init. Calib. Date(s): 07/22/16 07/22/16

Init. Calib. Times(s): 17:19 19:31

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzaldehyde	0.268	0.275	51.460	50.0	3
			Average %Drift:		3

JM6/5446
7-27-16

FORM VII SV-1

page 1 of 1

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: Lancaster Laboratories Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Instrument ID: HP11165 Calibration Date: 07/27/16 Time: 06:27

Lab File ID: gg1403.d Init. Calib. Date(s): 07/22/16 07/22/16

Init. Calib. Times(s): 20:26 22:38

Min RRF for SPCC(#) = 0.050 Max %Drift for CCC(*) = 20%

COMPOUND	RRF	RRF50	ACTUAL CONC.	TRUE CONC.	% DRIFT
2-Chlorobenzalmalononitrile	0.373	0.371	49.790	50.0	0
			Average %Drift:		0

JM6/8/16
7-27-2016

FORM VII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1351.d Date Analyzed: 07/26/16

Instrument ID: HP11165 Time Analyzed: 21:14

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	90932	5.334	436730	6.563	282167	8.275
UPPER LIMIT	181864	5.834	873460	7.063	564334	8.775
LOWER LIMIT	45466	4.834	218365	6.063	141084	7.775
LLI SAMPLE NO.						
01 SBLKLC205	87497	5.328	367114	6.563	218075	8.269
02 205LCLCS	81032	5.328	371468	6.563	239175	8.275
03 205LCLCS1	82694	5.334	345461	6.563	205059	8.269
04 205LCLCSD1	80197	5.334	337589	6.563	198319	8.269
05 205LCLCS2	80185	5.334	331276	6.563	203130	8.269
06 205LCLCSD2	80687	5.328	342815	6.563	209223	8.269
07 8472665	89428	5.334	396280	6.563	235297	8.269
08 8472665MS	72771	5.334	339893	6.563	216574	8.269
09 8472665MSD	79568	5.334	358259	6.563	223715	8.269
10 8471034	74852	5.334	346391	6.563	212892	8.269
11 8471038	74837	5.334	340926	6.563	214125	8.275
12 8471042	82124	5.334	370639	6.563	224169	8.275
13 8471046	75203	5.334	344649	6.563	209733	8.275
14 8471055	83222	5.334	371803	6.569	220807	8.275

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1351.d Date Analyzed: 07/26/16

Instrument ID: HP11165 Time Analyzed: 21:14

	IS4(PHN)		IS5(PYR)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	542937	9.722	594103	11.098	460958	13.710
UPPER LIMIT	1085874	10.222	1188206	11.598	921916	14.210
LOWER LIMIT	271469	9.222	297052	10.598	230479	13.210
LLI SAMPLE NO.						
01 SBLKLC205	423992	9.716	469503	11.098	354312	13.704
02 205LCLCS	448865	9.716	486322	11.098	335976	13.710
03 205LCLCS1	405083	9.716	445887	11.098	345038	13.704
04 205LCLCSD1	387361	9.716	427490	11.098	331335	13.704
05 205LCLCS2	402858	9.716	440612	11.098	329605	13.710
06 205LCLCSD2	413260	9.716	459901	11.098	349943	13.704
07 8472665	416275	9.716	433712	11.098	304312	13.710
08 8472665MS	399751	9.716	428197	11.098	315532	13.710
09 8472665MSD	405060	9.716	438819	11.098	319596	13.710
10 8471034	396582	9.716	414855	11.098	290524	13.710
11 8471038	389600	9.716	410101	11.098	288267	13.710
12 8471042	382613	9.716	367571	11.098	253866	13.715
13 8471046	371705	9.722	363598	11.104	252450	13.715
14 8471055	378099	9.722	386337	11.104	269661	13.721

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1401.d Date Analyzed: 07/27/16

Instrument ID: HP11165 Time Analyzed: 05:29

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	72939	5.304	364071	6.540	244903	8.251
UPPER LIMIT	145878	5.804	728142	7.040	489806	8.751
LOWER LIMIT	36470	4.804	182036	6.040	122452	7.751
LLI SAMPLE NO.						
01 SBLKLA208	86870	5.304	371739	6.539	224902	8.245
02 208LALCS	72684	5.304	328486	6.539	217288	8.251
03 8486520	92074	5.322	404767	6.551	242569	8.257
04 8486520MS	83914	5.322	368101	6.551	220980	8.263
05 8486520MSD	77757	5.322	345126	6.551	203325	8.257
06 8486523	81480	5.322	351414	6.551	219274	8.251
07 8471059	89223	5.304	379322	6.540	226294	8.251
08 8471063	70001	5.304	304985	6.540	223246	8.251
09 8471067	73727	5.304	331458	6.539	237886	8.251
10 8471071	78200	5.304	341318	6.540	234212	8.251
11 8472644	73962	5.304	330831	6.540	233178	8.251
12 8472653	88790	5.304	380327	6.540	223103	8.251
13 8472657	74129	5.304	349469	6.539	226654	8.251
14 8472661	76828	5.304	370113	6.540	247649	8.251
15 8472669	85996	5.310	368996	6.539	216827	8.251

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

8C
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: LANCASTER LABS Contract:_____

Lab Code: LANCAS Case No.:_____ SAS No.:_____ SDG No.:_____

Lab File ID (Standard): gg1401.d Date Analyzed: 07/27/16

Instrument ID: HP11165 Time Analyzed: 05:29

	IS4(PHN)		IS5(PYR)		IS6(PRY)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	483362	9.698	534070	11.075	422686	13.680
UPPER LIMIT	966724	10.198	1068140	11.575	845372	14.180
LOWER LIMIT	241681	9.198	267035	10.575	211343	13.180
LLI SAMPLE NO.						
01 SBLKLA208	437144	9.692	496892	11.074	395599	13.680
02 208LALCS	416248	9.698	471626	11.080	354486	13.680
03 8486520	442059	9.698	455050	11.075	332962	13.680
04 8486520MS	391112	9.698	413097	11.080	297749	13.686
05 8486520MSD	372962	9.698	404217	11.080	292467	13.680
06 8486523	394890	9.698	427303	11.075	302584	13.680
07 8471059	383504	9.692	384338	11.075	256295	13.686
08 8471063	434942	9.692	483140	11.075	339848	13.686
09 8471067	454467	9.692	492592	11.074	336753	13.680
10 8471071	460241	9.698	485833	11.075	330486	13.686
11 8472644	457841	9.692	500905	11.075	336030	13.686
12 8472653	378756	9.692	381238	11.075	263289	13.686
13 8472657	399031	9.698	403122	11.080	273422	13.686
14 8472661	445447	9.698	452313	11.080	306444	13.686
15 8472669	350994	9.698	358926	11.080	253627	13.686

IS4 (PHN) = Phenanthrene-d10
IS5 (PYR) = Pyrene-d10
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard are and RT values with an asterisk
* Values outside of QC limits.

Preparation and Run Logs

Semivolatiles by GC/MS

Lancaster Laboratories
Semi-Volatiles
Runlog for Agilent GC/MS System HP11165 **HP #07**

Data Directory Path is - C:\msdchem\1\data\16ju120a\

OPERATOR	FILE	LLI#	DATE	TIME	BATCH	DILUTION FACTOR
whs02991	GG0880.D	DFTPP1816	07/20/2016	17:52		
whs02991	GG0881.D	STD1886	07/20/2016	18:11		
whs02991	GG0882.D	BAS1166	07/20/2016	18:38		
whs02991	gg0890.D	DFTPP1816	07/20/2016	20:26		
whs02991	gg0891.D	STD1886	07/20/2016	20:46		
whs02991	gg0892.D	STD1886	07/20/2016	21:24		
whs02991	gg0893.D	STD1886	07/20/2016	21:50		
whs02991	gg0894.D	STD1886	07/20/2016	22:18		
whs02991	gg0895.D	STD1886	07/20/2016	22:44		
whs02991	gg0896.D	STD1886	07/20/2016	23:11		
whs02991	gg0897.D	STD1886	07/20/2016	23:37		
whs02991	gg0898.D	STD1886	07/21/2016	00:04		
whs02991	gg0899.D	MDL1886	07/21/2016	00:30		
whs02991	gg0900.D	MDLPAH1886	07/21/2016	00:56		
whs02991	gg0901.D	ICV1376	07/21/2016	01:23		
whs02991	gg0903.D	BAS1166	07/21/2016	01:49		
whs02991	gg0904.D	BAS1166	07/21/2016	02:16		
whs02991	gg0905.D	BAS1166	07/21/2016	02:43		
whs02991	gg0906.D	BAS1166	07/21/2016	03:09		
whs02991	gg0907.D	BAS1166	07/21/2016	03:36		
whs02991	gg0908.D	BAS1166	07/21/2016	04:02		
whs02991	gg0909.D	BAS1166	07/21/2016	04:29		
whs02991	gg0902.D	ICVBAS0716	07/21/2016	04:55		

SAMPLE INFORMATION SUMMARY

BATCH: /chem/HP11165.i/16jul22.b

Data File	Injection Date	Sample Type	Dil Factor	Inst ID	Method	Method Batch
gg0800.d	22-JUL-2016 16:14	DFTPP	1.00	HP11165	gcdft7_d.m	16jul22.b
gg0800z.d	22-JUL-2016 16:25	DFTPP	1.00	HP11165	gcdft7_d.m	16jul22.b
gg1000.d	22-JUL-2016 16:25	DFTPP	1.00	HP11165	gcdft7_d.m	16jul22.b
gg1001.d	22-JUL-2016 16:42	Continuing Cal	1.00	HP11165	m8270d.m	16jul22.b
gg0801.d	22-JUL-2016 16:42	Continuing Cal	1.00	HP11165	m8270d.m	16jul22.b
gg0802.d	22-JUL-2016 17:19	Cal Level 8	1.00	HP11165	m8270d.m	16jul22.b
gg1002.d	22-JUL-2016 17:19	Cal Level 8	1.00	HP11165	m8270d.m	16jul22.b
gg0803.d	22-JUL-2016 17:45	Cal Level 7	1.00	HP11165	m8270d.m	16jul22.b
gg1003.d	22-JUL-2016 17:45	Cal Level 7	1.00	HP11165	m8270d.m	16jul22.b
gg1004.d	22-JUL-2016 18:11	Cal Level 6	1.00	HP11165	m8270d.m	16jul22.b
gg0804.d	22-JUL-2016 18:11	Cal Level 6	1.00	HP11165	m8270d.m	16jul22.b
gg0805.d	22-JUL-2016 18:38	Cal Level 5	1.00	HP11165	m8270d.m	16jul22.b
gg1005.d	22-JUL-2016 18:38	Cal Level 5	1.00	HP11165	m8270d.m	16jul22.b
gg1006.d	22-JUL-2016 19:05	Cal Level 4	1.00	HP11165	m8270d.m	16jul22.b

Data File	Matrix	Fraction	Lab Sample ID	Lab Prep Batch	Client Sample ID	Client Sample Group
gg0800.d	LIQUID	SV	DFTPP1116	16jul22	DFTPP	16jul22
gg0800z.d	LIQUID	SV	DFTPP1116	16jul22	DFTPP	16jul22
gg1000.d	LIQUID	SV	DFTPP1116	16jul22	DFTPP	16jul22
gg1001.d	LIQUID	SV	STD1806	16jul22	SSTD030	16jul22
gg0801.d	LIQUID	SV	STD1806	16jul22	SSTD030	16jul22
gg0802.d	LIQUID	SV	CBZ1876	16jul22	SSTD120	16jul22
gg1002.d	LIQUID	SV	CBZ1876	16jul22	SSTD120	16jul22
gg0803.d	LIQUID	SV	CBZ1876	16jul22	SSTD080	16jul22
gg1003.d	LIQUID	SV	CBZ1876	16jul22	SSTD080	16jul22
gg1004.d	LIQUID	SV	CBZ1876	16jul22	SSTD050	16jul22
gg0804.d	LIQUID	SV	CBZ1876	16jul22	SSTD050	16jul22
gg0805.d	LIQUID	SV	CBZ1876	16jul22	SSTD030	16jul22
gg1005.d	LIQUID	SV	CBZ1876	16jul22	SSTD030	16jul22
gg1006.d	LIQUID	SV	CBZ1876	16jul22	SSTD015	16jul22

Data File	Compound Sublist	Spike List File	Sample Ref #	QC Group Ref #	Init Cal Ref #	Batch Ref #
gg0800.d	all.sub		201652414	201652415	200002637	201652413
gg0800z.d	all.sub		201652440	201652441	200002637	201652413
gg1000.d	all.sub		201652647	201652655	200002637	201652413
gg1001.d	all1-b.sub		201652667	201652655	201650855	201652679
gg0801.d	all1-b.sub		201652545	201652441	201650855	201652544
gg0802.d	bnz.sub		201652568	201652441	201650855	201652544
gg1002.d	bnz.sub		201652671	201652655	201650855	201652679
gg0803.d	bnz.sub		201652580	201652441	201650855	201652544
gg1003.d	bnz.sub		201652673	201652655	201650855	201652679
gg1004.d	bnz.sub		201652675	201652655	201650855	201652679
gg0804.d	bnz.sub		201652597	201652441	201650855	201652544
gg0805.d	bnz.sub		201652665	201652655	201650855	201652544
gg1005.d	bnz.sub		201652677	201652655	201650855	201652679
gg1006.d	bnz.sub		201652698	201652655	201650855	201652679

SAMPLE INFORMATION SUMMARY

BATCH: /chem/HP11165.i/16jul22.b

Data File	Injection Date	Sample Type	Dil Factor	Inst ID	Method	Method Batch
gg1007.d	22-JUL-2016 19:31	Cal Level 3	1.00	HP11165	m8270d.m	16jul22.b
gg1008.d	22-JUL-2016 19:59	MDL/LOQ	1.00	HP11165	m8270d.m	16jul22.b
gg1009.d	22-JUL-2016 20:26	Cal Level 8	1.00	HP11165	m8270d.m	16jul22.b
gg1010.d	22-JUL-2016 20:52	Cal Level 7	1.00	HP11165	m8270d.m	16jul22.b
gg1011.d	22-JUL-2016 21:19	Cal Level 6	1.00	HP11165	m8270d.m	16jul22.b
gg1012.d	22-JUL-2016 21:46	Cal Level 5	1.00	HP11165	m8270d.m	16jul22.b
gg1013.d	22-JUL-2016 22:12	Cal Level 4	1.00	HP11165	m8270d.m	16jul22.b
gg1014.d	22-JUL-2016 22:38	Cal Level 3	1.00	HP11165	m8270d.m	16jul22.b
gg1015.d	22-JUL-2016 23:05	MDL/LOQ	1.00	HP11165	m8270d.m	16jul22.b

Data File	Matrix	Fraction	Lab Sample ID	Lab Prep Batch	Client Sample ID	Client Sample Group
gg1007.d	LIQUID	SV	CBZ1876	16jul22	SSTD005	16jul22
gg1008.d	LIQUID	SV	CBZMDL1876	16jul22	SSTD001	16jul22
gg1009.d	LIQUID	SV	TRG1586	16jul22	SSTD120	16jul22
gg1010.d	LIQUID	SV	TRG1586	16jul22	SSTD080	16jul22
gg1011.d	LIQUID	SV	TRG1586	16jul22	SSTD050	16jul22
gg1012.d	LIQUID	SV	TRG1586	16jul22	SSTD030	16jul22
gg1013.d	LIQUID	SV	TRG1586	16jul22	SSTD015	16jul22
gg1014.d	LIQUID	SV	TRG1586	16jul22	SSTD005	16jul22
gg1015.d	LIQUID	SV	TRGMDL1586	16jul22	SSTD001	16jul22

Data File	Compound Sublist	Spike List File	Sample Ref #	QC Group Ref #	Init Cal Ref #	Batch Ref #
gg1007.d	bnz.sub		201652713	201652655	201650855	201652679
gg1008.d	bnz.sub		201652728	201652655	201650855	201652679
gg1009.d	trg.sub		201652754	201652655	201650855	201652679
gg1010.d	trg.sub		201652772	201652655	201650855	201652679
gg1011.d	trg.sub		201652848	201652655	201650855	201652679
gg1012.d	trg.sub		201652885	201652655	201650855	201652679
gg1013.d	trg.sub		201652909	201652655	201650855	201652679
gg1014.d	trg.sub		201652922	201652655	201650855	201652679
gg1015.d	trg.sub		201652936	201652655	201650855	201652679

Organic Extraction Batchlog Assigned to: 6740 Jessica Cook Reviewed by: MS 7/26/16 Start Date: 7/25/16 Start time: 8:30

16205SLC026

Tech 1: QC6740 Tech 2:

Dept: 26 Prep Analysis: 10813 BNA Soil Microwave APP IX SVOA 8270D (microwave)

QC	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
* 8472665MSD	D9518MSD	30.41	SS1619426A	1.0	~~MS1618126A~~	1.0	5	Z	Z	301c	Sandy ,grey
* 8472665MS	D9518MS	30.28	SS1619426A		~~MS1618126A~~	1.0	5	Z	Z	301b	
BLANKA	SBLKLC205	30.0	SS1619426A				1	Z	Z		Na2SO4
LCSA	205LCLCS	30.0	SS1619426A		~~MS1618126A~~	1.0	1	Z	Z		
LCSALT	205LCLCS	30.0	SS1619426A		MS1602726A	1.0	1	Z	Z		
LCSCS	205LCLCS	30.0	SS1619426A		MS1617326A	1.0	1	Z	Z		
LCSDALT	205LCLCSD	30.0	SS1619426A		MS1602726A	1.0	1	Z	Z		
LCSDCS	205LCLCSD	30.0	SS1619426A		MS1617326A	1.0	1	Z	Z		

Solvent Used	Lot No.
1:1 Methylene Chloride/Acetone	185062816A
Methylene Chloride	163036
Sodium Sulfate	16203A

Spike Solutions: Witness:

MS1602726A ALTIMONT SPECIALS SPIKE
MS1617326A CS LCS SPIKE
~~MS1618126A~~ LCS SPIKE MIX #1
SS1619426A BNA SURROGATE STANDARD

* Samples vented in Microwave. QC6740 7/25/16.

MS1602726A? QC6740 7/25/16

Sample #	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1 8471034	D9402	20.00	SS1619426A	1.0	1	Z	Z	301A	Organic Matter;Soil;Brown	10726	19863	08/02/2016	N
2 8471038	D9406	20.09	SS1619426A		1	Z	Z	301A	Organic Matter;Soil;Brown	10726	19863	08/02/2016	N
* 3 8471042	D9410	20.05	SS1619426A		5	Z	Z	301A	Organic Matter;Soil;Brown	10726	19863	08/02/2016	N
* 4 8471046	D9414	30.05	SS1619426A		5	Z	Z	301A	Organic Matter;Soil;Brown	10726	19863	08/02/2016	N
* 5 8471055	D9418	30.04	SS1619426A		5	Z	Z	301A	Soil;Brown	10726	19863	08/02/2016	N
* 6 8471059	D9422	30.09	SS1619426A		5	Z	Z	301A	Soil;Brown	10726	19863	08/02/2016	N
* 7 8471063	D9426	20.09	SS1619426A		5	Z	Z	301A	Organic Matter;Soil;Brown	10726	19863	08/02/2016	N
* 8 8471067	D9430	30.01	SS1619426A		5	Z	Z	20A	Brown Soil	10726	19863	08/03/2016	N
* 9 8471071	D9434	30.02	SS1619426A		5	Z	Z	20A		10726	19863	08/03/2016	N
* 10 8472644	D9502	30.0	SS1619426A		5	Z	Z	20A		10726	19863	08/03/2016	N
* 11 8472653	D9506	30.1	SS1619426A		5	Z	Z	20A		10726	19863	08/03/2016	N
* 12 8472657	D9510	30.0	SS1619426A		5	Z	Z	301a	Organic Matter;Soil;Sandy;Grey;Brown	10726	19863	08/03/2016	N
13 8472661	D9514	30.2	SS1619426A		1	Z	Z	301A	Organic Matter;Soil;Sandy;Grey;Brown	10726	19863	08/03/2016	N
14 8472665	D9518	30.34	SS1619426A		1	Z	Z						
* 15 8472669	D9522	30.31	SS1619426A		5	Z	Z						

Rack ID:		Work Station	Micro	Micro Temp 100?
Internal Standard	LC19796 ✓	Balance #	13	✓

S-bath ID	98 C	S-bath ID	C	N-Evap	C	M-vap	C	16205SLC026

Documented temps are NIST corrected.

DF = Dilution Factor FV = Final Volume

Explosives Data

Case Narrative/Conformance Summary

Explosives

eurofins | Lancaster Laboratories Environmental

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Pesticide Residue Analysis

Fraction: Explosives

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8471036	DU-1-13-A		X	1	
8471040	DU-1-13-B		X	1	
8471044	DU-1-13-C		X	1	
8471051	DU-1-14-A		X	1	Unspiked
8471052	DU-1-14-A MS		X	1	Matrix Spike
8471053	DU-1-14-A MSD		X	1	Matrix Spike Duplicate
8471057	DU-1-14-B		X	1	
8471061	DU-1-14-C		X	1	
8471065	DU-1-1-A		X	1	
8471069	DU-1-1-B		X	1	
8471073	DU-1-1-C		X	1	
8471076	Exp/Perchlorate Blank		X	1	Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

(Sample number(s): 8471036, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069,
The response for a target analyte(s) in the continuing
calibration verification standard is outside the QC acceptance
limits. The analysis was not repeated because the sample extracts
were past the method holding time.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Pesticide Residue Analysis

Fraction: Explosives

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: 162010023A (Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076, UNSPK: 8471051)
The recovery(ies) for the following analyte(s) in the LCS exceeds the acceptance window indicating a positive bias: 1,3-Dinitrobenzene, 4-Nitrotoluene
Since the recovery is high and no analytes are detected above the quantitation limit, the data is reported.
The recovery(ies) for the following analyte(s) in the LCS is below the acceptance window: 1,3,5-Trinitrobenzene, 2,4,6-Trinitrotoluene, 2,4-Dinitrotoluene, 3-Nitrotoluene, Nitrobenzene, Tetryl

MS/MSD

Please note that US EPA Methods for organic compounds do not require action by the laboratory based on out-of-specification MS/MSD results.

Batch#: 162010023A (Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076, UNSPK: 8471051)
The recovery(ies) for the following analyte(s) in the MS is outside the acceptance window: Nitrobenzene
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: 1,3-Dinitrobenzene, 2,6-Dinitrotoluene, 4-Amino-2,6-Dinitrotoluene, 4-Nitrotoluene, RDX, Tetryl
Refer to the QC Summary forms for more information.

Surrogate

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

Batch#: 162010023A (Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076, UNSPK: 8471051)
The recovery(ies) for the following surrogate(s) is below the acceptance window: 3,4-Dinitrotoluene (8471057, 8471061)

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Pesticide Residue Analysis

Fraction: Explosives

(Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076: Analysis: 13413)
The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Explosives

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Quality Control Reference List
Pesticide Residue Analysis

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Fraction: Explosives

Analysis	Batch Number	Sample Number	Analysis Date
Nitroaromatics/Amines 8330B(s)	162010023A	PBLK23201	08/20/2016 17:09:00
		LCS201Q	08/20/2016 17:51:00
		8471036	08/20/2016 19:58:00
		8471040	08/17/2016 11:19:00
		8471044	08/20/2016 21:23:00
		8471051 UNSPK	08/20/2016 22:06:00
		8471052 MS	08/20/2016 22:48:00
		8471053 MSD	08/20/2016 23:31:00
		8471057	08/21/2016 00:13:00
		8471061	08/21/2016 00:56:00
		8471065	08/21/2016 01:38:00
		8471069	08/21/2016 03:03:00
		8471073	08/21/2016 03:45:00
		8471076	08/21/2016 04:28:00

Fraction: Explosives

13413: Nitroaromatics/Amines 8330B(s) Analyte Name	Default MDL	Default LOQ	Units
HMX	210	300	ug/kg
Nitroglycerin	800	2,400	ug/kg
PETN	800	2,400	ug/kg
RDX	40	120	ug/kg
1,3,5-Trinitrobenzene	40	120	ug/kg
Tetryl	100	300	ug/kg
1,3-Dinitrobenzene	40	120	ug/kg
2,4,6-Trinitrotoluene	44	120	ug/kg
Nitrobenzene	100	300	ug/kg
4-Amino-2,6-Dinitrotoluene	41	120	ug/kg
2-Amino-4,6-Dinitrotoluene	41	120	ug/kg
2,6-Dinitrotoluene	110	120	ug/kg
2,4-Dinitrotoluene	40	120	ug/kg
2-Nitrotoluene	75	120	ug/kg
4-Nitrotoluene	110	120	ug/kg
3-Nitrotoluene	110	120	ug/kg

Quality Control Summary
Method Blank
Pesticide Residue Analysis
SDG: DWD94
Matrix: SOLID

Fraction: Explosives

162010023A / PBLK23201 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
HMX	08/20/16	N.D.	ug/kg	210	300
Nitroglycerin	08/20/16	N.D.	ug/kg	800	2400
PETN	08/20/16	N.D.	ug/kg	800	2400
RDX	08/20/16	N.D.	ug/kg	40	120
1,3,5-Trinitrobenzene	08/20/16	N.D.	ug/kg	40	120
Tetryl	08/20/16	N.D.	ug/kg	100	300
1,3-Dinitrobenzene	08/20/16	N.D.	ug/kg	40	120
2,4,6-Trinitrotoluene	08/20/16	N.D.	ug/kg	44	120
4-Amino-2,6-Dinitrotoluene	08/20/16	N.D.	ug/kg	41	120
2-Amino-4,6-Dinitrotoluene	08/20/16	N.D.	ug/kg	41	120
2,4-Dinitrotoluene	08/20/16	N.D.	ug/kg	40	120
2,6-Dinitrotoluene	08/20/16	N.D.	ug/kg	110	120
Nitrobenzene	08/20/16	N.D.	ug/kg	100	300
2-Nitrotoluene	08/20/16	N.D.	ug/kg	75	120
3-Nitrotoluene	08/20/16	N.D.	ug/kg	110	120
4-Nitrotoluene	08/20/16	N.D.	ug/kg	110	120

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Quality Control Summary
Surrogates
Pesticide Residue Analysis
SDG: DWD94
Matrix: SOLID

Fraction: Explosives

162010023A	3,4-Dinitrotoluene	
	Spike Added	1000 ug/kg
Sample	% Recovery	Limits
PBLK23201	99	62 - 133
LCS201Q	82	62 - 133
8471036	65	62 - 133
8471040	79	62 - 133
8471044	110	62 - 133
8471051 UNSPK	103	62 - 133
8471052 MS	88	62 - 133
8471053 MSD	126	62 - 133
8471057	52 *	62 - 133
8471061	50 *	62 - 133
8471065	72	62 - 133
8471069	67	62 - 133
8471073	86	62 - 133
8471076	92	62 - 133

Surrogate recoveries that are noncompliant are confirmed unless attributed to a dilution or otherwise noted.

Pesticide Residue Analysis

Fraction: Explosives

UNSPK: 8471051 MS: 8471052 MSD: 8471053 **Analyte**	Batch: **162010023A** (Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076)								
	Spike Added ug/kg MS/MSD	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
HMX	1910 / 1930	N.D.	2300.86	2360.21	120	122	29-148	3	50
Nitroglycerin	21100 / 21300	N.D.	17230.34	17712.04	82	83	45-137	3	50
PETN	21100 / 21300	N.D.	20966.73	21367.34	99	100	36-143	2	50
RDX	1920 / 1930	N.D.	4613.15	4690.35	240 *	243 *	45-145	2	50
1,3,5-Trinitrobenzene	1910 / 1930	N.D.	1204.41	1204.42	63	62	48-141	0	50
Tetryl	1910 / 1930	N.D.	351.34	237.14	18 *	12 *	38-152	39	50
1,3-Dinitrobenzene	1910 / 1930	N.D.	5222.77	5119.33	273 *	265 *	54-140	2	50
2,4,6-Trinitrotoluene	1910 / 1930	N.D.	1243.15	1245.17	65	65	47-140	0	50
2,4-Dinitrotoluene	1920 / 1930	N.D.	1324.64	1335.97	69	69	52-137	1	50
2,6-Dinitrotoluene	1910 / 1930	N.D.	6532.71	7041.82	342 *	365 *	51-138	8	50
2-Amino-4,6-Dinitrotoluene	1920 / 1930	N.D.	2475.77	2664.35	129	138	43-141	7	50
2-Nitrotoluene	1920 / 1930	N.D.	2042.44	2087.14	106	108	57-135	2	50
3-Nitrotoluene	1920 / 1930	N.D.	1965.05	2096.01	102	109	57-135	6	50
4-Amino-2,6-Dinitrotoluene	1920 / 1930	N.D.	2771.	2730.29	144 *	141 *	42-138	1	50
4-Nitrotoluene	1910 / 1930	N.D.	4282.05	4252.97	224 *	220 *	53-133	1	50
Nitrobenzene	1920 / 1940	N.D.	1200.66	1489.2	63 *	77	64-138	21	50

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

Pesticide Residue Analysis

Fraction: Explosives

LCS: LCS201Q	Batch: **162010023A** (Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
HMX	1957	1175.77	NA	60	NA	29-148	NA	NA
Nitroglycerin	9785	5915.19	NA	60	NA	45-137	NA	NA
PETN	9785	4435.75	NA	45	NA	36-143	NA	NA
RDX	1957	2045.48	NA	105	NA	45-145	NA	NA
1,3,5-Trinitrobenzene	1957	410.5	NA	21 *	NA	48-141	NA	NA
Tetryl	1957	84.68	NA	4 *	NA	38-152	NA	NA
1,3-Dinitrobenzene	1957	2777.55	NA	142 *	NA	54-140	NA	NA
2,4,6-Trinitrotoluene	1957	539.19	NA	28 *	NA	47-140	NA	NA
2,4-Dinitrotoluene	1957	878.17	NA	45 *	NA	52-137	NA	NA
2,6-Dinitrotoluene	1957	2272.09	NA	116	NA	51-138	NA	NA
2-Amino-4,6-Dinitrotoluene	1957	2108.47	NA	108	NA	43-141	NA	NA
2-Nitrotoluene	1957	1691.68	NA	86	NA	57-135	NA	NA
3-Nitrotoluene	1957	977.33	NA	50 *	NA	57-135	NA	NA
4-Amino-2,6-Dinitrotoluene	1957	2314.71	NA	118	NA	42-138	NA	NA
4-Nitrotoluene	1957	3484.41	NA	178 *	NA	53-133	NA	NA
Nitrobenzene	1957	917.55	NA	47 *	NA	64-138	NA	NA

Triplicate summary form

TMO

Sample #	8471036	8471036DUP	8471036MS			
compound	result (ug/kg) trial1	result (ug/kg) trial2	result (ug/kg) trial3	AVERAGE	std dev	%rsd
4-AM-2,6-DNT	0	0	0	0	0	#DIV/0!
2-AM-4,6-DNT	0	0	0	0	0	#DIV/0!
1,3-DNB	0	0	0	0	0	#DIV/0!
2,4-DNT	0	0	0	0	0	#DIV/0!
2,6-DNT	0	0	0	0	0	#DIV/0!
HMX	0	0	0	0	0	#DIV/0!
Nitrobenzene	0	0	0	0	0	#DIV/0!
2-NT	0	0	0	0	0	#DIV/0!
3-NT	0	0	0	0	0	#DIV/0!
4-NT	0	0	0	0	0	#DIV/0!
RDX	0	0	0	0	0	#DIV/0!
1,3,5-TNB	0	0	0	0	0	#DIV/0!
2,4,6-TNT	0	0	0	0	0	#DIV/0!
Nitroglycerin	0	0	0	0	0	#DIV/0!
PETN	0	0	0	0	0	#DIV/0!
Tetryl	0	0	0	0	0	#DIV/0!
3,5-DNA	0	0	0	0	0	#DIV/0!

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621101

GC Column (1) : CHROMPACK ID: 100 (mm) Update File:

Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT (3) Level 3 RT	RT WINDOW FROM	TO
RDX	4.37	4.38	4.34	4.35	4.37	4.37	4.27	4.47
1,3,5-Trinitrobenzene	5.08	5.08	5.03	5.06	5.06	5.06	4.96	5.16
1,3-DNB	7.38	7.39	7.28	7.18	7.39	7.39	7.29	7.49
3,5-Dinitroaniline	7.76	7.78	7.66	7.40	7.52	7.52	7.19	7.86
Nitrobenzene	8.26	8.27	8.12	7.95	8.19	8.19	8.05	8.33
Tetryl	8.26	8.27	8.12	7.95	8.19	8.19	8.05	8.33
2,4,6-Trinitrotoluene	8.81	8.82	8.67	8.51	8.75	8.75	8.65	8.85
Tetryl breakdown	10.45	10.00	9.80	9.61	9.85	9.85	9.73	9.97
4-Amino-2,6-dinitrotoluene	10.72	10.75	10.53	10.47	10.79	10.79	10.65	10.94
2-Amino-4,6-dinitrotoluene	11.25	11.28	11.12	10.73	11.15	11.15	11.00	11.29
3,4-Dinitrotoluene	11.25	11.28	11.12	10.73	11.15	11.15	10.91	11.39
2,6-Dinitrotoluene	12.03	12.08	11.94	11.50	12.06	12.06	11.92	12.20
2,4-Dinitrotoluene	12.79	12.82	12.67	12.25	12.80	12.80	12.66	12.94
2-Nitrotoluene	14.65	14.71	14.18	14.07	14.68	14.68	14.54	14.82
4-Nitrotoluene	16.28	16.24	15.74	15.63	16.26	16.26	16.09	16.42
3-Nitrotoluene	17.05	17.06	16.54	16.43	17.08	17.08	16.92	17.24

(3) Jessica L. Miller
Senior Chemist

JUL 3 1 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621101

GC Column (1) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN		
RDX	1.51E+02	9.26E+01	8.77E+01	8.83E+01	8.78E+01	1.02E+02	27	linear
1,3,5-Trinitrobenzene	2.05E+02	1.88E+02	1.94E+02	1.99E+02	1.97E+02	1.96E+02	3	
1,3-DNB	2.91E+02	2.50E+02	2.54E+02	2.41E+02	1.64E+02	2.40E+02	19	
3,5-Dinitroaniline	2.68E+02	2.24E+02	2.25E+02	2.69E+02	2.32E+02	2.44E+02	9	
Nitrobenzene	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
Tetryl	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
2,4,6-Trinitrotoluene	2.55E+02	1.98E+02	2.02E+02	2.13E+02	2.02E+02	2.14E+02	11	
Tetryl breakdown	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
4-Amino-2,6-dinitrotoluene	1.57E+02	1.29E+02	1.24E+02	1.24E+02	8.77E+01	1.24E+02	20	linear
2-Amino-4,6-dinitrotoluene	3.92E+02	3.09E+02	3.29E+02	3.01E+02	3.26E+02	3.31E+02	11	
3,4-Dinitrotoluene	3.89E+02	3.07E+02	3.27E+02	2.99E+02	3.24E+02	3.29E+02	11	
2,6-Dinitrotoluene	2.01E+02	1.39E+02	1.34E+02	1.29E+02	1.24E+02	1.45E+02	22	linear
2,4-Dinitrotoluene	3.50E+02	2.69E+02	2.85E+02	2.53E+02	2.56E+02	2.83E+02	14	
2-Nitrotoluene	1.97E+02	1.24E+02	1.13E+02	1.14E+02	1.12E+02	1.32E+02	28	linear
4-Nitrotoluene	1.34E+02	9.88E+01	9.34E+01	9.37E+01	9.09E+01	1.02E+02	18	
3-Nitrotoluene	1.66E+02	1.22E+02	1.26E+02	1.25E+02	1.24E+02	1.33E+02	14	

Average % RSD: 16

JUL 3 1 2016

File Name: V:\CP12\12eexp1621101.CAL
Version: 74

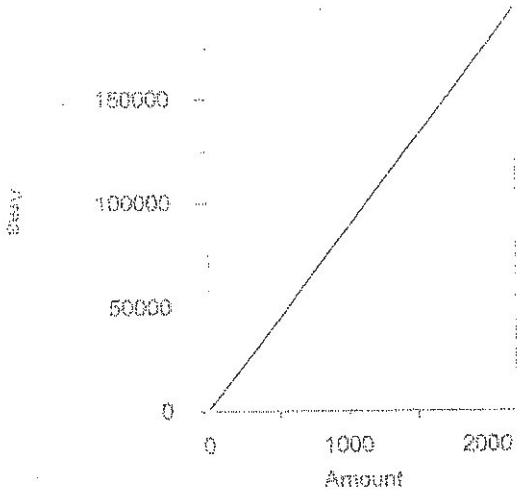
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 RDX



Expected retention time: 4.371 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

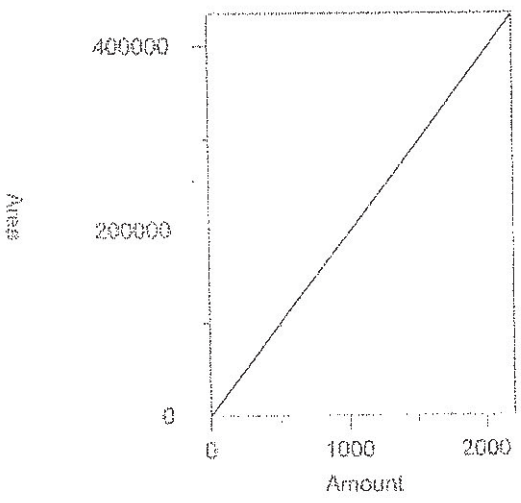
Single peak quantification by area

Y = 87.2768 X + 860.4011

Linear fit with equal weighting
Coefficient of determination: 0.9999437
Average error: 5.910%
Average CF: 101.5227
RSD: 27.484%

Level	Amount	Response	Cal Factor	Error, %	Source	Dat
1	25.1	3797.655	151.301	24.470	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND	7/3
2	100.4	9299.011	92.61963	-3.367	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND	7/3
3	502	44005.84	87.66103	-1.494	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND	7/3
4	1004	88628.66	88.27555	0.161	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND	7/3
5	2008	176214.8	87.75637	0.038	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND	7/3

2 1,3,5-TNB



Expected retention time: 5.055 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

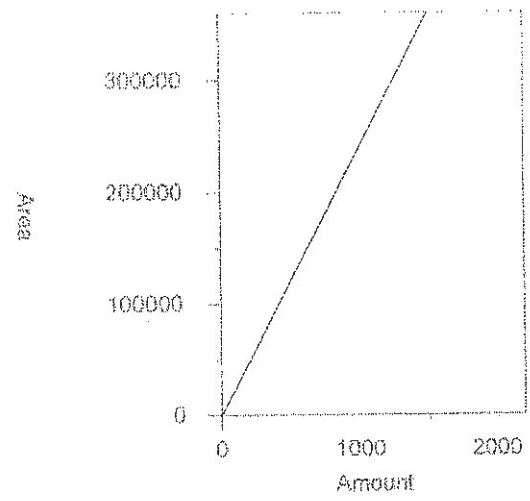
Single peak quantification by area

Y = 196.4074 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9999138
Average error: 2.287%
Average CF: 196.4074
RSD: 3.199%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5135.729	204.8147	4.281	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	18825.87	187.6956	-4.436	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	97235.12	193.8886	-1.282	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	199124.8	198.5292	1.080	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	395400.6	197.109	0.357	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

3 1,3-DNB



Expected retention time: 7.389 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

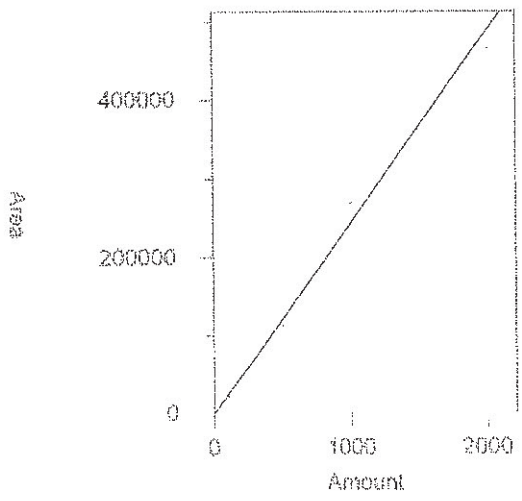
Single peak quantification by area

Y = 239.9322 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.6936649
Average error: 12.712%
Average CF: 239.9322
RSD: 19.431%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	7278.833	290.5722	21.106	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.2	25099.51	250.4941	4.402	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501	127354.2	254.2	5.947	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1002	241194.4	240.713	0.325	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2004	328018	163.6816	-31.780	Manual

4 3,5-dinitroaniline



Expected retention time: 7.524 minutes
Search window: 0.339 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

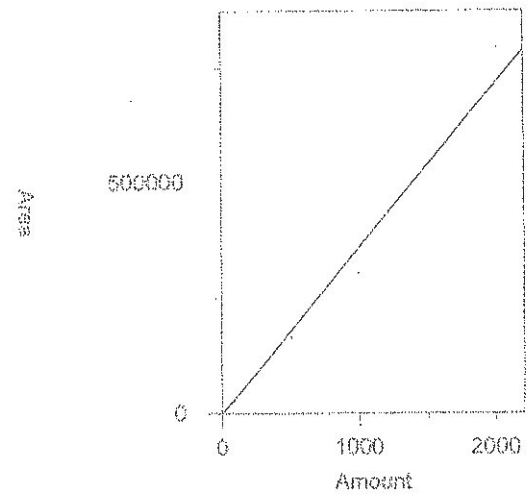
Single peak quantification by area

Y = 243.6005 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9915071
Average error: 8.231%
Average CF: 243.6005
RSD: 9.493%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	6729.358	268.1019	10.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	22465	223.755	-8.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	112746.7	224.595	-7.802	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	270302	269.2251	10.519	Manual
5	2008	466510	232.3257	-4.628	Manual

5 Nitrobenzene



Expected retention time: 8.186 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

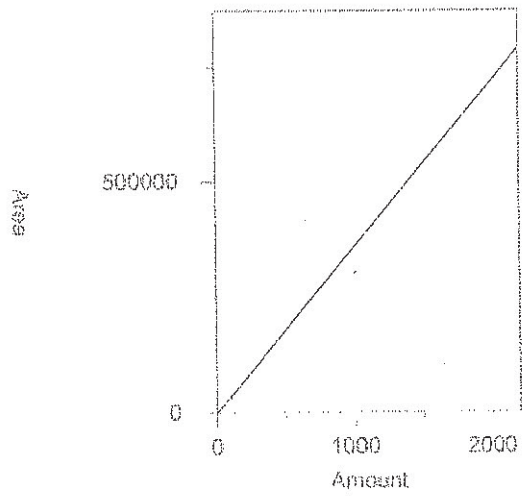
Single peak quantification by area

Y = 357.7505 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 357.7505
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	10846	432.5424	20.906	Manual	7/31/2016 1:44:38 PM
2	100.3	33073	329.7408	-7.829	Manual	7/31/2016 12:56:30 PM
3	501.5	164995	329.003	-8.036	Manual	7/31/2016 1:02:59 PM
4	1003	302870	301.9641	-15.594	Manual	7/31/2016 1:15:46 PM
5	2006	793378	395.5025	10.553	Manual	7/31/2016 2:08:12 PM

6 Tetryl



Expected retention time: 8.187 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

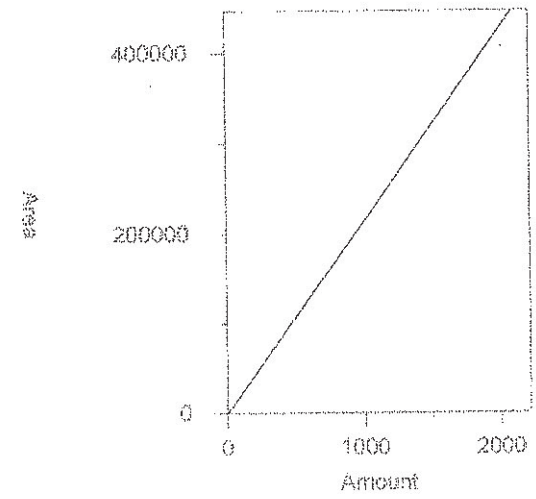
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:40 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:33 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:04 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:50 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:14 PM

7 2,4,6-TNT



Expected retention time: 8.747 minntes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

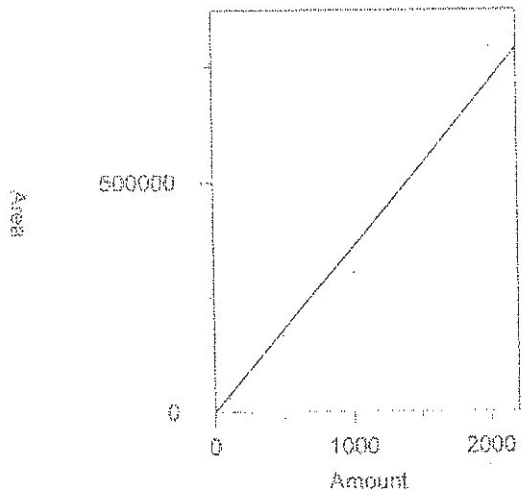
Single peak quantification by area

Y = 214.0261 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9945887
Average error: 7.605%
Average CF: 214.0261
RSD: 10.933%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	6399.85	254.7204	19.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	19912.04	198.1297	-7.427	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	101539.5	202.0686	-5.587	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	213954.5	212.89	-0.531	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	406666.3	202.3215	-5.469	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

8 Tetryl breakdown



Expected retention time: 9.85 minutes
Search window: 0.121 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

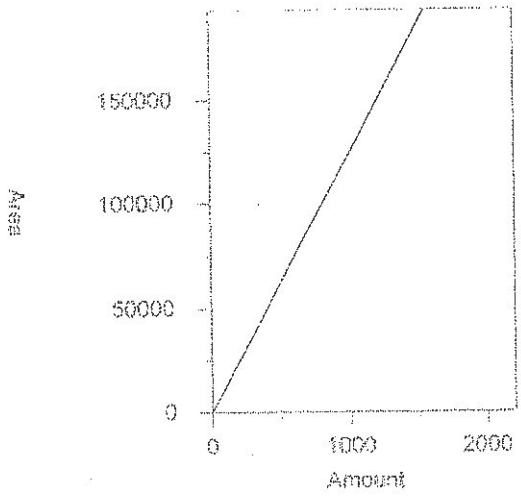
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:44 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:41 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:09 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:57 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:16 PM

9 4-Am-2,6-DNT



Expected retention time: 10.794 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

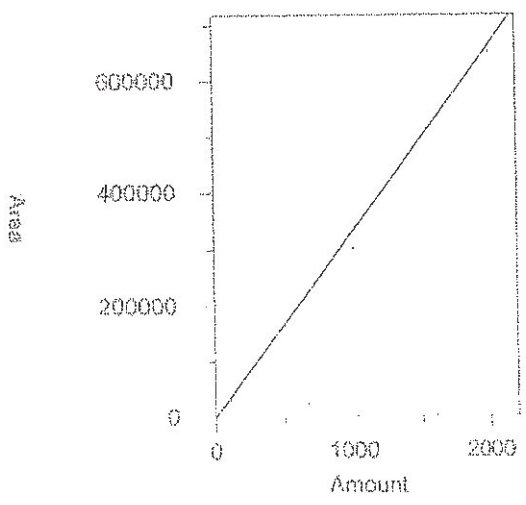
Single peak quantification by area

Y = 124.411 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.7492826
Average error: 12.083%
Average CF: 124.411
RSD: 19.915%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	3946	157.3679	26.490	Manual
2	100.3	12938.61	128.9991	3.688	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	62410.41	124.4475	0.029	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	123909	123.5384	-0.701	Manual
5	2006	175931	87.70239	-29.506	Manual

10 2-Am-4,6-DNT



Expected retention time:	11.146 minutes
Search window:	0.142 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

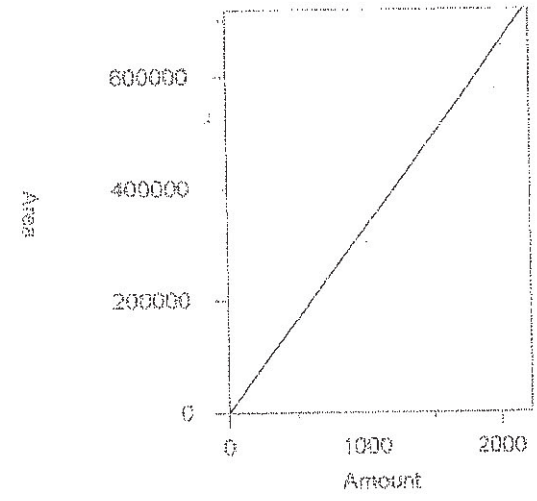
$Y = 331.455\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9962868
Average error:	7.259%
Average CF:	331.455
RSD:	10.743%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	9800	391.6084	18.148	Manual
2	100.1	30903.33	308.7246	-6.858	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	164855.9	329.3824	-0.625	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	301678	301.3766	-9.075	Manual
5	2002	653018	326.1828	-1.591	Manual

11 3,4-Dinitrotoluene



Expected retention time:	11.147 minutes
Search window:	0.242 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

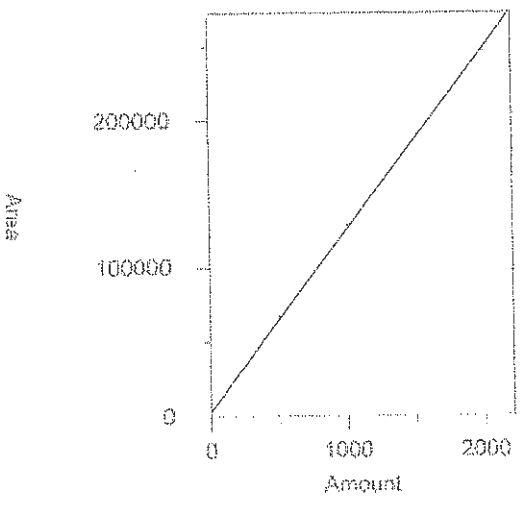
$Y = 329.1532\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9962868
Average error:	7.259%
Average CF:	329.1532
RSD:	10.743%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.2	9800	388.8889	18.148	Manual	7/31/2016 2:12:02 PM
2	100.8	30903.33	306.5807	-6.858	Manual	7/31/2016 2:04:36 PM
3	504	164855.9	327.0951	-0.625	Manual	7/31/2016 2:04:39 PM
4	1008	301678	299.2837	-9.075	Manual	7/31/2016 2:09:50 PM
5	2016	653018	323.9177	-1.591	Manual	7/31/2016 2:08:35 PM

12 2,6-DNT



Expected retention time: 12.062 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

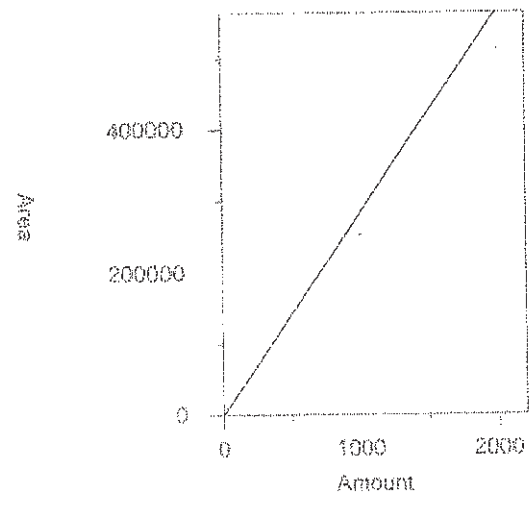
Single peak quantification by area

Y = 122.7019 X + 3330.402

Linear fit with equal weighting
Coefficient of determination: 0.9995252
Average error: 7.593%
Average CF: 145.3016
RSD: 21.987%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5052.243	201.4853	-21.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	13962.72	139.2096	-10.709	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	67079.15	133.757	3.413	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	128937.6	128.5519	2.007	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	247749	123.504	-0.690	Manual

13 2,4-DNT



Expected retention time: 12.798 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

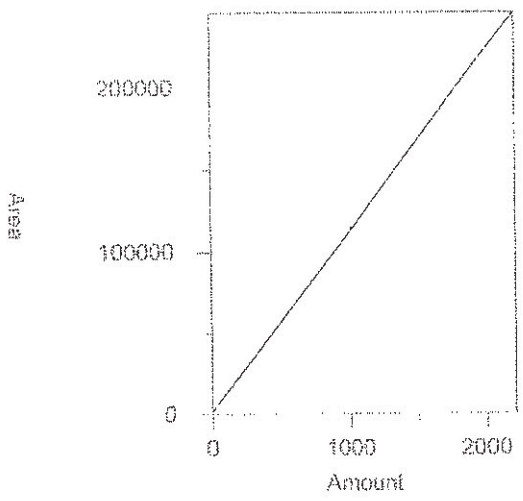
Single peak quantification by area

Y = 282.5082 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9784554
Average error: 9.870%
Average CF: 282.5082
RSD: 14.055%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	8756.587	349.9136	23.860	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	26893.81	268.6694	-4.899	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	142549.9	284.815	0.817	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	253228.9	252.9759	-10.454	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	512846.5	256.1671	-9.324	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

14 2-NT



Expected retention time: 14.682 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

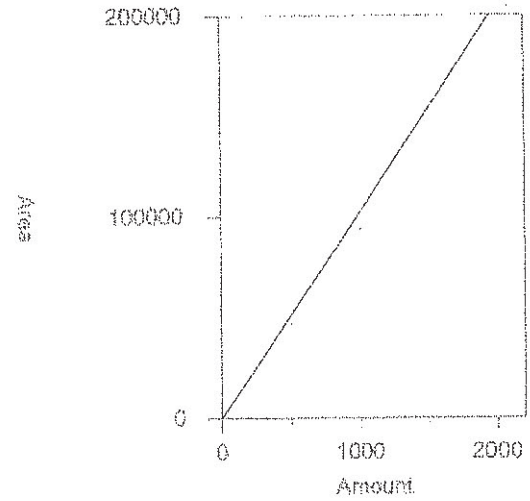
Single peak quantification by area

Y = 110.8549 X + 1788.915

Linear fit with equal weighting
Coefficient of determination: 0.999931
Average error: 2.804%
Average CF: 131.8325
RSD: 27.773%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	4943.087	196.7398	8.066	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	12460.69	123.987	-3.628	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	56837.48	113.1094	-1.141	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	114344.8	113.7759	1.013	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	224216.7	111.5506	-0.174	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

15 4-NT



Expected retention time: 16.256 minutes
Search window: 0.162 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

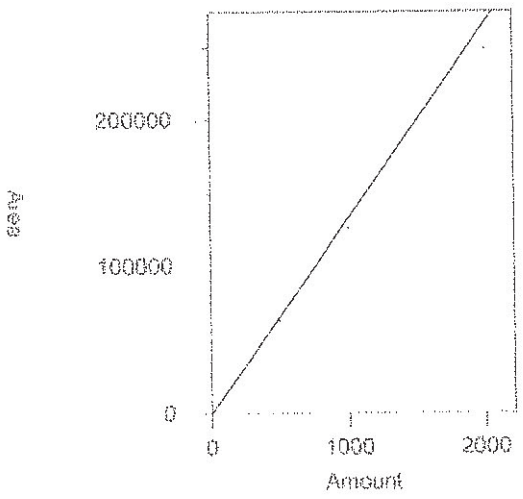
Single peak quantification by area

Y = 102.163 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9720693
Average error: 12.509%
Average CF: 102.163
RSD: 17.707%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	3356.179	134.1131	31.274	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	9887.746	98.77869	-3.313	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	46749.97	93.40653	-8.571	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	93749.27	93.65562	-8.327	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	181903.8	90.86104	-11.063	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

16 3-NT



Expected retention time:	17.078 minutes
Search window:	0.162 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 132.7551\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9910454
Average error:	10.013%
Average CF:	132.7551
RSD:	14.037%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4166.31	165.9884	25.034	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	12271.74	122.2285	-7.929	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	63316.97	126.1294	-4.991	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	125734.3	125.2334	-5.666	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2008	249384.6	124.1955	-6.448	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories
Contract:
Lab Code: Case No.: SAS No.: SDG No.:
Instrument: X6329B
Calibration File: 12EEXP1621101B
GC Column (2) : CHROMPACK ID: 100 (mm)
Update File:
Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	~~MIDPOINT~~ (3 levels) RT	RT WINDOW FROM	TO
HMX	2.73	2.71	2.71	2.70	2.70	2.70	2.60	2.80
Nitroglycerin	9.49	9.51	9.35	9.21	9.47	9.47	9.28	9.66
3,4-Dinitrotoluene	11.38	11.41	11.25	10.85	11.27	11.27	10.98	11.55
PETN	18.12	18.11	17.55	17.46	18.14	18.14	17.86	18.43

(3) Jessica L. Mintz
Senior Chemist

JUL 3 1 2016

6E
INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621101B

GC Column (2): CHROMPACK ID: 100 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	2.23E+03	1.12E+03	8.95E+02	8.46E+02	8.22E+02	1.18E+03	51
Nitroglycerin	3.08E+02	2.75E+02	2.99E+02	2.75E+02	2.83E+02	2.88E+02	5
3,4-Dinitrotoluene	2.16E+03	2.09E+03	2.23E+03	2.30E+03	2.50E+03	2.26E+03	7
PETN	2.50E+02	2.73E+02	3.10E+02	2.56E+02	2.58E+02	2.70E+02	9

Average % RSD: 18

linear

JUL 3 1 2016

File Name: V:\CP12\12eexp1621101b.CAL
Version: 32

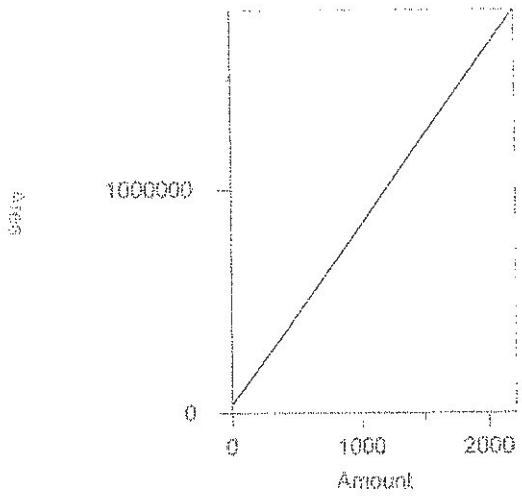
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 2.698 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

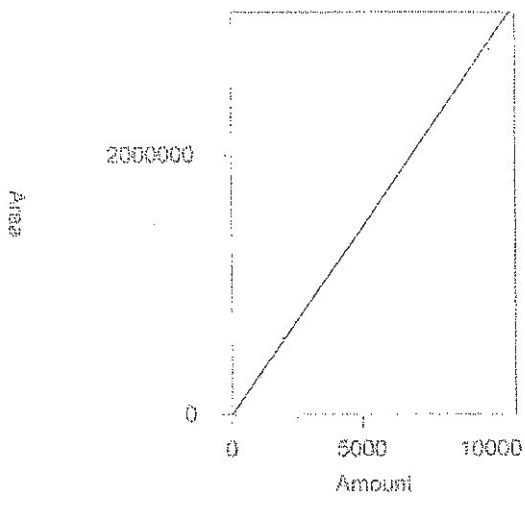
Single peak quantification by area

$Y = 805.2766\ X + 37388.52$

Linear fit with equal weighting
Coefficient of determination: 0.9999336
Average error: 2.045%
Average CF: 1182.899
RSD: 50.515%

Level	Amount	Response	Cal Factor	Error, %	Source	D
1	25.015	55800.27	2230.672	-3.011	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND	7/
2	100.06	112141	1120.738	-4.937	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND	7/
3	500.3	447552.8	894.5689	1.655	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND	7/
4	1000.6	846707.3	846.1996	0.422	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0007.BND	7/
5	2001.2	1645620	822.3167	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0008.BND	7/

2 Nitroglycerin



Expected retention time: 9.466 minutes
Search window: 0.19 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

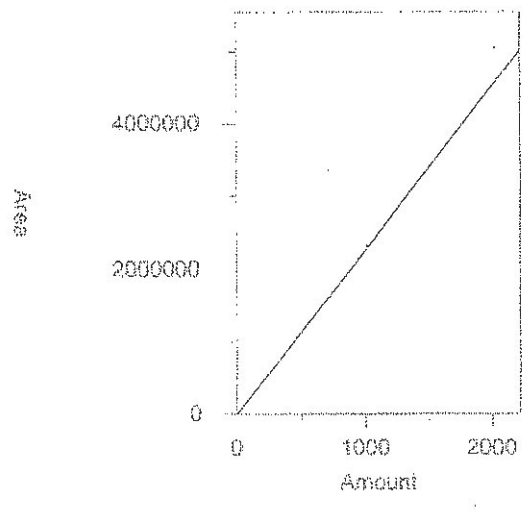
Single peak quantification by area

Y = 287.855 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9984417
Average error: 4.349%
Average CF: 287.855
RSD: 5.225%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	149840.5	308.4725	7.162	Manual	7/31/2016 2:13:36 PM
2	1063.86	292352.8	274.8038	-4.534	Manual	7/31/2016 2:13:45 PM
3	1947.18	581299.4	298.534	3.710	Manual	7/31/2016 2:13:49 PM
4	4857.82	1335512	274.92	-4.494	Manual	7/31/2016 2:13:56 PM
5	9956.51	2813161	282.5449	-1.845	Manual	7/31/2016 2:14:00 PM

3 3,4-Dinitrotoluene



Expected retention time: 11.266 minutes
Search window: 0.286 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

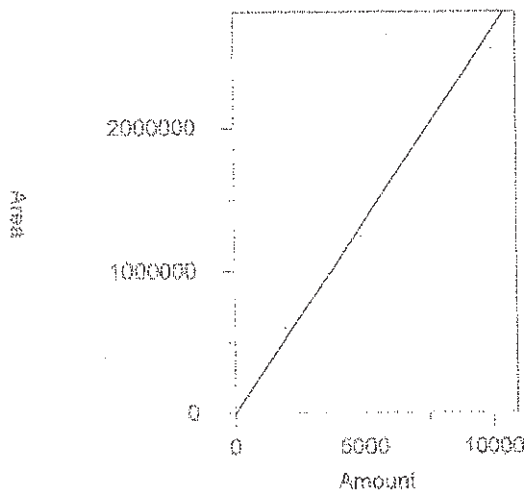
Single peak quantification by area

Y = 2258.673 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9853915
Average error: 5.118%
Average CF: 2258.673
RSD: 7.001%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	54453.62	2160.858	-4.331	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND
2	100.8	210800.4	2091.274	-7.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND
3	504	1126383	2234.887	-1.053	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND
4	1008	2321369	2302.946	1.960	Manual
5	2016	5046855	2503.4	10.835	Manual

4 PETN



Expected retention time:	18.141 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 269.6573\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9940489
Average error:	6.588%
Average CF:	269.6573
RSD:	9.016%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	121312.6	250.289	-7.183	Manual	7/31/2016 2:14:24 PM
2	1061.44	290126.8	273.3332	1.363	Manual	7/31/2016 2:14:29 PM
3	1942.16	602831.4	310.3922	15.106	Manual	7/31/2016 2:14:32 PM
4	4845.76	1240206	255.9363	-5.088	Manual	7/31/2016 2:14:37 PM
5	9931.88	2565758	258.3356	-4.199	Manual	7/31/2016 2:14:44 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621108

GC Column (1): CHROMPACK ID: 100 (mm) Update File: 12EEXP16211008.0040.RAW

Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
RDX			4.25			4.25	4.15	4.35
1,3,5-Trinitrobenzene			4.93			4.93	4.83	5.03
1,3-DNB			7.17			7.17	7.07	7.27
3,5-Dinitroaniline			7.54			7.54	7.20	7.88
Nitrobenzene			8.03			8.03	7.89	8.17
Tetryl			8.03			8.03	7.89	8.17
2,4,6-Trinitrotoluene			8.54			8.54	8.44	8.64
Tetryl breakdown			9.68			9.68	9.56	9.80
4-Amino-2,6-dinitrotoluene			10.44			10.44	10.30	10.58
2-Amino-4,6-dinitrotoluene			10.97			10.97	10.83	11.11
3,4-Dinitrotoluene			10.97			10.97	10.73	11.21
2,6-Dinitrotoluene			11.76			11.76	11.61	11.90
2,4-Dinitrotoluene			12.45			12.45	12.31	12.59
2-Nitrotoluene			14.35			14.35	14.21	14.49
4-Nitrotoluene			15.89			15.89	15.72	16.05
3-Nitrotoluene			16.68			16.68	16.52	16.85

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RT Update

File used = 12EEXP16211008.0040

Applies to = 12EEXP16211008.0001 →

James H. Place
Senior Chemist

AUG 18 2016

Audited:

AUG 18 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621108

GC Column (1) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	CALIBRATION FACTORS						
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	%RSD
RDX	1.51E+02	9.26E+01	8.77E+01	8.83E+01	8.78E+01	1.02E+02	27 — Linear
1,3,5-Trinitrobenzene	2.05E+02	1.88E+02	1.94E+02	1.99E+02	1.97E+02	1.96E+02	3
1,3-DNB	2.91E+02	2.50E+02	2.54E+02	2.41E+02	1.64E+02	2.40E+02	19
3,5-Dinitroaniline	2.68E+02	2.24E+02	2.25E+02	2.69E+02	2.32E+02	2.44E+02	9
Nitrobenzene	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15
Tetryl	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15
2,4,6-Trinitrotoluene	2.55E+02	1.98E+02	2.02E+02	2.13E+02	2.02E+02	2.14E+02	11
Tetryl breakdown	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15
4-Amino-2,6-dinitrotoluene	1.57E+02	1.29E+02	1.24E+02	1.24E+02	8.77E+01	1.24E+02	20
2-Amino-4,6-dinitrotoluene	3.92E+02	3.09E+02	3.29E+02	3.01E+02	3.26E+02	3.31E+02	11
3,4-Dinitrotoluene	3.89E+02	3.07E+02	3.27E+02	2.99E+02	3.24E+02	3.29E+02	11
2,6-Dinitrotoluene	2.01E+02	1.39E+02	1.34E+02	1.29E+02	1.24E+02	1.45E+02	22 — Linear
2,4-Dinitrotoluene	3.50E+02	2.69E+02	2.85E+02	2.53E+02	2.56E+02	2.83E+02	14
2-Nitrotoluene	1.97E+02	1.24E+02	1.13E+02	1.14E+02	1.12E+02	1.32E+02	28 — Linear
4-Nitrotoluene	1.34E+02	9.88E+01	9.34E+01	9.37E+01	9.09E+01	1.02E+02	18
3-Nitrotoluene	1.66E+02	1.22E+02	1.26E+02	1.25E+02	1.24E+02	1.33E+02	14

Coelute

Average % RSD: 16

James H. Pipco
Senior Chemist

AUG 18 2016

File Name: V:\CP12\12eexp1621108.CAL
Version: 1

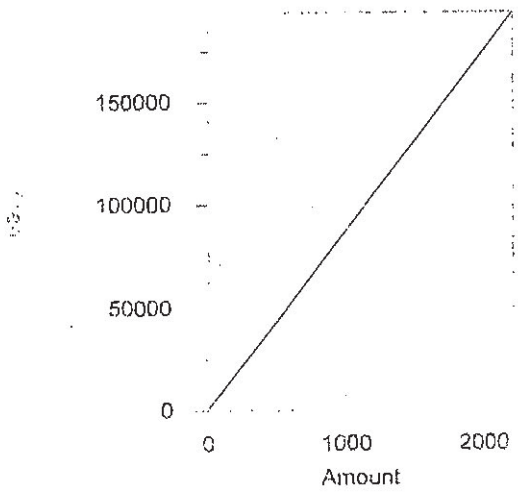
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 RDX



Expected retention time: 4.247 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

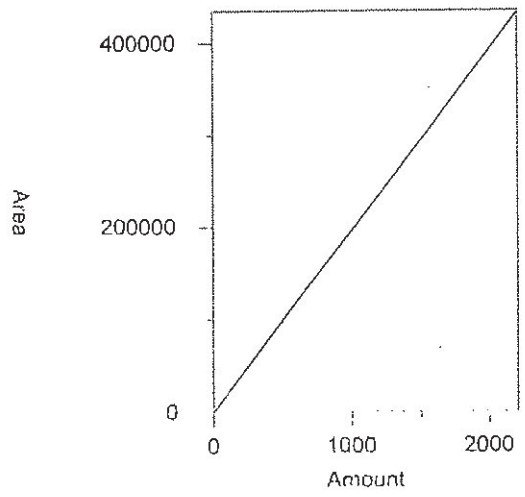
Single peak quantification by area

Y = 87.2768 X + 860.4011

Linear fit with equal weighting
Coefficient of determination: 0.9999437
Average error: 5.910%
Average CF: 101.5227
RSD: 27.484%

Level	Amount	Response	Cal Factor	Error, %	Source	Dat
1	25.1	3797.655	151.301	24.470	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND	7/3
2	100.4	9299.011	92.61963	-3.367	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND	7/3
3	502	44005.84	87.66103	-1.494	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND	7/3
4	1004	88628.66	88.27555	0.161	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND	7/3
5	2008	176214.8	87.75637	0.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND	7/3

2 1,3,5-TNB



Expected retention time: 4.926 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

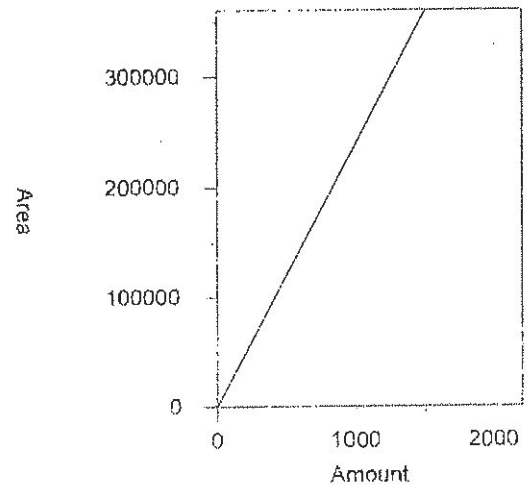
Single peak quantification by area

Y = 196.4074 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9999138
Average error: 2.287%
Average CF: 196.4074
RSD: 3.199%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5135.729	204.8147	4.281	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	18825.87	187.6956	-4.436	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	97235.12	193.8886	-1.282	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	199124.8	198.5292	1.080	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	395400.6	197.109	0.357	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

3 1,3-DNB



Expected retention time: 7.165 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

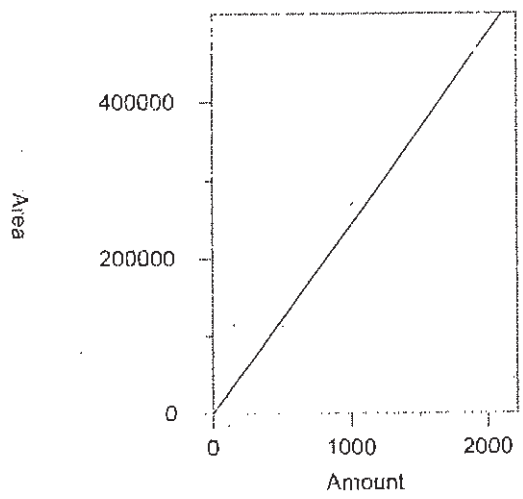
Single peak quantification by area

Y = 239.9322 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.6936649
Average error: 12.712%
Average CF: 239.9322
RSD: 19.431%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	7278.833	290.5722	21.106	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.2	25099.51	250.4941	4.402	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501	127354.2	254.2	5.947	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1002	241194.4	240.713	0.325	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2004	328018	163.6816	-31.780	Manual

4 3,5-dinitroaniline



Expected retention time: 7.536 minutes
Search window: 0.339 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

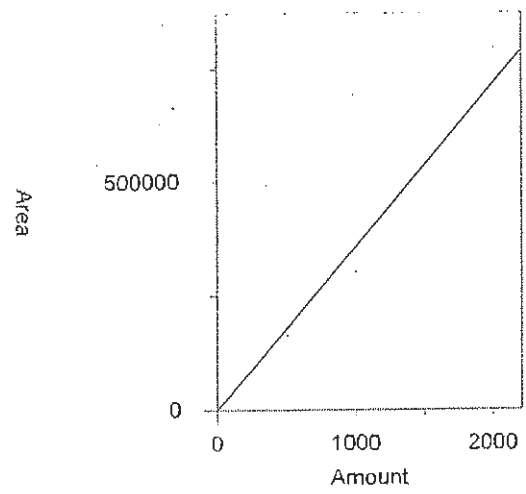
Single peak quantification by area

Y = 243.6005 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9915071
Average error: 8.231%
Average CF: 243.6005
RSD: 9.493%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	6729.358	268.1019	10.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	22465	223.755	-8.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	112746.7	224.595	-7.802	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	270302	269.2251	10.519	Manual
5	2008	466510	232.3257	-4.628	Manual

5 Tetryl



Expected retention time: 8.028 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

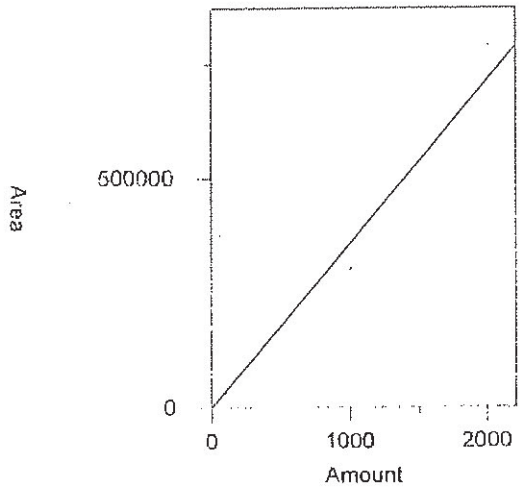
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:40 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:33 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:04 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:50 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:14 PM

6 Nitrobenzene



Expected retention time: 8.029 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

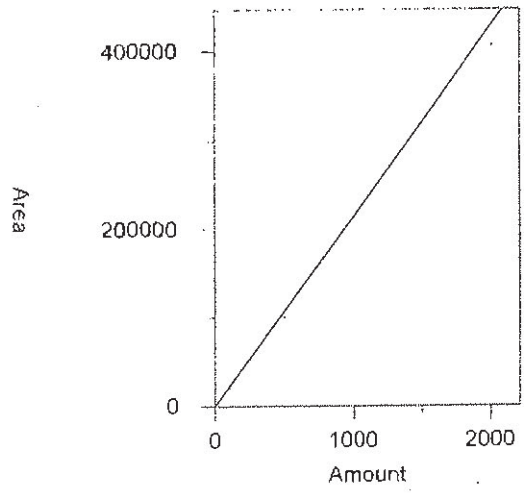
Single peak quantification by area

Y = 357.7505 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 357.7505
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	10846	432.5424	20.906	Manual	7/31/2016 1:44:38 PM
2	100.3	33073	329.7408	-7.829	Manual	7/31/2016 12:56:30 PM
3	501.5	164995	329.003	-8.036	Manual	7/31/2016 1:02:59 PM
4	1003	302870	301.9641	-15.594	Manual	7/31/2016 1:15:46 PM
5	2006	793378	395.5025	10.553	Manual	7/31/2016 2:08:12 PM

7 2,4,6-TNT



Expected retention time: 8.544 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

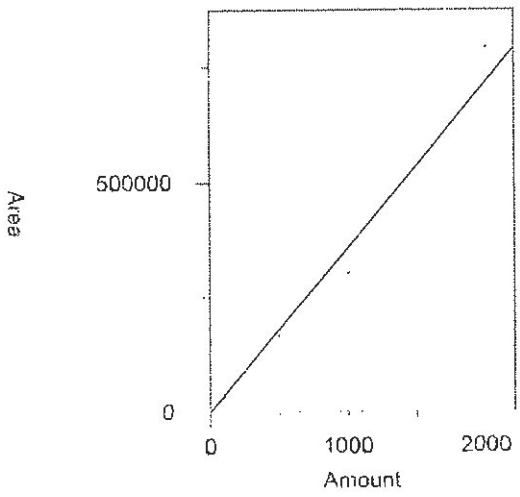
Single peak quantification by area

Y = 214.0261 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9945887
Average error: 7.605%
Average CF: 214.0261
RSD: 10.933%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	6399.85	254.7204	19.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	19912.04	198.1297	-7.427	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	101539.5	202.0686	-5.587	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	213954.5	212.89	-0.531	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	406666.3	202.3215	-5.469	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

8 Tetryl breakdown



Expected retention time: 9.683 minutes
Search window: 0.121 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

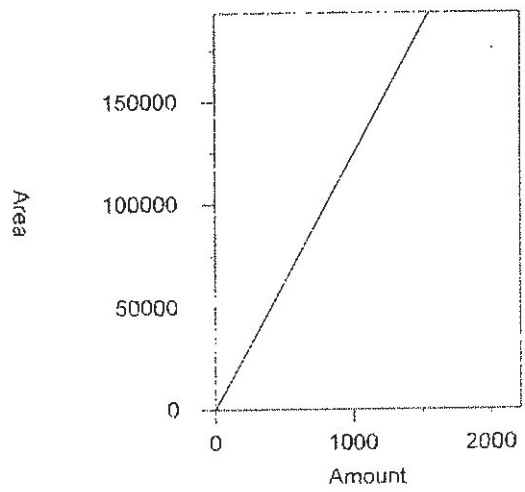
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:44 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:41 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:09 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:57 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:16 PM

9 4-Am-2,6-DNT



Expected retention time: 10.442 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

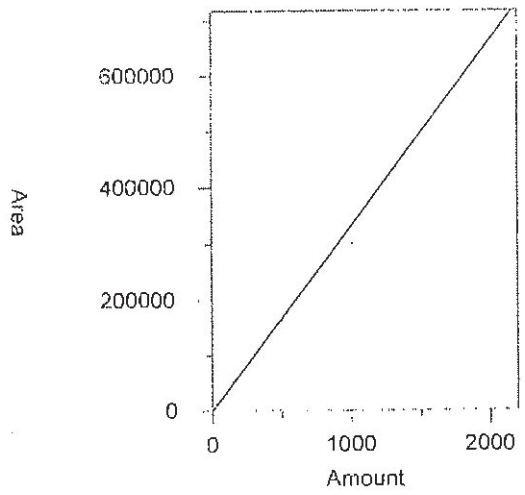
Single peak quantification by area

Y = 124.411 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.7492826
Average error: 12.083%
Average CF: 124.411
RSD: 19.915%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	3946	157.3679	26.490	Manual
2	100.3	12938.61	128.9991	3.688	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162\1001.0005.BND
3	501.5	62410.41	124.4475	0.029	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162\1001.0006.BND
4	1003	123909	123.5384	-0.701	Manual
5	2006	175931	87.70239	-29.506	Manual

10 2-Am-4,6-DNT



Expected retention time: 10.971 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

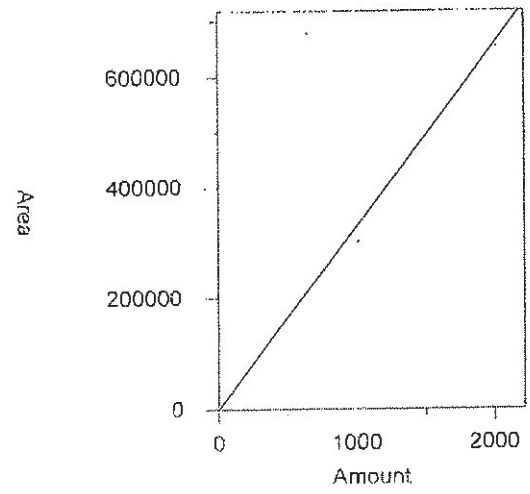
Single peak quantification by area

Y = 331.455 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 331.455
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	9800	391.6084	18.148	Manual
2	100.1	30903.33	308.7246	-6.858	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	164855.9	329.3824	-0.625	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	301678	301.3766	-9.075	Manual
5	2002	653018	326.1828	-1.591	Manual

11 3,4-Dinitrotoluene



Expected retention time: 10.972 minutes
Search window: 0.242 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

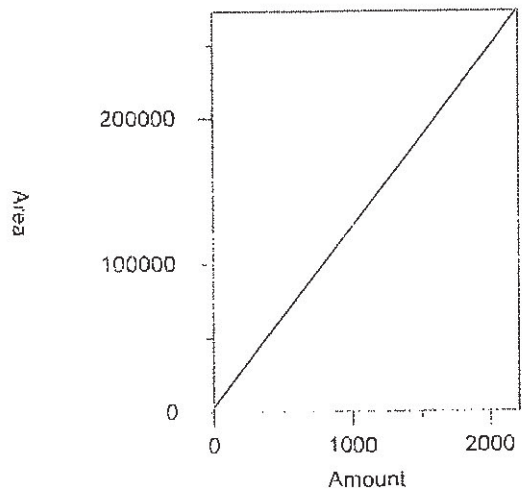
Single peak quantification by area

Y = 329.1532 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 329.1532
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.2	9800	388.8889	18.148	Manual	7/31/2016 2:12:02 PM
2	100.8	30903.33	306.5807	-6.858	Manual	7/31/2016 2:04:36 PM
3	504	164855.9	327.0951	-0.625	Manual	7/31/2016 2:04:39 PM
4	1008	301678	299.2837	-9.075	Manual	7/31/2016 2:09:50 PM
5	2016	653018	323.9177	-1.591	Manual	7/31/2016 2:08:35 PM

12 2,6-DNT



Expected retention time: 11.756 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

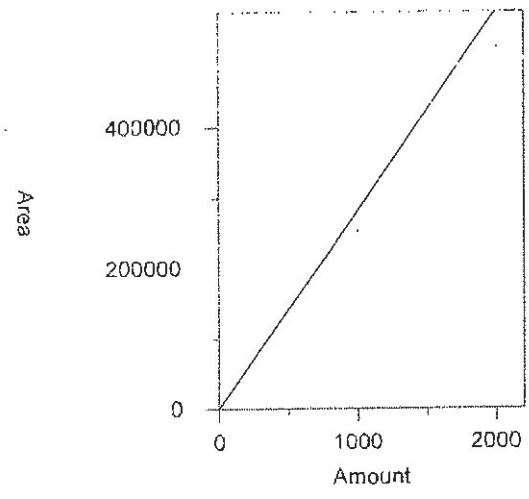
Single peak quantification by area

Y = 122.7019 X + 3330.402

Linear fit with equal weighting
Coefficient of determination: 0.9995252
Average error: 7.593%
Average CF: 145.3016
RSD: 21.987%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5052.243	201.4853	-21.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	13962.72	139.2096	-10.709	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	67079.15	133.757	3.413	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	128937.6	128.5519	2.007	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	247749	123.504	-0.690	Manual

13 2,4-DNT



Expected retention time: 12.452 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

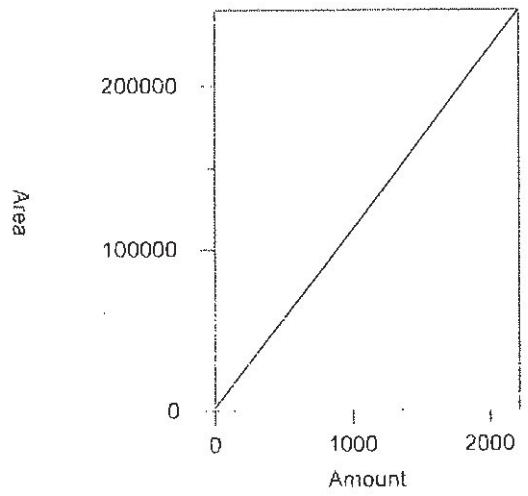
Single peak quantification by area

Y = 282.5082 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9784554
Average error: 9.870%
Average CF: 282.5082
RSD: 14.055%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	8756.587	349.9136	23.860	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	26893.81	268.6694	-4.899	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	142549.9	284.815	0.817	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	253228.9	252.9759	-10.454	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	512846.5	256.1671	-9.324	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

14 2-NT



Expected retention time: 14.35 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

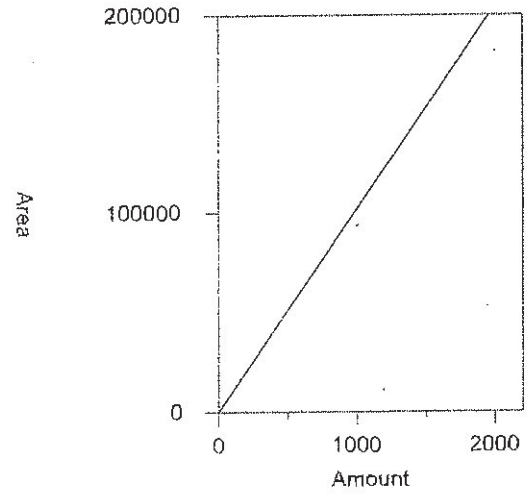
Single peak quantification by area

Y = 110.8549 X + 1788.915

Linear fit with equal weighting
Coefficient of determination: 0.999931
Average error: 2.804%
Average CF: 131.8325
RSD: 27.773%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	4943.087	196.7398	8.066	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	12460.69	123.987	-3.628	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	56837.48	113.1094	-1.141	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	114344.8	113.7759	1.013	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	224216.7	111.5506	-0.174	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

15 4-NT



Expected retention time: 15.886 minutes
Search window: 0.162 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

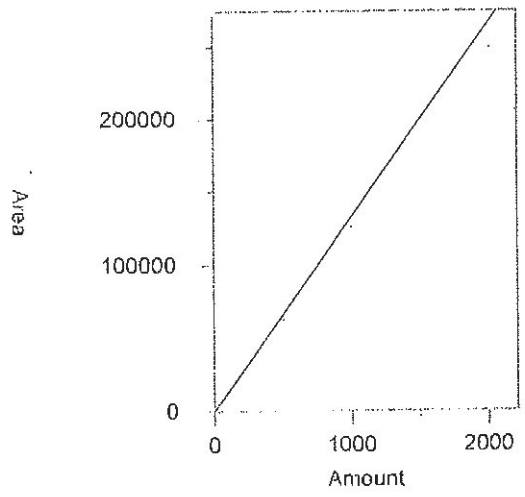
Single peak quantification by area

Y = 102.163 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9720693
Average error: 12.509%
Average CF: 102.163
RSD: 17.707%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	3356.179	134.1131	31.274	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	9887.746	98.77869	-3.313	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	46749.97	93.40653	-8.571	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	93749.27	93.65562	-8.327	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	181903.8	90.86104	-11.063	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

16 3-NT



Expected retention time:	16.683 minutes
Search window:	0.162 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 132.7551\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9910454
Average error:	10.013%
Average CF:	132.7551
RSD:	14.037%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4166.31	165.9884	25.034	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP1621001.0004.BND
2	100.4	12271.74	122.2285	-7.929	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP1621001.0005.BND
3	502	63316.97	126.1294	-4.991	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP1621001.0006.BND
4	1004	125734.3	125.2334	-5.666	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP1621001.0007.BND
5	2008	249384.6	124.1955	-6.448	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP1621001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621108B

GC Column (2): CHROMPACK ID: 100 (mm) Update File: 12EEXP16211008B.0040.RAW

Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			2.63			2.63	2.53	2.73
Nitroglycerin			9.21			9.21	9.02	9.40
3,4-Dinitrotoluene			11.08			11.08	10.80	11.37
PETN			17.62			17.62	17.33	17.91

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621108B

GC Column (2): CHROMPACK ID: 100 (mm) Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	2.23E+03	1.12E+03	8.95E+02	8.46E+02	8.22E+02	1.18E+03	51
Nitroglycerin	3.08E+02	2.75E+02	2.99E+02	2.75E+02	2.83E+02	2.88E+02	5
3,4-Dinitrotoluene	2.16E+03	2.09E+03	2.23E+03	2.30E+03	2.50E+03	2.26E+03	7
PETN	2.50E+02	2.73E+02	3.10E+02	2.56E+02	2.58E+02	2.70E+02	9

Linear

Average % RSD: 18

James H. Place
Senior Chemist

AUG 18 2016

File Name: V:\CP12\12eexp1621108B.CAL
Version: 1

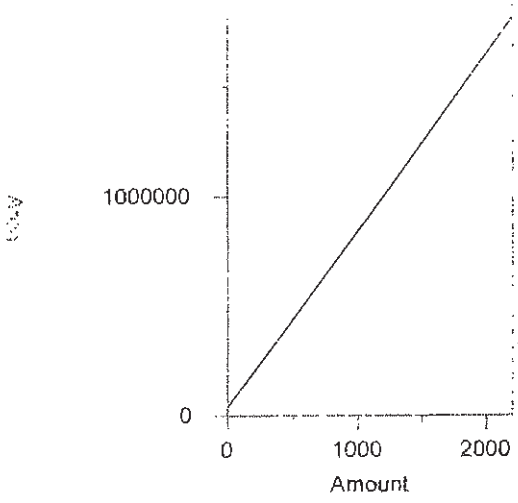
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 2.633 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

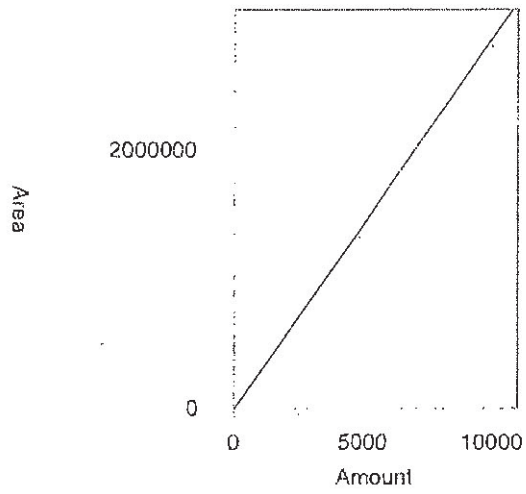
Single peak quantification by area

Y = 805.2766 X + 37388.52

Linear fit with equal weighting
Coefficient of determination: 0.9999336
Average error: 2.045%
Average CF: 1182.899
RSD: 50.515%

Level	Amount	Response	Cal Factor	Error, %	Source	D
1	25.015	55800.27	2230.672	-3.011	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162110018.0004.BND	7/
2	100.06	112141	1120.738	-4.937	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162110018.0005.BND	7/
3	500.3	447552.8	894.5689	1.655	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162110018.0006.BND	7/
4	1000.6	846707.3	846.1996	0.422	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162110018.0007.BND	7/
5	2001.2	1645620	822.3167	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162110018.0008.BND	7/

2 Nitroglycerin



Expected retention time:	9.207 minutes
Search window:	0.19 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

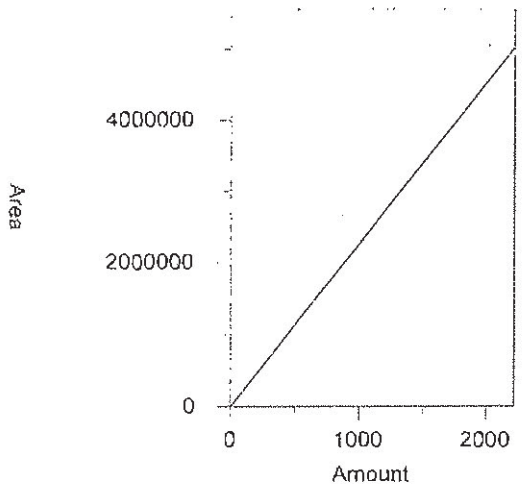
Y = 287.855 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9984417
Average error:	4.349%
Average CF:	287.855
RSD:	5.225%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	149840.5	308.4725	7.162	Manual	7/31/2016 2:13:36 PM
2	1063.86	292352.8	274.8038	-4.534	Manual	7/31/2016 2:13:45 PM
3	1947.18	581299.4	298.534	3.710	Manual	7/31/2016 2:13:49 PM
4	4857.82	1335512	274.92	-4.494	Manual	7/31/2016 2:13:56 PM
5	9956.51	2813161	282.5449	-1.845	Manual	7/31/2016 2:14:00 PM

3 3,4-Dinitrotoluene



Expected retention time:	11.081 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

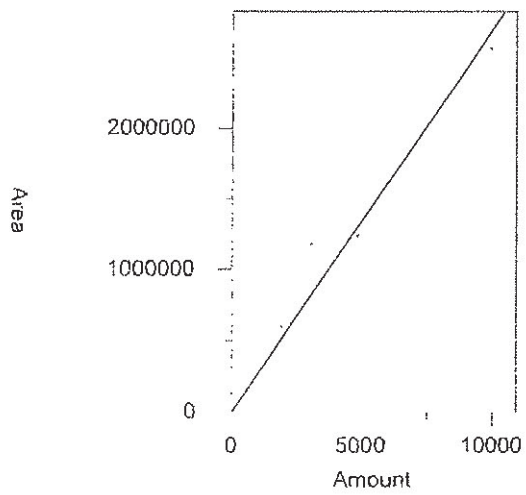
Y = 2258.673 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9853915
Average error:	5.118%
Average CF:	2258.673
RSD:	7.001%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	54453.62	2160.858	-4.331	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162\1001B.0004.BND
2	100.8	210800.4	2091.274	-7.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162\1001B.0005.BND
3	504	1126383	2234.887	-1.053	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP162\1001B.0006.BND
4	1008	2321369	2302.946	1.960	Manual
5	2016	5046855	2503.4	10.835	Manual

4 PETN



Expected retention time:	17.619 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 269.6573\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9940489
Average error:	6.588%
Average CF:	269.6573
RSD:	9.016%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	121312.6	250.289	-7.183	Manual	7/31/2016 2:14:24 PM
2	1061.44	290126.8	273.3332	1.363	Manual	7/31/2016 2:14:29 PM
3	1942.16	602831.4	310.3922	15.106	Manual	7/31/2016 2:14:32 PM
4	4845.76	1240206	255.9363	-5.088	Manual	7/31/2016 2:14:37 PM
5	9931.88	2565758	258.3356	-4.199	Manual	7/31/2016 2:14:44 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621109

GC Column (1) : CHROMPACK ID: 100 (mm) Update File: 12EEXP16211009.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
RDX			4.12			4.12	4.02	4.22
1,3,5-Trinitrobenzene			4.78			4.78	4.68	4.88
1,3-DNB			6.93			6.93	6.83	7.03
3,5-Dinitroaniline			7.29			7.29	6.96	7.63
Nitrobenzene			7.77			7.77	7.63	7.91
Tetryl			7.77			7.77	7.63	7.91
2,4,6-Trinitrotoluene			8.28			8.28	8.18	8.38
Tetryl breakdown			9.35			9.35	9.22	9.47
4-Amino-2,6-dinitrotoluene			10.12			10.12	9.98	10.26
2-Amino-4,6-dinitrotoluene			10.62			10.62	10.48	10.76
3,4-Dinitrotoluene			10.63			10.63	10.38	10.87
2,6-Dinitrotoluene			11.37			11.37	11.23	11.52
2,4-Dinitrotoluene			12.05			12.05	11.91	12.19
2-Nitrotoluene			13.87			13.87	13.73	14.02
4-Nitrotoluene			15.37			15.37	15.20	15.53
3-Nitrotoluene			16.13			16.13	15.97	16.30

Coelute

RT Update

File used : 12EEXP16211009.0030

Applies to : 12EEXP16211009.0001 →

James H. Place
Senior Chemist

AUG 23 2016

Audited By:

AUG 23 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Calibration File: 12EEXP1621109

GC Column (1) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	%RSD	
RDX	1.51E+02	9.26E+01	8.77E+01	8.83E+01	8.78E+01	1.02E+02	27	— Linear
1,3,5-Trinitrobenzene	2.05E+02	1.88E+02	1.94E+02	1.99E+02	1.97E+02	1.96E+02	3	
1,3-DNB	2.91E+02	2.50E+02	2.54E+02	2.41E+02	1.64E+02	2.40E+02	19	
3,5-Dinitroaniline	2.68E+02	2.24E+02	2.25E+02	2.69E+02	2.32E+02	2.44E+02	9	
Nitrobenzene	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
Tetryl	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
2,4,6-Trinitrotoluene	2.55E+02	1.98E+02	2.02E+02	2.13E+02	2.02E+02	2.14E+02	11	
Tetryl breakdown	4.33E+02	3.30E+02	3.29E+02	3.02E+02	3.96E+02	3.58E+02	15	
4-Amino-2,6-dinitrotoluene	1.57E+02	1.29E+02	1.24E+02	1.24E+02	8.77E+01	1.24E+02	20	
2-Amino-4,6-dinitrotoluene	3.92E+02	3.09E+02	3.29E+02	3.01E+02	3.26E+02	3.31E+02	11	
3,4-Dinitrotoluene	3.89E+02	3.07E+02	3.27E+02	2.99E+02	3.24E+02	3.29E+02	11	
2,6-Dinitrotoluene	2.01E+02	1.39E+02	1.34E+02	1.29E+02	1.24E+02	1.45E+02	22	— Linear
2,4-Dinitrotoluene	3.50E+02	2.69E+02	2.85E+02	2.53E+02	2.56E+02	2.83E+02	14	
2-Nitrotoluene	1.97E+02	1.24E+02	1.13E+02	1.14E+02	1.12E+02	1.32E+02	28	— Linear
4-Nitrotoluene	1.34E+02	9.88E+01	9.34E+01	9.37E+01	9.09E+01	1.02E+02	18	
3-Nitrotoluene	1.66E+02	1.22E+02	1.26E+02	1.25E+02	1.24E+02	1.33E+02	14	

Coelute

Average % RSD: 16

James H. Place
Senior Chemist

AUG 2 3 2016

File Name: V:\CP12\12eexp1621109.CAL
Version: 1

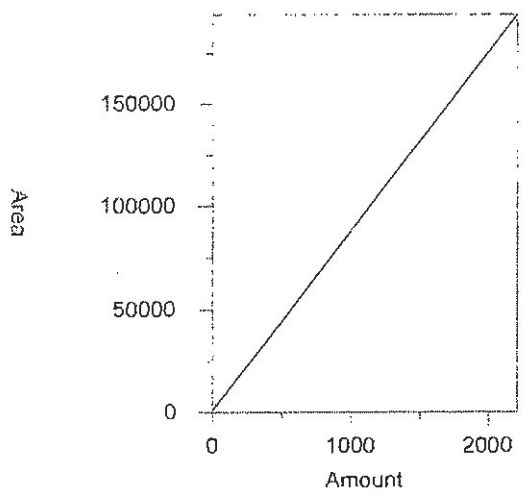
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 RDX



Expected retention time: 4.118 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

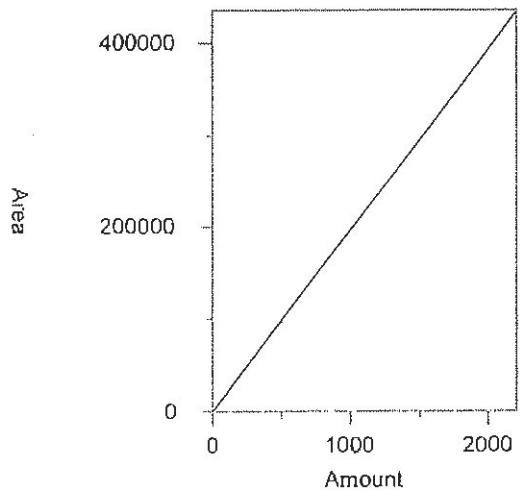
Single peak quantification by area

Y = 87.2768 X + 860.4011

Linear fit with equal weighting
Coefficient of determination: 0.9999437
Average error: 5.910%
Average CF: 101.5227
RSD: 27.484%

Level	Amount	Response	Cal Factor	Error, %	Source	Dat
1	25.1	3797.655	151.301	24.470	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND	7/3
2	100.4	9299.011	92.61963	-3.367	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND	7/3
3	502	44005.84	87.66103	-1.494	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND	7/3
4	1004	88628.66	88.27555	0.161	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND	7/3
5	2008	176214.8	87.75637	0.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND	7/3

2 1,3,5-TNB



Expected retention time: 4.781 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

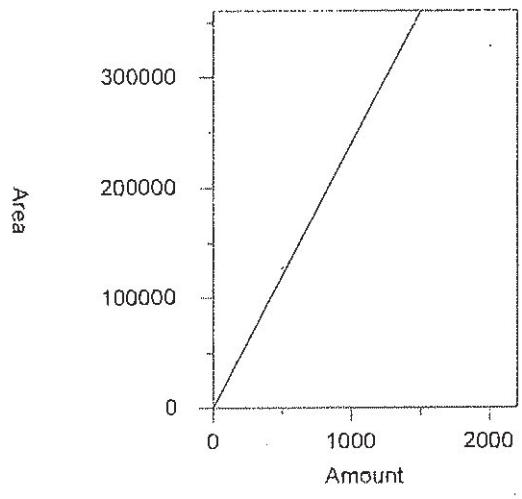
Single peak quantification by area

Y = 196.4074 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9999138
Average error: 2.287%
Average CF: 196.4074
RSD: 3.199%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5135.729	204.8147	4.281	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	18825.87	187.6956	-4.436	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	97235.12	193.8886	-1.282	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	199124.8	198.5292	1.080	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	395400.6	197.109	0.357	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

3 1,3-DNB



Expected retention time: 6.93 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

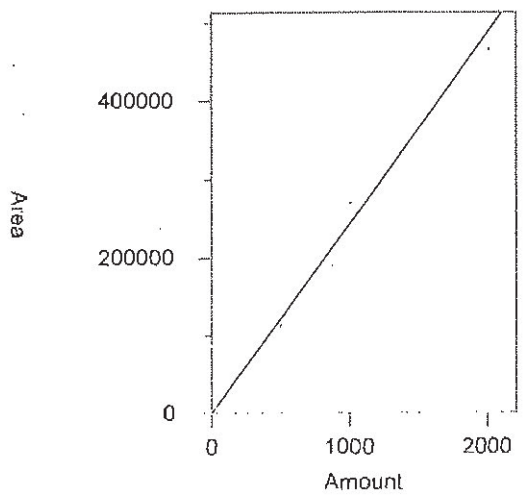
Single peak quantification by area

Y = 239.9322 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.6936649
Average error: 12.712%
Average CF: 239.9322
RSD: 19.431%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	7278.833	290.5722	21.106	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.2	25099.51	250.4941	4.402	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501	127354.2	254.2	5.947	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1002	241194.4	240.713	0.325	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2004	328018	163.6816	-31.780	Manual

4 3,5-dinitroaniline



Expected retention time: 7.294 minutes
Search window: 0.339 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

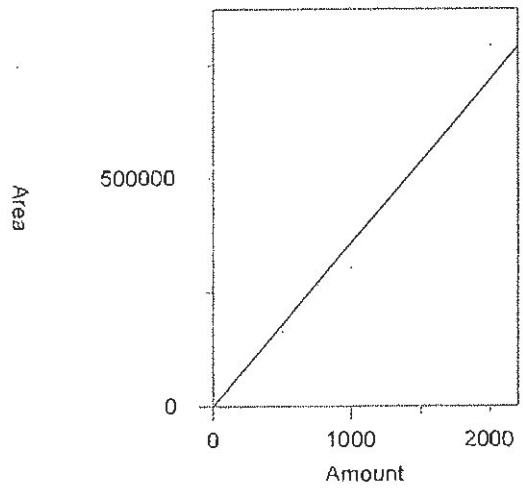
Single peak quantification by area

Y = 243.6005 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9915071
Average error: 8.231%
Average CF: 243.6005
RSD: 9.493%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	6729.358	268.1019	10.058	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	22465	223.755	-8.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	112746.7	224.595	-7.802	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	270302	269.2251	10.519	Manual
5	2008	466510	232.3257	-4.628	Manual

5 Tetryl



Expected retention time: 7.768 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

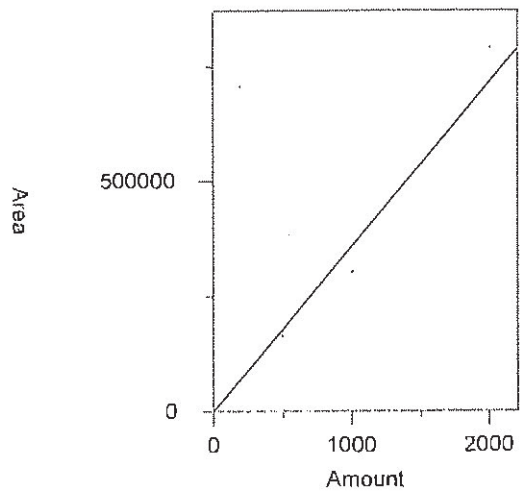
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:40 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:33 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:04 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:50 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:14 PM

6 Nitrobenzene



Expected retention time: 7.769 minutes
Search window: 0.14 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

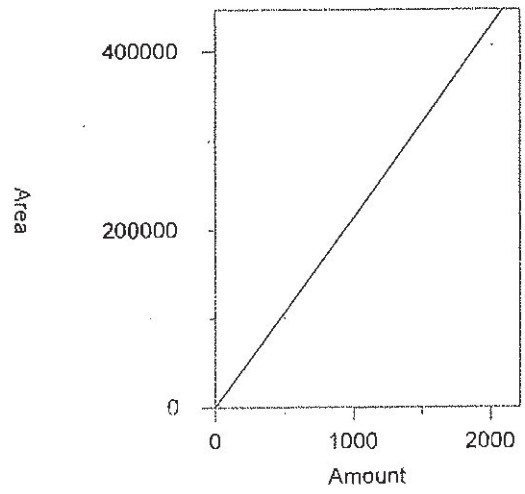
Single peak quantification by area

Y = 357.7505 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 357.7505
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	10846	432.5424	20.906	Manual	7/31/2016 1:44:38 PM
2	100.3	33073	329.7408	-7.829	Manual	7/31/2016 12:56:30 PM
3	501.5	164995	329.003	-8.036	Manual	7/31/2016 1:02:59 PM
4	1003	302870	301.9641	-15.594	Manual	7/31/2016 1:15:46 PM
5	2006	793378	395.5025	10.553	Manual	7/31/2016 2:08:12 PM

7 2,4,6-TNT



Expected retention time: 8.277 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

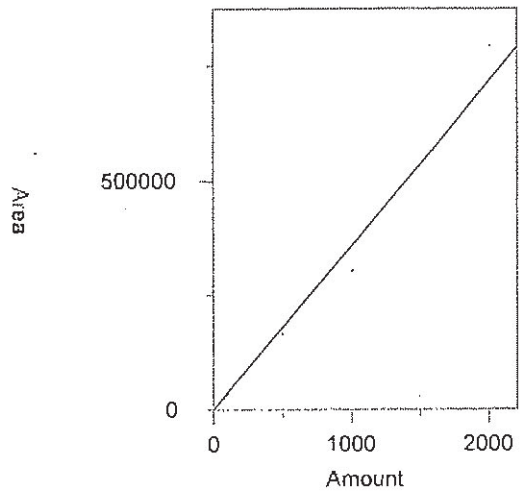
Single peak quantification by area

Y = 214.0261 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9945887
Average error: 7.605%
Average CF: 214.0261
RSD: 10.933%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	6399.85	254.7204	19.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	19912.04	198.1297	-7.427	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	101539.5	202.0686	-5.587	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	213954.5	212.89	-0.531	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	406666.3	202.3215	-5.469	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

8 Tetryl breakdown



Expected retention time: 9.345 minutes
Search window: 0.121 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

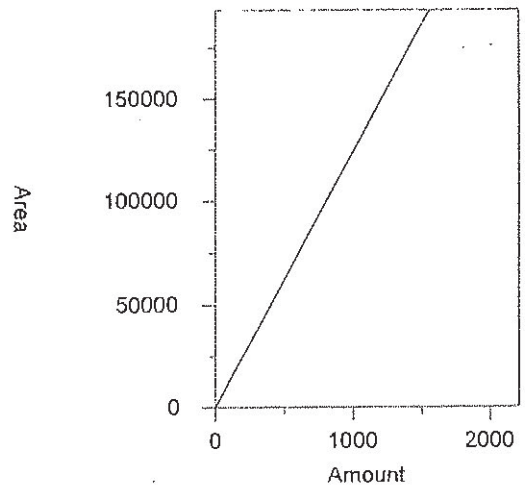
Single peak quantification by area

Y = 358.1076 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9777827
Average error: 12.583%
Average CF: 358.1076
RSD: 15.145%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.05	10846	432.9741	20.906	Manual	7/31/2016 1:44:44 PM
2	100.2	33073	330.0699	-7.829	Manual	7/31/2016 12:56:41 PM
3	501	164995	329.3313	-8.036	Manual	7/31/2016 1:03:09 PM
4	1002	302870	302.2655	-15.594	Manual	7/31/2016 1:15:57 PM
5	2004	793378	395.8972	10.553	Manual	7/31/2016 2:08:16 PM

9 4-Am-2,6-DNT



Expected retention time: 10.118 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

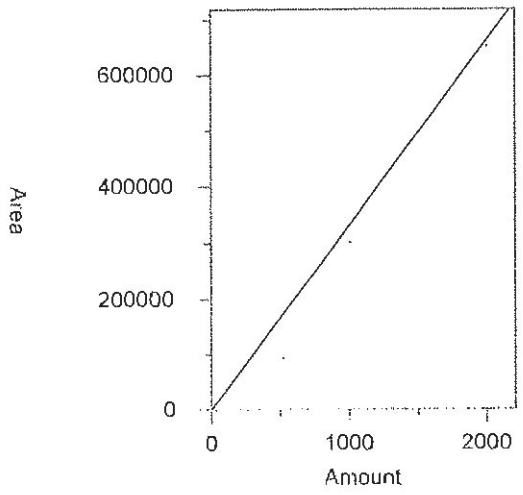
Single peak quantification by area

Y = 124.411 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.7492826
Average error: 12.083%
Average CF: 124.411
RSD: 19.915%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	3946	157.3679	26.490	Manual
2	100.3	12938.61	128.9991	3.688	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	62410.41	124.4475	0.029	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	123909	123.5384	-0.701	Manual
5	2006	175931	87.70239	-29.506	Manual

10 2-Am-4,6-DNT



Expected retention time: 10.62 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

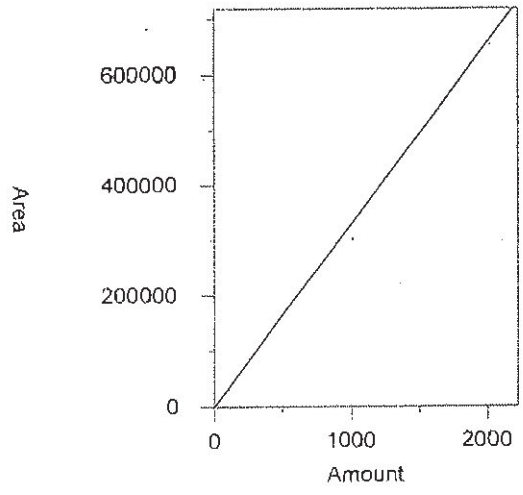
Single peak quantification by area

Y = 331.455 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 331.455
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	9800	391.6084	18.148	Manual
2	100.1	30903.33	308.7246	-6.858	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	164855.9	329.3824	-0.625	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	301678	301.3766	-9.075	Manual
5	2002	653018	326.1828	-1.591	Manual

11 3,4-Dinitrotoluene



Expected retention time: 10.625 minutes
Search window: 0.242 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

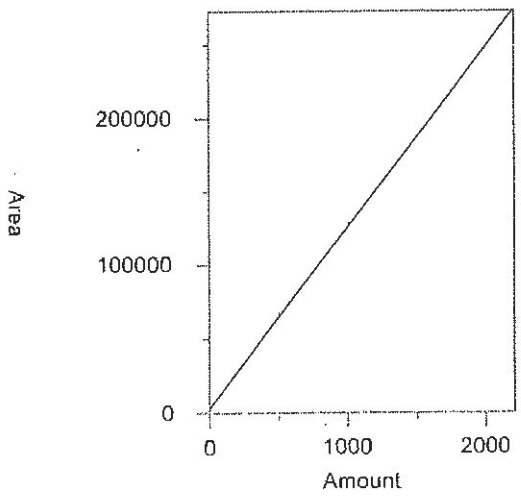
Single peak quantification by area

Y = 329.1532 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9962868
Average error: 7.259%
Average CF: 329.1532
RSD: 10.743%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.2	9800	388.8889	18.148	Manual	7/31/2016 2:12:02 PM
2	100.8	30903.33	306.5807	-6.858	Manual	7/31/2016 2:04:36 PM
3	504	164855.9	327.0951	-0.625	Manual	7/31/2016 2:04:39 PM
4	1008	301678	299.2837	-9.075	Manual	7/31/2016 2:09:50 PM
5	2016	653018	323.9177	-1.591	Manual	7/31/2016 2:08:35 PM

12 2,6-DNT



Expected retention time: 11.373 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

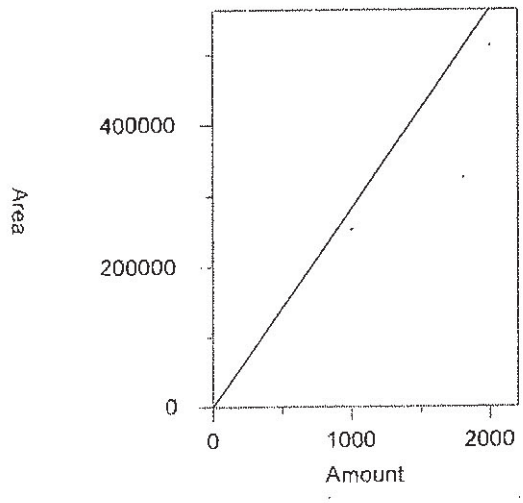
Single peak quantification by area

Y = 122.7019 X + 3330.402

Linear fit with equal weighting
Coefficient of determination: 0.9995252
Average error: 7.593%
Average CF: 145.3016
RSD: 21.987%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5052.243	201.4853	-21.147	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.3	13962.72	139.2096	-10.709	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	501.5	67079.15	133.757	3.413	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1003	128937.6	128.5519	2.007	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2006	247749	123.504	-0.690	Manual

13 2,4-DNT



Expected retention time: 12.052 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

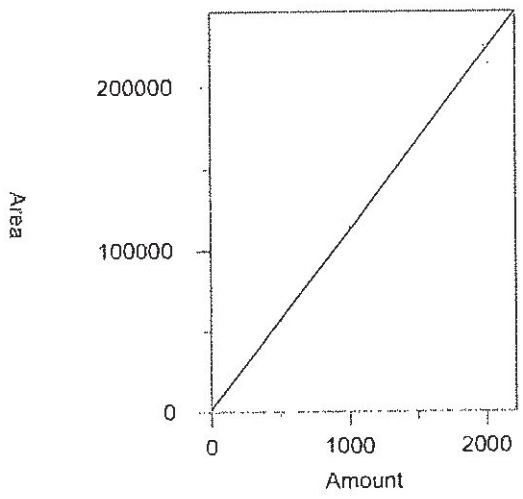
Single peak quantification by area

Y = 282.5082 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9784554
Average error: 9.870%
Average CF: 282.5082
RSD: 14.055%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	8756.587	349.9136	23.860	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	26893.81	268.6694	-4.899	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	142549.9	284.815	0.817	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	253228.9	252.9759	-10.454	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	512846.5	256.1671	-9.324	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

14 2-NT



Expected retention time: 13.874 minutes
Search window: 0.142 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

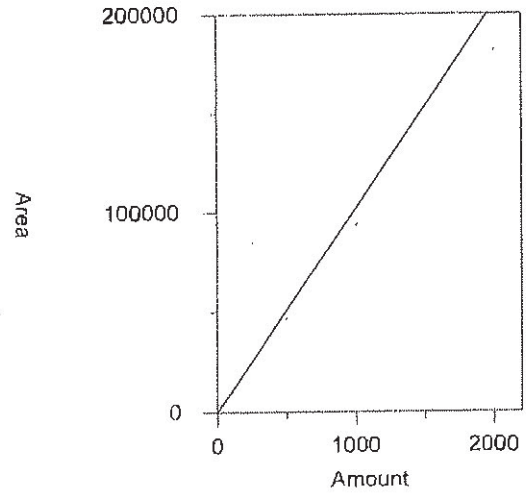
Single peak quantification by area

Y = 110.8549 X + 1788.915

Linear fit with equal weighting
Coefficient of determination: 0.999931
Average error: 2.804%
Average CF: 131.8325
RSD: 27.773%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	4943.087	196.7398	8.066	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.5	12460.69	123.987	-3.628	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502.5	56837.48	113.1094	-1.141	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1005	114344.8	113.7759	1.013	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2010	224216.7	111.5506	-0.174	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

15 4-NT



Expected retention time: 15.366 minutes
Search window: 0.162 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

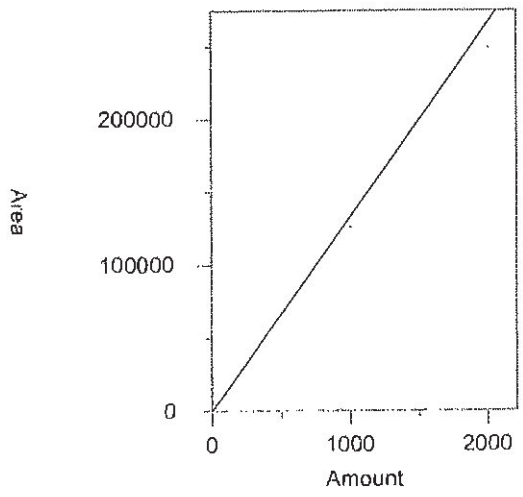
Single peak quantification by area

Y = 102.163 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9720693
Average error: 12.509%
Average CF: 102.163
RSD: 17.707%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	3356.179	134.1131	31.274	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.1	9887.746	98.77869	-3.313	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	500.5	46749.97	93.40653	-8.571	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1001	93749.27	93.65562	-8.327	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2002	181903.8	90.86104	-11.063	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

16 3-NT



Expected retention time:	16.134 minutes
Search window:	0.162 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 132.7551\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9910454
Average error:	10.013%
Average CF:	132.7551
RSD:	14.037%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4166.31	165.9884	25.034	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0004.BND
2	100.4	12271.74	122.2285	-7.929	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0005.BND
3	502	63316.97	126.1294	-4.991	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0006.BND
4	1004	125734.3	125.2334	-5.666	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0007.BND
5	2008	249384.6	124.1955	-6.448	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621109B

GC Column (2) : CHROMPACK ID: 100 (mm) Update File: 12EEXP16211009B.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS					MIDPOINT	RT WINDOW	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	RT	FROM	TO
HMX			2.56			2.56	2.46	2.66
Nitroglycerin			8.91			8.91	8.72	9.10
3,4-Dinitrotoluene			10.73			10.73	10.44	11.02
PETN			17.03			17.03	16.74	17.31

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Calibration File: 12EEXP1621109B

GC Column (2) : CHROMPACK ID: 100 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	2.23E+03	1.12E+03	8.95E+02	8.46E+02	8.22E+02	1.18E+03	51
Nitroglycerin	3.08E+02	2.75E+02	2.99E+02	2.75E+02	2.83E+02	2.88E+02	5
3,4-Dinitrotoluene	2.16E+03	2.09E+03	2.23E+03	2.30E+03	2.50E+03	2.26E+03	7
PETN	2.50E+02	2.73E+02	3.10E+02	2.56E+02	2.58E+02	2.70E+02	9

Average % RSD: 18

— Linear

James H. Place
Senior Chemist

AUG 2 3 2016

File Name: V:\CP12\12eexp1621109B.CAL
Version: 1

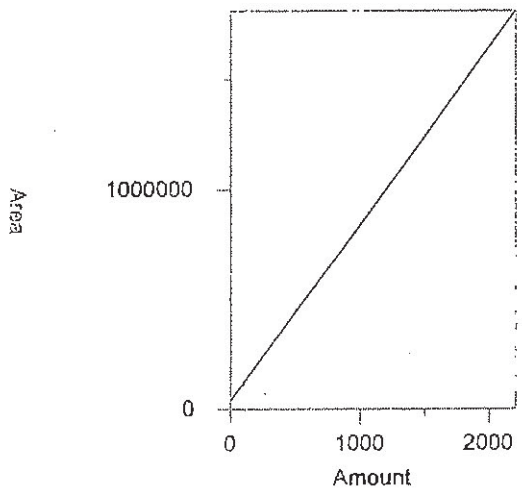
Creator:
Description:
Reason for change:

Internal standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 2.563 minutes
Search window: 0.1 minutes
No internal standard component
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

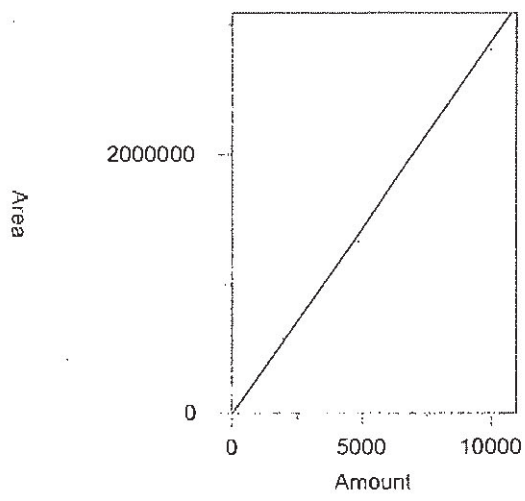
Single peak quantification by area

Y = 805.2766 X + 37388.52

Linear fit with equal weighting
Coefficient of determination: 0.9999336
Average error: 2.045%
Average CF: 1182.899
RSD: 50.515%

Level	Amount	Response	Cal Factor	Error, %	Source	D
1	25.015	55800.27	2230.672	-3.011	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND	7/
2	100.06	112141	1120.738	-4.937	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND	7/
3	500.3	447552.8	894.5689	1.655	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND	7/
4	1000.6	846707.3	846.1996	0.422	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0007.BND	7/
5	2001.2	1645620	822.3167	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0008.BND	7/

2 Nitroglycerin



Expected retention time:	8.911 minutes
Search window:	0.19 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

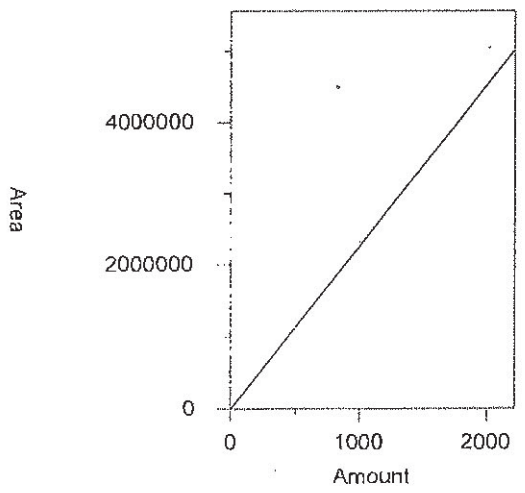
Y = 287.855 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9984417
Average error:	4.349%
Average CF:	287.855
RSD:	5.225%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	149840.5	308.4725	7.162	Manual	7/31/2016 2:13:36 PM
2	1063.86	292352.8	274.8038	-4.534	Manual	7/31/2016 2:13:45 PM
3	1947.18	581299.4	298.534	3.710	Manual	7/31/2016 2:13:49 PM
4	4857.82	1335512	274.92	-4.494	Manual	7/31/2016 2:13:56 PM
5	9956.51	2813161	282.5449	-1.845	Manual	7/31/2016 2:14:00 PM

3 3,4-Dinitrotoluene



Expected retention time:	10.729 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

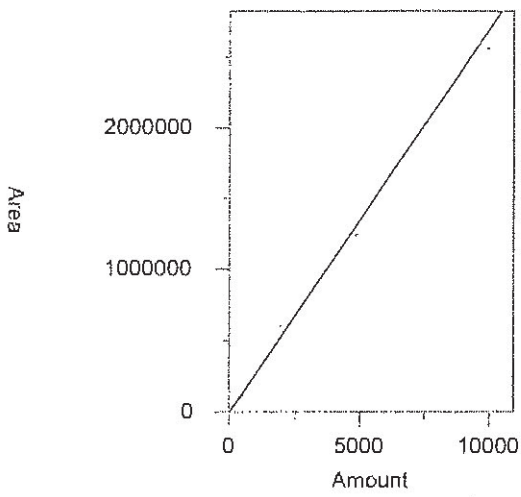
Y = 2258.673 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9853915
Average error:	5.118%
Average CF:	2258.673
RSD:	7.001%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	54453.62	2160.858	-4.331	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0004.BND
2	100.8	210800.4	2091.274	-7.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0005.BND
3	504	1126383	2234.887	-1.053	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12EEXP16211001B.0006.BND
4	1008	2321369	2302.946	1.960	Manual
5	2016	5046855	2503.4	10.835	Manual

4 PETN



Expected retention time:	17.025 minutes
Search window:	0.286 minutes
No internal standard component	
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

$Y = 269.6573\ X + 0$

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9940489
Average error:	6.588%
Average CF:	269.6573
RSD:	9.016%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	121312.6	250.289	-7.183	Manual	7/31/2016 2:14:24 PM
2	1061.44	290126.8	273.3332	1.363	Manual	7/31/2016 2:14:29 PM
3	1942.16	602831.4	310.3922	15.106	Manual	7/31/2016 2:14:32 PM
4	4845.76	1240206	255.9363	-5.088	Manual	7/31/2016 2:14:37 PM
5	9931.88	2565758	258.3356	-4.199	Manual	7/31/2016 2:14:44 PM

6D
INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621101

GC Column (3) : CAPCELL CN ID: 250 (mm) Update File:

Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS					MIDPOINT RT Level 5	RT WINDOW	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5		FROM	TO
HMX	3.90	3.91	3.90	3.89	3.90	3.90	3.80	4.00
RDX	4.75	4.80	4.78	4.79	4.82	4.82	4.72	4.92
3,5-Dinitroaniline	10.39	10.38	10.31	10.12	10.48	10.48	10.38	10.58
Nitrobenzene	11.75	11.82	11.81	11.29	11.90	11.90	11.74	12.06
2-Amino-4,6-dinitrotoluene	15.60	15.60	15.15	14.97	15.66	15.66	15.50	15.82
4-Amino-2,6-dinitrotoluene	15.60	15.60	15.15	14.97	15.66	15.66	15.50	15.82
1,3-DNB	17.51	17.39	17.15	17.02	17.46	17.46	17.31	17.61
2-Nitrotoluene	22.31	22.39	21.74	21.76	22.40	22.40	22.14	22.66
3-Nitrotoluene	25.77	25.59	24.91	24.98	25.55	25.55	25.29	25.81
4-Nitrotoluene	25.77	25.59	24.91	24.98	25.55	25.55	25.29	25.81
1,3,5-Trinitrobenzene	27.44	27.27	26.80	26.84	27.07	27.07	26.87	27.27
2,6-Dinitrotoluene	28.68	28.27	27.36	27.50	28.46	28.46	28.16	28.76
3,4-Dinitrotoluene	31.44	31.10	30.67	30.76	31.25	31.25	31.07	31.43
2,4-Dinitrotoluene	33.00	32.66	32.54	32.60	32.76	32.76	32.65	32.87
Tetryl	33.59	33.62	33.66	33.70	33.79	33.79	33.69	33.89
2,4,6-Trinitrotoluene	34.79	34.58	34.68	34.71	34.76	34.76	34.66	34.86

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6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

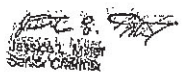
Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621101

GC Column (3) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	3.96E+01	9.40E+01	9.37E+01	9.77E+01	9.27E+01	8.35E+01	30
RDX	1.69E+02	1.30E+02	1.19E+02	1.12E+02	1.08E+02	1.28E+02	19
3,5-Dinitroaniline	4.07E+02	2.49E+02	2.31E+02	2.24E+02	2.20E+02	2.66E+02	30
Nitrobenzene	2.82E+02	1.82E+02	1.69E+02	1.63E+02	1.61E+02	1.91E+02	27
2-Amino-4,6-dinitrotoluene	4.76E+02	4.01E+02	3.66E+02	3.61E+02	3.53E+02	3.91E+02	13
4-Amino-2,6-dinitrotoluene	4.75E+02	4.00E+02	3.65E+02	3.61E+02	3.52E+02	3.91E+02	13
1,3-DNB	4.35E+02	3.22E+02	3.11E+02	3.01E+02	2.94E+02	3.33E+02	17
2-Nitrotoluene	2.33E+02	1.14E+02	1.12E+02	1.10E+02	1.06E+02	1.35E+02	41
3-Nitrotoluene	2.85E+02	1.90E+02	1.85E+02	1.66E+02	1.85E+02	2.02E+02	23
4-Nitrotoluene	2.86E+02	1.91E+02	1.86E+02	1.66E+02	1.86E+02	2.03E+02	23
1,3,5-Trinitrobenzene	2.59E+02	2.13E+02	2.26E+02	2.24E+02	2.57E+02	2.36E+02	9
2,6-Dinitrotoluene	2.34E+02	1.31E+02	1.41E+02	1.17E+02	1.29E+02	1.51E+02	32
3,4-Dinitrotoluene	1.93E+02	1.79E+02	1.05E+02	1.10E+02	1.16E+02	1.41E+02	30
2,4-Dinitrotoluene	1.67E+02	2.74E+02	2.59E+02	2.60E+02	2.57E+02	2.43E+02	18
Tetryl	1.65E+01	1.41E+02	1.57E+02	1.52E+02	1.58E+02	1.25E+02	49
2,4,6-Trinitrotoluene	1.04E+02	2.73E+02	2.09E+02	2.00E+02	1.95E+02	1.96E+02	31

Average % RSD: 25



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File Name: V:\CP12\12cexp1621101.CAL
Version: 40

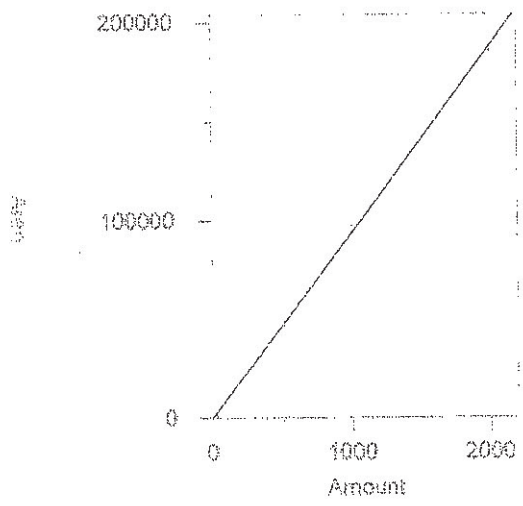
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 3.9 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

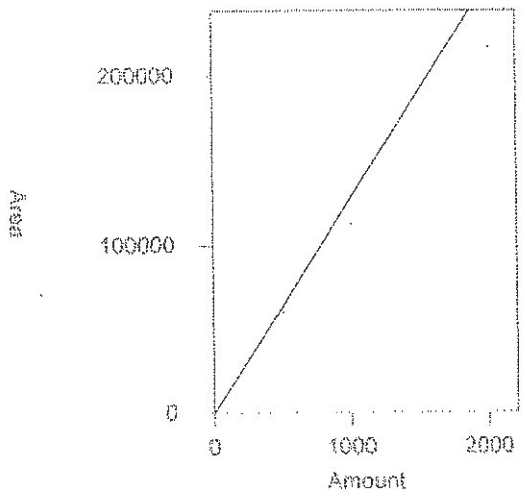
Single peak quantification by area

Y = 93.47101 X + 286.7556

Linear fit with equal weighting
Coefficient of determination: 0.9990436
Average error: 14.065%
Average CF: 83.52895
RSD: 29.509%

Level	Amount	Response	Cal Factor	Error, %	Source	Date
1	25.015	989.8299	39.56945	-62.291	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND	7/31/
2	100.06	9409.896	94.04254	-2.382	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND	7/31/
3	500.3	46854.54	93.65289	-0.416	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND	7/31/
4	1000.6	97772.98	97.71435	4.220	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND	7/31/
5	2001.2	185442.2	92.6655	-1.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND	7/31/

2 RDX



Expected retention time: 4.818 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

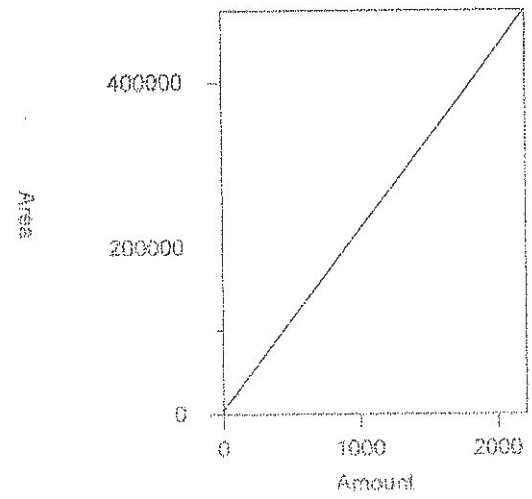
Single peak quantification by area

Y = 127.61 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9412987
Average error: 13.641%
Average CF: 127.61
RSD: 19.226%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4240.228	168.9334	32.383	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.4	13032.28	129.8036	1.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502	59883.89	119.2906	-6.519	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	112280.9	111.8336	-12.363	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	217243.5	108.189	-15.219	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

3 3,5-dinitroaniline



Expected retention time: 10.48 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

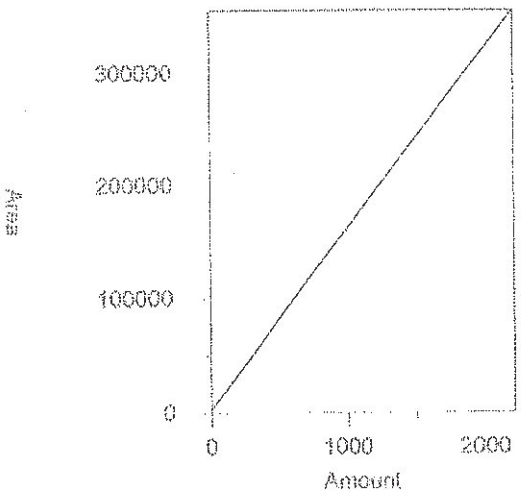
Single peak quantification by area

Y = 217.7032 X + 5084.649

Linear fit with equal weighting
Coefficient of determination: 0.9999126
Average error: 2.576%
Average CF: 266.3089
RSD: 29.810%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	10213	406.8924	-3.185	Manual
2	100.4	25019	249.1932	-7.138	Manual
3	502	116177.5	231.4293	1.579	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	225267.2	224.3697	0.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	441077.2	219.66	-0.261	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

4 Nitrobenzene



Expected retention time: 11.899 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

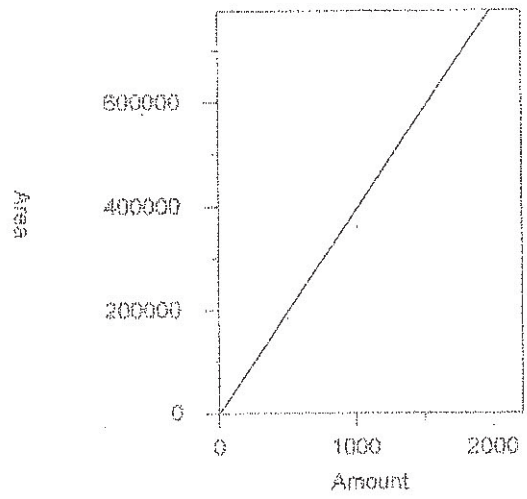
Single peak quantification by area

Y = 159.699 X + 3133.753

Linear fit with equal weighting
Coefficient of determination: 0.9999601
Average error: 1.494%
Average CF: 191.2579
RSD: 26.891%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	7074	282.1136	-0.899	Manual
2	100.3	18226	181.7148	-4.833	Manual
3	501.5	84554.1	168.6024	1.600	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1003	163200.3	162.7122	-0.068	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2006	323260	161.1466	-0.071	Manual

5 4-Am-2,6-DNT



Expected retention time: 15.658 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

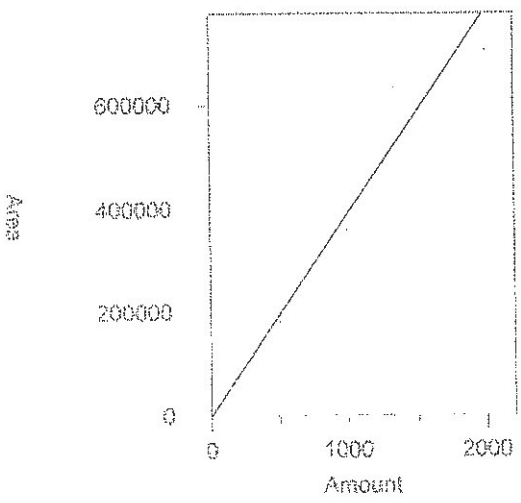
Single peak quantification by area

Y = 390.6894 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 390.6894
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	11912.02	475.0556	21.594	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	40161.76	400.4164	2.490	Manual
3	501.5	183130.3	365.1651	-6.533	Manual
4	1003	361759.3	360.6773	-7.682	Manual
5	2006	706378	352.1326	-9.869	Manual

6 2-Am-4,6-DNT



Expected retention time: 15.659 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

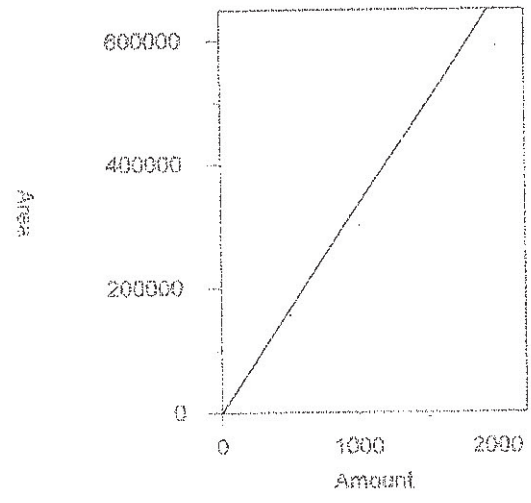
Single peak quantification by area

Y = 391.47 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 391.47
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	11912.02	476.0048	21.594	Manual
2	100.1	40161.76	401.2164	2.490	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	183130.3	365.8947	-6.533	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	361759.3	361.3979	-7.682	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	706378	352.8362	-9.869	Manual

7 1,3-DNB



Expected retention time: 17.458 minutes
Search window: 0.15 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

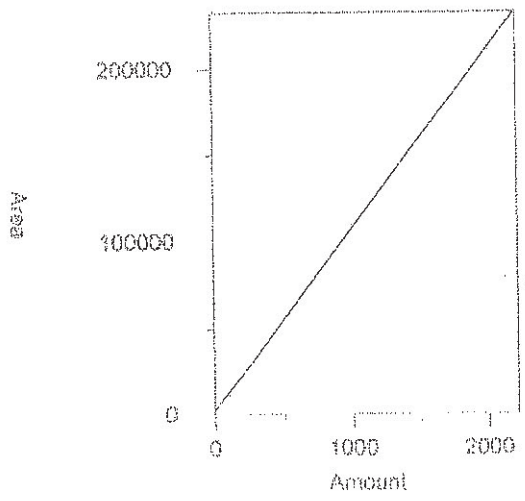
Single peak quantification by area

Y = 332.8964 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9687725
Average error: 12.247%
Average CF: 332.8964
RSD: 17.407%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	10892.23	434.8196	30.617	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.2	32300.18	322.3571	-3.166	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	156048.5	311.4741	-6.435	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	302065.9	301.463	-9.442	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	589914.3	294.3684	-11.574	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

8 2-NT



Expected retention time:	22.399 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

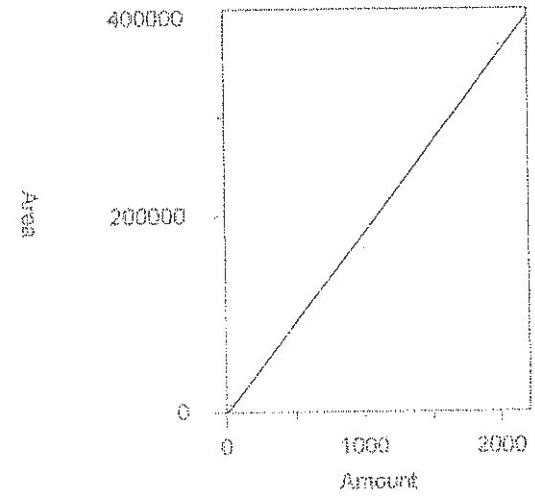
Y = 104.7342 X + 2906.16

Linear fit with equal weighting

Coefficient of determination:	0.9996743
Average error:	4.859%
Average CF:	134.8939
RSD:	40.815%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	5859.8	233.2259	5.818	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0004.BND
2	100.5	11450.75	113.9378	-14.750	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0005.BND
3	502.5	56340.11	112.1196	1.450	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0006.BND
4	1005	110084.5	109.5368	1.775	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0007.BND
5	2010	212355.5	105.6495	-0.500	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0008.BND

9 4-NT



Expected retention time:	25.552 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

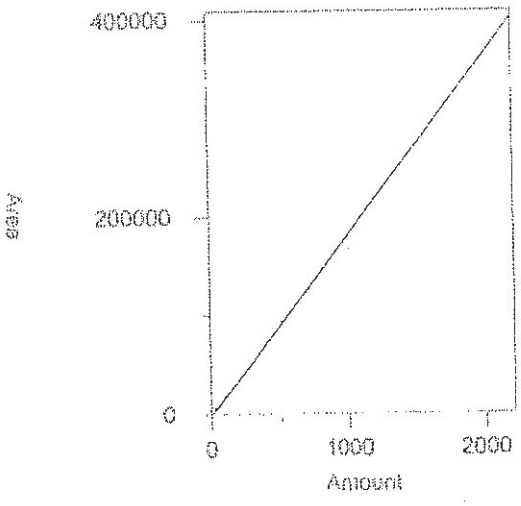
Y = 182.9801 X + -1257.135

Linear fit with equal weighting

Coefficient of determination:	0.9965405
Average error:	28.124%
Average CF:	202.9486
RSD:	23.343%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	7158	286.034	115.476	Manual
2	100.1	19112	190.9291	12.034	Manual
3	500.5	92873	185.5604	2.822	Manual
4	1001	166606.3	166.4398	-8.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12ccxp16211001.0007.BND
5	2002	371931	185.7797	1.880	Manual

10 3-NT



Expected retention time: 25.553 minutes
Search window: 0.26 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

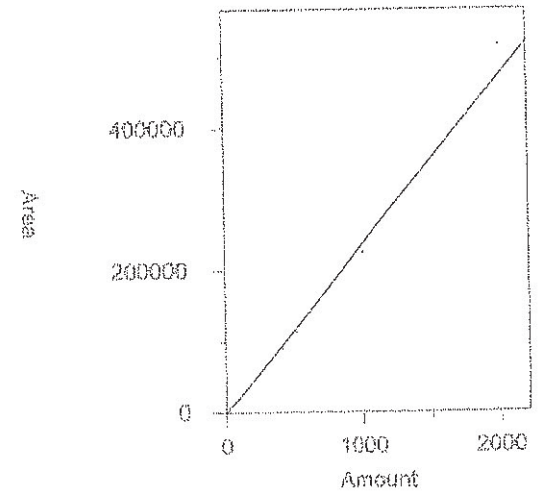
Single peak quantification by area

Y = 182.4333 X + -1257.155

Linear fit with equal weighting
Coefficient of determination: 0.9965405
Average error: 28.125%
Average CF: 202.3422
RSD: 23.343%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.1	7158	285.1793	115.478	Manual	7/31/2016 4:56:35 PM
2	100.4	19112	190.3586	12.034	Manual	7/31/2016 4:57:30 PM
3	502	92873	185.006	2.822	Manual	7/31/2016 4:58:26 PM
4	1004	166606.3	165.9425	-8.411	Manual	7/31/2016 4:59:44 PM
5	2008	371931	185.2246	1.880	Manual	7/31/2016 5:01:09 PM

11 1,3,5-TNB



Expected retention time: 27.071 minutes
Search window: 0.2 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

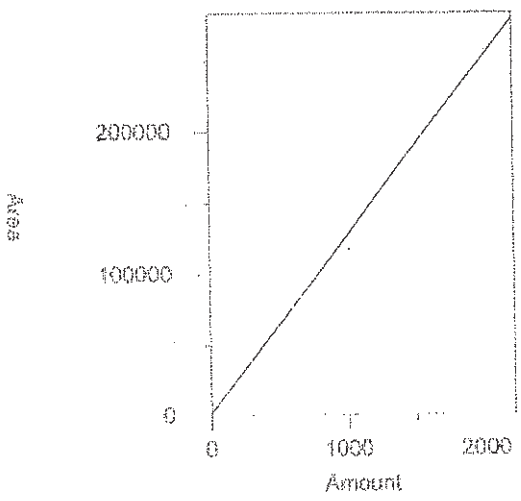
Single peak quantification by area

Y = 235.9349 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9885247
Average error: 7.520%
Average CF: 235.9349
RSD: 8.821%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	6493	258.9432	9.752	Manual	7/31/2016 4:56:40 PM
2	100.3	21403	213.3898	-9.556	Manual	7/31/2016 4:57:36 PM
3	501.5	113282	225.8863	-4.259	Manual	7/31/2016 4:58:49 PM
4	1003	224845	224.1725	-4.985	Manual	7/31/2016 4:59:49 PM
5	2006	516109	257.2827	9.048	Manual	7/31/2016 5:01:21 PM

12 2,6-DNT



Expected retention time:	27.933 minutes
Search window:	0.3 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

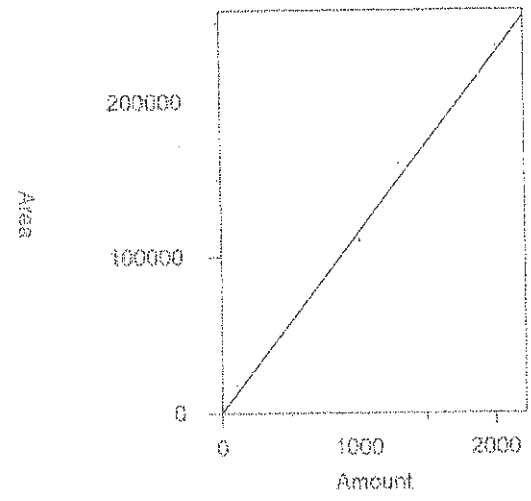
Single peak quantification by area

Y = 126.3104 X + 1347.232

Linear fit with equal weighting	
Coefficient of determination:	0.9962553
Average error:	11.138%
Average CF:	150.5242
RSD:	31.661%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5878.026	234.4178	30.204	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	13104	130.6481	-6.508	Manual
3	501.5	70879	141.334	9.564	Manual
4	1003	117796	117.4437	-7.998	Manual
5	2006	258328	128.7777	1.414	Manual

13 3,4-Dinitrotoluene



Expected retention time:	31.249 minutes
Search window:	0.18 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

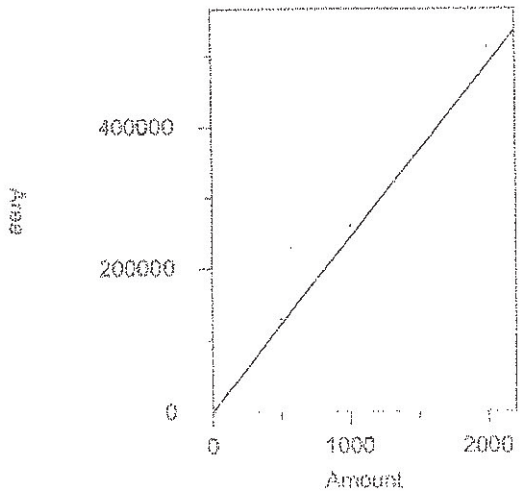
Single peak quantification by area

Y = 114.3201 X + 746.6834

Linear fit with equal weighting	
Coefficient of determination:	0.99705
Average error:	19.245%
Average CF:	140.6028
RSD:	29.730%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	4864	193.0159	34.085	Manual
2	100.8	18007.12	178.642	46.755	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	504	52826.8	104.8151	-9.487	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1008	110945	110.0645	-4.342	Manual
5	2016	234816.3	116.4763	1.557	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

14 2,4-DNT



Expected retention time: 32.757 minutes
Search window: 0.11 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

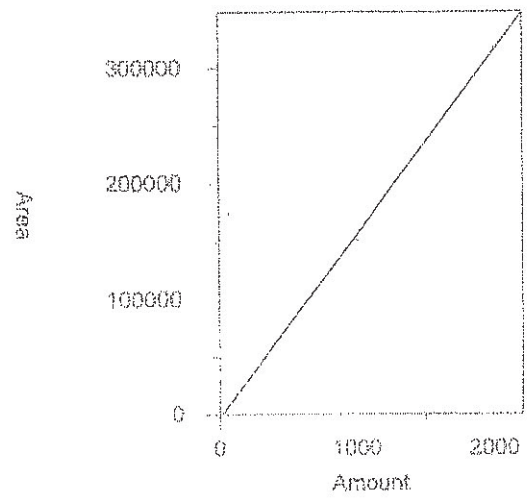
Single peak quantification by area

Y = 243.4707 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9938254
Average error: 12.519%
Average CF: 243.4707
RSD: 17.720%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	4186	167.2727	-31.297	Manual
2	100.1	27446.51	274.1909	12.618	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	129449.5	258.6404	6.231	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	260610.7	260.3503	6.933	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	514312.1	256.8991	5.515	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

15 Tetryl



Expected retention time: 33.791 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

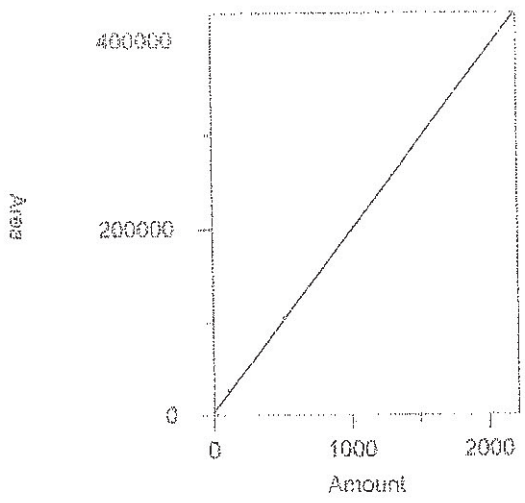
Single peak quantification by area

Y = 159.0213 X + -2990.364

Linear fit with equal weighting
Coefficient of determination: 0.9996614
Average error: 14.566%
Average CF: 124.8977
RSD: 48.832%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	413	16.48703	-58.414	Manual
2	100.2	14106.57	140.7841	8.985	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	78577.62	156.8416	2.476	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	152437.5	152.1332	-2.502	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	317118.5	158.2428	0.453	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

16 2,4,6-TNT



Expected retention time:	34.758 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 193.2523 X + 4592.776

Linear fit with equal weighting	
Coefficient of determination:	0.9992185
Average error:	18.224%
Average CF:	196.0521
RSD:	30.652%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	2622	104.3582	-72.249	Manual
2	100.5	27397.48	272.6118	14.087	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	104806.1	208.5694	3.052	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	201209.6	200.2086	1.206	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	390970.8	194.5128	-0.524	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories
Contract:
Lab Code: Case No.: SAS No.: SDG No.:
Instrument: Y6329B
Calibration File: 12CEXP1621101B
GC Column (4) : CAPCELL CN ID: 250 (mm)
Update File:
Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	RT OF STANDARDS					MIDPOINT (level 3) RT	3 RT WINDOW	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5		FROM	TO
HMX	4.05	4.05	4.04	4.03	4.03	4.03	3.93	4.13
Nitroglycerin	8.90	8.92	8.81	8.65	8.86	8.86	8.76	8.96
PETN	24.02	24.00	23.34	23.38	23.99	23.99	23.78	24.20

Jessica L. Miller

JUL 31 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621101B

GC Column (4) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 7/29/2016 7/29/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	4.80E+02	4.51E+02	4.42E+02	4.55E+02	4.31E+02	4.52E+02	4
Nitroglycerin	1.89E+02	1.64E+02	1.58E+02	1.61E+02	1.55E+02	1.65E+02	8
PETN	1.48E+02	1.34E+02	1.25E+02	1.18E+02	1.06E+02	1.26E+02	13

Average % RSD: 8

File Name: V:\CP12\12cexp1621101B.CAL
Version: 24

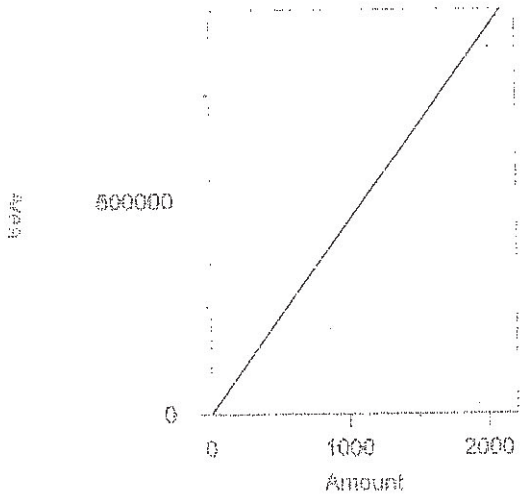
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 4.031 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

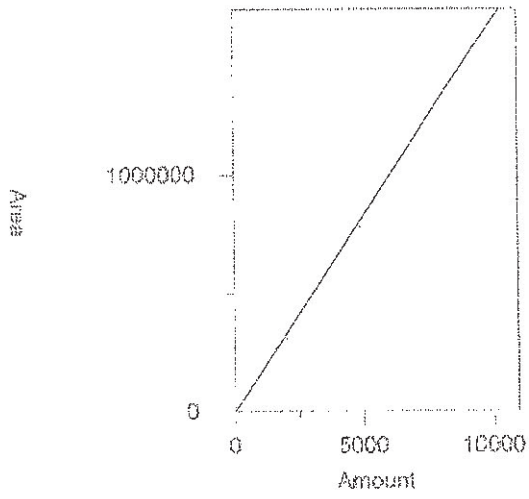
Single peak quantification by area

Y = 451.6414 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9963331
Average error: 2.773%
Average CF: 451.6414
RSD: 4.021%

Level	Amount	Response	Cal Factor	Error, %	Source	Da
1	25.015	11994.8	479.5043	6.169	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0004.BND	7/3
2	100.06	45101.28	450.7424	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0005.BND	7/3
3	500.3	221258	442.2507	-2.079	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0006.BND	7/3
4	1000.6	455362.5	455.0894	0.763	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0007.BND	7/3
5	2001.2	861757.3	430.6203	-4.654	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0008.BND	7/3

2 Nitroglycerin



Expected retention time: 8.858 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

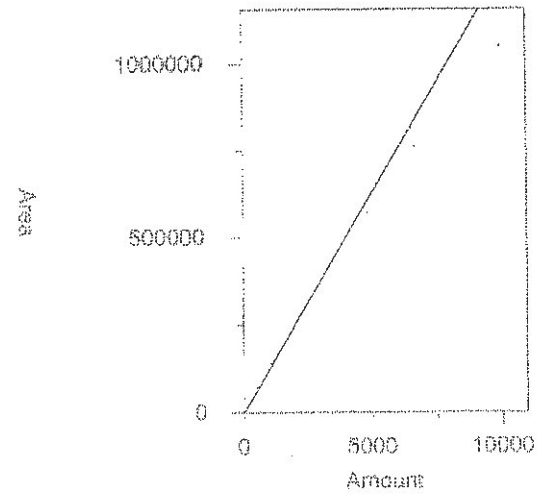
Single peak quantification by area

$Y = 165.3441\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9924413
Average error: 5.680%
Average CF: 165.3441
RSD: 8.174%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	91720.05	188.8215	14.199	Manual	7/31/2016 4:55:02 PM
2	1063.86	174175.5	163.7203	-0.982	Manual	7/31/2016 4:55:07 PM
3	1947.18	307368	157.8529	-4.531	Manual	7/31/2016 4:55:10 PM
4	4857.82	782708.9	161.1235	-2.553	Manual	7/31/2016 4:55:14 PM
5	9956.51	1545275	155.2025	-6.134	Manual	7/31/2016 4:55:19 PM

3 PETN



Expected retention time: 23.992 minutes
Search window: 0.21 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

Single peak quantification by area

$Y = 126.0229\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9349322
Average error: 9.436%
Average CF: 126.0229
RSD: 12.677%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	71685	147.8987	17.359	Manual	7/31/2016 5:05:51 PM
2	1061.44	142101	133.8757	6.231	Manual	7/31/2016 5:06:02 PM
3	1942.16	242496.5	124.8592	-0.923	Manual	7/31/2016 4:55:35 PM
4	4845.76	570434	117.7182	-6.590	Manual	7/31/2016 4:55:42 PM
5	9931.88	1050426	105.7631	-16.076	Manual	7/31/2016 4:55:46 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621108

GC Column (3): CAPCELL CN ID: 250 (mm) Update File: 12CEXP16211008.0040.RAW

Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			3.94			3.94	3.84	4.04
RDX			4.84			4.84	4.74	4.94
3,5-Dinitroaniline			10.51			10.51	10.41	10.61
Nitrobenzene			11.98			11.98	11.82	12.14
4-Amino-2,6-dinitrotoluene			15.80			15.80	15.64	15.96
2-Amino-4,6-dinitrotoluene			15.81			15.81	15.65	15.97
1,3-DNB			17.63			17.63	17.48	17.78
2-Nitrotoluene			22.68			22.68	22.42	22.94
3-Nitrotoluene			25.98			25.98	25.72	26.24
4-Nitrotoluene			25.98			25.98	25.72	26.24
1,3,5-Trinitrobenzene			27.37			27.37	27.17	27.57
2,6-Dinitrotoluene			28.68			28.68	28.38	28.98
3,4-Dinitrotoluene			31.42			31.42	31.24	31.60
2,4-Dinitrotoluene			32.89			32.89	32.78	33.00
Tetryl			33.89			33.89	33.79	33.99
2,4,6-Trinitrotoluene			34.84			34.84	34.74	34.94

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RT Update

File used: 12CEXP16211008.0040

Applies to: 12CEXP16211008.0001 →

James H. Place
Senior Chemist

AUG 18 2016

Audited By: 2855 18Aug16

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621108

GC Column (3) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	CALIBRATION FACTORS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	%RSD	
HMX	3.96E+01	9.40E+01	9.37E+01	9.77E+01	9.27E+01	8.35E+01	30	Linear
RDX	1.69E+02	1.30E+02	1.19E+02	1.12E+02	1.08E+02	1.28E+02	19	
3,5-Dinitroaniline	4.07E+02	2.49E+02	2.31E+02	2.24E+02	2.20E+02	2.66E+02	30	Linear
Nitrobenzene	2.82E+02	1.82E+02	1.69E+02	1.63E+02	1.61E+02	1.91E+02	27	
4-Amino-2,6-dinitrotoluene	4.75E+02	4.00E+02	3.65E+02	3.61E+02	3.52E+02	3.91E+02	13	
2-Amino-4,6-dinitrotoluene	4.76E+02	4.01E+02	3.66E+02	3.61E+02	3.53E+02	3.91E+02	13	
1,3-DNB	4.35E+02	3.22E+02	3.11E+02	3.01E+02	2.94E+02	3.33E+02	17	
2-Nitrotoluene	2.33E+02	1.14E+02	1.12E+02	1.10E+02	1.06E+02	1.35E+02	41	Linear
3-Nitrotoluene	2.85E+02	1.90E+02	1.85E+02	1.66E+02	1.85E+02	2.02E+02	23	
4-Nitrotoluene	2.86E+02	1.91E+02	1.86E+02	1.66E+02	1.86E+02	2.03E+02	23	
1,3,5-Trinitrobenzene	2.59E+02	2.13E+02	2.26E+02	2.24E+02	2.57E+02	2.36E+02	9	
2,6-Dinitrotoluene	2.34E+02	1.31E+02	1.41E+02	1.17E+02	1.29E+02	1.51E+02	32	Linear
3,4-Dinitrotoluene	1.93E+02	1.79E+02	1.05E+02	1.10E+02	1.16E+02	1.41E+02	30	
2,4-Dinitrotoluene	1.67E+02	2.74E+02	2.59E+02	2.60E+02	2.57E+02	2.43E+02	18	
Tetryl	1.65E+01	1.41E+02	1.57E+02	1.52E+02	1.58E+02	1.25E+02	49	Linear
2,4,6-Trinitrotoluene	1.04E+02	2.73E+02	2.09E+02	2.00E+02	1.95E+02	1.96E+02	31	

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Average % RSD: 25

James H. Place
Senior Chemist

AUG 18 2016

File Name: V:\CP12\12cexp1621108.CAL
Version: 2

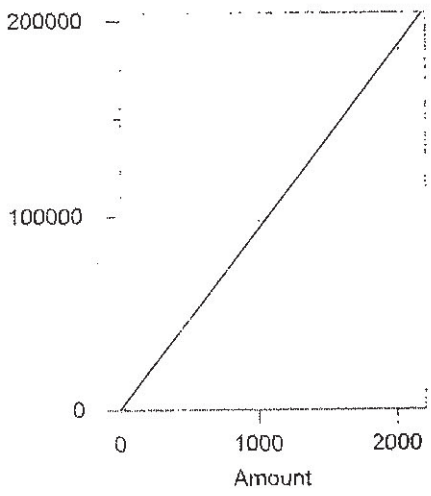
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 3.936 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

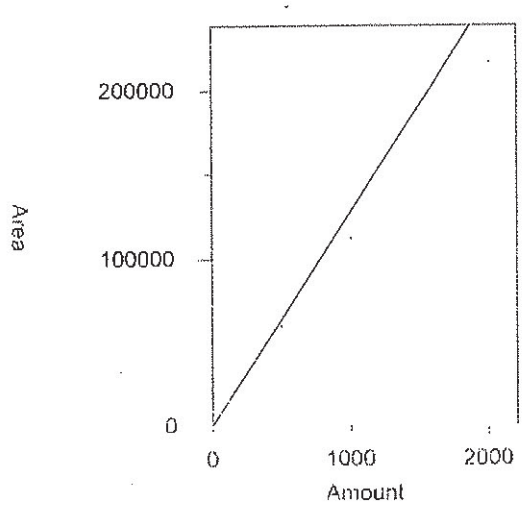
Single peak quantification by area

Y = 93.47101 X + 286.7556

Linear fit with equal weighting
Coefficient of determination: 0.9990436
Average error: 14.065%
Average CF: 83.52895
RSD: 29.509%

Level	Amount	Response	Cal Factor	Error, %	Source	Date
1	25.015	989.8299	39.56945	-62.291	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND	7/31/
2	100.06	9409.896	94.04254	-2.382	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND	7/31/
3	500.3	46854.54	93.65289	-0.416	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND	7/31/
4	1000.6	97772.98	97.71435	4.220	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND	7/31/
5	2001.2	185442.2	92.6655	-1.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND	7/31/

2 RDX



Expected retention time: 4.838 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

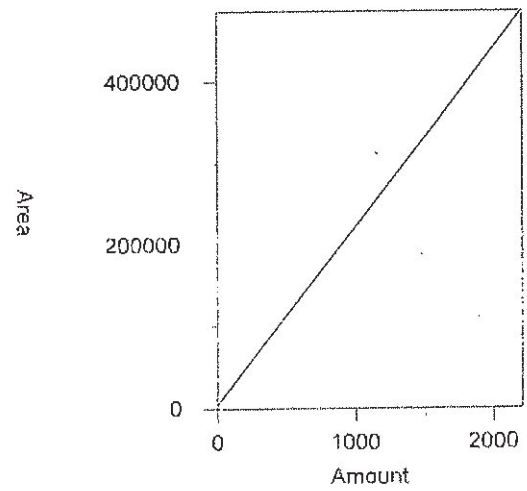
Single peak quantification by area

Y = 127.61 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9412987
Average error: 13.641%
Average CF: 127.61
RSD: 19.226%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4240.228	168.9334	32.383	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.4	13032.28	129.8036	1.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502	59883.89	119.2906	-6.519	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	112280.9	111.8336	-12.363	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	217243.5	108.189	-15.219	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

3 3,5-dinitroaniline



Expected retention time: 10.506 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

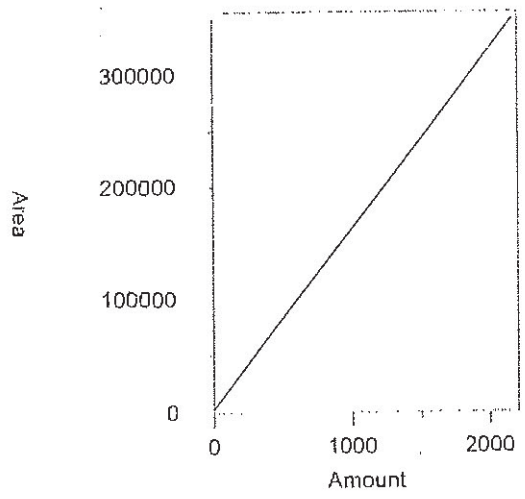
Single peak quantification by area

Y = 217.7032 X + 5084.649

Linear fit with equal weighting
Coefficient of determination: 0.9999126
Average error: 2.576%
Average CF: 266.3089
RSD: 29.810%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	10213	406.8924	-3.185	Manual
2	100.4	25019	249.1932	-7.138	Manual
3	502	116177.5	231.4293	1.579	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	225267.2	224.3697	0.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	441077.2	219.66	-0.261	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

4 Nitrobenzene



Expected retention time: 11.981 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

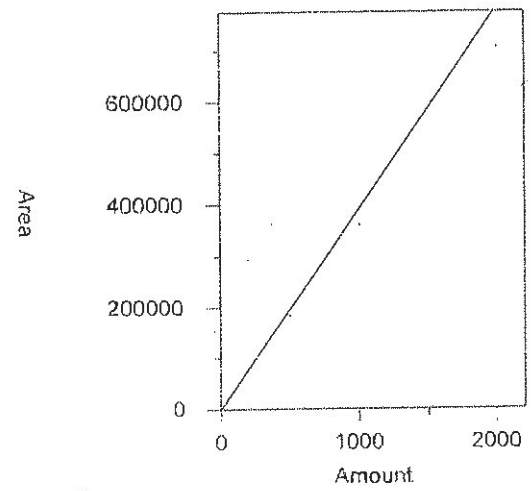
Single peak quantification by area

Y = 159.699 X + 3133.753

Linear fit with equal weighting
Coefficient of determination: 0.9999601
Average error: 1.494%
Average CF: 191.2579
RSD: 26.891%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	7074	282.1136	-0.899	Manual
2	100.3	18226	181.7148	-4.833	Manual
3	501.5	84554.1	168.6024	1.600	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1003	163200.3	162.7122	-0.068	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2006	323260	161.1466	-0.071	Manual

5 4-Am-2,6-DNT



Expected retention time: 15.8 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

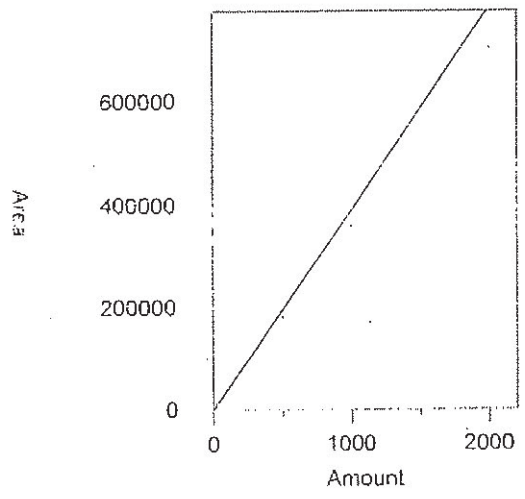
Single peak quantification by area

Y = 390.6894 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 390.6894
RSD: 12.958%

Level	Amount	Respoose	Cal Factor	Error, %	Source
1	25.075	11912.02	475.0556	21.594	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	40161.76	400.4164	2.490	Manual
3	501.5	183130.3	365.1651	-6.533	Manual
4	1003	361759.3	360.6773	-7.682	Manual
5	2006	706378	352.1326	-9.869	Manual

6 2-Am-4,6-DNT



Expected retention time: 15.81 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

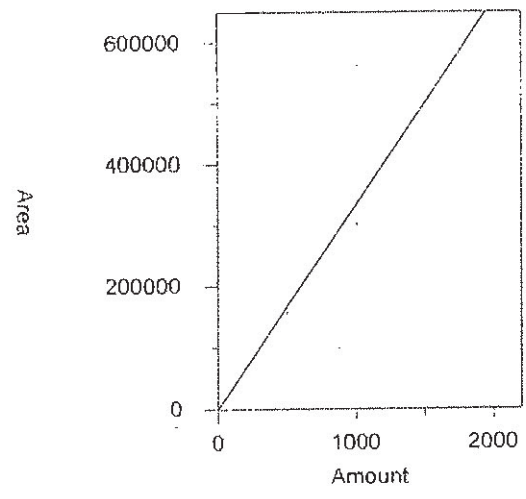
Single peak quantification by area

Y = 391.47 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 391.47
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	11912.02	476.0048	21.594	Manual
2	100.1	40161.76	401.2164	2.490	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	183130.3	365.8947	-6.533	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	361759.3	361.3979	-7.682	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	706378	352.8362	-9.869	Manual

7 1,3-DNB



Expected retention time: 17.626 minutes
Search window: 0.15 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

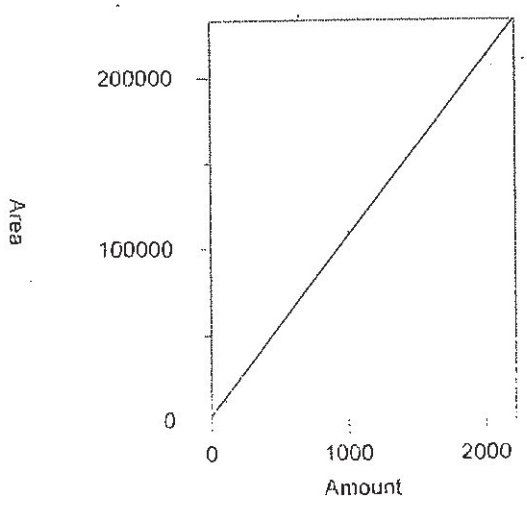
Single peak quantification by area

Y = 332.8964 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9687725
Average error: 12.247%
Average CF: 332.8964
RSD: 17.407%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	10892.23	434.8196	30.617	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.2	32300.18	322.3571	-3.166	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	156048.5	311.4741	-6.435	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	302065.9	301.463	-9.442	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	589914.3	294.3684	-11.574	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

8 2-NT



Expected retention time:	22.684 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

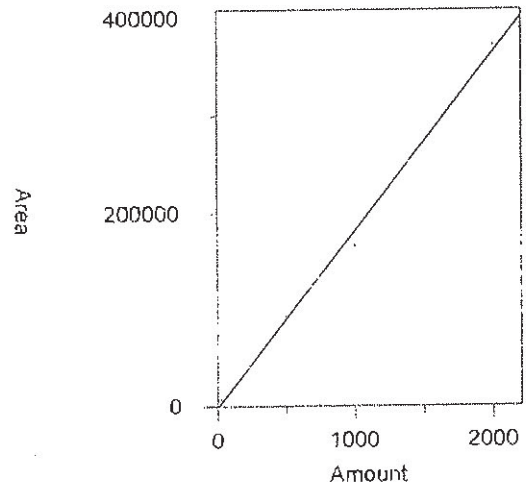
Single peak quantification by area

Y = 104.7342 X + 2906.16

Linear fit with equal weighting	
Coefficient of determination:	0.9996743
Average error:	4.859%
Average CF:	134.8939
RSD:	40.815%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	5859.8	233.2259	5.818	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.5	11450.75	113.9378	-14.750	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	56340.11	112.1196	1.450	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	110084.5	109.5368	1.775	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	212355.5	105.6495	-0.500	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

9 4-NT



Expected retention time:	25.982 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

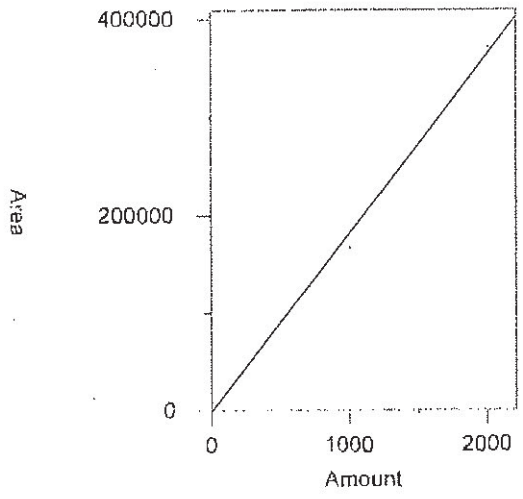
Single peak quantification by area

Y = 182.9801 X + -1257.135

Linear fit with equal weighting	
Coefficient of determination:	0.9965405
Average error:	28.124%
Average CF:	202.9486
RSD:	23.343%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	7158	286.034	115.476	Manual
2	100.1	19112	190.9291	12.034	Manual
3	500.5	92873	185.5604	2.822	Manual
4	1001	166606.3	166.4398	-8.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	371931	185.7797	1.880	Manual

10 3-NT



Expected retention time: 25.983 minutes
Search window: 0.26 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

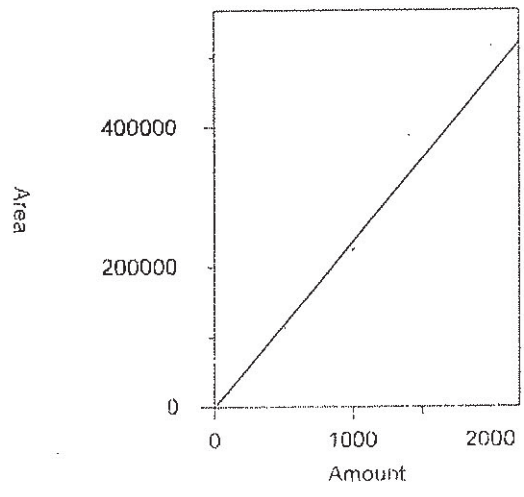
Single peak quantification by area

$\dot{Y} = 182.4333\ X + -1257.155$

Linear fit with equal weighting
Coefficient of determination: 0.9965405
Average error: 28.125%
Average CF: 202.3422
RSD: 23.343%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.1	7158	285.1793	115.478	Manual	7/31/2016 4:56:35 PM
2	100.4	19112	190.3586	12.034	Manual	7/31/2016 4:57:30 PM
3	502	92873	185.006	2.822	Manual	7/31/2016 4:58:26 PM
4	1004	166606.3	165.9425	-8.411	Manual	7/31/2016 4:59:44 PM
5	2008	371931	185.2246	1.880	Manual	7/31/2016 5:01:09 PM

11 1,3,5-TNB



Expected retention time: 27.37 minutes
Search window: 0.2 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

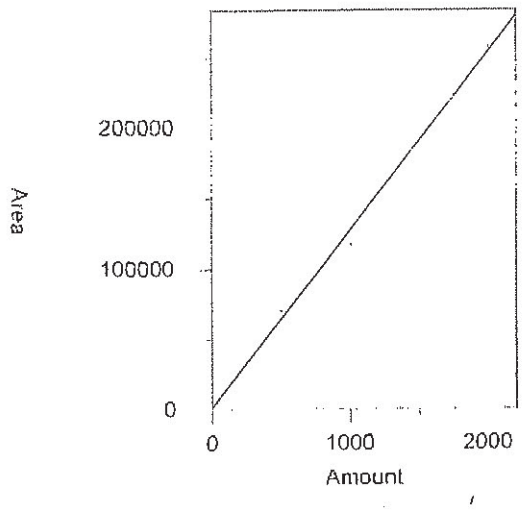
Single peak quantification by area

$Y = 235.9349\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9885247
Average error: 7.520%
Average CF: 235.9349
RSD: 8.821%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	6493	258.9432	9.752	Manual	7/31/2016 4:56:40 PM
2	100.3	21403	213.3898	-9.556	Manual	7/31/2016 4:57:36 PM
3	501.5	113282	225.8863	-4.259	Manual	7/31/2016 4:58:49 PM
4	1003	224845	224.1725	-4.985	Manual	7/31/2016 4:59:49 PM
5	2006	516109	257.2827	9.048	Manual	7/31/2016 5:01:21 PM

12 2,6-DNT



Expected retention time:	28.682 minutes
Search window:	0.3 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

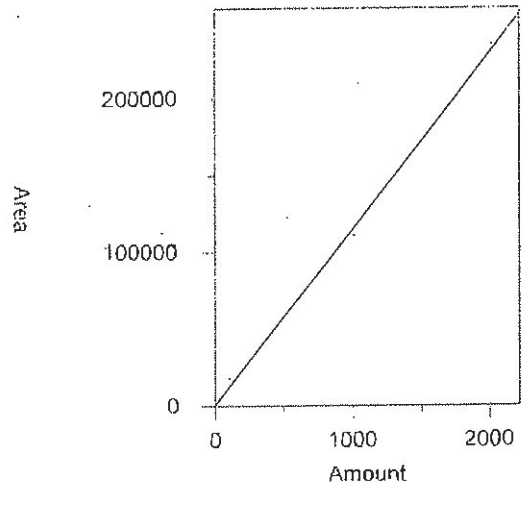
Single peak quantification by area

Y = 126.3104 X + 1347.232

Linear fit with equal weighting	
Coefficient of determination:	0.9962553
Average error:	11.138%
Average CF:	150.5242
RSD:	31.661%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5878.026	234.4178	30.204	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	13104	130.6481	-6.508	Manual
3	501.5	70879	141.334	9.564	Manual
4	1003	117796	117.4437	-7.998	Manual
5	2006	258328	128.7777	1.414	Manual

13 3,4-Dinitrotoluene



Expected retention time:	31.417 minutes
Search window:	0.18 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

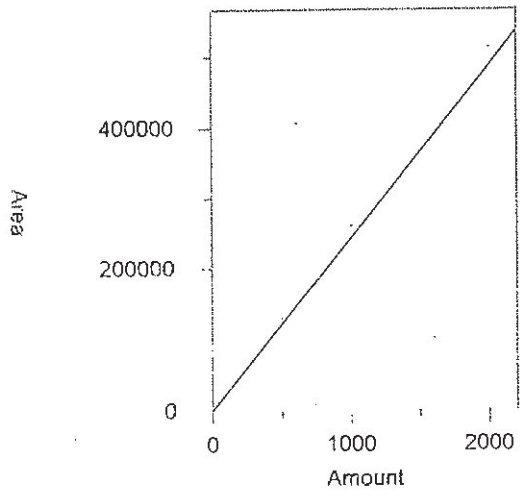
Single peak quantification by area

Y = 114.3201 X + 746.6834

Linear fit with equal weighting	
Coefficient of determination:	0.99705
Average error:	19.245%
Average CF:	140.6028
RSD:	29.730%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	4864	193.0159	34.085	Manual
2	100.8	18007.12	178.642	46.755	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	504	52826.8	104.8151	-9.487	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1008	110945	110.0645	-4.342	Manual
5	2016	234816.3	116.4763	1.557	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

14 2,4-DNT



Expected retention time: 32.887 minutes
Search window: 0.11 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

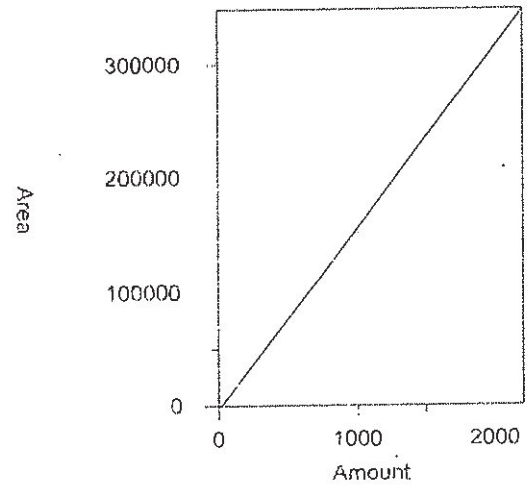
Single peak quantification by area

Y = 243.4707 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9938254
Average error: 12.519%
Average CF: 243.4707
RSD: 17.720%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	4186	167.2727	-31.297	Manual
2	100.1	27446.51	274.1909	12.618	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	129449.5	258.6404	6.231	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	260610.7	260.3503	6.933	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	514312.1	256.8991	5.515	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

15 Tetryl



Expected retention time: 33.886 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

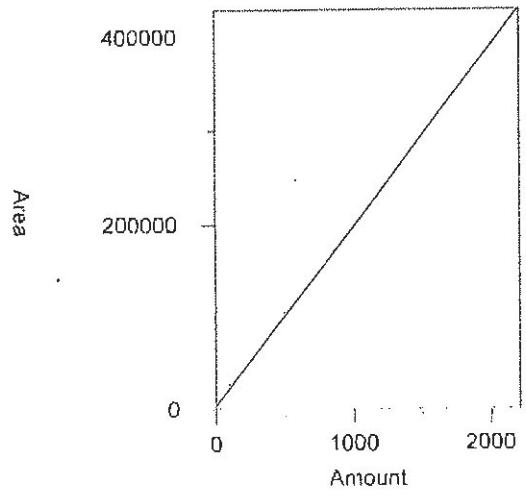
Single peak quantification by area

Y = 159.0213 X + -2990.364

Linear fit with equal weighting
Coefficient of determination: 0.9996614
Average error: 14.566%
Average CF: 124.8977
RSD: 48.832%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	413	16.48703	-58.414	Manual
2	100.2	14106.57	140.7841	8.985	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	78577.62	156.8416	2.476	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	152437.5	152.1332	-2.502	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	317118.5	158.2428	0.453	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

16 2,4,6-TNT



Expected retention time:	34.838 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 193.2523 X + 4592.776

Linear fit with equal weighting	
Coefficient of determination:	0.9992185
Average error:	18.224%
Average CF:	196.0521
RSD:	30.652%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	2622	104.3582	-72.249	Manual
2	100.5	27397.48	272.6118	14.087	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	104806.1	208.5694	3.052	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	201209.6	200.2086	1.206	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	390970.8	194.5128	-0.524	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621108B

GC Column (4) : CAPCELL CN ID: 250 (mm) Update File: 12CEXP16211008B.0040.RAW

Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			4.08			4.08	3.98	4.18
Nitroglycerin			8.98			8.98	8.88	9.08
PETN			24.33			24.33	24.12	24.54

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621108B

GC Column (4) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 8/17/2016 8/17/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	4.80E+02	4.51E+02	4.42E+02	4.55E+02	4.31E+02	4.52E+02	4
Nitroglycerin	1.89E+02	1.64E+02	1.58E+02	1.61E+02	1.55E+02	1.65E+02	8
PETN	1.48E+02	1.34E+02	1.25E+02	1.18E+02	1.06E+02	1.26E+02	13

Average % RSD: 8

File Name: V:\CP12\12Cexp1621108B.CAL
Version: 1

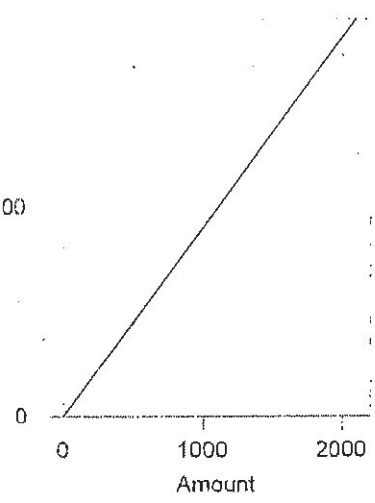
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 4.075 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

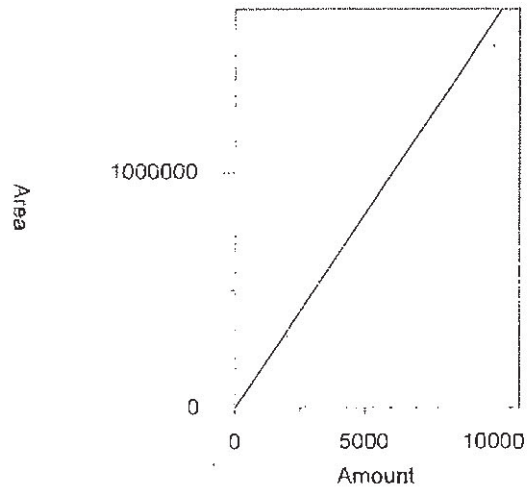
Single peak quantification by area

$Y = 451.6414\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9963331
Average error: 2.773%
Average CF: 451.6414
RSD: 4.021%

Level	Amount	Response	Cal Factor	Error, %	Source	Da
1	25.015	11994.8	479.5043	6.169	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0004.BND	7/3
2	100.06	45101.28	450.7424	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0005.BND	7/3
3	500.3	221258	442.2507	-2.079	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0006.BND	7/3
4	1000.6	455362.5	455.0894	0.763	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0007.BND	7/3
5	2001.2	861757.3	430.6203	-4.654	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0008.BND	7/3

2 Nitroglycerin



Expected retention time:	8.982 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

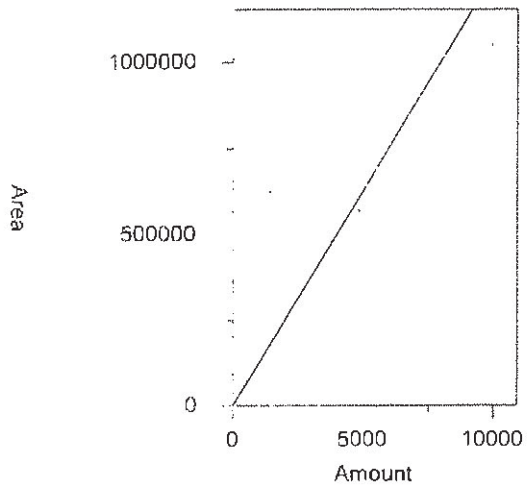
Y = 165.3441 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9924413
Average error:	5.680%
Average CF:	165.3441
RSD:	8.174%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	91720.05	188.8215	14.199	Manual	7/31/2016 4:55:02 PM
2	1063.86	174175.5	163.7203	-0.982	Manual	7/31/2016 4:55:07 PM
3	1947.18	307368	157.8529	-4.531	Manual	7/31/2016 4:55:10 PM
4	4857.82	782708.9	161.1235	-2.553	Manual	7/31/2016 4:55:14 PM
5	9956.51	1545275	155.2025	-6.134	Manual	7/31/2016 4:55:19 PM

3 PETN



Expected retention time:	24.332 minutes
Search window:	0.21 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 126.0229 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9349322
Average error:	9.436%
Average CF:	126.0229
RSD:	12.677%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	71685	147.8987	17.359	Manual	7/31/2016 5:05:51 PM
2	1061.44	142101	133.8757	6.231	Manual	7/31/2016 5:06:02 PM
3	1942.16	242496.5	124.8592	-0.923	Manual	7/31/2016 4:55:35 PM
4	4845.76	570434	117.7182	-6.590	Manual	7/31/2016 4:55:42 PM
5	9931.88	1050426	105.7631	-16.076	Manual	7/31/2016 4:55:46 PM

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621109

GC Column (3) : CAPCELL CN ID: 250 (mm) Update File: 12CEXP16211009.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			3.98			3.98	3.88	4.08
RDX			4.90			4.90	4.80	5.00
3,5-Dinitroaniline			10.64			10.64	10.54	10.74
Nitrobenzene			12.12			12.12	11.96	12.28
2-Amino-4,6-dinitrotoluene			15.97			15.97	15.81	16.13
4-Amino-2,6-dinitrotoluene			15.97			15.97	15.81	16.13
1,3-DNB			17.83			17.83	17.68	17.98
2-Nitrotoluene			23.00			23.00	22.74	23.26
3-Nitrotoluene			26.43			26.43	26.17	26.69
4-Nitrotoluene			26.43			26.43	26.17	26.69
1,3,5-Trinitrobenzene			27.82			27.82	27.62	28.02
2,6-Dinitrotoluene			29.13			29.13	28.83	29.43
3,4-Dinitrotoluene			31.70			31.70	31.58	31.88
2,4-Dinitrotoluene			33.09			33.09	32.98	33.20
Tetryl			34.02			34.02	33.92	34.12
2,4,6-Trinitrotoluene			34.99			34.99	34.89	35.09

Coelute

RT Update

File used : 12CEXP16211009.0030

Applies to : 12CEXP16211009.0001 →

James H. Place
Senior Chemist

AUG 23 2016

Reviewed By:

Jessica L. Miller
Senior Chemist

AUG 23 2016

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Calibration File: 12CEXP1621109

GC Column (3) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	%RSD	
HMX	3.96E+01	9.40E+01	9.37E+01	9.77E+01	9.27E+01	8.35E+01	30	Linear
RDX	1.69E+02	1.30E+02	1.19E+02	1.12E+02	1.08E+02	1.28E+02	19	
3,5-Dinitroaniline	4.07E+02	2.49E+02	2.31E+02	2.24E+02	2.20E+02	2.66E+02	30	Linear
Nitrobenzene	2.82E+02	1.82E+02	1.69E+02	1.63E+02	1.61E+02	1.91E+02	27	
2-Amino-4,6-dinitrotoluene	4.76E+02	4.01E+02	3.66E+02	3.61E+02	3.53E+02	3.91E+02	13	Coelute
4-Amino-2,6-dinitrotoluene	4.75E+02	4.00E+02	3.65E+02	3.61E+02	3.52E+02	3.91E+02	13	Coelute
1,3-DNB	4.35E+02	3.22E+02	3.11E+02	3.01E+02	2.94E+02	3.33E+02	17	
2-Nitrotoluene	2.33E+02	1.14E+02	1.12E+02	1.10E+02	1.06E+02	1.35E+02	41	Linear
3-Nitrotoluene	2.85E+02	1.90E+02	1.85E+02	1.66E+02	1.85E+02	2.02E+02	23	
4-Nitrotoluene	2.86E+02	1.91E+02	1.86E+02	1.66E+02	1.86E+02	2.03E+02	23	
1,3,5-Trinitrobenzene	2.59E+02	2.13E+02	2.26E+02	2.24E+02	2.57E+02	2.36E+02	9	
2,6-Dinitrotoluene	2.34E+02	1.31E+02	1.41E+02	1.17E+02	1.29E+02	1.51E+02	32	Linear
3,4-Dinitrotoluene	1.93E+02	1.79E+02	1.05E+02	1.10E+02	1.16E+02	1.41E+02	30	
2,4-Dinitrotoluene	1.67E+02	2.74E+02	2.59E+02	2.60E+02	2.57E+02	2.43E+02	18	
Tetryl	1.65E+01	1.41E+02	1.57E+02	1.52E+02	1.58E+02	1.25E+02	49	Linear
2,4,6-Trinitrotoluene	1.04E+02	2.73E+02	2.09E+02	2.00E+02	1.95E+02	1.96E+02	31	

Average % RSD: 25

James H. Place
Senior Chemist

AUG 2 3 2016

File Name: V:\CP12\12Cexp1621109.CAL
Version: 1

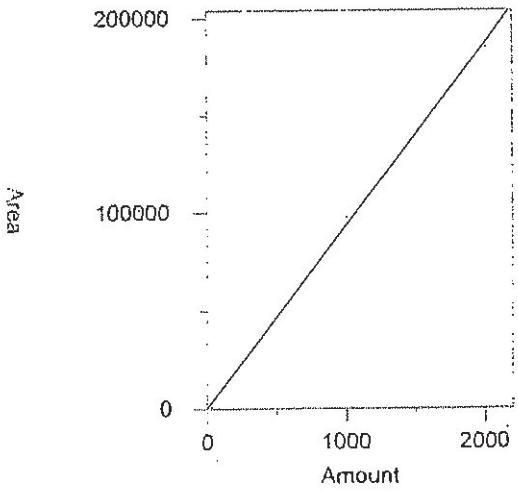
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time:	3.984 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

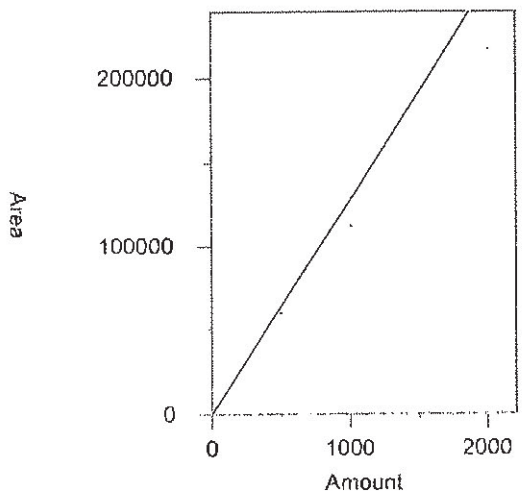
$Y = 93.47101\ X + 286.7556$

Linear fit with equal weighting

Coefficient of determination:	0.9990436
Average error:	14.065%
Average CF:	83.52895
RSD:	29.509%

Level	Amount	Response	Cal Factor	Error, %	Source	Date
1	25.015	989.8299	39.56945	-62.291	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND	7/31/
2	100.06	9409.896	94.04254	-2.382	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND	7/31/
3	500.3	46854.54	93.65289	-0.416	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND	7/31/
4	1000.6	97772.98	97.71435	4.220	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND	7/31/
5	2001.2	185442.2	92.6655	-1.014	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND	7/31/

2 RDX



Expected retention time: 4.897 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

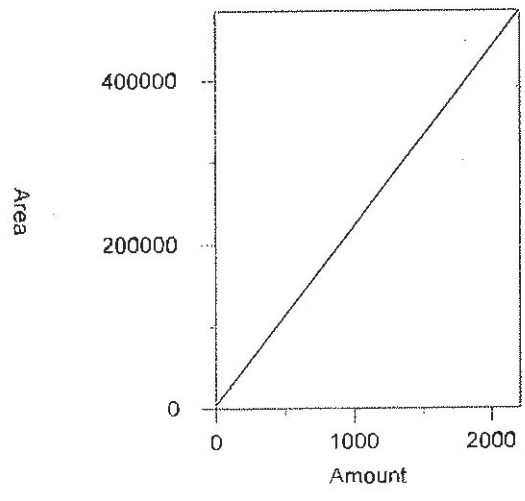
Single peak quantification by area

Y = 127.61 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9412987
Average error: 13.641%
Average CF: 127.61
RSD: 19.226%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	4240.228	168.9334	32.383	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.4	13032.28	129.8036	1.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502	59883.89	119.2906	-6.519	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	112280.9	111.8336	-12.363	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	217243.5	108.189	-15.219	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

3 3,5-dinitroaniline



Expected retention time: 10.644 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

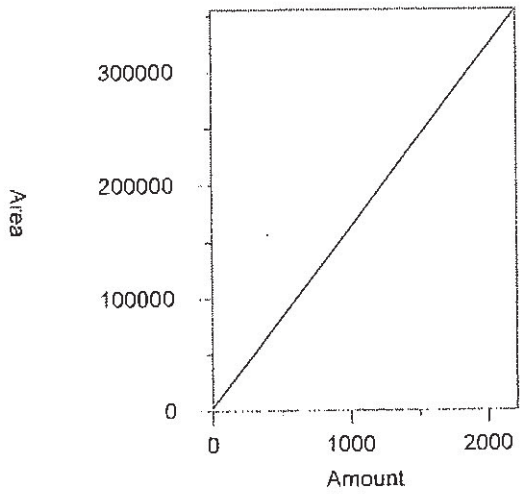
Single peak quantification by area

Y = 217.7032 X + 5084.649

Linear fit with equal weighting
Coefficient of determination: 0.9999126
Average error: 2.576%
Average CF: 266.3089
RSD: 29.810%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.1	10213	406.8924	-3.185	Manual
2	100.4	25019	249.1932	-7.138	Manual
3	502	116177.5	231.4293	1.579	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1004	225267.2	224.3697	0.719	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2008	441077.2	219.66	-0.261	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

4 Nitrobenzene



Expected retention time: 12.121 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

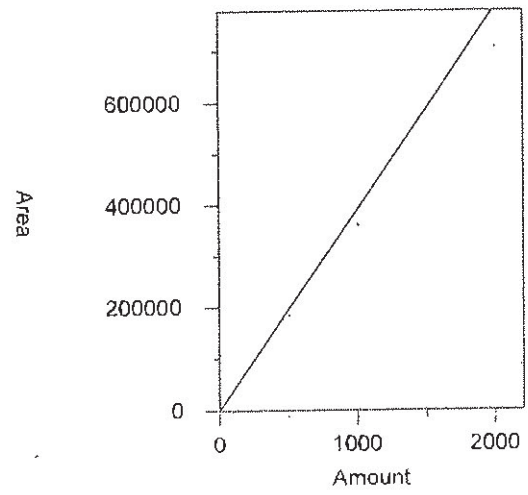
Single peak quantification by area

Y = 159.699 X + 3133.753

Linear fit with equal weighting
Coefficient of determination: 0.9999601
Average error: 1.494%
Average CF: 191.2579
RSD: 26.891%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	7074	282.1136	-0.899	Manual
2	100.3	18226	181.7148	-4.833	Manual
3	501.5	84554.1	168.6024	1.600	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1003	163200.3	162.7122	-0.068	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2006	323260	161.1466	-0.071	Manual

5 4-Am-2,6-DNT



Expected retention time: 15.967 minutes
Search window: 0.16 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

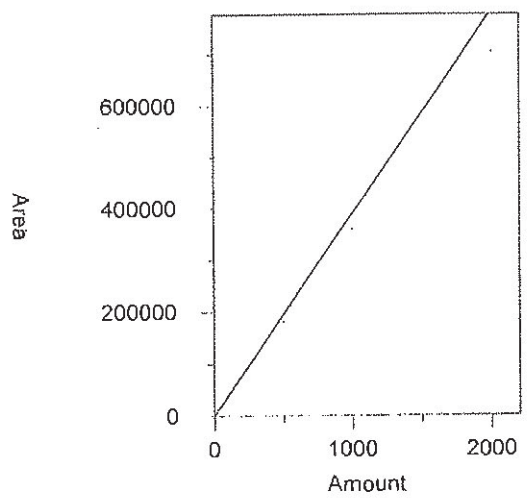
Single peak quantification by area

Y = 390.6894 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9783103
Average error: 9.634%
Average CF: 390.6894
RSD: 12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	11912.02	475.0556	21.594	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	40161.76	400.4164	2.490	Manual
3	501.5	183130.3	365.1651	-6.533	Manual
4	1003	361759.3	360.6773	-7.682	Manual
5	2006	706378	352.1326	-9.869	Manual

6 2-Am-4,6-DNT



Expected retention time:	15.968 minutes
Search window:	0.16 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

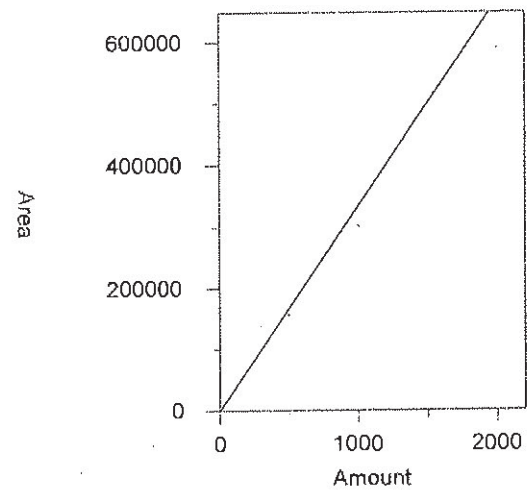
Y = 391.47 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9783103
Average error:	9.634%
Average CF:	391.47
RSD:	12.958%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	11912.02	476.0048	21.594	Manual
2	100.1	40161.76	401.2164	2.490	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	183130.3	365.8947	-6.533	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	361759.3	361.3979	-7.682	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	706378	352.8362	-9.869	Manual

7 1,3-DNB



Expected retention time:	17.826 minutes
Search window:	0.15 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

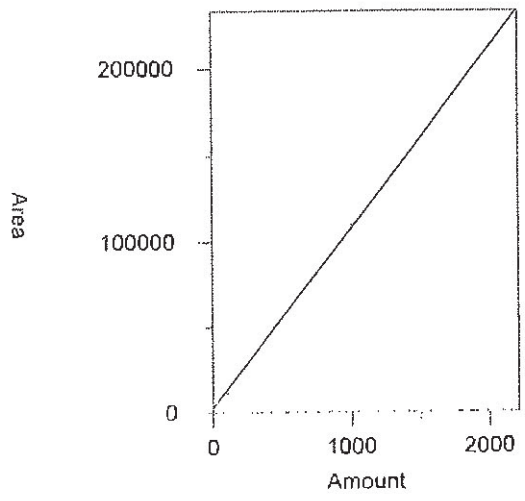
Y = 332.8964 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9687725
Average error:	12.247%
Average CF:	332.8964
RSD:	17.407%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	10892.23	434.8196	30.617	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.2	32300.18	322.3571	-3.166	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	156048.5	311.4741	-6.435	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	302065.9	301.463	-9.442	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	589914.3	294.3684	-11.574	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

8 2-NT



Expected retention time:	22.997 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

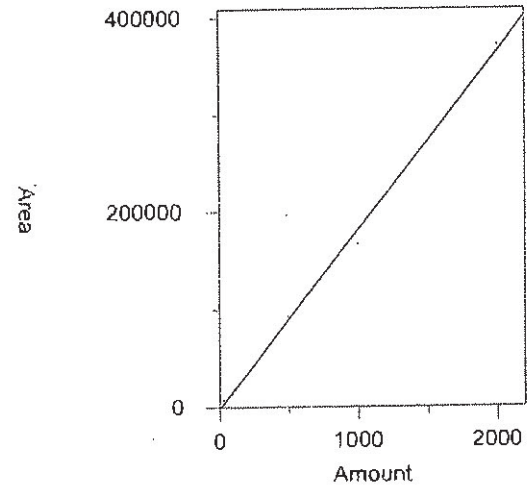
Y = 104.7342 X + 2906.16

Linear fit with equal weighting

Coefficient of determination:	0.9996743
Average error:	4.859%
Average CF:	134.8939
RSD:	40.815%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	5859.8	233.2259	5.818	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.5	11450.75	113.9378	-14.750	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	502.5	56340.11	112.1196	1.450	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1005	110084.5	109.5368	1.775	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2010	212355.5	105.6495	-0.500	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

9 4-NT



Expected retention time:	26.432 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

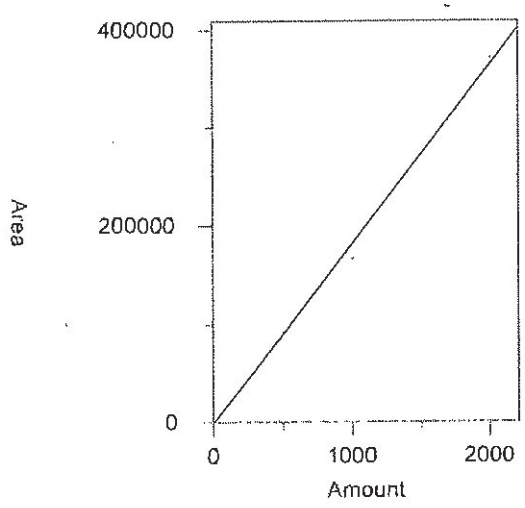
Y = 182.9801 X + -1257.135

Linear fit with equal weighting

Coefficient of determination:	0.9965405
Average error:	28.124%
Average CF:	202.9486
RSD:	23.343%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	7158	286.034	115.476	Manual
2	100.1	19112	190.9291	12.034	Manual
3	500.5	92873	185.5604	2.822	Manual
4	1001	166606.3	166.4398	-8.411	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	371931	185.7797	1.880	Manual

10 3-NT



Expected retention time:	26.433 minutes
Search window:	0.26 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

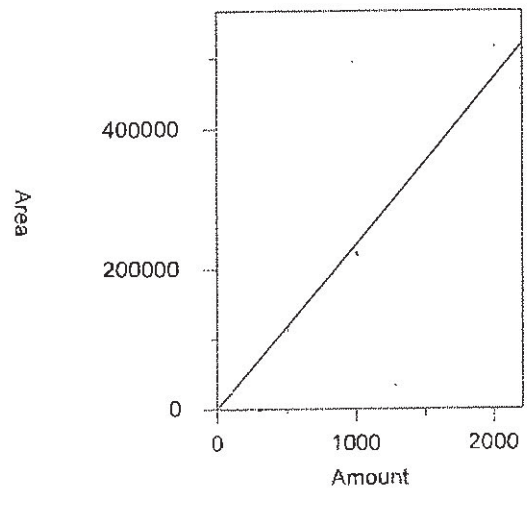
Single peak quantification by area

Y = 182.4333 X + -1257.155

Linear fit with equal weighting	
Coefficient of determination:	0.9965405
Average error:	28.125%
Average CF:	202.3422
RSD:	23.343%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.1	7158	285.1793	115.478	Manual	7/31/2016 4:56:35 PM
2	100.4	19112	190.3586	12.034	Manual	7/31/2016 4:57:30 PM
3	502	92873	185.006	2.822	Manual	7/31/2016 4:58:26 PM
4	1004	166606.3	165.9425	-8.411	Manual	7/31/2016 4:59:44 PM
5	2008	371931	185.2246	1.880	Manual	7/31/2016 5:01:09 PM

11 1,3,5-TNB



Expected retention time:	27.825 minutes
Search window:	0.2 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

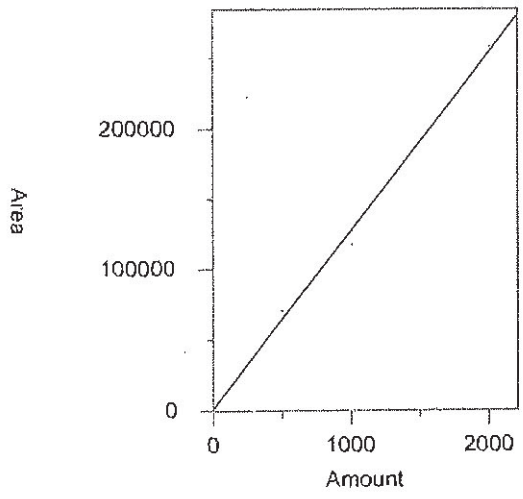
Single peak quantification by area

Y = 235.9349 X + 0

Average CF fit with equal weighting, forced to origin	
Coefficient of determination:	0.9885247
Average error:	7.520%
Average CF:	235.9349
RSD:	8.821%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	25.075	6493	258.9432	9.752	Manual	7/31/2016 4:56:40 PM
2	100.3	21403	213.3898	-9.556	Manual	7/31/2016 4:57:36 PM
3	501.5	113282	225.8863	-4.259	Manual	7/31/2016 4:58:49 PM
4	1003	224845	224.1725	-4.985	Manual	7/31/2016 4:59:49 PM
5	2006	516109	257.2827	9.048	Manual	7/31/2016 5:01:21 PM

12 2,6-DNT



Expected retention time: 29.135 minutes
Search window: 0.3 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

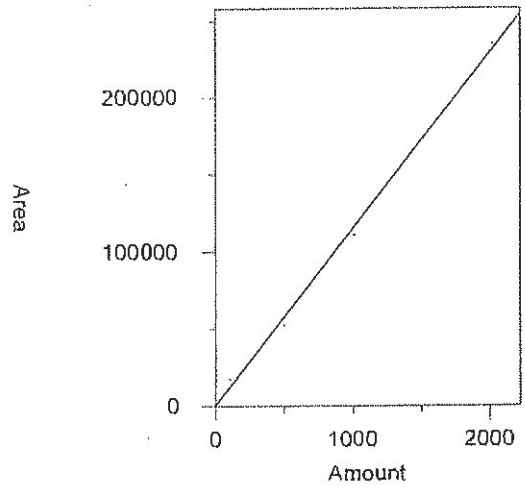
Single peak quantification by area

Y = 126.3104 X + 1347.232

Linear fit with equal weighting
Coefficient of determination: 0.9962553
Average error: 11.138%
Average CF: 150.5242
RSD: 31.661%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.075	5878.026	234.4178	30.204	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0004.BND
2	100.3	13104	130.6481	-6.508	Manual
3	501.5	70879	141.334	9.564	Manual
4	1003	117796	117.4437	-7.998	Manual
5	2006	258328	128.7777	1.414	Manual

13 3,4-Dinitrotoluene



Expected retention time: 31.699 minutes
Search window: 0.18 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

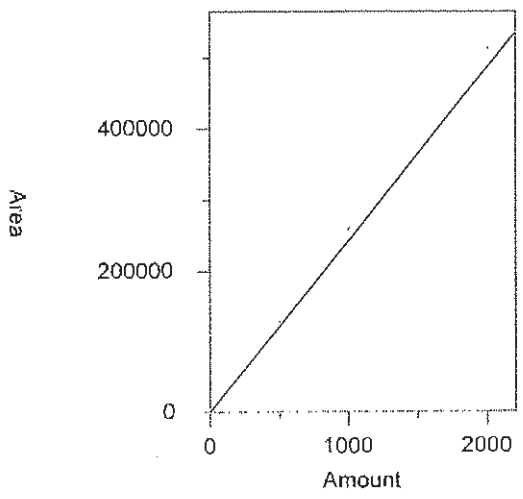
Single peak quantification by area

Y = 114.3201 X + 746.6834

Linear fit with equal weighting
Coefficient of determination: 0.99705
Average error: 19.245%
Average CF: 140.6028
RSD: 29.730%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.2	4864	193.0159	34.085	Manual
2	100.8	18007.12	178.642	46.755	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	504	52826.8	104.8151	-9.487	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1008	110945	110.0645	-4.342	Manual
5	2016	234816.3	116.4763	1.557	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

14 2,4-DNT



Expected retention time: 33.09 minutes
Search window: 0.11 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

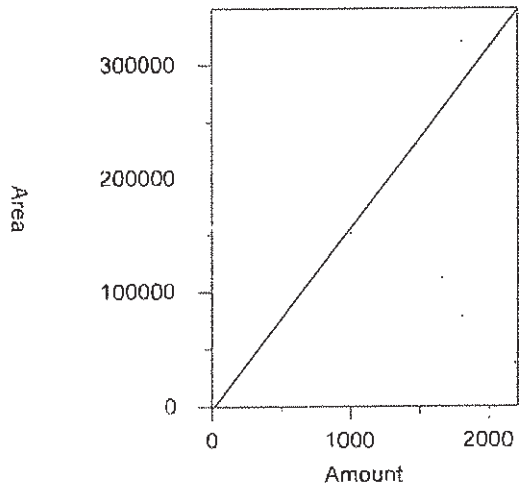
Single peak quantification by area

Y = 243.4707 X + 0

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9938254
Average error: 12.519%
Average CF: 243.4707
RSD: 17.720%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.025	4186	167.2727	-31.297	Manual
2	100.1	27446.51	274.1909	12.618	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	500.5	129449.5	258.6404	6.231	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1001	260610.7	260.3503	6.933	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2002	514312.1	256.8991	5.515	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

15 Tetryl



Expected retention time: 34.024 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

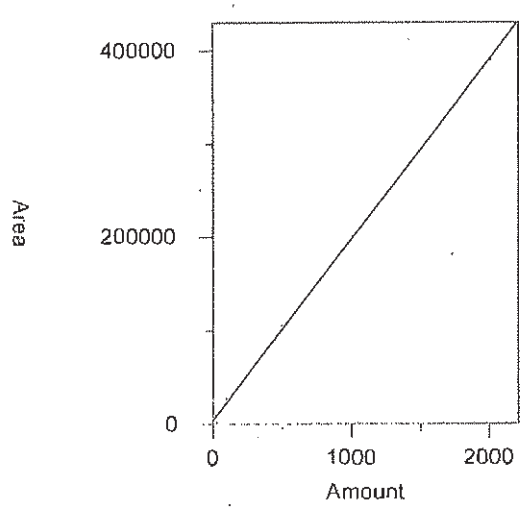
Single peak quantification by area

Y = 159.0213 X + -2990.364

Linear fit with equal weighting
Coefficient of determination: 0.9996614
Average error: 14.566%
Average CF: 124.8977
RSD: 48.832%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.05	413	16.48703	-58.414	Manual
2	100.2	14106.57	140.7841	8.985	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0005.BND
3	501	78577.62	156.8416	2.476	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0006.BND
4	1002	152437.5	152.1332	-2.502	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0007.BND
5	2004	317118.5	158.2428	0.453	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001.0008.BND

16 2,4,6-TNT



Expected retention time:	34.994 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 193.2523 X + 4592.776

Linear fit with equal weighting	
Coefficient of determination:	0.9992185
Average error:	18.224%
Average CF:	196.0521
RSD:	30.652%

Level	Amount	Response	Cal Factor	Error, %	Source
1	25.125	2622	104.3582	-72.249	Manual
2	100.5	27397.48	272.6118	14.087	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp162\1001.0005.BND
3	502.5	104806.1	208.5694	3.052	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp162\1001.0006.BND
4	1005	201209.6	200.2086	1.206	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp162\1001.0007.BND
5	2010	390970.8	194.5128	-0.524	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp162\1001.0008.BND

6D

INITIAL CALIBRATION - RETENTION TIME SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621109B

GC Column (4) : CAPCELL CN ID: 250 (mm) Update File: 12CEXP16211009B.0030.RAW

Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	RT OF STANDARDS LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MIDPOINT RT	RT WINDOW FROM	TO
HMX			4.13			4.13	4.03	4.23
Nitroglycerin			9.11			9.11	9.01	9.21
PETN			24.68			24.68	24.47	24.89

6E

INITIAL CALIBRATION - CALIBRATION FACTOR SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Calibration File: 12CEXP1621109B

GC Column (4) : CAPCELL CN ID: 250 (mm) Date(s) Analyzed: 8/20/2016 8/20/2016

COMPOUND	CALIBRATION FACTORS						%RSD
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	MEAN	
HMX	4.80E+02	4.51E+02	4.42E+02	4.55E+02	4.31E+02	4.52E+02	4
Nitroglycerin	1.89E+02	1.64E+02	1.58E+02	1.61E+02	1.55E+02	1.65E+02	8
PETN	1.48E+02	1.34E+02	1.25E+02	1.18E+02	1.06E+02	1.26E+02	13
						Average % RSD:	8

File Name: V:\CP12\12Cexp1621109B.CAL
Version: 1

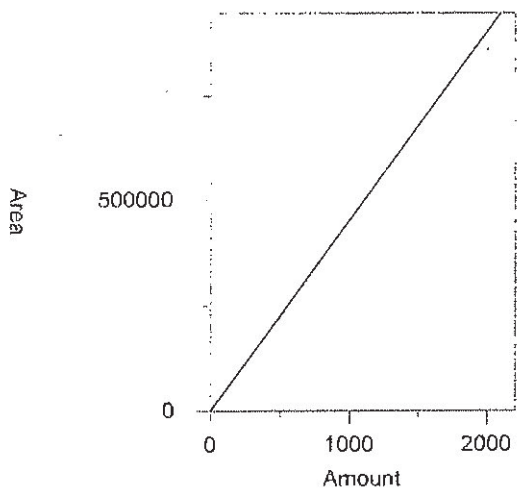
Creator:
Description:
Reason for change:

External standard calibration
Standard injection volume: 1
No sample weight correction
Area reject threshold: 0
Reference peak area reject threshold: 500
Amount units: ug/L
No default component

Method of calculating data point averages: Equal weight for all updates
Print calibration update report

All levels are normal data points.

1 HMX



Expected retention time: 4.13 minutes
Search window: 0.1 minutes
No retention time reference component
No response proxy component
Group number: 0

High alarm limit: 0
Low alarm limit: 0
Component constant: 0

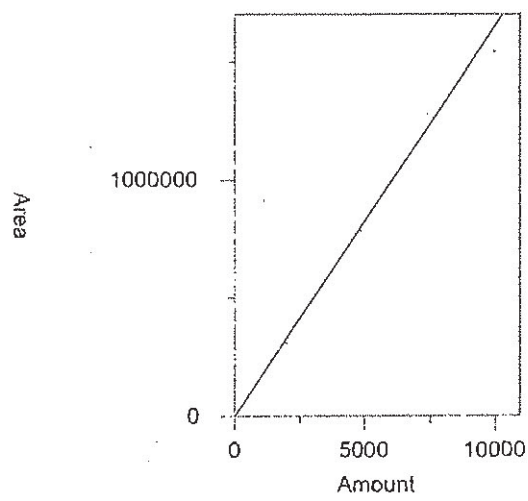
Single peak quantification by area

$Y = 451.6414\ X + 0$

Average CF fit with equal weighting, forced to origin
Coefficient of determination: 0.9963331
Average error: 2.773%
Average CF: 451.6414
RSD: 4.021%

Level	Amount	Response	Cal Factor	Error, %	Source	Da
1	25.015	11994.8	479.5043	6.169	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0004.BND	7/3
2	100.06	45101.28	450.7424	-0.199	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0005.BND	7/3
3	500.3	221258	442.2507	-2.079	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0006.BND	7/3
4	1000.6	455362.5	455.0894	0.763	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0007.BND	7/3
5	2001.2	861757.3	430.6203	-4.654	\\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\12cexp16211001B.0008.BND	7/3

2 Nitroglycerin



Expected retention time:	9.109 minutes
Search window:	0.1 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

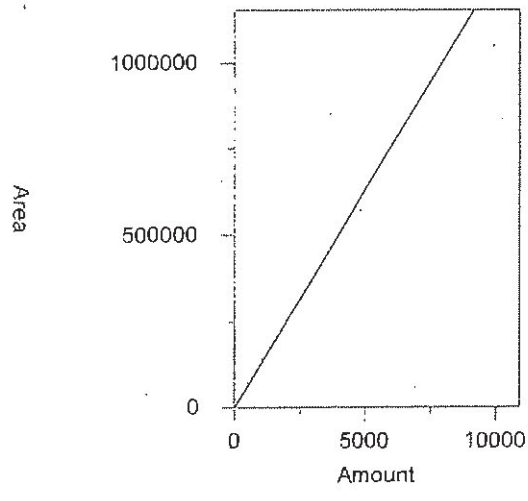
Y = 165.3441 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9924413
Average error:	5.680%
Average CF:	165.3441
RSD:	8.174%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	485.75	91720.05	188.8215	14.199	Manual	7/31/2016 4:55:02 PM
2	1063.86	174175.5	163.7203	-0.982	Manual	7/31/2016 4:55:07 PM
3	1947.18	307368	157.8529	-4.531	Manual	7/31/2016 4:55:10 PM
4	4857.82	782708.9	161.1235	-2.553	Manual	7/31/2016 4:55:14 PM
5	9956.51	1545275	155.2025	-6.134	Manual	7/31/2016 4:55:19 PM

3 PETN



Expected retention time:	24.68 minutes
Search window:	0.21 minutes
No retention time reference component	
No response proxy component	
Group number:	0
High alarm limit:	0
Low alarm limit:	0
Component constant:	0

Single peak quantification by area

Y = 126.0229 X + 0

Average CF fit with equal weighting, forced to origin

Coefficient of determination:	0.9349322
Average error:	9.436%
Average CF:	126.0229
RSD:	12.677%

Level	Amount	Response	Cal Factor	Error, %	Source	Date and time
1	484.69	71685	147.8987	17.359	Manual	7/31/2016 5:05:51 PM
2	1061.44	142101	133.8757	6.231	Manual	7/31/2016 5:06:02 PM
3	1942.16	242496.5	124.8592	-0.923	Manual	7/31/2016 4:55:35 PM
4	4845.76	570434	117.7182	-6.590	Manual	7/31/2016 4:55:42 PM
5	9931.88	1050426	105.7631	-16.076	Manual	7/31/2016 4:55:46 PM

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 07/29/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 22:30

Lab File ID: 12EEXP16211001.0010.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: IC83XAA Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621101

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.35	4.27	4.47	507.99	500.00	2
1,3,5-Trinitrobenzene	5.05	4.96	5.16	501.46	501.00	0
1,3-DNB	7.33	7.29	7.49	499.04	501.00	0
3,5-Dinitroaniline	7.59	7.19	7.86	466.31	502.00	-7
Nitrobenzene	8.20	8.05	8.33	444.28	500.00	-11
2,4,6-Trinitrotoluene	8.75	8.65	8.85	464.63	500.00	-7
4-Amino-2,6-dinitrotoluene	10.71	10.65	10.94	455.19	500.00	-9
2-Amino-4,6-dinitrotoluene	11.20	11.00	11.29	450.91	500.00	-10
2,6-Dinitrotoluene	12.04	11.92	12.20	486.41	500.00	-3
2,4-Dinitrotoluene	12.78	12.66	12.94	443.25	502.00	-12
2-Nitrotoluene	14.67	14.54	14.82	477.94	501.00	-5
4-Nitrotoluene	16.24	16.09	16.42	433.09	500.50	-13
3-Nitrotoluene	17.07	16.92	17.24	425.94	501.00	-15

Compounds 13 Average of %D: 7

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 07/29/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 22:30

Lab File ID: 12EEXP16211001B.0010.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: IC83XAA Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621101B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.69	2.60	2.80	506.95	500.80	1
Nitroglycerin	9.45	9.28	9.66	1807.07	2012.00	-10
3,4-Dinitrotoluene	11.33	10.98	11.55	468.07	504.00	-7
PETN	18.13	17.86	18.43	1885.54	2000.00	-6

Compounds 4 Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 07/29/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 22:30

Lab File ID: 12CEXP16211001.0010.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: IC83XAA Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621101

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.90	3.80	4.00	492.11	500.80	-2
RDX	4.81	4.72	4.92	433.85	500.00	-13
3,5-Dinitroaniline	10.46	10.38	10.58	493.71	502.00	-2
Nitrobenzene	11.88	11.74	12.06	497.37	500.00	-1
4-Amino-2,6-dinitrotoluene	15.61	15.50	15.82	455.40	500.00	-9
1,3-DNB	17.45	17.31	17.61	470.57	501.00	-6
2-Nitrotoluene	22.46	22.14	22.66	504.31	501.00	1
4-Nitrotoluene	25.70	25.29	25.81	366.85	500.50	-27
1,3,5-Trinitrobenzene	27.25	26.87	27.27	381.54	501.00	-24
2,6-Dinitrotoluene	28.46	28.16	28.76	440.09	500.00	-12
3,4-Dinitrotoluene	31.26	31.07	31.43	539.44	504.00	7
2,4-Dinitrotoluene	32.79	32.65	32.87	527.30	502.00	5
Tetryl	33.83	33.69	33.89	505.98	500.00	1
2,4,6-Trinitrotoluene	34.79	34.66	34.86	485.55	500.00	-3

Compounds 14 Average of %D: 8

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B

GC Column (4) : CAPCELL CN ID: 250 (mm)

Lab File ID: 12CEXP16211001B.0010.RAW

Lab Standard ID: IC83XAA

Calibration: 12CEXP1621101B

Date Analyzed: 07/29/16

Time Analyzed: 22:30

Initial Calibration: 12CEXP1621101B

Init. Calib Date(s): 07/29/16 07/29/16

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.04	3.93	4.13	477.03	500.80	-5
Nitroglycerin	8.87	8.76	8.96	1731.56	2012.00	-14
PETN	24.07	23.78	24.20	1884.72	2000.00	-6

Compounds 3 Average of %D: 8

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories
Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A
Date Analyzed: 08/17/16

GC Column (1) : CHROMPACK ID: 100 (mm)
Time Analyzed: 7:05

Lab File ID: 12EEXP16211008.0019.RAW
Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MI
Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621108

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.32	4.15	4.35	511.91	502.00	2
1,3,5-Trinitrobenzene	5.01	4.83	5.03	509.48	501.50	2
1,3-DNB	7.28	7.07	7.27	516.92	501.00	3
3,5-Dinitroaniline	7.67	7.20	7.88	453.88	502.00	-10
Tetryl	8.15	7.89	8.17	455.22	501.00	-9
2,4,6-Trinitrotoluene	8.69	8.44	8.64	484.86	502.50	-4
4-Amino-2,6-dinitrotoluene	10.62	10.30	10.58	452.85	501.50	-10
2-Amino-4,6-dinitrotoluene	11.16	10.83	11.11	459.83	500.50	-8
2,6-Dinitrotoluene	11.96	11.61	11.90	506.04	501.50	1
2,4-Dinitrotoluene	12.68	12.31	12.59	456.47	500.50	-9
2-Nitrotoluene	14.58	14.21	14.49	484.79	502.50	-4
4-Nitrotoluene	16.15	15.72	16.05	430.42	500.50	-14
3-Nitrotoluene	16.97	16.52	16.85	475.12	502.00	-5

Compounds 13

Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories
Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B
Date Analyzed: 08/17/16

GC Column (2) : CHROMPACK ID: 100 (mm)
Time Analyzed: 7:05

Lab File ID: 12EEXP16211008B.0019.RAW
Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MI
Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621108B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.68	2.53	2.73	517.45	500.30	3
Nitroglycerin	9.37	9.02	9.40	1726.07	1947.18	-11
3,4-Dinitrotoluene	11.28	10.80	11.37	457.08	504.00	-9
PETN	17.91	17.33	17.91	1891.17	1942.16	-3

Compounds 4

Average of %D: 7

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/17/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 14:52

Lab File ID: 12EEXP16211008.0030.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MJ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621108

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.29	4.15	4.35	507.84	502.00	1
1,3,5-Trinitrobenzene	4.98	4.83	5.03	506.78	501.50	1
1,3-DNB	7.24	7.07	7.27	519.28	501.00	4
3,5-Dinitroaniline	7.63	7.20	7.88	451.94	502.00	-10
Tetryl	8.12	7.89	8.17	451.08	501.00	-10
2,4,6-Trinitrotoluene	8.66	8.44	8.64	482.53	502.50	-4
4-Amino-2,6-dinitrotoluene	10.60	10.30	10.58	443.24	501.50	-12
2-Amino-4,6-dinitrotoluene	11.13	10.83	11.11	463.59	500.50	-7
2,6-Dinitrotoluene	11.93	11.61	11.90	495.30	501.50	-1
2,4-Dinitrotoluene	12.64	12.31	12.59	452.55	500.50	-10
2-Nitrotoluene	14.56	14.21	14.49	475.13	502.50	-5
4-Nitrotoluene	16.12	15.72	16.05	428.40	500.50	-14
3-Nitrotoluene	16.93	16.52	16.85	476.52	502.00	-5

Compounds 13 Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/17/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 14:52

Lab File ID: 12EEXP16211008B.0030.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MJ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621108B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.65	2.53	2.73	510.59	500.30	2
Nitroglycerin	9.33	9.02	9.40	1754.28	1947.18	-10
3,4-Dinitrotoluene	11.25	10.80	11.37	467.92	504.00	-7
PETN	17.90	17.33	17.91	1901.60	1942.16	-2

Compounds 4 Average of %D: 5

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/17/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 7:05

Lab File ID: 12CEXP16211008.0019.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MI Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621108

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.86	3.84	4.04	543.87	500.30	9
RDX	4.73	4.74	4.94	525.40	502.00	5
3,5-Dinitroaniline	10.28	10.41	10.61	492.74	502.00	-2
Nitrobenzene	11.68	11.82	12.14	491.62	501.50	-2
4-Amino-2,6-dinitrotoluene	15.43	15.64	15.96	479.21	501.50	-4
1,3-DNB	17.26	17.48	17.78	465.89	501.00	-7
2-Nitrotoluene	22.18	22.42	22.94	512.99	502.50	2
4-Nitrotoluene	25.45	25.72	26.24	352.38	500.50	-30
1,3,5-Trinitrobenzene	26.96	27.17	27.57	373.72	501.50	-25
2,6-Dinitrotoluene	28.17	28.38	28.98	442.93	501.50	-12
3,4-Dinitrotoluene	31.05	31.02	31.38	517.81	504.00	3
2,4-Dinitrotoluene	32.66	32.78	33.00	525.95	500.50	5
Tetryl	33.74	33.79	33.99	552.21	501.00	10
2,4,6-Trinitrotoluene	34.71	34.74	34.94	509.05	502.50	1

Compounds 14 Average of %D: 8

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/17/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 7:05

Lab File ID: 12CEXP16211008B.0019.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MI Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621108B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.00	3.98	4.18	481.82	500.30	-4
Nitroglycerin	8.80	8.88	9.08	1735.38	1947.18	-11
PETN	23.85	24.12	24.54	1892.96	1942.16	-3

Compounds 3 Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/17/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 14:52

Lab File ID: 12CEXP16211008.0030.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MJ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621108

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.93	3.84	4.04	542.19	500.30	8
RDX	4.83	4.74	4.94	463.34	502.00	-8
3,5-Dinitroaniline	10.47	10.41	10.61	501.57	502.00	0
Nitrobenzene	11.91	11.82	12.14	481.25	501.50	-4
4-Amino-2,6-dinitrotoluene	15.85	15.64	15.96	479.96	501.50	-4
1,3-DNB	17.59	17.48	17.78	462.59	501.00	-8
2-Nitrotoluene	22.71	22.42	22.94	522.07	502.50	4
4-Nitrotoluene	26.15	25.72	26.24	260.15	500.50	-48
1,3,5-Trinitrobenzene	27.43	27.17	27.57	308.27	501.50	-39
2,6-Dinitrotoluene	28.86	28.38	28.98	391.19	501.50	-22
3,4-Dinitrotoluene	31.49	31.02	31.38	550.89	504.00	9
2,4-Dinitrotoluene	32.93	32.78	33.00	534.88	500.50	7
Tetryl	33.93	33.79	33.99	541.12	501.00	8
2,4,6-Trinitrotoluene	34.88	34.74	34.94	503.03	502.50	0

Compounds 14 Average of %D: 12

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/17/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 14:52

Lab File ID: 12CEXP16211008B.0030.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MJ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621108B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.06	3.98	4.18	480.33	500.30	-4
Nitroglycerin	8.96	8.88	9.08	1703.09	1947.18	-13
PETN	24.43	24.12	24.54	1799.03	1942.16	-7

Compounds 3 Average of %D: 8

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/20/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 10:46

Lab File ID: 12EEXP16211009.0030.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.12	4.02	4.22	510.98	502.00	2
1,3,5-Trinitrobenzene	4.78	4.68	4.88	516.99	501.50	3
1,3-DNB	6.93	6.83	7.03	563.69	501.00	13
3,5-Dinitroaniline	7.29	6.96	7.63	399.11	502.00	-20
Tetryl	7.77	7.63	7.91	458.95	501.00	-8
2,4,6-Trinitrotoluene	8.28	8.18	8.38	476.27	502.50	-5
4-Amino-2,6-dinitrotoluene	10.12	9.98	10.26	422.46	501.50	-16
2-Amino-4,6-dinitrotoluene	10.62	10.48	10.76	468.16	500.50	-6
2,6-Dinitrotoluene	11.37	11.23	11.52	489.31	501.50	-2
2,4-Dinitrotoluene	12.05	11.91	12.19	451.88	500.50	-10
2-Nitrotoluene	13.87	13.73	14.02	474.40	502.50	-6
4-Nitrotoluene	15.37	15.20	15.53	422.26	500.50	-16
3-Nitrotoluene	16.13	15.97	16.30	472.06	502.00	-6

Compounds 13 Average of %D: 9

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/20/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 10:46

Lab File ID: 12EEXP16211009B.0030.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.56	2.46	2.66	516.86	500.30	3
Nitroglycerin	8.91	8.72	9.10	1716.50	1947.18	-12
3,4-Dinitrotoluene	10.73	10.44	11.02	469.99	504.00	-7
PETN	17.03	16.74	17.31	1949.67	1942.16	0

Compounds 4 Average of %D: 6

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/20/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 18:34

Lab File ID: 12EEXP16211009.0041.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.09	4.02	4.22	474.39	502.00	-5
1,3,5-Trinitrobenzene	4.74	4.68	4.88	489.43	501.50	-2
1,3-DNB	6.87	6.83	7.03	563.81	501.00	13
3,5-Dinitroaniline	7.20	6.96	7.63	375.37	502.00	-25
Tetryl	7.67	7.63	7.91	461.74	501.00	-8
2,4,6-Trinitrotoluene	8.17	8.18	8.38	494.94	502.50	-2
4-Amino-2,6-dinitrotoluene	10.05	9.98	10.26	344.94	501.50	-31
2-Amino-4,6-dinitrotoluene	10.48	10.48	10.76	491.54	500.50	-2
2,6-Dinitrotoluene	11.22	11.23	11.52	465.59	501.50	-7
2,4-Dinitrotoluene	11.88	11.91	12.19	473.35	500.50	-5
2-Nitrotoluene	13.68	13.73	14.02	475.42	502.50	-5
4-Nitrotoluene	15.15	15.20	15.53	375.21	500.50	-25
3-Nitrotoluene	15.90	15.97	16.30	513.58	502.00	2

Compounds 13 Average of %D: 10

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/20/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 18:34

Lab File ID: 12EEXP16211009B.0041.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.55	2.46	2.66	525.99	500.30	5
Nitroglycerin	8.80	8.72	9.10	1808.20	1947.18	-7
3,4-Dinitrotoluene	10.59	10.44	11.02	504.52	504.00	0
PETN	16.79	16.74	17.31	2106.00	1942.16	8

Compounds 4 Average of %D: 5

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/21/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 2:21

Lab File ID: 12EEXP16211009.0052.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MR Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.14	4.02	4.22	470.89	502.00	-6
1,3,5-Trinitrobenzene	4.79	4.68	4.88	491.94	501.50	-2
1,3-DNB	6.95	6.83	7.03	495.58	501.00	-1
3,5-Dinitroaniline	7.27	6.96	7.63	431.57	502.00	-14
Tetryl	7.75	7.63	7.91	470.73	501.00	-6
2,4,6-Trinitrotoluene	8.25	8.18	8.38	518.01	502.50	3
4-Amino-2,6-dinitrotoluene	10.13	9.98	10.26	361.62	501.50	-28
2-Amino-4,6-dinitrotoluene	10.59	10.48	10.76	484.27	500.50	-3
2,6-Dinitrotoluene	11.34	11.23	11.52	481.30	501.50	-4
2,4-Dinitrotoluene	12.02	11.91	12.19	491.27	500.50	-2
2-Nitrotoluene	13.83	13.73	14.02	490.28	502.50	-2
4-Nitrotoluene	15.30	15.20	15.53	400.18	500.50	-20
3-Nitrotoluene	16.06	15.97	16.30	518.18	502.00	3

Compounds 13 Average of %D: 7

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/21/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 2:21

Lab File ID: 12EEXP16211009B.0052.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MR Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.58	2.46	2.66	517.30	500.30	3
Nitroglycerin	8.89	8.72	9.10	1889.85	1947.18	-3
3,4-Dinitrotoluene	10.69	10.44	11.02	508.33	504.00	1
PETN	16.96	16.74	17.31	2079.77	1942.16	7

Compounds 4 Average of %D: 4

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329A Date Analyzed: 08/21/16

GC Column (1) : CHROMPACK ID: 100 (mm) Time Analyzed: 8:43

Lab File ID: 12EEXP16211009.0061.RAW Initial Calibration: 12EEXP1621101

Lab Standard ID: 83303MS Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
RDX	4.12	4.02	4.22	511.74	502.00	2
1,3,5-Trinitrobenzene	4.77	4.68	4.88	518.68	501.50	3
1,3-DNB	6.93	6.83	7.03	558.77	501.00	12
3,5-Dinitroaniline	7.25	6.96	7.63	392.44	502.00	-22
Tetryl	7.74	7.63	7.91	463.33	501.00	-8
2,4,6-Trinitrotoluene	8.24	8.18	8.38	483.71	502.50	-4
4-Amino-2,6-dinitrotoluene	10.12	9.98	10.26	360.30	501.50	-28
2-Amino-4,6-dinitrotoluene	10.56	10.48	10.76	495.63	500.50	-1
2,6-Dinitrotoluene	11.31	11.23	11.52	466.69	501.50	-7
2,4-Dinitrotoluene	11.99	11.91	12.19	465.22	500.50	-7
2-Nitrotoluene	13.81	13.73	14.02	475.24	502.50	-5
4-Nitrotoluene	15.28	15.20	15.53	403.92	500.50	-19
3-Nitrotoluene	16.04	15.97	16.30	493.28	502.00	-2

Compounds 13 Average of %D: 9

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: X6329B Date Analyzed: 08/21/16

GC Column (2) : CHROMPACK ID: 100 (mm) Time Analyzed: 8:43

Lab File ID: 12EEXP16211009B.0061.RAW Initial Calibration: 12EEXP1621101B

Lab Standard ID: 83303MS Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12EEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	2.57	2.46	2.66	501.86	500.30	0
Nitroglycerin	8.87	8.72	9.10	1781.52	1947.18	-9
3,4-Dinitrotoluene	10.66	10.44	11.02	503.58	504.00	0
PETN	16.93	16.74	17.31	2009.02	1942.16	3

Compounds 4 Average of %D: 3

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/20/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 10:46

Lab File ID: 12CEXP16211009.0030.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.98	3.88	4.08	578.19	500.30	16
RDX	4.90	4.80	5.00	489.76	502.00	-2
3,5-Dinitroaniline	10.64	10.54	10.74	495.98	502.00	-1
Nitrobenzene	12.12	11.96	12.28	473.62	501.50	-6
4-Amino-2,6-dinitrotoluene	15.97	15.81	16.13	496.18	501.50	-1
1,3-DNB	17.83	17.68	17.98	472.54	501.00	-6
2-Nitrotoluene	23.00	22.74	23.26	465.22	502.50	-7
4-Nitrotoluene	26.43	26.17	26.69	219.81	500.50	-56
1,3,5-Trinitrobenzene	27.82	27.63	28.03	330.59	501.50	-34
2,6-Dinitrotoluene	29.13	28.84	29.44	371.62	501.50	-26
3,4-Dinitrotoluene	31.70	31.13	31.49	521.55	504.00	3
2,4-Dinitrotoluene	33.09	32.98	33.20	525.00	500.50	5
Tetryl	34.02	33.67	33.87	557.03	501.00	11
2,4,6-Trinitrotoluene	34.99	34.61	34.81	513.67	502.50	2

Average of %D: 13

Compounds 14

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/20/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 10:46

Lab File ID: 12CEXP16211009B.0030.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MP Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.13	4.03	4.23	476.68	500.30	-5
Nitroglycerin	9.11	9.01	9.21	1741.21	1947.18	-11
PETN	24.68	23.85	24.27	1567.45	1942.16	-19

Compounds 3 Average of %D: 12

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/20/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 18:34

Lab File ID: 12CEXP16211009.0041.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.00	3.88	4.08	586.01	500.30	17
RDX	4.90	4.80	5.00	508.19	502.00	1
3,5-Dinitroaniline	10.64	10.54	10.74	508.14	502.00	1
Nitrobenzene	12.12	11.96	12.28	473.99	501.50	-5
4-Amino-2,6-dinitrotoluene	15.98	15.81	16.13	495.95	501.50	-1
1,3-DNB	17.81	17.68	17.98	474.65	501.00	-5
2-Nitrotoluene	22.97	22.74	23.26	486.89	502.50	-3
4-Nitrotoluene	26.34	26.17	26.69	113.11	500.50	-77
1,3,5-Trinitrobenzene	27.69	27.63	28.03	304.74	501.50	-39
2,6-Dinitrotoluene	28.61	28.84	29.44	295.01	501.50	-41
3,4-Dinitrotoluene	31.73	31.13	31.49	515.67	504.00	2
2,4-Dinitrotoluene	33.03	32.98	33.20	495.74	500.50	-1
Tetryl	33.98	33.67	33.87	523.40	501.00	4
2,4,6-Trinitrotoluene	34.95	34.61	34.81	503.35	502.50	0

Compounds 14 Average of %D: 14

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/20/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 18:34

Lab File ID: 12CEXP16211009B.0041.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MQ Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.14	4.03	4.23	478.66	500.30	-4
Nitroglycerin	9.11	9.01	9.21	1691.25	1947.18	-13
PETN	24.53	23.85	24.27	977.97	1942.16	-50

Compounds 3 Average of %D: 22

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/21/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 2:21

Lab File ID: 12CEXP16211009.0052.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MR Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.96	3.88	4.08	576.81	500.30	15
RDX	4.85	4.80	5.00	478.24	502.00	-5
3,5-Dinitroaniline	10.46	10.54	10.74	503.97	502.00	0
Nitrobenzene	12.00	11.96	12.28	468.86	501.50	-7
4-Amino-2,6-dinitrotoluene	15.69	15.81	16.13	508.19	501.50	1
1,3-DNB	17.51	17.68	17.98	483.12	501.00	-4
2-Nitrotoluene	22.54	22.74	23.26	475.15	502.50	-5
4-Nitrotoluene	25.99	26.17	26.69	95.46	500.50	-81
1,3,5-Trinitrobenzene	27.05	27.63	28.03	221.41	501.50	-56
2,6-Dinitrotoluene	28.18	28.84	29.44	509.61	501.50	2
3,4-Dinitrotoluene	31.27	31.13	31.49	436.99	504.00	-13
2,4-Dinitrotoluene	32.82	32.98	33.20	449.16	500.50	-10
Tetryl	33.83	33.67	33.87	473.86	501.00	-5
2,4,6-Trinitrotoluene	34.81	34.61	34.81	469.30	502.50	-7

Compounds 14 Average of %D: 15

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/21/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 2:21

Lab File ID: 12CEXP16211009B.0052.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MR Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.10	4.03	4.23	484.88	500.30	-3
Nitroglycerin	8.98	9.01	9.21	1680.97	1947.18	-14
PETN	24.07	23.85	24.27	1741.57	1942.16	-10

Compounds 3 Average of %D: 9

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329A Date Analyzed: 08/21/16

GC Column (3) : CAPCELL CN ID: 250 (mm) Time Analyzed: 8:43

Lab File ID: 12CEXP16211009.0061.RAW Initial Calibration: 12CEXP1621101

Lab Standard ID: 83303MS Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	3.95	3.88	4.08	580.82	500.30	16
RDX	4.86	4.80	5.00	488.34	502.00	-3
3,5-Dinitroaniline	10.47	10.54	10.74	506.58	502.00	1
Nitrobenzene	11.93	11.96	12.28	463.89	501.50	-8
4-Amino-2,6-dinitrotoluene	15.64	15.81	16.13	503.08	501.50	0
1,3-DNB	17.44	17.68	17.98	477.35	501.00	-5
2-Nitrotoluene	22.45	22.74	23.26	458.31	502.50	-9
4-Nitrotoluene	25.91	26.17	26.69	87.89	500.50	-82
1,3,5-Trinitrobenzene	27.08	27.63	28.03	259.67	501.50	-48
2,6-Dinitrotoluene	28.17	28.84	29.44	517.65	501.50	3
3,4-Dinitrotoluene	31.25	31.13	31.49	390.39	504.00	-23
2,4-Dinitrotoluene	32.77	32.98	33.20	444.55	500.50	-11
Tetryl	33.82	33.67	33.87	488.50	501.00	-2
2,4,6-Trinitrotoluene	34.79	34.61	34.81	491.83	502.50	-2

Compounds 14 Average of %D: 15

7E

CALIBRATION VERIFICATION SUMMARY

Lab Name: Lancaster Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.:

Instrument: Y6329B Date Analyzed: 08/21/16

GC Column (4) : CAPCELL CN ID: 250 (mm) Time Analyzed: 8:43

Lab File ID: 12CEXP16211009B.0061.RAW Initial Calibration: 12CEXP1621101B

Lab Standard ID: 83303MS Init. Calib Date(s): 07/29/16 07/29/16

Calibration: 12CEXP1621109B

COMPOUND	RT	RT WINDOW FROM	TO	CALC AMOUNT	NOM AMOUNT	%D
HMX	4.09	4.03	4.23	478.06	500.30	-4
Nitroglycerin	8.95	9.01	9.21	1640.53	1947.18	-16
PETN	23.92	23.85	24.27	1502.54	1942.16	-23

Compounds 3 Average of %D: 14

Eurofins Lancaster Laboratories
Pesticide Residue Analysis
Runlog for 12EEXP16211001
Instrument CP12--X6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

Operator	File	LLi#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211001.0001	CONDITIONER		7/29/16 16:08	1621099999	1.00
1566	12EEXP16211001.0002	3,4-DNT	AA	7/29/16 16:50	1621099999	1.00
1566	12EEXP16211001.0003	3,5-DNA	AA	7/29/16 17:33	1621099999	1.00
1566	12EEXP16211001.0004	833011624C	83301AA	7/29/16 18:15	1621099999	1.00
1566	12EEXP16211001.0005	833021624C	83302AA	7/29/16 18:58	1621099999	1.00
1566	12EEXP16211001.0006	833031624C	83303AA	7/29/16 19:40	1621099999	1.00
1566	12EEXP16211001.0007	833041624C	83304AA	7/29/16 20:23	1621099999	1.00
1566	12EEXP16211001.0008	833051624C	83305AA	7/29/16 21:05	1621099999	1.00
1566	12EEXP16211001.0009	MD83X1624C	MD83XAA	7/29/16 21:48	1621099999	1.00
1566	12EEXP16211001.0010	IC83X1624C	IC83XAA	7/29/16 22:30	1621099999	1.00
1566	12EEXP16211001.0011	BLANKA 7/5/16 RI	PBLK27187	7/29/16 23:13	161870027A	40.00
1566	12EEXP16211001.0012	MDL1 7/5/16 RI		7/29/16 23:55	161870027A	40.00
1566	12EEXP16211001.0013	MDL2 7/5/16 RI		7/30/16 0:37	161870027A	40.00
1566	12EEXP16211001.0014	MDL3 7/5/16 RI		7/30/16 1:20	161870027A	40.00
1566	12EEXP16211001.0015	MDL4 7/5/16 RI		7/30/16 2:02	161870027A	40.00
1566	12EEXP16211001.0016	MDL5 7/5/16 RI		7/30/16 2:45	161870027A	40.00
1566	12EEXP16211001.0017	MDL6 7/5/16 RI		7/30/16 3:27	161870027A	40.00
1566	12EEXP16211001.0018	MDL7 7/5/16 RI		7/30/16 4:10	161870027A	40.00
1566	12EEXP16211001.0019	MDL8 7/5/16 RI		7/30/16 4:52	161870027A	40.00
1566	12EEXP16211001.0020	MDL9 7/5/16		7/30/16 5:35	161870027A	40.00
1566	12EEXP16211001.0021	833031624C	83303KN	7/30/16 6:17	1621099999	1.00
1566	12EEXP16211001.0022	MDL10 7/5/16 RI		7/30/16 7:00	161870027A	40.00
1566	12EEXP16211001.0023	MDL11 7/5/16		7/30/16 7:42	161870027A	40.00
1566	12EEXP16211001.0024	MDL12 7/5/16		7/30/16 8:25	161870027A	40.00
1566	12EEXP16211001.0025	MDL13 7/5/16		7/30/16 9:07	161870027A	40.00
1566	12EEXP16211001.0026	MDL14 7/5/16		7/30/16 9:50	161870027A	40.00
1566	12EEXP16211001.0027	BLANKA 7/6/16	PBLK22187	7/30/16 10:32	161870022A	10.00
1566	12EEXP16211001.0028	MDL1 7/6/16		7/30/16 11:14	161870022A	10.00
1566	12EEXP16211001.0029	MDL2 7/6/16		7/30/16 11:57	161870022A	10.00
1566	12EEXP16211001.0030	MDL3 7/6/16		7/30/16 12:39	161870022A	10.00
1566	12EEXP16211001.0031	MDL4 7/6/16		7/30/16 13:22	161870022A	10.00
1566	12EEXP16211001.0032	833031624C	83303KN	7/30/16 14:04	1621099999	1.00
1566	12EEXP16211001.0033	MDL5 7/6/16		7/30/16 14:47	161870022A	10.00
1566	12EEXP16211001.0034	MDL6 7/6/16		7/30/16 15:29	161870022A	10.00
1566	12EEXP16211001.0035	MDL7 7/6/16		7/30/16 16:12	161870022A	10.00
1566	12EEXP16211001.0036	PETN1 7/6/16		7/30/16 16:54	161870022A	10.00
1566	12EEXP16211001.0037	PETN2 7/6/16		7/30/16 17:37	161870022A	10.00
1566	12EEXP16211001.0038	PETN3 7/6/16		7/30/16 18:19	161870022A	10.00
1566	12EEXP16211001.0039	PETN4 7/6/16		7/30/16 19:02	161870022A	10.00
1566	12EEXP16211001.0040	PETN5 7/6/16		7/30/16 19:44	161870022A	10.00
1566	12EEXP16211001.0041	PETN6 7/6/16		7/30/16 20:27	161870022A	10.00
1566	12EEXP16211001.0042	PETN7 7/6/16		7/30/16 21:09	161870022A	10.00
1566	12EEXP16211001.0043	833031624C	83303KN	7/30/16 21:52	1621099999	1.00

Eurofins Lancaster Laboratories
Pesticide Residue Analysis
Runlog for 12EEXP16211008
Instrument CP12--X6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211008.0001	CONDITIONER		8/16/16 18:21	1622899999	1.00
1566	12EEXP16211008.0002	CONDITIONER		8/16/16 19:03	1622899999	1.00
1566	12EEXP16211008.0003	CONDITIONER		8/16/16 19:46	1622899999	1.00
1566	12EEXP16211008.0004	CONDITIONER		8/16/16 20:28	1622899999	1.00
1566	12EEXP16211008.0005	CONDITIONER		8/16/16 21:10	1622899999	1.00
1566	12EEXP16211008.0006	CONDITIONER		8/16/16 21:53	1622899999	1.00
1566	12EEXP16211008.0007	CONDITIONER		8/16/16 22:35	1622899999	1.00
1566	12EEXP16211008.0008	833031624D	83303MH	8/16/16 23:18	1622899999	1.00
1566	12EEXP16211008.0009	BLANKA 7/8/16 RI	PBLK22189	8/17/16 0:00	161890022A	40.00
1566	12EEXP16211008.0010	ISMLCS 7/8/16 RI	LCS22189	8/17/16 0:43	161890022A	40.00
1566	12EEXP16211008.0011	LCSA 7/8/16 RI	LCS22189	8/17/16 1:25	161890022A	40.00
1566	12EEXP16211008.0012	8444090 RI	BGA13	8/17/16 2:08	161890022A	40.00
1566	12EEXP16211008.0013	8444094 RI	BGA23	8/17/16 2:50	161890022A	40.00
1566	12EEXP16211008.0014	8444107 RI	BGA33	8/17/16 3:33	161890022A	40.00
1566	12EEXP16211008.0015	8444108MS RI	BGA33	8/17/16 4:15	161890022A	40.00
1566	12EEXP16211008.0016	8444109MSD RI	BGA33	8/17/16 4:57	161890022A	40.00
1566	12EEXP16211008.0017	8445671 RI	D8906	8/17/16 5:40	161890022A	40.00
1566	12EEXP16211008.0018	8445671 RI	D8906DUP	8/17/16 6:22	161890022A	40.00
1566	12EEXP16211008.0019	833031624D	83303MI	8/17/16 7:05	1622899999	1.00
1566	12EEXP16211008.0020	8445671MSD RI	D8906MSD	8/17/16 7:47	161890022A	40.00
1566	12EEXP16211008.0021	8445675 RI	D8910	8/17/16 8:30	161890022A	40.00
1566	12EEXP16211008.0022	8454735 RI	D9116	8/17/16 9:12	161950012A	40.00
1566	12EEXP16211008.0023	ISMLCS 7/14/16 RI	LCS14196	8/17/16 9:55	161960014A	40.00
1566	12EEXP16211008.0024	8471036MS RI	D9404MS	8/17/16 10:37	162010023A	40.00
1566	12EEXP16211008.0025	8471040 RI	D9408	8/17/16 11:19	162010023A	40.00
1566	12EEXP16211008.0026	8474741 RI	D9616	8/17/16 12:02	162020011A	40.00
1566	12EEXP16211008.0027	8474745 RI	D9620	8/17/16 12:44	162020011A	40.00
1566	12EEXP16211008.0028	8474749 RI	D9624	8/17/16 13:27	162020011A	40.00
1566	12EEXP16211008.0029	8474751 RI	D9626	8/17/16 14:09	162020011A	40.00
1566	12EEXP16211008.0030	833031624D	83303MJ	8/17/16 14:52	1622899999	1.00
1566	12EEXP16211008.0031	8474752 RI	D9627	8/17/16 15:34	162020011A	40.00
1566	12EEXP16211008.0032	8445679 RI	D8914	8/17/16 16:18	161890022A	40.00
1566	12EEXP16211008.0033	8449088 RI	D19A3	8/17/16 17:00	161890022A	40.00
1566	12EEXP16211008.0034	8449092 RI	D19B3	8/17/16 17:43	161890022A	40.00
1566	12EEXP16211008.0035	8449096 RI	D19C3	8/17/16 18:25	161890022A	40.00
1566	12EEXP16211008.0036	8450971 RI	15A-3	8/17/16 19:08	161890022A	40.00
1566	12EEXP16211008.0037	8450975 RI	15B-3	8/17/16 19:50	161890022A	40.00
1566	12EEXP16211008.0038	8450979 RI	15C-3	8/17/16 20:32	161890022A	40.00
1566	12EEXP16211008.0039	8455251 RI	D89B2	8/17/16 21:15	161890022A	40.00
1566	12EEXP16211008.0040	833031624D	83303MK	8/17/16 21:57	1622899999	1.00
1566	12EEXP16211008.0041	BLANKA 8/12/16	PBLK32224	8/17/16 22:40	162240032A	10.00
1566	12EEXP16211008.0042	LCSA 8/12/16	LCS32224	8/17/16 23:22	162240032A	10.00
1566	12EEXP16211008.0043	LCSDA 8/12/16	LCSD32224	8/18/16 0:05	162240032A	10.00
1566	12EEXP16211008.0044	8491058	32-24	8/18/16 0:47	162240032A	10.00
1566	12EEXP16211008.0045	833031624D	83303MM	8/18/16 1:29	1622999999	1.00

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Pesticide Residue Analysis
Runlog for 12EEXP16211009 .
Instrument CP12--X6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211009.0001	CONDITIONER		8/19/16 14:16	1623199999	1.00
1566	12EEXP16211009.0002	CONDITIONER		8/19/16 14:58	1623199999	1.00
1566	12EEXP16211009.0003	CONDITIONER		8/19/16 15:41	1623199999	1.00
1566	12EEXP16211009.0004	CONDITIONER		8/19/16 16:23	1623199999	1.00
1566	12EEXP16211009.0005	CONDITIONER		8/19/16 17:05	1623199999	1.00
1566	12EEXP16211009.0006	CONDITIONER		8/19/16 17:48	1623199999	1.00
1566	12EEXP16211009.0007	CONDITIONER		8/19/16 18:30	1623199999	1.00
1566	12EEXP16211009.0008	833031624D	83303MN	8/19/16 19:13	1623199999	1.00
1566	12EEXP16211009.0009	BLANKA 7/13/16 RI	PBLK12195	8/19/16 19:55	161950012A	40.00
1566	12EEXP16211009.0010	ISMLCS 7/13/16 RI	LCS12195	8/19/16 20:38	161950012A	40.00
1566	12EEXP16211009.0011	LCSA 7/13/16 RI	LCS12195	8/19/16 21:20	161950012A	40.00
1566	12EEXP16211009.0012	8454723 RI	D9104	8/19/16 22:03	161950012A	40.00
1566	12EEXP16211009.0013	8454723 RI	D9104DUP	8/19/16 22:45	161950012A	40.00
1566	12EEXP16211009.0014	8454723MS RI	D9104MS	8/19/16 23:27	161950012A	40.00
1566	12EEXP16211009.0015	8454727 RI	D9108	8/20/16 0:10	161950012A	40.00
1566	12EEXP16211009.0016	8454731 RI	D9112	8/20/16 0:52	161950012A	40.00
1566	12EEXP16211009.0017	8454739 RI	D9120	8/20/16 1:35	161950012A	40.00
1566	12EEXP16211009.0018	8454739MS RI	D9120MS	8/20/16 2:17	161950012A	40.00
1566	12EEXP16211009.0019	833031624D	83303MO	8/20/16 3:00	1623199999	1.00
1566	12EEXP16211009.0020	8454739MSD RI	D9120MSD	8/20/16 3:42	161950012A	40.00
1566	12EEXP16211009.0021	8454743 RI	D9124	8/20/16 4:24	161950012A	40.00
1566	12EEXP16211009.0022	8454746 RI	D9127	8/20/16 5:07	161950012A	40.00
1566	12EEXP16211009.0023	BLANKA 7/14/16 RI	PBLK14196	8/20/16 5:49	161960014A	40.00
1566	12EEXP16211009.0024	LCSA 7/14/16 RI	LCS14196	8/20/16 6:32	161960014A	40.00
1566	12EEXP16211009.0025	8457191 RI	13A-3	8/20/16 7:14	161960014A	40.00
1566	12EEXP16211009.0026	8457195 RI	13B-3	8/20/16 7:57	161960014A	40.00
1566	12EEXP16211009.0027	8457199 RI	13C-3	8/20/16 8:39	161960014A	40.00
1566	12EEXP16211009.0028	8457203 RI	12A-3	8/20/16 9:21	161960014A	40.00
1566	12EEXP16211009.0029	8457203 RI	12A-3DUP	8/20/16 10:04	161960014A	40.00
1566	12EEXP16211009.0030	833031624D	83303MP	8/20/16 10:46	1623199999	1.00
1566	12EEXP16211009.0031	8457203MS RI	12A-3MS	8/20/16 11:29	161960014A	40.00
1566	12EEXP16211009.0032	8457207 RI	12B-3	8/20/16 12:11	161960014A	40.00
1566	12EEXP16211009.0033	8457211 RI	12C-3	8/20/16 12:54	161960014A	40.00
1566	12EEXP16211009.0034	8457213 RI	40MMS	8/20/16 13:36	161960014A	40.00
1566	12EEXP16211009.0035	8457214 RI	40MMD	8/20/16 14:19	161960014A	40.00
1566	12EEXP16211009.0036	8457216 RI	D92B2	8/20/16 15:01	161960014A	40.00
1566	12EEXP16211009.0037	8469770MS RI	13A-3	8/20/16 15:44	161960014A	40.00
1566	12EEXP16211009.0038	8469771MSD RI	13A-3	8/20/16 16:26	161960014A	40.00
1566	12EEXP16211009.0039	BLANKA 7/19/16 RI	PBLK23201	8/20/16 17:09	162010023A	40.00
1566	12EEXP16211009.0040	ISMLCS 7/19/16 RI	LCS23201	8/20/16 17:51	162010023A	40.00
1566	12EEXP16211009.0041	833031624D	83303MQ	8/20/16 18:34	1623199999	1.00
1566	12EEXP16211009.0042	LCSA 7/19/16 RI	LCS23201	8/20/16 19:16	162010023A	40.00
1566	12EEXP16211009.0043	8471036 RI	D9404	8/20/16 19:58	162010023A	40.00
1566	12EEXP16211009.0044	8471036 RI	D9404DUP	8/20/16 20:41	162010023A	40.00
1566	12EEXP16211009.0045	8471044 RI	D9412	8/20/16 21:23	162010023A	40.00
1566	12EEXP16211009.0046	8471051 RI	D9416	8/20/16 22:06	162010023A	40.00
1566	12EEXP16211009.0047	8471052MS RI	D9416	8/20/16 22:48	162010023A	40.00
1566	12EEXP16211009.0048	8471053MSD RI	D9416	8/20/16 23:31	162010023A	40.00
1566	12EEXP16211009.0049	8471057 RI	D9420	8/21/16 0:13	162010023A	40.00
1566	12EEXP16211009.0050	8471061 RI	D9424	8/21/16 0:56	162010023A	40.00
1566	12EEXP16211009.0051	8471065 RI	D9428	8/21/16 1:38	162010023A	40.00
1566	12EEXP16211009.0052	833031624D	83303MR	8/21/16 2:21	1623199999	1.00
1566	12EEXP16211009.0053	8471069 RI	D9432	8/21/16 3:03	162010023A	40.00
1566	12EEXP16211009.0054	8471073 RI	D9436	8/21/16 3:45	162010023A	40.00
1566	12EEXP16211009.0055	8471076 RI	D9439	8/21/16 4:28	162010023A	40.00
1566	12EEXP16211009.0056	BLANKA 8/18/16	PBLK30231	8/21/16 5:10	162310030A	40.00

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12EEXP16211009.0057	LCSA 8/18/16	LCS30231	8/21/16 5:53	162310030A	40.00
1566	12EEXP16211009.0058	LCSDA 8/18/16	LCSD30231	8/21/16 6:35	162310030A	40.00
1566	12EEXP16211009.0059	8505584	E9516	8/21/16 7:18	162310030A	40.00
1566	12EEXP16211009.0060	SS1619724A		8/21/16 8:00	162310030A	100.00
1566	12EEXP16211009.0061	833031624D	83303MS	8/21/16 8:43	1623199999	1.00

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Pesticide Residue Analysis
Runlog for 12CEXP16211001
Instrument C12C--Y6329A

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Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12CEXP16211001.0001	CONDITIONER		7/29/16 16:08	1621099999	1.00
1566	12CEXP16211001.0002	3,4-DNT	AA	7/29/16 16:50	1621099999	1.00
1566	12CEXP16211001.0003	3,5-DNA	AA	7/29/16 17:33	1621099999	1.00
1566	12CEXP16211001.0004	833011624C	83301AA	7/29/16 18:15	1621099999	1.00
1566	12CEXP16211001.0005	833021624C	83302AA	7/29/16 18:58	1621099999	1.00
1566	12CEXP16211001.0006	833031624C	83303AA	7/29/16 19:40	1621099999	1.00
1566	12CEXP16211001.0007	833041624C	83304AA	7/29/16 20:23	1621099999	1.00
1566	12CEXP16211001.0008	833051624C	83305AA	7/29/16 21:05	1621099999	1.00
1566	12CEXP16211001.0009	MD83X1624C	MD83XAA	7/29/16 21:48	1621099999	1.00
1566	12CEXP16211001.0010	IC83X1624C	IC83XAA	7/29/16 22:30	1621099999	1.00
1566	12CEXP16211001.0011	BLANKA 7/5/16 RI	PBLK27187	7/29/16 23:13	161870027A	40.00
1566	12CEXP16211001.0012	MDL1 7/5/16 RI		7/29/16 23:55	161870027A	40.00
1566	12CEXP16211001.0013	MDL2 7/5/16 RI		7/30/16 0:37	161870027A	40.00
1566	12CEXP16211001.0014	MDL3 7/5/16 RI		7/30/16 1:20	161870027A	40.00
1566	12CEXP16211001.0015	MDL4 7/5/16 RI		7/30/16 2:02	161870027A	40.00
1566	12CEXP16211001.0016	MDL5 7/5/16 RI		7/30/16 2:45	161870027A	40.00
1566	12CEXP16211001.0017	MDL6 7/5/16 RI		7/30/16 3:27	161870027A	40.00
1566	12CEXP16211001.0018	MDL7 7/5/16 RI		7/30/16 4:10	161870027A	40.00
1566	12CEXP16211001.0019	MDL8 7/5/16 RI		7/30/16 4:52	161870027A	40.00
1566	12CEXP16211001.0020	MDL9 7/5/16		7/30/16 5:35	161870027A	40.00
1566	12CEXP16211001.0021	833031624C	83303KN	7/30/16 6:17	1621099999	1.00
1566	12CEXP16211001.0022	MDL10 7/5/16 RI		7/30/16 7:00	161870027A	40.00
1566	12CEXP16211001.0023	MDL11 7/5/16		7/30/16 7:42	161870027A	40.00
1566	12CEXP16211001.0024	MDL12 7/5/16		7/30/16 8:25	161870027A	40.00
1566	12CEXP16211001.0025	MDL13 7/5/16		7/30/16 9:07	161870027A	40.00
1566	12CEXP16211001.0026	MDL14 7/5/16		7/30/16 9:50	161870027A	40.00
1566	12CEXP16211001.0027	BLANKA 7/6/16	PBLK22187	7/30/16 10:32	161870022A	10.00
1566	12CEXP16211001.0028	MDL1 7/6/16		7/30/16 11:14	161870022A	10.00
1566	12CEXP16211001.0029	MDL2 7/6/16		7/30/16 11:57	161870022A	10.00
1566	12CEXP16211001.0030	MDL3 7/6/16		7/30/16 12:39	161870022A	10.00
1566	12CEXP16211001.0031	MDL4 7/6/16		7/30/16 13:22	161870022A	10.00
1566	12CEXP16211001.0032	833031624C	83303KN	7/30/16 14:04	1621099999	1.00
1566	12CEXP16211001.0033	MDL5 7/6/16		7/30/16 14:47	161870022A	10.00
1566	12CEXP16211001.0034	MDL6 7/6/16		7/30/16 15:29	161870022A	10.00
1566	12CEXP16211001.0035	MDL7 7/6/16		7/30/16 16:12	161870022A	10.00
1566	12CEXP16211001.0036	PETN1 7/6/16		7/30/16 16:54	161870022A	10.00
1566	12CEXP16211001.0037	PETN2 7/6/16		7/30/16 17:37	161870022A	10.00
1566	12CEXP16211001.0038	PETN3 7/6/16		7/30/16 18:19	161870022A	10.00
1566	12CEXP16211001.0039	PETN4 7/6/16		7/30/16 19:02	161870022A	10.00
1566	12CEXP16211001.0040	PETN5 7/6/16		7/30/16 19:44	161870022A	10.00
1566	12CEXP16211001.0041	PETN6 7/6/16		7/30/16 20:27	161870022A	10.00
1566	12CEXP16211001.0042	PETN7 7/6/16		7/30/16 21:09	161870022A	10.00
1566	12CEXP16211001.0043	833031624C	83303KN	7/30/16 21:52	1621099999	1.00

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Pesticide Residue Analysis
Runlog for 12CEXP16211008
Instrument C12C--Y6329A

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Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12CEXP16211008.0001	CONDITIONER		8/16/16 18:21	1622899999	1.00
1566	12CEXP16211008.0002	CONDITIONER		8/16/16 19:03	1622899999	1.00
1566	12CEXP16211008.0003	CONDITIONER		8/16/16 19:46	1622899999	1.00
1566	12CEXP16211008.0004	CONDITIONER		8/16/16 20:28	1622899999	1.00
1566	12CEXP16211008.0005	CONDITIONER		8/16/16 21:10	1622899999	1.00
1566	12CEXP16211008.0006	CONDITIONER		8/16/16 21:53	1622899999	1.00
1566	12CEXP16211008.0007	CONDITIONER		8/16/16 22:35	1622899999	1.00
1566	12CEXP16211008.0008	833031624D	83303MH	8/16/16 23:18	1622899999	1.00
1566	12CEXP16211008.0009	BLANKA 7/8/16 RI	PBLK22189	8/17/16 0:00	161890022A	40.00
1566	12CEXP16211008.0010	ISMLCS 7/8/16 RI	LCS22189	8/17/16 0:43	161890022A	40.00
1566	12CEXP16211008.0011	LCSA 7/8/16 RI	LCS22189	8/17/16 1:25	161890022A	40.00
1566	12CEXP16211008.0012	8444090 RI	BGA13	8/17/16 2:08	161890022A	40.00
1566	12CEXP16211008.0013	8444094 RI	BGA23	8/17/16 2:50	161890022A	40.00
1566	12CEXP16211008.0014	8444107 RI	BGA33	8/17/16 3:33	161890022A	40.00
1566	12CEXP16211008.0015	8444108MS RI	BGA33	8/17/16 4:15	161890022A	40.00
1566	12CEXP16211008.0016	8444109MSD RI	BGA33	8/17/16 4:57	161890022A	40.00
1566	12CEXP16211008.0017	8445671 RI	D8906	8/17/16 5:40	161890022A	40.00
1566	12CEXP16211008.0018	8445671 RI	D8906DUP	8/17/16 6:22	161890022A	40.00
1566	12CEXP16211008.0019	833031624D	83303MI	8/17/16 7:05	1622899999	1.00
1566	12CEXP16211008.0020	8445671MSD RI	D8906MSD	8/17/16 7:47	161890022A	40.00
1566	12CEXP16211008.0021	8445675 RI	D8910	8/17/16 8:30	161890022A	40.00
1566	12CEXP16211008.0022	8454735 RI	D9116	8/17/16 9:12	161950012A	40.00
1566	12CEXP16211008.0023	ISMLCS 7/14/16 RI	LCS14196	8/17/16 9:55	161960014A	40.00
1566	12CEXP16211008.0024	8471036MS RI	D9404MS	8/17/16 10:37	162010023A	40.00
1566	12CEXP16211008.0025	8471040 RI	D9408	8/17/16 11:19	162010023A	40.00
1566	12CEXP16211008.0026	8474741 RI	D9616	8/17/16 12:02	162020011A	40.00
1566	12CEXP16211008.0027	8474745 RI	D9620	8/17/16 12:44	162020011A	40.00
1566	12CEXP16211008.0028	8474749 RI	D9624	8/17/16 13:27	162020011A	40.00
1566	12CEXP16211008.0029	8474751 RI	D9626	8/17/16 14:09	162020011A	40.00
1566	12CEXP16211008.0030	833031624D	83303MJ	8/17/16 14:52	1622899999	1.00
1566	12CEXP16211008.0031	8474752 RI	D9627	8/17/16 15:34	162020011A	40.00
1566	12CEXP16211008.0032	8445679 RI	D8914	8/17/16 16:18	161890022A	40.00
1566	12CEXP16211008.0033	8449088 RI	D19A3	8/17/16 17:00	161890022A	40.00
1566	12CEXP16211008.0034	8449092 RI	D19B3	8/17/16 17:43	161890022A	40.00
1566	12CEXP16211008.0035	8449096 RI	D19C3	8/17/16 18:25	161890022A	40.00
1566	12CEXP16211008.0036	8450971 RI	15A-3	8/17/16 19:08	161890022A	40.00
1566	12CEXP16211008.0037	8450975 RI	15B-3	8/17/16 19:50	161890022A	40.00
1566	12CEXP16211008.0038	8450979 RI	15C-3	8/17/16 20:32	161890022A	40.00
1566	12CEXP16211008.0039	8455251 RI	D89B2	8/17/16 21:15	161890022A	40.00
1566	12CEXP16211008.0040	833031624D	83303MK	8/17/16 21:57	1622899999	1.00
1566	12CEXP16211008.0041	BLANKA 8/12/16	PBLK32224	8/17/16 22:40	162240032A	10.00
1566	12CEXP16211008.0042	LCSA 8/12/16	LCS32224	8/17/16 23:22	162240032A	10.00
1566	12CEXP16211008.0043	LCSDA 8/12/16	LCSD32224	8/18/16 0:05	162240032A	10.00
1566	12CEXP16211008.0044	8491058	32-24	8/18/16 0:47	162240032A	10.00
1566	12CEXP16211008.0045	833031624D	83303MM	8/18/16 1:29	1622999999	1.00

Eurofins Lancaster Laboratories
Pesticide Residue Analysis
Runlog for 12CEXP16211009
Instrument C12C--Y6329A

Data Directory Path is - \\USLAN-CHROMPERFECT\CHROMPERFECT-DATA\DEPT-24\ACTIVE\CP12\

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12CEXP16211009.0001	CONDITIONER		8/19/16 14:16	1623199999	1.00
1566	12CEXP16211009.0002	CONDITIONER		8/19/16 14:58	1623199999	1.00
1566	12CEXP16211009.0003	CONDITIONER		8/19/16 15:41	1623199999	1.00
1566	12CEXP16211009.0004	CONDITIONER		8/19/16 16:23	1623199999	1.00
1566	12CEXP16211009.0005	CONDITIONER		8/19/16 17:05	1623199999	1.00
1566	12CEXP16211009.0006	CONDITIONER		8/19/16 17:48	1623199999	1.00
1566	12CEXP16211009.0007	CONDITIONER		8/19/16 18:30	1623199999	1.00
1566	12CEXP16211009.0008	833031624D	83303MN	8/19/16 19:13	1623199999	1.00
1566	12CEXP16211009.0009	BLANKA 7/13/16 RI	PBLK12195	8/19/16 19:55	161950012A	40.00
1566	12CEXP16211009.0010	ISMLCS 7/13/16 RI	LCS12195	8/19/16 20:38	161950012A	40.00
1566	12CEXP16211009.0011	LCSA 7/13/16 RI	LCS12195	8/19/16 21:20	161950012A	40.00
1566	12CEXP16211009.0012	8454723 RI	D9104	8/19/16 22:03	161950012A	40.00
1566	12CEXP16211009.0013	8454723 RI	D9104DUP	8/19/16 22:45	161950012A	40.00
1566	12CEXP16211009.0014	8454723MS RI	D9104MS	8/19/16 23:27	161950012A	40.00
1566	12CEXP16211009.0015	8454727 RI	D9108	8/20/16 0:10	161950012A	40.00
1566	12CEXP16211009.0016	8454731 RI	D9112	8/20/16 0:52	161950012A	40.00
1566	12CEXP16211009.0017	8454739 RI	D9120	8/20/16 1:35	161950012A	40.00
1566	12CEXP16211009.0018	8454739MS RI	D9120MS	8/20/16 2:17	161950012A	40.00
1566	12CEXP16211009.0019	833031624D	83303MO	8/20/16 3:00	1623199999	1.00
1566	12CEXP16211009.0020	8454739MSD RI	D9120MSD	8/20/16 3:42	161950012A	40.00
1566	12CEXP16211009.0021	8454743 RI	D9124	8/20/16 4:24	161950012A	40.00
1566	12CEXP16211009.0022	8454746 RI	D9127	8/20/16 5:07	161950012A	40.00
1566	12CEXP16211009.0023	BLANKA 7/14/16 RI	PBLK14196	8/20/16 5:49	161960014A	40.00
1566	12CEXP16211009.0024	LCSA 7/14/16 RI	LCS14196	8/20/16 6:32	161960014A	40.00
1566	12CEXP16211009.0025	8457191 RI	13A-3	8/20/16 7:14	161960014A	40.00
1566	12CEXP16211009.0026	8457195 RI	13B-3	8/20/16 7:57	161960014A	40.00
1566	12CEXP16211009.0027	8457199 RI	13C-3	8/20/16 8:39	161960014A	40.00
1566	12CEXP16211009.0028	8457203 RI	12A-3	8/20/16 9:21	161960014A	40.00
1566	12CEXP16211009.0029	8457203 RI	12A-3DUP	8/20/16 10:04	161960014A	40.00
1566	12CEXP16211009.0030	833031624D	83303MP	8/20/16 10:46	1623199999	1.00
1566	12CEXP16211009.0031	8457203MS RI	12A-3MS	8/20/16 11:29	161960014A	40.00
1566	12CEXP16211009.0032	8457207 RI	12B-3	8/20/16 12:11	161960014A	40.00
1566	12CEXP16211009.0033	8457211 RI	12C-3	8/20/16 12:54	161960014A	40.00
1566	12CEXP16211009.0034	8457213 RI	40MMS	8/20/16 13:36	161960014A	40.00
1566	12CEXP16211009.0035	8457214 RI	40MMD	8/20/16 14:19	161960014A	40.00
1566	12CEXP16211009.0036	8457216 RI	D92B2	8/20/16 15:01	161960014A	40.00
1566	12CEXP16211009.0037	8469770MS RI	13A-3	8/20/16 15:44	161960014A	40.00
1566	12CEXP16211009.0038	8469771MSD RI	13A-3	8/20/16 16:26	161960014A	40.00
1566	12CEXP16211009.0039	BLANKA 7/19/16 RI	PBLK23201	8/20/16 17:09	162010023A	40.00
1566	12CEXP16211009.0040	ISMLCS 7/19/16 RI	LCS23201	8/20/16 17:51	162010023A	40.00
1566	12CEXP16211009.0041	833031624D	83303MQ	8/20/16 18:34	1623199999	1.00
1566	12CEXP16211009.0042	LCSA 7/19/16 RI	LCS23201	8/20/16 19:16	162010023A	40.00
1566	12CEXP16211009.0043	8471036 RI	D9404	8/20/16 19:58	162010023A	40.00
1566	12CEXP16211009.0044	8471036 RI	D9404DUP	8/20/16 20:41	162010023A	40.00
1566	12CEXP16211009.0045	8471044 RI	D9412	8/20/16 21:23	162010023A	40.00
1566	12CEXP16211009.0046	8471051 RI	D9416	8/20/16 22:06	162010023A	40.00
1566	12CEXP16211009.0047	8471052MS RI	D9416	8/20/16 22:48	162010023A	40.00
1566	12CEXP16211009.0048	8471053MSD RI	D9416	8/20/16 23:31	162010023A	40.00
1566	12CEXP16211009.0049	8471057 RI	D9420	8/21/16 0:13	162010023A	40.00
1566	12CEXP16211009.0050	8471061 RI	D9424	8/21/16 0:56	162010023A	40.00
1566	12CEXP16211009.0051	8471065 RI	D9428	8/21/16 1:38	162010023A	40.00
1566	12CEXP16211009.0052	833031624D	83303MR	8/21/16 2:21	1623199999	1.00
1566	12CEXP16211009.0053	8471069 RI	D9432	8/21/16 3:03	162010023A	40.00
1566	12CEXP16211009.0054	8471073 RI	D9436	8/21/16 3:45	162010023A	40.00
1566	12CEXP16211009.0055	8471076 RI	D9439	8/21/16 4:28	162010023A	40.00
1566	12CEXP16211009.0056	BLANKA 8/18/16	PBLK30231	8/21/16 5:10	162310030A	40.00

Operator	File	LLI#	Client ID	Analysis Date	Batch	Dilution Factor
1566	12CEXP16211009.0057	LCSA 8/18/16	LCS30231	8/21/16 5:53	162310030A	40.00
1566	12CEXP16211009.0058	LCSDA 8/18/16	LCSD30231	8/21/16 6:35	162310030A	40.00
1566	12CEXP16211009.0059	8505584	E9516	8/21/16 7:18	162310030A	40.00
1566	12CEXP16211009.0060	SS1619724A		8/21/16 8:00	162310030A	100.00
1566	12CEXP16211009.0061	833031624D	83303MS	8/21/16 8:43	1623199999	1.00

Preparation and Run Logs

Explosives

Organic Extraction Batchlog Assigned to: 1429 David Hershey Reviewed by: JM055 Start Date: 7/19/16 Start time: 21:00

162010023A Tech 1: D. H MZ4 Tech 2: —

Dept: 24 Prep Analysis: 13433 Nitroaromatic/Amine Ext 8330B Nitroaromatics/Amines 8330B(s)

QC	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8471036DUP	D9404DUP	10.00	SS1618224A (8)	0.1			40	Z	Z	315b	
8471036 DUP2	D9404MS	10.30	SS1618224A (8)	1	(8)		40	Z	Z	315c	
8471052MS	D9416	10.46	SS1618224A (8)		MS1615824B	2	40	Z	Z	315A	
8471053MSD	D9416	10.38	SS1618224A (8)		MS1615824B (8)	2	40	Z	Z	315A	
BLANKA	PBLK23201	10.0	SS1618224A (8)				40	Z	Z		
ISMLCS	LCS23201	10.22	SS1618224A (8)		(8)		40	Z	Z		
LCSA	LCS23201	10.0	SS1618224A (8)		MS1615824B	2	40	Z	Z		
LCSDDIA	LCSD23201	10.0	SS1618224A (8)		ST1614624A ST1614624B	.18 .18	40	Z	Z		
LCSDIA	LCS23201	10.0	SS1618224A (8)	1	ST1614624A ST1614624B	.18 .18	40	Z	Z		

Solvent Used	Lot No.
Acetonitrile	157773
CaCl2 Sol'n	1429070616A
Syringe Filter	9734955

DH MZ4 7-19-16

(8) changed codes

Start Time: 21:00
Stop Time: 15:00

MS1619724A
SS1619724A

Spike Solutions: Witness: NA

ST1614624A	2,4-Diamino-6-nitrotoluene
ST1614624B	2,6-Diamino-4-nitrotoluene
MS1615824B (8)	8330B EXPLOSIVE LOD
SS1618224A (8)	8330B SURROGATE

Sample #	Sample Code	Amt (g)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1 8471036	D9404	10.11	SS1618224A (8)	0.1	40	Z	Z	315a	Soil;Brown	13413	19865	08/02/2016	N
2 8471040	D9408	10.03	SS1618224A (8)	1	40	Z	Z	315A	Soil;Brown	13413	19865	08/02/2016	N
3 8471044	D9412	10.44	SS1618224A (8)		40	Z	Z	315A	Soil;Brown	13413	19865	08/02/2016	N
4 8471051BKG	D9416	10.28	SS1618224A (8)		40	Z	Z	315A	Soil;Brown	13413	19865	08/02/2016	N
5 8471057	D9420	10.20	SS1618224A (8)		40	Z	Z	315a	Soil;Brown	13413	19865	08/02/2016	N
6 8471061	D9424	10.15	SS1618224A (8)		40	Z	Z	315a	Soil;Brown	13413	19865	08/02/2016	N
7 8471065	D9428	10.44	SS1618224A (8)		40	Z	Z	315A	Soil;Brown	13413	19865	08/02/2016	N
8 8471069	D9432	10.03	SS1618224A (8)		40	Z	Z	315A	Soil;Brown	13413	19865	08/02/2016	N
9 8471073	D9436	10.01	SS1618224A (8)		40	Z	Z	315a	Soil;Brown	13413	19865	08/02/2016	N
10 8471076	D9439	10.05	SS1618224A (8)	1	40	Z	Z	315A	Soil;Brown	13413	19865	08/02/2016	N

DH MZ4 7-19-16

Rack ID:		Work Station		Micro Temp 100?
Internal Standard		Balance #		

DF = Dilution Factor FV = Final Volume

Page 1 of 1

S-bath ID	C	S-bath ID	C	N-Evap	C	M-vap	C	162010023A

Documented temps are NIST corrected.

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529	Revision: 2	Historical Reference: Form 5103
Effective date: Feb 5, 2015	Status: Effective	

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
Metals BLANK (A)	13588										X	X	7/8/16	1005	SB 3882	8471075 96A
	13564										|	|	|	1010	|	8471076 96A
SAND BLANK (A)	2203										|	|	|	↓	|	
8471035	13588				34	NA	ND	427.28	31.45	SOIL	X	X		1015		
8471036	13564	4.06	4.06	y	36	|	|	↓	↓	ROCKS STICKS	|	|	|	1020	|	
	2203				↓	|	|	|	|	↓	|	|	|	↓	|	
8471039	13588				34	|	|	480.50	28.06	|	|	|	|	1025	|	
8471040	12564	4.24	4.24	y	36	|	|	↓	↓	|	|	|	|	1030	|	
	2203				↓	|	|	|	|	↓	|	|	|	↓	|	
8471043	13588				34	|	|	199.54	30.54	|	|	|	|	1035	|	
8471044	12564	4.17	4.17	y	36	|	|	↓	↓	|	|	|	|	1040	|	
	2203				↓	|	|	|	|	↓	|	|	|	↓	|	
8471047 8471050 8471051	13588				34	|	|	417.85	47.35	|	|	|	|	1045	|	
	12564	4.15	4.14	y	36	|	|	↓	↓	|	|	|	|	1048	|	
	2203				↓	|	|	|	|	↓	|	|	|	↓	|	

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529	Revision: 2	Historical Reference: Form 5103
Effective date: Feb 6, 2015		Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8471048	13588				34	NA	NA	417.85	47.35	SOILS	X	K	7/8/16	1046	[illegible]	
8471052	13564	4.05	4.05	y	36					ROOTS STICKS				1049		
	2203															
8471049	13588				34			417.85	47.35					1047		
8471053	13564	4.25	4.25	y	36									1050		
	2203															
8471056	13588				34			403.02	49.85					1055		
8471057	12564	4.09	4.09	y	36									1100		
	2203															
8471060	13588				34			407.66	51.01					1105		
8471061	12564	4.33	4.33	y	36									1110		
	2203															
8471064	13588				34			513.95	34.23					1115		
8471065	12564	4.17	4.16	y	36									1120		
	2203															

Reviewed by: _____ Date: _____

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Document Title:
Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010629	Revision: 2	Historical Reference: Form 5103
Effective date: Feb 5, 2015	Status: Effective	

Sample Number	Analysis	Wt. of dried sample/ drying dish	2nd Wt. of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8471068	13588				34/34	NA	NA	550.53	30.35	3 STICKS ROOTS	X	X	7-18-16	1122	85880	
8471069	13564	4.58 20	4.19	J	34/36					3 STICKS				1124		
	2203															
8471072	13588				34/34			54481	30.65					1125		
8471073	13564	4.30	4.30	J	34/36									1130		
	2203															
metals blank (B)	13588													1131		8471075 96B
	12564													1133		8471076 96B
sand blank (B)	2203															
8471075	13588				30									1132		metals blank
8471076	12564				30									1134		sand blank
	2203															
	13588															
	12564															
	2203															

Reviewed by: _____ Date: _____

Perchlorate Data

Case Narrative/Conformance Summary

Perchlorate

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Pesticide Residue Analysis

Fraction: Perchlorate

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8471036	DU-1-13-A		X	1	
8471040	DU-1-13-B		X	1	
8471044	DU-1-13-C		X	1	
8471051	DU-1-14-A		X	1	Unspiked
8471052	DU-1-14-A MS		X	1	Matrix Spike
8471053	DU-1-14-A MSD		X	1	Matrix Spike Duplicate
8471057	DU-1-14-B		X	1	
8471061	DU-1-14-C		X	1	
8471065	DU-1-1-A		X	1	
8471069	DU-1-1-B		X	1	
8471073	DU-1-1-C		X	1	
8471076	Exp/Perchlorate Blank		X	1	Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

LCS/LCSD

Batch#: 162010001A (Sample number(s): 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076, UNSPK: 8471051)
The recovery(ies) for the following analyte(s) in the LCS is below the acceptance window:
Perchlorate in Soil LC/MS/MS

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Pesticide Residue Analysis

Fraction: Perchlorate

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Sample number(s): 8471036, 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076: Analysis: 06557)
The stated QC limits are advisory.

Abbreviation Key

UNSPK = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
+MS = Matrix Spike	MDL = Method Detection Limit
MSD = Matrix Spike Duplicate	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	E= out of calibration range
LCS = Lab Control Sample	RE = Repreparation/Reanalysis
LCSD = Lab Control Sample Duplicate	* = Out of Specification

Quality Control and Calibration Summary Forms

Perchlorate

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Quality Control Reference List
Pesticide Residue Analysis

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Fraction: Perchlorate

Analysis	Batch Number	Sample Number	Analysis Date
Perchlorate in Soil LC/MS/MS	162010001A	PBLK01201	07/19/2016 19:54:00
		LCS01201	07/19/2016 20:19:00
		8471040	07/19/2016 20:45:00
		8471044	07/19/2016 21:10:00
		8471051 UNSPK	07/19/2016 21:23:00
		8471052 MS	07/19/2016 21:35:00
		8471053 MSD	07/19/2016 21:48:00
		8471057	07/19/2016 22:01:00
		8471061	07/19/2016 22:14:00
		8471065	07/19/2016 22:26:00
		8471069	07/19/2016 22:39:00
		8471073	07/19/2016 22:52:00
		8471076	07/19/2016 23:05:00
		PBLK19202	07/27/2016 16:36:00
Perchlorate in Soil LC/MS/MS	162020019A	LCS19202	07/27/2016 17:02:00
		8471036	07/27/2016 17:40:00

LOQ/MDL Summary
Pesticide Residue Analysis

SDG: DWD94

Fraction: Perchlorate

06557: Perchlorate in Soil LC/MS/MS Analyte Name	Default MDL	Default LOQ	Units
Perchlorate in Soil LC/MS/MS	2.1	5.0	ug/kg

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Quality Control Summary
Method Blank
Pesticide Residue Analysis
SDG: DWD94
Matrix: SOLID

Fraction: Perchlorate

162010001A / PBLK01201 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Perchlorate in Soil LC/MS/MS	07/19/16	N.D.	ug/kg	2.1	5.0

162020019A / PBLK19202 Analyte	Analysis Date	Blank Results	Units	MDL	LOQ
Perchlorate in Soil LC/MS/MS	07/27/16	N.D.	ug/kg	2.1	5.0

Pesticide Residue Analysis

Fraction: Perchlorate

UNSPK: 8471051 MS: 8471052 MSD: 8471053 **Analyte**	Batch: **162010001A** (Sample number(s): 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076)								
	Spike Added ug/kg	**Unspiked Conc ug/kg**	**MS Conc ug/kg**	**MSD Conc ug/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Perchlorate in Soil LC/MS/MS	100	N.D.	100.06	95.58	100	96	70-130	5	15

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD94
Matrix: SOLID

Pesticide Residue Analysis

Fraction: Perchlorate

LCS: LCS01201	Batch: **162010001A** (Sample number(s): 8471040, 8471044, 8471051-8471053, 8471057, 8471061, 8471065, 8471069, 8471073, 8471076)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Perchlorate in Soil LC/MS/MS	100	54.23	NA	54 *	NA	80-120	NA	NA

LCS: LCS19202	Batch: **162020019A** (Sample number(s): 8471036)							
Analyte	**Spike Added ug/kg**	**LCS Conc ug/kg**	**LCSD Conc ug/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Perchlorate in Soil LC/MS/MS	100	101.85	NA	102	NA	80-120	NA	NA

Quant Calibration Report (ISTD)

Batch Info

Batch Data Path D:\MassHunter\Data\perchlorate\QuantResults\ms5p20116.batch.xml

Analysis Time	2016-07-20 08:26	**Analyst Name**	Administrator
Report Time	2016-07-20 08:28	**Reporter Name**	Administrator
Last Calib Update	2016-07-20 08:24	**Batch State**	ResultsDirty

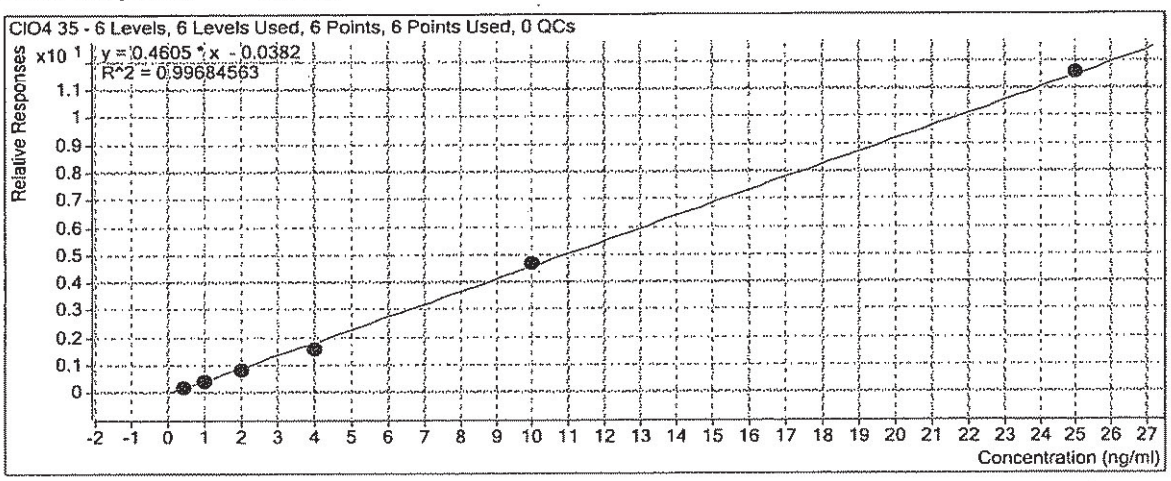
Calibration Info

ISTD Compound *ClO4 18*

35685

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20116004.d	Calibration	L1	☑	35646	10.0000	3564.6009
ms5p20116005.d	Calibration	L2	☑	35991	10.0000	3599.1001
ms5p20116006.d	Calibration	L3	☑	35867	10.0000	3586.6922
ms5p20116007.d	Calibration	L4	☑	38427	10.0000	3842.7463
ms5p20116008.d	Calibration	L5	☑	33826	10.0000	3382.6142
ms5p20116009.d	Calibration	L6	☑	34353	10.0000	3435.2658

Target Compound *ClO4 35*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20116004.d	Calibration	L1	☑	6188	0.4000	4.3398
ms5p20116005.d	Calibration	L2	☑	15614	1.0000	4.3382
ms5p20116006.d	Calibration	L3	☑	28679	2.0000	3.9980
ms5p20116007.d	Calibration	L4	☑	60135	4.0000	3.9122
ms5p20116008.d	Calibration	L5	☑	159901	10.0000	4.7271
ms5p20116009.d	Calibration	L6	☑	398435	25.0000	4.6393

ION RATIO USING LEVEL 4

3.13

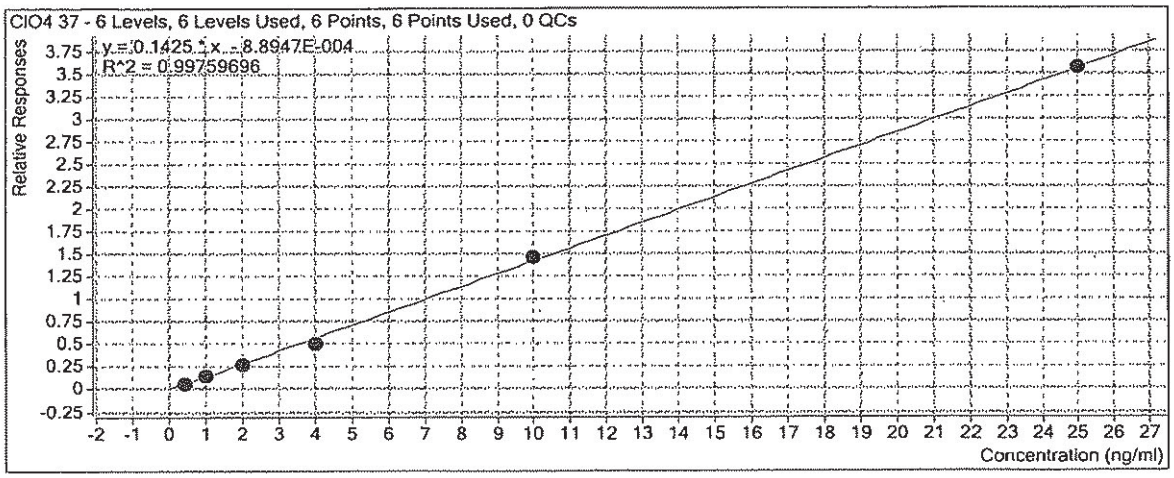
Valerie L. Tomaszko
Principal Specialist

JUL 20 2016

7/20/16

Quant Calibration Report (ISTD)

Target Compound *ClO4 37*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20116004.d	Calibration	L1	☑	2061	0.4000	1.4458
ms5p20116005.d	Calibration	L2	☑	5503	1.0000	1.5289
ms5p20116006.d	Calibration	L3	☑	9911	2.0000	1.3817
ms5p20116007.d	Calibration	L4	☑	19184	4.0000	1.2480
ms5p20116008.d	Calibration	L5	☑	49967	10.0000	1.4772
ms5p20116009.d	Calibration	L6	☑	122745	25.0000	1.4292

Quant Calibration Report (ISTD)

Batch Info

Batch Data Path	D:\MassHunter\Data\perchlorate\QuantResults\ms5p20916.batch.xml		
Analysis Time	2016-07-28 07:35	**Analyst Name**	Administrator
Report Time	2016-07-28 07:36	**Reporter Name**	Administrator
Last Calib Update	2016-07-28 07:32	**Batch State**	ResultsDirty

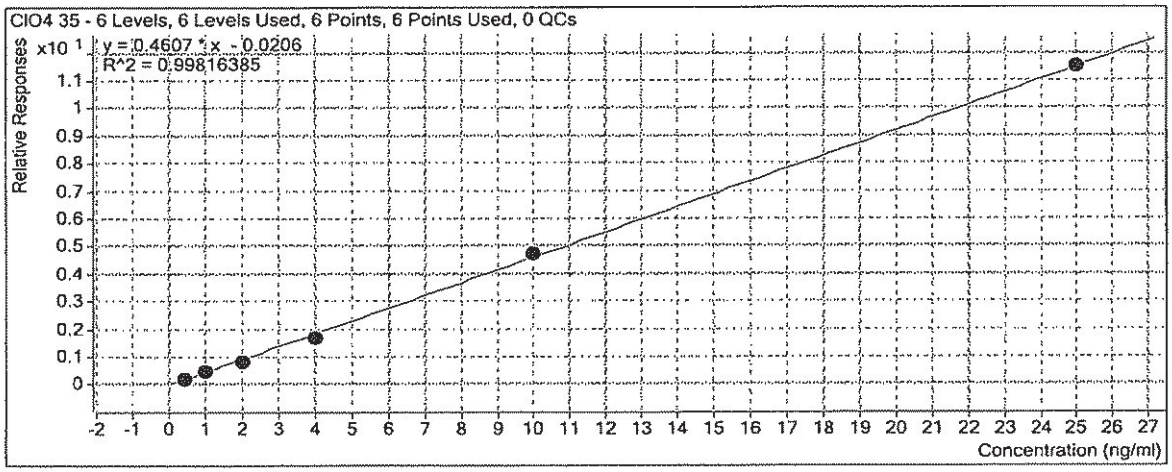
Calibration Info

22934

ISTD Compound *ClO4 18*

Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20916004.d	Calibration	L1	☑	23578	10.0000	2357.7939
ms5p20916005.d	Calibration	L2	☑	23125	10.0000	2312.5308
ms5p20916006.d	Calibration	L3	☑	23602	10.0000	2360.1881
ms5p20916007.d	Calibration	L4	☑	24113	10.0000	2411.3007
ms5p20916008.d	Calibration	L5	☑	21819	10.0000	2181.9279
ms5p20916009.d	Calibration	L6	☑	21365	10.0000	2136.4740

Target Compound *ClO4 35*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20916004.d	Calibration	L1	☑	4273	0.4000	4.5308
ms5p20916005.d	Calibration	L2	☑	10642	1.0000	4.6017
ms5p20916006.d	Calibration	L3	☑	19137	2.0000	4.0542
ms5p20916007.d	Calibration	L4	☑	40391	4.0000	4.1877
ms5p20916008.d	Calibration	L5	☑	103637	10.0000	4.7498
ms5p20916009.d	Calibration	L6	☑	246392	25.0000	4.6131

ION RATIO USING LEVEL 4

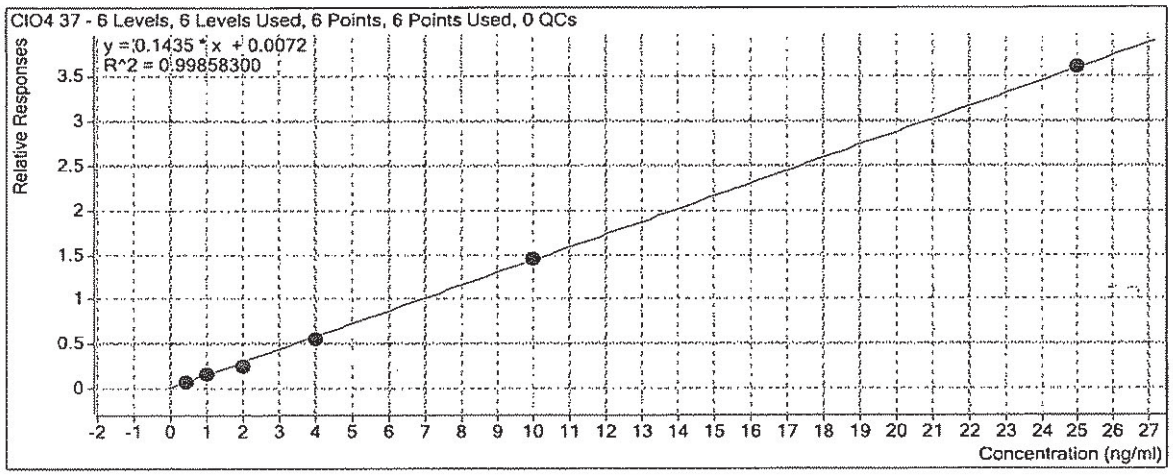
2.97

Susan M. Goshert
Manager

JUL 28 2016

Quant Calibration Report (ISTD)

Target Compound *ClO4 37*



Calibration STD	Cal Type	Level	Enabled	Response	Exp Conc	RF
ms5p20916004.d	Calibration	L1	☑	1583	0.4000	1.6781
ms5p20916005.d	Calibration	L2	☑	3802	1.0000	1.6441
ms5p20916006.d	Calibration	L3	☑	6072	2.0000	1.2863
ms5p20916007.d	Calibration	L4	☑	13605	4.0000	1.4105
ms5p20916008.d	Calibration	L5	☑	31796	10.0000	1.4572
ms5p20916009.d	Calibration	L6	☑	77248	25.0000	1.4463

QQQ Autotune Report

Instrument Name	Instrument 1	**MS Model**	G6410A
Tune Date & Time	2016-07-19 15:18		
Data Path	D:\MassHunter\Tune\QQQ\atunes.TUNE.XML		
Ion Source	ESI		
Ionization Mode	ESI		

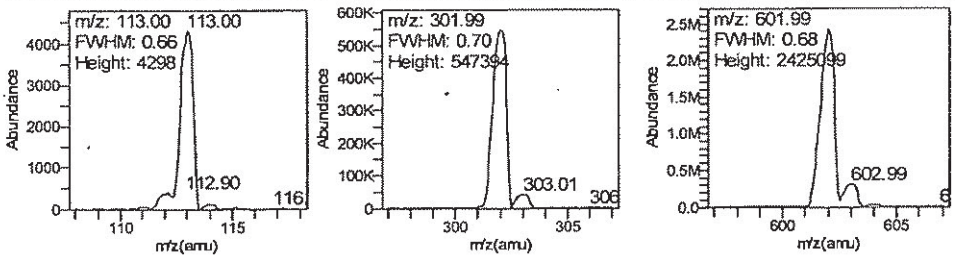
Source Parameters

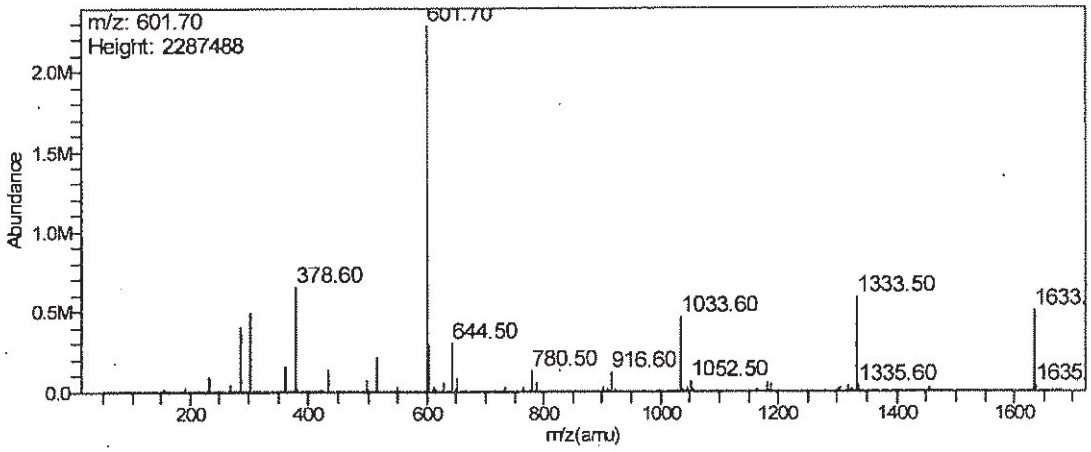
Parameter	Value
Gas Temp	350
Gas Flow	10
Nebulizer	30
Capillary	4000

QQQ Autotune Report

Negative Results

Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Unit*

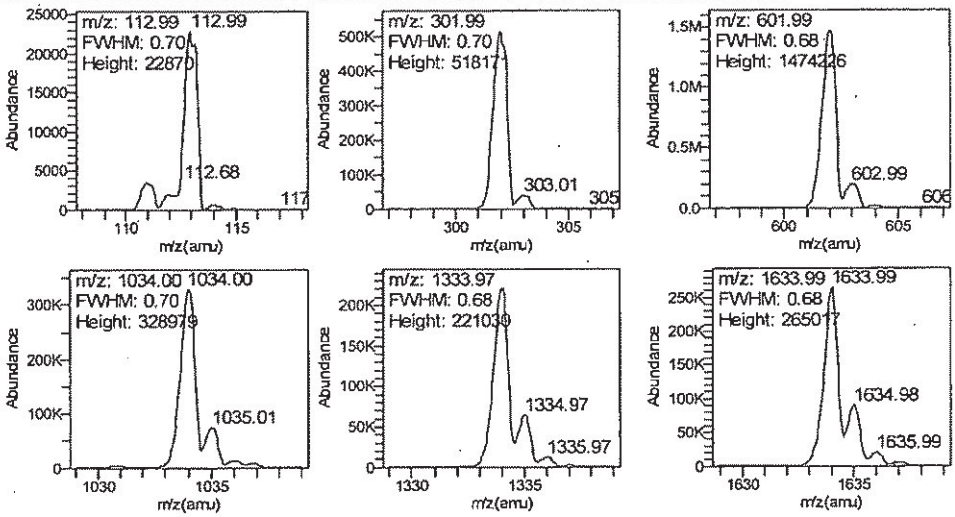


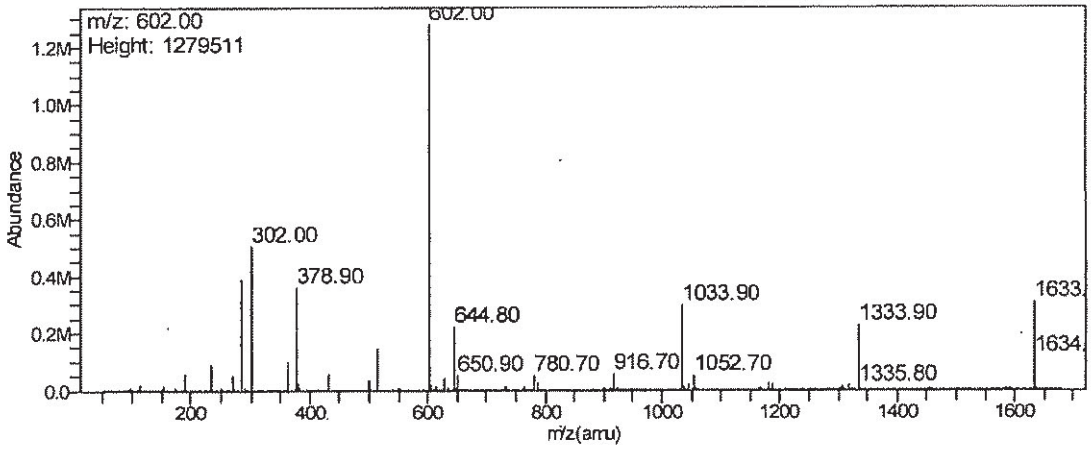


m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.00	112.99	0.66	0.70	4298
301.99	302.00	0.70	0.70	547394
601.98	601.98	0.68	0.70	2425099
1033.99	1033.99	0.68	0.70	587283
1333.98	1333.97	0.67	0.70	730625
1633.97	1633.95	0.67	0.70	609958

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Unit*

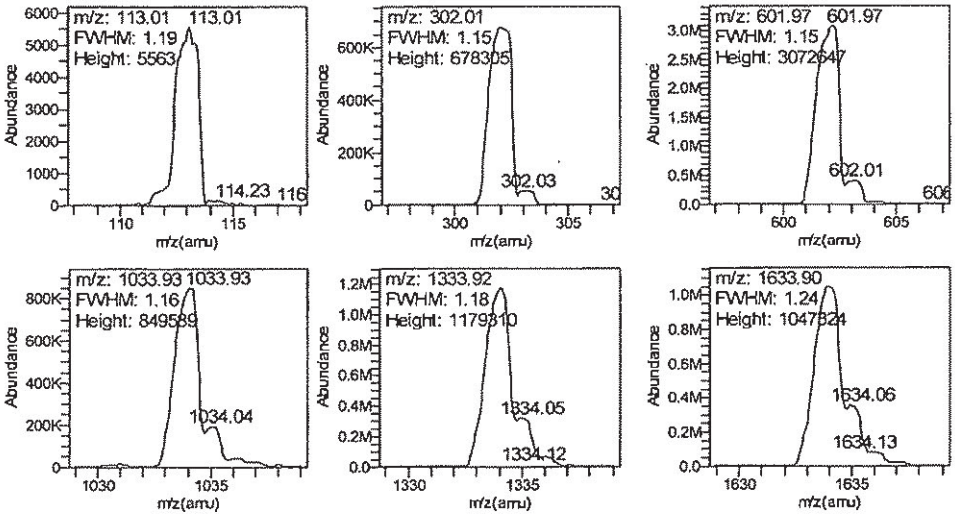




m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.99	112.99	0.70	0.70	22870
301.99	302.00	0.70	0.70	518171
601.99	601.98	0.68	0.70	1474226
1034.00	1033.99	0.70	0.70	328979
1333.99	1333.97	0.68	0.70	221030
1634.00	1633.95	0.68	0.70	265017

QQQ Autotune Report

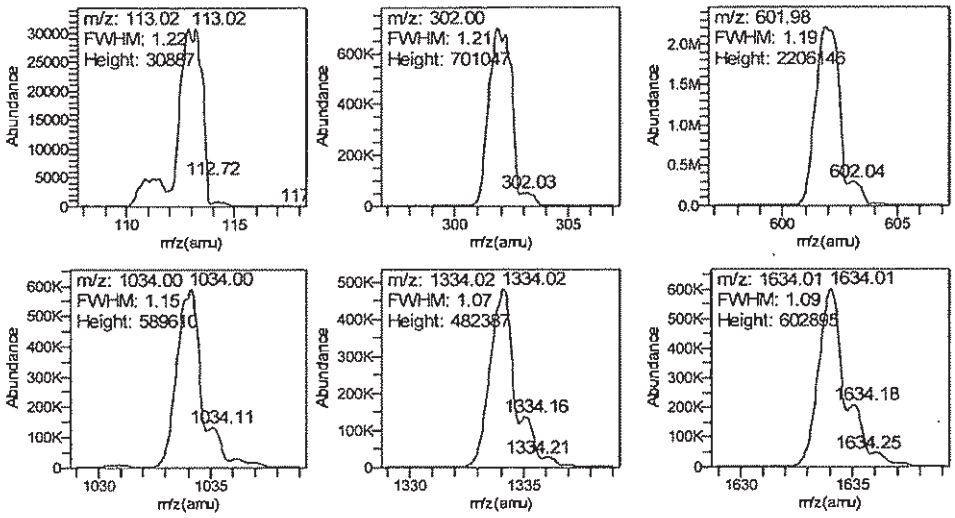
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.01	112.99	1.19	1.20	5563
302.01	302.00	1.15	1.20	678305
601.96	601.98	1.15	1.20	3072647
1033.93	1033.99	1.16	1.20	849589
1333.93	1333.97	1.18	1.20	1179310
1633.91	1633.95	1.24	1.20	1047324

QQQ Autotune Report

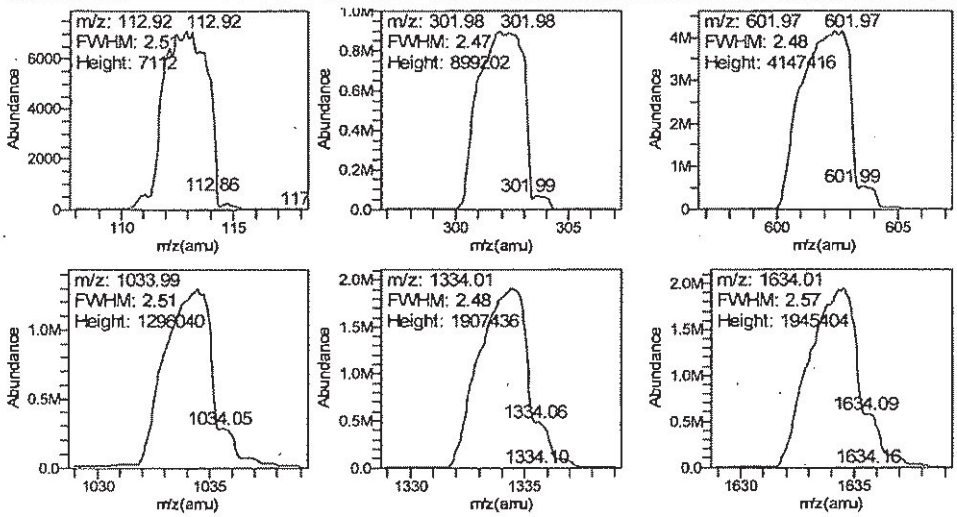
Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.02	112.99	1.22	1.20	30887
301.99	302.00	1.21	1.20	701047
601.98	601.98	1.19	1.20	2206146
1034.00	1033.99	1.14	1.20	589610
1334.03	1333.97	1.07	1.20	482387
1634.02	1633.95	1.09	1.20	602895

QQQ Autotune Report

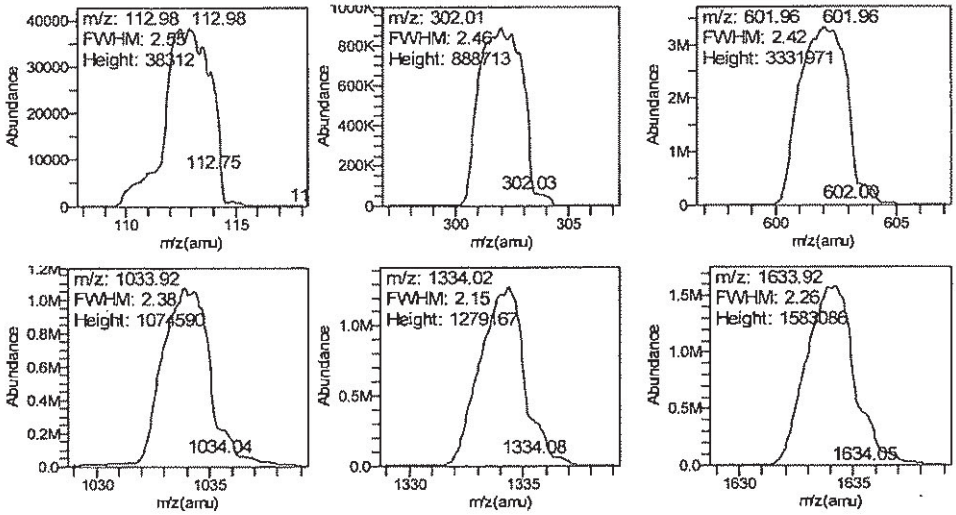
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.92	112.99	2.51	2.50	7112
301.98	302.00	2.47	2.50	899202
601.97	601.98	2.48	2.50	4147416
1033.99	1033.99	2.51	2.50	1296040
1334.02	1333.97	2.48	2.50	1907437
1634.02	1633.95	2.57	2.50	1945404

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.98	112.99	2.55	2.50	38312
302.01	302.00	2.46	2.50	888713
601.95	601.98	2.42	2.50	3331971
1033.92	1033.99	2.38	2.50	1074590
1334.03	1333.97	2.15	2.50	1279167
1633.93	1633.95	2.26	2.50	1583087

QQQ Autotune Report

Negative Parameters

Tune Parameters

Parameter	Setting
Fragmentor	135.00
Skimmer	15.00
Octopole DC	5.00
Octopole RF	600.00
Lens1	0.10
Lens2 DC	3.20
Lens2 RF Enable	1.00
Lens2 RF	319.00
Lens2 RF Phase	-108.00
MS1 DC	-3.00
MS1 PostFilter	-2.00
MS1 Axis Offset	0.81
MS1 Axis Gain	-29.15
MS1 Width Offset	0.05
MS1 Width Gain	31.40
MS1 Heater	100.00
MS2 DC	12.00
MS2 PreFilter	27.00
MS2 Axis Offset	0.69
MS2 Axis Gain	15.90
MS2 Width Offset	0.13
MS2 Width Gain	18.50
MS2 Heater	100.00
Cell Entry	0.00
Hexapole DC	0.00
Hexapole RF	400.00
Hexapole Accel	7.00
Cell Exit	8.00
Collision Gas	1.00
Iris	150.00
HED	10.00
EMV	1350.00
Collision Energy	0.00
Lens2 DC RF Off	30.00

Dynamic Ramp Tables

Lens2 DC

m/z	Setting
112.99	1.00
302.00	1.50
601.98	2.40
1033.99	3.70
1333.97	4.60
1633.95	5.50

Lens2 RF

m/z	Setting
112.99	82.00
302.00	112.00
601.98	158.00
1033.99	226.00
1333.97	273.00
1633.95	319.00

MS1 Axis Offset

m/z	Setting
112.99	0.81
302.00	0.84
601.98	0.86
1033.99	0.86
1333.97	0.82
1633.95	0.81

MS1 Width Offset

m/z	Setting
112.99	0.05
302.00	0.06
601.98	0.08
1033.99	0.07
1333.97	0.05
1633.95	0.05

MS2 Axis Offset

m/z	Setting
112.99	0.69
302.00	0.73
601.98	0.74
1033.99	0.73
1333.97	0.68
1633.95	0.69

MS2 Width Offset

m/z	Setting
112.99	0.13
302.00	0.14
601.98	0.14
1033.99	0.15
1333.97	0.13
1633.95	0.13

MS1 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	-29.15	0.81	31.40	0.05
Wide	-29.45	1.01	31.70	0.41
Widest	-29.35	1.37	32.10	1.43

QQQ Autotune Report

MS2 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	15.90	0.69	18.50	0.13
Wide	15.65	0.92	18.60	0.55
Widest	15.10	1.39	19.30	1.44

QQQ Autotune Report

Instrument Name	Instrument 1	**MS Model**	G6410A
Tune Date & Time	2016-07-27 13:19		
Data Path	D:\MassHunter\Tune\QQQ\atunes.TUNE.XML		
Ion Source	ESI		
Ionization Mode	ESI		

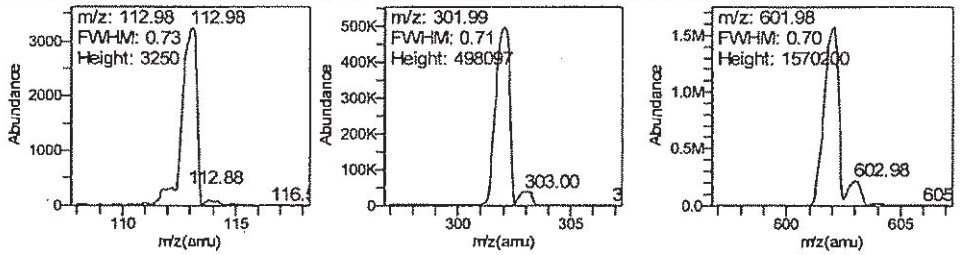
Source Parameters

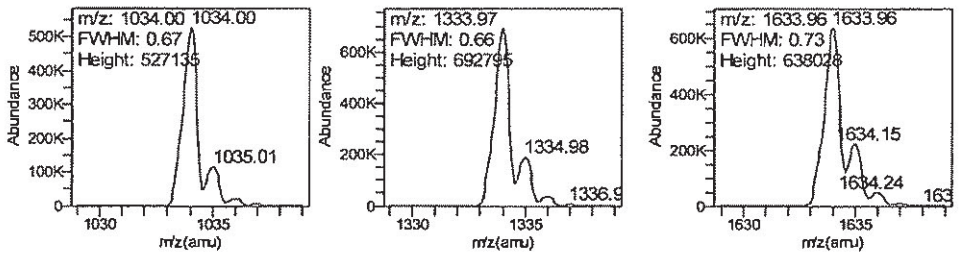
Parameter	Value
Gas Temp	350
Gas Flow	10
Nebulizer	30
Capillary	4000

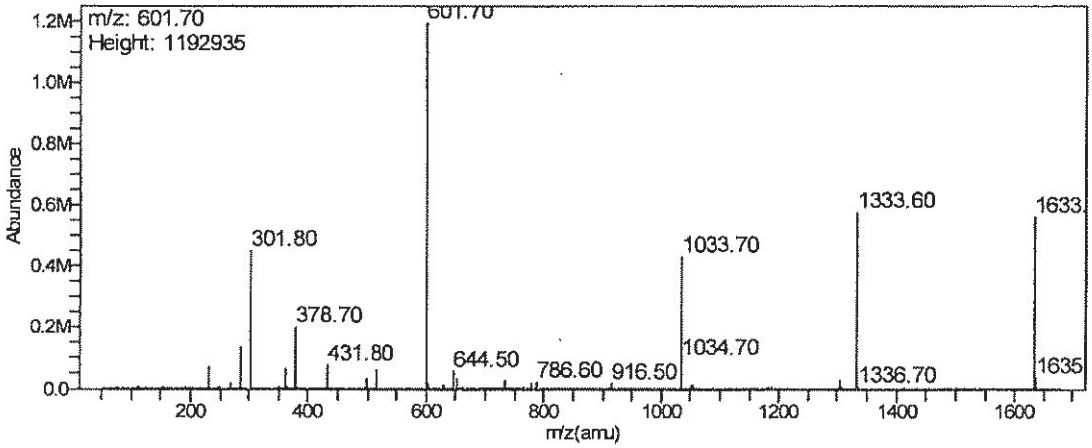
QQQ Autotune Report

Negative Results

Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Unit*



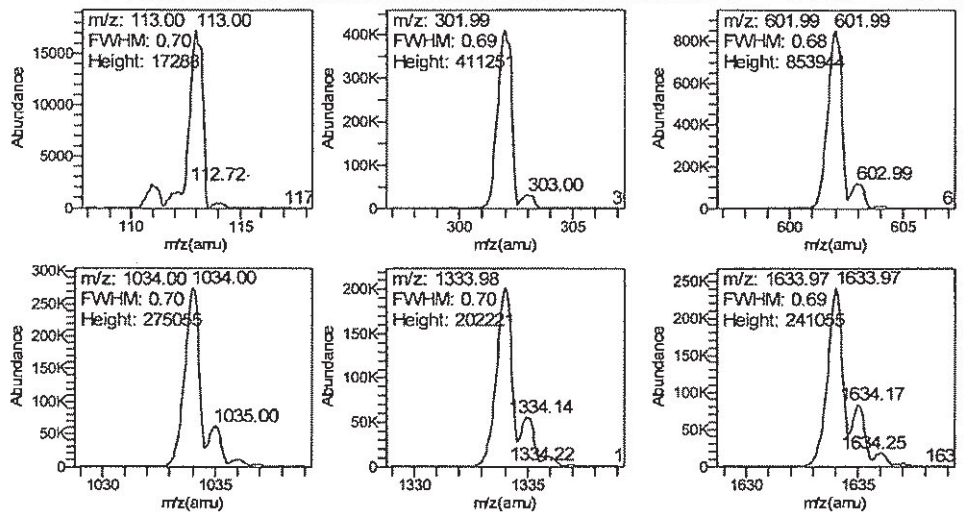


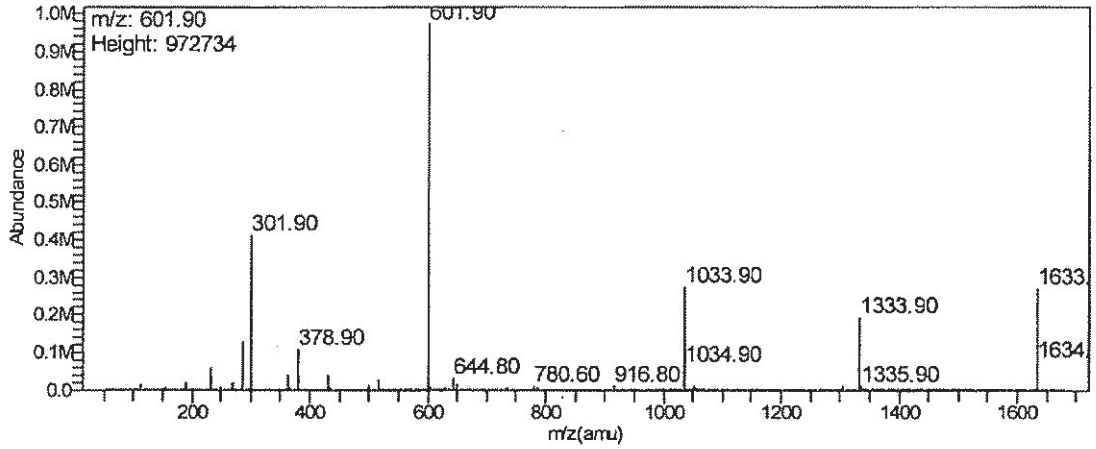


m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.98	112.99	0.73	0.70	3250
301.98	302.00	0.71	0.70	498097
601.98	601.98	0.70	0.70	1570200
1034.00	1033.99	0.66	0.70	527135
1333.98	1333.97	0.66	0.70	692795
1633.98	1633.95	0.73	0.70	638028

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Unit*

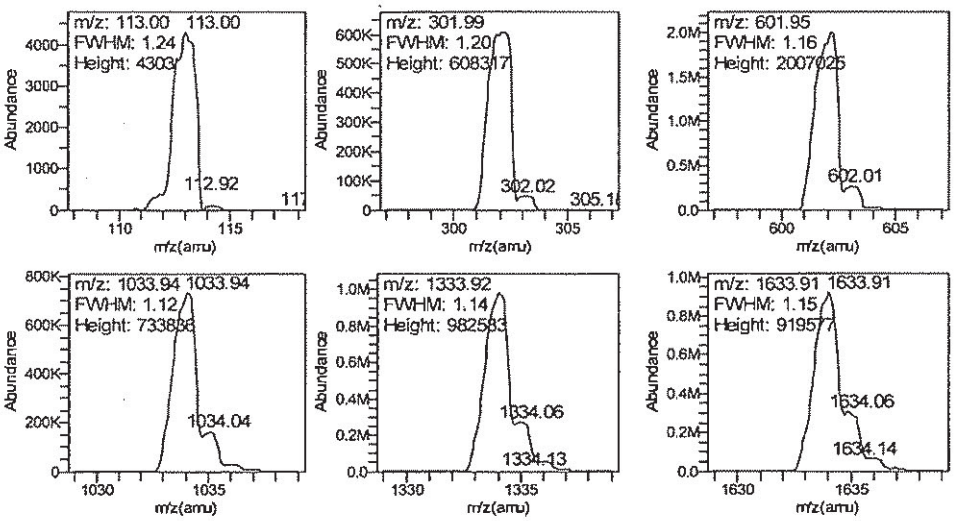




m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.00	112.99	0.70	0.70	17288
301.99	302.00	0.69	0.70	411251
601.99	601.98	0.68	0.70	853944
1033.99	1033.99	0.70	0.70	275055
1333.99	1333.97	0.70	0.70	202221
1633.98	1633.95	0.69	0.70	241055

QQQ Autotune Report

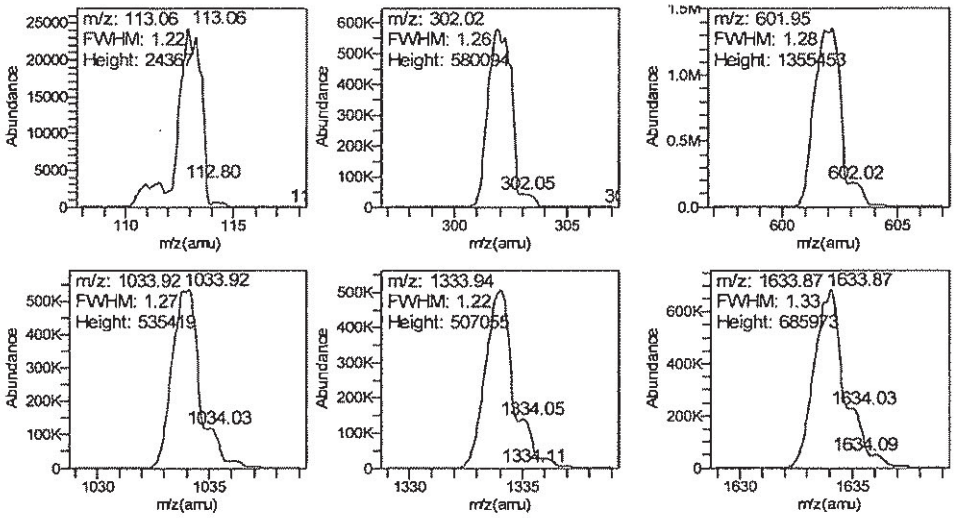
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.00	112.99	1.24	1.20	4303
301.99	302.00	1.20	1.20	608317
601.95	601.98	1.16	1.20	2007025
1033.94	1033.99	1.12	1.20	733836
1333.94	1333.97	1.14	1.20	982583
1633.92	1633.95	1.16	1.20	919577

QQQ Autotune Report

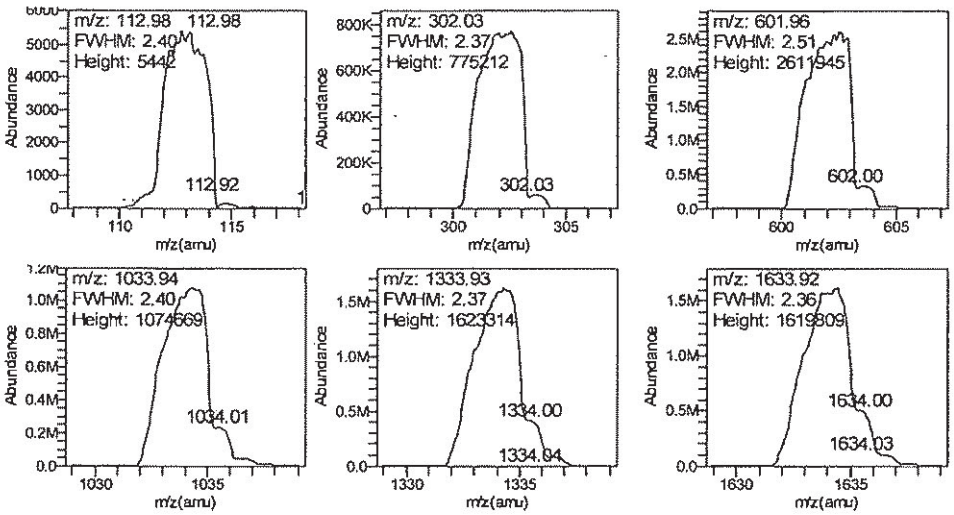
Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Wide*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.06	112.99	1.22	1.20	24367
302.01	302.00	1.26	1.20	580094
601.95	601.98	1.28	1.20	1355453
1033.92	1033.99	1.27	1.20	535419
1333.95	1333.97	1.22	1.20	507055
1633.88	1633.95	1.33	1.20	685973

QQQ Autotune Report

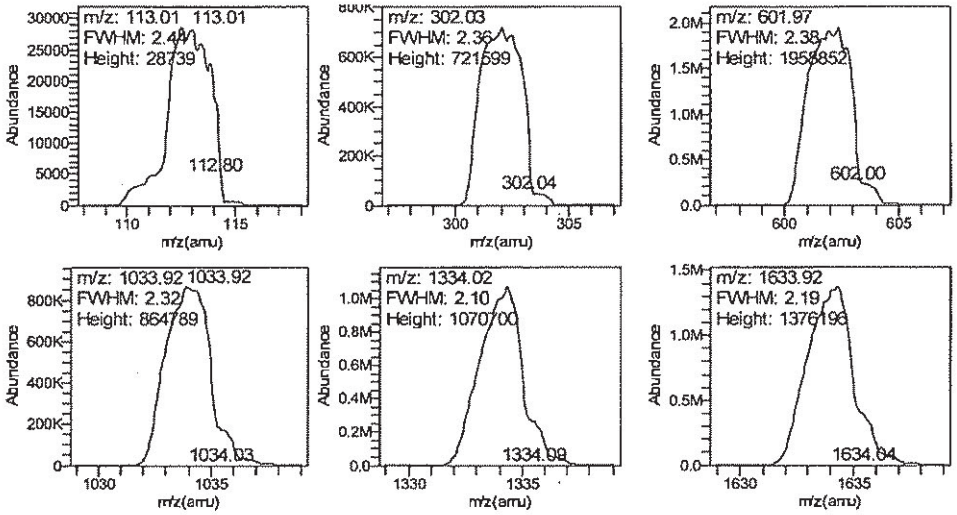
Analyzer: *MS1* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
112.98	112.99	2.40	2.50	5442
302.02	302.00	2.37	2.50	775212
601.96	601.98	2.51	2.50	2611945
1033.94	1033.99	2.40	2.50	1074669
1333.94	1333.97	2.37	2.50	1623314
1633.93	1633.95	2.36	2.50	1619810

QQQ Autotune Report

Analyzer: *MS2* ***Polarity:*** *Negative* ***Width:*** *Widest*



m/z	m/z Expected	FWHM	FWHM Expected	Abundance
113.01	112.99	2.44	2.50	28739
302.02	302.00	2.36	2.50	721599
601.97	601.98	2.38	2.50	1958852
1033.92	1033.99	2.32	2.50	864789
1334.04	1333.97	2.10	2.50	1070700
1633.94	1633.95	2.19	2.50	1376196

QQQ Autotune Report

Negative Parameters

Tune Parameters

Parameter	Setting
Fragmentor	135.00
Skimmer	15.00
Octopole DC	5.00
Octopole RF	600.00
Lens1	0.00
Lens2 DC	2.00
Lens2 RF Enable	1.00
Lens2 RF	318.00
Lens2 RF Phase	-108.00
MS1 DC	-3.00
MS1 PostFilter	-2.00
MS1 Axis Offset	0.80
MS1 Axis Gain	-29.10
MS1 Width Offset	0.06
MS1 Width Gain	31.50
MS1 Heater	100.00
MS2 DC	12.00
MS2 PreFilter	27.00
MS2 Axis Offset	0.70
MS2 Axis Gain	15.85
MS2 Width Offset	0.14
MS2 Width Gain	18.50
MS2 Heater	100.00
Cell Entry	0.00
Hexapole DC	0.00
Hexapole RF	400.00
Hexapole Accel	7.00
Cell Exit	8.00
Collision Gas	1.00
Iris	175.00
HED	10.00
EMV	1300.00
Collision Energy	0.00
Lens2 DC RF Off	28.00

Dynamic Ramp Tables

Lens2 DC

m/z	Setting
112.99	0.70
302.00	1.20
601.98	2.00
1033.99	3.10
1333.97	3.90
1633.95	4.70

Lens2 RF

QQQ Autotune Report

m/z	Setting
112.99	87.00
302.00	116.00
601.98	161.00
1033.99	227.00
1333.97	272.00
1633.95	318.00

MS1 Axis Offset

m/z	Setting
112.99	0.80
302.00	0.83
601.98	0.84
1033.99	0.84
1333.97	0.80
1633.95	0.80

MS1 Width Offset

m/z	Setting
112.99	0.06
302.00	0.04
601.98	0.06
1033.99	0.02
1333.97	0.02
1633.95	0.06

MS2 Axis Offset

m/z	Setting
112.99	0.70
302.00	0.73
601.98	0.75
1033.99	0.75
1333.97	0.72
1633.95	0.70

MS2 Width Offset

m/z	Setting
112.99	0.14
302.00	0.13
601.98	0.13
1033.99	0.15
1333.97	0.16
1633.95	0.14

MS1 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	-29.10	0.80	31.50	0.06
Wide	-29.45	1.00	31.50	0.43
Widest	-29.70	1.41	32.00	1.33

QQQ Autotune Report

MS2 Calibrations

Resolution	Mass Gain	Mass Offset	Width Gain	Width Offset
Unit	15.85	0.70	18.50	0.14
Wide	15.35	0.98	19.00	0.55
Widest	15.10	1.37	19.30	1.39

Continuing Calibration Method 6850

Run # ms5p20116

MS5P20116010		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.83	perchlorate	3.7	4	-8%	ICV

MS5P20116021		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.83	perchlorate	0.45	0.4	13%	

MS5P20116032		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.83	perchlorate	3.7	4	-8%	

entered by _____

verified by _____ 7/20/16

Continuing Calibration Method 6850

Run # ms5p20916

MS5P20916010		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.83	perchlorate	4.4	4	10%	ICV

MS5P20916021		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.82	perchlorate	0.46	0.4	15%	

MS5P20916027		Found	Added		
RT (min)		ug/L	ug/L	%D	
1.83	perchlorate	3.8	4	-5%	

entered by _____ 7/28/16

verified by _____
Susan M. Gosher
Manager

JUL 28 2016

Worklist Report

Worklist Path:	D:\MassHunter\Worklists\ms5p20116.wkl

Worklist Run Parameters

Operator Name:	---
Run Type:	Standard Start
Part of Method to Run:	Acquisition Only
Execution for Acquisition-DA:	Synchronous
Acquisition Method Path:	D:\MassHunter\methods
DA Method Path:	D:\MassHunter\methods
Data File Path:	D:\MassHunter\data
Pre-Worklist Script:	---
Post-Worklist Script:	---
Acquisition Clean Up Script:	---
Overlapped Injection:	Yes
Clear sample selection after run:	Yes
Wait Time for Ready(Min):	10
Threshold Disk Value(MB):	10240
Comment:	---

Worklist Table

Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Dilution	Comment
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116001.d	Sample		1	
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116002.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116002a.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116002b.d	Sample		1	
Perc11624a	P1-A3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116003.d	Sample		1	
Perc21624a	P1-A4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116004.d	Calibration	L1	1	

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Perc31624a	P1-A5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116005.d	Calibration	L2	1	
Perc41624a	P1-A6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116006.d	Calibration	L3	1	
Perc51624a	P1-A7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116007.d	Calibration	L4	1	
Perc61624a	P1-A8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116008.d	Calibration	L5	1	
Perc71624a	P1-A9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116009.d	Calibration	L6	1	
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116010.d	Sample		1	
8466272 df10	P1-B2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116011.d	Sample		100	161970017A
8466273BKG df10	P1-B3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116012.d	Sample		100	161970017A
8466273MS df10	P1-B4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116013.d	Sample		100	161970017A
8466273MSD df10	P1-B5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116014.d	Sample		100	161970017A
8466274 df10	P1-B6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116015.d	Sample		100	161970017A
BLANKA	P1-B7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116016.d	Sample		10	162010001A
LCSA	P1-B8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116017.d	Sample		10	162010001A
ISMLCS	P1-B9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116018.d	Sample		10	162010001A
8471036	P1-C1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116019.d	Sample		10	162010001A
8471040	P1-C2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116020.d	Sample		10	162010001A
lcperc21624a	P1-C3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116021.d	Sample		1	
8471044	P1-C4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116022.d	Sample		10	162010001A
8471051BKG	P1-C5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116023.d	Sample		10	162010001A
8471052MS	P1-C6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116024.d	Sample		10	162010001A
8471053MSD	P1-C7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116025.d	Sample		10	162010001A
8471057	P1-C8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116026.d	Sample		10	162010001A
8471061	P1-C9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116027.d	Sample		10	162010001A
8471065	P1-D1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116028.d	Sample		10	162010001A
8471069	P1-D2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116029.d	Sample		10	162010001A
8471073	P1-D3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116030.d	Sample		10	162010001A
8471076	P1-D4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116031.d	Sample		10	162010001A
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20116032.d	Sample		1	
SCP_InstrumentStandby(){Acquisition : AcqEngSystem : SCP_System}							

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Worklist Report

Worklist Path:	D:\MassHunter\Worklists\ms5p20916.wkl

Worklist Run Parameters

Operator Name:	---
Run Type:	**Standard Start**
Part of Method to Run:	**Acquisition Only**
Execution for Acquisition-DA:	**Synchronous**
Acquisition Method Path:	**D:\MassHunter\methods**
DA Method Path:	**D:\MassHunter\methods**
Data File Path:	**D:\MassHunter\data**
Pre-Worklist Script:	---
Post-Worklist Script:	---
Acquisition Clean Up Script:	---
Overlapped Injection:	**Yes**
Clear sample selection after run:	**Yes**
Wait Time for Ready(Min):	**10**
Threshold Disk Value(MB):	**10240**
Comment:	---

Worklist Table

Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Dilution	Comment
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916001.d	Sample		1	
Conditioner	P1-A1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916002.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916002a.d	Sample		1	
Conditioner	P1-A2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916002b.d	Sample		1	
Perc11624a	P1-A3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916003.d	Sample		1	
Perc21624a	P1-A4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916004.d	Calibration	L1	1	

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Perc31624a	P1-A5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916005.d	Calibration	L2	1	
Perc41624a	P1-A6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916006.d	Calibration	L3	1	
Perc51624a	P1-A7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916007.d	Calibration	L4	1	
Perc61624a	P1-A8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916008.d	Calibration	L5	1	
Perc71624a	P1-A9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916009.d	Calibration	L6	1	
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916010.d	Sample		1	
BLANKA	P1-B2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916011.d	Sample		10	162020019A
LCSA	P1-B3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916012.d	Sample		10	162020019A
ISMLCS	P1-B4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916013.d	Sample		10	162020019A
8457216	P1-B5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916014.d	Sample		10	162020019A
8457216DUP	P1-B6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916015.d	Sample		10	162020019A
8471036	P1-B7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916016.d	Sample		10	162020019A
8474724	P1-B8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916017.d	Sample		10	162020019A
8474728	P1-B9	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916018.d	Sample		10	162020019A
8474735BKG	P1-C1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916019.d	Sample		10	162020019A
8474736MS	P1-C2	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916020.d	Sample		10	162020019A
lcperc21624a	P1-C3	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916021.d	Sample		1	
8474737MSD	P1-C4	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916022.d	Sample		10	162020019A
8474741	P1-C5	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916023.d	Sample		10	162020019A
8474745	P1-C6	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916024.d	Sample		10	162020019A
8474749	P1-C7	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916025.d	Sample		10	162020019A
8474754	P1-C8	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916026.d	Sample		10	162020019A
lcperc51624a	P1-B1	clo4_Obeli_01.m	D:\MassHunter\data\perchlorate\ms5p20916027.d	Sample		1	
SCP_InstrumentStandby(){Acquisition : AcqEngSystem : SCP_System}							

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Preparation and Run Logs

Perchlorate

Organic Extraction Batchlog Assigned to: 300 Maria Davenport Reviewed by: RBH Start Date: 7-9-16 Start time: 07:00

162010001A Tech 1: MD300 Tech 2:

Dept: 24 Prep Analysis: 06568 Perchlorate Soil Prep — Perchlorate in Soil LC/MS/MS

QC	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8471052MS	D9416	1.01	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	305A	soil; Brown
8471053MSD	D9416	1.01	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	305A	soil; Brown
BLANKA	PBLK01201	1.00	IS1602624A	0.02			10	Z	Z	N/A	
ISMLCS	LCS01201	1.02	IS1602624A	0.02			10	Z	Z	N/A	#3
LCSA	LCS01201	1.01	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	N/A	

Solvent Used	Lot No.
Ottawa Sand	213240-AG
Syringe Filter	9734955

IS1602624A Perchlorate Int. Std.
IN1601924B Perchlorate Interm.

Note: .02mls Int. Std. is added to 2mls of extract

Sample #	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1 8471036	D9404	1.00	IS1602624A	0.02	10	Z	Z	305a	Soil;Brown R1	06557		08/02/2016	N
2 8471040	D9408	1.04	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/02/2016	N
3 8471044	D9412	1.03	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/02/2016	N
4 8471051BKG	D9416	1.04	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/02/2016	N
5 8471057	D9420	1.02	IS1602624A	0.02	10	Z	Z	305a	Soil;Brown	06557		08/02/2016	N
6 8471061	D9424	1.02	IS1602624A	0.02	10	Z	Z	305a	Soil;Brown	06557		08/02/2016	N
7 8471065	D9428	1.00	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/02/2016	N
8 8471069	D9432	1.01	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/02/2016	N
9 8471073	D9436	1.01	IS1602624A	0.02	10	Z	Z	305a	Soil;Brown	06557		08/02/2016	N
10 8471076	D9439	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/02/2016	N

7-9-16 MD300 N/A

Rack ID:		Work Station		Micro Temp 100?
Internal Standard		Balance #	17609	

DF = Dilution Factor FV = Final Volume

Page 1 of 1

Sonic bath 17489

S-bath ID	C	S-bath ID	C	N-Evap	C	M-vap	C	162010001A

Documented temps are NIST corrected.

Centrifuge #8

Organic Extraction Batchlog Assigned to: 300 Maria Davenport Reviewed by: _____ Start Date: 7-27-16 Start time: 09:55

162020019A

Tech 1: MD300 Tech 2: _____

Dept: 24 Prep Analysis: 06568 Perchlorate Soil Prep — Perchlorate in Soil LC/MS/MS

QC	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	MS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments
8457216DUP	D92B2DUP	1.01	IS1602624A	0.02			10	Z	Z	96B	Soil; Brown
8474736MS	D9612	1.00	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	305A	Soil; Brown
8474737MSD	D9612	1.04	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	305A	Soil; Brown
BLANKA	PBLK19202	1.00	IS1602624A	0.02			10	Z	Z	N/A	
ISMLCS	LCS19202	1.01	IS1602624A	0.02			10	Z	Z	N/A	#1
LCSA	LCS19202	1.01	IN1601924B IS1602624A	0.1 0.02			10	Z	Z	N/A	

Note: .02mls Int. Std is added to 2mls of extract

Solvent Used	Lot No.
Ottawa Sand	213240-AG
Syringe Filter	9734955

IS1602624A Perchlorate Int. Std.
IN1601924B Perchlorate Interm.

Sample #	Sample Code	Amt (G)	SS/IS Sol.	Amt (mL)	FV (mL)	pH	pH	BC	Comments	Analyses	List	Due Date	Prio
1 8457216 R	D92B2	1.00	IS1602624A	0.02	10	Z	Z	96A	Soil;Brown	06557		07/25/2016	N
2 8471036 R	D9404	1.00	IS1602624A	0.02	10	Z	Z	305b	Soil;Brown	06557		08/02/2016	N
3 8474724	D9604	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
4 8474728	D9608	1.04	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
5 8474735BKG	D9612	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
6 8474741	D9616	1.02	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
7 8474745	D9620	1.01	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
8 8474749	D9624	1.01	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N
9 8474754	D9629	1.04	IS1602624A	0.02	10	Z	Z	305A	Soil;Brown	06557		08/04/2016	N

7-27-16
MD300
N/A

Rack ID:		Work Station		Micro Temp 100?
Internal Standard		Balance #	13	

DF = Dilution Factor FV = Final Volume

Sonic bath 17489

S-bath ID	C	S-bath ID	C	N-Evap	C	M-vap	C	162020019A

Documented temps are NIST corrected.

centrifuge #8

eurofins | Lancaster Laboratories Environmental

Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 5103

Effective date: Feb 5, 2016 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
Metals BLANK (A)	13588										X	X	7/28/16	1005	[illegible]	84710735 96A
	13564										|	|	|	1010	|	84710736 96A
SAND BLANK (A)	2203										|	|	|	↓	|	
8471035	13588				34	NA	ND	42.23	31.45	SOIL	X	✓		1015		
8471036	13564	4.06	4.06	y	36	|	|	↓	↓	ROCKS STICKS	|	|	|	1020	|	
	2203				↓	|	|	↓	↓	↓	|	|	|	↓	|	
8471039	13588				34	|	|	48.52	28.06	|	|	|	|	1025	|	
8471040	12564	4.24	4.24	y	36	|	|	↓	↓	|	|	|	|	1030	|	
	2203				↓	|	|	↓	↓	|	|	|	|	↓	|	
8471043	13588				34	|	|	49.54	30.54	|	|	|	|	1035	|	
8471044	12564	4.17	4.17	y	36	|	|	↓	↓	|	|	|	|	1040	|	
	2203				↓	|	|	↓	↓	|	|	|	|	↓	|	
8471047	13588				34	|	|	47.85	47.35	|	|	|	|	1045	|	
8471050	12564	4.15	4.14	y	36	|	|	↓	↓	|	|	|	|	1048	|	
8471051	2203				↓	|	|	↓	↓	↓	|	|	|	↓	↓	

Reviewed by: _____ Date: _____

eurofins | Lancaster Laboratories Environmental

Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010629 | Revision: 2 | Historical Reference: Form 5103

Effective date: Feb 6, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8471048	13588				34	LA	MT	417.85	47.35	SCITS	X	K	7/8/16	1046	58 1887	
8471052	13564	4.05	4.05	y	36					ROCKS STICKS				1049		
	2203				↓			↓	↓							
8471049	13588				34			417.85	47.35					1047		
8471053	13564	4.25	4.25	y	36									1050		
	2203				↓			↓	↓							
8471056	13588				34			402.02	49.85					1055		
8471057	12564	4.09	4.09	y	36									1100		
	2203				↓			↓	↓							
8471060	13588				34			407.60	37.01					1105		
8471061	12564	4.33 4.38	4.33	y	36									1110		
	2203				↓			↓	↓							
8471064	13588							513.95	34.23					1115		
8471065	12564	4.17	4.16	y						↓				1120		
	2203							↓	↓							

Reviewed by: _____ Date: _____

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Document Title: Sample Preparation of Solid Samples Using Incremental Sampling Methodology

Eurofins Document Reference: 1-P-QM-FOR-9010529 | Revision: 2 | Historical Reference: Form 5103

Effective date: Feb 5, 2015 | Status: Effective

Sample Number	Analysis	Wt of dried sample/ drying dish	2nd Wt of sample/drying dish	Final Wt <0.05 g (Y or N)	Comp. Bottle Code	Metal 0390	Moist 0111	Total Sample Wt.	Unsieved sample Wt.	Unsieved Sample Description	entered	verified	Date	Time	Init./ Emp. #	Comments
8471068	13588					NA	NA	5505	30.35	3STS rocks	X	X	7/18/16	1122	[illegible]	
8471069	13564	4.58	4.19	Y						sticks				1124		
	2203															
8471072	13588							84481	30.65					1125		
8471073	13564	4.30	4.30	Y										1130		
	2203															
metals blank (B)	13588													1131		8471075 96B
sand blank (B)	12564													1133		8471076 96B
	2203															↓
8471075	13588				20									1132		metals blank
8471076	12564				20									1134		sand blank
	2203				↓											↓
	13588															
	12564															NA 7/18/16
	2203															

Reviewed by: _____ Date: _____

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Metals in Solid Data

Case Narrative/Conformance Summary

Metals in Solid

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

ICP Metals

Fraction: Metals in Solid

Sample #	Client ID	Matrix Liquid	Matrix Solid	Comments
8471034	DU-1-13-A		X	
8471035	DU-1-13-A		X	
8471038	DU-1-13-B		X	
8471039	DU-1-13-B		X	
8471042	DU-1-13-C		X	
8471043	DU-1-13-C		X	
8471046	DU-1-14-A		X	
8471047	DU-1-14-A		X	Background/Unspiked
8471048	DU-1-14-A MS		X	Matrix Spike
8471049	DU-1-14-A MSD		X	Matrix Spike Duplicate
8471050	DU-1-14-A DUP		X	Duplicate
8471055	DU-1-14-B		X	
8471056	DU-1-14-B		X	
8471059	DU-1-14-C		X	
8471060	DU-1-14-C		X	
8471063	DU-1-1-A		X	
8471064	DU-1-1-A		X	
8471067	DU-1-1-B		X	
8471068	DU-1-1-B		X	
8471071	DU-1-1-C		X	
8471072	DU-1-1-C		X	
8471075	Metals Blank		X	Blank

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

ICP Metals

Fraction: Metals in Solid

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

Method Blank

For noncompliant preparation/method blanks, corrective action is not required if the sample is ND or > 10 times the blank concentration, unless otherwise specified in the method or by the client.

MS/MSD

Method defined actions are taken for any failed matrix QC.

Batch#: 162010637003 (Sample number(s): 8471035, 8471039, 8471043, 8471047-8471050, 8471056, 8471060, 8471064, 8471068, 8471072, 8471075, UNSPK: 8471047, BKG: 8471047)
The recovery(ies) for the following analyte(s) in the MSD is outside the acceptance window: Iron
The recovery(ies) for the following analyte(s) in the MS and MSD is outside the acceptance window: Aluminum
Refer to the QC Summary forms for more information.

Sample Duplicate

Batch#: 162110638002 (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071, UNSPK: P472644, BKG: P472644)
The duplicate RPD for the following analyte(s) is outside the acceptance window: Mercury

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

Refer to analysis run log for samples requiring dilutions.

The instrument detection limits (IDLs) are used for determining the U flags on the initial and continuing calibration blanks. The highest IDL is selected when multiple instruments are used for an analysis. The method detection limits (MDLs) are used for determining all other U flags.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

ICP Metals

Fraction: Metals in Solid

Abbreviation Key

BKG – Background	AF - Cold Vapor Atomic Fluorescence
DUP – Duplicate	U - Below MDL
MS - Matrix Spike	B - Below LOQ
MSD - Matrix Spike Dup	N - Matrix Spike out of specifications
B – Blank	* - Duplicate out of specifications
Q - Laboratory Control Sample	E - Matrix Effects exist as proven by Serial Dilution or Spiked Dilution
Y - Laboratory Control Sample Duplicate	A - Post Digestion Spike
P - ICP Atomic Emission Spectrometer	L - Serial Dilution
MS - ICP Mass Spectrometry	R - Internal Standard Relative Intensity OOS
CV - Cold Vapor	NR - Not Required

Sample Data

Metals in Solid

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471034 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.038	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471035 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2250			P
7440-36-0	Antimony	0.51	U		P
7440-38-2	Arsenic	0.71	U		P
7440-39-3	Barium	8.2			P
7440-41-7	Beryllium	0.064	B		P
7440-43-9	Cadmium	0.049	B		P
7440-70-2	Calcium	2550			P
7440-47-3	Chromium	2.8			P
7440-48-4	Cobalt	0.088	U		P
7440-50-8	Copper	1.3	B		P
7439-89-6	Iron	1170			P
7439-92-1	Lead	5.2			P
7439-95-4	Magnesium	937			P
7439-96-5	Manganese	53.6			P
7440-02-0	Nickel	0.99	B		P
7440-09-7	Potassium	81.0			P
7782-49-2	Selenium	0.66	U		P
7440-22-4	Silver	0.11	U		P
7440-23-5	Sodium	23.4	B		P
7440-28-0	Thallium	0.021	U		MS
7440-62-2	Vanadium	2.8			P
7440-66-6	Zinc	12.0			P

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence
NR = Not Required

CONCENTRATION QUALIFIERS:
U = Below MDL,
B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471038 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.026	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471039 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2390			P
7440-36-0	Antimony	0.69	U		P
7440-38-2	Arsenic	0.96	U		P
7440-39-3	Barium	8.8			P
7440-41-7	Beryllium	0.072	B		P
7440-43-9	Cadmium	0.049	U		P
7440-70-2	Calcium	3210			P
7440-47-3	Chromium	3.0			P
7440-48-4	Cobalt	0.12	U		P
7440-50-8	Copper	0.99	B		P
7439-89-6	Iron	1110			P
7439-92-1	Lead	4.9			P
7439-95-4	Magnesium	1290			P
7439-96-5	Manganese	58.7			P
7440-02-0	Nickel	0.91	B		P
7440-09-7	Potassium	84.2	B		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	26.4	B		P
7440-28-0	Thallium	0.029	U		MS
7440-62-2	Vanadium	3.1			P
7440-66-6	Zinc	10.8			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471042 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.047	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471043 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2310			P
7440-36-0	Antimony	0.68	U		P
7440-38-2	Arsenic	0.94	U		P
7440-39-3	Barium	7.8			P
7440-41-7	Beryllium	0.067	B		P
7440-43-9	Cadmium	0.060	B		P
7440-70-2	Calcium	3790			P
7440-47-3	Chromium	3.0			P
7440-48-4	Cobalt	0.12	U		P
7440-50-8	Copper	2.1			P
7439-89-6	Iron	1060			P
7439-92-1	Lead	7.6			P
7439-95-4	Magnesium	1450			P
7439-96-5	Manganese	53.8			P
7440-02-0	Nickel	1.0	B		P
7440-09-7	Potassium	89.5	B		P
7782-49-2	Selenium	0.87	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	25.7	B		P
7440-28-0	Thallium	0.028	U		MS
7440-62-2	Vanadium	3.0			P
7440-66-6	Zinc	8.4			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471046 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.064	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471047BKG % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3250			P
7440-36-0	Antimony	0.55	U		P
7440-38-2	Arsenic	0.76	U		P
7440-39-3	Barium	10.0			P
7440-41-7	Beryllium	0.070	B		P
7440-43-9	Cadmium	0.038	U		P
7440-70-2	Calcium	505			P
7440-47-3	Chromium	2.9			P
7440-48-4	Cobalt	0.094	U		P
7440-50-8	Copper	0.63	B		P
7439-89-6	Iron	1270			P
7439-92-1	Lead	4.8			P
7439-95-4	Magnesium	194			P
7439-96-5	Manganese	70.1			P
7440-02-0	Nickel	1.2	B		P
7440-09-7	Potassium	76.1	B		P
7782-49-2	Selenium	0.70	U		P
7440-22-4	Silver	0.12	U		P
7440-23-5	Sodium	18.7	U		P
7440-28-0	Thallium	0.023	U		MS
7440-62-2	Vanadium	3.1			P
7440-66-6	Zinc	3.4			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471048MS % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3920			P
7440-36-0	Antimony	41.9			P
7440-38-2	Arsenic	13.8			P
7440-39-3	Barium	195			P
7440-41-7	Beryllium	4.7			P
7440-43-9	Cadmium	4.7			P
7440-70-2	Calcium	890			P
7440-47-3	Chromium	21.2			P
7440-48-4	Cobalt	46.6			P
7440-50-8	Copper	24.8			P
7439-89-6	Iron	1380			P
7439-92-1	Lead	18.5			P
7439-95-4	Magnesium	400			P
7439-96-5	Manganese	114			P
7440-02-0	Nickel	47.9			P
7440-09-7	Potassium	1010			P
7782-49-2	Selenium	12.7			P
7440-22-4	Silver	4.6			P
7440-23-5	Sodium	940			P
7440-28-0	Thallium	0.38			MS
7440-62-2	Vanadium	50.0			P
7440-66-6	Zinc	50.1			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471049MSD % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4030			P
7440-36-0	Antimony	44.3			P
7440-38-2	Arsenic	14.3			P
7440-39-3	Barium	209			P
7440-41-7	Beryllium	5.0			P
7440-43-9	Cadmium	5.0			P
7440-70-2	Calcium	934			P
7440-47-3	Chromium	22.7			P
7440-48-4	Cobalt	49.8			P
7440-50-8	Copper	25.6			P
7439-89-6	Iron	1440			P
7439-92-1	Lead	18.7			P
7439-95-4	Magnesium	416			P
7439-96-5	Manganese	120			P
7440-02-0	Nickel	50.9			P
7440-09-7	Potassium	1090			P
7782-49-2	Selenium	14.2			P
7440-22-4	Silver	5.0			P
7440-23-5	Sodium	1010			P
7440-28-0	Thallium	0.40			MS
7440-62-2	Vanadium	53.4			P
7440-66-6	Zinc	53.6			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471050DUP % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3400			P
7440-36-0	Antimony	0.69	U		P
7440-38-2	Arsenic	0.95	U		P
7440-39-3	Barium	10.6			P
7440-41-7	Beryllium	0.075	B		P
7440-43-9	Cadmium	0.048	U		P
7440-70-2	Calcium	532			P
7440-47-3	Chromium	3.1			P
7440-48-4	Cobalt	0.12	U		P
7440-50-8	Copper	0.65	B		P
7439-89-6	Iron	1350			P
7439-92-1	Lead	5.0			P
7439-95-4	Magnesium	202			P
7439-96-5	Manganese	74.2			P
7440-02-0	Nickel	1.4	B		P
7440-09-7	Potassium	77.7	B		P
7782-49-2	Selenium	0.88	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	23.4	U		P
7440-28-0	Thallium	0.028	U		MS
7440-62-2	Vanadium	3.3			P
7440-66-6	Zinc	4.0			P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471055 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.058	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471056 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3360			P
7440-36-0	Antimony	0.66	U		P
7440-38-2	Arsenic	0.92	U		P
7440-39-3	Barium	11.0			P
7440-41-7	Beryllium	0.078	B		P
7440-43-9	Cadmium	0.046	U		P
7440-70-2	Calcium	487			P
7440-47-3	Chromium	3.3			P
7440-48-4	Cobalt	0.11	U		P
7440-50-8	Copper	0.64	B		P
7439-89-6	Iron	1380			P
7439-92-1	Lead	4.1			P
7439-95-4	Magnesium	194			P
7439-96-5	Manganese	76.3			P
7440-02-0	Nickel	1.4	B		P
7440-09-7	Potassium	74.0	B		P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	0.14	U		P
7440-23-5	Sodium	22.5	U		P
7440-28-0	Thallium	0.027	U		MS
7440-62-2	Vanadium	3.3			P
7440-66-6	Zinc	3.6	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471059 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.072	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471060 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3380			P
7440-36-0	Antimony	0.63	U		P
7440-38-2	Arsenic	0.87	U		P
7440-39-3	Barium	10.3			P
7440-41-7	Beryllium	0.075	B		P
7440-43-9	Cadmium	0.044	U		P
7440-70-2	Calcium	517			P
7440-47-3	Chromium	3.0			P
7440-48-4	Cobalt	0.11	U		P
7440-50-8	Copper	0.62	B		P
7439-89-6	Iron	1330			P
7439-92-1	Lead	4.8			P
7439-95-4	Magnesium	196			P
7439-96-5	Manganese	72.7			P
7440-02-0	Nickel	1.4	B		P
7440-09-7	Potassium	73.5	B		P
7782-49-2	Selenium	0.81	U		P
7440-22-4	Silver	0.14	U		P
7440-23-5	Sodium	21.5	U		P
7440-28-0	Thallium	0.026	U		MS
7440-62-2	Vanadium	3.2			P
7440-66-6	Zinc	3.6	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471063 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.030	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471064 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	908			P
7440-36-0	Antimony	0.59	U		P
7440-38-2	Arsenic	0.82	U		P
7440-39-3	Barium	2.1			P
7440-41-7	Beryllium	0.057	U		P
7440-43-9	Cadmium	0.042	U		P
7440-70-2	Calcium	34.8			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	0.10	U		P
7440-50-8	Copper	0.50	B		P
7439-89-6	Iron	465			P
7439-92-1	Lead	7.3			P
7439-95-4	Magnesium	45.2			P
7439-96-5	Manganese	15.6			P
7440-02-0	Nickel	0.50	B		P
7440-09-7	Potassium	24.7	B		P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	0.13	B		P
7440-23-5	Sodium	20.3	U		P
7440-28-0	Thallium	0.025	U		MS
7440-62-2	Vanadium	4.4			P
7440-66-6	Zinc	1.2	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471067 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.032	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471068 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	773			P
7440-36-0	Antimony	0.70	U		P
7440-38-2	Arsenic	0.97	U		P
7440-39-3	Barium	1.8			P
7440-41-7	Beryllium	0.067	U		P
7440-43-9	Cadmium	0.049	U		P
7440-70-2	Calcium	27.3	B		P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	0.12	U		P
7440-50-8	Copper	0.43	B		P
7439-89-6	Iron	432			P
7439-92-1	Lead	6.4			P
7439-95-4	Magnesium	36.4			P
7439-96-5	Manganese	14.6			P
7440-02-0	Nickel	0.47	B		P
7440-09-7	Potassium	24.7	B		P
7782-49-2	Selenium	0.90	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	23.9	U		P
7440-28-0	Thallium	0.029	U		MS
7440-62-2	Vanadium	4.0			P
7440-66-6	Zinc	1.2	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471071 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7439-97-6	Mercury	0.022	B		CV

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471072 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	839			P
7440-36-0	Antimony	0.64	U		P
7440-38-2	Arsenic	0.89	U		P
7440-39-3	Barium	2.0			P
7440-41-7	Beryllium	0.061	U		P
7440-43-9	Cadmium	0.045	U		P
7440-70-2	Calcium	30.0	B		P
7440-47-3	Chromium	1.8	B		P
7440-48-4	Cobalt	0.11	U		P
7440-50-8	Copper	0.52	B		P
7439-89-6	Iron	434			P
7439-92-1	Lead	6.3			P
7439-95-4	Magnesium	39.8			P
7439-96-5	Manganese	13.8			P
7440-02-0	Nickel	0.48	B		P
7440-09-7	Potassium	24.8	B		P
7782-49-2	Selenium	0.83	U		P
7440-22-4	Silver	0.14	U		P
7440-23-5	Sodium	21.9	U		P
7440-28-0	Thallium	0.027	U		MS
7440-62-2	Vanadium	4.0			P
7440-66-6	Zinc	1.5	B		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 1
INORGANIC ANALYSIS DATA SHEET
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Lab Sample ID: 8471075 % Solids: 100.0
Concentration Units: MG/KG Date Received: 07/12/2016

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8.6	U		P
7440-36-0	Antimony	0.69	U		P
7440-38-2	Arsenic	0.96	U		P
7440-39-3	Barium	0.049	B		P
7440-41-7	Beryllium	0.066	U		P
7440-43-9	Cadmium	0.049	U		P
7440-70-2	Calcium	5.6	U		P
7440-47-3	Chromium	0.14	U		P
7440-48-4	Cobalt	0.12	U		P
7440-50-8	Copper	0.21	U		P
7439-89-6	Iron	4.1	U		P
7439-92-1	Lead	0.54	U		P
7439-95-4	Magnesium	1.9	U		P
7439-96-5	Manganese	0.082	U		P
7440-02-0	Nickel	0.30	U		P
7440-09-7	Potassium	23.7	U		P
7782-49-2	Selenium	0.89	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	23.7	U		P
7440-28-0	Thallium	0.029	U		MS
7440-62-2	Vanadium	0.14	U		P
7440-66-6	Zinc	0.67	U		P

Comments:

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METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence NR = Not Required	U = Below MDL, B = Below LOQ

Quality Control and Calibration Summary Forms

Metals in Solid

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD94
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Aluminum	162010637003	8471035
Antimony		8471039
Arsenic		8471043
Barium		8471047BKG
Beryllium		8471048MS
Cadmium		8471049MSD
Calcium		8471050DUP
Chromium		8471056
Cobalt		8471060
Iron		8471064
Lead		8471068
Magnesium		8471072
Manganese		8471075
Nickel		P20137CB
Potassium		P20137CQ
Selenium		
Silver		
Sodium		
Vanadium		
Zinc		

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD94
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Copper	162040637005	8471035
Lead		8471039
		8471043
		8471047BKG
		8471048MS
		8471049MSD
		8471050DUP
		8471056
		8471060
		8471064
		8471068
		8471072
		8471075
		P20437EB
		P20437EQ

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD94
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Thallium	162010637003	8471035
		8471039
		8471043
		8471047BKG
		8471048MS
		8471049MSD
		8471050DUP
		8471056
		8471060
		8471064
		8471068
		8471072
		8471075
		P20137CB
		P20137CQ

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

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QUALITY CONTROL REFERENCE LIST

SDG No.: DWD94
Matrix: SOIL

Analyte	Batch Number	Lab Sample ID
Mercury	162110638002	8471034
		8471038
		8471042
		8471046
		8471055
		8471059
		8471063
		8471067
		8471071
		*72644BKG
		*72644MS
		*72644MSD
		*72644DUP
		P21138BB
		P21138BQ

LEGEND:

BKG = Background	B = Blank
DUP = Duplicate	Q = Laboratory Control Sample
MS = Matrix Spike	Y = Laboratory Control Sample Duplicate
MSD = Matrix Spike Duplicate	

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620304T72
Calibration Date(s): 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum		30000.0	29131.47	97.1	25000.0	24403.95	97.6	25000.0	24283.42	97.1
Antimony		600.0	606.64	101.1	500.0	501.62	100.3	500.0	502.54	100.5
Arsenic		600.0	594.37	99.1	500.0	509.70	101.9	500.0	500.65	100.1
Barium		600.0	606.57	101.1	500.0	504.16	100.8	500.0	498.08	99.6
Beryllium		600.0	587.59	97.9	500.0	487.83	97.6	500.0	484.60	96.9
Cadmium		600.0	595.19	99.2	500.0	503.82	100.8	500.0	499.07	99.8
Calcium		30000.0	29129.89	97.1	25000.0	24581.09	98.3	25000.0	24561.57	98.2
Chromium		600.0	584.48	97.4	500.0	492.92	98.6	500.0	492.96	98.6
Cobalt		600.0	583.62	97.3	500.0	496.54	99.3	500.0	498.58	99.7
Copper										
Iron		30000.0	28987.84	96.6	25000.0	24281.08	97.1	25000.0	24233.87	96.9
Lead		600.0	577.94	96.3	500.0	485.83	97.2	500.0	483.86	96.8
Magnesium		30000.0	29296.11	97.7	25000.0	24615.15	98.5	25000.0	24440.55	97.8
Manganese		600.0	603.80	100.6	500.0	500.94	100.2	500.0	492.70	98.5
Nickel		600.0	588.55	98.1	500.0	495.83	99.2	500.0	495.81	99.2
Potassium		30000.0	29607.86	98.7	25000.0	24742.77	99.0	25000.0	24592.56	98.4
Selenium		600.0	608.36	101.4	500.0	496.49	99.3	500.0	495.75	99.2
Silver		600.0	607.08	101.2	500.0	502.16	100.4	500.0	496.87	99.4
Sodium		30000.0	29260.94	97.5	25000.0	24704.15	98.8	25000.0	24906.68	99.6
Vanadium		600.0	609.25	101.5	500.0	508.45	101.7	500.0	505.39	101.1
Zinc		600.0	600.95	100.2	500.0	504.36	100.9	500.0	501.63	100.3

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620304T72
Calibration Date(s): 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum					25000.0	24540.47	98.2			
Antimony					500.0	499.15	99.8			
Arsenic					500.0	507.18	101.4			
Barium					500.0	502.90	100.6			
Beryllium					500.0	488.64	97.7			
Cadmium					500.0	504.71	100.9			
Calcium					25000.0	24608.22	98.4			
Chromium					500.0	492.97	98.6			
Cobalt					500.0	496.73	99.3			
Copper										
Iron					25000.0	24322.97	97.3			
Lead					500.0	486.30	97.3			
Magnesium					25000.0	24564.21	98.3			
Manganese					500.0	501.67	100.3			
Nickel					500.0	497.11	99.4			
Potassium					25000.0	24705.46	98.8			
Selenium					500.0	506.26	101.3			
Silver					500.0	501.78	100.4			
Sodium					25000.0	24706.93	98.8			
Vanadium					500.0	509.62	101.9			
Zinc					500.0	506.33	101.3			

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620404T73
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration			Continuing Calibration					
		True	Found	%R(1)	True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead		600.0	590.54	98.4	500.0	504.05	100.8	500.0	500.59	100.1
Magnesium										
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620404T73
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead					500.0	500.34	100.1			
Magnesium										
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620405T70
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Nickel		600.0	591.78	98.6	500.0	498.76	99.8	500.0	502.64	100.5
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc		600.0	594.12	99.0	500.0	499.64	99.9	500.0	501.07	100.2

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620405T70
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Magnesium										
Manganese										
Nickel					500.0	503.80	100.8			
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc					500.0	499.68	99.9			

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620903T71
Calibration Date(s): 07/27/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper		600.0	600.03	100.0	500.0	497.35	99.5	500.0	519.07	103.8
Iron										
Lead		600.0	583.42	97.2	500.0	488.43	97.7	500.0	489.52	97.9
Magnesium										
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: P
Run Name: 1620903T71
Calibration Date(s): 07/27/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Aluminum										
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper					500.0	511.71	102.3			
Iron										
Lead					500.0	485.91	97.2			
Magnesium										
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: MS
Run Name: 1620704E05
Calibration Date(s): 07/25/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration			Continuing Calibration					
		True	Found	%R(1)	True	Found	%R(2)	True	Found	%R(2)
Thallium	203	50.0	48.75	97.5	25.0	25.59	102.4	25.0	25.47	101.9

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: MS
Run Name: 1620704E05
Calibration Date(s): 07/25/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Thallium	203				25.0	25.40	101.6	25.0	25.30	101.2

(1) Control Limits: 90 - 110
(2) Control Limits: 90 - 110
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

		Initial Calibration			Continuing Calibration					
Analyte	Mass	True	Found	%R(1)	True	Found	%R(2)	True	Found	%R(2)
Mercury		2.5	2.42	96.8	1.0	0.99	99.0	1.0	0.97	97.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury					1.0	0.98	98.0	1.0	0.96	96.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury					1.0	0.96	96.0	1.0	0.97	97.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury					1.0	0.94	94.0	1.0	0.95	95.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury					1.0	0.95	95.0	1.0	0.96	96.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

Analyte	Mass	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(2)	True	Found	%R(2)
Mercury					1.0	0.95	95.0	1.0	0.95	95.0

(1) Control Limits: 90 - 110
(2) Control Limits: 80 - 120
* Outside Limits. If Continuing Calibration is outside limits, high, only ND samples are accepted.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD94

Method: P
Run Name: 1620304T72
Calibration Date(s): 07/21/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum		400.0	356.01	89.0	376.98	94.2
Antimony		40.0	41.49	103.7	40.01	100.0
Arsenic		40.0	34.60	86.5	38.94	97.4
Barium		10.0	10.35	103.5	10.44	104.4
Beryllium		10.0	9.87	98.7	10.05	100.5
Cadmium		10.0	10.03	100.3	10.07	100.7
Calcium		400.0	393.95	98.5	395.78	98.9
Chromium		30.0	29.97	99.9	30.22	100.7
Cobalt		10.0	10.22	102.2	9.84	98.4
Copper						
Iron		400.0	382.14	95.5	382.71	95.7
Lead		30.0	27.44	91.5	27.04	90.1
Magnesium		200.0	193.55	96.8	190.03	95.0
Manganese		10.0	10.09	100.9	10.35	103.5
Nickel		20.0	20.13	100.7	20.03	100.2
Potassium		1000.0	915.57	91.6	967.82	96.8
Selenium		40.0	36.78	92.0	37.58	94.0
Silver		10.0	9.67	96.7	10.27	102.7
Sodium		2000.0	2046.18	102.3	2010.53	100.5
Vanadium		10.0	9.84	98.4	9.76	97.6
Zinc		40.0	39.65	99.1	39.93	99.8

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD94

Method: P
Run Name: 1620404T73
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead		30.0	33.15	110.5	31.03	103.4
Magnesium						
Manganese						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Vanadium						
Zinc						

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: P
Run Name: 1620405T70
Calibration Date(s): 07/22/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Nickel		20.0	22.40	112.0	22.77	113.9
Potassium						
Selenium						
Silver						
Sodium						
Vanadium						
Zinc		40.0	38.84	97.1	39.25	98.1

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD94

Method: P
Run Name: 1620903T71
Calibration Date(s): 07/27/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper		20.0	20.84	104.2	19.74	98.7
Iron						
Lead		30.0	32.26	107.5	36.08	120.3
Magnesium						
Manganese						
Nickel						
Potassium						
Selenium						
Silver						
Sodium						
Vanadium						
Zinc						

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 2B
LOW LEVEL CHECK STANDARD
SDG No.: DWD94

Method: MS
Run Name: 1620704E05
Calibration Date(s): 07/25/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Thallium	203	1.0	1.15	115.0	1.17	117.0

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Concentration Units: UG/L

Analyte	Mass	Initial True	Initial Found	Initial %R	Final Found	Final %R
Mercury		0.2	0.19	95.0	0.18	90.0

Control limits: 70% - 130%

For 6010B - Control limits apply to values up to 10 times the true value of the low level check standard. If LLC is out of specification, high, results < RL are acceptable.
For 6010C - If Low Level Check (LLC) is out of specification, results > CCV are acceptable. If LLC is out of specification, high, results < RL are acceptable.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: P
Run Name: 1620304T72
Calibration Date(s): 07/21/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Aluminum		-43.9	B	33.4	U	-45.6	B	33.4	U		8.700	U	162010637003
Antimony		4.1	U	4.1	U	4.1	U	4.1	U		0.700	U	162010637003
Arsenic		5.5	U	5.5	U	5.5	U	5.5	U		0.970	U	162010637003
Barium		0.33	U	0.33	U	0.33	U	0.33	U		0.065	B	162010637003
Beryllium		0.67	U	0.67	U	0.67	U	0.67	U		0.067	U	162010637003
Cadmium		0.33	U	0.33	U	0.33	U	0.33	U		0.049	U	162010637003
Calcium		33.4	U	33.4	U	33.4	U	33.4	U		5.852	B	162010637003
Chromium		0.90	U	0.90	U	0.90	U	0.90	U		0.140	U	162010637003
Cobalt		0.58	U	0.58	U	0.58	U	0.58	U		0.120	U	162010637003
Copper													
Iron		33.4	U	33.4	U	33.4	U	33.4	U		4.100	U	162010637003
Lead		5.4	U	5.4	U	5.4	U	5.4	U		0.550	U	162010637003
Magnesium		16.7	U	16.7	U	16.7	U	17.8	B		1.900	U	162010637003
Manganese		0.83	U	0.83	U	0.83	U	0.83	U		0.083	U	162010637003
Nickel		16.7	B	1.5	U	1.5	U	1.5	U		0.300	U	162010637003
Potassium		83.4	U	83.4	U	83.4	U	83.4	U		23.900	U	162010637003
Selenium		7.7	U	7.7	U	7.7	U	7.7	U		0.900	U	162010637003
Silver		0.83	U	0.83	U	0.83	U	0.83	U		0.150	U	162010637003
Sodium		167	U	167	U	167	U	167	U		23.900	U	162010637003
Vanadium		0.97	U	0.97	U	0.97	U	0.97	U		0.140	U	162010637003
Zinc		8.8	B	2.0	U	2.0	U	2.0	U		0.680	U	162010637003

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below IDL/MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: P
Run Name: 1620404T73
Calibration Date(s): 07/22/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Aluminum													
Antimony													
Arsenic													
Barium													
Beryllium													
Cadmium													
Calcium													
Chromium													
Cobalt													
Copper													
Iron													
Lead		5.4	U	5.4	U	5.4	U	5.4	U				
Magnesium													
Manganese													
Nickel													
Potassium													
Selenium													
Silver													
Sodium													
Vanadium													
Zinc													

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below IDL/MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: P
Run Name: 1620405T70
Calibration Date(s): 07/22/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Aluminum													
Antimony													
Arsenic													
Barium													
Beryllium													
Cadmium													
Calcium													
Chromium													
Cobalt													
Copper													
Iron													
Lead													
Magnesium													
Manganese													
Nickel		1.5	U	1.5	U	1.5	U	1.5	U				
Potassium													
Selenium													
Silver													
Sodium													
Vanadium													
Zinc		2.0	U	2.0	U	2.0	U	2.0	U				

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence	U= Below IDL/MDL B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: P
Run Name: 1620903T71
Calibration Date(s): 07/27/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Aluminum													
Antimony													
Arsenic													
Barium													
Beryllium													
Cadmium													
Calcium													
Chromium													
Cobalt													
Copper		1.7	U	1.7	U	1.7	U	1.7	U		0.230	U	162040637005
Iron													
Lead		5.4	U	5.4	U	5.4	U	5.4	U		0.550	U	162040637005
Magnesium													
Manganese													
Nickel													
Potassium													
Selenium													
Silver													
Sodium													
Vanadium													
Zinc													

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below IDL/MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: MS
Run Name: 1620704E05
Calibration Date(s): 07/25/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Thallium	203	0.15	U	0.15	U	0.15	U	0.15	U	203	0.029	U	162010637003A

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below IDL/MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: MS
Run Name: 1620704E05
Calibration Date(s): 07/25/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Thallium	203			0.15	U								

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence	U= Below IDL/MDL B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016
Preparation Blank Matrix: SOIL

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Mercury		0.050	U	0.050	U	0.050	U	0.050	U		0.010	U	162110638002

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below IDL/MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Mercury				0.050	U	0.050	U	0.050	U				

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence	U= Below IDL/MDL B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Mercury				0.050	U	0.050	U	0.050	U				

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below IDL/MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 3
BLANKS
SDG No.: DWD94

Method: CV
Run Name: 1621501M08
Calibration Date(s): 08/02/2016

		Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank (MG/KG)			
Analyte	Mass		C	1	C	2	C	3	C	Mass		C	Batch Number
Mercury				0.050	U	0.050	U	0.050	U				

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below IDL/MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 4A
ICP-AES INTERFERENCE CHECK SAMPLE
SDG No.: DWD94

Instrument ID: 16417
Run Name: 1620304T72
Concentration Units: ug/L

Analyte	True		Initial Found				Final Found			
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Sol. A	%R	Sol. AB	%R
Aluminum	500000	500000	514491	102.9	512331.1	102.5	520146	104.0	515591.3	103.1
Antimony	0	600	-8		643.5	107.3	-4		636.1	106.0
Arsenic	0	100	-10		84.7	84.7	-10		94.2	94.2
Barium	0	500	4		513.1	102.6	4		513.8	102.8
Beryllium	0	500	0		506.4	101.3	0		510.6	102.1
Cadmium	0	1000	-3		942.8	94.3	-4		944.1	94.4
Calcium	500000	500000	516346	103.3	514287.0	102.9	519706	103.9	517807.0	103.6
Chromium	0	500	7		491.2	98.2	7		494.8	99.0
Cobalt	0	500	1		465.2	93.0	2		465.0	93.0
Copper										
Iron	200000	200000	207779	103.9	207082.6	103.5	208524	104.3	207449.1	103.7
Lead	0	50	-2		50.4	100.8	1		46.2	92.4
Magnesium	500000	500000	518282	103.7	516712.7	103.3	518104	103.6	517596.6	103.5
Manganese	0	500	1		486.6	97.3	2		489.4	97.9
Nickel	0	1000	-4		911.3	91.1	-4		911.7	91.2
Potassium	0	0	24		8.4		5		-32.4	
Selenium	0	550	-22		554.9	100.9	-24		564.9	102.7
Silver	0	200	-1		222.0	111.0	-2		222.3	111.2
Sodium	0	0	280		284.2		262		275.7	
Vanadium	0	500	-1		513.3	102.7	-1		515.4	103.1
Zinc	0	1000	3		1031.4	103.1	3		1030.8	103.1

Control Limits: All Metals 80%-120%

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QUALITY ASSURANCE SUMMARY
FORM 4A
ICP-AES INTERFERENCE CHECK SAMPLE
SDG No.: DWD94

Instrument ID: 18255
Run Name: 1620404T73
Concentration Units: ug/L

Analyte	True		Initial Found				Final Found			
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Sol. A	%R	Sol. AB	%R
Aluminum	500000	500000	501578	100.3	497948.9	99.6	500726	100.1	498224.0	99.6
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium	500000	500000	499512	99.9	497862.2	99.6	500312	100.1	496089.1	99.2
Chromium										
Cobalt										
Copper										
Iron	200000	200000	198643	99.3	198318.5	99.2	199035	99.5	198017.1	99.0
Lead	0	50	-5		45.6	91.2	3		46.3	92.6
Magnesium	500000	500000	484202	96.8	477720.7	95.5	486738	97.3	482506.3	96.5
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

Control Limits: All Metals 80%-120%

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QUALITY ASSURANCE SUMMARY
FORM 4A
ICP-AES INTERFERENCE CHECK SAMPLE
SDG No.: DWD94

Instrument ID: 11016
Run Name: 1620405T70
Concentration Units: ug/L

Analyte	True		Initial Found				Final Found			
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Sol. A	%R	Sol. AB	%R
Aluminum	500000	500000	497984	99.6	500084.3	100.0	501713	100.3	502372.1	100.5
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium	500000	500000	490456	98.1	495295.7	99.1	492404	98.5	498047.9	99.6
Chromium										
Cobalt										
Copper										
Iron	200000	200000	198917	99.5	199543.6	99.8	200232	100.1	201269.6	100.6
Lead										
Magnesium	500000	500000	484196	96.8	484976.2	97.0	490425	98.1	493016.3	98.6
Manganese										
Nickel	0	1000	4		921.2	92.1	3		928.7	92.9
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc	0	1000	-1		1004.1	100.4	-1		1008.9	100.9

Control Limits: All Metals 80%-120%

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QUALITY ASSURANCE SUMMARY
FORM 4A
ICP-AES INTERFERENCE CHECK SAMPLE
SDG No.: DWD94

Instrument ID: 16315
Run Name: 1620903T71
Concentration Units: ug/L

Analyte	True		Initial Found				Final Found			
	Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R	Sol. A	%R	Sol. AB	%R
Aluminum	500000	500000	505341	101.1	509527.3	101.9	530148	106.0	528254.1	105.7
Antimony										
Arsenic										
Barium										
Beryllium										
Cadmium										
Calcium	500000	500000	518649	103.7	515507.6	103.1	522207	104.4	516639.8	103.3
Chromium										
Cobalt										
Copper	0	500	4		535.7	107.1	4		545.5	109.1
Iron	200000	200000	202154	101.1	203320.8	101.7	206996	103.5	207326.6	103.7
Lead	0	50	10		53.8	107.6	2		47.6	95.2
Magnesium	500000	500000	511693	102.3	510414.1	102.1	514317	102.9	505652.5	101.1
Manganese										
Nickel										
Potassium										
Selenium										
Silver										
Sodium										
Vanadium										
Zinc										

Control Limits: All Metals 80%-120%

QUALITY ASSURANCE SUMMARY
FORM 4B
ICP-MS INTERFERENCE CHECK SAMPLE
SDG No.: DWD94

Instrument ID: 19204
Run Name: 1620704E05
Concentration Units: ug/L

Analyte	Mass	True		Found			
		Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R
Aluminum	27	100000	100000	98611	98.6	100660.3	100.7
Calcium	44	300000	300000	273249	91.1	272869.5	91.0
Carbon	13	20000	20000	NA		NA	
Chloride	37	100000	100000	NA		NA	
Iron	57	250000	250000	241792	96.7	245370.4	98.1
Magnesium	24	100000	100000	104142	104.1	105134.8	105.1
Molybdenum	98	2000	2000	1962	98.1	2009.4	100.5
Phosphorus	31	10000	10000	NA		NA	
Potassium	39	100000	100000	103100	103.1	104644.7	104.6
Sodium	23	250000	250000	269455	107.8	272186.5	108.9
Sulfur	34	10000	10000	NA		NA	
Thallium	203	0	0	0		0.0	
Titanium	47	2000	2000	2264	113.2	2278.5	113.9

Control Limits: All Metals 80%-120%

QUALITY ASSURANCE SUMMARY
FORM 4B
ICP-MS INTERFERENCE CHECK SAMPLE
SDG No.: DWD94

Instrument ID: 19204
Run Name: 1620704E05
Concentration Units: ug/L

Analyte	Mass	True		Found			
		Sol. A	Sol. AB	Sol. A	%R	Sol. AB	%R
Aluminum	27	100000	100000	100563	100.6	99739.5	99.7
Calcium	44	300000	300000	277485	92.5	276000.0	92.0
Carbon	13	20000	20000	NA		NA	
Chloride	37	100000	100000	NA		NA	
Iron	57	250000	250000	245249	98.1	243487.2	97.4
Magnesium	24	100000	100000	105765	105.8	104569.0	104.6
Molybdenum	98	2000	2000	1982	99.1	1990.2	99.5
Phosphorus	31	10000	10000	NA		NA	
Potassium	39	100000	100000	105920	105.9	105433.4	105.4
Sodium	23	250000	250000	271631	108.7	273099.6	109.2
Sulfur	34	10000	10000	NA		NA	
Thallium	203	0	0	0		0.0	
Titanium	47	2000	2000	2276	113.8	2265.6	113.3

Control Limits: All Metals 80%-120%

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: *72644BKG Matrix Spike Lab Sample ID: *72644MS Matrix Spike Duplicate Lab Sample ID: *72644MSD
Batch Number(s): 162110638002

		BKG Sample		MS Sample		MSD Sample		MS Spike	MSD Spike		MS		MSD				Control Limit		
Analyte	Mass	Result	C	Result	C	Result	C	Added	Added	Units	%R	Q	%R	Q	RPD	Q	%R	RPD	M
Mercury		0.0336	B	0.1983		0.1870		0.1632	0.1555	MG/KG	101		99		6		80 - 120	20	CV

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 5A(MS/MSD)
MATRIX SPIKE/MATRIX SPIKE DUPLICATE
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8471047BKG Matrix Spike Lab Sample ID: 8471048MS Matrix Spike Duplicate Lab Sample ID: 8471049MSD
Batch Number(s): 162010637003, 162040637005

		BKG Sample		MS Sample		MSD Sample		MS Spike	MSD Spike		MS		MSD				Control Limit		
Analyte	Mass	Result	C	Result	C	Result	C	Added	Added	Units	%R	Q	%R	Q	RPD	Q	%R	RPD	M
Aluminum		3246.7172		3916.4771		4033.5618		183.4862	196.0784	MG/KG	365		401		3			20	P
Antimony		0.5469	U	41.8578		44.3098		45.8716	49.0196	MG/KG	91		90		6		75 - 125	20	P
Arsenic		0.7578	U	13.7642		14.3402		13.7615	14.7059	MG/KG	100		98		4		75 - 125	20	P
Barium		10.0273		194.9037		208.6422		183.4862	196.0784	MG/KG	101		101		7		75 - 125	20	P
Beryllium		0.0695	B	4.6550		4.9951		4.5872	4.9020	MG/KG	100		100		7		75 - 125	20	P
Cadmium		0.0383	U	4.6725		4.9873		4.5872	4.9020	MG/KG	102		102		7		75 - 125	20	P
Calcium		504.7117		889.6541		933.6108		366.9725	392.1569	MG/KG	105		109		5		75 - 125	20	P
Chromium		2.9422		21.1725		22.6500		18.3486	19.6078	MG/KG	99		101		7		75 - 125	20	P
Cobalt		0.0938	U	46.5844		49.7618		45.8716	49.0196	MG/KG	102		102		7		75 - 125	20	P
Copper		0.6277	B	24.8311		25.5892		24.2718	24.5098	MG/KG	100		102		3		75 - 125	20	P
Iron		1270.7164		1376.9881		1444.0275		91.7431	98.0392	MG/KG	116		177		5			20	P
Lead		4.7713		18.4728		18.6902		14.5631	14.7059	MG/KG	94		95		1		75 - 125	20	P
Magnesium		194.0180		399.7661		416.2010		183.4862	196.0784	MG/KG	112		113		4		75 - 125	20	P
Manganese		70.1195		113.9899		120.3167		45.8716	49.0196	MG/KG	96		102		5		75 - 125	20	P
Nickel		1.2352	B	47.9275		50.9333		45.8716	49.0196	MG/KG	102		101		6		75 - 125	20	P
Potassium		76.1453	B	1012.1339		1085.3608		917.4312	980.3922	MG/KG	102		103		7		75 - 125	20	P
Selenium		0.7031	U	12.7495		14.1765		13.7615	14.7059	MG/KG	93		96		11		75 - 125	20	P
Silver		0.1172	U	4.6339		4.9853		4.5872	4.9020	MG/KG	101		102		7		75 - 125	20	P
Sodium		18.6719	U	939.6890		1009.0402		917.4312	980.3922	MG/KG	102		103		7		75 - 125	20	P
Thallium	203	0.0227	U	0.3758		0.3975		0.3670	0.3922	MG/KG	102		101		6		75 - 125	20	MS
Vanadium		3.0984		50.0450		53.4275		45.8716	49.0196	MG/KG	102		103		7		75 - 125	20	P
Zinc		3.4430		50.1110		53.5775		45.8716	49.0196	MG/KG	102		102		7		75 - 125	20	P

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer CV = Cold Vapor
MS = ICP Mass Spectrometry AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL, B= Below LOQ
FLAGS:
N = Matrix Spike OOS, * = Duplicate OOS

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: *72644BKG Duplicate Lab Sample ID: *72644DUP
Batch Number(s): 162110638002
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Mercury			0.0336	B	0.0259	B	26		CV

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ

FLAGS:
* = Duplicate Out of Spec

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QUALITY ASSURANCE SUMMARY
FORM 6
DUPLICATES
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8471047BKG Duplicate Lab Sample ID: 8471050DUP
Batch Number(s): 162010637003, 162040637005
Concentration Units: MG/KG

Analyte	Mass	Control Limit	Samples (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum			3246.7172		3398.8431		5		P
Antimony			0.5469	U	0.6863	U			P
Arsenic			0.7578	U	0.9510	U			P
Barium			10.0273		10.5882		5		P
Beryllium			0.0695	B	0.0745	B	7		P
Cadmium			0.0383	U	0.0480	U			P
Calcium			504.7117		531.6931		5		P
Chromium		2.3	2.9422		3.1020		5		P
Cobalt			0.0938	U	0.1176	U			P
Copper			0.6277	B	0.6452	B	3		P
Iron			1270.7164		1349.6775		6		P
Lead		3.0	4.7713		4.9519		4		P
Magnesium			194.0180		201.5873		4		P
Manganese			70.1195		74.1794		6		P
Nickel			1.2352	B	1.3598	B	10		P
Potassium			76.1453	B	77.6539	B	2		P
Selenium			0.7031	U	0.8824	U			P
Silver			0.1172	U	0.1471	U			P
Sodium			18.6719	U	23.4314	U			P
Thallium	203		0.0227	U	0.0284	U			MS
Vanadium		0.8	3.0984		3.3304		7		P
Zinc		3.1	3.4430		4.0069		15		P

NOTE: An asterisk (*) in column "Q" indicates poor duplicate precision (RPD > 20% OR |(S) - (D)| > LOQ for values < 5x LOQ).
The data are considered to be valid because the laboratory control sample is within the control limits. See the Laboratory Control Sample.

Note: Results shown are reported on an as-received basis.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
* = Duplicate Out of Spec

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QUALITY ASSURANCE SUMMARY
FORM 7
LABORATORY CONTROL SAMPLE
SDG No.: DWD94
Matrix: SOIL

Analyte	Mass	Batch Number	Units	True	Found	C	Control Limits (%)	%R	M	In Spec
Aluminum		162010637003	MG/KG	200.000	194.045		80 - 120	97	P	Yes
Antimony		162010637003	MG/KG	50.000	49.902		80 - 120	100	P	Yes
Arsenic		162010637003	MG/KG	15.000	15.721		80 - 120	105	P	Yes
Barium		162010637003	MG/KG	200.000	202.660		80 - 120	101	P	Yes
Beryllium		162010637003	MG/KG	5.000	5.020		80 - 120	100	P	Yes
Cadmium		162010637003	MG/KG	5.000	5.175		80 - 120	104	P	Yes
Calcium		162010637003	MG/KG	400.000	402.275		80 - 120	101	P	Yes
Chromium		162010637003	MG/KG	20.000	20.189		80 - 120	101	P	Yes
Cobalt		162010637003	MG/KG	50.000	51.206		80 - 120	102	P	Yes
Copper		162040637005	MG/KG	25.000	25.834		80 - 120	103	P	Yes
Iron		162010637003	MG/KG	100.000	117.880		80 - 120	118	P	Yes
Lead		162010637003	MG/KG	15.000	19.104		80 - 120	127	P	No
Magnesium		162010637003	MG/KG	200.000	200.301		80 - 120	100	P	Yes
Manganese		162010637003	MG/KG	50.000	50.910		80 - 120	102	P	Yes
Mercury		162110638002	MG/KG	0.100	0.099		80 - 120	99	CV	Yes
Nickel		162010637003	MG/KG	50.000	51.607		80 - 120	103	P	Yes
Potassium		162010637003	MG/KG	1000.000	990.859		80 - 120	99	P	Yes
Selenium		162010637003	MG/KG	15.000	15.644		80 - 120	104	P	Yes
Silver		162010637003	MG/KG	5.000	5.169		80 - 120	103	P	Yes
Sodium		162010637003	MG/KG	1000.000	1012.895		80 - 120	101	P	Yes
Thallium	203	162010637003	MG/KG	0.200	0.190	B	80 - 120	95	MS	Yes
Vanadium		162010637003	MG/KG	50.000	51.115		80 - 120	102	P	Yes
Zinc		162010637003	MG/KG	50.000	51.500		80 - 120	103	P	Yes

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 7
LABORATORY CONTROL SAMPLE
SDG No.: DWD94
Matrix: SOIL

Analyte	Mass	Batch Number	Units	True	Found	C	Control Limits (%)	%R	M	In Spec
Lead		162010637003	MG/KG	15.000	19.891		80 - 120	133	P	No

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer	U= Below MDL
MS = ICP Mass Spectrometry	B= Below LOQ
CV = Cold Vapor	
AF = Cold Vapor Atomic Fluorescence	

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QUALITY ASSURANCE SUMMARY
FORM 7
LABORATORY CONTROL SAMPLE
SDG No.: DWD94
Matrix: SOIL

Analyte	Mass	Batch Number	Units	True	Found	C	Control Limits (%)	%R	M	In Spec
Lead		162040637005	MG/KG	15.000	16.079		80 - 120	107	P	Yes

METHODS:	CONCENTRATION QUALIFIERS:
P = ICP Atomic Emission Spectrometer MS = ICP Mass Spectrometry CV = Cold Vapor AF = Cold Vapor Atomic Fluorescence	U= Below MDL B= Below LOQ

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QUALITY ASSURANCE SUMMARY
FORM 9
SERIAL DILUTIONS
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8471047BKG Serial Dilution Lab Sample ID: 8471047L
Batch Number(s): 162010637003, 162040637005
Concentration Units: UG/L

Analyte	Mass	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Diff.	Q	M
Aluminum		41557.9800		40110.9000		3		P
Antimony		7.0000	U	35.0000	U			P
Arsenic		9.7000	U	48.5000	U			P
Barium		128.3500		124.3000		3		P
Beryllium		0.8900	B	3.3500	U	100		P
Cadmium		0.4900	U	2.4500	U			P
Calcium		6460.3100		6236.9000		3		P
Chromium		37.6600		34.3000	B	9		P
Cobalt		1.2000	U	6.0000	U			P
Copper		6.3400	B	11.5000	U	100		P
Iron		16265.1700		15653.4000		4		P
Lead		48.1900		63.2500	B	31		P
Magnesium		2483.4300		2404.7000		3		P
Manganese		897.5300		860.2000		4		P
Potassium		974.6600	B	1195.0000	U	100		P
Selenium		9.0000	U	45.0000	U			P
Silver		1.5000	U	7.5000	U			P
Sodium		239.0000	U	1195.0000	U			P
Thallium	203	0.1450	U	0.7250	U			MS
Vanadium		39.6600		37.3000	B	6		P

NOTE: An E in column Q indicates the presence of a chemical or physical interference in the matrix when the % difference is greater than 10%. This applies only when (I) is greater than or equal to 50x MDL for ICP, 100x MDL for ICP-MS (6020), 50x MDL for ICP-MS (200.8), or 25x MDL for GFAA.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
E = Matrix Effects exist as proven by Serial Dilution or Spiked Dilution

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QUALITY ASSURANCE SUMMARY
FORM 9
SERIAL DILUTIONS
SDG No.: DWD94
Matrix: SOIL Level (low/med): LOW

Background Lab Sample ID: 8471050DUP Serial Dilution Lab Sample ID: 8471050DL
Batch Number(s): 162010637003
Concentration Units: UG/L

Analyte	Mass	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Diff.	Q	M
Nickel		13.8700	B	16.5500	B	19		P
Zinc		40.8700		34.0000	U	100		P

NOTE: An E in column Q indicates the presence of a chemical or physical interference in the matrix when the % difference is greater than 10%. This applies only when (I) is greater than or equal to 50x MDL for ICP, 100x MDL for ICP-MS (6020), 50x MDL for ICP-MS (200.8), or 25x MDL for GFAA.

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry

CONCENTRATION QUALIFIERS:
U= Below MDL
B= Below LOQ
FLAGS:
E = Matrix Effects exist as proven by Serial Dilution or Spiked Dilution

Method: P
Instrument ID: 11016
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Nickel	231.60		1.5
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc	213.86		2.0

Comments:

_____
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: P
Instrument ID: 16315
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper	327.40		1.7
Iron			
Lead	220.35		3.6
Magnesium			
Manganese			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

Comments:
_____
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: P
Instrument ID: 16417
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Aluminum	308.21		33.4
Antimony	206.83		4.1
Arsenic	189.04		5.5
Barium	455.40		0.33
Beryllium	313.04		0.67
Cadmium	226.50		0.33
Calcium	317.93		33.4
Chromium	267.72		0.90
Cobalt	228.62		0.58
Copper			
Iron	261.19		33.4
Lead	220.35		4.2
Magnesium	285.21		16.7
Manganese	257.61		0.83
Nickel	231.60		1.1
Potassium	766.49		83.4
Selenium	196.09		7.7
Silver	328.06		0.83
Sodium	589.59		167
Vanadium	292.40		0.97
Zinc	213.86		2.0

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: P
Instrument ID: 18255
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead	220.35		5.4
Magnesium			
Manganese			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: MS
Instrument ID: 19204
Date: 07/2016

Analyte	MASS (amu)	Background	IDL (UG/L)
Thallium	203		0.15

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Method: CV
Instrument ID: 19302
Date: 07/2016

Analyte	Wavelength (nm)	Background	IDL (UG/L)
Mercury			0.050

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10 MDL
METHOD DETECTION LIMITS (ANNUALLY)
SDG No.: DWD94
Matrix: SOIL

Method: P
Date: 06/2016

Analyte	Wavelength (nm)	Background	LOQ (UG/L)	MDL (UG/L)
Aluminum	308.21		400	86.8
Antimony	206.83		40.0	7.0
Arsenic	189.04		40.0	9.7
Barium	455.40		10.0	0.33
Beryllium	313.04		10.0	0.67
Cadmium	226.50		10.0	0.49
Calcium	317.93		400	56.6
Chromium	267.72		30.0	1.4
Cobalt	228.62		10.0	1.2
Copper	327.40		20.0	2.3
Iron	261.19		400	41.2
Lead	220.35		30.0	5.5
Magnesium	285.21		200	19.0
Manganese	257.61		10.0	0.83
Nickel	231.60		20.0	3.0
Potassium	766.49		1000	239
Selenium	196.09		40.0	9.0
Silver	328.06		10.0	1.5
Sodium	589.59		2000	239
Vanadium	292.40		10.0	1.4
Zinc	213.86		40.0	6.8

The LOQ/MDL must be adjusted for % Solids and Sample Weight for samples reporting in mg/kg and ug/L.

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10 MDL
METHOD DETECTION LIMITS (ANNUALLY)
SDG No.: DWD94
Matrix: SOIL

Method: MS
Date: 06/2016

Analyte	Mass	Background	LOQ (UG/L)	MDL (UG/L)
Thallium	203		1.0	0.15

The LOQ/MDL must be adjusted for % Solids and Sample Weight for samples reporting in mg/kg and ug/L.

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 10 MDL
METHOD DETECTION LIMITS (ANNUALLY)
SDG No.: DWD94
Matrix: SOIL

Method: CV
Date: 07/2015

Analyte	Wavelength (nm)	Background	LOQ (UG/L)	MDL (UG/L)
Mercury			0.60	0.060

The LOQ/MDL must be adjusted for % Solids and Sample Weight for samples reporting in mg/kg and ug/L.

Comments:

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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 11016
Date: 02/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: AL	CA	FE	MG	CO
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.86	0.0000000	0.0000000	0.0001200	0.0000000	0.0000000

Comments:

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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 11016
Date: 02/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: MO	NI	--	--	--
Nickel	231.60	0.0000000	0.0000000			
Zinc	213.86	0.0000000	0.0062000			

Comments:

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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 16315
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: AL	CA	FE	MG	SI
Copper	327.40	0.0000000	0.0000160	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0001770	0.0000000	0.0000430	0.0000000	0.0001830

Comments:

QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 16417
Date: 02/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: AL	CA	FE	MG	CO
Aluminum	308.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.83	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	189.04	0.0000000	0.0000000	-0.0001600	0.0000000	0.0000000
Barium	455.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0001170	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.62	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Iron	261.19	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0002270	0.0000000	0.0000000	0.0000000	-0.0003780
Magnesium	285.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.09	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.06	0.0000000	0.0000000	-0.0004180	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000190	0.0000000	0.0000000
Zinc	213.86	0.0000000	0.0000000	0.0001080	0.0000000	0.0000000

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 16417
Date: 02/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: CR	MO	NI	SI	TI
Aluminum	308.21	0.0000000	0.0197250	0.0000000	0.0000000	0.0000000
Antimony	206.83	0.0203250	-0.0071940	0.0000000	0.0000000	0.0000000
Arsenic	189.04	0.0010380	0.0017140	0.0000000	0.0000000	0.0000000
Barium	455.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.62	0.0000000	0.0000000	0.0000000	0.0000000	0.0022370
Iron	261.19	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0000000	-0.0026860	0.0000000	0.0000910	0.0000000
Magnesium	285.21	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.09	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.06	0.0000000	0.0000000	0.0000000	0.0000000	-0.0004780
Vanadium	292.40	0.0000000	-0.0127040	0.0000000	0.0000000	0.0007100
Zinc	213.86	0.0000000	0.0000000	0.0047920	0.0000000	0.0000000

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 16417
Date: 02/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: V	ZR	--	--	--
Aluminum	308.21	0.0244560	0.0000000			
Antimony	206.83	0.0000000	-0.0009840			
Arsenic	189.04	0.0000000	0.0000000			
Barium	455.40	0.0000000	0.0005290			
Beryllium	313.04	0.0000000	0.0000000			
Cadmium	226.50	0.0000000	0.0000000			
Calcium	317.93	0.0000000	0.0000000			
Chromium	267.72	0.0000000	0.0000000			
Cobalt	228.62	0.0000000	0.0000000			
Iron	261.19	0.0000000	0.0000000			
Lead	220.35	0.0000000	0.0000000			
Magnesium	285.21	0.0000000	0.0000000			
Nickel	231.60	0.0000000	0.0000000			
Selenium	196.09	0.0000000	0.0000000			
Silver	328.06	0.0000000	0.0054810			
Vanadium	292.40	0.0000000	0.0000000			
Zinc	213.86	0.0000000	0.0000000			

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 11
ICP INTERELEMENT CORRECTION FACTORS (BIANNUALLY)
SDG No.: DWD94

Instrument ID: 18255
Date: 03/2016

Analyte	Wavelength (nm)	Interelement Correction Factor for: AL	CA	FE	MG	MO
Lead	220.35	0.0003320	0.0000000	0.0000000	0.0000000	-0.0025910

Comments:
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QUALITY ASSURANCE SUMMARY
FORM 12
LINEAR RANGES
SDG No.: DWD94

Method: P
Instrument ID: 11016
Date: 07/2016

Analyte	Wavelength (nm)	Integration Time (Sec.)	Concentration (ug/L)
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Nickel	231.6	10.00	20000.0
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc	213.86	10.00	20000.0

Comments:
_____
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 12
LINEAR RANGES
SDG No.: DWD94

Method: P
Instrument ID: 16315
Date: 07/2016

Analyte	Wavelength (nm)	Integration Time (Sec.)	Concentration (ug/L)
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper	327.4	10.00	20000.0
Iron			
Lead	220.35	10.00	20000.0
Magnesium			
Manganese			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

Comments:
_____
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METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

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QUALITY ASSURANCE SUMMARY
FORM 12
LINEAR RANGES
SDG No.: DWD94

Method: P
Instrument ID: 16417
Date: 07/2016

Analyte	Wavelength (nm)	Integration Time (Sec.)	Concentration (ug/L)
Aluminum	308.21	10.00	600000.0
Antimony	206.83	10.00	10000.0
Arsenic	189.04	10.00	20000.0
Barium	455.4	10.00	10000.0
Beryllium	313.04	10.00	5000.0
Cadmium	226.5	10.00	20000.0
Calcium	317.93	10.00	600000.0
Chromium	267.72	10.00	20000.0
Cobalt	228.62	10.00	10000.0
Copper			
Iron	261.19	10.00	300000.0
Lead	220.35	10.00	10000.0
Magnesium	285.21	10.00	600000.0
Manganese	257.61	10.00	10000.0
Nickel	231.6	10.00	10000.0
Potassium	766.49	10.00	500000.0
Selenium	196.09	10.00	20000.0
Silver	328.06	10.00	20000.0
Sodium	589.59	10.00	500000.0
Vanadium	292.4	10.00	20000.0
Zinc	213.86	10.00	10000.0

Comments:

_____
_____
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_____

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

QUALITY ASSURANCE SUMMARY
FORM 12
LINEAR RANGES
SDG No.: DWD94

Method: P
Instrument ID: 18255
Date: 07/2016

Analyte	Wavelength (nm)	Integration Time (Sec.)	Concentration (ug/L)
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead	220.35	10.00	20000.0
Magnesium			
Manganese			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			

Comments:
_____
_____
_____
_____

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

Tune Report

Batch Folder D:\Agilent\ICPMH\1\DATA\~EPATUNE.b
Report Comment ICP-MS #19204 (E05) Daily Tune Check
Instrument Name G3281A JP12071581

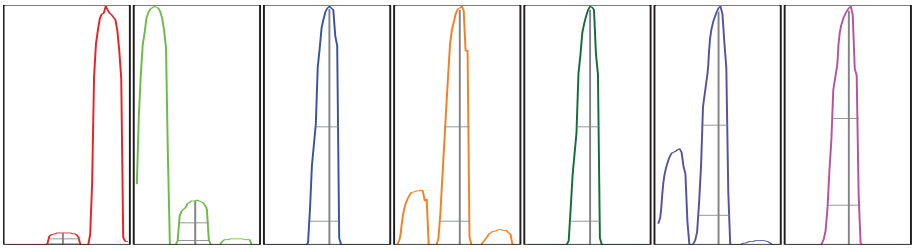
[No Gas]

Mass	Range	Count (Actual)	Response (Actual) [cps/ug/l]	Response (Required) [cps/ug/l]	Response (Flag)	Resp Ratio (Actual)	Resp Ratio (Required)	Resp Ratio (Flag)
6		37702	37702.32			NaN	-	
24		98820	98819.52			NaN	-	
103		162453	162453.31			NaN	-	
115		163757	163756.87			NaN	-	
140		163984	163983.99			NaN	-	
208		101197	101196.75			NaN	-	
238		223698	223697.53			NaN	-	

Mass	RSD% (Actual)	RSD% (Required)	RSD% (Flag)	Background (Actual)	Background (Required)	Background (Flag)
6	4.12	5.00				
24	3.40	5.00				
103	2.46	5.00				
115	2.52	5.00				
140	2.45	5.00				
208	2.59	5.00				
238	2.21	5.00				

Mass	Replicate 1 Count	Replicate 2 Count	Replicate 3 Count	Replicate 4 Count	Replicate 5 Count
6	40159	38261	37042	36736	36313
24	103515	101043	97702	96200	95639
103	168795	163675	160324	160927	158545
115	170108	165427	161566	162099	159584
140	169998	165548	162591	162486	159297
208	105142	102570	100061	99231	98980
238	231454	225462	221629	221134	218808

Integration Time [sec] 0.1



Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)
6	5464.05	5.90	5.9 - 6.1		0.73	0.792	0.900	
24	15185.95	23.95	23.9 - 24.1		0.69	0.755	0.900	
103	28960.73	103.05	102.9 - 103.1		0.57	0.713	0.900	
115	29415.56	115.05	114.9 - 115.1		0.58	0.710	0.900	
140	30115.09	140.05	139.9 - 140.1		0.56	0.714	0.900	
208	17820.00	208.00	207.9 - 208.1		0.59	0.745	0.900	
238	38347.25	238.00	237.9 - 238.1		0.60	0.757	0.900	

X = 10 **Integration Time [sec]** 0.1 **Acquisition Time [sec]** 260.8 **Y Axis** Linear

Tune Parameters
Plasma Paramters

RF Power	1600 W	Carrier Gas	0.25 L/min	S/C Temp	20 ℃
RF Matching	0.80 V	Option Gas	0.0 %	Makeup/Dilution Gas	0.80 L/min
Smpl Depth	8.0 mm	Nebulizer Pump	0.10 rps	Gas Switch	Dilution Gas

Lenses Parameters

Tune Report

Extract 1	0.0 V	Omega Lens	6.1 V	Deflect	16.8 V			
Extract 2	-160.0 V	Cell Entrance	-30 V	Plate Bias	-40 V			

Mass	Peak Height	Axis (Actual)	Axis (Required)	Axis (Flag)	W-50%	W-X% (Actual)	W-X% (Required)	W-X% (Flag)

Omega Bias	-75 V	Cell Exit	-50 V		

Cell Parameters

OctP Bias	-6.0 V	He Flow	0.0 mL/min	Energy Discrimination	5.0 V
OctP RF	200 V	H2 Flow	0.0 mL/min		
Use Gas	false	3rd Gas Flow	0 %		

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QUALITY ASSURANCE SUMMARY
FORM 16
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
SDG No.: DWD94

Instrument ID: 19204
Run Name: 1620704E05

Start Date: 07/25/2016
End Date: 07/25/2016

Standard	Elements Applies to	Standard	Elements Applies to
BI-1-209	TL		

Lab Sample ID	Time	Internal Standards %RI For: Element BI-1-209	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
S0	14:22	100													
S	14:24	95													
CCS	14:25	97													
CCS	14:27	97													
ICV	14:29	97													
ICB	14:31	99													
LLC	14:33	100													
ICSA	14:34	83													
ICSAB	14:36	82													
ZZZZZZ	14:38														
CCV	14:40	97													
CCB	14:42	98													
P20137CB	14:43	103													
P20137CQ	14:45	101													
P20137CQ	14:47	100													
8471047BKG	14:49	105													
8471047A	14:51	102													
8471050DUP	14:52	104													
8471048MS	14:54	98													
8471049MSD	14:56	98													
8471047L	14:58	102													
8471035	15:00	101													
CCV	15:02	100													
CCB	15:03	102													
8471039	15:05	102													
8471043	15:07	102													
8471056	15:09	104													
8471060	15:11	102													
8471064	15:12	102													
8471068	15:14	103													
8471072	15:16	105													
8471075	15:18	104													
CCV	15:20	99													

LEGEND:
BKG = Background
DUP = Duplicate
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike

FLAG:
R = Internal Standard Relative Intensity OOS

INTERNAL STANDARD ELEMENTS:
BE = Beryllium
BI = Bismuth
GE = Germanium
HO = Holmium
IN = Indium
LI = Lithium
SC = Scandium
TB = Terbium
Y = Yttrium

QUALITY ASSURANCE SUMMARY
FORM 16
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
SDG No.: DWD94

Instrument ID: 19204
Run Name: 1620704E05

Start Date: 07/25/2016
End Date: 07/25/2016

Standard	Elements Applies to	Standard	Elements Applies to
BI-1-209	TL		

Lab Sample ID	Time	Internal Standards %RI For: Element BI-1-209	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q	Element	Q
CCB	15:22	100													
LLC	15:23	102													
ICSA	15:25	84													
ICSAB	15:27	84													
ZZZZZZ	15:29														
CCV	15:31	101													
CCB	15:32	101													

LEGEND:
BKG = Background
DUP = Duplicate
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike

FLAG:
R = Internal Standard Relative Intensity OOS

INTERNAL STANDARD ELEMENTS:
BE = Beryllium
BI = Bismuth
GE = Germanium
HO = Holmium
IN = Indium
LI = Lithium
SC = Scandium
TB = Terbium
Y = Yttrium

Preparation and Run Logs

Metals in Solid

Method: P
Batch Number: 162010637003

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8471035	07/20/2016	1.37	100
8471039	07/20/2016	1.01	100
8471043	07/20/2016	1.03	100
8471056	07/20/2016	1.06	100
8471060	07/20/2016	1.11	100
8471064	07/20/2016	1.18	100
8471068	07/20/2016	1.00	100
8471072	07/20/2016	1.09	100
8471075	07/20/2016	1.01	100
8471047BKG	07/20/2016	1.28	100
8471050DUP	07/20/2016	1.02	100
8471049MSD	07/20/2016	1.02	100
8471048MS	07/20/2016	1.09	100
P20137CB	07/20/2016	1.00	100
P20137CQ	07/20/2016	1.00	100

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

Method: P
Batch Number: 162040637005

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8471035	07/26/2016	1.00	100
8471039	07/26/2016	1.08	100
8471043	07/26/2016	1.07	100
8471056	07/26/2016	1.19	100
8471060	07/26/2016	1.02	100
8471064	07/26/2016	1.15	100
8471068	07/26/2016	1.05	100
8471072	07/26/2016	1.11	100
8471075	07/26/2016	1.11	100
8471047BKG	07/26/2016	1.01	100
8471050DUP	07/26/2016	1.04	100
8471049MSD	07/26/2016	1.02	100
8471048MS	07/26/2016	1.03	100
P20437EB	07/26/2016	1.00	100
P20437EQ	07/26/2016	1.00	100

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

Method: MS
Batch Number: 162010637003

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8471035	07/20/2016	1.37	100
8471039	07/20/2016	1.01	100
8471043	07/20/2016	1.03	100
8471056	07/20/2016	1.06	100
8471060	07/20/2016	1.11	100
8471064	07/20/2016	1.18	100
8471068	07/20/2016	1.00	100
8471072	07/20/2016	1.09	100
8471075	07/20/2016	1.01	100
8471047BKG	07/20/2016	1.28	100
8471050DUP	07/20/2016	1.02	100
8471049MSD	07/20/2016	1.02	100
8471048MS	07/20/2016	1.09	100
P20137CB	07/20/2016	1.00	100
P20137CQ	07/20/2016	1.00	100

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

Method: CV
Batch Number: 162110638002

Lab Sample ID	Date	Sample Weight(gram)	Final Volume(ml)
8471034	08/01/2016	0.64	100
8471038	08/01/2016	0.65	100
8471042	08/01/2016	0.61	100
8471046	08/01/2016	0.60	100
8471055	08/01/2016	0.60	100
8471059	08/01/2016	0.60	100
8471063	08/01/2016	0.60	100
8471067	08/01/2016	0.64	100
8471071	08/01/2016	0.65	100
*72644BKG	08/01/2016	0.63	100
*72644DUP	08/01/2016	0.61	100
*72644MSD	08/01/2016	0.64	100
*72644MS	08/01/2016	0.61	100
P21138BB	08/01/2016	0.60	100
P21138BQ	08/01/2016	1.00	100

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: P
Instrument ID: 16417
Run Name: 1620304T72

Run Start Date: 07/21/2016
Run End Date: 07/21/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	NG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	10:14	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
S	1.00	10:17	X						X				X		X				X			X										
S	1.00	10:21			X	X	X	X			X			X		X		X		X	X				X							
S	1.00	10:24		X						X														X								
ICV	1.00	10:27	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
ICB	1.00	10:30	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
LLC	1.00	10:33	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
ICSA	1.00	10:36	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
ICSAB	1.00	10:40	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
CCV	1.00	10:43	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
CCB	1.00	10:46	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
P20137CB	1.00	10:49	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
P20137CQ	1.00	10:52	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
8471047BKG	1.00	10:56	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471047A	1.00	10:59																														
8471050DUP	1.00	11:02	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471048MS	1.00	11:05	X	X	X	X	X	X	X	X	X		X		X	X		X	X	X	X	X		X	X							
8471049MSD	1.00	11:08	X	X	X	X	X	X	X	X	X		X		X	X		X	X	X	X	X		X	X							
8471047L	5.00	11:11	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471035	1.00	11:14	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X	X							
8471039	1.00	11:17	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X	X							
CCV	1.00	11:20	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
CCB	1.00	11:23	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
8471043	1.00	11:27	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471056	1.00	11:30	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471060	1.00	11:33	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471064	1.00	11:36	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471068	1.00	11:39	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471072	1.00	11:42	X	X	X	X	X	X	X	X	X		X		X	X			X	X	X	X		X								
8471075	1.00	11:45	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
LLC	1.00	11:48	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
ICSA	1.00	11:51	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
ICSAB	1.00	11:55	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
CCV	1.00	11:58	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							
CCB	1.00	12:01	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X	X							

METHODS:	LEGEND:
P = ICP Atomic Emission Spectrometer	BKG = Background
MS = ICP Mass Spectrometry	DUP = Duplicate
CV = Cold Vapor	MS = Matrix Spike
AF = Cold Vapor Atomic Fluorescence	MSD = Matrix Spike Duplicate
	A = Post Digest Spike
	L = Serial Dilution
	B = Blank
	Q = Laboratory Control Sample
	Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: P
Instrument ID: 18255
Run Name: 1620404T73

Run Start Date: 07/22/2016
Run End Date: 07/22/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	07:45												X																		
S	1.00	07:49																														
S	1.00	07:52												X																		
S	1.00	07:56																														
ICV	1.00	07:59												X																		
ICB	1.00	08:02												X																		
LLC	1.00	08:06												X																		
ICSA	1.00	08:09												X																		
ICSAB	1.00	08:12												X																		
CCV	1.00	08:16												X																		
CCB	1.00	08:19												X																		
P20137CQ	1.00	08:23																														
P20137CQ	1.00	08:26												X																		
ZZZZZZ	1.00	08:29																														
ZZZZZZ	1.00	08:33																														
ZZZZZZ	1.00	08:36																														
ZZZZZZ	1.00	08:39																														
ZZZZZZ	5.00	08:43																														
ZZZZZZ	1.00	08:46																														
ZZZZZZ	1.00	08:49																														
ZZZZZZ	1.00	08:52																														
CCV	1.00	08:56												X																		
CCB	1.00	08:59												X																		
ZZZZZZ	1.00	09:02																														
ZZZZZZ	1.00	09:06																														
ZZZZZZ	1.00	09:09																														
ZZZZZZ	1.00	09:12																														
ZZZZZZ	1.00	09:15																														
ZZZZZZ	1.00	09:19																														
LLC	1.00	09:22												X																		
ICSA	1.00	09:25												X																		
ICSAB	1.00	09:29												X																		
CCV	1.00	09:32												X																		
CCB	1.00	09:36												X																		

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- A = Post Digest Spike
- L = Serial Dilution
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: P
Instrument ID: 11016
Run Name: 1620405T70

Run Start Date: 07/22/2016
Run End Date: 07/22/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	11:04																X							X								
S	1.00	11:07																															
S	1.00	11:10																X							X								
S	1.00	11:13																															
ICV	1.00	11:16																X							X								
ICB	1.00	11:19																X							X								
LLC	1.00	11:23																X							X								
ICSA	1.00	11:26																X							X								
ICSAB	1.00	11:29																X							X								
CCV	1.00	11:32																X							X								
CCB	1.00	11:35																X							X								
8471047BKG	1.00	11:38																X							X								
8471050DA	1.00	11:41																															
8471050DUP	1.00	11:44																X							X								
8471050DL	5.00	11:47																X							X								
8471035	1.00	11:51																X															
8471039	1.00	11:54																X															
8471043	1.00	11:57																X							X								
8471056	1.00	12:00																X							X								
8471060	1.00	12:03																X							X								
8471064	1.00	12:06																X							X								
CCV	1.00	12:09																X							X								
CCB	1.00	12:12																X							X								
8471068	1.00	12:15																X							X								
8471072	1.00	12:18																X							X								
ZZZZZZ	100.00	12:21																															
LLC	1.00	12:24																X							X								
ICSA	1.00	12:27																X							X								
ICSAB	1.00	12:31																X							X								
CCV	1.00	12:34																X							X								
CCB	1.00	12:37																X							X								

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: P
Instrument ID: 16315
Run Name: 1620903T71

Run Start Date: 07/27/2016
Run End Date: 07/27/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	06:58										X		X																		
S	1.00	07:01																														
S	1.00	07:04										X		X																		
S	1.00	07:07																														
ICV	1.00	07:10										X		X																		
ICB	1.00	07:13										X		X																		
LLC	1.00	07:16										X		X																		
ICSA	1.00	07:20										X		X																		
ICSAB	1.00	07:23										X		X																		
CCV	1.00	07:26										X		X																		
CCB	1.00	07:29										X		X																		
P20437EB	1.00	07:32										X		X																		
P20437EQ	1.00	07:36										X		X																		
8471047BKG	1.00	07:39										X		X																		
8471047A	1.00	07:42																														
8471050DUP	1.00	07:45										X		X																		
8471048MS	1.00	07:48										X		X																		
8471049MSD	1.00	07:51										X		X																		
8471047L	5.00	07:54										X		X																		
8471035	1.00	07:57										X		X																		
8471039	1.00	08:00										X		X																		
CCV	1.00	08:03										X		X																		
CCB	1.00	08:06										X		X																		
8471043	1.00	08:09										X		X																		
8471056	1.00	08:12										X		X																		
8471060	1.00	08:15										X		X																		
8471064	1.00	08:18										X		X																		
8471068	1.00	08:22										X		X																		
8471072	1.00	08:25										X		X																		
8471075	1.00	08:28										X																				
LLC	1.00	08:31										X		X																		
ICSA	1.00	08:34										X		X																		
ICSAB	1.00	08:37										X		X																		
CCV	1.00	08:41										X		X																		
CCB	1.00	08:44										X		X																		

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: MS
Instrument ID: 19204
Run Name: 1620704E05

Run Start Date: 07/25/2016
Run End Date: 07/25/2016

Lab Sample ID	D/F	Time	Analytes																												
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	NG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	14:22																					X									
S	1.00	14:24																					X									
CCS	1.00	14:25																					X									
CCS	1.00	14:27																					X									
ICV	1.00	14:29																					X									
ICB	1.00	14:31																					X									
LLC	1.00	14:33																					X									
ICSA	1.00	14:34																					X									
ICSAB	1.00	14:36																					X									
ZZZZZZ	1.00	14:38																														
CCV	1.00	14:40																					X									
CCB	1.00	14:42																					X									
P20137CB	2.00	14:43																					X									
P20137CQ	2.00	14:45																					X									
P20137CQ	2.00	14:47																														
8471047BKG	2.00	14:49																					X									
8471047A	2.00	14:51																														
8471050DUP	2.00	14:52																					X									
8471048MS	2.00	14:54																					X									
8471049MSD	2.00	14:56																					X									
8471047L	10.00	14:58																					X									
8471035	2.00	15:00																					X									
CCV	1.00	15:02																					X									
CCB	1.00	15:03																					X									
8471039	2.00	15:05																					X									
8471043	2.00	15:07																					X									
8471056	2.00	15:09																					X									
8471060	2.00	15:11																					X									
8471064	2.00	15:12																					X									
8471068	2.00	15:14																					X									
8471072	2.00	15:16																					X									
8471075	2.00	15:18																					X									
CCV	1.00	15:20																					X									
CCB	1.00	15:22																					X									
LLC	1.00	15:23																					X									
ICSA	1.00	15:25																					X									
ICSAB	1.00	15:27																					X									
ZZZZZZ	1.00	15:29																														

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: MS
Instrument ID: 19204
Run Name: 1620704E05

Run Start Date: 07/25/2016
Run End Date: 07/25/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	NG	NI	K	SE	AG	NA	TL	V	ZN							
CCV	1.00	15:31																					X									
CCB	1.00	15:32																					X									

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: CV
Instrument ID: 19302
Run Name: 1621501M08

Run Start Date: 08/02/2016
Run End Date: 08/02/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
S0	1.00	08:08															X															
S0.2	1.00	08:10															X															
S0.5	1.00	08:12															X															
S1.0	1.00	08:14															X															
S2.5	1.00	08:16															X															
S5.0	1.00	08:18															X															
ICV	1.00	08:20															X															
ICB	1.00	08:22															X															
CRA	1.00	08:24															X															
CCV	1.00	08:26															X															
CCB	1.00	08:28															X															
P21138BB	1.00	08:30															X															
P21138BQ	1.00	08:32															X															
*72644BKG	1.00	08:34															X															
*72644A	1.00	08:36																														
*72644DUP	1.00	08:39															X															
*72644MS	1.00	08:41															X															
*72644MSD	1.00	08:43															X															
8471034	1.00	08:45															X															
8471038	1.00	08:47															X															
8471042	1.00	08:49															X															
CCV	1.00	08:51															X															
CCB	1.00	08:53															X															
8471046	1.00	08:55															X															
8471055	1.00	08:57															X															
8471059	1.00	08:59															X															
8471063	1.00	09:01															X															
8471067	1.00	09:03															X															
8471071	1.00	09:05															X															
ZZZZZZ	1.00	09:07																														
ZZZZZZ	1.00	09:09																														
ZZZZZZ	1.00	09:11																														
ZZZZZZ	1.00	09:13																														
CCV	1.00	09:15															X															
CCB	1.00	09:17															X															
CCV	1.00	09:38															X															
CCB	1.00	09:40															X															
ZZZZZZ	1.00	09:42																														

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: CV
Instrument ID: 19302
Run Name: 1621501M08

Run Start Date: 08/02/2016
Run End Date: 08/02/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
ZZZZZZ	1.00	09:52																														
ZZZZZZ	1.00	09:54																														
ZZZZZZ	1.00	09:57																														
ZZZZZZ	1.00	09:59																														
ZZZZZZ	1.00	10:01																														
ZZZZZZ	1.00	10:03																														
ZZZZZZ	1.00	10:05																														
ZZZZZZ	1.00	10:07																														
ZZZZZZ	1.00	10:09																														
CCV	1.00	10:11															X															
CCB	1.00	10:13															X															
ZZZZZZ	1.00	10:15																														
ZZZZZZ	1.00	10:17																														
ZZZZZZ	1.00	10:19																														
ZZZZZZ	1.00	10:21																														
ZZZZZZ	1.00	10:23																														
ZZZZZZ	1.00	10:25																														
ZZZZZZ	1.00	10:27																														
ZZZZZZ	1.00	10:29																														
ZZZZZZ	1.00	10:31																														
ZZZZZZ	1.00	10:33																														
CCV	1.00	10:35															X															
CCB	1.00	10:37															X															
ZZZZZZ	1.00	10:39																														
ZZZZZZ	1.00	10:41																														
ZZZZZZ	1.00	10:43																														
ZZZZZZ	1.00	10:45																														
ZZZZZZ	1.00	10:47																														
ZZZZZZ	1.00	10:49																														
ZZZZZZ	1.00	10:53																														
ZZZZZZ	5.00	10:55																														
ZZZZZZ	5.00	10:57																														
ZZZZZZ	1.00	10:59																														
CCV	1.00	11:01															X															
CCB	1.00	11:03															X															
ZZZZZZ	1.00	11:05																														
ZZZZZZ	1.00	11:07																														
ZZZZZZ	1.00	11:09																														

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- A = Post Digest Spike
- L = Serial Dilution
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: CV
Instrument ID: 19302
Run Name: 1621501M08

Run Start Date: 08/02/2016
Run End Date: 08/02/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
ZZZZZZ	1.00	11:11																														
ZZZZZZ	1.00	11:13																														
ZZZZZZ	1.00	11:15																														
ZZZZZZ	1.00	11:17																														
ZZZZZZ	1.00	11:19																														
ZZZZZZ	1.00	11:21																														
ZZZZZZ	1.00	11:23																														
CCV	1.00	11:25															X															
CCB	1.00	11:27															X															
ZZZZZZ	1.00	11:29																														
ZZZZZZ	1.00	11:31																														
ZZZZZZ	1.00	11:33																														
ZZZZZZ	1.00	11:35																														
ZZZZZZ	1.00	11:37																														
ZZZZZZ	1.00	11:39																														
ZZZZZZ	1.00	11:41																														
ZZZZZZ	1.00	11:43																														
ZZZZZZ	1.00	11:45																														
ZZZZZZ	1.00	11:47																														
CCV	1.00	11:49															X															
CCB	1.00	11:51															X															
ZZZZZZ	1.00	11:54																														
ZZZZZZ	1.00	11:56																														
ZZZZZZ	1.00	11:58																														
ZZZZZZ	1.00	12:00																														
ZZZZZZ	1.00	12:02																														
ZZZZZZ	1.00	12:04																														
ZZZZZZ	1.00	12:06																														
ZZZZZZ	1.00	12:08																														
ZZZZZZ	1.00	12:10																														
ZZZZZZ	1.00	12:12																														
CCV	1.00	12:14															X															
CCB	1.00	12:16															X															
ZZZZZZ	1.00	12:18																														
ZZZZZZ	1.00	12:20																														
ZZZZZZ	1.00	12:22																														
ZZZZZZ	1.00	12:24																														
ZZZZZZ	1.00	12:26																														

METHODS:
- P = ICP Atomic Emission Spectrometer
- MS = ICP Mass Spectrometry
- CV = Cold Vapor
- AF = Cold Vapor Atomic Fluorescence

LEGEND:
- BKG = Background
- DUP = Duplicate
- MS = Matrix Spike
- MSD = Matrix Spike Duplicate
- A = Post Digest Spike
- L = Serial Dilution
- B = Blank
- Q = Laboratory Control Sample
- Y = Laboratory Control Sample Duplicate

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QUALITY ASSURANCE SUMMARY
FORM 14
ANALYSIS RUN LOG
SDG No.: DWD94

Method: CV
Instrument ID: 19302
Run Name: 1621501M08

Run Start Date: 08/02/2016
Run End Date: 08/02/2016

Lab Sample ID	D/F	Time	Analytes																													
			AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN							
ZZZZZZ	1.00	12:28																														
ZZZZZZ	1.00	12:30																														
ZZZZZZ	1.00	12:32																														
ZZZZZZ	1.00	12:34																														
ZZZZZZ	1.00	12:36																														
CCV	1.00	12:38															X															
CCB	1.00	12:40															X															
ZZZZZZ	1.00	12:42																														
ZZZZZZ	1.00	12:44																														
CRA	1.00	12:46															X															
CCV	1.00	12:48															X															
CCB	1.00	12:51															X															

METHODS:
P = ICP Atomic Emission Spectrometer
MS = ICP Mass Spectrometry
CV = Cold Vapor
AF = Cold Vapor Atomic Fluorescence

LEGEND:
BKG = Background
DUP = Duplicate
MS = Matrix Spike
MSD = Matrix Spike Duplicate
A = Post Digest Spike
L = Serial Dilution
B = Blank
Q = Laboratory Control Sample
Y = Laboratory Control Sample Duplicate

Instrumental Wet Chemistry Data

Case Narrative/Conformance Summary

Instrumental Wet Chemistry

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

Sample #	Client ID	Matrix Liquid	Matrix Solid	DF	Comments
8471034	DU-1-13-A		X	1	
8471038	DU-1-13-B		X	1	
8471042	DU-1-13-C		X	1	
8471046	DU-1-14-A		X	1	
8471055	DU-1-14-B		X	1	
8471059	DU-1-14-C		X	1	
8471063	DU-1-1-A		X	1	
8471067	DU-1-1-B		X	1	
8471071	DU-1-1-C		X	1	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

All QC is within specification.

SAMPLE ANALYSIS:

No problems were encountered with the analysis of the samples.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

Abbreviation Key

U = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
R = Matrix Spike (MS)	MDL = Method Detection Limit
M = Matrix Spike Duplicate (MSD)	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	NA = Not Applicable
HS = High Spike	ME = Method
LS = Low Spike	CO = Colorimetric
SS = Soluble Spike	G = Gravimetric
IS = Insoluble Spike	IR = Infrared Spectrophotometry
ISD = Insoluble Spike Duplicate	MTR = Meter
PDS = Post Digestion Spike	OD = Oven Dried
* = Out of Specification	TI = Titration
V = Visual	TOC = Total Organic Carbon
AK = Alpkem	IC = Ion Chromatography
TC = Total Carbon	RA = Rapid Analyzer

Quality Control and Calibration Summary Forms

Instrumental Wet Chemistry

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Quality Control Reference List
Instrumental Water Quality

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Fraction: Instrumental Wet Chemistry

Analysis	Batch Number	Sample Number	Analysis Date
Total Cyanide (solid)	16202102201A	P20202AB	07/22/2016 11:49:00
		P20202AQ	07/22/2016 11:48:00
		8471034 UNSPK/BKG	07/22/2016 11:50:00
		8471034 DUP	07/22/2016 11:52:00
		8471034 MS	07/22/2016 11:53:00
		8471038	07/22/2016 11:54:00
		8471042	07/22/2016 11:55:00
		8471046	07/22/2016 11:56:00
		8471055	07/22/2016 11:57:00
		8471059	07/22/2016 11:59:00
		8471063	07/22/2016 12:02:00
		8471067	07/22/2016 12:03:00
		8471071	07/22/2016 12:04:00

Quality Control Summary
Method Blank
Instrumental Water Quality
SDG: DWD94
Matrix: SOLID

Fraction: Instrumental Wet Chemistry

16202102201A / P20202AB Parameter	ME	Analysis Date	Blank Results	Units	MDL	LOQ
Total Cyanide (solid)	AK	07/22/16	N.D.	mg/kg	0.18	0.50

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

UNSPK: 8471034 MS: 8471034 **Parameter**	Batch: **16202102201A** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071) **ME**	**Spike Added mg/kg**	**Unspiked Conc mg/kg**	**MS Conc mg/kg**	**MSD Conc mg/kg**	**MS %Rec**	**MSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Total Cyanide (solid)	AK	4.90	N.D.	4.86	NA	99	NA	41-145	NA	NA

Comments:
(2) The unspiked sample result is greater than four times the spike added.
* = Out of Specification

Results are being reported on an as received basis.

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

BKG: 8471034 DUP: 8471034	Batch: **16202102201A** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)				
Parameter	**ME**	**Unspiked Conc mg/kg**	**DUP Conc mg/kg**	**%RPD**	**%RPD Limits**
Total Cyanide (solid)	AK	N.D.	N.D.	0 (1)	20

Comments:
(1) The sample and/or duplicate result is less than five times the LOQ.
* = Out of Specification

Results are being reported on an as received basis.

Quality Control Summary
Laboratory Control Standard (LCS)
Laboratory Control Standard Duplicate(LCSD)

SDG: DWD94
Matrix: SOLID

Instrumental Water Quality

Fraction: Instrumental Wet Chemistry

LCS: P20202AQ	Batch: **16202102201A** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)								
Parameter	**ME**	**Spike Added mg/kg**	**LCS Conc mg/kg**	**LCSD Conc mg/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Total Cyanide (solid)	AK	10	9.79	NA	98	NA	90-110	NA	NA

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Quality Control Summary
Initial And Continuing Calibration
Instrumental Analysis/TCN

SDG: DWD94

Instrument ID: 09037
Calibration Date: 07/22/2016

Analysis	AUTO CAL1	AUTO CAL2	AUTO CAL3	AUTO CAL4	AUTO CAL5	AUTO CAL6	CC
Total Cyanide	0.4012	0.4566	0.6167	0.8825	1.4134	2.1879	1.0000

Acceptance Range:
ICV/CCV: +/- 10%
ICB/CCB: < MDL

Concentration units: mg/L

Batch Numbers: 16202102201A
Run Start Dates: 07/22/2016
Run Names: 1620403C01

	Total Cyanide		
Sample	True	Result	%Rec
ICV	0.15	0.14430	96
ICB	0	ND	NA
CCV2	0.15	0.14780	99
CCB 1	0	ND	NA
CCV2	0.15	0.14490	97
CCB 2	0	ND	NA

* = Out of Specifications

Fraction: Instrumental Wet Chemistry

05895: Total Cyanide (solid) Analyte Name	Default MDL	Default LOQ	Units
Total Cyanide (solid)	0.18	0.50	mg/kg

Extraction/Distillation/Digestion Logs

Instrumental Wet Chemistry

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Raw Data Logbook
Total Cyanide/Distillations
Analysis #492, 5896, 8256

Start Time: 0900
Cool Time: 1045
Finish: 1100

Batch No. 16202 | 102 | 201

Enter 102 for Analysis 492, 5896
Enter 117 for Analysis 8256

Analysis: 5896 Date: 7-20-16 Analyst: MJS 1203

Std. Ref. (Book/Page/Line): 220405 p. 72 l. 6-7

Bottle Code	Sample Number	Initial Volume (mL)	Initial Weight (g)	Comments/True Values	SDG
	LCSS		1.00	+.5ml 20 mg/L KCN	
	PBS		2.00		
20A	8471034 (4)		2.00	A	DWD94
+	8471034 (D)		2.01		
+	8471034 (L)		2.04	+.5ml 20 mg/L KCN	
20A	8471038		2.02		
20A	8471042		2.01		
20A	8471046		2.02		
20A	~~8471~~ 8471055		2.03		
20A	8471059		2.09		
20A	8471063		2.02		
20A	8471067		2.03		
20A	8471071		2.03		↓
20A	8472644		2.05	↓	DWD95
20A	8472653		2.01	B	↓
20A	8472657		2.02		
21A	8477123		2.04		
21A	8477126 (4)		2.03		
+	8477126 (D)		2.05		
+	8477126 (L)		2.07	+.5ml 20 mg/L KCN ↓	

(B) MJS 1203 7-20-16

Please Note: Final extraction volume is 50 mL

Verified: Sm/347 Signing for EP1665 Date: 7/26/16

Wet Chemistry Data

Case Narrative/Conformance Summary

Wet Chemistry

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Water Quality

Fraction: Wet Chemistry

Sample #	Client ID	Matrix Liquid	Matrix Solid	Comments
8471034	DU-1-13-A		X	
8471038	DU-1-13-B		X	
8471042	DU-1-13-C		X	
8471046	DU-1-14-A		X	
8471055	DU-1-14-B		X	
8471059	DU-1-14-C		X	
8471063	DU-1-1-A		X	
8471067	DU-1-1-B		X	
8471071	DU-1-1-C		X	

See QC Reference List for Associated Batch QC Samples

SAMPLE RECEIPT:

Samples were received in good condition and within temperature requirements.

HOLDING TIME:

All holding times were met.

PREPARATION/EXTRACTION/DIGESTION:

No problems were encountered.

CALIBRATION/STANDARDIZATION:

All criteria were met.

QUALITY CONTROL AND NONCONFORMANCE SUMMARY:

MS/MSD

Matrix QC may not be included if site-specific QC were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, laboratory spike data (LCS) are provided.

Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Water Quality

Fraction: Wet Chemistry

SAMPLE ANALYSIS:

Samples	Hexavalent Chromium (SOLIDS)	Oxidation Reduction Potential	pH
8471034	DF10	DF1	DF1
8471038	DF10	DF1	DF1
8471042	DF20	DF1	DF1
8471046	DF10	DF1	DF1
8471055	DF20	DF1	DF1
8471059	DF5	DF1	DF1
8471063	DF20	DF1	DF1
8471067	DF5	DF1	DF1
8471071	DF5	DF1	DF1

No problems were encountered with the analysis of the samples.

(Sample number(s): 8471055: Analysis: 00394)
The pH was measured in water at 21.6 C.

(Sample number(s): 8471059, 8471063, 8471067: Analysis: 00394)
The pH was measured in water at 21.5 C.

(Sample number(s): 8471042, 8471046: Analysis: 00394)
The pH was measured in water at 21.4 C.

(Sample number(s): 8471071: Analysis: 00394)
The pH was measured in water at 21.1 C.

(Sample number(s): 8471034, 8471038: Analysis: 00394)
The pH was measured in water at 21 C.

(Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071: Analysis: 00425)
Reporting limits were raised due to interference from the sample matrix.

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Case Narrative/Conformance Summary

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Water Quality

Fraction: Wet Chemistry

Abbreviation Key

U = Unspiked (for MS/MSD)	LOQ = Limit of Quantitation
R = Matrix Spike (MS)	MDL = Method Detection Limit
M = Matrix Spike Duplicate (MSD)	ND = Not Detected
BKG = Background (for Duplicate)	J = Estimated Value
D = Duplicate (DUP)	NA = Not Applicable
HS = High Spike	ME = Method
LS = Low Spike	CO = Colorimetric
SS = Soluble Spike	G = Gravimetric
IS = Insoluble Spike	IR = Infrared Spectrophotometry
ISD = Insoluble Spike Duplicate	MTR = Meter
PDS = Post Digestion Spike	OD = Oven Dried
* = Out of Specification	TI = Titration
V = Visual	TOC = Total Organic Carbon
AK = Alpkem	IC = Ion Chromatography
TC = Total Carbon	RA = Rapid Analyzer

QC Summary

Wet Chemistry

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Quality Control Reference List
Water Quality

CLIENT: CH2M Hill, Inc.
SDG: DWD94

Fraction: Wet Chemistry

Analysis	Batch Number	Sample Number	Analysis Date
Hexavalent Chromium (SOLIDS)	16201042501A	P201042B	07/20/2016 20:30:00
		P201042Q	07/20/2016 20:30:00
		8471034	07/20/2016 20:30:00
		8471038	07/20/2016 20:30:00
		8471042	07/20/2016 20:30:00
		8471046	07/20/2016 20:30:00
		8471055	07/20/2016 20:30:00
		8471059	07/20/2016 20:30:00
		8471063	07/20/2016 20:30:00
		8471067	07/20/2016 20:30:00
		8471071	07/20/2016 20:30:00
Oxidation Reduction Potential	16200182101A	P200182Q	07/18/2016 11:00:00
		8471034	07/18/2016 11:00:00
		8471038	07/18/2016 11:00:00
		8471042	07/18/2016 11:00:00
		8471046	07/18/2016 11:00:00
		8471055	07/18/2016 11:00:00
		8471059	07/18/2016 11:00:00
		8471063	07/18/2016 11:00:00
		8471067	07/18/2016 11:00:00
Oxidation Reduction Potential	16200182102A	P200182Q	07/18/2016 14:15:00
		8471071	07/18/2016 14:15:00
pH	16200039401A	P200039Q	07/18/2016 11:00:00
		8471034	07/18/2016 11:00:00
		8471038	07/18/2016 11:00:00
		8471042	07/18/2016 11:00:00
		8471046	07/18/2016 11:00:00
		8471055	07/18/2016 11:00:00
		8471059	07/18/2016 11:00:00
		8471063	07/18/2016 11:00:00
		8471067	07/18/2016 11:00:00
pH	16200039402A	P200039Q	07/18/2016 14:15:00
		8471071	07/18/2016 14:15:00

Quality Control Summary
Method Blank
Water Quality
SDG: DWD94
Matrix: SOLID

Fraction: Wet Chemistry

16201042501A / P201042B Parameter	ME	Analysis Date	Blank Results	Units	MDL	LOQ
Hexavalent Chromium (SOLIDS)	CO	07/20/16	N.D.	mg/kg	0.50	1.5

Water Quality
Fraction: Wet Chemistry

LCS: P200039Q	Batch: **16200039401A** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067)								
Parameter	**ME**	**Spike Added Std. Units**	**LCS Conc Std. Units**	**LCSD Conc Std. Units**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
pH	MTR	7.00	7.06	NA	101	NA	95-105	NA	NA

LCS: P200039Q	Batch: **16200039402A** (Sample number(s): 8471071)								
Parameter	**ME**	**Spike Added Std. Units**	**LCS Conc Std. Units**	**LCSD Conc Std. Units**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
pH	MTR	7.00	7.05	NA	101	NA	95-105	NA	NA

LCS: P200182Q	Batch: **16200182101A** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067)								
Parameter	**ME**	**Spike Added mV**	**LCS Conc mV**	**LCSD Conc mV**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Oxidation Reduction Potential	TI	427	427	NA	100	NA	98-102	NA	NA

LCS: P200182Q	Batch: **16200182102A** (Sample number(s): 8471071)								
Parameter	**ME**	**Spike Added mV**	**LCS Conc mV**	**LCSD Conc mV**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Oxidation Reduction Potential	TI	427	426	NA	100	NA	98-102	NA	NA

LCS: P201042Q	Batch: **16201042501A** (Sample number(s): 8471034, 8471038, 8471042, 8471046, 8471055, 8471059, 8471063, 8471067, 8471071)								
Parameter	**ME**	**Spike Added mg/kg**	**LCS Conc mg/kg**	**LCSD Conc mg/kg**	**LCS %Rec**	**LCSD %Rec**	**%Rec Limits**	**%RPD**	**%RPD Limits**
Hexavalent Chromium (SOLIDS)	CO	5.00	4.72	NA	94	NA	80-120	NA	NA

Fraction: Wet Chemistry

00425: Hexavalent Chromium (SOLIDS) Analyte Name	Default MDL	Default LOQ	Units
Hexavalent Chromium (SOLIDS)	0.50	1.5	mg/kg

01821: Oxidation Reduction Potential Analyte Name	Default MDL	Default LOQ	Units
Oxidation Reduction Potential	10.0	10.0	mV

00394: pH Analyte Name	Default MDL	Default LOQ	Units
pH	0.0100	0.0100	Std. Units

Moisture Data

MOISTURE

SAMPLE NUMBERS:

Sample #	Sample Code
8471034	D9402
8471035	D9403
8471036	D9404
8471037	D9405
8471038	D9406
8471039	D9407
8471040	D9408
8471041	D9409
8471042	D9410
8471043	D9411
8471044	D9412
8471045	D9413
8471046	D9414
8471047	D9415BKG
8471048	D9415MS
8471049	D9415MSD
8471050	D9415DUP
8471051	D9416BKG
8471052	D9416MS
8471053	D9416MSD
8471054	D9417
8471055	D9418
8471056	D9419
8471057	D9420
8471058	D9421
8471059	D9422
8471060	D9423
8471061	D9424
8471062	D9425
8471063	D9426
8471064	D9427
8471065	D9428
8471066	D9429
8471067	D9430
8471068	D9431
8471069	D9432
8471070	D9433
8471071	D9434
8471072	D9435
8471073	D9436
8471074	D9437

COMMENTS:

Method defined actions are taken for any failed matrix QC.

MOISTURE

Laboratory Compliance Quality Control

Analysis Name		LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number:	16232820002A	Sample number(s):		8471034-8471045		
Moisture		100		99-101		
Moisture		100		99-101		
Batch number:	16232820002B	Sample number(s):		8471046-8471074		
Moisture		100		99-101		
Moisture		100		99-101		
Moisture Duplicate		100		99-101		

Sample Matrix Quality Control

Analysis Name		BKG Conc	DUP Conc	RPD	RPD Max
Batch number:	16232820002A	Sample number(s):		8471034-8471045	
Moisture		7.0	7.7	8*	5
Moisture		7.1	7.7	8*	5
Batch number:	16232820002B	Sample number(s):		8471046-8471074	
Moisture		2.3	2.5	7* (1)	5
Moisture		2.3	2.5	8* (1)	5
Moisture Duplicate		2.3	2.5	7* (1)	5

* - Outside of specification

(1) - The result for one or both determinations was less than five times the LOQ.

Moisture Data Report

Batch #: 16232820002

Sample ID	Batch ID	Analysis#	Tare Wt	Sample Wt	Dry Wt	%Moisture	Analysis Date (Emp#)	Verified Date (Emp#)
8471034	A	00111	1.0885	5.7002	6.6332	2.73	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471035	A	00118				2.73	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471036	A	00118				2.73	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471037	A	00118				2.73	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471038	A	00111	1.0990	7.1990	8.1264	2.38	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471039	A	00118				2.38	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471040	A	00118				2.38	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471041	A	00118				2.38	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471042	A	00111	1.0861	6.7932	7.6818	2.91	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471043	A	00118				2.91	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471044	A	00118				2.91	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471045	A	00118				2.91	8/19/16 (1201/SWF)	8/22/16 (236/CW)
P457189BKG	A	00111	1.0876	9.2411	9.6775	7.05	8/19/16 (1201/SWF)	8/22/16 (236/CW)
P457189DUP	A	00111	1.0812	9.4647	9.8198	7.67	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471046BKG	B	00111	1.0758	6.8992	7.8156	2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471046DUP	B	00111	1.0948	6.0703	7.0140	2.49	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471047BKG	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471048MS	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471049MSD	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471050DUP	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471050DUP	B	00121	1.0948	6.0703	7.0140	2.49	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471051BKG	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471052MS	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471053MSD	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471054	B	00118				2.31	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471055	B	00111	1.0966	6.6544	7.5526	2.98	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471056	B	00118				2.98	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471057	B	00118				2.98	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471058	B	00118				2.98	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471059	B	00111	1.0876	6.5898	7.5315	2.21	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471060	B	00118				2.21	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471061	B	00118				2.21	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471062	B	00118				2.21	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471063	B	00111	1.0722	7.4045	8.4170	0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471064	B	00118				0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471065	B	00118				0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471066	B	00118				0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471067	B	00111	1.0788	7.3504	8.3736	0.76	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471068	B	00118				0.76	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471069	B	00118				0.76	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471070	B	00118				0.76	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471071	B	00111	1.0893	8.2764	9.2983	0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471072	B	00118				0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471073	B	00118				0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
8471074	B	00118				0.81	8/19/16 (1201/SWF)	8/22/16 (236/CW)
LCS 89.5% Std.		00111	1.0962	5.0226	1.6254	89.46	8/19/16 (1201/SWF)	8/22/16 (236/CW)

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Type I (No Raw Data) Data Package

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Project: Woodbine Phase III MEC RFI
Sand, Soil and Water Samples
Collected on 07/12/16

SDG# DWD89

GROUP	SAMPLE NUMBERS
1682221	8472643-8472674

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

Authorized by: Dana M Kauffman **Date:** **08/07/2016**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Natalie Luciano at (717) 556-7258.

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Sample Reference List for SDG Number DWD95 with a Data Package Type of I-NODATA

11372 - CH2M Hill, Inc.

Project: Woodbine Phase III MEC RFI

Lab Sample Number	Client Sample ID	Collection Date	Date Received
8472643	TB-10	07/12/2016 08:00	07/13/2016 09:40
8472644	DU-2-3-A	07/12/2016 09:00	07/13/2016 09:40
8472645	DU-2-3-A	07/12/2016 09:00	07/13/2016 09:40
8472646	DU-2-3-A MS	07/12/2016 09:00	07/13/2016 09:40
8472647	DU-2-3-A MSD	07/12/2016 09:00	07/13/2016 09:40
8472648	DU-2-3-A DUP	07/12/2016 09:00	07/13/2016 09:40
8472649	DU-2-3-A	07/12/2016 09:00	07/13/2016 09:40
8472650	DU-2-3-A MS	07/12/2016 09:00	07/13/2016 09:40
8472651	DU-2-3-A MSD	07/12/2016 09:00	07/13/2016 09:40
8472652	DU-2-3-A	07/12/2016 09:00	07/13/2016 09:40
8472653	DU-2-3-B	07/12/2016 10:30	07/13/2016 09:40
8472654	DU-2-3-B	07/12/2016 10:30	07/13/2016 09:40
8472655	DU-2-3-B	07/12/2016 10:30	07/13/2016 09:40
8472656	DU-2-3-B	07/12/2016 10:30	07/13/2016 09:40
8472657	DU-2-3-C	07/12/2016 12:30	07/13/2016 09:40
8472658	DU-2-3-C	07/12/2016 12:30	07/13/2016 09:40
8472659	DU-2-3-C	07/12/2016 12:30	07/13/2016 09:40
8472660	DU-2-3-C	07/12/2016 12:30	07/13/2016 09:40
8472661	DU-2-1-A	07/12/2016 15:00	07/13/2016 09:40
8472662	DU-2-1-A	07/12/2016 15:00	07/13/2016 09:40
8472663	DU-2-1-A	07/12/2016 15:00	07/13/2016 09:40
8472664	DU-2-1-A	07/12/2016 15:00	07/13/2016 09:40
8472665	DU-2-1-B	07/12/2016 16:30	07/13/2016 09:40
8472666	DU-2-1-B	07/12/2016 16:30	07/13/2016 09:40
8472667	DU-2-1-B	07/12/2016 16:30	07/13/2016 09:40
8472668	DU-2-1-B	07/12/2016 16:30	07/13/2016 09:40
8472669	DU-2-1-C	07/12/2016 18:00	07/13/2016 09:40
8472670	DU-2-1-C	07/12/2016 18:00	07/13/2016 09:40
8472671	DU-2-1-C	07/12/2016 18:00	07/13/2016 09:40
8472672	DU-2-1-C	07/12/2016 18:00	07/13/2016 09:40
8472673	Metals Blank		07/13/2016 09:40
8472674	Exp/Perchlorate Blank		07/13/2016 09:40

Sample pH Log

SDG: DWD95

LLI Sample Number	Bottle Code	Actual pH	Exp. pH	pH Check Code	Adj. pH	Adjusted Date	Adjusted Time	Preservative Added	Preservative Lot #	LLI Supplied Bottle?	Sulfide Present?	Corrective Substance	CS Lot #	Res. Cl. Present?	Corrective Substance	CS Lot #	Record Date	Employee
8472643	038A	<2	<2	NA	NA	NA	NA	NA	NA	Y	NA	NA	NA	NA	NA	NA	7/18/2016 1:52:10PM	3231

Check Code Key
PK = Original container checked - pH is within the correct range. (No preservative was added)
PA = Original container checked - pH adjusted to correct range. (Preservative was added)
PV = Volatile container checked
PC = pH checked (unpreserved container)
SPK = Subsampled from an original container. Original container checked - pH is within correct range
SPA = Subsampled from an original container. Subsample container checked - pH adjusted to correct range.
SPC = Subsampled from an original container. pH checked (unpreserved container).
SUP = Subsampled from original container. Unable to be preserved due to the matrix of the sample.
UP = Unable to preserve due to matrix of the sample.
NA = Not applicable

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01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030B, December 1996.

11997 VOCs- 5ml Water by 8260C

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

11995 VOCs- Solid by 8260C

The soil sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

10638 Hg - SW, 7471B - U4
00159 Mercury

The solution resulting from the mercury digestion is analyzed by Cold Vapor AA.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 7471B, February 2007

01643 Aluminum
06944 Antimony
06935 Arsenic
06946 Barium
06947 Beryllium
06949 Cadmium
01650 Calcium
06951 Chromium
06952 Cobalt
06953 Copper
01654 Iron
06955 Lead
01657 Magnesium
06958 Manganese
06961 Nickel
01662 Potassium
06936 Selenium
06966 Silver
01667 Sodium
06971 Vanadium
06972 Zinc

The solution resulting from the metals digestion is analyzed by Trace ICP.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 6010C, February 2007.

06145 Thallium

The solution resulting from the metals digestion is analyzed by ICP/MS.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 6020A, February 2007.

10637 ICP/ICPMS-SW, 3050B - U4

The sample is digested with nitric acid, hydrochloric acid and hydrogen peroxide.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3050B, December 1996

13433 Nitroaromatic/Amine Ext 8330B

The sample is extracted with acetonitrile in a vial using a chilled ultrasonic bath. The vial is centrifuged and the acetonitrile removed. The extract is brought to volume with calcium chloride solution and filtered prior to analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8330B, Revision 2, October 2006.

13413 Nitroaromatics/Amines 8330B(s)

The sample is extracted into acetonitrile using an ultrasonic bath. The extract is analyzed using High Performance Liquid Chromatography (HPLC) with UV detection at two wavelengths for optimum sensitivity for all target compounds 214 and 254 nm. Confirmation of presumptive peaks is performed on a second column at the same two wavelengths.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8330B, Revision 2, October 2006.

06568 Perchlorate Soil Prep

Water samples are filtered through a 0.45-um syringe filter, followed by direct injection into a LC/MS/MS system followed by multiple reaction monitoring. Quantitation is performed using an isotopic internal standard.

Reference: Test Methods for Evaluating Solid Waste, EPA SW-846, Method 6850, 1/2007.

06557 Perchlorate in Soil LC/MS/MS

Soil samples are extracted with water, then filtered through a 0.45-um syringe filter and analyzed by LC/MS/MS. Quantitation is performed using an isotopic internal standard.

Reference: Test Methods for Evaluating Solid Waste, EPA SW-846, Method 6850, 1/2007.

10726 SVOA 8270D (microwave)

The sample extract is analyzed by capillary column Gas Chromatography/Mass Spectrometry.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 8270D, February 2007.

10813 BNA Soil Microwave APP IX

The sample aliquot is extracted using microwave extraction with 1:1 methylene chloride and acetone. The extract is concentrated prior to analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3546, Revision 0, February 2007.

05895 Total Cyanide (solid)

During the distillation step, complex cyanides are converted to hydrogen cyanide which readily reacts with chloramine T. Simple cyanides are converted to cyanogen chloride by reaction with chloramine T. This reacts with pyridine and barbituric acid to give a red colored complex determined colorimetrically.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9012B Rev. 2, November 2004.

05896 Cyanide Solid Distillation

The sample is acidified and distilled. Cyanide is released as hydrogen cyanide and is absorbed in a sodium hydroxide solution.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9012B Rev. 2, November 2004.

00394 pH

A 1:1 slurry is prepared. The activity of hydrogen ions in the supernatant is measured using a glass electrode and a reference electrode.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9045D Modified, November 2004.

00425 Hexavalent Chromium (SOLIDS)

The filtrate from method #7825 is analyzed colorimetrically using diphenylcarbazide to produce a red-violet color. The absorbance is read at 540 nm and compared to a standard curve.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 7196A, July 1992.

01821 Oxidation Reduction Potential

The oxidation-reduction potential is measured using a platinum electrode and a reference electrode. The potential reported is the electromotive force between the platinum electrode and the reference electrode, referred to the standard hydrogen scale.

Reference: Annual Book of ASTM Standards, Method D 1498

07825 Hexavalent Cr (Extraction)

The sample is digested using a 3% sodium carbonate - 2% sodium hydroxide solution and then filtered through a 0.45 micron filter.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3060A, December 1996

00111 Moisture
00118 Moisture
00121 Moisture Duplicate

A well-mixed sample is placed in a tared container and dried to a constant weight in an oven at 103-105C. The increase in weight is the total solids.

Reference: Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998, Method 2540 G-1997

07320 GC/MS - LL DIH2O Encore Prep

Two EnCore samples are collected per sample. The vials used for preparation are pre-preserved and pre-weighed. Two aliquots are extruded into DI water. The vials are re-weighed and the weight of the sample should be 5-g +/- .5 g. The prepared samples are then delivered to the lab for analysis. DI vials are frozen after they are weighed to complete preservation step.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

07578 GC/MS-HL Encore Prep-NC

The sample is collected in an EnCore sampler and is submitted to the laboratory. A vial containing 5-ml methanol is prepared for each sample and weighed prior to adding the sample. After the sample is added to the vial, the vial is reweighed and the weight of sample is determined by difference. The weight of the sample should be 5-g +/- .5 g. The sample vial is then delivered to the lab for analysis.

Reference: Test Methods for Evaluating Solid Wastes, SW-846, Method 5035A, Revision 1, July 2002.

Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Report Date: August 31, 2016

Project: Woodbine Phase III MEC RFI

Submittal Date: 07/13/2016
Group Number: 1682221
SDG: DWD95
PO Number: 10381-7-113967
Release Number: DWD95
State of Sample Origin: GA

Client Sample Description	Lancaster Labs (LL) #
TB-10 Water	8472643
DU-2-3-A Composite Soil	8472644
DU-2-3-A Composite Soil	8472645
DU-2-3-A MS Composite Soil	8472646
DU-2-3-A MSD Composite Soil	8472647
DU-2-3-A DUP Composite Soil	8472648
DU-2-3-A Composite Soil	8472649
DU-2-3-A MS Composite Soil	8472650
DU-2-3-A MSD Composite Soil	8472651
DU-2-3-A Composite Soil	8472652
DU-2-3-B Composite Soil	8472653
DU-2-3-B Composite Soil	8472654
DU-2-3-B Composite Soil	8472655
DU-2-3-B Composite Soil	8472656
DU-2-3-C Composite Soil	8472657
DU-2-3-C Composite Soil	8472658
DU-2-3-C Composite Soil	8472659
DU-2-3-C Composite Soil	8472660
DU-2-1-A Composite Soil	8472661
DU-2-1-A Composite Soil	8472662
DU-2-1-A Composite Soil	8472663
DU-2-1-A Composite Soil	8472664
DU-2-1-B Composite Soil	8472665
DU-2-1-B Composite Soil	8472666
DU-2-1-B Composite Soil	8472667
DU-2-1-B Composite Soil	8472668
DU-2-1-C Composite Soil	8472669
DU-2-1-C Composite Soil	8472670
DU-2-1-C Composite Soil	8472671
DU-2-1-C Composite Soil	8472672

Metals Blank Grab Sand	8472673
Exp/Perchlorate Blank Grab Sand	8472674

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Sherrill
Electronic Copy To	CH2M Hill, Inc.	Attn: Chemistry Mailbox
Electronic Copy To	CH2M Hill, Inc.	Attn: Mark Stinnett

Respectfully Submitted,

Natalie R. Luciano
Senior Specialist

(717) 556-7258

Sample Description: TB-10 Water
Woodbine Phase III MEC RFI

LL Sample # WW 8472643
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 08:00

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9501 SDG#: DWD95-01TB

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/l		ug/l	ug/l	
11997	4-Methyl-2-pentanone	108-10-1	3	U	3	10	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11997	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	L161991AA	07/17/2016 20:41	Christopher G Torres	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L161991AA	07/17/2016 20:41	Christopher G Torres	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472644
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9502 SDG#: DWD95-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	960	U	960	4,800	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	4,800	U	4,800	14,000	5
10726	Quinoline	91-22-5	960	U	960	4,800	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0387	J	0.0111	0.111	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.22	J	0.20	0.56	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	627		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.5	U	11.5	34.6	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.62		0.0100	0.0100	1
	The pH was measured in water at 21.3 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	13.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 11:02	Joseph M Gambler	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472644
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9502 SDG#: DWD95-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 08:34	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201A	07/22/2016 12:06	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201A	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102A	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039402A	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472645
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9503 SDG#: DWD95-03B G

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,990		8.63	39.8	1
06944	Antimony	7440-36-0	0.696	U	0.696	3.98	1
06935	Arsenic	7440-38-2	0.964	U	0.964	3.98	1
06946	Barium	7440-39-3	15.4		0.0328	0.994	1
06947	Beryllium	7440-41-7	0.0666	U	0.0666	0.994	1
06949	Cadmium	7440-43-9	0.822	J	0.0487	0.994	1
01650	Calcium	7440-70-2	590		5.63	39.8	1
06951	Chromium	7440-47-3	3.02		0.139	2.98	1
06952	Cobalt	7440-48-4	0.119	U	0.119	0.994	1
06953	Copper	7440-50-8	12.1		0.229	1.99	1
01654	Iron	7439-89-6	554		4.10	39.8	1
06955	Lead	7439-92-1	4.57		0.547	2.98	1
01657	Magnesium	7439-95-4	139		1.89	19.9	1
06958	Manganese	7439-96-5	11.0		0.0825	0.994	1
06961	Nickel	7440-02-0	0.776	J	0.298	1.99	1
01662	Potassium	7440-09-7	84.2	J	23.8	99.4	1
06936	Selenium	7782-49-2	0.895	U	0.895	3.98	1
06966	Silver	7440-22-4	0.149	U	0.149	0.994	1
01667	Sodium	7440-23-5	23.9	J	23.8	199	1
06971	Vanadium	7440-62-2	2.24		0.139	0.994	1
06972	Zinc	7440-66-6	179		0.676	3.98	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0288	U	0.0288	0.199	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	13.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472645
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9503 SDG#: DWD95-03B G

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 21:43	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 17:38	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:01	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472646
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9503 SDG#: DWD95-03MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,420	8.01	36.9	1
06944	Antimony	7440-36-0	41.1	0.646	3.69	1
06935	Arsenic	7440-38-2	14.0	0.895	3.69	1
06946	Barium	7440-39-3	204	0.0304	0.923	1
06947	Beryllium	7440-41-7	4.74	0.0618	0.923	1
06949	Cadmium	7440-43-9	4.94	0.0452	0.923	1
01650	Calcium	7440-70-2	1,000	5.22	36.9	1
06951	Chromium	7440-47-3	20.8	0.129	2.77	1
06952	Cobalt	7440-48-4	46.6	0.111	0.923	1
06953	Copper	7440-50-8	31.5	0.212	1.85	1
01654	Iron	7439-89-6	609	3.80	36.9	1
06955	Lead	7439-92-1	18.6	0.507	2.77	1
01657	Magnesium	7439-95-4	335	1.75	18.5	1
06958	Manganese	7439-96-5	55.6	0.0766	0.923	1
06961	Nickel	7440-02-0	48.0	0.277	1.85	1
01662	Potassium	7440-09-7	1,030	22.1	92.3	1
06936	Selenium	7782-49-2	13.3	0.830	3.69	1
06966	Silver	7440-22-4	4.63	0.138	0.923	1
01667	Sodium	7440-23-5	964	22.1	185	1
06971	Vanadium	7440-62-2	50.0	0.129	0.923	1
06972	Zinc	7440-66-6	70.7	0.627	3.69	1
	SW-846 6020A		mg/kg	mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.373	0.0268	0.185	2
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	13.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472646
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9503 SDG#: DWD95-03MS

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 21:52	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 17:47	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:08	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472647
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9503 SDG#: DWD95-03MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg	mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,580	9.63	44.4	1
06944	Antimony	7440-36-0	48.4	0.776	4.44	1
06935	Arsenic	7440-38-2	16.3	1.08	4.44	1
06946	Barium	7440-39-3	242	0.0366	1.11	1
06947	Beryllium	7440-41-7	5.50	0.0743	1.11	1
06949	Cadmium	7440-43-9	5.78	0.0543	1.11	1
01650	Calcium	7440-70-2	1,320	6.28	44.4	1
06951	Chromium	7440-47-3	25.4	0.155	3.33	1
06952	Cobalt	7440-48-4	54.4	0.133	1.11	1
06953	Copper	7440-50-8	206	0.255	2.22	1
01654	Iron	7439-89-6	649	4.57	44.4	1
06955	Lead	7439-92-1	24.4	0.610	3.33	1
01657	Magnesium	7439-95-4	383	2.11	22.2	1
06958	Manganese	7439-96-5	64.7	0.0921	1.11	1
06961	Nickel	7440-02-0	56.1	0.333	2.22	1
01662	Potassium	7440-09-7	1,210	26.5	111	1
06936	Selenium	7782-49-2	16.1	0.998	4.44	1
06966	Silver	7440-22-4	5.48	0.166	1.11	1
01667	Sodium	7440-23-5	1,120	26.5	222	1
06971	Vanadium	7440-62-2	57.9	0.155	1.11	1
06972	Zinc	7440-66-6	85.0	0.754	4.44	1
	SW-846 6020A		mg/kg	mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.519	0.0322	0.222	2
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	13.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472647
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9503 SDG#: DWD95-03MSD

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 21:55	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 17:50	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:11	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A DUP Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472648
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9503 SDG#: DWD95-03DUP

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,730		8.78	40.5	1
06944	Antimony	7440-36-0	0.708	U	0.708	4.05	1
06935	Arsenic	7440-38-2	0.981	U	0.981	4.05	1
06946	Barium	7440-39-3	15.0		0.0334	1.01	1
06947	Beryllium	7440-41-7	0.0678	U	0.0678	1.01	1
06949	Cadmium	7440-43-9	0.258	J	0.0496	1.01	1
01650	Calcium	7440-70-2	949		5.73	40.5	1
06951	Chromium	7440-47-3	2.76	J	0.142	3.04	1
06952	Cobalt	7440-48-4	0.121	U	0.121	1.01	1
06953	Copper	7440-50-8	7.52		0.233	2.02	1
01654	Iron	7439-89-6	544		4.17	40.5	1
06955	Lead	7439-92-1	4.50		0.556	3.04	1
01657	Magnesium	7439-95-4	131		1.92	20.2	1
06958	Manganese	7439-96-5	11.4		0.0840	1.01	1
06961	Nickel	7440-02-0	0.726	J	0.304	2.02	1
01662	Potassium	7440-09-7	79.9	J	24.2	101	1
06936	Selenium	7782-49-2	1.79	J	0.911	4.05	1
06966	Silver	7440-22-4	0.152	U	0.152	1.01	1
01667	Sodium	7440-23-5	25.6	J	24.2	202	1
06971	Vanadium	7440-62-2	2.07		0.142	1.01	1
06972	Zinc	7440-66-6	28.6		0.688	4.05	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0293	U	0.0293	0.202	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	13.3		0.50	0.50	1
00121	Moisture Duplicate	n.a.	11.5		0.50	0.50	1

The duplicate moisture value is provided to assess the precision of the moisture test. For comparability purposes, the initial moisture determination is the value used to perform dry weight calculations.

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A DUP Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472648
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9503 SDG#: DWD95-03DUP

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 21:49	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 17:44	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:06	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472649
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9504 SDG#: DWD95-04B G

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	46	U	46	140	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	46	U	46	140	1
13413	1,3-Dinitrobenzene	99-65-0	45	U	45	140	1
13413	2,4-Dinitrotoluene	121-14-2	45	U	45	140	1
13413	2,6-Dinitrotoluene	606-20-2	130	U	130	140	1
13413	HM	2691-41-0	240	U	240	340	1
13413	Nitrobenzene	98-95-3	110	U	110	340	1
13413	Nitroglycerin	55-63-0	910	U	910	2,700	1
13413	2-Nitrotoluene	88-72-2	85	U	85	140	1
13413	3-Nitrotoluene	99-08-1	120	U	120	140	1
13413	4-Nitrotoluene	99-99-0	120	U	120	140	1
13413	PETN	78-11-5	910	U	910	2,700	1
13413	RD	121-82-4	45	U	45	140	1
13413	Tetryl	479-45-8	110	U	110	340	1
13413	1,3,5-Trinitrobenzene	99-35-4	45	U	45	140	1
13413	2,4,6-Trinitrotoluene	118-96-7	50	U	50	140	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	SW-846 6850 1/2007		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.4	U	2.4	5.8	1
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	13.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 03:38	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/20/2016 23:08	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-A MS Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472650
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9504 SDG#: DWD95-04MS

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg	ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	1,700	46	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	2,900	46	130	1
13413	1,3-Dinitrobenzene	99-65-0	3,600	45	130	1
13413	2,4-Dinitrotoluene	121-14-2	1,200	45	130	1
13413	2,6-Dinitrotoluene	606-20-2	5,800	130	130	1
13413	HM	2691-41-0	2,200	240	340	1
13413	Nitrobenzene	98-95-3	1,600	110	340	1
13413	Nitroglycerin	55-63-0	13,000	900	2,700	1
13413	2-Nitrotoluene	88-72-2	1,400	84	130	1
13413	3-Nitrotoluene	99-08-1	1,600	120	130	1
13413	4-Nitrotoluene	99-99-0	4,000	120	130	1
13413	PETN	78-11-5	19,000	900	2,700	1
13413	RD	121-82-4	4,700	45	130	1
13413	Tetryl	479-45-8	1,300	110	340	1
13413	1,3,5-Trinitrobenzene	99-35-4	1,500	45	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	1,100	49	130	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.					
Perchlorate	**SW-846 6850 1/2007**		ug/kg	ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	110	2.4	5.8	1
Wet Chemistry	**SM 2540 G-1997**		%	%	%	
00118	Moisture	n.a.	13.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 04:20	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/20/2016 23:21	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-A MSD Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472651
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9504 SDG#: DWD95-04MSD

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg	ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	1,800	47	140	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	3,200	47	140	1
13413	1,3-Dinitrobenzene	99-65-0	3,600	46	140	1
13413	2,4-Dinitrotoluene	121-14-2	1,200	46	140	1
13413	2,6-Dinitrotoluene	606-20-2	5,900	130	140	1
13413	HM	2691-41-0	2,300	240	340	1
13413	Nitrobenzene	98-95-3	1,500	110	340	1
13413	Nitroglycerin	55-63-0	14,000	910	2,700	1
13413	2-Nitrotoluene	88-72-2	1,400	85	140	1
13413	3-Nitrotoluene	99-08-1	1,600	130	140	1
13413	4-Nitrotoluene	99-99-0	4,100	130	140	1
13413	PETN	78-11-5	19,000	910	2,700	1
13413	RD	121-82-4	4,800	46	140	1
13413	Tetryl	479-45-8	1,200	110	340	1
13413	1,3,5-Trinitrobenzene	99-35-4	1,600	46	140	1
13413	2,4,6-Trinitrotoluene	118-96-7	1,200	50	140	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.					
Perchlorate	SW-846 6850 1/2007		ug/kg	ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	110	2.4	5.8	1
Wet Chemistry	SM 2540 G-1997		%	%	%	
00118	Moisture	n.a.	13.3	0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 05:03	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/20/2016 23:34	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472652
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 09:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9505 SDG#: DWD95-05

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	5	U	5	18	1.55
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	13.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161971AA	07/15/2016 13:40	Jennifer Howe	1.55
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619541867	07/13/2016 16:24	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619541867	07/13/2016 16:05	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472653
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 10:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9506 SDG#: DWD95-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	190	U	190	950	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	950	U	950	2,900	1
10726	Quinoline	91-22-5	190	U	190	950	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0302	J	0.0109	0.109	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	U	0.21	0.57	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	621		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.5	U	11.5	34.4	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.58		0.0100	0.0100	1
	The pH was measured in water at 21.2 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	12.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 11:27	Joseph M Gambler	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472653
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 10:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9506 SDG#: DWD95-06

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 09:07	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201B	07/22/2016 12:07	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201B	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102A	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039402A	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472654
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 10:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9507 SDG#: DWD95-07

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,100		9.47	43.6	1
06944	Antimony	7440-36-0	0.764	U	0.764	4.36	1
06935	Arsenic	7440-38-2	1.06	U	1.06	4.36	1
06946	Barium	7440-39-3	18.1		0.0360	1.09	1
06947	Beryllium	7440-41-7	0.0731	U	0.0731	1.09	1
06949	Cadmium	7440-43-9	0.238	J	0.0535	1.09	1
01650	Calcium	7440-70-2	882		6.17	43.6	1
06951	Chromium	7440-47-3	3.16	J	0.153	3.27	1
06952	Cobalt	7440-48-4	0.131	U	0.131	1.09	1
06953	Copper	7440-50-8	8.25		0.251	2.18	1
01654	Iron	7439-89-6	604		4.49	43.6	1
06955	Lead	7439-92-1	5.12		0.600	3.27	1
01657	Magnesium	7439-95-4	166		2.07	21.8	1
06958	Manganese	7439-96-5	12.7		0.0905	1.09	1
06961	Nickel	7440-02-0	0.801	J	0.327	2.18	1
01662	Potassium	7440-09-7	101	J	26.1	109	1
06936	Selenium	7782-49-2	0.982	U	0.982	4.36	1
06966	Silver	7440-22-4	0.164	U	0.164	1.09	1
01667	Sodium	7440-23-5	33.2	J	26.1	218	1
06971	Vanadium	7440-62-2	2.38		0.153	1.09	1
06972	Zinc	7440-66-6	25.4		0.742	4.36	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0316	U	0.0316	0.218	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	12.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472654
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 10:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9507 SDG#: DWD95-07

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 22:04	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 18:19	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:25	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472655
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 10:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9508 SDG#: DWD95-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		**ug/kg**		**ug/kg**	**ug/kg**	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	46	U	46	130	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	46	U	46	130	1
13413	1,3-Dinitrobenzene	99-65-0	45	U	45	130	1
13413	2,4-Dinitrotoluene	121-14-2	45	U	45	130	1
13413	2,6-Dinitrotoluene	606-20-2	130	U	130	130	1
13413	HM	2691-41-0	240	U	240	330	1
13413	Nitrobenzene	98-95-3	110	U	110	330	1
13413	Nitroglycerin	55-63-0	890	U	890	2,700	1
13413	2-Nitrotoluene	88-72-2	84	U	84	130	1
13413	3-Nitrotoluene	99-08-1	120	U	120	130	1
13413	4-Nitrotoluene	99-99-0	120	U	120	130	1
13413	PETN	78-11-5	890	U	890	2,700	1
13413	RD	121-82-4	45	U	45	130	1
13413	Tetryl	479-45-8	110	U	110	330	1
13413	1,3,5-Trinitrobenzene	99-35-4	45	U	45	130	1
13413	2,4,6-Trinitrotoluene	118-96-7	49	U	49	130	1
	This sample was used for the ISM triplicate. The individual RSD is included in the data package for review. The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		**ug/kg**		**ug/kg**	**ug/kg**	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.4	U	2.4	5.7	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00118	Moisture	n.a.	12.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 06:28	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/20/2016 23:46	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472656
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 10:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9509 SDG#: DWD95-09

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	8	U	8	27	2.38
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	12.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161971AA	07/15/2016 14:02	Jennifer Howe	2.38
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619541867	07/13/2016 16:24	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619541867	07/13/2016 16:24	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619541867	07/13/2016 16:03	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472657
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 12:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9510 SDG#: DWD95-10

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	190	U	190	970	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	970	U	970	2,900	1
10726	Quinoline	91-22-5	190	U	190	970	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0356	J	0.0115	0.115	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	U	0.21	0.57	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	610		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.6	U	11.6	34.8	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.42		0.0100	0.0100	1
	The pH was measured in water at 21.2 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	13.7		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 11:52	Joseph M Gambler	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472657
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 12:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9510 SDG#: DWD95-10

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162110638002	08/02/2016 09:09	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162110638002	08/01/2016 09:14	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16202102201B	07/22/2016 12:08	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16202102201B	07/20/2016 09:00	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102B	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039402A	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472658
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 12:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9511 SDG#: DWD95-11

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	2,060		9.49	43.7	1
06944	Antimony	7440-36-0	0.765	U	0.765	4.37	1
06935	Arsenic	7440-38-2	1.06	U	1.06	4.37	1
06946	Barium	7440-39-3	26.9		0.0361	1.09	1
06947	Beryllium	7440-41-7	0.0732	U	0.0732	1.09	1
06949	Cadmium	7440-43-9	0.463	J	0.0536	1.09	1
01650	Calcium	7440-70-2	874		6.19	43.7	1
06951	Chromium	7440-47-3	3.53		0.153	3.28	1
06952	Cobalt	7440-48-4	0.131	U	0.131	1.09	1
06953	Copper	7440-50-8	11.2		0.251	2.19	1
01654	Iron	7439-89-6	606		4.50	43.7	1
06955	Lead	7439-92-1	4.99		0.601	3.28	1
01657	Magnesium	7439-95-4	189		2.08	21.9	1
06958	Manganese	7439-96-5	10.8		0.0907	1.09	1
06961	Nickel	7440-02-0	0.910	J	0.328	2.19	1
01662	Potassium	7440-09-7	104	J	26.1	109	1
06936	Selenium	7782-49-2	0.984	U	0.984	4.37	1
06966	Silver	7440-22-4	0.164	U	0.164	1.09	1
01667	Sodium	7440-23-5	35.5	J	26.1	219	1
06971	Vanadium	7440-62-2	2.17		0.153	1.09	1
06972	Zinc	7440-66-6	45.7		0.743	4.37	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0317	U	0.0317	0.219	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	13.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472658
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 12:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9511 SDG#: DWD95-11

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 22:14	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 18:22	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:28	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-3-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472659
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 12:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9512 SDG#: DWD95-12

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		**ug/kg**		**ug/kg**	**ug/kg**	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	47	U	47	140	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	47	U	47	140	1
13413	1,3-Dinitrobenzene	99-65-0	46	U	46	140	1
13413	2,4-Dinitrotoluene	121-14-2	46	U	46	140	1
13413	2,6-Dinitrotoluene	606-20-2	130	U	130	140	1
13413	HM	2691-41-0	240	U	240	340	1
13413	Nitrobenzene	98-95-3	110	U	110	340	1
13413	Nitroglycerin	55-63-0	910	U	910	2,700	1
13413	2-Nitrotoluene	88-72-2	85	U	85	140	1
13413	3-Nitrotoluene	99-08-1	130	U	130	140	1
13413	4-Nitrotoluene	99-99-0	130	U	130	140	1
13413	PETN	78-11-5	910	U	910	2,700	1
13413	RD	121-82-4	46	U	46	140	1
13413	Tetryl	479-45-8	110	U	110	340	1
13413	1,3,5-Trinitrobenzene	99-35-4	46	U	46	140	1
13413	2,4,6-Trinitrotoluene	118-96-7	50	U	50	140	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		**ug/kg**		**ug/kg**	**ug/kg**	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.4	U	2.4	5.8	1
Wet Chemistry	**SM 2540 G-1997**		**%**		**%**	**%**	
00118	Moisture	n.a.	13.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 07:53	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/20/2016 23:59	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-3-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472660
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 12:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9513 SDG#: DWD95-13

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	5	U	5	16	1.38
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	13.7		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161971AA	07/15/2016 11:47	Jennifer Howe	1.38
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619541867	07/13/2016 15:54	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

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Analysis Report

Sample Description: DU-2-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472661
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 15:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9514 SDG#: DWD95-14

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	190	U	190	970	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	970	U	970	2,900	5
10726	Quinoline	91-22-5	190	U	190	970	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0494	J	0.0111	0.111	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	U	0.21	0.58	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	618		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.7	U	11.7	35.0	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.39		0.0100	0.0100	1
	The pH was measured in water at 21.2 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	14.3		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 12:17	Joseph M Gambler	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472661
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 15:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9514 SDG#: DWD95-14

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:32	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16203102201A	07/23/2016 11:41	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16203102201A	07/21/2016 09:10	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102A	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039402A	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472662
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 15:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9515 SDG#: DWD95-15

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	989		9.38	43.2	1
06944	Antimony	7440-36-0	0.756	U	0.756	4.32	1
06935	Arsenic	7440-38-2	1.05	U	1.05	4.32	1
06946	Barium	7440-39-3	6.13		0.0357	1.08	1
06947	Beryllium	7440-41-7	0.0724	U	0.0724	1.08	1
06949	Cadmium	7440-43-9	0.0583	J	0.0529	1.08	1
01650	Calcium	7440-70-2	908		6.12	43.2	1
06951	Chromium	7440-47-3	1.83	J	0.151	3.24	1
06952	Cobalt	7440-48-4	0.130	U	0.130	1.08	1
06953	Copper	7440-50-8	5.77		0.248	2.16	1
01654	Iron	7439-89-6	511		4.45	43.2	1
06955	Lead	7439-92-1	4.81		0.594	3.24	1
01657	Magnesium	7439-95-4	148		2.05	21.6	1
06958	Manganese	7439-96-5	29.7		0.0897	1.08	1
06961	Nickel	7440-02-0	0.618	J	0.324	2.16	1
01662	Potassium	7440-09-7	90.9	J	25.8	108	1
06936	Selenium	7782-49-2	0.972	U	0.972	4.32	1
06966	Silver	7440-22-4	0.162	U	0.162	1.08	1
01667	Sodium	7440-23-5	30.5	J	25.8	216	1
06971	Vanadium	7440-62-2	2.31		0.151	1.08	1
06972	Zinc	7440-66-6	6.68		0.735	4.32	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0313	U	0.0313	0.216	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	14.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472662
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 15:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9515 SDG#: DWD95-15

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 22:17	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 18:26	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:30	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472663
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 15:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9516 SDG#: DWD95-16

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	47	U	47	140	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	47	U	47	140	1
13413	1,3-Dinitrobenzene	99-65-0	46	U	46	140	1
13413	2,4-Dinitrotoluene	121-14-2	46	U	46	140	1
13413	2,6-Dinitrotoluene	606-20-2	130	U	130	140	1
13413	HM	2691-41-0	240	U	240	340	1
13413	Nitrobenzene	98-95-3	110	U	110	340	1
13413	Nitroglycerin	55-63-0	920	U	920	2,800	1
13413	2-Nitrotoluene	88-72-2	86	U	86	140	1
13413	3-Nitrotoluene	99-08-1	130	U	130	140	1
13413	4-Nitrotoluene	99-99-0	130	U	130	140	1
13413	PETN	78-11-5	920	U	920	2,800	1
13413	RD	121-82-4	46	U	46	140	1
13413	Tetryl	479-45-8	110	U	110	340	1
13413	1,3,5-Trinitrobenzene	99-35-4	46	U	46	140	1
13413	2,4,6-Trinitrotoluene	118-96-7	50	U	50	140	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.5	U	2.5	5.8	1
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	14.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 09:18	James H Place	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/21/2016 00:12	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-1-A Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472664
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 15:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9517 SDG#: DWD95-17

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	6	U	6	19	1.6
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	14.3		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161971AA	07/15/2016 14:25	Jennifer Howe	1.6
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619541867	07/13/2016 16:24	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619541867	07/13/2016 15:59	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472665
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 16:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9518 SDG#: DWD95-18

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	200	U	200	980	5
10726	2-Chlorobenzalmalononitrile	2698-41-1	980	U	980	2,900	5
10726	Quinoline	91-22-5	200	U	200	980	5
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0521	J	0.0113	0.113	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	U	0.21	0.58	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	612		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.9	U	11.9	35.7	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.35		0.0100	0.0100	1
	The pH was measured in water at 21.3 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	15.9		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 01:04	William H Saadeh	5

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472665
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 16:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9518 SDG#: DWD95-18

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 11:59	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16203102201A	07/23/2016 11:43	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16203102201A	07/21/2016 09:10	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102A	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039402A	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472666
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 16:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9519 SDG#: DWD95-19

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	954		9.56	44.0	1
06944	Antimony	7440-36-0	0.771	U	0.771	4.40	1
06935	Arsenic	7440-38-2	1.07	U	1.07	4.40	1
06946	Barium	7440-39-3	24.9		0.0363	1.10	1
06947	Beryllium	7440-41-7	0.0738	U	0.0738	1.10	1
06949	Cadmium	7440-43-9	0.0539	J	0.0539	1.10	1
01650	Calcium	7440-70-2	937		6.23	44.0	1
06951	Chromium	7440-47-3	2.65	J	0.154	3.30	1
06952	Cobalt	7440-48-4	0.132	U	0.132	1.10	1
06953	Copper	7440-50-8	5.23		0.253	2.20	1
01654	Iron	7439-89-6	458		4.54	44.0	1
06955	Lead	7439-92-1	4.38		0.606	3.30	1
01657	Magnesium	7439-95-4	152		2.09	22.0	1
06958	Manganese	7439-96-5	26.5		0.0914	1.10	1
06961	Nickel	7440-02-0	0.550	J	0.330	2.20	1
01662	Potassium	7440-09-7	90.9	J	26.3	110	1
06936	Selenium	7782-49-2	0.991	U	0.991	4.40	1
06966	Silver	7440-22-4	0.165	U	0.165	1.10	1
01667	Sodium	7440-23-5	32.5	J	26.3	220	1
06971	Vanadium	7440-62-2	2.03		0.154	1.10	1
06972	Zinc	7440-66-6	7.21		0.749	4.40	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0319	U	0.0319	0.220	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	15.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472666
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 16:30 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9519 SDG#: DWD95-19

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 22:20	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 18:29	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:32	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472667
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 16:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9520 SDG#: DWD95-20

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	49	U	49	140	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	49	U	49	140	1
13413	1,3-Dinitrobenzene	99-65-0	48	U	48	140	1
13413	2,4-Dinitrotoluene	121-14-2	48	U	48	140	1
13413	2,6-Dinitrotoluene	606-20-2	140	U	140	140	1
13413	HM	2691-41-0	250	U	250	360	1
13413	Nitrobenzene	98-95-3	120	U	120	360	1
13413	Nitroglycerin	55-63-0	950	U	950	2,900	1
13413	2-Nitrotoluene	88-72-2	89	U	89	140	1
13413	3-Nitrotoluene	99-08-1	130	U	130	140	1
13413	4-Nitrotoluene	99-99-0	130	U	130	140	1
13413	PETN	78-11-5	950	U	950	2,900	1
13413	RD	121-82-4	48	U	48	140	1
13413	Tetryl	479-45-8	120	U	120	360	1
13413	1,3,5-Trinitrobenzene	99-35-4	48	U	48	140	1
13413	2,4,6-Trinitrotoluene	118-96-7	52	U	52	140	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.5	U	2.5	5.9	1
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	15.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 10:01	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/21/2016 00:24	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-1-B Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472668
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 16:30 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9521 SDG#: DWD95-21

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	6	U	6	19	1.61
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	15.9		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161972AA	07/15/2016 21:54	Sara E Johnson	1.61
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619541867	07/13/2016 16:24	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619541867	07/13/2016 15:56	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472669
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 18:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9522 SDG#: DWD95-22

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS Semivolatiles	SW-846 8270D		ug/kg		ug/kg	ug/kg	
10726	2-Chlorobenzaldehyde	89-98-5	200	U	200	980	1
10726	2-Chlorobenzalmalononitrile	2698-41-1	980	U	980	2,900	1
10726	Quinoline	91-22-5	200	U	200	980	1
	The stated QC limits for 2-Chlorobenzalmalononitrile are advisory only until sufficient data points can be obtained to calculate statistical limits.						
	Reporting limits were raised due to interference from the sample matrix.						
Metals	SW-846 7471B		mg/kg		mg/kg	mg/kg	
00159	Mercury	7439-97-6	0.0529	J	0.0112	0.112	1
Wet Chemistry	SW-846 9012B		mg/kg		mg/kg	mg/kg	
05895	Total Cyanide solid	57-12-5	0.21	U	0.21	0.59	1
	ASTM D1498		m		m	m	
01821	Oxidation Reduction Potential	n.a.	595		10.0	10.0	1
	The oxidation-reduction potential is reported in mV as referred to the standard hydrogen scale.						
	SW-846 7196A		mg/kg		mg/kg	mg/kg	
00425	Hexavalent Chromium SOLIDS	18540-29-9	11.9	U	11.9	35.7	20
	Reporting limits were raised due to interference from the sample matrix.						
	SW-846 9045D modified		Std. Units		Std. Units	Std. Units	
00394	pH	n.a.	4.31		0.0100	0.0100	1
	The pH was measured in water at 21.3 C.						
Wet Chemistry	SM 2540 G-1997		%		%	%	
00111	Moisture	n.a.	16.0		0.50	0.50	1
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.						

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10726	SVOA 8270D microwave	SW-846 8270D	1	16205SLC026	07/27/2016 12:41	Joseph M Gambler	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472669
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 18:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9522 SDG#: DWD95-22

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10813	BNA Soil Microwave APP I	SW-846 3546	1	16205SLC026	07/25/2016 08:30	Jessica M Cook	1
00159	Mercury	SW-846 7471B	1	162010638001	07/20/2016 12:01	Damary Valentin	1
10638	Hg - SW, 7471B - U4	SW-846 7471B	1	162010638001	07/20/2016 09:19	James L Mertz	1
05895	Total Cyanide solid	SW-846 9012B	1	16203102201A	07/23/2016 11:44	Brianna A White	1
05896	Cyanide Solid Distillation	SW-846 9012B	1	16203102201A	07/21/2016 09:10	Nancy J Shoop	1
01821	Oxidation Reduction Potential	ASTM D1498	1	16200182102A	07/18/2016 14:15	Tyler W Wise	1
00425	Hexavalent Chromium SOLIDS	SW-846 7196A	1	16201042501A	07/20/2016 20:30	Daniel S Smith	20
00394	pH	SW-846 9045D modified	1	16200039402B	07/18/2016 14:15	Nathan T Morgan	1
07825	Hexavalent Cr Extraction	SW-846 3060A	1	16201042501A	07/19/2016 20:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472670
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 18:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9523 SDG#: DWD95-23

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	1,010		9.84	45.4	1
06944	Antimony	7440-36-0	0.794	U	0.794	4.54	1
06935	Arsenic	7440-38-2	1.10	U	1.10	4.54	1
06946	Barium	7440-39-3	7.05		0.0374	1.13	1
06947	Beryllium	7440-41-7	0.0760	U	0.0760	1.13	1
06949	Cadmium	7440-43-9	0.0578	J	0.0556	1.13	1
01650	Calcium	7440-70-2	1,080		6.42	45.4	1
06951	Chromium	7440-47-3	1.62	J	0.159	3.40	1
06952	Cobalt	7440-48-4	0.136	U	0.136	1.13	1
06953	Copper	7440-50-8	5.43		0.261	2.27	1
01654	Iron	7439-89-6	470		4.67	45.4	1
06955	Lead	7439-92-1	4.50		0.624	3.40	1
01657	Magnesium	7439-95-4	179		2.15	22.7	1
06958	Manganese	7439-96-5	29.2		0.0941	1.13	1
06961	Nickel	7440-02-0	0.543	J	0.340	2.27	1
01662	Potassium	7440-09-7	111	J	27.1	113	1
06936	Selenium	7782-49-2	1.02	U	1.02	4.54	1
06966	Silver	7440-22-4	0.170	U	0.170	1.13	1
01667	Sodium	7440-23-5	41.8	J	27.1	227	1
06971	Vanadium	7440-62-2	2.05		0.159	1.13	1
06972	Zinc	7440-66-6	7.91		0.771	4.54	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0329	U	0.0329	0.227	2
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	16.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472670
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 18:00 by JC

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9523 SDG#: DWD95-23

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 22:23	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 18:32	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:35	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: DU-2-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472671
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 18:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9524 SDG#: DWD95-24

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Explosives	**SW-846 8330B Rev.2 Oct. 2006**		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	48	U	48	140	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	48	U	48	140	1
13413	1,3-Dinitrobenzene	99-65-0	47	U	47	140	1
13413	2,4-Dinitrotoluene	121-14-2	47	U	47	140	1
13413	2,6-Dinitrotoluene	606-20-2	130	U	130	140	1
13413	HM	2691-41-0	250	U	250	350	1
13413	Nitrobenzene	98-95-3	120	U	120	350	1
13413	Nitroglycerin	55-63-0	940	U	940	2,800	1
13413	2-Nitrotoluene	88-72-2	88	U	88	140	1
13413	3-Nitrotoluene	99-08-1	130	U	130	140	1
13413	4-Nitrotoluene	99-99-0	130	U	130	140	1
13413	PETN	78-11-5	940	U	940	2,800	1
13413	RD	121-82-4	47	U	47	140	1
13413	Tetryl	479-45-8	120	U	120	350	1
13413	1,3,5-Trinitrobenzene	99-35-4	47	U	47	140	1
13413	2,4,6-Trinitrotoluene	118-96-7	52	U	52	140	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	**SW-846 6850 1/2007**		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	2.5	U	2.5	6.0	1
Wet Chemistry	**SM 2540 G-1997**		%		%	%	
00118	Moisture	n.a.	16.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 10:43	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/21/2016 00:37	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: DU-2-1-C Composite Soil
Woodbine Phase III MEC RFI

LL Sample # SW 8472672
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: 07/12/2016 18:00 by JC

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

D9525 SDG#: DWD95-25

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
GC/MS olatiles	SW-846 8260C		ug/kg		ug/kg	ug/kg	
11995	4-Methyl-2-pentanone	108-10-1	6	U	6	19	1.57
Wet Chemistry	SM 2540 G-1997		%		%	%	
00118	Moisture	n.a.	16.0		0.50	0.50	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	4-Methyl-2-pentanone 8260C	SW-846 8260C	1	A161971AA	07/15/2016 12:10	Jennifer Howe	1.57
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	1	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07320	GC/MS - LL DIH2O Encore Prep	SW-846 5035A	2	201619541867	07/13/2016 16:25	atelyn C Shober	n.a.
07578	GC/MS-HL Encore Prep-NC	SW-846 5035A	1	201619541867	07/13/2016 15:50	atelyn C Shober	n.a.
00118	Moisture	SM 2540 G-1997	1	16232820003A	08/19/2016 23:27	Scott W Freisher	1

*=This limit was used in the evaluation of the final result

Sample Description: Metals Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8472673
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: n.a.

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9526 SDG#: DWD95-26BL

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846 6010C		mg/kg		mg/kg	mg/kg	
01643	Aluminum	7429-90-5	8.11	U	8.11	37.4	1
06944	Antimony	7440-36-0	0.654	U	0.654	3.74	1
06935	Arsenic	7440-38-2	0.907	U	0.907	3.74	1
06946	Barium	7440-39-3	0.0308	U	0.0308	0.935	1
06947	Beryllium	7440-41-7	0.0626	U	0.0626	0.935	1
06949	Cadmium	7440-43-9	0.0458	U	0.0458	0.935	1
01650	Calcium	7440-70-2	5.29	U	5.29	37.4	1
06951	Chromium	7440-47-3	0.131	U	0.131	2.80	1
06952	Cobalt	7440-48-4	0.112	U	0.112	0.935	1
06953	Copper	7440-50-8	0.250	J	0.215	1.87	1
01654	Iron	7439-89-6	4.70	J	3.85	37.4	1
06955	Lead	7439-92-1	0.514	U	0.514	2.80	1
01657	Magnesium	7439-95-4	1.78	U	1.78	18.7	1
06958	Manganese	7439-96-5	0.0776	U	0.0776	0.935	1
06961	Nickel	7440-02-0	0.280	U	0.280	1.87	1
01662	Potassium	7440-09-7	22.3	U	22.3	93.5	1
06936	Selenium	7782-49-2	0.841	U	0.841	3.74	1
06966	Silver	7440-22-4	0.140	U	0.140	0.935	1
01667	Sodium	7440-23-5	22.3	U	22.3	187	1
06971	Vanadium	7440-62-2	0.131	U	0.131	0.935	1
06972	Zinc	7440-66-6	0.636	U	0.636	3.74	1
	SW-846 6020A		mg/kg		mg/kg	mg/kg	
06145	Thallium	7440-28-0	0.0271	U	0.0271	0.187	2

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was collected following the protocol specified by each method listed in the Laboratory Sample Analysis Record.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01643	Aluminum	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06944	Antimony	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06935	Arsenic	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06946	Barium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06947	Beryllium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06949	Cadmium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
01650	Calcium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06951	Chromium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06952	Cobalt	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06953	Copper	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
01654	Iron	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1

*=This limit was used in the evaluation of the final result

Sample Description: Metals Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8472673
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: n.a.

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9526 SDG#: DWD95-26BL

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06955	Lead	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
01657	Magnesium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06958	Manganese	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06961	Nickel	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
01662	Potassium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06936	Selenium	SW-846 6010C	1	162030637003	07/22/2016 22:26	Suzanne M Will	1
06966	Silver	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
01667	Sodium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06971	Vanadium	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06972	Zinc	SW-846 6010C	1	162030637003	07/22/2016 18:35	Suzanne M Will	1
06145	Thallium	SW-846 6020A	1	162030637003A	07/25/2016 19:37	Patrick J Engle	2
10637	ICP/ICPMS-SW, 3050B - U4	SW-846 3050B	1	162030637003	07/22/2016 07:10	Ann Borg	1

*=This limit was used in the evaluation of the final result

Sample Description: Exp/Perchlorate Blank Grab Sand
Woodbine Phase III MEC RFI

LL Sample # SW 8472674
LL Group # 1682221
Account # 11372

Project Name: Woodbine Phase III MEC RFI

Collected: n.a.

CH2M Hill, Inc.
PO Box 241329
Denver CO 80224

Submitted: 07/13/2016 09:40
Reported: 08/31/2016 15:20

D9527 SDG#: DWD95-27BL

CAT No.	Analysis Name	CAS Number	As Received Result		As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Explosives	SW-846 8330B Rev.2 Oct. 2006		ug/kg		ug/kg	ug/kg	
13413	4-Amino-2,6-Dinitrotoluene	19406-51-0	40	U	40	120	1
13413	2-Amino-4,6-Dinitrotoluene	35572-78-2	40	U	40	120	1
13413	1,3-Dinitrobenzene	99-65-0	39	U	39	120	1
13413	2,4-Dinitrotoluene	121-14-2	39	U	39	120	1
13413	2,6-Dinitrotoluene	606-20-2	110	U	110	120	1
13413	HM	2691-41-0	210	U	210	290	1
13413	Nitrobenzene	98-95-3	98	U	98	290	1
13413	Nitroglycerin	55-63-0	790	U	790	2,400	1
13413	2-Nitrotoluene	88-72-2	74	U	74	120	1
13413	3-Nitrotoluene	99-08-1	110	U	110	120	1
13413	4-Nitrotoluene	99-99-0	110	U	110	120	1
13413	PETN	78-11-5	790	U	790	2,400	1
13413	RD	121-82-4	39	U	39	120	1
13413	Tetryl	479-45-8	98	U	98	290	1
13413	1,3,5-Trinitrobenzene	99-35-4	39	U	39	120	1
13413	2,4,6-Trinitrotoluene	118-96-7	43	U	43	120	1
	The stated QC limits are advisory only until sufficient data points can be obtained to calculate statistical limits.						
Perchlorate	SW-846 6850 1/2007		ug/kg		ug/kg	ug/kg	
06557	Perchlorate in Soil LC/MS/MS	14797-73-0	3.1	J	2.1	5.0	1

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/17.
This sample was collected following the protocol specified by each method listed in the Laboratory Sample Analysis Record.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
13413	Nitroaromatics/Amines 8330B s	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	08/26/2016 11:26	Jessica L Miller	1
06557	Perchlorate in Soil LC/MS/MS	SW-846 6850 1/2007	1	162010025A	07/21/2016 01:03	Richard A Shober	1
06568	Perchlorate Soil Prep	SW-846 6850 1/2007	1	162010025A	07/20/2016 06:55	Maria Davenport	1
13433	Nitroaromatic/Amine Ext 8330B	SW-846 8330B Rev.2 Oct. 2006	1	162010024A	07/19/2016 21:00	David V Hershey Jr	1

*=This limit was used in the evaluation of the final result

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result		MDL**	LOQ
	ug/kg		ug/kg	ug/kg
Batch number: A161971AA	Sample number s : 8472652,8472656,8472660,8472664,8472672			
4-Methyl-2-pentanone	3	U	3	10
Batch number: A161972AA	Sample number s : 8472668			
4-Methyl-2-pentanone	3	U	3	10
	ug/l		ug/l	ug/l
Batch number: L161991AA	Sample number s : 8472643			
4-Methyl-2-pentanone	3	U	3	10
	ug/kg		ug/kg	ug/kg
Batch number: 16205SLC026	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669			
2-Chlorobenzaldehyde	33	U	33	170
2-Chlorobenzalmalononitrile	170	U	170	500
Quinoline	33	U	33	170
Batch number: 162010024A	Sample number s : 8472649-8472651,8472655,8472659,8472663,8472667,8472671,8472674			
4-Amino-2,6-Dinitrotoluene	41	U	41	120
2-Amino-4,6-Dinitrotoluene	41	U	41	120
1,3-Dinitrobenzene	40	U	40	120
2,4-Dinitrotoluene	40	U	40	120
2,6-Dinitrotoluene	110	U	110	120
HM	210	U	210	300
Nitrobenzene	100	U	100	300
Nitroglycerin	800	U	800	2,400
2-Nitrotoluene	75	U	75	120
3-Nitrotoluene	110	U	110	120
4-Nitrotoluene	110	U	110	120
PETN	800	U	800	2,400
RD	40	U	40	120
Tetryl	100	U	100	300
1,3,5-Trinitrobenzene	40	U	40	120
2,4,6-Trinitrotoluene	44	U	44	120
Batch number: 162010025A	Sample number s : 8472649-8472651,8472655,8472659,8472663,8472667,8472671,8472674			
Perchlorate in Soil LC/MS/MS	2.1	U	2.1	5.0
	mg/kg		mg/kg	mg/kg
Batch number: 162010638001	Sample number s : 8472661,8472665,8472669			
Mercury	0.0100	U	0.0100	0.100
Batch number: 162030637003	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673			
Aluminum	8.68	U	8.68	40.0
Antimony	0.700	U	0.700	4.00
Arsenic	0.970	U	0.970	4.00
Barium	0.0490	J	0.0330	1.00

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

Method Blank continued

Analysis Name	Result	MDL**	LOQ
	mg/kg	mg/kg	mg/kg
Beryllium	0.0670 U	0.0670	1.00
Cadmium	0.0490 U	0.0490	1.00
Calcium	15.1 J	5.66	40.0
Chromium	0.140 U	0.140	3.00
Cobalt	0.120 U	0.120	1.00
Copper	0.252 J	0.230	2.00
Iron	4.12 U	4.12	40.0
Lead	0.550 U	0.550	3.00
Magnesium	2.37 J	1.90	20.0
Manganese	0.0830 U	0.0830	1.00
Nickel	0.300 U	0.300	2.00
Potassium	23.9 U	23.9	100
Selenium	0.900 U	0.900	4.00
Silver	0.150 U	0.150	1.00
Sodium	23.9 U	23.9	200
Vanadium	0.140 U	0.140	1.00
Zinc	0.680 U	0.680	4.00
Batch number: 162030637003A	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673		
Thallium	0.0290 U	0.0290	0.200
Batch number: 162110638002	Sample number s : 8472644,8472653,8472657		
Mercury	0.0100 U	0.0100	0.100
Batch number: 16202102201A	Sample number s : 8472644		
Total Cyanide solid	0.18 U	0.18	0.50
Batch number: 16202102201B	Sample number s : 8472653,8472657		
Total Cyanide solid	0.18 U	0.18	0.50
Batch number: 16203102201A	Sample number s : 8472661,8472665,8472669		
Total Cyanide solid	0.18 U	0.18	0.50
Batch number: 16201042501A	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669		
Hexavalent Chromium SOLIDS	0.50 U	0.50	1.5

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: A161971AA	Sample number s : 8472652,8472656,8472660,8472664,8472672								
4-Methyl-2-pentanone	100	115.35	100	109.43	115	109	50-120	5	30
Batch number: A161972AA	Sample number s : 8472668								
4-Methyl-2-pentanone	100	114.96	100	115.02	115	115	50-120	0	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: L161991AA	Sample number s : 8472643								
4-Methyl-2-pentanone	100	90.99			91		47-133		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

LCS/LCSD continued

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 16205SLC026	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669								
2-Chlorobenzaldehyde	1666.67	1600.59	1666.67	1567.97	96	94	58-114	2	30
2-Chlorobenzalmalononitrile	1666.67	1082.25	1666.67	1304.89	65	78	70-130	19	30
Quinoline	1666.67	1701.84			102		80-119		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010024A	Sample number s : 8472649-8472651,8472655,8472659,8472663,8472667,8472671,8472674								
4-Amino-2,6-Dinitrotoluene	1974	1767.76			90		42-138		
2-Amino-4,6-Dinitrotoluene	1974	3373.85			171		43-141		
1,3-Dinitrobenzene	1974	4195.63			213		54-140		
2,4-Dinitrotoluene	1974	1298.6			66		52-137		
2,6-Dinitrotoluene	1974	6564.47			333		51-138		
HM	1974	2139.27			108		29-148		
Nitrobenzene	1974	1613.81			82		64-138		
Nitroglycerin	9872	6762.94			69		45-137		
2-Nitrotoluene	1974	1473.7			75		57-135		
3-Nitrotoluene	1974	1469.24			74		57-135		
4-Nitrotoluene	1974	4023.71			204		53-133		
PETN	9872	7716.16			78		36-143		
RD	1974	4719.67			239		45-145		
Tetryl	1974	406.24			21		38-152		
1,3,5-Trinitrobenzene	1974	1354.98			69		48-141		
2,4,6-Trinitrotoluene	1974	1276.97			65		47-140		
	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010025A	Sample number s : 8472649-8472651,8472655,8472659,8472663,8472667,8472671,8472674								
Perchlorate in Soil LC/MS/MS	100	80.37			80		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010638001	Sample number s : 8472661,8472665,8472669								
Mercury	0.100	0.104			104		80-120		
Batch number: 162030637003	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673								
Aluminum	200	209.43			105		80-120		
Antimony	50	46.5			93		80-120		
Arsenic	15	15.94			106		80-120		
Barium	200	213.4			107		80-120		
Beryllium	5.00	5.32			106		80-120		
Cadmium	5.00	5.43			109		80-120		
Calcium	400	434.74			109		80-120		
Chromium	20	20.9			105		80-120		
Cobalt	50	53.37			107		80-120		
Copper	25	28.61			114		80-120		
Iron	100	103.95			104		80-120		
Lead	15	16.31			109		80-120		
Magnesium	200	215.92			108		80-120		
Manganese	50	53.61			107		80-120		
Nickel	50	54.18			108		80-120		
Potassium	1000	1066.8			107		80-120		
Selenium	15	16.07			107		80-120		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

LCS/LCSD continued

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	mg/kg	mg/kg	mg/kg	mg/kg					
Silver	5.00	5.04			101		80-120		
Sodium	1000	1070.17			107		80-120		
Vanadium	50	54.42			109		80-120		
Zinc	50	54.15			108		80-120		
Batch number: 162030637003A	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673								
Thallium	0.200	0.184			92		80-120		
Batch number: 162110638002	Sample number s : 8472644,8472653,8472657								
Mercury	0.100	0.0994			99		80-120		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16202102201A	Sample number s : 8472644								
Total Cyanide solid	10	9.79			98		90-110		
Batch number: 16202102201B	Sample number s : 8472653,8472657								
Total Cyanide solid	10	9.79			98		90-110		
Batch number: 16203102201A	Sample number s : 8472661,8472665,8472669								
Total Cyanide solid	10	10.44			104		90-110		
	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16201042501A	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669								
Hexavalent Chromium SOLIDS	5.00	4.72			94		80-120		
	m	m	m	m					
Batch number: 16200182102A	Sample number s : 8472644,8472653,8472661,8472665,8472669								
Oxidation Reduction Potential	427	426			100		98-102		
Batch number: 16200182102B	Sample number s : 8472657								
Oxidation Reduction Potential	427	426			100		98-102		
	Std. Units	Std. Units	Std. Units	Std. Units					
Batch number: 16200039402A	Sample number s : 8472644,8472653,8472657,8472661,8472665								
pH	7.00	7.05			101		95-105		
Batch number: 16200039402B	Sample number s : 8472669								
pH	7.00	7.05			101		95-105		
	%	%	%	%					
Batch number: 16232820003A	Sample number s : 8472644-8472672								
Moisture	89.5	89.45			100		99-101		
Moisture	89.5	89.45			100		99-101		
Moisture Duplicate	89.5	89.45			100		99-101		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

MS/MSD

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc	MS Spike Added	MS Conc	MSD Spike Added	MSD Conc	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l	ug/l					
Batch number: L161991AA	Sample number s : 8472643 UNSP : P475451									
4-Methyl-2-pentanone	3 U	100	81.91	100	88.09	82	88	47-133	7	30
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 16205SLC026	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669 UNSP : 8472665									
Quinoline	160 U	1651.25	1015.7	1644.2	820 U	62	0	80-119	200	30
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010024A	Sample number s : 8472649-8472651,8472655,8472659,8472663,8472667,8472671,8472674 UNSP : 8472649									
4-Amino-2,6-Dinitrotoluene	40 U	1950	1451.33	1980	1572.81	74	79	42-138	8	50
2-Amino-4,6-Dinitrotoluene	40 U	1950	2538.29	1980	2763.1	130	140	43-141	8	50
1,3-Dinitrobenzene	39 U	1940	3079.2	1980	3143.32	159	159	54-140	2	50
2,4-Dinitrotoluene	39 U	1950	1008.01	1980	1013.44	52	51	52-137	1	50
2,6-Dinitrotoluene	110 U	1940	5005.88	1980	5112.77	258	258	51-138	2	50
HM	210 U	1940	1894.34	1980	2033.25	98	103	29-148	7	50
Nitrobenzene	98 U	1950	1352.52	1980	1323.59	69	67	64-138	2	50
Nitroglycerin	790 U	21500	11432.64	21800	11860.91	53	54	45-137	4	50
2-Nitrotoluene	74 U	1950	1192.92	1980	1203.56	61	61	57-135	1	50
3-Nitrotoluene	110 U	1950	1364.1	1980	1399.47	70	71	57-135	3	50
4-Nitrotoluene	110 U	1940	3476.88	1980	3540.08	179	179	53-133	2	50
PETN	790 U	21500	16122.63	21800	16683.32	75	77	36-143	3	50
RD	39 U	1950	4054.14	1980	4192.98	208	212	45-145	3	50
Tetryl	98 U	1940	1157.47	1980	1002.31	60	51	38-152	14	50
1,3,5-Trinitrobenzene	39 U	1940	1342.28	1970	1360.35	69	69	48-141	1	50
2,4,6-Trinitrotoluene	43 U	1940	981.86	1980	1008.69	51	51	47-140	3	50
	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg					
Batch number: 162010025A	Sample number s : 8472649-8472651,8472655,8472659,8472663,8472667,8472671,8472674 UNSP : 8472649									
Perchlorate in Soil LC/MS/MS	2.1 U	100	93.97	100	91.92	94	92	70-130	2	15
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 162010638001	Sample number s : 8472661,8472665,8472669 UNSP : 8472661									
Mercury	0.0423	0.158	0.211	0.162	0.212	107	105	80-120	1	20
Batch number: 162030637003	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673 UNSP : 8472645									
Aluminum	1728.81	160	2099.54	192.31	2237.05	232 2	264 2	75-125	6	20
Antimony	0.603 U	40	35.62	48.08	41.97	89	87	75-125	16	20
Arsenic	0.836 U	12	12.18	14.42	14.09	101	98	75-125	15	20
Barium	13.34	160	176.85	192.31	209.48	102	102	75-125	17	20
Beryllium	0.0578 U	4.00	4.11	4.81	4.77	103	99	75-125	15	20
Cadmium	0.713	4.00	4.28	4.81	5.01	89	89	75-125	16	20
Calcium	511.78	320	867.86	384.62	1142.64	111	164	75-125	27	20
Chromium	2.62	16	18.04	19.23	22.02	96	101	75-125	20	20
Cobalt	0.103 U	40	40.37	48.08	47.15	101	98	75-125	15	20

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

MS/MSD continued

Unspiked UNSP the sample used in con unction with the matrix spike

Analysis Name	Unspiked Conc mg/kg	MS Spike Added mg/kg	MS Conc mg/kg	MSD Spike Added mg/kg	MSD Conc mg/kg	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Copper	10.46	20	27.34	24.04	178.53	84	699	75-125	147	20
Iron	480.64	80	528.25	96.15	562.72	60 2	85 2	75-125	6	20
Lead	3.96	12	16.16	14.42	21.14	102	119	75-125	27	20
Magnesium	120.21	160	290.88	192.31	331.67	107	110	75-125	13	20
Manganese	9.58	40	48.17	48.08	56.09	96	97	75-125	15	20
Nickel	0.672	40	41.59	48.08	48.62	102	100	75-125	16	20
Potassium	73.01	800	893.05	961.54	1051.73	103	102	75-125	16	20
Selenium	0.776 U	12	11.57	14.42	13.96	96	97	75-125	19	20
Silver	0.129 U	4.00	4.01	4.81	4.75	100	99	75-125	17	20
Sodium	20.69	800	835.37	961.54	973.57	102	99	75-125	15	20
Vanadium	1.94	40	43.31	48.08	50.16	103	100	75-125	15	20
Zinc	155.58	40	61.34	48.08	73.7	-236	-170	75-125	18	20
Batch number: 162030637003A	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673 UNSP : 8472645									
Thallium	0.0250 U	0.320	0.324	0.385	0.450	101	117	75-125	33	20
Batch number: 162110638002	Sample number s : 8472644,8472653,8472657 UNSP : 8472644									
Mercury	0.0336	0.163	0.198	0.155	0.187	101	99	80-120	6	20
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16202102201A	Sample number s : 8472644 UNSP : P471034									
Total Cyanide solid	0.18 U	4.90	4.86			99		41-145		
Batch number: 16202102201B	Sample number s : 8472653,8472657 UNSP : P477126									
Total Cyanide solid	0.18 U	4.83	5.03			104		41-145		
Batch number: 16203102201A	Sample number s : 8472661,8472665,8472669 UNSP : P481876									
Total Cyanide solid	0.18 U	4.93	4.81			98		41-145		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
Batch number: 16201042501A	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669 UNSP : P480313									
Hexavalent Chromium SOLIDS	0.538	40	37.71			93		75-125		

Laboratory Duplicate

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc mg/kg	DUP Conc mg/kg	DUP RPD	DUP RPD Max
Batch number: 162010638001	Sample number s : 8472661,8472665,8472669 B G: 8472661			
Mercury	0.0423	0.0435	3 1	20
Batch number: 162030637003	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673 B G: 8472645			
Aluminum	1728.81	1497.54	14	20

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

Laboratory Duplicate continued

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc	DUP Conc	DUP RPD	DUP RPD Max
	mg/kg	mg/kg		
Antimony	0.603 U	0.614 U	0 1	20
Arsenic	0.836 U	0.851 U	0 1	20
Barium	13.34	13.02	2	20
Beryllium	0.0578 U	0.0588 U	0 1	20
Cadmium	0.713	0.224	104 1	20
Calcium	511.78	822.45	47	20
Chromium	2.62	2.39	9 1	20
Cobalt	0.103 U	0.105 U	0 1	20
Copper	10.46	6.52	46 1	20
Iron	480.64	471.27	2	20
Lead	3.96	3.90	1 1	20
Magnesium	120.21	113.91	5	20
Manganese	9.58	9.89	3	20
Nickel	0.672	0.630	7 1	20
Potassium	73.01	69.24	5 1	20
Selenium	0.776 U	1.55	200 1	20
Silver	0.129 U	0.132 U	0 1	20
Sodium	20.69	22.18	7 1	20
Vanadium	1.94	1.80	8 1	20
Zinc	155.58	24.82	145	20
Batch number: 162030637003A	Sample number s : 8472645-8472648,8472654,8472658,8472662,8472666,8472670,8472673 B G: 8472645			
Thallium	0.0250 U	0.0254 U	0 1	20
Batch number: 162110638002	Sample number s : 8472644,8472653,8472657 B G: 8472644			
Mercury	0.0336	0.0259	26 1	20
	mg/kg	mg/kg		
Batch number: 16202102201A	Sample number s : 8472644 B G: P471034			
Total Cyanide solid	0.18 U	0.18 U	0 1	20
Batch number: 16202102201B	Sample number s : 8472653,8472657 B G: P477126			
Total Cyanide solid	0.18 U	0.18 U	0 1	20
Batch number: 16203102201A	Sample number s : 8472661,8472665,8472669 B G: P481876			
Total Cyanide solid	0.18 U	0.18 U	0 1	20
	mg/kg	mg/kg		
Batch number: 16201042501A	Sample number s : 8472644,8472653,8472657,8472661,8472665,8472669 B G: P480313			
Hexavalent Chromium SOLIDS	0.538	0.50 U	200 1	20
	m	m		
Batch number: 16200182102A	Sample number s : 8472644,8472653,8472661,8472665,8472669 B G: 8472669			
Oxidation Reduction Potential	594.5	602.5	1	5
Batch number: 16200182102B	Sample number s : 8472657 B G: 8472657			
Oxidation Reduction Potential	609.5	626	3	5
	Std. Units	Std. Units		

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Quality Control Summary

Client Name: CH2M Hill, Inc. Group Number: 1682221
Reported: 08/31/2016 15:20

Laboratory Duplicate continued

Background B G the sample used in con unction with the duplicate

Analysis Name	B G Conc Std. Units	DUP Conc Std. Units	DUP RPD	DUP RPD Max
Batch number: 16200039402A	Sample number s : 8472644,8472653,8472657,8472661,8472665 B G: 8472657			
pH	4.42	4.47	1	3
Batch number: 16200039402B	Sample number s : 8472669 B G: 8472669			
pH	4.31	4.30	0	3
	%	%		
Batch number: 16232820003A	Sample number s : 8472644-8472672 B G: 8472644, P472644			
Moisture	13.33	11.5	15	5
Moisture	13.3	11.5	15	5
Moisture Duplicate	13.33	11.5	15	5

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: A161971AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8472652	106	102	119	73
8472656	104	99	118	83
8472660	105	103	118	75
8472664	108	104	131	67
8472672	108	105	135	62
Blank	103	101	100	93
LCS	102	102	100	100
LCSD	102	102	101	99
Limits:	50-141	54-135	52-141	50-131

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: A161972AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8472668	111	107	132	70
Blank	104	105	99	95
LCS	103	102	101	102
LCSD	101	102	100	101
Limits:	50-141	54-135	52-141	50-131

Analysis Name: 4-Methyl-2-pentanone 8260C
Batch number: L161991AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8472643	103	104	98	98
Blank	103	103	97	99

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Quality Control Summary

Client Name: CH2M Hill, Inc.
Reported: 08/31/2016 15:20

Group Number: 1682221

Surrogate Quality Control continued

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
LCS	101	101	99	100
MS	103	103	99	99
MSD	102	101	99	99
Limits:	80-116	77-113	80-113	78-113

Analysis Name: SVOA 8270D microwave
Batch number: 16205SLC026

	Phenol-d6	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
8472644	81	98	116	103	87	101
8472653	85	98	105	94	102	98
8472657	88	96	102	88	91	94
8472661	81	85	90	78	78	82
8472665	68	73	82	67	76	74
8472669	61	69	72	69	74	71
Blank	86	93	117	89	98	103
LCS	96	101	124	91	97	100
LCSD	90	98	125	92	100	105
MS	92	94	106	89	94	93
MSD	73	75	81	72	74	72
Limits:	58-122	57-126	35-136	54-123	63-117	59-129

Analysis Name: Nitroaromatics/Amines 8330B s
Batch number: 162010024A

	3,4-Dinitrotoluene
8472649	73
8472650	47
8472651	53
8472655	72
8472659	69
8472663	79
8472667	72
8472671	79
8472674	75
Blank	91
LCS	50
MS	47
MSD	53
Limits:	62-133

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.