Evaluate Continuing Calibration Report

Data Path : C:\MSDCHEM\1\DATA\110116M\
Data File : M8842.D
Acq On : 1 Nov 2016 7:18 pm
Operator : TP/MTH
Sample : CCVS110116M-10
Misc : E0241,62.5,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 02 09:01:44 2016
Quant Method : C:\MSDCHEM\1\METHODS\Q0101116M.M
Quant Title : TO-15 Determination of VOCs in Air
QLast Update : Wed Oct 12 12:06:20 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.30min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1		Bromochloromethane	1.000	1.000	0.0	71	0.00
2	mc	Propylene	0.685	0.752	-9.8	78	0.02
3	Mc	Freon 12(Dichlorodifluorome	1.776	2.233	-25.7	82	0.03
4	Mc	Freon 114(1,2-Dichlorotetra	1.936	2.364	-22.1	86	0.03
5	mc	Chloromethane	0.701	0.807	-15.1	81	0.02
6	T	n-Butane	1.273	1.446	-13.6	79	0.03
7	Mc	Vinyl chloride	0.796	0.945	-18.7	83	0.03
8	mc	1,3-Butadiene	0.682	0.730	-7.0	76	0.02
9	Mc	Bromomethane	0.668	0.813	-21.7	85	0.02
10	Mc	Chloroethane	0.390	0.465	-19.2	83	0.02
11	mc	Ethanol	0.193	0.203	-5.2	82	0.00
12	MC	Bromoethene(Vinyl bromide)	0.664	0.712	-7.2	74	0.02
13	Mc	Freon 11(Trichlorofluoromet	1.872	1.987	-6.1	74	0.02
14	mc	Isopropyl alcohol(2-Propano	1.220	1.167	4.3	67	0.00
15	mc	Freon 113(1,1,2-Trichlorotr	1.373	1.456	-6.0	73	0.01
16	mc	Acetone	1.252	1.180	5.8	67	0.01
17	mc	1,1-Dichloroethene	1.163	1.228	-5.6	73	0.02
18	MC	Acetonitrile	0.760	0.751	1.2	71	0.01
19	MC	Tertiary butyl alcohol(TBA)	1.793	1.893	-5.6	72	0.01
20	10	Bromoethane(Ethyl bromide)	0.603	0.637	-5.6	73	0.00
21	MC	3-Chloropropene(Allyl chlor	0.988	0.940	4.9	67	0.00
22	mc	Carbon disulfide	2.104	2.310	-9.8	76	0.01
23	mc	Methylene chloride	0.857	0.895	-4.4	73	0.01
24	MC	Acrylonitrile	0.570	0.577	-1.2	68	0.01
25	mc	Methyl-tert-butyl ether(MTB	2.193	2.314	-5.5	72	0.01
26	mc	trans-1,2-Dichloroethene	1.147	1.200	-4.6	72	0.01
27	mc	n-Hexane	1.277	1.334	-4.5	72	0.01
28	mc	1,1-Dichloroethane	1.397	1.462	-4.7	72	0.00
29	mc	Vinyl acetate	1.292	1.431	-10.8	76	0.00
30	mc	2-Butanone(MEK)	1.764	1.704	3.4	67	0.00
31	mc	cis-1,2-Dichloroethene	0.778	0.822	-5.7	74	0.00
32	mc	Ethyl acetate	2.084	2.063	1.0	68	0.00
33	mc	Chloroform	1.520	1.608	-5.8	73	0.00
34	mc	Tetrahydrofuran	1.000	0.977	2.3	67	0.00
35	mc	1,1,1-Trichloroethane	1.557	1.635	-5.0	73	0.00
36	mc	Cyclohexane	1.087	1.170	-7.6	75	0.00
37	MC	2,2,4-Trimethylpentane(Isoo	4.185	4.406	-5.3	72	0.00
38	mc	Carbon tetrachloride	1.494	1.615	-8.1	75	0.00
39	mc	n-Heptane	1.610	1.583	1.7	69	0.00
40	mc	1,2-Dichloroethane	1.085	1.093	-0.7	70	0.00
41	mc	Benzene	2.380	2.537	-6.6	74	0.00
42		1,4-Difluorobenzene	1.000	1.000	0.0	69	0.00
43	mc	Trichloroethene	0.397	0.403	-1.5	71	0.00
44	mc	1,2-Dichloropropane	0.344	0.358	-4.1	72	0.00
45	T	Methyl Methacrylate	0.347	0.358	-3.2	69	0.00
46	mc	Bromodichloromethane	0.645	0.699	-8.4	74	0.00
47	mc	1,4-Dioxane	0.128	0.139	-8.6	74	0.00
48	mc	4-Methyl-2-pentanone(MIBK)	0.773	0.783	-1.3	67	0.00

49	mc	cis-1,3-Dichloropropene	0.493	0.526	-6.7	72	0.00
50	mc	Toluene	1.082	1.147	-6.0	72	0.00
51	mc	trans-1,3-Dichloropropene	0.494	0.526	-6.5	71	0.00
52	mc	1,1,2-Trichloroethane	0.363	0.395	-8.8	74	0.00
53	mc	2-Hexanone(MBK)	0.754	0.787	-4.4	69	0.00
54	mc	Tetrachloroethene	0.444	0.453	-2.0	71	0.00
55	cm	Dibromochloromethane	0.596	0.664	-11.4	76	0.00
56	mc	1,2-Dibromoethane	0.556	0.580	-4.3	72	0.00
57		Chlorobenzene-d5	1.000	1.000	0.0	68	0.00
58	mc	Chlorobenzene	0.927	0.973	-5.0	71	0.00
59	mc	Ethylbenzene	1.599	1.711	-7.0	72	0.00
60	mc	Xylene (p,m)	1.282	1.433	-11.8	74	0.00
61	mc	Xylene (Ortho)	1.302	1.387	-6.5	72	0.00
62	mc	Styrene	0.952	1.025	-7.7	72	0.00
63	t	Isopropylbenzene (cumene)	1.792	1.999	-11.6	74	0.00
64	mc	Bromoform	0.629	0.705	-12.1	75	0.00
65	mc	1,1,2,2-Tetrachloroethane	0.905	1.077	-19.0	78	0.00
66	S	4-Bromofluorobenzene	0.776	0.838	-8.0	74	0.00
67	cm	4-Ethyltoluene	1.846	2.093	-13.4	75	0.00
68	mc	1,3,5-Trimethylbenzene	1.519	1.712	-12.7	75	0.00
69	MC	2-Chlorotoluene	1.380	1.563	-13.3	76	0.00
70	mc	1,2,4-Trimethylbenzene	1.575	1.817	-15.4	76	0.00
71	mc	1,3-Dichlorobenzene	1.036	1.136	-9.7	75	0.00
72	mc	1,4-Dichlorobenzene	1.056	1.169	-10.7	75	0.00
73	mc	Benzyl chloride	1.118	1.333	-19.2	76	0.00
74	mc	1,2-Dichlorobenzene	0.978	1.090	-11.5	76	0.00
75	mc	1,2,4-Trichlorobenzene	0.910	0.941	-3.4	73	0.00
76	mc	Hexachloro-1,3-butadiene	0.673	0.787	-16.9	80	0.00
77	T	Naphthalene	2.177	2.466	-13.3	75	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Q0101116M.M Wed Nov 02 09:03:46 2016

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EMSL Order: Method Blank
EMSL Sample ID: MB110116M
Received Date: NA
Report Date: 11/18/2016

Project ID: Method Blank
Lab Sample ID: MB110116M

Lab File ID: M8843.D
Sample Vol(ml): 250
Dilution Factor: 1

Sampling Date: NA
Canister ID: E15639

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Method Blank- Target Compound Results Summary

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Result ppbv	Q	Result ug/m3	Comments
Propylene	115-07-1	42.08	1.0	U	1.7	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	0.50	U	2.5	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	0.50	U	3.5	
Chloromethane	74-87-3	50.49	0.50	U	1.0	
n-Butane	106-97-8	58.12	0.50	U	1.2	
Vinyl chloride	75-01-4	62.50	0.50	U	1.3	
1,3-Butadiene	106-99-0	54.09	0.50	U	1.1	
Bromomethane	74-83-9	94.94	0.50	U	1.9	
Chloroethane	75-00-3	64.52	0.50	U	1.3	
Ethanol	64-17-5	46.07	0.50	U	0.94	
Bromoethene(Vinyl bromide)	593-60-2	106.9	0.50	U	2.2	
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	0.50	U	2.8	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	0.50	U	1.2	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	0.50	U	3.8	
Acetone	67-64-1	58.08	0.50	U	1.2	
1,1-Dichloroethene	75-35-4	96.94	0.50	U	2.0	
Acetonitrile	75-05-8	41.00	0.50	U	0.84	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	0.50	U	1.5	
Bromoethane(Ethyl bromide)	74-96-4	108.0	0.50	U	2.2	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	0.50	U	1.6	
Carbon disulfide	75-15-0	76.14	0.50	U	1.6	
Methylene chloride	75-09-2	84.94	0.50	U	1.7	
Acrylonitrile	107-13-1	53.00	0.50	U	1.1	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	0.50	U	1.8	
trans-1,2-Dichloroethene	156-60-5	96.94	0.50	U	2.0	
n-Hexane	110-54-3	86.17	0.50	U	1.8	
1,1-Dichloroethane	75-34-3	98.96	0.50	U	2.0	
Vinyl acetate	108-05-4	86.00	0.50	U	1.8	
2-Butanone(MEK)	78-93-3	72.10	0.50	U	1.5	
cis-1,2-Dichloroethene	156-59-2	96.94	0.50	U	2.0	
Ethyl acetate	141-78-6	88.1	0.50	U	1.8	

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EMSL Order: Method Blank
EMSL Sample ID: MB110116M
Received Date: NA
Report Date: 11/18/2016

Project ID: Method Blank
Lab Sample ID: MB110116M

Lab File ID: M8843.D
Sample Vol(ml): 250
Dilution Factor: 1

Sampling Date: NA
Canister ID: E15639

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Method Blank- Target Compound Results Summary

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Result ppbv	Q	Result ug/m3	Comments
Chloroform	67-66-3	119.4	0.50	U	2.4	
Tetrahydrofuran	109-99-9	72.11	0.50	U	1.5	
1,1,1-Trichloroethane	71-55-6	133.4	0.50	U	2.7	
Cyclohexane	110-82-7	84.16	0.50	U	1.7	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	0.50	U	2.3	
Carbon tetrachloride	56-23-5	153.8	0.50	U	3.1	
n-Heptane	142-82-5	100.2	0.50	U	2.0	
1,2-Dichloroethane	107-06-2	98.96	0.50	U	2.0	
Benzene	71-43-2	78.11	0.50	U	1.6	
Trichloroethene	79-01-6	131.4	0.50	U	2.7	
1,2-Dichloropropane	78-87-5	113.0	0.50	U	2.3	
Methyl Methacrylate	80-62-6	100.12	0.50	U	2.0	
Bromodichloromethane	75-27-4	163.8	0.50	U	3.3	
1,4-Dioxane	123-91-1	88.12	0.50	U	1.8	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	0.50	U	2.0	
cis-1,3-Dichloropropene	10061-01-5	111.0	0.50	U	2.3	
Toluene	108-88-3	92.14	0.50	U	1.9	
trans-1,3-Dichloropropene	10061-02-6	111.0	0.50	U	2.3	
1,1,2-Trichloroethane	79-00-5	133.4	0.50	U	2.7	
2-Hexanone(MBK)	591-78-6	100.1	0.50	U	2.0	
Tetrachloroethene	127-18-4	165.8	0.50	U	3.4	
Dibromochloromethane	124-48-1	208.3	0.50	U	4.3	
1,2-Dibromoethane	106-93-4	187.8	0.50	U	3.8	
Chlorobenzene	108-90-7	112.6	0.50	U	2.3	
Ethylbenzene	100-41-4	106.2	0.50	U	2.2	
Xylene (p,m)	1330-20-7	106.2	1.0	U	4.3	
Xylene (Ortho)	95-47-6	106.2	0.50	U	2.2	
Styrene	100-42-5	104.1	0.50	U	2.1	
Isopropylbenzene (cumene)	98-82-8	120.19	0.50	U	2.5	
Bromoform	75-25-2	252.8	0.50	U	5.2	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	0.50	U	3.4	

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EMSL Order: Method Blank
EMSL Sample ID: MB110116M
Received Date: NA
Report Date: 11/18/2016

Project ID: Method Blank
Lab Sample ID: MB110116M

Lab File ID: M8843.D
Sample Vol(ml): 250
Dilution Factor: 1

Sampling Date: NA
Canister ID: E15639

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Method Blank- Target Compound Results Summary

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Result ppbv	Q	Result ug/m3	Comments
4-Ethyltoluene	622-96-8	120.2	0.50	U	2.5	
1,3,5-Trimethylbenzene	108-67-8	120.2	0.50	U	2.5	
2-Chlorotoluene	95-49-8	126.6	0.50	U	2.6	
1,2,4-Trimethylbenzene	95-63-6	120.2	0.50	U	2.5	
1,3-Dichlorobenzene	541-73-1	147.0	0.50	U	3.0	
1,4-Dichlorobenzene	106-46-7	147.0	0.50	U	3.0	
Benzyl chloride	100-44-7	126.0	0.50	U	2.6	
1,2-Dichlorobenzene	95-50-1	147.0	0.50	U	3.0	
1,2,4-Trichlorobenzene	120-82-1	181.5	0.50	U	3.7	
Hexachloro-1,3-butadiene	87-68-3	260.8	0.50	U	5.3	
Naphthalene	91-20-3	128.17	0.50	U	2.6	
		Total Target Compounds:	0.0		0.0	

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	10	10	100%

Qualifier Definitions

U- Compound was analyzed for but not detected at a listed and appropriately adjusted reporting level.

J- Estimated value reported below adjusted reporting limit for target compounds.

B- Compound found in associated method blank as well as in the sample.

D- Compound reported from additional diluted analysis.

E- Estimated value exceeding upper calibration range of instrument. Ethanol and isopropyl alcohol are not specifically targeted to dilute within calibration range.

NJDEP Certification #: 03036

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EMSL Order: Method Blank
EMSL Sample ID: MB110116M
Received Date: NA
Report Date: 11/18/2016

Project ID: Method Blank
Lab Sample ID: MB110116M

Lab File ID: M8843.D
Sample Vol(ml): 250
Dilution Factor: 1

Sampling Date: NA
Canister ID: E15639

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Method Blank- Tentatively Identified Compound Results Summary

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Tentatively Identified Compounds	CAS#	MW(1)	Result ppbv	Q	Result ug/m3	Retention Time

No Tentatively Identified Compounds (TICs) Reported

Qualifier Definitions

(1)- If compound is unknown, MW is assigned as Toluene (92) for ug/m3 conversion purposes.
J- Estimated value for TICs based on a 1:1 response to internal standards assumed.
N- Indicates presumptive evidence of a compound based on library search match.
B- Compound found in associated method blank as well as in the sample.

NJDEP Certification #: 03036

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EMSL Order: RLLCS
EMSL Sample ID: RLLCS110116M

Report Date: 11/02/2016

Project ID: Reporting Limit Laboratory Control Sample
Sampling Date: NA
Canister ID: E0251

Lab Sample ID: RLLCS110116M
Lab File ID: M8844.D
Sample Vol(ml): 62.5
Dilution Factor: 1

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Reporting Limit Laboratory Control Sample

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Spike ppbv	Result ppbv	% Rec	#	Recovery Limits (%)
Propylene	115-07-1	42.08	0.5	0.53	106		60-140
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	0.5	0.62	124		60-140
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	0.5	0.57	114		60-140
Chloromethane	74-87-3	50.49	0.5	0.66	132		60-140
n-Butane	106-97-8	58.12	0.5	0.57	114		60-140
Vinyl chloride	75-01-4	62.50	0.5	0.59	118		60-140
1,3-Butadiene	106-99-0	54.09	0.5	0.59	118		60-140
Bromomethane	74-83-9	94.94	0.5	0.60	120		60-140
Chloroethane	75-00-3	64.52	0.5	0.59	118		60-140
Ethanol	64-17-5	46.07	0.5	0.65	130		60-140
Bromoethene(Vinyl bromide)	593-60-2	106.9	0.5	0.51	102		60-140
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	0.5	0.53	106		60-140
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	0.5	0.52	104		60-140
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	0.5	0.52	104		60-140
Acetone	67-64-1	58.08	0.5	0.49	98		60-140
1,1-Dichloroethene	75-35-4	96.94	0.5	0.50	100		60-140
Acetonitrile	75-05-8	41.00	0.5	0.53	106		60-140
Tertiary butyl alcohol(TBA)	75-65-0	74.12	0.5	0.44	88		60-140
Bromoethane(Ethyl bromide)	74-96-4	108.0	0.5	0.49	98		60-140
3-Chloropropene(Allyl chloride)	107-05-1	76.53	0.5	0.46	92		60-140
Carbon disulfide	75-15-0	76.14	0.5	0.53	106		60-140
Methylene chloride	75-09-2	84.94	0.5	0.55	110		60-140
Acrylonitrile	107-13-1	53.00	0.5	0.46	92		60-140
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	0.5	0.47	94		60-140
trans-1,2-Dichloroethene	156-60-5	96.94	0.5	0.50	100		60-140
n-Hexane	110-54-3	86.17	0.5	0.46	92		60-140
1,1-Dichloroethane	75-34-3	98.96	0.5	0.50	100		60-140
Vinyl acetate	108-05-4	86.00	0.5	0.41	82		60-140
2-Butanone(MEK)	78-93-3	72.10	0.5	0.44	88		60-140
cis-1,2-Dichloroethene	156-59-2	96.94	0.5	0.47	94		60-140
Ethyl acetate	141-78-6	88.1	0.5	0.46	92		60-140

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EMSL Order: RLLCS
EMSL Sample ID: RLLCS110116M

Report Date: 11/02/2016

Project ID: Reporting Limit Laboratory Control Sample
Sampling Date: NA
Canister ID: E0251

Lab Sample ID: RLLCS110116M
Lab File ID: M8844.D
Sample Vol(ml): 62.5
Dilution Factor: 1

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Reporting Limit Laboratory Control Sample

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Spike ppbv	Result ppbv	% Rec	#	Recovery Limits (%)
Chloroform	67-66-3	119.4	0.5	0.49	98		60-140
Tetrahydrofuran	109-99-9	72.11	0.5	0.45	90		60-140
1,1,1-Trichloroethane	71-55-6	133.4	0.5	0.48	96		60-140
Cyclohexane	110-82-7	84.16	0.5	0.45	90		60-140
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	0.5	0.46	92		60-140
Carbon tetrachloride	56-23-5	153.8	0.5	0.49	98		60-140
n-Heptane	142-82-5	100.2	0.5	0.41	82		60-140
1,2-Dichloroethane	107-06-2	98.96	0.5	0.48	96		60-140
Benzene	71-43-2	78.11	0.5	0.50	100		60-140
Trichloroethene	79-01-6	131.4	0.5	0.43	86		60-140
1,2-Dichloropropane	78-87-5	113.0	0.5	0.49	98		60-140
Methyl Methacrylate	80-62-6	100.12	0.5	0.41	82		60-140
Bromodichloromethane	75-27-4	163.8	0.5	0.48	96		60-140
1,4-Dioxane	123-91-1	88.12	0.5	0.49	98		60-140
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	0.5	0.40	80		60-140
cis-1,3-Dichloropropene	10061-01-5	111.0	0.5	0.44	88		60-140
Toluene	108-88-3	92.14	0.5	0.42	84		60-140
trans-1,3-Dichloropropene	10061-02-6	111.0	0.5	0.43	86		60-140
1,1,2-Trichloroethane	79-00-5	133.4	0.5	0.49	98		60-140
2-Hexanone(MBK)	591-78-6	100.1	0.5	0.40	80		60-140
Tetrachloroethene	127-18-4	165.8	0.5	0.40	80		60-140
Dibromochloromethane	124-48-1	208.3	0.5	0.44	88		60-140
1,2-Dibromoethane	106-93-4	187.8	0.5	0.43	86		60-140
Chlorobenzene	108-90-7	112.6	0.5	0.48	96		60-140
Ethylbenzene	100-41-4	106.2	0.5	0.45	90		60-140
Xylene (p,m)	1330-20-7	106.2	1.0	0.89	89		60-140
Xylene (Ortho)	95-47-6	106.2	0.5	0.42	84		60-140
Styrene	100-42-5	104.1	0.5	0.40	80		60-140
Isopropylbenzene (cumene)	98-82-8	120.19	0.5	0.42	84		60-140
Bromoform	75-25-2	252.8	0.5	0.41	82		60-140
1,1,2,2-Tetrachloroethane	79-34-5	167.9	0.5	0.50	100		60-140

EMSL Analytical, Inc.
200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax:(856)858-4800/ (856)858-4571
http://www.EMSL.com TO-15_Lab@emsl.com

EMSL Order: RLLCS
EMSL Sample ID: RLLCS110116M

Report Date: 11/02/2016

Project ID: Reporting Limit Laboratory Control Sample
Sampling Date: NA
Canister ID: E0251

Lab Sample ID: RLLCS110116M
Lab File ID: M8844.D
Sample Vol(ml): 62.5
Dilution Factor: 1

Analysis Date: 11/01/2016
Instrument ID: 5973M
Analyst Initials: TP/MTH

Reporting Limit Laboratory Control Sample

USEPA: Compendium Method TO-15, January 1999, (EPA/625/R-96/010b).

Target Compounds	CAS#	MW	Spike ppbv	Result ppbv	% Rec	#	Recovery Limits (%)
4-Ethyltoluene	622-96-8	120.2	0.5	0.41	82		60-140
1,3,5-Trimethylbenzene	108-67-8	120.2	0.5	0.42	84		60-140
2-Chlorotoluene	95-49-8	126.6	0.5	0.47	94		60-140
1,2,4-Trimethylbenzene	95-63-6	120.2	0.5	0.40	80		60-140
1,3-Dichlorobenzene	541-73-1	147.0	0.5	0.39	78		60-140
1,4-Dichlorobenzene	106-46-7	147.0	0.5	0.40	80		60-140
Benzyl chloride	100-44-7	126.0	0.5	0.43	86		60-140
1,2-Dichlorobenzene	95-50-1	147.0	0.5	0.40	80		60-140
1,2,4-Trichlorobenzene	120-82-1	181.5	0.5	0.32	64		60-140
Hexachloro-1,3-butadiene	87-68-3	260.8	0.5	0.34	68		60-140
Naphthalene	91-20-3	128.17	0.5	0.42	84		60-140

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	10	10	100%

= Compounds outside control limits marked with asterisk (*).

Total Compounds Spiked	73
Total Outside Control Limits	0
% Recoveries within Control Limits	100

Acceptable Criteria: 90% of compounds must be within control limits

NJDEP Certification #: 03036

Please visit our website at http://www.emsl.com

Evaluate Continuing Calibration Report

Data Path : C:\MSDCHEM\1\DATA\110116M\
Data File : M8857.D
Acq On : 2 Nov 2016 7:02 pm
Operator : TP/MTH
Sample : ECVS110116M-10
Misc : E0241,62.5,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 18 11:48:23 2016
Quant Method : C:\MSDCHEM\1\METHODS\Q0101116M.M
Quant Title : TO-15 Determination of VOCs in Air
QLast Update : Wed Oct 12 12:06:20 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.30min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	Bromochloromethane	1.000	1.000	0.0	74	0.00
2 mc	Propylene	0.685	0.767	-12.0	82	0.05
3 Mc	Freon 12(Dichlorodifluorome	1.776	2.071	-16.6	79	0.05
4 Mc	Freon 114(1,2-Dichlorotetra	1.936	2.323	-20.0	87	0.04
5 mc	Chloromethane	0.701	0.821	-17.1	86	0.04
6 T	n-Butane	1.273	1.477	-16.0	83	0.05
7 Mc	Vinyl chloride	0.796	0.954	-19.8	86	0.04
8 mc	1,3-Butadiene	0.682	0.731	-7.2	79	0.04
9 Mc	Bromomethane	0.668	0.789	-18.1	86	0.04
10 Mc	Chloroethane	0.390	0.467	-19.7	86	0.04
11 mc	Ethanol	0.193	0.232	-20.2	96	0.02
12 MC	Bromoethene(Vinyl bromide)	0.664	0.716	-7.8	77	0.04
13 Mc	Freon 11(Trichlorofluoromet	1.872	1.977	-5.6	76	0.04
14 mc	Isopropyl alcohol(2-Propano	1.220	1.233	-1.1	73	0.01
15 mc	Freon 113(1,1,2-Trichlorotr	1.373	1.441	-5.0	75	0.03
16 mc	Acetone	1.252	1.286	-2.7	75	0.02
17 mc	1,1-Dichloroethene	1.163	1.194	-2.7	73	0.03
18 MC	Acetonitrile	0.760	0.726	4.5	71	0.02
19 MC	Tertiary butyl alcohol(TBA)	1.793	1.841	-2.7	72	0.01
20 10	Bromoethane(Ethyl bromide)	0.603	0.618	-2.5	73	0.02
21 MC	3-Chloropropene(Allyl chlor	0.988	0.920	6.9	67	0.02
22 mc	Carbon disulfide	2.104	2.260	-7.4	77	0.02
23 mc	Methylene chloride	0.857	0.877	-2.3	74	0.02
24 MC	Acrylonitrile	0.570	0.571	-0.2	70	0.02
25 mc	Methyl-tert-butyl ether(MTB	2.193	2.220	-1.2	72	0.02
26 mc	trans-1,2-Dichloroethene	1.147	1.161	-1.2	72	0.02
27 mc	n-Hexane	1.277	1.304	-2.1	73	0.02
28 mc	1,1-Dichloroethane	1.397	1.415	-1.3	72	0.01
29 mc	Vinyl acetate	1.292	1.557	-20.5	86	0.00
30 mc	2-Butanone(MEK)	1.764	1.617	8.3	65	0.00
31 mc	cis-1,2-Dichloroethene	0.778	0.778	0.0	72	0.00
32 mc	Ethyl acetate	2.084	1.948	6.5	66	0.00
33 mc	Chloroform	1.520	1.528	-0.5	72	0.00
34 mc	Tetrahydrofuran	1.000	0.923	7.7	66	0.00
35 mc	1,1,1-Trichloroethane	1.557	1.554	0.2	72	0.00
36 mc	Cyclohexane	1.087	1.110	-2.1	73	0.00
37 MC	2,2,4-Trimethylpentane(Isoo	4.185	4.219	-0.8	72	0.00
38 mc	Carbon tetrachloride	1.494	1.527	-2.2	73	0.00
39 mc	n-Heptane	1.610	1.494	7.2	67	0.00
40 mc	1,2-Dichloroethane	1.085	1.041	4.1	69	0.00
41 mc	Benzene	2.380	2.399	-0.8	73	0.00
42	1,4-Difluorobenzene	1.000	1.000	0.0	71	0.00
43 mc	Trichloroethene	0.397	0.379	4.5	68	0.00
44 mc	1,2-Dichloropropane	0.344	0.346	-0.6	71	0.00
45 T	Methyl Methacrylate	0.347	0.339	2.3	67	0.00
46 mc	Bromodichloromethane	0.645	0.658	-2.0	72	0.00
47 mc	1,4-Dioxane	0.128	0.143	-11.7	79	0.00
48 mc	4-Methyl-2-pentanone(MIBK)	0.773	0.733	5.2	65	0.00

49	mc	cis-1,3-Dichloropropene	0.493	0.498	-1.0	70	0.00
50	mc	Toluene	1.082	1.088	-0.6	70	0.00
51	mc	trans-1,3-Dichloropropene	0.494	0.505	-2.2	71	-0.01
52	mc	1,1,2-Trichloroethane	0.363	0.378	-4.1	73	0.00
53	mc	2-Hexanone(MBK)	0.754	0.743	1.5	67	0.00
54	mc	Tetrachloroethene	0.444	0.432	2.7	70	0.00
55	cm	Dibromochloromethane	0.596	0.621	-4.2	73	0.00
56	mc	1,2-Dibromoethane	0.556	0.546	1.8	69	-0.01
57		Chlorobenzene-d5	1.000	1.000	0.0	70	0.00
58	mc	Chlorobenzene	0.927	0.933	-0.6	69	0.00
59	mc	Ethylbenzene	1.599	1.621	-1.4	69	-0.01
60	mc	Xylene (p,m)	1.282	1.348	-5.1	71	0.00
61	mc	Xylene (Ortho)	1.302	1.300	0.2	68	0.00
62	mc	Styrene	0.952	0.963	-1.2	69	0.00
63	t	Isopropylbenzene (cumene)	1.792	1.873	-4.5	70	0.00
64	mc	Bromoform	0.629	0.658	-4.6	71	0.00
65	mc	1,1,2,2-Tetrachloroethane	0.905	1.022	-12.9	75	0.00
66	S	4-Bromofluorobenzene	0.776	0.837	-7.9	75	0.00
67	cm	4-Ethyltoluene	1.846	1.967	-6.6	72	0.00
68	mc	1,3,5-Trimethylbenzene	1.519	1.624	-6.9	72	0.00
69	MC	2-Chlorotoluene	1.380	1.454	-5.4	71	0.00
70	mc	1,2,4-Trimethylbenzene	1.575	1.689	-7.2	72	0.00
71	mc	1,3-Dichlorobenzene	1.036	1.075	-3.8	72	0.00
72	mc	1,4-Dichlorobenzene	1.056	1.099	-4.1	72	0.00
73	mc	Benzyl chloride	1.118	1.256	-12.3	73	0.00
74	mc	1,2-Dichlorobenzene	0.978	1.014	-3.7	72	0.00
75	mc	1,2,4-Trichlorobenzene	0.910	0.897	1.4	71	0.00
76	mc	Hexachloro-1,3-butadiene	0.673	0.742	-10.3	77	0.00
77	T	Naphthalene	2.177	2.313	-6.2	72	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Q0101116M.M Fri Nov 18 11:48:30 2016

APPENDIX I

Data Quality Assessment Report

APPENDIX I
DATA QUALITY ASSESSMENT REPORT

DRAFT – AIR MONITORING SUMMARY REPORT
SIMS METAL RECYCLING
699 SEAPORT BOULEVARD
REDWOOD CITY, CALIFORNIA 94063-2712
CONTRACT NO. 15-T4124

I.1 Summary of QA/QC Samples

We collected 115 air samples consisting of 84 primary field samples and 31 field quality control (QC) samples on October 20 through 22, 2016 at the SMM site. A breakdown of the number of primary and QA/QC samples is as follows:

Number of Primary Field Samples	Number of QA/QC Samples	Laboratory	Analysis
12	7	CLN	TSP, metals
12	7	CLN	PM_{10}, metals
12	7	CLN	$PM_{2.5}$, metals
12	3	EMSL	asbestos (TEM)
12	1	EMSL	VOCs
12	3	ECS	PCBs
12	3	EAT	Formaldehyde

Notes: CLN = CHESTER LabNet,
EMSL = EMSL Analytical
ECS = Eurofins Calscience
EAT = Eurofins Air Toxics

I.2 Laboratory Quality Control Results

The laboratory QC samples consisted of replicate samples, method blanks, laboratory control samples (LCSs), matrix spikes (MS), and MS duplicates (MSD). Upon receipt of the analytical reports, we reviewed the data for completeness, compliance with the laboratory contract scope of work, and the *Sampling and Analysis Plan* (Geocon, 2015).

I.2.1 CLN QA/QC Review

The following analytical notes were included in the case CLN's Case Narrative:

- "Many of the samples had thicker than usual deposits and did not conform (DNC) to the thin film method. This resulted in high uncertainties for the analytes listed in the comments for each affected samples. The results have not been blank corrected. "
- "All of the data have been reviewed by the analysts performing the analyses and the project manager. All of the quality control and sample-specific information in this package is complete and meets or exceeds the minimum requirements for acceptability. "

The results of CLN's QA/QC procedures are in Appendix I.

J.2.2 EMSL QA/QC Review

The following analytical notes were included in EMSL's Case Narrative for the asbestos samples:

- "The samples were received via overnight carrier and were logged in following normal lab procedures. All samples were received under Chain of Custody and in good condition.
- All samples were analyzed according to the TEM AHERA method EPA 40 CFR, Part 763, Subpart E, except for EMSL order 041628499. These samples had a particulate loading greater than ten percent and were analyzed at the clients' request. This method is for the determination of asbestos concentrations in air samples by TEM. Air samples are collected on a membrane filter, prepared via a direct preparation method and analyzed with an electron microscope at approximately 20,000 X magnification. Fibers encountered during analysis were identified by morphology, Energy Dispersive X-Ray analysis, and Selected Area Electron Diffraction. Results are reported in structures per cc or air, with an analytical sensitivity of <0.005 structures per cc of air.
- The Quality Control and equipment calibration were performed in compliance with EMSL's Quality Assurance Manual. One laboratory blank was analyzed and three inter-analyst QC analyses were completed. All QC presented with this package were found to be concordant."

The following analytical notes were included in EMSL's QA/QC Summaries for the TOS samples:

- Serial numbers for four samples were incorrect on the chain of custody. The correct information was verified using information recorded Field Log and was clarified to the lab in an email dated October 17, 2016.
- "Test meets all NELAP requirements unless otherwise specified."

I.2.3 EAT QA/QC Review

The following analytical notes were included in EAT's Laboratory Narrative:

- "The Chain of Custody (COC) was missing method information. EATL proceeded with the analysis as per the original contract or verbal agreement."
- "The COC was not relinquished properly. The signature, date and time provided in the first 'Received By' line was completed by the field sampler. The correct 'Received By' information was completed on the second line of the COC by the laboratory receiving technician."

- The quantitation of Formaldehyde in samples SMM2-T1-FORM, SMM5-T1-FORM, SMM1-T2-FORM, SMM2-T2-FORM, SMM3-T2-FORM, SMM4-T2-FORM, SMM2-T3-FORM, SMM3-T3-FORM, SMM4-T3-FORM and SMM5-T3-FORM is impacted by matrix interference. Results are qualified with an "M" flag."

The results of EAT's QA/QC procedures are in Appendix I.

I.2.4 ECS QA/QC Review

The following analytical notes were included in ECS's Work Order Narrative:

- "Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.
- All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.
- Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
- All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

The results of ECS's QA/QC procedures in Appendix I.

I.3 Field Quality Control Results

Field QC samples consisted of field blank samples, trip blanks and lab blank samples, and two field duplicate sample pairs. The results of analysis of the QA/QC samples are presented in Tables 1 through 7 of the report.

I.3.1 Field Blanks, Trip Blanks, and Lab Blanks

The pre- and post-sampling weight differences for various field blank, trip blank, and lab blank samples are as follows.

Sample Type	Sample ID	Analysis	Weight difference (µg)
Field Blank	SMM1-T2-TSP-FB	TSP	400
	SMM3-T3-TSP-FB		2,300
	SMM1-T2-PM_{10}-FB	PM_{10}	12
	SMM3-T3-PM_{10}-FB		7

Sample Type	Sample ID	Analysis	Weight difference (µg)
	SMM1-T2-$PM_{2.5}$-FB	$PM_{2.5}$	9
	SMM3-T3-$PM_{2.5}$-FB		25
Trip Blank	SMM-TB-TSP	TSP	800
	SMM-TB-PM_{10}	PM_{10}	7
	SMM-TB-$PM_{2.5}$	$PM_{2.5}$	14
Lab Blank	Lab Blank	TSP	600
	Lab Blank		200
	Lab Blank	$PM_{10}/PM_{2.5}$	3
	Lab Blank		-1
	Lab Blank		3
	Lab Blank		1

The validation acceptance criterion for field, trip, and lab blanks are ±30, ±15, and ±15 µg between weighings. Therefore, each of the PM_{10} and $PM_{2.5}$ field, trip, and lab blank samples meet the acceptance criteria. None of the TSP field, trip, and lab blank samples meet the acceptance criteria.

I.3.2 Field Duplicates

Collocated duplicate air samples were collected and submitted for analysis. Samples identified with SMM5-T1 were collocated duplicate samples of the primary samples identified with SMM2-T1. Samples identified with SMM5-T3 were collocated duplicate samples of the primary samples identified with SMM2-T3. CLN analyzed both of the TSP, PM_{10}, and $PM_{2.5}$ samples for gravimetric and metals. EMSL analyzed both samples for asbestos and VOCs, ECS analyzed both for PCBs, and EAT analyzed both for formaldehyde. We compared the results of primary samples to their duplicates (Tables 1 through 7) by calculating the relative percent difference (RPD) between the reported concentrations of the two samples. The analytes with concentrations differences that exceeded the acceptable relative RPD of 20% were as follows:

TSP	PM_{10}	$PM_{2.5}$	TO-11A
Antimony, Cadmium, Gallium, Germanium, Molybdenum, Rubidium, Strontium, and Yttrium	Antimony, Copper, Gallium, Germanium, Rubidium, Selenium, Sodium, Tin, and Vanadium	Arsenic, Barium, Chromium, Copper, Lanthanum, Lead, Nickel, Rubidium, Strontium, Vanadium, and Zirconium	Formaldehyde

As shown above, the analytical results for the TSP samples had the most analytes with RPDs exceeding 20%, followed by the PM_{10}, $PM_{2.5}$, and the Summa canister samples. According to CLN staff, metals are commonly present on new, unused TSP, PM_{10} and $PM_{2.5}$ filters, with the TSP quartz fiber filters typically having more metals than the Teflon filters used for PM_{10} and $PM_{2.5}$. The analytical results of the lab blanks

corroborate this because only five of the 35 metals analyzed were not detected in both TSP lab blank samples analyzed. Similarly, eight of the 38 metals analyzed were not detected in each of the four PM_{10} and $PM_{2.5}$ lab blank samples analyzed.

To evaluate the effect that these pre-existing metals concentrations had on the variability between the primary and duplicate sample analysis results, we calculated the differences between the primary and duplicate samples and between the lab blanks. Lab blanks consisting of clean filters that were prepared in the same manner as the rest of the filters used in the field, but were never shipped to Geocon. CLN retained the lab blanks and upon receipt of the field samples, analyzed the TSP, PM_{10}, and $PM_{2.5}$ lab blanks for gravimetric and metals. If more than two lab blanks were analyzed (as was the case for the PM_{10} and $PM_{2.5}$ samples), we used the maximum and minimum reported concentrations. We multiplied the lab blanks mass (in µg/filter) by the volume used for the TSP, PM_{10}, and $PM_{2.5}$ sampling equipment to calculate the concentration of the lab blanks in $\mu g/m^3$. Finally, we divided the duplicate concentration difference by the lab blank concentration difference to determine the potential percentage of variation of the duplicate samples that could be attributable to the lab blank concentrations. The results of these calculations are in Table J.

Analytes with concentration variances most attributable to filter contamination	Analytes with concentration variances moderately attributable to filter contamination	Analytes with concentrations variances least attributable to filter contamination
TSP – Rubidium	TSP – Antimony, Cadmium, Gallium, Germanium, Molybdenum, Strontium	TSP – Yttrium
PM_{10} – Antimony, Gallium, Germanium	PM_{10} – Tin, Rubidium, Vanadium	PM_{10} – Copper, Selenium, Sodium
$PM_{2.5}$ – Chromium	$PM_{2.5}$ – Arsenic, Lead, Rubidium, Strontium, Vanadium, Zirconium	$PM_{2.5}$ –Barium, Copper, Lanthanum, Nickel

The variability of analytes in the left column appear to be attributed to the variability inherent in the filters and therefore, the reported results are acceptable. The variability of analytes in the middle column may be partially attributed to the variability inherent in the filters. Professional judgement should be used to determine if the data are of adequate quality for the intended use. The variability of analytes in the right column does not appear to be attributed to the variability inherent in the filters. Therefore, these analyses must be qualified as estimated with the potential to be less than or greater than the reported values. Likely reasons for the variability are changes in wind speed and direction during the sampling and the non-heterogenic distribution of particulates in air.

TABLE I

DATA QUALITY ASSESSMENT - ANALYSIS OF ANALYTES WITH RPDS EXCEEDING 20%

DTSC METAL SHREDDING FACILITIES

SIMS METAL RECYCLING (SMM), 699 SEAPORT BOULEVARD, REDWOOD CITY, CALIFORNIA

CONTRACT NO. 15-T4124

Sample ID: Primary/ Duplicate	Date Collected	Analyte	Primary Result ($\mu g/m^3$)	Duplicate Result ($\mu g/m^3$)	Duplicate Concentration Difference ($\mu g/m^3$)	Relative Percent Difference (%)	Lab Blank Minimum (µg/filter)	Lab Blank Maximum (µg/filter)	Mass Difference (µg/filter)	Volume of (used to convert mass into concentration) (m^3)	Lab Blank Concentration Difference ($\mu g/m^3$)	Possible Variation From Blank Filters[1] (%)
SMM2-T1/ SMM5-T1	10/20/2016	TSP – Gallium	0.0014	0.0049	0.0035	111	13.28	14.66	1.38	1752	0.0008	22.50%
		TSP – Germanium	0.0022	0.0038	0.0016	53	6.415	7.146	0.731	1752	0.0004	26.08%
		TSP – Rubidium	0.0027	0.0037	0.001	31	0	2.842	2.842	1752	0.0016	162.21%
		TSP – Yttrium	0.006	0.0039	0.0021	42	3.207	3.37	0.163	1752	0.0001	4.43%
		TSP – Cadmium	0.0016	0.0052	0.0036	106	0	1.218	1.218	1752	0.0007	19.31%
		TSP – Antimony	0.0051	0.0113	0.0062	76	0	4.182	4.182	1752	0.0024	38.50%
		PM10 – Sodium	0.9266	1.142	0.2154	21	0	0.0282	0.0282	24	0.0012	0.55%
		PM10 – Selenium	0.004	0.0053	0.0013	28	0	0	0	24	0.0000	0.00%
		PM10 – Tin	0	0.0124	0.0124	200	0	0.1153	0.1153	24	0.0048	38.74%
		PM10-Antimony	0.0056	0.0092	0.0036	49	0	0.1469	0.1469	24	0.00612	170.02%
		PM2.5 – Vanadium	0.0017	0.0028	0.0011	49	0	0.0102	0.0102	24	0.0004	38.64%
		PM2.5 – Copper	0.0242	0.019	0.0052	24	0	0	0	24	0.0000	0.00%
		PM2.5 – Arsenic	0.0011	0	0.0011	200	0	0.0147	0.0147	24	0.0006	55.68%
		PM2.5 – Rubidium	0.0009	0	0.0009	200	0	0.0056	0.0056	24	0.0002	25.93%
		PM2.5 – Strontium	0.0026	0.0032	0.0006	21	0	0.0056	0.0056	24	0.0002	38.89%
		PM2.5 – Barium	0.0178	0.0309	0.0131	54	0	0	0	24	0.0000	0.00%
		PM2.5 – Lanthanum	0	0.0085	0.0085	200	0	0.0124	0.0124	24	0.0005	6.08%
		TO-11A - Formaldehyde	3.2	4.6	1.4	36	N/A	N/A	N/A	N/A	N/A	N/A
SMM2-T3/ SMM5-T3	10/22/2016	TSP – Gallium	0.0019	0.0033	0.0014	54	13.28	14.66	1.38	1752	0.0008	56.26%
		TSP – Germanium	0.0043	0.0016	0.0027	92	6.415	7.146	0.731	1752	0.0004	15.45%
		TSP – Strontium	0.0257	0.0317	0.006	21	6.537	7.795	1.258	1752	0.0007	11.97%
		TSP – Molybdenum	0.0316	0.0438	0.0122	32	53.43	56.35	2.92	1752	0.0017	13.66%
		PM10 - Vanadium	0.0032	0.004	0.0008	22	0	0.0102	0.0102	24	0.0004	53.13%
		PM10 - Copper	0.0421	0.0333	0.0088	23	0	0	0	24	0.0000	0.00%
		PM10 - Gallium	0.0004	0.0011	0.0007	20	0	0.0133	0.0133	24	0.0006	79.17%
		PM10 - Germanium	0.0006	0.0009	0.0003	40	0	0.0056	0.0056	24	0.0002	77.78%
		PM10 – Rubidium	0.0001	0.0009	0.0008	160	0	0.0056	0.0056	24	0.0002	29.17%
		PM2.5 – Chromium	0.0018	0.0013	0.0005	32	0	0.0136	0.0136	24	0.0006	113.33%
		PM2.5 - Nickel	0.0009	0.0007	0.0002	25	0	0	0	24	0.0000	0.00%
		PM2.5 - Copper	0.0154	0.012	0.0034	25	0	0	0	24	0.0000	0.00%
		PM2.5 - Rubidium	0.0006	0	0.0006	200	0	0.0056	0.0056	24	0.0002	38.89%
		PM2.5 - Zirconium	0.0022	0.003	0.0008	31	0	0.0113	0.0113	24	0.0005	58.85%
		PM2.5 - Lead	0.0063	0.0049	0.0014	25	0	0.0124	0.0124	24	0.0005	36.90%
		TO-11A - Formaldehyde	2.4	3.6	1.2	40	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

µg = micrograms

m^3 = cubic meter

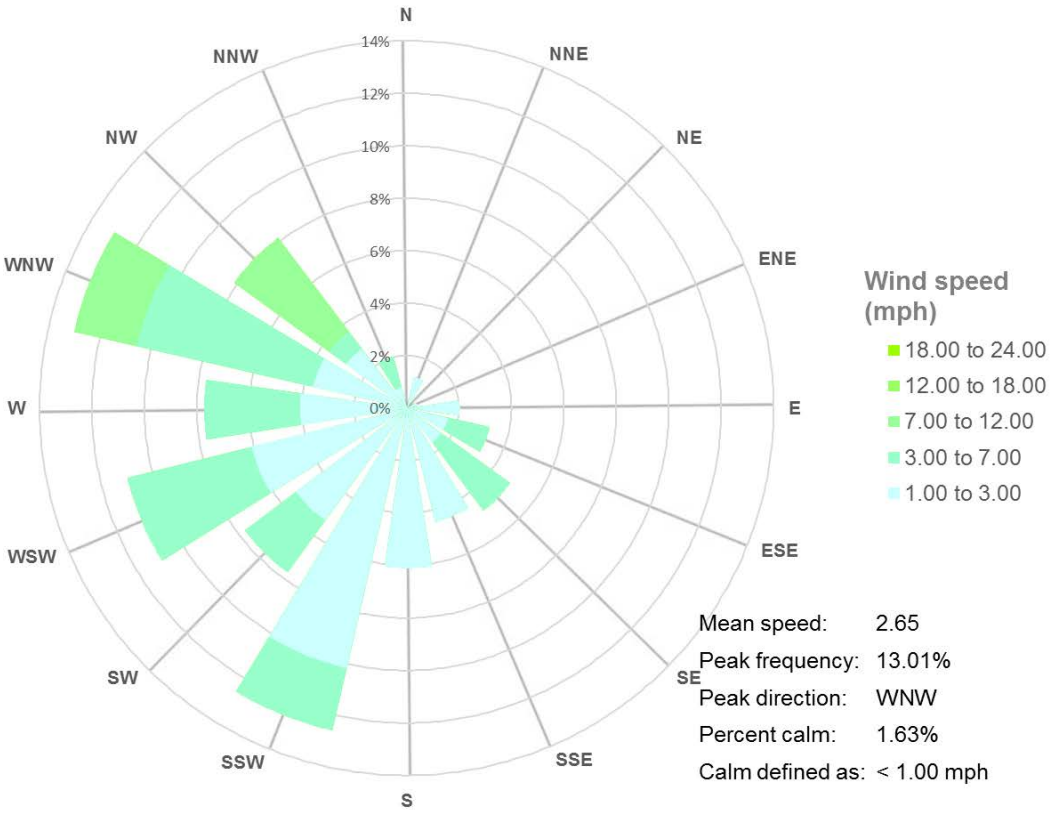
$\mu g/m^3$ = micrograms per cubic meter

Wind Rose Diagrams

APPENDIX J

SMM T1 Rose Diagram - NOAA Data

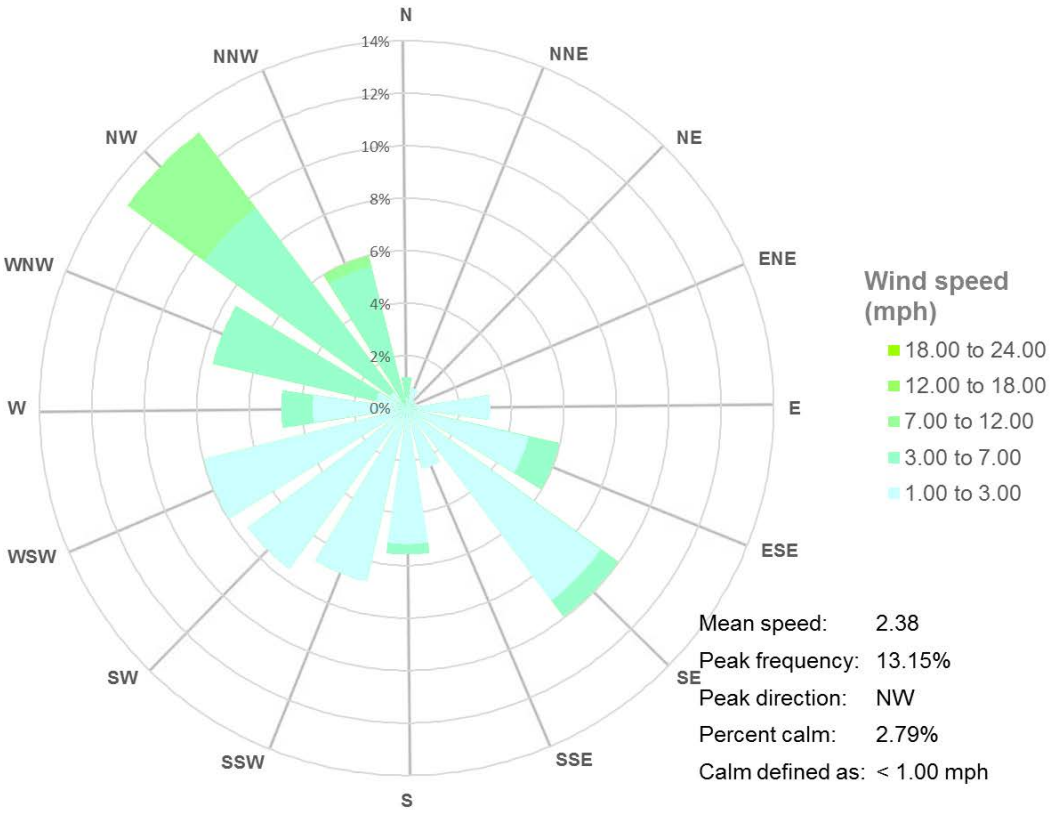
Data from NOAA Station RTYC1 , Oct-19-2016 at 0800 to Oct-20-2016 at 0830



Mean speed:	2.65
Peak frequency:	13.01%
Peak direction:	WNW
Percent calm:	1.63%
Calm defined as:	< 1.00 mph

SMM T2 Rose Diagram - NOAA Data

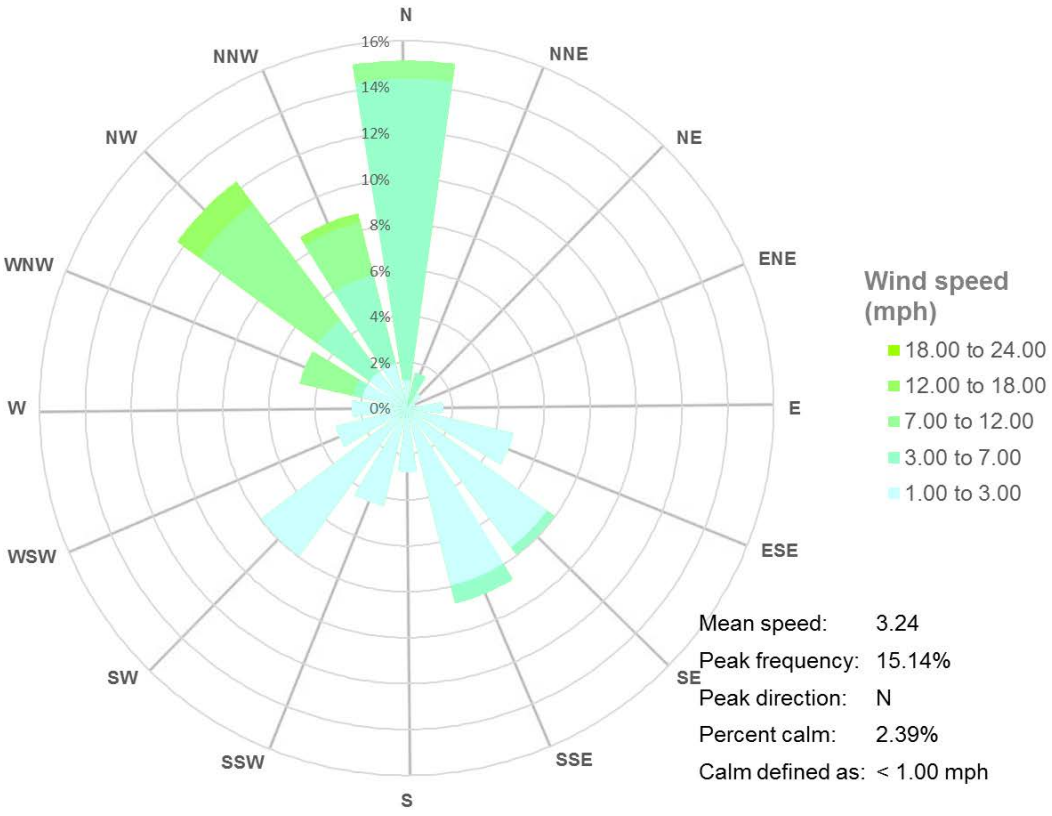
Data from NOAA Station RTYC1 , Oct-20-2016 at 1100 to Oct-21-2016 at 1200



Mean speed:	2.38
Peak frequency:	13.15%
Peak direction:	NW
Percent calm:	2.79%
Calm defined as:	< 1.00 mph

SMM T3 Rose Diagram - NOAA Data

Data from NOAA Station RTYC1 , Oct-21-2016 at 1300 to Oct-22-2016 at 1400



Mean speed:	3.24
Peak frequency:	15.14%
Peak direction:	N
Percent calm:	2.39%
Calm defined as:	< 1.00 mph