APPENDIX B

DoD Quality Systems Manual (QSM) and Laboratory Method Control Limits

B-1. DoD QSM Control Limits

B-2. Laboratory Method Control Limits – Groundwater

B-3. Laboratory Method Control Limits – Soil

B-4. Laboratory Method Control Limits – Soil Gas

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APPENDIX B-1

DoD QSM Control Limits

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DoD Quality Systems Manual for Environmental Laboratories

Version 4.1

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presented in Table G-2. The lower control limit generated for alternative or modified methods must be greater than 10% to be considered acceptable.

G.6 Surrogates

The surrogate compounds for each method are added to all samples, standards, and blanks to assess the ability of the method to recover specific non-target analytes from a given matrix and to monitor sample-specific recovery. Control limits for these compounds were calculated in the same study as the other analytes on the target analyte lists. Below are the limits for some of the surrogates of Methods 8260, 8270, 8081, and 8082, based on 3 standard deviations around the mean (Table G-3). Sufficient data were not received for those analytes during the LCS study to perform statistically significant analyses. No ME limits are presented as marginal exceedances are not acceptable for surrogate spikes.

Note: DoD prefers the use of those surrogates not identified as poor performing analytes in Table G-2 above.

Table G-3. Surrogates

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit
8260 Water:				
1,2-Dichloroethane-d_4	95	8	70	120
4-Bromofluorobenzene	98	7	75	120
Dibromofluoromethane	100	5	85	115
Toluene-d_8	102	6	85	120
8260 Solid:				
4-Bromofluorobenzene	101	6	85	120
Toluene-d_8	100	5	85	115
8270 Water:				
2-Fluorobiphenyl	79	10	50	110
Terphenyl-d_{14}	92	14	50	135
2,4,6-Tribromophenol	82	13	40	125
2-Fluorophenol	63	14	20	110
Nitrobenzene-d_5	76	11	40	110
8270 Solid:				
2-Fluorobiphenyl	72	10	45	105
Terphenyl-d_{14}	78	15	30	125
2,4,6-Tribromophenol	80	15	35	125
2-Fluorophenol	70	11	35	105
Phenol-d_5/d_6	71	10	40	100
Nitrobenzene-d_5	69	10	35	100
8081 Water:				
Decachlorobiphenyl	83	17	30	135
TCMX	81	19	25	140
8081 Solid:				
Decachlorobiphenyl	94	13	55	130
TCMX	97	9	70	125
8082 Water:				
Decachlorobiphenyl	88	15	40	135
8082 Solid:				
Decachlorobiphenyl	91	11	60	125

G.7 In-House LCS Control Limits

The acceptability of LCS results within any preparatory batch shall be based on project-specified limits or the following DoD-specified LCS control limits, if project-specific limits are not available. If DoD limits are not available, the laboratory must use its in-house limits for batch acceptance.

DoD strongly believes that it is important for laboratories to maintain their own in-house LCS limits. These in-house limits must be consistent with (i.e., within) the DoD limits (project-specific, if available; otherwise the following LCS-CLs). The laboratory in-house limits shall be calculated from the laboratory's historical LCS data in accordance with a documented procedure (e.g., SOP) that is consistent with good laboratory practice. That document must describe the process for establishing and maintaining LCS limits and the use of control charts.

The laboratory in-house limits are to be used for several purposes:

- Laboratories are expected to utilize their in-house limits as part of their quality control system, and to evaluate trends and monitor and improve performance.
- When a laboratory's in-house limits are outside the DoD control limits (upper and/or lower), they must report their in-house limits in the laboratory report (see Appendix E) even if the LCS associated with the batch fell within the DoD limits. Using this information, DoD will be able to determine how laboratory performance affects the quality of the environmental data.
- DoD may review the laboratory in-house limits and associated trends, as reflected in control charts, to determine whether the laboratory's overall performance is acceptable. If deemed unacceptable, this can allow DoD to decide not to use the laboratory again until substantial improvement has occurred.

Table G-4. LCS Control Limits for Volatile Organic Compounds SW-846 Method 8260 Water Matrix[2]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
1,1,1,2-Tetrachloroethane	105	8	80	130	75	135
1,1,1-Trichloroethane	100	11	65	130	55	145
1,1,2,2-Tetrachloroethane	96	11	65	130	55	140
1,1,2-Trichloroethane	100	8	75	125	65	135
1,1-Dichloroethane	101	11	70	135	60	145
1,1-Dichloroethene	99	10	70	130	55	140
1,1-Dichloropropene	102	10	75	130	65	140
1,2,3-Trichlorobenzene	99	14	55	140	45	155
1,2,3-Trichloropropane	98	9	75	125	65	130
1,2,4-Trichlorobenzene	100	11	65	135	55	145
1,2,4-Trimethylbenzene	103	10	75	130	65	140
1,2-Dibromo-3-chloropropane	91	14	50	130	35	145
1,2-Dibromoethane	100	7	80	120	75	125
1,2-Dichlorobenzene	96	9	70	120	60	130
1,2-Dichloroethane	100	10	70	130	60	140
1,2-Dichloropropane	100	8	75	125	65	135
1,3,5-Trimethylbenzene	102	10	75	130	65	140
1,3-Dichlorobenzene	100	8	75	125	65	130
1,3-Dichloropropane	100	9	75	125	65	135
1,4-Dichlorobenzene	99	8	75	125	65	130
2,2-Dichloropropane	103	11	70	135	60	150
2-Butanone	91	20	30	150	10	170

[2] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits are not available for Total Xylene. Xylene may be reported on a project-specific basis as a total number; however, for the purposes of the DoD QSM, it will be analyzed and reported as m,p-Xylene and o-Xylene. Additional limits for poor performing compounds can be found in section G.5 and for surrogate compounds in section G.6.

Table G-4. LCS Control Limits for Volatile Organic Compounds SW-846 Method 8260 Water Matrix[2] (continued)

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
2-Chlorotoluene	100	9	75	125	65	135
2-Hexanone	92	12	55	130	45	140
4-Chlorotoluene	101	9	75	130	65	135
4-Methyl-2-pentanone	96	13	60	135	45	145
Acetone	91	17	40	140	20	160
Benzene	102	7	80	120	75	130
Bromobenzene	100	8	75	125	70	130
Bromochloromethane	97	11	65	130	55	140
Bromodichloromethane	98	8	75	120	70	130
Bromoform	99	10	70	130	60	140
Bromomethane	88	19	30	145	10	165
Carbon disulfide	100	21	35	160	15	185
Carbon tetrachloride	102	12	65	140	55	150
Chlorobenzene	102	7	80	120	75	130
Chlorodibromomethane	96	13	60	135	45	145
Chloroethane	99	12	60	135	50	145
Chloroform	100	12	65	135	50	150
Chloromethane	83	15	40	125	25	140
cis-1,2-Dichloroethene	99	9	70	125	60	135
cis-1,3-Dichloropropene	100	10	70	130	60	140
Dibromomethane	101	8	75	125	65	135
Dichlorodifluoromethane	93	21	30	155	10	175
Ethylbenzene	100	9	75	125	65	135
Hexachlorobutadiene	97	15	50	140	35	160
Isopropylbenzene	101	9	75	125	65	135
m,p-Xylene	102	9	75	130	65	135
Methyl tert-butyl ether	94	10	65	125	55	135
Methylene chloride	96	14	55	140	40	155
Naphthalene	96	14	55	140	40	150
n-Butylbenzene	103	11	70	135	55	150
n-Propylbenzene	101	9	70	130	65	140
o-Xylene	100	7	80	120	75	130
p-Isopropyltoluene	102	10	75	130	65	140
sec-Butylbenzene	100	9	70	125	65	135
Styrene	100	11	65	135	55	145
tert-Butylbenzene	99	10	70	130	60	140
Tetrachloroethene	96	18	45	150	25	165
Toluene	100	7	75	120	70	130
trans-1,2-Dichloroethene	99	13	60	140	45	150
trans-1,3-Dichloropropene	98	15	55	140	40	155
Trichloroethene	99	9	70	125	60	135
Trichlorofluoromethane	103	15	60	145	45	160
Vinyl chloride	99	16	50	145	35	165

Table G-5. LCS Control Limits for Volatile Organic Compounds SW-846 Method 8260 Solid Matrix[3]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
1,1,1,2-Tetrachloroethane	100	9	75	125	65	135
1,1,1-Trichloroethane	101	11	70	135	55	145
1,1,2,2-Tetrachloroethane	93	13	55	130	40	145
1,1,2-Trichloroethane	95	11	60	125	50	140
1,1-Dichloroethane	99	9	75	125	65	135
1,1-Dichloroethene	100	12	65	135	55	150
1,1-Dichloropropene	102	11	70	135	60	145
1,2,3-Trichlorobenzene	97	12	60	135	50	145
1,2,3-Trichloropropane	97	11	65	130	50	140
1,2,4-Trichlorobenzene	98	11	65	130	55	140
1,2,4-Trimethylbenzene	100	12	65	135	55	145
1,2-Dibromo-3-chloropropane	87	16	40	135	25	150
1,2-Dibromoethane	97	9	70	125	60	135
1,2-Dichlorobenzene	97	7	75	120	65	125
1,2-Dichloroethane	104	11	70	135	60	145
1,2-Dichloropropane	95	8	70	120	65	125
1,3,5-Trimethylbenzene	99	11	65	135	55	145
1,3-Dichlorobenzene	98	9	70	125	65	135
1,3-Dichloropropane	100	8	75	125	70	130
1,4-Dichlorobenzene	98	9	70	125	65	135
2,2-Dichloropropane	101	11	65	135	55	145
2-Butanone	94	22	30	160	10	180
2-Chlorotoluene	98	10	70	130	60	140
2-Hexanone	97	16	45	145	30	160
4-Chlorotoluene	100	9	75	125	65	135
4-Methyl-2-pentanone	97	17	45	145	30	165
Acetone	88	23	20	160	10	180
Benzene	99	9	75	125	65	135
Bromobenzene[4]	93	9	65	120	55	130
Bromochloromethane	99	9	70	125	60	135
Bromodichloromethane	100	9	70	130	60	135
Bromoform	96	13	55	135	45	150
Bromomethane	95	21	30	160	10	180
Carbon disulfide	103	19	45	160	30	180
Carbon tetrachloride	100	11	65	135	55	145
Chlorobenzene	99	8	75	125	65	130
Chlorodibromomethane	98	11	65	130	55	140
Chloroethane	98	20	40	155	20	175

[3] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits are not available for Methyl tert-butyl ether and Total Xylene. Sufficient data to perform statistically significant analyses were not received for MTBE during the LCS study. Xylene may be reported on a project-specific basis as a total number; however, for the purposes of the DoD QSM, it will be analyzed and reported as m,p-Xylene and o-Xylene. Additional limits for poor performing compounds can be found in section G.5 and for surrogate compounds in section G.6.

[4] Provisional limits – outlier analyses during the LCS study resulted in LCS-CLs generated with data from fewer than four laboratories. Limits may be adjusted in the future as additional data become available.

Table G-5. LCS Control Limits for Volatile Organic Compounds SW-846 Method 8260 Solid Matrix[3] (continued)

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Chloroform	98	9	70	125	65	135
Chloromethane	90	13	50	130	40	140
cis-1,2-Dichloroethene	96	10	65	125	55	135
cis-1,3-Dichloropropene	99	9	70	125	65	135
Dibromomethane	100	9	75	130	65	135
Dichlorodifluoromethane[4]	85	17	35	135	15	155
Ethylbenzene	101	9	75	125	65	135
Hexachlorobutadiene	98	15	55	140	40	155
Isopropylbenzene	103	9	75	130	70	140
m,p-Xylene	102	8	80	125	70	135
Methylene chloride	97	14	55	140	40	155
Naphthalene	84	14	40	125	25	140
n-Butylbenzene	101	12	65	140	50	150
n-Propylbenzene	99	12	65	135	50	145
o-Xylene	101	8	75	125	70	135
p-Isopropyltoluene	104	10	75	135	65	140
sec-Butylbenzene	97	11	65	130	50	145
Styrene	101	9	75	125	65	135
tert-Butylbenzene	99	11	65	130	55	145
Tetrachloroethene	103	12	65	140	55	150
Toluene	99	9	70	125	60	135
trans-1,2-Dichloroethene	100	11	65	135	55	145
trans-1,3-Dichloropropene	96	10	65	125	55	140
Trichloroethene	101	8	75	125	70	130
Trichlorofluoromethane	106	27	25	185	10	215
Vinyl chloride	92	11	60	125	45	140

Table G-6. LCS Control Limits for Semivolatile Organic Compounds SW-846 Method 8270 Water Matrix[5]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Polynuclear Aromatics						
2-Methylnaphthalene	75.0	9.5	45	105	35	115
Acenaphthene	77.6	10.1	45	110	35	120
Acenaphthylene	78.5	9.4	50	105	40	115
Anthracene	83.0	9.7	55	110	45	120
Benz[a]anthracene	82.7	8.9	55	110	45	120
Benzo[a]pyrene	81.3	9.5	55	110	45	120

[5] A number of sporadic marginal exceedances of the control limits are allowed depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits are not available for Benzidine, 2,6-Dichlorophenol, and N-nitrosopyrrolidine. Sufficient data to perform statistically significant analyses were not received for those analytes during the LCS study. Additional limits for poor performing compounds can be found in section G.5.

Table G-6. LCS Control Limits for Semivolatile Organic Compounds SW-846 Method 8270 Water Matrix[5] (continued)

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Benzo[b]fluoranthene	81.8	12.1	45	120	35	130
Benzo[k]fluoranthene	84.6	13.2	45	125	30	135
Benzo[g,h,i]perylene	80.5	14.1	40	125	25	135
Chrysene	82.1	8.9	55	110	45	120
Dibenz[a,h]anthracene	84.7	14.1	40	125	30	140
Fluoranthene	85.2	10.4	55	115	45	125
Fluorene	80.6	10.3	50	110	40	120
Indeno[1,2,3-cd]pyrene	84.3	13.6	45	125	30	140
Naphthalene	70.8	10.5	40	100	30	115
Phenanthrene	84.0	11.0	50	115	40	130
Pyrene	88.6	13.2	50	130	35	140
Phenolic/Acidic						
2,4,5-Trichlorophenol	79.7	10.3	50	110	40	120
2,4,6-Trichlorophenol	80.7	10.7	50	115	40	125
2,4-Dichlorophenol	76.3	9.6	50	105	40	115
2,4-Dimethylphenol	68.8	13.5	30	110	15	125
2,4-Dinitrophenol	75.8	20.6	15	140	10	160
2-Chlorophenol	71.3	11.4	35	105	25	115
2-Methylphenol	73.3	11.7	40	110	25	120
2-Nitrophenol	75.8	12.4	40	115	25	125
3-Methylphenol/4-Methylphenol	71.3	13.0	30	110	20	125
4,6-Dinitro-2-methylphenol	84.9	15.0	40	130	25	145
4-Chloro-3-methylphenol	78.6	10.7	45	110	35	120
Pentachlorophenol	77.6	13.3	40	115	25	130
Basic						
3,3'-Dichlorobenzidine	65.2	15.3	20	110	10	125
4-Chloroaniline	62.2	15.6	15	110	10	125
Phthalate Esters						
Bis(2-ethylhexyl) phthalate	84.2	14.0	40	125	30	140
Butyl benzyl phthalate	81.1	11.7	45	115	35	130
Di-n-butyl phthalate	84.8	10.3	55	115	45	125
Di-n-octyl phthalate	87.4	16.6	35	135	20	155
Diethyl phthalate	79.2	12.9	40	120	30	130
Dimethyl phthalate	75.9	16.9	25	125	10	145
Nitrosoamines						
N-Nitrosodi-n-propylamine	80.9	15.7	35	130	20	145
N-Nitrosodimethylamine	67.9	14.1	25	110	10	125
N-Nitrosodiphenylamine	79.6	10.6	50	110	35	120
Chlorinated Aliphatics						
Bis(2-chlorethoxy)methane	76.2	10.2	45	105	35	115
Bis(2-chloroethyl) ether	73.3	12.3	35	110	25	120
Bis(2-chloroisopropyl) ether	78.2	17.5	25	130	10	150
Hexachlorobutadiene	65.2	12.6	25	105	15	115
Hexachloroethane	60.9	11.1	30	100	15	105

Table G-6. LCS Control Limits for Semivolatile Organic Compounds SW-846 Method 8270 Water Matrix[5] (continued)

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Halogenated Aromatics						
1,2,4-Trichlorobenzene	71.7	11.6	35	105	25	120
1,2-Dichlorobenzene	67.3	11.4	35	100	20	115
1,3-Dichlorobenzene	64.8	10.9	30	100	20	110
1,4-Dichlorobenzene	64.8	10.9	30	100	20	110
2-Chloronaphthalene	76.5	9.3	50	105	40	115
4-Bromophenyl phenyl ether	82.9	10.2	50	115	40	125
4-Chlorophenyl phenyl ether	80.6	10.3	50	110	40	120
Hexachlorobenzene	82.3	10.0	50	110	40	120
Nitroaromatics						
2,4-Dinitrotoluene	84.3	11.2	50	120	40	130
2,6-Dinitrotoluene	82.7	11.3	50	115	35	130
2-Nitroaniline	81.8	11.2	50	115	35	125
3-Nitroaniline	72.6	17.7	20	125	10	145
4-Nitroaniline	77.2	13.7	35	120	20	130
Nitrobenzene	76.8	10.8	45	110	35	120
Neutral Aromatics						
Carbazole	82.5	11.4	50	115	35	130
Dibenzofuran	80.3	8.8	55	105	45	115
Others						
1,2-Diphenylhydrazine	84.8	9.4	55	115	45	120
Benzyl alcohol	71.0	13.8	30	110	15	125
Isophorone	81.0	10.5	50	110	40	125

Table G-7. LCS Control Limits for Semivolatile Organic Compounds SW-846 Method 8270 Solid Matrix[6]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Polynuclear Aromatics						
2-Methylnaphthalene	77.3	10.0	45	105	35	115
Acenaphthene	77.3	10.3	45	110	35	120
Acenaphthylene	75.7	10.4	45	105	35	115
Anthracene	79.9	9.0	55	105	45	115
Benz[a]anthracene	81.6	9.8	50	110	40	120
Benzo[a]pyrene	80.7	10.3	50	110	40	120
Benzo[b]fluoranthene	79.7	11.4	45	115	35	125
Benzo[k]fluoranthene	83.8	12.9	45	125	30	135
Benzo[g,h,i]perylene	81.8	14.7	40	125	25	140
Chrysene	82.6	9.9	55	110	45	120

[6] A number of sporadic marginal exceedances (ME) of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits are not available for Benzidine, 2,6-Dichlorophenol, 1,2-Diphenylhydrazine, and N-nitrosopyrrolidine. Sufficient data to perform statistically significant analyses were not received for those analytes during the LCS study. Additional limits for poor performing compounds can be found in section G.5.

Table G-7. LCS Control Limits for Semivolatile Organic Compounds SW-846 Method 8270 Solid Matrix[6] (continued)

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Dibenz[a,h]anthracene	82.9	13.9	40	125	25	140
Fluoranthene	83.9	10.1	55	115	45	125
Fluorene	78.3	9.8	50	110	40	115
Indeno[1,2,3-cd]pyrene	79.7	13.8	40	120	25	135
Naphthalene	73.4	11.1	40	105	30	120
Phenanthrene	80.1	10.0	50	110	40	120
Pyrene	84.4	12.8	45	125	35	135
Phenolic/Acidic						
2,4,5-Trichlorophenol	80.1	10.4	50	110	40	120
2,4,6-Trichlorophenol	76.3	11.0	45	110	30	120
2,4-Dichlorophenol	77.2	10.9	45	110	35	120
2,4-Dimethylphenol	67.3	11.9	30	105	20	115
2,4-Dinitrophenol	72.6	20.0	15	130	10	150
2-Chlorophenol	74.7	10.3	45	105	35	115
2-Methylphenol	71.7	10.6	40	105	30	115
2-Nitrophenol	76.2	11.5	40	110	30	120
3-Methylphenol/4-Methylphenol	73.9	10.9	40	105	30	120
4,6-Dinitro-2-methylphenol	83.1	18.0	30	135	10	155
4-Chloro-3-methylphenol	79.5	11.1	45	115	35	125
4-Nitrophenol	77.0	20.2	15	140	10	160
Pentachlorophenol	71.9	15.6	25	120	10	135
Phenol	69.7	10.2	40	100	30	110
Phthalate Esters						
Bis(2-ethylhexyl) phthalate	87.4	13.3	45	125	35	140
Butyl benzyl phthalate	86.4	12.3	50	125	35	135
Di-n-butyl phthalate	83.2	9.1	55	110	45	120
Di-n-octyl phthalate	86.4	15.2	40	130	25	145
Diethyl phthalate	82.2	10.6	50	115	40	125
Dimethyl phthalate	79.6	10.2	50	110	40	120
Nitrosoamines						
N-Nitrosodi-n-propylamine	76.8	12.3	40	115	30	125
N-Nitrosodimethylamine	66.1	15.9	20	115	10	130
N-Nitrosodiphenylamine	82.4	11.1	50	115	40	125
Chlorinated Aliphatics						
Bis(2-chlorethoxy)methane	75.5	10.9	45	110	30	120
Bis(2-chloroethyl) ether	71.1	11.2	40	105	25	115
Bis(2-chloroisopropyl) ether	68.4	15.7	20	115	10	130
Hexachlorobutadiene	78.2	12.9	40	115	25	130
Hexachloroethane	71.9	12.6	35	110	20	120
Halogenated Aromatics						
1,2,4-Trichlorobenzene	77.4	11.2	45	110	30	120
1,2-Dichlorobenzene	70.9	8.7	45	100	35	105
1,3-Dichlorobenzene	69.7	10.3	40	100	30	110
1,4-Dichlorobenzene	69.0	11.4	35	105	25	115

Table G-7. LCS Control Limits for Semivolatile Organic Compounds SW-846 Method 8270 Solid Matrix (continued)

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
2-Chloronaphthalene	75.2	9.9	45	105	35	115
4-Bromophenyl phenyl ether	81.7	11.8	45	115	35	130
4-Chlorophenyl phenyl ether	79.6	10.7	45	110	35	120
Hexachlorobenzene	82.5	11.7	45	120	35	130
Nitroaromatics						
2,4-Dinitrotoluene	82.0	11.4	50	115	35	130
2,6-Dinitrotoluene	80.2	10.7	50	110	35	125
2-Nitroaniline	81.0	12.2	45	120	30	130
3-Nitroaniline	68.8	13.8	25	110	15	125
4-Nitroaniline	73.6	13.1	35	115	20	125
Nitrobenzene	77.2	11.9	40	115	30	125
Neutral Aromatics						
Carbazole	80.4	12.3	45	115	30	130
Dibenzofuran	77.1	8.8	50	105	40	110
Others						
Benzyl alcohol	70.9	17.4	20	125	10	140
Isophorone	77.0	11.4	45	110	30	125

Table G-8. LCS Control Limits for Chlorinated Herbicides SW-846 Method 8151 Water Matrix[7]

Analyte	Median	Lower Control Limit	Upper Control Limit
2,4-D	88	35	115
2,4-DB	99	45	130
2,4,5-T	83	35	110
2,4,5-TP (Silvex)	87	50	115
Dalapon	62	40	110
Dicamba	86	60	110
Dichloroprop	91	70	120
Dinoseb	65	20	100
MCPA	93	60	145

[7] LCS control limits were generated using non-parametric statistics (see section G.1 for further explanation). LCS control limits are not available for MCPP. Sufficient data to perform statistically significant analyses were not received for the analyte during the LCS study.

Table G-9. LCS Control Limits for Chlorinated Herbicides SW-846 Method 8151 Solid Matrix[8]

Analyte	Median	Lower Control Limit	Upper Control Limit
2,4-D	88	35	145
2,4-DB	108	50	155
2,4,5-T	86	45	135
2,4,5-TP (Silvex)	90	45	125
Dicamba	90	55	110
Dichloroprop	99	75	140

Table G-10. LCS Control Limits for Polynuclear Aromatic Hydrocarbons SW-846 Method 8310 Water Matrix[9]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Acenaphthene	70	11	35	105	25	115
Acenaphthylene	74	13	35	115	20	125
Anthracene	77	12	40	110	30	125
Benz[a]anthracene	81	11	50	110	40	125
Benzo[a]pyrene	79	11	45	115	35	125
Benzo[b]fluoranthene	82	10	50	110	40	125
Benzo[k]fluoranthene	79	10	50	110	40	120
Benzo[g,h,i]perylene	77	14	35	120	20	135
Chrysene	83	11	50	115	40	125
Dibenz[a,h]anthracene	64	15	20	110	10	125
Fluoranthene	82	11	50	115	35	125
Fluorene	69	11	35	105	25	115
Indeno[1,2,3-cd]pyrene	80	11	45	110	35	125
Naphthalene	68	12	35	105	20	115
Phenanthrene	80	13	40	120	25	135
Pyrene	80	9	50	110	45	115

[8] LCS control limits were generated using non-parametric statistics (see section G.1 for further explanation). LCS control limits are not available for Dalapon, MCPA, and MCPP. Sufficient data to perform statistically significant analyses were not received for those analytes during the LCS study. Additional limits for poor performing compounds can be found in section G.5.

[9] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits.

Table G-11. LCS Control Limits for Polynuclear Aromatic Hydrocarbons SW-846 Method 8310 Solid Matrix[10]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Acenaphthene	71	12	35	110	20	120
Acenaphthylene	73	13	35	115	20	125
Anthracene	86	13	45	125	35	140
Benz[a]anthracene	78	9	50	105	40	115
Benzo[a]pyrene	86	15	40	135	25	150
Benzo[b]fluoranthene	89	11	55	120	45	130
Benzo[k]fluoranthene	84	12	50	120	35	135
Benzo[g,h,i]perylene[11]	85	10	55	115	45	125
Chrysene	87	11	55	120	45	130
Dibenz[a,h]anthracene	81	11	45	115	35	125
Fluoranthene	88	16	40	135	25	150
Fluorene	76	10	45	105	35	115
Indeno[1,2,3-cd]pyrene	95	13	55	135	45	145
Naphthalene	80	11	50	110	40	120
Phenanthrene	91	12	55	125	45	135
Pyrene	82	11	50	115	40	125

Table G-12. LCS Control Limits for Explosives SW-846 Methods 8330 and 8330A Water Matrix[12]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
1,3,5-Trinitrobenzene	102	13	65	140	50	150
1,3-Dinitrobenzene	103	18	45	160	30	175
2,4-Dinitrotoluene	98	12	60	135	50	145
2,6-Dinitrotoluene	99	13	60	135	50	150
2,4,6-Trinitrotoluene (TNT)	98	15	50	145	35	160
2-Amino-4,6-dinitrotoluene[13]	101	17	50	155	35	170
2-Nitrotoluene	88	15	45	135	30	150
3-Nitrotoluene	90	14	50	130	35	145
4-Amino-2,6-dinitrotoluene[13]	104	16	55	155	40	170
4-Nitrotoluene	90	14	50	130	35	145
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	106	18	50	160	35	180
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)[13]	98	25	20	175	10	200
Nitrobenzene	94	15	50	140	35	155
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	99	6	80	115	75	120

[10] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits.

[11] Provisional limits – outlier analyses during the LCS study resulted in LCS-CLs generated with data from fewer than four laboratories. Limits may be adjusted in the future as additional data become available.

[12] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits were generated using solid phase extraction with acetonitrile only, without removing outliers from the data set (see section G.1 for further explanation).

[13] Provisional limits – outlier analyses during the LCS study resulted in LCS-CLs generated with data from fewer than four laboratories. Limits may be adjusted in the future as additional data become available.

Table G-13. LCS Control Limits for Explosives SW-846 Methods 8330 and 8330A Solid Matrix[14]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
1,3,5-Trinitrobenzene	99	9	75	125	65	135
1,3-Dinitrobenzene	102	8	80	125	70	135
2,4-Dinitrotoluene	102	7	80	125	75	130
2,6-Dinitrotoluene	100	7	80	120	70	130
2,4,6-Trinitrotoluene (TNT)	99	14	55	140	45	155
2-Amino-4,6-dinitrotoluene	102	7	80	125	75	130
2-Nitrotoluene	101	7	80	125	70	130
3-Nitrotoluene	100	7	75	120	70	130
4-Amino-2,6-dinitrotoluene	101	7	80	125	75	130
4-Nitrotoluene	101	8	75	125	70	135
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	103	10	70	135	65	145
Nitrobenzene	100	8	75	125	70	130
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	100	9	75	125	65	135

Table G-14. LCS Control Limits for Organochlorine Pesticides SW-846 Method 8081 Water Matrix[15]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
4,4'-DDD	88	20	25	150	10	170
4,4'-DDE	87	18	35	140	15	160
4,4'-DDT	92	15	45	140	30	155
Aldrin	83	19	25	140	10	155
alpha-BHC	94	11	60	130	50	140
alpha-Chlordane	93	10	65	125	55	135
beta-BHC	96	10	65	125	55	135
delta-BHC	91	15	45	135	30	150
Dieldrin	95	11	60	130	50	140
Endosulfan I[16]	80	10	50	110	40	120
Endosulfan II	79	17	30	130	10	150
Endosulfan sulfate	96	14	55	135	40	150
Endrin	95	13	55	135	45	145
Endrin aldehyde	96	14	55	135	40	150
Endrin ketone	102	8	75	125	70	135
gamma-BHC	82	18	25	135	10	155
gamma-Chlordane	94	11	60	125	50	135
Heptachlor	87	15	40	130	30	145
Heptachlor epoxide	96	11	60	130	50	140
Methoxychlor	103	16	55	150	40	165

[14] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. Additional limits for poor performing compounds can be found in section G.5.

[15] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits are not available for Hexachlorobenzene and Toxaphane. Sufficient data to perform statistically significant analyses were not received for those analytes during the LCS study. Additional limits for surrogate compounds can be found in section G.6.

[16] Provisional limits – outlier analyses during the LCS study resulted in LCS-CLs generated with data from fewer than four laboratories. Limits may be adjusted in the future as additional data becomes available.

Table G-15. LCS Control Limits for Organochlorine Pesticides SW-846 Method 8081 Solid Matrix [17]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
4,4'-DDD	81	18	30	135	10	155
4,4'-DDE	97	10	70	125	60	135
4,4'-DDT	92	16	45	140	30	155
Aldrin	93	16	45	140	30	155
alpha-BHC	93	10	60	125	50	135
alpha-Chlordane	92	10	65	120	55	130
beta-BHC	95	11	60	125	50	135
delta-BHC	94	12	55	130	45	145
Dieldrin	96	10	65	125	55	135
Endosulfan I	74	20	15	135	10	155
Endosulfan II	89	17	35	140	20	160
Endosulfan sulfate	99	12	60	135	50	145
Endrin	97	12	60	135	50	145
Endrin aldehyde	92	18	35	145	20	165
Endrin ketone	100	11	65	135	55	145
gamma-BHC	91	11	60	125	50	135
gamma-Chlordane	96	10	65	125	55	135
Heptachlor	96	15	50	140	35	155
Heptachlor epoxide	98	11	65	130	55	140
Methoxychlor	100	14	55	145	45	155

Table G-16. LCS Control Limits for Polychlorinated Biphenyls SW-846 Method 8082 Water Matrix[18]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit
Aroclor 1016	85	20	25	145
Aroclor 1260	87	19	30	145

Table G-17. LCS Control Limits for Polychlorinated Biphenyls SW-846 Method 8082 Solid Matrix[18]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit
Aroclor 1016	90	16	40	140
Aroclor 1260	96	12	60	130

[17] A number of sporadic marginal exceedances of the control limits are allowed, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits. LCS control limits are not available for Hexachlorobenzene, Hexachlorocyclopentadiene, and Toxaphane. Sufficient data to perform statistically significant analyses were not received for those analytes during the LCS study. Additional limits for surrogate compounds can be found in section G.6.

[18] LCS control limits are not available for Aroclors 1221, 1232, 1242, 1248, 1262, and 1268. Sufficient data to perform statistically significant analyses were not received for those analytes during the LCS study. Additional limits for surrogate compounds can be found in section G.6.

Table G-18. LCS Control Limits for Metals SW-846 Methods 6010 and 7470 Water Matrix[19]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Aluminum	97	5	80	120	80	120
Antimony	98	4	80	120	80	120
Arsenic	98	4	80	120	80	120
Barium	99	4	80	120	80	120
Beryllium	99	4	80	120	80	120
Cadmium	100	4	80	120	80	120
Calcium	98	4	80	120	80	120
Chromium	100	4	80	120	80	120
Cobalt	99	3	80	120	80	120
Copper	99	3	80	120	80	120
Iron	102	4	80	120	80	120
Lead	99	4	80	120	80	120
Magnesium	98	4	80	120	80	120
Manganese	100	4	80	120	80	120
Mercury	100	5	80	120	No ME	No ME
Molybdenum	95	5	80	120	75	120
Nickel	100	4	80	120	80	120
Potassium	98	4	80	120	80	120
Selenium	98	6	80	120	75	120
Silver	97	5	80	120	75	120
Sodium	99	4	80	120	80	120
Thallium	97	4	80	120	80	120
Vanadium	99	4	80	120	80	120
Zinc	100	4	80	120	80	120

[19] The as-generated limits have been adjusted to reflect Method requirements and acceptable calibration uncertainty. A number of sporadic marginal exceedances of the control limits are allowed for Method 6010, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits.

Table G-19. LCS Control Limits for Metals SW-846 Methods 6010 and 7471 Solid Matrix [20]

Analyte	Mean	Standard Deviation	Lower Control Limit	Upper Control Limit	Lower ME Limit	Upper ME Limit
Aluminum	95	5	80	120	75	120
Antimony	96	5	80	120	75	120
Arsenic	95	4	80	120	80	120
Barium	98	3	80	120	80	120
Beryllium	99	4	80	120	80	120
Cadmium	97	4	80	120	80	120
Calcium	97	4	80	120	80	120
Chromium	99	5	80	120	80	120
Cobalt	98	4	80	120	80	120
Copper	97	3	80	120	80	120
Iron	100	4	80	120	80	120
Lead	95	4	80	120	80	120
Magnesium	96	3	80	120	80	120
Manganese	97	4	80	120	80	120
Mercury	100	6	80	120	No ME	No ME
Molybdenum	96	5	80	120	75	120
Nickel	97	4	80	120	80	120
Potassium	96	4	80	120	80	120
Selenium	93	4	80	120	75	120
Silver	96	7	75	120	70	125
Sodium	96	4	80	120	80	120
Thallium	94	4	80	120	80	120
Vanadium	99	3	80	120	80	120
Zinc	95	5	80	120	75	120

[20] The as-generated limits have been adjusted to reflect Method requirements and acceptable calibration uncertainty. A number of sporadic marginal exceedances of the control limits are allowed for Method 6010, depending on the number of analytes spiked in the LCS. Refer to section G.2 and Table G-1 for guidance on the appropriate application of control and ME limits.

APPENDIX B-2

Laboratory Method Control Limits - Groundwater

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Empirical Laboratories, LLC Control Limits

Method	Analyte	Laboratory Specific Control Limits		
		Lower	Upper	RPD
SW846 8260B	1,1,1,2-Tetrachloroethane	80	130	30
Waters	1,1,1-Trichloroethane	65	130	30
	1,1,2,2-Tetrachloroethane	65	130	30
	1,1,2-Ttrichloro-1,2,2-Trifluoroethane	60	130	30
	1,1,2-Trichloroethane	75	125	30
	1,1-Dichloroethane	70	135	30
	1,1-Dichloroethene	70	130	30
	1,1-Dichloropropene	75	130	30
	1,2,3-Trichlorobenzene	55	140	30
	1,2,3-Trichloropropane	75	125	30
	1,2,4-Trichlorobenzene	65	135	30
	1,2,4-Trimethylbenzene	75	130	30
	1,3,5-Trimethylbenzene	75	130	30
	1,2-Dibromo-3-Chloroprpane	50	130	30
	1,2-Dibromoethane	80	120	30
	1,2-Dichlorobenzene	70	120	30
	1,2-Dichloroethane	70	130	30
	1,2-Dichlropropane	75	125	30
	1,3-Dichlorobenzene	75	125	30
	1,3-Dichloropropane	75	125	30
	1,4-Dichlorobenzene	75	125	30
	1-Chlorohexane	75	125	30
	2,2-Dichloropropane	70	135	30
	2-Butanone	30	150	30
	2-Chloro Vinyl Ether	10	165	30
	2-Chlorotoluene	75	125	30
	2-Hexanone	55	130	30
	4-Chlorotoluene	75	130	30
	4-Methyl-2-Pentanone	60	135	30
	Acetone	40	140	30
	Acrolein	10	200	30
	Acrylonitrile	35	180	30
	Benzene	80	120	30
	Bromobenzene	75	125	30
	Bromochloromethane	65	130	30
	Bromodichloromethane	75	120	30
	Bromoform	70	130	30
	Bromomethane	30	145	30
	Carbon Disulfide	35	160	30
	Carbon Tetrachloride	65	140	30
	Chlorobenzene	80	120	30
	Chloroethane	60	135	30
	Chloroform	65	135	30
	Chloromethane	40	125	30

	cis-1,2-Dichloroethene	70	125	30
	cis-1,3-Dichloropropene	70	130	30
	Cyclohexane	60	130	30
	Dibromochloromethane	60	135	30
	Dibromomethane	75	125	30
	Dichlorodifluoromethane	30	155	30
	Di-Isopropyl Ether	60	130	30
	ETBE	50	150	30
	Ethyl Methacrylate	70	135	30
	Ethylbenzene	75	125	30
	Hexachlorobutadiene	50	140	30
	Iodomethane	50	140	30
	Isopropylbenzene	75	125	30
	Methyl Acetate	55	150	30
	Methyl Methacrylate	70	135	30
	Methyl tert-Butyl Ether	65	125	30
	Methylcyclohexane	60	125	30
	Methylene Chloride	55	140	30
	Naphthalene	55	140	30
	n-Butylbenzene	70	135	30
	n-Propylbenzene	70	130	30
	p-Isopropyltoluene	75	130	30
	sec-Butylbenzene	70	125	30
	Styrene	65	135	30
	t-Butyl Alcohol	60	130	30
	tert-Amyl Methyl Ether	50	150	30
Surrogates	Bromofluorobenzene	75	125	
	Dibromofluorobenzene	85	115	
	1,2 Dichloroethane-d4	70	120	
	Toluene-d8	85	120	

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits		
Method	**Analyte**	**Lower**	**Upper**	**RPD**
SW846 8270C	1-Methylnaphthalene	30	115	30
Waters	1,1'-Biphenyl	50	110	30
	1,2,4,5-Tetrachlorobenzene	50	125	30
	1,2,4-Trichlorobenzene	35	105	30
	1,2-Dichlorobenzene	35	100	30
	1,2-Diphenylhydrazine	55	115	30
	1,3-Dichlorobenzene	30	100	30
	1,4-Dichlorobenzene	30	100	30
	2,3,4,6-Tetrachlorophenol	50	125	30
	2,4,5-Trichlorophenol	50	110	30
	2,4,6-Trichlorophenol (TCP)	50	115	30
	2,4-Dichlorophenol (DCP)	40	110	30
	2,4-Dimethylphenol	30	110	30
	2,4-Dinitrophenol	15	140	30
	2,4-Dinitrotoluene (DNT)	50	120	30
	2,6-Dinitrotoluene	50	115	30
	2-Chloronaphthalene	50	105	30
	2-Chlorophenol	35	105	30
	2-Methylnaphthalene	45	105	30
	2-Methylphenol (o-Cresol)	40	110	30
	2-Nitroaniline	50	115	30
	2-Nitrophenol (ONP)	40	115	30
	3,3'-Dichlorobenzidine (DCB)	20	110	30
	3-Methylphenol	30	110	30
	3-Nitroaniline	20	125	30
	4,6-Dinitro-2-methylphenol (DNOC)	40	130	30
	4-Bromophenyl phenyl ether	50	115	30
	4-Chloro-3-methylphenol	45	110	30
	4-Chloroaniline	15	110	30
	4-Chlorophenyl phenyl ether	50	110	30
	4-Methylphenol (p-Cresol)	30	110	30
	4-Nitroaniline (PNA)	35	120	30
	4-Nitrophenol (PNP)	0	125	30
	Acenaphthene	45	110	30
	Acenaphthylene	50	105	30
	Acetaphenone	50	110	30
	Aniline	10	110	30
	Anthracene	55	110	30
	Benzidine	0	200	30
	Benzo(a)anthracene	55	110	30
	Benzo(a)pyrene	55	110	30
	Benzo(b)fluoranthene	45	120	30
	Benzo(g,h,i)perylene	40	125	30
	Benzo(k)fluoranthene	45	125	30

	Benzoic Acid	0	125	30
	Benzyl alcohol	30	110	30
	bis(2-Chloroethoxy)methane	45	105	30
	bis(2-Chloroethyl)ether (BCEE)	35	110	30
	Bis(2-chloroisopropyl)ether, or 2,2'-oxybis (1-Chloropropane)	25	130	30
	bis(2-Ethylhexyl)phthalate (BEHP)	40	125	30
	Butyl benzyl phthalate (BBP)	45	115	30
	Carbazole	50	115	30
	Chrysene	55	110	30
	Dibenz(a,h)anthracene	40	125	30
	Dibenzofuran (DBF)	55	105	30
	Diethyl phthalate (DEP)	40	120	30
	Dimethyl phthalate (DMP)	25	125	30
	Di-n-butyl phthalate (DBP)	55	115	30
	Di-n-octyl phthalate (DNOP)	35	135	30
	Fluoranthene	55	115	30
	Fluorene	50	110	30
	Hexachlorobenzene (HCB)	50	110	30
	Hexachlorobutadiene (HCBD)	25	105	30
	Hexachlorocyclopentadiene (HCCPD)	10	110	30
	Hexachloroethane (HCE)	30	95	30
	Indeno(1,2,3-cd)pyrene	45	125	30
	Isophorone	50	110	30
	Naphthalene	40	100	30
	Nitrobenzene	30	110	30
	N-Nitrosodimethylamine	25	110	30
	N-Nitroso-di-n-propylamine (NDPA)	35	130	30
	N-nitrosodiphenylamine (NDPHA)	50	110	30
	Pentachlorophenol	40	115	30
	Phenanthrene	50	115	30
	Phenol	0	115	30
	Pyrene	50	130	30
	Pyridine	10	110	30
Surrogates:	2-Fluorobiphenyl	50	110	
	2-Fluorophenol	20	110	
	Nitrobenzene-d5	40	110	
	Phenol-d5	15	110	
	Terphenyl-d14	50	135	

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits		
Method	**Analyte**	**Lower**	**Upper**	**RPD**
SW846 8011	Ethylene Dibromide	70	130	20
Waters				

Empirical Laboratories, LLC Control Limits

Method	Analyte	Laboratory Specific Control Limits		
		Lower	Upper	RPD
SW846 8015B DRO	DRO C10- C28	50	150	50
Waters				
Surrogates:	2-Fluorobiphenyl	50	150	
	o-Terphenyl	30	140	

Method	Analyte	Laboratory Specific Control		
		Lower	Upper	RPD
SW846 8015B GRO	GRO C6-C8	50	150	50
Waters				
Surrogate:	Bromofluorobenzene	50	150	

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits LCS			Laboratory Specific Control Limits Matrix Spikes		
Method	**Analyte**	**Lower**	**Upper**	**RPD**	**Lower**	**Upper**	**RPD**
EPH MA DEP	C12 - C40	50	150	20	50	150	50
Waters							
Surrogate:	o-Terphenyl	50	150				

		Laboratory Specific Control Limits		
Method	**Analyte**	**Lower**	**Upper**	**RPD**
VPH MA DEP	C5-C8 Aliphatics	70	130	40
Waters	C9-C12 Aliphatics	70	130	40
Surrogate:	2,5 Dibromotoluene	70	130	

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits		
Method	**Analyte**	**Lower**	**Upper**	**RPD**
SW846 6010B	Dissolved Iron	80	120	20
Waters	Dissolved Manganese	80	120	20
	Lead	80	120	20
	Sodium	80	120	20
	Potassium	80	120	20
	Calcium	80	120	20
	Magnesium	80	120	20

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits LCS			Laboratory Specific Control Limits MS		
Method	**Analyte**	**Lower**	**Upper**	**RPD**	**Lower**	**Upper**	**RPD**
SW846 9056	Nitrate	90	110	20	80	120	20
Waters	Nitrite	90	110	20	80	120	20
	Sulfate	90	110	20	80	120	20
	Chloride	90	110	20	80	120	20

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits LCS			Laboratory Specific Control Limits MS		
Method	**Analyte**	**Lower**	**Upper**	**RPD**	**Lower**	**Upper**	**RPD**
SM2320B	Alkalinity	80	120	20	75	125	20
Waters							

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits LCS			Laboratory Specific Control Limits MS		
Method	**Analyte**	**Lower**	**Upper**	**RPD**	**Lower**	**Upper**	**RPD**
SM4500SCF	Sulfide	80	120	20	75	125	20
Waters							

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits LCS			Laboratory Specific Control Limits MS/MSD		
Method	**Analyte**	**Lower**	**Upper**	**RPD**	**Lower**	**Upper**	**RPD**
SM4500PE	Ortho phosphate	80	120	20	75	125	20
Waters							

Empirical Laboratories, LLC Control Limits

		Laboratory Specific Control Limits LCS			Laboratory Specific Control Limits MS/MSD		
Method	**Analyte**	**Lower**	**Upper**	**RPD**	**Lower**	**Upper**	**RPD**
SM4500NH3BG	Ammonia	80	120	20	75	125	20
Waters							

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APPENDIX B-3

Laboratory Method Control Limits – Soil

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Control Limits

Gulf Coast Analytical Laboratories

Method: SW-846 8260B

LCS			
Analyte	**Name**	**LCL-UCL**	**Matrix**
630-20-6	1,1,1,2-Tetrachloroethane	77-122	S
71-55-6	1,1,1-Trichloroethane	70-130	S
79-34-5	1,1,2,2-Tetrachloroethane	66-129	S
79-00-5	1,1,2-Trichloroethane	74-120	S
75-34-3	1,1-Dichloroethane	71-126	S
75-35-4	1,1-Dichloroethene	68-129	S
563-58-6	1,1-Dichloropropene	70-138	S
87-61-6	1,2,3-Trichlorobenzene	69-130	S
96-18-4	1,2,3-Trichloropropane	63-132	S
120-82-1	1,2,4-Trichlorobenzene	64-135	S
95-63-6	1,2,4-Trimethylbenzene	75-130	S
96-12-8	1,2-Dibromo-3-chloropropane	60-123	S
106-93-4	1,2-Dibromoethane	74-122	S
95-50-1	1,2-Dichlorobenzene	76-125	S
107-06-2	1,2-Dichloroethane	68-126	S
78-87-5	1,2-Dichloropropane	72-129	S
108-67-8	1,3,5-Trimethylbenzene	74-136	S
541-73-1	1,3-Dichlorobenzene	77-127	S
142-28-9	1,3-Dichloropropane	77-121	S
106-46-7	1,4-Dichlorobenzene	74-123	S
544-10-5	1-Chlorohexane	68-136	S
594-20-7	2,2-Dichloropropane	74-129	S
78-93-3	2-Butanone	47-142	S
95-49-8	2-Chlorotoluene	75-132	S
591-78-6	2-Hexanone	47-137	S
106-43-4	4-Chlorotoluene	74-133	S
99-87-6	4-Isopropyltoluene	71-136	S
108-10-1	4-Methyl-2-pentanone	52-136	S
67-64-1	Acetone	38-152	S
107-02-8	Acrolein	34-158	S

107-13-1	Acrylonitrile	49-142	S
71-43-2	Benzene	73-128	S
108-86-1	Bromobenzene	73-124	S
74-97-5	Bromochloromethane	73-127	S
75-27-4	Bromodichloromethane	74-126	S
75-25-2	Bromoform	67-122	S
74-83-9	Bromomethane	48-139	S
75-15-0	Carbon disulfide	68-133	S
56-23-5	Carbon tetrachloride	71-133	S
108-90-7	Chlorobenzene	75-121	S
75-00-3	Chloroethane	57-144	S
67-66-3	Chloroform	74-124	S
74-87-3	Chloromethane	61-130	S
124-48-1	Dibromochloromethane	74-122	S
74-95-3	Dibromomethane	72-125	S
75-71-8	Dichlorodifluoromethane	59-138	S
100-41-4	Ethylbenzene	74-130	S
87-68-3	Hexachlorobutadiene	71-140	S
98-82-8	Isopropylbenzene (Cumene)	74-125	S
75-09-2	Methylene chloride	66-130	S
91-20-3	Naphthalene	54-132	S
100-42-5	Styrene	72-128	S
127-18-4	Tetrachloroethene	70-127	S
108-88-3	Toluene	74-121	S
79-01-6	Trichloroethene	78-127	S
75-69-4	Trichlorofluoromethane	64-141	S
108-05-4	Vinyl acetate	53-140	S
75-01-4	Vinyl chloride	67-131	S
1330-20-7	Xylene (total)	71-129	S
156-59-2	cis-1,2-Dichloroethene	72-130	S
10061-01-5	cis-1,3-Dichloropropene	72-129	S
136777-61-2	m,p-Xylene	72-128	S
104-51-8	n-Butylbenzene	68-144	S
103-65-1	n-Propylbenzene	73-137	S
95-47-6	o-Xylene	69-133	S
135-98-8	sec-Butylbenzene	72-141	S
1634-04-4	tert-Butyl methyl ether (MTBE)	69-126	S
98-06-6	tert-Butylbenzene	72-136	S
156-60-5	trans-1,2-Dichloroethene	67-134	S
10061-02-6	trans-1,3-Dichloropropene	72-126	S
17060-07-0	1,2-Dichloroethane-d4	62-125	Surrogate
460-00-4	4-Bromofluorobenzene	62-127	Surrogate

1868-53-7	Dibromofluoromethane	65-130	Surrogate
2037-26-5	Toluene-d8	71-132	Surrogate

Control Limits

Gulf Coast Analytical Laboratories

Method: SW-846 8260B

LCSD			
Analyte	**Name**	**LCL-UCL**	**Matrix**
630-20-6	1,1,1,2-Tetrachloroethane	0-30	S
71-55-6	1,1,1-Trichloroethane	0-30	S
79-34-5	1,1,2,2-Tetrachloroethane	0-30	S
79-00-5	1,1,2-Trichloroethane	0-30	S
75-34-3	1,1-Dichloroethane	0-30	S
75-35-4	1,1-Dichloroethene	0-30	S
563-58-6	1,1-Dichloropropene	0-30	S
87-61-6	1,2,3-Trichlorobenzene	0-30	S
96-18-4	1,2,3-Trichloropropane	0-30	S
120-82-1	1,2,4-Trichlorobenzene	0-30	S
95-63-6	1,2,4-Trimethylbenzene	0-30	S
96-12-8	1,2-Dibromo-3-chloropropane	0-30	S
106-93-4	1,2-Dibromoethane	0-30	S
95-50-1	1,2-Dichlorobenzene	0-30	S
107-06-2	1,2-Dichloroethane	0-30	S
78-87-5	1,2-Dichloropropane	0-30	S
108-67-8	1,3,5-Trimethylbenzene	0-30	S
541-73-1	1,3-Dichlorobenzene	0-30	S
142-28-9	1,3-Dichloropropane	0-30	S
106-46-7	1,4-Dichlorobenzene	0-30	S
544-10-5	1-Chlorohexane	0-30	S
594-20-7	2,2-Dichloropropane	0-30	S
78-93-3	2-Butanone	0-30	S
95-49-8	2-Chlorotoluene	0-30	S
591-78-6	2-Hexanone	0-30	S
106-43-4	4-Chlorotoluene	0-30	S
99-87-6	4-Isopropyltoluene	0-30	S
108-10-1	4-Methyl-2-pentanone	0-30	S
67-64-1	Acetone	0-30	S
107-02-8	Acrolein	0-30	S

107-13-1	Acrylonitrile	0-30	S
71-43-2	Benzene	0-30	S
108-86-1	Bromobenzene	0-30	S
74-97-5	Bromochloromethane	0-30	S
75-27-4	Bromodichloromethane	0-30	S
75-25-2	Bromoform	0-30	S
74-83-9	Bromomethane	0-30	S
75-15-0	Carbon disulfide	0-30	S
56-23-5	Carbon tetrachloride	0-30	S
108-90-7	Chlorobenzene	0-30	S
75-00-3	Chloroethane	0-30	S
67-66-3	Chloroform	0-30	S
74-87-3	Chloromethane	0-30	S
124-48-1	Dibromochloromethane	0-30	S
74-95-3	Dibromomethane	0-30	S
75-71-8	Dichlorodifluoromethane	0-30	S
100-41-4	Ethylbenzene	0-30	S
87-68-3	Hexachlorobutadiene	0-30	S
98-82-8	Isopropylbenzene (Cumene)	0-30	S
75-09-2	Methylene chloride	0-30	S
91-20-3	Naphthalene	0-30	S
100-42-5	Styrene	0-30	S
127-18-4	Tetrachloroethene	0-30	S
108-88-3	Toluene	0-30	S
79-01-6	Trichloroethene	0-30	S
75-69-4	Trichlorofluoromethane	0-30	S
108-05-4	Vinyl acetate	0-30	S
75-01-4	Vinyl chloride	0-30	S
1330-20-7	Xylene (total)	0-30	S
156-59-2	cis-1,2-Dichloroethene	0-30	S
10061-01-5	cis-1,3-Dichloropropene	0-30	S
136777-61-2	m,p-Xylene	0-30	S
104-51-8	n-Butylbenzene	0-30	S
103-65-1	n-Propylbenzene	0-30	S
95-47-6	o-Xylene	0-30	S
135-98-8	sec-Butylbenzene	0-30	S
1634-04-4	tert-Butyl methyl ether (MTBE)	0-30	S
98-06-6	tert-Butylbenzene	0-30	S
156-60-5	trans-1,2-Dichloroethene	0-30	S
10061-02-6	trans-1,3-Dichloropropene	0-30	S

Control Limits

Gulf Coast Analytical Laboratories

Method: SW-846 8270

LCS			
Analyte	**Name**	**LCL-UCL**	**Matrix**
95-94-3	1,2,4,5-Tetrachlorobenzene	60-120	S
120-82-1	1,2,4-Trichlorobenzene	46-120	S
95-50-1	1,2-Dichlorobenzene	44-120	S
122-66-7	1,2Diphenylhydrazine/Azobenzen	49-120	S
541-73-1	1,3-Dichlorobenzene	40-120	S
106-46-7	1,4-Dichlorobenzene	42-120	S
58-90-2	2,3,4,6-Tetrachlorophenol	60-120	S
95-95-4	2,4,5-Trichlorophenol	47-120	S
88-06-2	2,4,6-Trichlorophenol	46-120	S
120-83-2	2,4-Dichlorophenol	47-120	S
105-67-9	2,4-Dimethylphenol	47-120	S
51-28-5	2,4-Dinitrophenol	14-120	S
121-14-2	2,4-Dinitrotoluene	45-120	S
87-65-0	2,6-Dichlorophenol	60-120	S
606-20-2	2,6-Dinitrotoluene	47-120	S
91-58-7	2-Chloronaphthalene	52-120	S
95-57-8	2-Chlorophenol	48-120	S
91-57-6	2-Methylnaphthalene	43-120	S
88-74-4	2-Nitroaniline	44-120	S
88-75-5	2-Nitrophenol	49-120	S
91-94-1	3,3'-Dichlorobenzidine	35-120	S
99-09-2	3-Nitroaniline	29-120	S
534-52-1	4,6-Dinitro-2-methylphenol	29-120	S
101-55-3	4-Bromophenyl phenyl ether	51-125	S
59-50-7	4-Chloro-3-methylphenol	46-120	S
106-47-8	4-Chloroaniline	20-120	S
7005-72-3	4-Chlorophenyl phenyl ether	50-120	S
100-01-6	4-Nitroaniline	32-120	S
100-02-7	4-Nitrophenol	32-120	S
83-32-9	Acenaphthene	50-120	S

208-96-8	Acenaphthylene	53-120	S
62-53-3	Aniline	21-131	S
120-12-7	Anthracene	52-120	S
56-55-3	Benzo(a)anthracene	48-120	S
50-32-8	Benzo(a)pyrene	44-120	S
205-99-2	Benzo(b)fluoranthene	31-130	S
191-24-2	Benzo(g,h,i)perylene	29-134	S
207-08-9	Benzo(k)fluoranthene	36-122	S
111-91-1	Bis(2-Chloroethoxy)methane	51-120	S
111-44-4	Bis(2-Chloroethyl)ether	46-120	S
108-60-1	Bis(2-Chloroisopropyl)ether	46-120	S
117-81-7	Bis(2-Ethylhexyl)phthalate	46-129	S
85-68-7	Butyl benzyl phthalate	46-130	S
86-74-8	Carbazole	47-120	S
218-01-9	Chrysene	51-120	S
84-74-2	Di-n-butyl phthalate	50-120	S
117-84-0	Di-n-octyl phthalate	41-122	S
53-70-3	Dibenz(a,h)anthracene	27-129	S
132-64-9	Dibenzofuran	50-120	S
84-66-2	Diethyl phthalate	36-120	S
131-11-3	Dimethyl phthalate	50-120	S
206-44-0	Fluoranthene	39-120	S
86-73-7	Fluorene	48-120	S
118-74-1	Hexachlorobenzene	48-120	S
87-68-3	Hexachlorobutadiene	46-120	S
77-47-4	Hexachlorocyclopentadiene	23-121	S
67-72-1	Hexachloroethane	40-120	S
193-39-5	Indeno(1,2,3-cd)pyrene	43-132	S
78-59-1	Isophorone	49-120	S
91-20-3	Naphthalene	48-120	S
98-95-3	Nitrobenzene	45-120	S
608-93-5	Pentachlorobenzene	60-120	S
87-86-5	Pentachlorophenol	30-124	S
85-01-8	Phenanthrene	53-120	S
108-95-2	Phenol	42-120	S
129-00-0	Pyrene	38-136	S
110-86-1	Pyridine	11-120	S
1319-77-3MP	m,p-Cresol	46-120	S
621-64-7	n-Nitrosodi-n-propylamine	46-120	S
55-18-5	n-Nitrosodiethylamine	60-120	S
62-75-9	n-Nitrosodimethylamine	34-126	S
86-30-6	n-Nitrosodiphenylamine	54-125	S
95-48-7	o-Cresol	46-120	S

118-79-6	2,4,6-Tribromophenol	44-121	Surrogate
321-60-8	2-Fluorobiphenyl	47-127	Surrogate
367-12-4	2-Fluorophenol	51-119	Surrogate
4165-60-0	Nitrobenzene-d5	46-123	Surrogate
4165-62-2	Phenol-d5	43-123	Surrogate
1718-51-0	Terphenyl-d14	38-167	Surrogate

Control Limits

Gulf Coast Analytical Laboratories

Method: SW-846 8270

	LCSD		
Analyte	**Name**	**LCL-UCL**	**Matrix**
95-94-3	1,2,4,5-Tetrachlorobenzene	0-40	S
120-82-1	1,2,4-Trichlorobenzene	0-40	S
95-50-1	1,2-Dichlorobenzene	0-40	S
122-66-7	1,2Diphenylhydrazine/Azobenzen	0-40	S
541-73-1	1,3-Dichlorobenzene	0-40	S
106-46-7	1,4-Dichlorobenzene	0-40	S
58-90-2	2,3,4,6-Tetrachlorophenol	0-40	S
95-95-4	2,4,5-Trichlorophenol	0-40	S
88-06-2	2,4,6-Trichlorophenol	0-40	S
120-83-2	2,4-Dichlorophenol	0-40	S
105-67-9	2,4-Dimethylphenol	0-40	S
51-28-5	2,4-Dinitrophenol	0-40	S
121-14-2	2,4-Dinitrotoluene	0-40	S
87-65-0	2,6-Dichlorophenol	0-40	S
606-20-2	2,6-Dinitrotoluene	0-40	S
91-58-7	2-Chloronaphthalene	0-40	S
95-57-8	2-Chlorophenol	0-40	S
91-57-6	2-Methylnaphthalene	0-40	S
88-74-4	2-Nitroaniline	0-40	S
88-75-5	2-Nitrophenol	0-40	S
91-94-1	3,3'-Dichlorobenzidine	0-40	S
99-09-2	3-Nitroaniline	0-40	S
534-52-1	4,6-Dinitro-2-methylphenol	0-40	S
101-55-3	4-Bromophenyl phenyl ether	0-40	S
59-50-7	4-Chloro-3-methylphenol	0-40	S
106-47-8	4-Chloroaniline	0-40	S
7005-72-3	4-Chlorophenyl phenyl ether	0-40	S
100-01-6	4-Nitroaniline	0-40	S
100-02-7	4-Nitrophenol	0-40	S
83-32-9	Acenaphthene	0-40	S

208-96-8	Acenaphthylene	0-40	S
62-53-3	Aniline	0-40	S
120-12-7	Anthracene	0-40	S
56-55-3	Benzo(a)anthracene	0-40	S
50-32-8	Benzo(a)pyrene	0-40	S
205-99-2	Benzo(b)fluoranthene	0-40	S
191-24-2	Benzo(g,h,i)perylene	0-40	S
207-08-9	Benzo(k)fluoranthene	0-40	S
111-91-1	Bis(2-Chloroethoxy)methane	0-40	S
111-44-4	Bis(2-Chloroethyl)ether	0-40	S
108-60-1	Bis(2-Chloroisopropyl)ether	0-40	S
117-81-7	Bis(2-Ethylhexyl)phthalate	0-40	S
85-68-7	Butyl benzyl phthalate	0-40	S
86-74-8	Carbazole	0-40	S
218-01-9	Chrysene	0-40	S
84-74-2	Di-n-butyl phthalate	0-40	S
117-84-0	Di-n-octyl phthalate	0-40	S
53-70-3	Dibenz(a,h)anthracene	0-40	S
132-64-9	Dibenzofuran	0-40	S
84-66-2	Diethyl phthalate	0-40	S
131-11-3	Dimethyl phthalate	0-40	S
206-44-0	Fluoranthene	0-40	S
86-73-7	Fluorene	0-40	S
118-74-1	Hexachlorobenzene	0-40	S
87-68-3	Hexachlorobutadiene	0-40	S
77-47-4	Hexachlorocyclopentadiene	0-40	S
67-72-1	Hexachloroethane	0-40	S
193-39-5	Indeno(1,2,3-cd)pyrene	0-40	S
78-59-1	Isophorone	0-40	S
91-20-3	Naphthalene	0-40	S
98-95-3	Nitrobenzene	0-40	S
608-93-5	Pentachlorobenzene	0-40	S
87-86-5	Pentachlorophenol	0-40	S
85-01-8	Phenanthrene	0-40	S
108-95-2	Phenol	0-40	S
129-00-0	Pyrene	0-40	S
110-86-1	Pyridine	0-40	S
1319-77-3MP	m,p-Cresol	0-40	S
621-64-7	n-Nitrosodi-n-propylamine	0-40	S
55-18-5	n-Nitrosodiethylamine	0-40	S
62-75-9	n-Nitrosodimethylamine	0-40	S
86-30-6	n-Nitrosodiphenylamine	0-40	S
95-48-7	o-Cresol	0-40	S

Control Limits

Gulf Coast Analytical Laboratories

Method: Massachusetts EPH & VPH

LCS			
Test	**Name**	**LCL-UCL**	**Matrix**
Mass EPH	C9-C18 Aliphatic Hydrocarbons	40-140	S
Mass EPH	C19-C36 Aliphatic Hydrocarbons	40-140	S
Mass EPH	C11-C22 Aromatics Hydrocarbons	40-140	S
Mass EPH	1-Chlorooctadecane	40-140	EPH Surr
Mass EPH	o-Terphenyl	40-140	EPH Surr
Mass VPH	C5-C8 Aliphatic Hydrocarbons	60-140	S
Mass VPH	C9-C12 Aliphatic Hydrocarbons	60-140	S
Mass VPH	C9-C10 Aromatic Hydrocarbons	60-140	S
Mass VPH	2,5-Dibromotoluene	60-140	VPH Surr

Control Limits

Gulf Coast Analytical Laboratories

Method: Massachusetts
EPH & VPH

LCSD			
Test	**Name**	**LCL-UCL**	**Matrix**
Mass EPH	C9-C18 Aliphatic Hydrocarbons	0-40	S
Mass EPH	C19-C36 Aliphatic Hydrocarbons	0-40	S
Mass EPH	C11-C22 Aromatics Hydrocarbons	0-40	S
Mass VPH	C5-C8 Aliphatic Hydrocarbons	0-30	S
Mass VPH	C9-C12 Aliphatic Hydrocarbons	0-30	S
Mass VPH	C9-C10 Aromatic Hydrocarbons	0-30	S

Control Limits

Gulf Coast Analytical Laboratories

Method: SW-846 6010

LCS			
Analyte	**Name**	**LCL-UCL**	**Matrix**
7439-92-1	Lead	80-120	S

Control Limits

Gulf Coast Analytical Laboratories

Method: SW-846 6010

LCSD			
Analyte	**Name**	**LCL-UCL**	**Matrix**
7439-92-1	Lead	0-20	S

APPENDIX B-4

Laboratory Method Control Limits – Soil Gas

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RTI QA Acceptance Criteria
ASTM 2504

10/21/2010

ASTM 2504

					CCV			DUP	LCS/LCSD			
	&Analyte	Units	MDL	PQL	SPK	Low	High	RPD	SPK	Low	High	RPD
	Carbon dioxide	%	0.1	0.1	1	85	115	20	0.25	70	130	20
	Carbon Monoxide	%	0.1	0.1	1	85	115	20	0.25	70	130	20
	Ethane	%	0.5	0.5	1	85	115	20	0.25	70	130	20
	Hydrogen	%	0.5	0.5	1	85	115	20	0.25	70	130	20
	Methane	%	0.5	0.5	1	85	115	20	0.25	70	130	20
	Nitrogen	%	0.1	0.1	1	85	115	20	0.25	70	130	20
	Oxygen	%	0.1	0.1	1	85	115	20	0.25	70	130	20

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					CCV			DUP	ICV		
	&Analyte	Units	MDL	PQL	SPK	Low	High	RPD	SPK	Low	High
	1,1,1-Trichloroethane	ppbv	0.33	1	9.6	70	130	25	9.6	70	130
	1,1,2,2-Tetrachloroethane	ppbv	0.42	1	10	70	130	25	10	70	130
	1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	0.31	1	9.8	70	130	25	9.8	70	130
	1,1,2-Trichloroethane	ppbv	0.23	0.5	9.8	70	130	25	9.8	70	130
	1,1-Dichloroethane	ppbv	0.38	1	9.7	70	130	25	9.7	70	130
	1,1-Dichloroethene	ppbv	0.65	2	9.9	70	130	25	9.9	70	130
	1,2,4-Trichlorobenzene	ppbv	0.52	2	9.1	70	130	25	9.1	70	130
	1,2,4-Trimethylbenzene	ppbv	0.42	1	9.8	70	130	25	9.8	70	130
	1,2-Dibromoethane	ppbv	0.19	0.5	9.6	70	130	25	9.6	70	130
	1,2-Dichlorobenzene	ppbv	0.37	1	9.7	70	130	25	9.7	70	130
	1,2-Dichloroethane	ppbv	0.33	1	9.7	70	130	25	9.7	70	130
	1,2-Dichloropropane	ppbv	0.23	0.5	9.8	70	130	25	9.8	70	130
	1,3,5-Trimethylbenzene	ppbv	0.38	1	9.7	70	130	25	9.7	70	130
	1,3-Butadiene	ppbv	1.34	3	9.8	70	130	25	9.8	70	130
	1,3-Dichlorobenzene	ppbv	0.36	1	9.7	70	130	25	9.7	70	130
	1,4-Dichlorobenzene	ppbv	0.45	1	9.6	70	130	25	9.6	70	130
	1,4-Dioxane	ppbv	1.8	5	9.6	70	130	25	9.6	70	130
	2-Butanone	ppbv	0.54	2	9.9	70	130	25	9.9	70	130
	2-Hexanone	ppbv	2.16	5	9.8	70	130	25	9.8	70	130
	2-Propanol	ppbv	0.44	1	10.1	70	130	25	10.1	70	130
	4-Methyl-2-pentanone	ppbv	1.07	5	10	70	130	25	10	70	130
	Acetone	ppbv	0.44	2	10	70	130	25	10	70	130
	Benzene	ppbv	0.39	1	9.6	70	130	25	9.6	70	130
	Benzyl chloride	ppbv	0.54	1	9.7	70	130	25	9.7	70	130
	Bromodichloromethane	ppbv	0.21	0.5	9.6	70	130	25	9.6	70	130
	Bromoform	ppbv	0.41	1	9.6	70	130	25	9.6	70	130
	Bromomethane	ppbv	0.71	2	9.3	70	130	25	9.3	70	130
	Carbon disulfide	ppbv	0.41	2	9.7	70	130	25	9.7	70	130
	Carbon tetrachloride	ppbv	0.35	1	9.5	70	130	25	9.5	70	130
	Chlorobenzene	ppbv	0.39	1	9.9	70	130	25	9.9	70	130
	Chlorodibromomethane	ppbv	0.34	1	9.2	70	130	25	9.2	70	130
	Chloroethane	ppbv	0.49	1	9.8	70	130	25	9.8	70	130
	Chloroform	ppbv	0.3	1	9.4	70	130	25	9.4	70	130

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	Chloromethane	ppbv	0.68	2	9.8	70	130	25	9.8	70	130
	cis-1,2-Dichloroethene	ppbv	1	1	9.8	70	130	25	9.8	70	130
	cis-1,3-dichloropropene	ppbv	0.24	0.5	9.5	70	130	25	9.5	70	130
	Cyclohexane	ppbv	0.37	1	9.8	70	130	25	9.8	70	130
	Dichlorodifluoromethane	ppbv	0.4	1	9.2	70	130	25	9.2	70	130
	Ethanol	ppbv	0.53	1	9.2	70	130	25	9.2	70	130
	Ethyl acetate	ppbv	0.55	1	9.8	70	130	25	9.8	70	130
	Ethylbenzene	ppbv	0.35	1	9.8	70	130	25	9.8	70	130
	Heptane	ppbv	0.37	1	9.9	70	130	25	9.9	70	130
	Hexachlorobutadiene	ppbv	0.54	2	9.4	70	130	25	9.4	70	130
	m,p-Xylene	ppbv	0.75	2	19.2	70	130	25	19.2	70	130
	Methylene chloride	ppbv	0.31	2	10	70	130	25	10	70	130
	n-Hexane	ppbv	0.31	1	10.1	70	130	25	10.1	70	130
	o-Xylene	ppbv	0.39	1	10	70	130	25	10	70	130
	Propylene	ppbv	0.37	1	10.2	70	130	25	10.2	70	130
	Styrene	ppbv	0.43	1	9.8	70	130	25	9.8	70	130
	tert-Butyl Methyl Ether	ppbv	0.61	2	9.9	70	130	25	9.9	70	130
	Tetrachloroethene	ppbv	0.21	0.5	9.6	70	130	25	9.6	70	130
	Tetrahydrofuran	ppbv	0.58	2	10	70	130	25	10	70	130
	Toluene	ppbv	0.24	0.5	9.8	70	130	25	9.8	70	130
	trans-1,2-Dichloroethene	ppbv	0.38	1	9.8	70	130	25	9.8	70	130
	trans-1,3-dichloropropene	ppbv	0.31	1	9.1	70	130	25	9.1	70	130
	Trichloroethene	ppbv	0.35	1	9.6	70	130	25	9.6	70	130
	Trichlorofluoromethane	ppbv	0.31	1	9.6	70	130	25	9.6	70	130
	Vinyl acetate	ppbv	0.31	1	9.9	70	130	25	9.9	70	130
	Vinyl chloride	ppbv	0.41	1	9.4	70	130	25	9.4	70	130
	Xylenes, Total	ppbv	1.14	3	29.2	70	130	25	29.2	70	130
SUR	4-Bromofluorobenzene	ppbv	0	0.5	12.5	70	130	25	12.5	70	130

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						CCV			DUP	ICV		
	&Analyte	Units	MDL	LOD	PQL	SPK	Low	High	RPD	SPK	Low	High
	C5-C8 Aliphatic	µg/m³	3.7	6	12	120	70	130	25	120	70	130
	C9-C12 Aliphatic	µg/m³	4.7	6	12	120	70	130	25	120	70	130
	C9-C10 Aromatic	µg/m³	1.9	5	8	80	70	130	25	80	70	130
	1,3-Butadiene	µg/m³	3.0	4.5	6.6	21.7	70	130	25	21.7	70	130
	tert-Butyl Methyl Ether	µg/m³	2.2	3.6	7.2	35.7	70	130	25	35.7	70	130
	Benzene	µg/m³	1.3	1.6	3.2	30.7	70	130	25	30.7	70	130
	Toluene	µg/m³	0.9	1.9	1.9	36.9	70	130	25	36.9	70	130
	Ethylbenzene	µg/m³	1.5	2.2	4.4	42.6	70	130	25	42.6	70	130
	m,p-Xylene	µg/m³	3.3	4.3	8.7	83.4	70	130	25	83.4	70	130
	o-Xylene	µg/m³	1.7	2.2	4.3	43.4	70	130	25	43.4	70	130
	Naphthalene	µg/m³	6.0	10.5	15.7	53.5	70	130	25	53.5	70	130
SUR	4-Bromofluorobenzene	µg/m³	0		3.6	89	70	130	25	89	70	130