

Client Sample ID: SVW7

Lab ID#: 1208098A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080807	Date of Collection:	7/30/12 1:30:00 PM
Dil. Factor:	1.87	Date of Analysis:	8/8/12 11:36 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.94	Not Detected	4.6	Not Detected
Freon 114	0.94	Not Detected	6.5	Not Detected
Chloromethane	9.4	Not Detected	19	Not Detected
Vinyl Chloride	0.94	Not Detected	2.4	Not Detected
1,3-Butadiene	0.94	Not Detected	2.1	Not Detected
Bromomethane	9.4	Not Detected	36	Not Detected
Chloroethane	3.7	Not Detected	9.9	Not Detected
Freon 11	0.94	Not Detected	5.2	Not Detected
Ethanol	3.7	Not Detected	7.0	Not Detected
Freon 113	0.94	Not Detected	7.2	Not Detected
1,1-Dichloroethene	0.94	Not Detected	3.7	Not Detected
Acetone	9.4	Not Detected	22	Not Detected
2-Propanol	3.7	Not Detected	9.2	Not Detected
Carbon Disulfide	3.7	Not Detected	12	Not Detected
3-Chloropropene	3.7	Not Detected	12	Not Detected
Methylene Chloride	9.4	Not Detected	32	Not Detected
Methyl tert-butyl ether	0.94	Not Detected	3.4	Not Detected
trans-1,2-Dichloroethene	0.94	Not Detected	3.7	Not Detected
Hexane	0.94	Not Detected	3.3	Not Detected
1,1-Dichloroethane	0.94	Not Detected	3.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.7	Not Detected	11	Not Detected
cis-1,2-Dichloroethene	0.94	Not Detected	3.7	Not Detected
Tetrahydrofuran	0.94	Not Detected	2.8	Not Detected
Chloroform	0.94	1.4	4.6	6.8
1,1,1-Trichloroethane	0.94	Not Detected	5.1	Not Detected
Cyclohexane	0.94	Not Detected	3.2	Not Detected
Carbon Tetrachloride	0.94	Not Detected	5.9	Not Detected
2,2,4-Trimethylpentane	0.94	Not Detected	4.4	Not Detected
Benzene	0.94	Not Detected	3.0	Not Detected
1,2-Dichloroethane	0.94	Not Detected	3.8	Not Detected
Heptane	0.94	Not Detected	3.8	Not Detected
Trichloroethene	0.94	2.6	5.0	14
1,2-Dichloropropane	0.94	Not Detected	4.3	Not Detected
1,4-Dioxane	3.7	Not Detected	13	Not Detected
Bromodichloromethane	0.94	Not Detected	6.3	Not Detected
cis-1,3-Dichloropropene	0.94	Not Detected	4.2	Not Detected
4-Methyl-2-pentanone	0.94	Not Detected	3.8	Not Detected
Toluene	0.94	1.0	3.5	3.8
trans-1,3-Dichloropropene	0.94	Not Detected	4.2	Not Detected
1,1,2-Trichloroethane	0.94	Not Detected	5.1	Not Detected
Tetrachloroethene	0.94	79	6.3	530
2-Hexanone	3.7	Not Detected	15	Not Detected

Client Sample ID: SVW7

Lab ID#: 1208098A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080807	Date of Collection:	7/30/12 1:30:00 PM
Dil. Factor:	1.87	Date of Analysis:	8/8/12 11:36 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.94	Not Detected	8.0	Not Detected
1,2-Dibromoethane (EDB)	0.94	Not Detected	7.2	Not Detected
Chlorobenzene	0.94	Not Detected	4.3	Not Detected
Ethyl Benzene	0.94	Not Detected	4.0	Not Detected
m,p-Xylene	0.94	1.8	4.1	8.0
o-Xylene	0.94	1.1	4.1	4.6
Styrene	0.94	Not Detected	4.0	Not Detected
Bromoform	0.94	Not Detected	9.7	Not Detected
Cumene	0.94	Not Detected	4.6	Not Detected
1,1,2,2-Tetrachloroethane	0.94	Not Detected	6.4	Not Detected
Propylbenzene	0.94	Not Detected	4.6	Not Detected
4-Ethyltoluene	0.94	Not Detected	4.6	Not Detected
1,3,5-Trimethylbenzene	0.94	Not Detected	4.6	Not Detected
1,2,4-Trimethylbenzene	0.94	Not Detected	4.6	Not Detected
1,3-Dichlorobenzene	0.94	Not Detected	5.6	Not Detected
1,4-Dichlorobenzene	0.94	Not Detected	5.6	Not Detected
alpha-Chlorotoluene	0.94	Not Detected	4.8	Not Detected
1,2-Dichlorobenzene	0.94	Not Detected	5.6	Not Detected
1,2,4-Trichlorobenzene	3.7	Not Detected	28	Not Detected
Hexachlorobutadiene	3.7	Not Detected	40	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: FB001

Lab ID#: 1208098A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080808	Date of Collection:	7/30/12 12:40:00 PM
Dil. Factor:	1.61	Date of Analysis:	8/8/12 12:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 114	0.80	Not Detected	5.6	Not Detected
Chloromethane	8.0	Not Detected	17	Not Detected
Vinyl Chloride	0.80	Not Detected	2.0	Not Detected
1,3-Butadiene	0.80	Not Detected	1.8	Not Detected
Bromomethane	8.0	Not Detected	31	Not Detected
Chloroethane	3.2	Not Detected	8.5	Not Detected
Freon 11	0.80	Not Detected	4.5	Not Detected
Ethanol	3.2	Not Detected	6.1	Not Detected
Freon 113	0.80	Not Detected	6.2	Not Detected
1,1-Dichloroethene	0.80	Not Detected	3.2	Not Detected
Acetone	8.0	Not Detected	19	Not Detected
2-Propanol	3.2	Not Detected	7.9	Not Detected
Carbon Disulfide	3.2	Not Detected	10	Not Detected
3-Chloropropene	3.2	Not Detected	10	Not Detected
Methylene Chloride	8.0	Not Detected	28	Not Detected
Methyl tert-butyl ether	0.80	Not Detected	2.9	Not Detected
trans-1,2-Dichloroethene	0.80	Not Detected	3.2	Not Detected
Hexane	0.80	Not Detected	2.8	Not Detected
1,1-Dichloroethane	0.80	Not Detected	3.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.2	Not Detected	9.5	Not Detected
cis-1,2-Dichloroethene	0.80	Not Detected	3.2	Not Detected
Tetrahydrofuran	0.80	Not Detected	2.4	Not Detected
Chloroform	0.80	Not Detected	3.9	Not Detected
1,1,1-Trichloroethane	0.80	Not Detected	4.4	Not Detected
Cyclohexane	0.80	Not Detected	2.8	Not Detected
Carbon Tetrachloride	0.80	Not Detected	5.1	Not Detected
2,2,4-Trimethylpentane	0.80	Not Detected	3.8	Not Detected
Benzene	0.80	Not Detected	2.6	Not Detected
1,2-Dichloroethane	0.80	Not Detected	3.2	Not Detected
Heptane	0.80	Not Detected	3.3	Not Detected
Trichloroethene	0.80	Not Detected	4.3	Not Detected
1,2-Dichloropropane	0.80	Not Detected	3.7	Not Detected
1,4-Dioxane	3.2	Not Detected	12	Not Detected
Bromodichloromethane	0.80	Not Detected	5.4	Not Detected
cis-1,3-Dichloropropene	0.80	Not Detected	3.6	Not Detected
4-Methyl-2-pentanone	0.80	Not Detected	3.3	Not Detected
Toluene	0.80	Not Detected	3.0	Not Detected
trans-1,3-Dichloropropene	0.80	Not Detected	3.6	Not Detected
1,1,2-Trichloroethane	0.80	Not Detected	4.4	Not Detected
Tetrachloroethene	0.80	Not Detected	5.5	Not Detected
2-Hexanone	3.2	Not Detected	13	Not Detected

Client Sample ID: FB001

Lab ID#: 1208098A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080808	Date of Collection:	7/30/12 12:40:00 PM
Dil. Factor:	1.61	Date of Analysis:	8/8/12 12:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.80	Not Detected	6.8	Not Detected
1,2-Dibromoethane (EDB)	0.80	Not Detected	6.2	Not Detected
Chlorobenzene	0.80	Not Detected	3.7	Not Detected
Ethyl Benzene	0.80	Not Detected	3.5	Not Detected
m,p-Xylene	0.80	Not Detected	3.5	Not Detected
o-Xylene	0.80	Not Detected	3.5	Not Detected
Styrene	0.80	Not Detected	3.4	Not Detected
Bromoform	0.80	Not Detected	8.3	Not Detected
Cumene	0.80	Not Detected	4.0	Not Detected
1,1,2,2-Tetrachloroethane	0.80	Not Detected	5.5	Not Detected
Propylbenzene	0.80	Not Detected	4.0	Not Detected
4-Ethyltoluene	0.80	Not Detected	4.0	Not Detected
1,3,5-Trimethylbenzene	0.80	Not Detected	4.0	Not Detected
1,2,4-Trimethylbenzene	0.80	Not Detected	4.0	Not Detected
1,3-Dichlorobenzene	0.80	Not Detected	4.8	Not Detected
1,4-Dichlorobenzene	0.80	Not Detected	4.8	Not Detected
alpha-Chlorotoluene	0.80	Not Detected	4.2	Not Detected
1,2-Dichlorobenzene	0.80	Not Detected	4.8	Not Detected
1,2,4-Trichlorobenzene	3.2	Not Detected	24	Not Detected
Hexachlorobutadiene	3.2	Not Detected	34	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: REP001

Lab ID#: 1208098A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080820	Date of Collection:	7/30/12 11:30:00 AM
Dil. Factor:	12.2	Date of Analysis:	8/8/12 07:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	6.1	Not Detected	30	Not Detected
Freon 114	6.1	Not Detected	43	Not Detected
Chloromethane	61	Not Detected	120	Not Detected
Vinyl Chloride	6.1	Not Detected	16	Not Detected
1,3-Butadiene	6.1	Not Detected	13	Not Detected
Bromomethane	61	Not Detected	240	Not Detected
Chloroethane	24	Not Detected	64	Not Detected
Freon 11	6.1	Not Detected	34	Not Detected
Ethanol	24	Not Detected	46	Not Detected
Freon 113	6.1	Not Detected	47	Not Detected
1,1-Dichloroethene	6.1	Not Detected	24	Not Detected
Acetone	61	Not Detected	140	Not Detected
2-Propanol	24	Not Detected	60	Not Detected
Carbon Disulfide	24	Not Detected	76	Not Detected
3-Chloropropene	24	Not Detected	76	Not Detected
Methylene Chloride	61	Not Detected	210	Not Detected
Methyl tert-butyl ether	6.1	Not Detected	22	Not Detected
trans-1,2-Dichloroethene	6.1	Not Detected	24	Not Detected
Hexane	6.1	Not Detected	21	Not Detected
1,1-Dichloroethane	6.1	Not Detected	25	Not Detected
2-Butanone (Methyl Ethyl Ketone)	24	Not Detected	72	Not Detected
cis-1,2-Dichloroethene	6.1	34	24	130
Tetrahydrofuran	6.1	Not Detected	18	Not Detected
Chloroform	6.1	Not Detected	30	Not Detected
1,1,1-Trichloroethane	6.1	Not Detected	33	Not Detected
Cyclohexane	6.1	Not Detected	21	Not Detected
Carbon Tetrachloride	6.1	Not Detected	38	Not Detected
2,2,4-Trimethylpentane	6.1	Not Detected	28	Not Detected
Benzene	6.1	Not Detected	19	Not Detected
1,2-Dichloroethane	6.1	Not Detected	25	Not Detected
Heptane	6.1	Not Detected	25	Not Detected
Trichloroethene	6.1	280	33	1500
1,2-Dichloropropane	6.1	Not Detected	28	Not Detected
1,4-Dioxane	24	Not Detected	88	Not Detected
Bromodichloromethane	6.1	Not Detected	41	Not Detected
cis-1,3-Dichloropropene	6.1	Not Detected	28	Not Detected
4-Methyl-2-pentanone	6.1	Not Detected	25	Not Detected
Toluene	6.1	Not Detected	23	Not Detected
trans-1,3-Dichloropropene	6.1	Not Detected	28	Not Detected
1,1,2-Trichloroethane	6.1	Not Detected	33	Not Detected
Tetrachloroethene	6.1	1600	41	11000
2-Hexanone	24	Not Detected	100	Not Detected

Client Sample ID: REP001

Lab ID#: 1208098A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080820	Date of Collection:	7/30/12 11:30:00 AM
Dil. Factor:	12.2	Date of Analysis:	8/8/12 07:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	6.1	Not Detected	52	Not Detected
1,2-Dibromoethane (EDB)	6.1	Not Detected	47	Not Detected
Chlorobenzene	6.1	Not Detected	28	Not Detected
Ethyl Benzene	6.1	Not Detected	26	Not Detected
m,p-Xylene	6.1	Not Detected	26	Not Detected
o-Xylene	6.1	Not Detected	26	Not Detected
Styrene	6.1	Not Detected	26	Not Detected
Bromoform	6.1	Not Detected	63	Not Detected
Cumene	6.1	Not Detected	30	Not Detected
1,1,2,2-Tetrachloroethane	6.1	Not Detected	42	Not Detected
Propylbenzene	6.1	Not Detected	30	Not Detected
4-Ethyltoluene	6.1	Not Detected	30	Not Detected
1,3,5-Trimethylbenzene	6.1	Not Detected	30	Not Detected
1,2,4-Trimethylbenzene	6.1	Not Detected	30	Not Detected
1,3-Dichlorobenzene	6.1	Not Detected	37	Not Detected
1,4-Dichlorobenzene	6.1	Not Detected	37	Not Detected
alpha-Chlorotoluene	6.1	Not Detected	32	Not Detected
1,2-Dichlorobenzene	6.1	Not Detected	37	Not Detected
1,2,4-Trichlorobenzene	24	Not Detected	180	Not Detected
Hexachlorobutadiene	24	Not Detected	260	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: Lab Blank

Lab ID#: 1208098A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080806	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 10:51 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1208098A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080806	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 10:51 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: CCV

Lab ID#: 1208098A-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080802	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 08:58 AM

Compound	%Recovery
Freon 12	93
Freon 114	94
Chloromethane	86
Vinyl Chloride	81
1,3-Butadiene	80
Bromomethane	86
Chloroethane	83
Freon 11	94
Ethanol	71
Freon 113	97
1,1-Dichloroethene	88
Acetone	86
2-Propanol	79
Carbon Disulfide	84
3-Chloropropene	89
Methylene Chloride	81
Methyl tert-butyl ether	126
trans-1,2-Dichloroethene	99
Hexane	88
1,1-Dichloroethane	85
2-Butanone (Methyl Ethyl Ketone)	90
cis-1,2-Dichloroethene	89
Tetrahydrofuran	80
Chloroform	90
1,1,1-Trichloroethane	92
Cyclohexane	91
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	86
Benzene	88
1,2-Dichloroethane	92
Heptane	100
Trichloroethene	91
1,2-Dichloropropane	80
1,4-Dioxane	95
Bromodichloromethane	91
cis-1,3-Dichloropropene	91
4-Methyl-2-pentanone	93
Toluene	92
trans-1,3-Dichloropropene	97
1,1,2-Trichloroethane	90
Tetrachloroethene	100
2-Hexanone	95

Client Sample ID: CCV

Lab ID#: 1208098A-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080802	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 08:58 AM

Compound	%Recovery
Dibromochloromethane	104
1,2-Dibromoethane (EDB)	96
Chlorobenzene	91
Ethyl Benzene	102
m,p-Xylene	106
o-Xylene	104
Styrene	103
Bromoform	103
Cumene	109
1,1,1,2-Tetrachloroethane	81
Propylbenzene	99
4-Ethyltoluene	105
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	107
1,3-Dichlorobenzene	93
1,4-Dichlorobenzene	96
alpha-Chlorotoluene	90
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	88
Hexachlorobutadiene	102

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	116	70-130

Client Sample ID: LCS

Lab ID#: 1208098A-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080803	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 09:33 AM

Compound	%Recovery
Freon 12	95
Freon 114	97
Chloromethane	84
Vinyl Chloride	90
1,3-Butadiene	84
Bromomethane	95
Chloroethane	85
Freon 11	94
Ethanol	50 Q
Freon 113	101
1,1-Dichloroethene	96
Acetone	90
2-Propanol	79
Carbon Disulfide	107
3-Chloropropene	104
Methylene Chloride	83
Methyl tert-butyl ether	136 Q
trans-1,2-Dichloroethene	111
Hexane	90
1,1-Dichloroethane	89
2-Butanone (Methyl Ethyl Ketone)	91
cis-1,2-Dichloroethene	94
Tetrahydrofuran	79
Chloroform	93
1,1,1-Trichloroethane	95
Cyclohexane	98
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	89
Benzene	88
1,2-Dichloroethane	89
Heptane	96
Trichloroethene	90
1,2-Dichloropropane	82
1,4-Dioxane	88
Bromodichloromethane	90
cis-1,3-Dichloropropene	91
4-Methyl-2-pentanone	90
Toluene	88
trans-1,3-Dichloropropene	99
1,1,2-Trichloroethane	95
Tetrachloroethene	100
2-Hexanone	86

Client Sample ID: LCS

Lab ID#: 1208098A-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080803	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 09:33 AM

Compound	%Recovery
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	99
Chlorobenzene	92
Ethyl Benzene	102
m,p-Xylene	107
o-Xylene	104
Styrene	102
Bromoform	102
Cumene	109
1,1,1,2-Tetrachloroethane	82
Propylbenzene	99
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	93
1,4-Dichlorobenzene	94
alpha-Chlorotoluene	86
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	87
Hexachlorobutadiene	101

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	113	70-130

Client Sample ID: LCSD

Lab ID#: 1208098A-12AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080804	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 09:52 AM

Compound	%Recovery
Freon 12	92
Freon 114	97
Chloromethane	85
Vinyl Chloride	87
1,3-Butadiene	81
Bromomethane	92
Chloroethane	85
Freon 11	89
Ethanol	48 Q
Freon 113	99
1,1-Dichloroethene	95
Acetone	87
2-Propanol	78
Carbon Disulfide	106
3-Chloropropene	101
Methylene Chloride	82
Methyl tert-butyl ether	130
trans-1,2-Dichloroethene	109
Hexane	88
1,1-Dichloroethane	87
2-Butanone (Methyl Ethyl Ketone)	93
cis-1,2-Dichloroethene	94
Tetrahydrofuran	77
Chloroform	91
1,1,1-Trichloroethane	93
Cyclohexane	94
Carbon Tetrachloride	92
2,2,4-Trimethylpentane	90
Benzene	86
1,2-Dichloroethane	87
Heptane	95
Trichloroethene	87
1,2-Dichloropropane	80
1,4-Dioxane	88
Bromodichloromethane	87
cis-1,3-Dichloropropene	88
4-Methyl-2-pentanone	86
Toluene	88
trans-1,3-Dichloropropene	95
1,1,2-Trichloroethane	92
Tetrachloroethene	98
2-Hexanone	85

Client Sample ID: LCS D

Lab ID#: 1208098A-12AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p080804	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/8/12 09:52 AM

Compound	%Recovery
Dibromochloromethane	100
1,2-Dibromoethane (EDB)	97
Chlorobenzene	91
Ethyl Benzene	100
m,p-Xylene	107
o-Xylene	104
Styrene	99
Bromoform	98
Cumene	108
1,1,1,2-Tetrachloroethane	82
Propylbenzene	98
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	105
1,2,4-Trimethylbenzene	104
1,3-Dichlorobenzene	93
1,4-Dichlorobenzene	95
alpha-Chlorotoluene	83
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	92
Hexachlorobutadiene	100

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	112	70-130



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Page ____ of ____

Project Manager sch4p4(6) Personal inform
 Collected by: (Print and Sign) sch4p4(6) Personal informat sch4p4(6) Personal
 Company Golden Associates Email sch4p4(6) Pers golden.com.au
 Address 216 Draper St City Cairns State Qld Zip 4870
 Phone sch4p4(6) Personal informat Fax _____

Project Info: P.O. # <u>CR 3105</u> Project # <u>087673045</u> Project Name <u>Kwikleen Dry Cleaners</u>	Turn Around Time: <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Rush specify _____	<i>Lab Use Only</i> Pressurized by: Date: Pressurization Gas: N ₂ He
--	--	---

8/6/12
12:00

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt	Final (psl)
01AB	SVW1	34581	30/07/12	10:00am	TO15 + Helium	-30	-9		
02AB	SVW2	34100	30/07/12	10:30am	" "	-29	-8		
03AB	SVW3	11821	30/07/12	12:00pm	" "	-30	-17		
04AB	SVW4	33645	30/07/12	11:00am	" "	-26	-9		
05AB	SVW5	12383	30/07/12	2:30pm	" "	-30	-10		
06AB	SVW6	9354	30/07/12	12:45pm	" "	-30	-7		
07AB	SVW7	37295	30/07/12	1:30pm	" "	-30	-10		
08AB	FB 001	9513	30/07/12	12:40pm	TO 15	-29	-5		
09AB	REP 001	34156	30/07/12	11:30am	TO15 + Helium	-30	-9		

Relinquished by: (signature) <u>sch4p4(6) Personal in</u> Date/Time <u>31/07/12 12:00pm</u>	Received by: (signature) <u>AIL</u> Date/Time <u>8/6/12 9:00 am</u>	Notes:
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Lab Use Only	Shipper Name <u>DHL</u>	Air Bill # _____	Temp (°C) <u>N/A</u>	Condition <u>Good</u>	Custody Seals Intact? Yes No <u>None</u>	Work Order # <u>1208098</u>
---------------------	-------------------------	------------------	----------------------	-----------------------	--	-----------------------------

8/13/2012

Mr. [sch4p4(6) Person]

Golder Associates, Australia
216 Draper Street

Cairns, Queensland 4870

Project Name: Kwikleen Dry Cleaners

Project #: 087673045

Workorder #: 1208098B

Dear Mr. [sch4p4(6) Person]

The following report includes the data for the above referenced project for sample(s) received on 8/6/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: [sch4p4(6) Person] at [sch4p4(6) Person] if you have any questions regarding the data in this report.

Regards,

[sch4p4(6) Personal information]

[sch4p4(6) Personal in]

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1208098B

Work Order Summary

CLIENT: sch4p4(6) Personal info
 Golder Associates, Australia
 216 Draper Street
 Cairns, Queensland 4870

BILL TO: Accounts Payable
 Golder Associates, Australia
 PO BOX 6079
 Hawthorne, Australia 3121

PHONE: +61 7 4054 8200
FAX: +61 7 4054 8201
DATE RECEIVED: 08/06/2012
DATE COMPLETED: 08/13/2012

P.O. # CQ3105
PROJECT # 087673045 Kwikleen Dry Cleaners
CONTACT: sch4p4(6) Personal info

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SVW1	Modified ASTM D-1946	8.0 "Hg	5.0 psi
02A	SVW2	Modified ASTM D-1946	8.0 "Hg	5.0 psi
03A	SVW3	Modified ASTM D-1946	9.5 "Hg	5.0 psi
04A	SVW4	Modified ASTM D-1946	8.0 "Hg	5.0 psi
05A	SVW5	Modified ASTM D-1946	9.0 "Hg	5.0 psi
06A	SVW6	Modified ASTM D-1946	7.0 "Hg	5.0 psi
07A	SVW7	Modified ASTM D-1946	8.5 "Hg	5.0 psi
09A	REP001	Modified ASTM D-1946	8.0 "Hg	5.0 psi
10A	Lab Blank	Modified ASTM D-1946	NA	NA
11A	LCS	Modified ASTM D-1946	NA	NA
11AA	LCSD	Modified ASTM D-1946	NA	NA

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CERTIFIED BY: sch4p4(6) Personal information

DATE: 08/13/12

Technical Director

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291, TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935

Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.

Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
Golder Associates, Australia
Workorder# 1208098B

Eight 1 Liter Summa Canister samples were received on August 06, 2012. The laboratory performed analysis via Modified ASTM Method D-1946 for Helium in air using GC/TCD. The method involves direct injection of 1.0 mL of sample.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>ASTM D-1946</i>	<i>ATL Modifications</i>
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a $\geq 95\%$ accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections $> 5 \times$ the RL.

Receiving Notes

There was a significant difference (greater than 5.0" Hg) between the measured canister receipt vacuum and that which was reported on the Chain of Custody (COC) for sample SVW3. A leak test indicated that the valve was functioning properly.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: SVW1
Lab ID#: 1208098B-01A
No Detections Were Found.

Client Sample ID: SVW2
Lab ID#: 1208098B-02A
No Detections Were Found.

Client Sample ID: SVW3
Lab ID#: 1208098B-03A
No Detections Were Found.

Client Sample ID: SVW4
Lab ID#: 1208098B-04A
No Detections Were Found.

Client Sample ID: SVW5
Lab ID#: 1208098B-05A
No Detections Were Found.

Client Sample ID: SVW6
Lab ID#: 1208098B-06A
No Detections Were Found.

Client Sample ID: SVW7
Lab ID#: 1208098B-07A
No Detections Were Found.

Client Sample ID: REP001
Lab ID#: 1208098B-09A
No Detections Were Found.



Air Toxics

Client Sample ID: SVW1

Lab ID#: 1208098B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081305	Date of Collection:	7/30/12 10:00:00 AM
Dil. Factor:	1.83	Date of Analysis:	8/13/12 09:10 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.092	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: SVW2

Lab ID#: 1208098B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081306	Date of Collection:	7/30/12 10:30:00 AM
Dil. Factor:	1.83	Date of Analysis:	8/13/12 09:22 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.092	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: SVW3

Lab ID#: 1208098B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081307	Date of Collection:	7/30/12 12:00:00 PM
Dil. Factor:	1.96	Date of Analysis:	8/13/12 09:30 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.098	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: SVW4

Lab ID#: 1208098B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081308	Date of Collection:	7/30/12 11:00:00 AM
Dil. Factor:	1.83	Date of Analysis:	8/13/12 09:40 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.092	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: SVW5

Lab ID#: 1208098B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081309	Date of Collection:	7/30/12 2:30:00 PM
Dil. Factor:	2.56	Date of Analysis:	8/13/12 09:54 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: SVW6

Lab ID#: 1208098B-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081310	Date of Collection:	7/30/12 12:45:00 PM
Dil. Factor:	1.75	Date of Analysis:	8/13/12 10:02 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.088	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: SVW7

Lab ID#: 1208098B-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081311	Date of Collection:	7/30/12 1:30:00 PM
Dil. Factor:	2.50	Date of Analysis:	8/13/12 10:09 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Air Toxics

Client Sample ID: REP001

Lab ID#: 1208098B-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081313	Date of Collection:	7/30/12 11:30:00 AM
Dil. Factor:	1.83	Date of Analysis:	8/13/12 10:41 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.092	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1208098B-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081304	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/13/12 08:50 AM

Compound	Rpt. Limit (%)	Amount (%)
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1208098B-11A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081303	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/13/12 08:41 AM

Compound	%Recovery
Helium	100

Container Type: NA - Not Applicable

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Air Toxics

Client Sample ID: LCSD

Lab ID#: 1208098B-11AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	9081323	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/13/12 01:31 PM

Compound	%Recovery
----------	-----------

Helium	100
--------	-----

Container Type: NA - Not Applicable

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APPENDIX E

Limitations

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ATTACHMENT F

Delineation Investigation September 2012 - March 2013, Cairns Villa Caravan Park, Golder Associates Pty Ltd, Ref. No. 087673045-040-R-Rev0, dated 10 April 2013.

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10 April 2013

**DELINEATION INVESTIGATION
SEPTEMBER 2012 - MARCH 2013**

Cairns Villa Caravan Park

Submitted to:
Mr sch4p4(6) Person
32-36 Pease Street
Manunda QLD 4883

REPORT

Report Number. 087673045-040-R-Rev0

Distribution:

1 Electronic Copy Mr sch4p4(6) Person
1 Electronic Copy Third Party Reviewer



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Table of Contents

1.0 INTRODUCTION	1
2.0 BACKGROUND	1
3.0 FINAL ADOPTED REMEDIATION CRITERIA	2
4.0 SOIL VAPOUR WELLS (OCTOBER 2012) INVESTIGATION	2
4.1 Rationale for Locating Soil Vapour Wells	2
4.2 Soil Vapour Well (SVW8-SVW12) Investigation	2
4.2.1 Vapour Well Details	2
4.2.2 Sampling Methodology	2
4.2.3 Investigation Data QA/QC	3
4.2.4 QA/QC Results	3
4.3 Soil Vapour Well Results	4
4.4 Investigation Conclusions and Recommendations	4
5.0 SOIL VAPOUR WELL/GW WELL INSTALLATION (DECEMBER 2012)	4
5.1 Rationale for Locating Soil Vapour Wells / Groundwater Well	4
5.2 Groundwater Well MW14CP Investigation	5
5.3 Soil Vapour Well (SVW13-SVW15) Investigation	5
5.3.1 Vapour Well Details	5
5.3.2 Sampling Methodology	5
5.3.3 Investigation Data QA/QC	5
5.3.4 QA/QC Results	5
5.3.5 Soil Vapour Well Results	5
5.4 Investigation Conclusions and Recommendations	6
6.0 GW WELL/SOIL VAPOUR WELL INSTALLATION (FEBRUARY 2013)	6
6.1 Rationale for Locating Groundwater Wells / Soil Vapour Wells	6
6.2 Groundwater Well MW15CP-MW20CP Investigation	6
6.2.1 Soil Sampling Results	6
6.2.2 Groundwater Well Details	6
6.2.3 Investigation Data QA/QC	6
6.2.4 QA/QC Results	7
6.2.5 Groundwater Well Results	7



6.3	Soil Vapour Well (SVW16-SVW18) Investigation	8
6.3.1	Vapour Well Details.....	8
6.3.2	Sampling Methodology.....	8
6.3.3	Investigation Data QA/QC.....	8
6.3.4	QA/QC Results	8
6.3.5	Soil Vapour Well Results.....	8
6.4	Bore Water samples	8
6.5	Investigation Conclusions and Recommendations	9
7.0	CONCLUSIONS AND RECOMMENDATIONS.....	9
8.0	LIMITATIONS	9

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FIGURES

- Figure 1 Site Location & Areas Delineated for Excise from Caravan Park
Figure 2 Sampling Locations Sept 2012- March 2013 (relevant locations from August 2012)
Figure 3 Approximate inferred area of impact around SVW10

APPENDICES

APPENDIX A

Soil Vapour Wells SVW08-SVW12

Laboratory Test Certificates

APPENDIX B

December 2012 MW14CP Borehole Log

APPENDIX C

December 2012 MW14CP & SVW08-SVW12

Laboratory Test Certificates

APPENDIX D

Feb-March 2013 MW15CP-MW20CP Borehole Logs

APPENDIX E

Feb-Mar 2013 MW15CP-MW20CP (GW), BH15-BH20 (Soil), EB01/EB02 (GW) and SVW16-SVW18 Laboratory Test Certificates

APPENDIX F

Limitations

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1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) was commissioned by Mr sch4p4(6) Personal to conduct additional investigations at the Cairns Villa Caravan Park, Pease St, Manunda (Site). This report details the findings of the scopes of works as outlined in the following Golder correspondence:

- 087673045-034-L-Rev0, dated 21 September 2012;
- 087673045-035-L-Rev0, dated 27 November 2012;
- 087673045-036-L-Rev0, dated 18 January 2013;
- 087673045-037-L-Rev0, dated 25 January 2013;
- 087673045-038-Rev0, dated 1 March 2013; and
- 087673045-038-Rev0, dated 8 March 2013.

The aim of the additional investigations was to delineate definitively, following on from previous investigations, the impacted area of chlorinated solvent contamination on the caravan park site. Once this extent has been identified it is planned to excise the area from the current caravan park site to enable the remainder of the lot to be removed from the Environmental Management Register (EMR).

Due to the conditions encountered, a series of iterative additional investigations was conducted to finalise the delineation of the impacted area. This report describes the works conducted and the findings of the investigations.

2.0 BACKGROUND

A former dry cleaners site owned by Mr sch4p4(6) P is situated adjacent to the Cairns Villa Caravan Park. The caravan park site has been the subject of a number of various investigations since the owners of the caravan park site identified the presence of chlorinated solvents in groundwater samples collected from their site in 2007.

The primary contaminants of concern (COCs) at the caravan park site are Tetrachloroethene (PCE) and its breakdown products – Trichloroethylene (TCE) and cis-1,2-dichloroethene (cis DCE). No free phase product has been observed in groundwater samples collected from the caravan park site during previous investigations or subsequent groundwater monitoring events.

Remedial works have been carried out on the caravan park site since 2009 and comprise groundwater extraction using bottom loading pumps in wells MW4KK (within the former dry cleaner site), MW11CP, MW12CP and MW5CP. A product recovery trench was also installed in October 2010 along part of the eastern boundary of the former dry cleaner site to extract impacted groundwater and to mitigate movement of impacted groundwater between the sites.

Golder prepared a Site Conceptual Model and Qualitative Risk Assessment report (0867673045-021-R-Rev0 in October 2011) aimed at identifying acceptable remediation criteria to allow removal of the caravan park site from the EMR. This report proposed the use of soil vapour concentrations as the basis of assessing suitability for unrestricted site use. This assessment method and the agreed remediation criteria were accepted by the TPR at that time.

In August 2012, the results of a Delineation Investigation were reported by Golder (087673045-033-R-Rev0 dated 20 August 2012). This Delineation Investigation comprised the utilisation of a Membrane Interface Probe (MIP) at 29 locations to provide real-time data to assist in the evaluation of the extent of chlorinated solvent impact. The MIP data was correlated against both groundwater sample concentrations and soil vapour concentrations from existing wells. The resulting interpreted extent of contamination of concern is marked on Figure 1. This interpreted area was “squared” and aligned against existing property boundaries, where possible, to simplify possible subdivision of this area from the remainder of the caravan park site.



Following review of the Delineation Investigation report, the TPR responded the Department of Environment and Heritage Protection had concerns with the previously agreed remediation criteria and that subsequently the TPR's risk assessment expert had calculated lower criteria based on recent toxicity data published by the USEPA Integrated Risk Information System (IRIS). Golder subsequently reviewed the rationale and calculations utilised by the TPR's risk assessment expert and agree with the resulting final adopted remediation criteria (outlined in Section 3).

Further to the above, the TPR requested that confirmation soil gas wells be constructed on the proposed northern and southern boundaries to confirm final adopted remediation criteria was achieved prior to finalisation of these boundaries.

3.0 FINAL ADOPTED REMEDIATION CRITERIA

Areas with soil gas concentrations below the final adopted remediation criteria are considered suitable to allow the most sensitive land use (standard residential).

Parameter	Adopted Remediation Criteria $\mu\text{g}/\text{m}^3$
Trichloroethylene (TCE)	100
Tetrachloroethylene (PCE)	2,000

4.0 SOIL VAPOUR WELLS (OCTOBER 2012) INVESTIGATION

4.1 Rationale for Locating Soil Vapour Wells

As requested by the TPR, soil vapour wells were installed along the expected northern and southern boundaries of the interpreted area of impact. These locations were based on a review of the Delineation Investigation results and discussion with the TPR.

4.2 Soil Vapour Well (SVW8-SVW12) Investigation

4.2.1 Vapour Well Details

Soil vapour wells SVW08, SVW09, SVW10, SVW11 and SVW12 were installed on 4 October 2012. The well locations are shown on Figure 2. Soil vapour well locations were installed within 200mm of the groundwater table. A single vapour sampling probe implant with attached PTFE (Teflon) tubing was installed near the base of each borehole and covered with at least 300mm of clean, washed sand. The sample point location was sealed with a 50mm thick layer of bentonite mud and the remainder of the borehole was sealed with a cement and bentonite grout. A steel Gattic-style cover was concreted into place to protect each sampling point. The vapour wells were left for a week to enable stabilisation and grout setting, prior to collection of the first round of samples.

4.2.2 Sampling Methodology

The soil vapour monitoring wells were sampled on 12 October 2012. The procedure for sampling VOCs using evacuated canisters, and for the subsequent analysis, is described in USEPA Method TO-15. The method involves the collection of whole air samples in passivated electropolished stainless steel canisters. The VOCs are subsequently separated by gas chromatography (GC), and measured by mass selective (MS) detector or multi-detector techniques.

SUMMA canister sampling was conducted in accordance with Golder Technical Procedure TP13 'Soil Gas Bore Sampling' as outlined below:

- The sampling train consisted of PTFE tubing, a glass impinger (moisture trap), flow controller and a 1 Litre SUMMA canister;
- The soil vapour bore and sampling train (PTFE tubing and glass moisture trap) were purged with a volume equal to three times the total bore and sampling train volume, immediately prior to sample collection;



- Samples were collected in low volume (1 litre) SUMMA canisters to reduce the possibility of atmospheric breakthrough and a false negative result;
- SUMMA canisters were equipped with a flow restricting orifice and a vacuum gauge to enable sampling over a nominal one hour period, again minimising the potential for atmospheric breakthrough; and
- A shroud and tracer gas was used during collection of all primary soil vapour samples.

SUMMA canister sampling was carried out in accordance with Golder Test Method No. C9 "Canister (Evacuated) Sampling for VOC and Reduced Sulphur Compounds: In Ambient Air and Source Emissions".

Sample analysis was conducted by Eurofins Air Toxics Ltd., in accordance with modified USEPA Method TO15. Eurofins Air Toxics Ltd is accredited by NELAP/Florida Department of Health for analyses of VOCs by the described method (Laboratory Accreditation No. E87680). Laboratory certificates of analysis are presented in Appendix A.

4.2.3 Investigation Data QA/QC

The following QA/QC measures were included in the sampling program:

- Above ground sampling tubing and in-line moisture traps (i.e. impingers) were replaced before sampling each bore to prevent cross contamination.
- Field blanks were collected at the rate of 1 per sampling event. Field blanks were obtained as ambient air samples recovered from the sampling train prior to soil vapour sample collection to determine possible ambient air and sample train contaminants.
- Replicates were recommended to be collected at the rate of 1 per sampling event taken as a check for repeatability. Two of the sampling canisters supplied to Golder Associates did not exhibit a vacuum and therefore it was not possible to take a replicate on site during the 12 October sampling round. A replicate was collected during the 26 October sampling round.
- Initial leak tests were conducted on each SUMMA canister prior to collection of sample to ensure that the canisters had not lost vacuum in transit and that flow controllers would not leak during collection of sample. It was discovered at this time that two of the sampling canisters were not functioning correctly meaning that not all samples planned were taken during the 12 October sampling round of sampling.
- Tracer gas (ultra high purity helium) was monitored within a shroud during collection of all primary soil vapour samples to assess the potential for atmospheric breakthrough and a false negative result.
- Chain of custody documentation was completed for all samples collected.

4.2.4 QA/QC Results

The soil vapour samples were analysed by Eurofins Air Toxics Ltd. Dilution of the sample was required for SVW10 owing to the high concentration of target species.

As part of the QA/QC programme a field blank sample was collected on 12 October 2012 and a replicate was taken during the 26 October sampling round.

No detections were recorded for either the field blank or the laboratory blank. The replicate sample for SVW11 revealed that all parameters tested were within 10% of the primary sample and helium testing indicated that the sampling was not compromised from the shroud gas, suggesting that the analytical run provided data which is of acceptable quality for the purposes of this investigation.



4.3 Soil Vapour Well Results

The results of the soil vapour samples collected from SVW8, SVW9, SVW10, SVW11 and SVW12 are presented in Table 1 below. Values in **bold** signify concentrations exceeding the final adopted remediation criteria.

Table 1: Results from Soil Vapour Sampling Round 12 October 2012

Sampling Location	Trichloroethylene (TCE) $\mu\text{g}/\text{m}^3$	Tetrachloroethylene (PCE) $\mu\text{g}/\text{m}^3$
SVW08	8.4	160
SVW09	None detected	21
SVW10	14,000	6,900
SVW11*	n/a	n/a
SVW12	16	None detected

*Two of the soil canisters supplied had no vacuum (could not be used) and so no sample was initially taken at SVW11, the inner boundary along the southern area to be excised. This location was separately sampled and analysed.

The results of soil vapour sample SVW11 is presented in Table 2 below. Values in bold signify concentrations exceeding the final adopted remediation criteria.

Table 2: Results from Soil Vapour Sampling Round 26 October 2012

Sampling Location	Trichloroethylene (TCE) $\mu\text{g}/\text{m}^3$	Tetrachloroethylene (PCE) $\mu\text{g}/\text{m}^3$
SVW11	8400	34000

4.4 Investigation Conclusions and Recommendations

The sampling results from soil vapour wells SVW8, SVW9, SVW10, SVW11 and SVW12 revealed that all of the sampling locations were below the final adopted remediation criteria except for SVW10 which is situated at the south eastern corner extent of the delineation area.

These results provided confirmation of the northern and southern boundaries of the impacted area to be excised from the Caravan Park site (see green and yellow shaded areas Figure 1).

However, an unexpected 'hot spot' area at SVW10 indicated that further assessment of this location was required. The concentrations of chlorinated solvent impact observed at this location was not consistent with previously observed concentrations identified during previous investigations to the west and northwest of the former dry cleaner site boundary.

5.0 SOIL VAPOUR WELL/GW WELL INSTALLATION (DECEMBER 2012)

5.1 Rationale for Locating Soil Vapour Wells / Groundwater Well

To evaluate the 'hot spot' of chlorinated solvent impact detected at soil vapour monitoring location SVW10, it was proposed to install a groundwater well (MW14CP) and 3 No. soil vapour wells (SVW13, SVW14 and SVW15) within this area to further define the outer edges of this 'hot spot' and provide enough reliable data to delineate the boundary to be excised from the Caravan Park Site

In addition to all previous site investigation data and historical data for the site a Photoionisation Detector (PID) survey was carried out in the vicinity of SVW10 in order to provide data to assist locating the likely boundary edges of this impacted area. The PID survey was carried out by inserting a probe 1.0-1.3m bgl and allowing the PID to measure soil vapour within each probe location. The approximate locations and results of the PID surveys carried out in October and November are shown in Figure 3.



The information gathered in these investigations was used to plan the locations for the 3 soil vapour wells and the groundwater well.

5.2 Groundwater Well MW14CP Investigation

Groundwater well MW14CP was drilled and installed adjacent to soil vapour monitoring location SVW10 on 5 December 2012. The well was installed to a depth of 4.5mbgl. The borehole log is presented in Appendix B. MW14CP was developed on 6 December 2012 and sampled on 12 December 2012.

The results revealed a TCE concentration of 440µg/l and a PCE concentration of 1200µg/l in the groundwater sample from this location.

5.3 Soil Vapour Well (SVW13-SVW15) Investigation

5.3.1 Vapour Well Details

Soil vapour wells SVW13, SVW14 and SVW15 were drilled and installed on 5 and 7 December 2012. The installation of the soil vapour wells was as per Section 4.2.1 of this report. The wells were allowed to stabilise for approximately one week and were sampled on 14 December 2012.

5.3.2 Sampling Methodology

The sampling methodology was as per Section 4.2.2 of this report.

5.3.3 Investigation Data QA/QC

QA/QC measures were integrated to the sampling program as per Section 4.2.3 of this report with the exception that there were no failures of canisters and it was possible to take both a replicate sample and a field blank in addition to samples from the 3 wells.

Sample analysis was conducted by Eurofins Air Toxics Ltd., in accordance with modified USEPA Method TO15. Eurofins Air Toxics Ltd is accredited by NELAP/Florida Department of Health for analyses of VOCs by the described method (Laboratory Accreditation No. E87680). Laboratory certificates of analysis are presented in Appendix C.

5.3.4 QA/QC Results

As part of the QA/QC programme a replicate sample and a field blank were collected within the field. As part of the analytical run two laboratory blanks were also run. Dilution was performed within the laboratory on samples numbers SVW13, SVW14, SVW15 and REP001 due to the presence of high level target species.

No detections were found for the parameters analysed within the field blank or either of the laboratory blanks.

The replicate sample for SVW15 revealed that all parameters tested were within 10% of the primary sample and helium testing indicated that the sampling was not compromised from the shroud gas, suggesting that the analytical run provided data which is of acceptable quality for the purposes of this investigation.

5.3.5 Soil Vapour Well Results

The results of the soil vapour samples collected from SVW13, SVW14 and SVW15 are presented in Table 3 below. Values in **bold** signify values exceeding the final adopted remediation criteria.

Table 3: Results from Soil Vapour Sampling Round December 2012

Sampling Location	Trichloroethylene (TCE) µg/m ³	Tetrachloroethylene (PCE) µg/m ³
SVW13	8,100	15,000
SVW14	14,000	17,000
SVW15	4,000	12,000



5.4 Investigation Conclusions and Recommendations

The groundwater results for MW14CP revealed that chlorinated solvents were present in the dissolved phase adjacent to soil vapour monitoring location SVW10, indicating that the soil vapour readings were representative of a chlorinated solvent 'hot spot'. The concentrations of chlorinated solvent impact observed at this location were not consistent with previously observed concentrations identified during previous investigations to the west and northwest of the former dry cleaner site boundary and it is supposed that this area of impact is separate from the primary identified area.

All of the soil vapour wells sampled during this monitoring round revealed concentrations of chlorinated solvents which exceed the final adopted remediation criteria. This indicated that the edges of the 'hot spot' were not defined during this round of sampling. The results also highlighted poor correlation between the PID readings and soil vapour concentrations.

It was recommended to carry out further soil vapour and groundwater sampling beyond the locations of SVW13, SVW14 and SVW15 with an aim to defining the 'hot spot' area boundaries for excise from the Caravan Park site.

6.0 GW WELL/SOIL VAPOUR WELL INSTALLATION (FEBRUARY 2013)

6.1 Rationale for Locating Groundwater Wells / Soil Vapour Wells

Given the poor correlation between PID readings and soil vapour concentrations detected during the preceding investigation, a series of borehole/groundwater wells were initially drilled stepping away from the previous soil vapour well locations to the west, south and east (2 boreholes/groundwater wells in each direction). The aim of this initial investigation was to allow collection of soil and groundwater samples to better evaluate the hotspot area extents.

Following review of the soil and groundwater sampling results, three soil vapour wells were proposed to the TPR to define the western, southern and eastern boundaries of this hotspot area. These agreed locations are shown on Figure 2.

In addition to the above described investigations, at the request of Mr [sch4p4(6) P], water samples were collected from two outlets from a water bore located in the caravan park site to the south east of the area of concern.

6.2 Groundwater Well MW15CP-MW20CP Investigation

6.2.1 Soil Sampling Results

A total of 12 soil samples were collected during the drilling exercise on 13 and 14 February 2013. Borehole logs are presented in Appendix D. In addition, QA/QC samples comprising an intra-laboratory and inter-laboratory sample and trip blank were included as part of the sampling programme. Samples were collected from varying depths of 1.0 to 3.6mbgl.

All of the samples (including inter and intra lab duplicates and the trip blank) tested below the laboratory detection limit for all of the parameters analysed. The complete Certificate of Analysis from SGS and ALS laboratories are presented in Appendix E.

6.2.2 Groundwater Well Details

Groundwater wells MW15CP, MW16CP and MW17CP were drilled and installed on 13 February 2013 and groundwater wells MW18CP, MW19CP and MW20CP were drilled and installed on 14 February 2013. Borehole logs and well construction details are presented in Appendix D. All of the groundwater wells were developed on 15 February 2013. Groundwater sampling of the 6 wells was undertaken on 18 February 2013.

6.2.3 Investigation Data QA/QC

Samples collected were sent to SGS (primary) and ALS (secondary) laboratories.



In order to meet QA/QC Objectives, the groundwater sample collection was carried out in general accordance with standard Golder technical procedures and comprised generally:

- Recording all field data directly onto relevant standard internal Golder forms;
- Use of clean and well maintained length and location measurement equipment;
- Documented calibration of all field chemical measurement equipment;
- Standard decontamination of all non-dedicated sampling equipment prior to and between sampling events (where relevant);
- Use of laboratory supplied and prepared sample containers appropriate for particular analytes;
- Immediate placement and storage of collected samples into ice/brick-cooled containers on-site prior to storage at the site-designated refrigerators or dispatch to the laboratory in accordance with the project programme

A QA/QC programme comprising inter and intra laboratory duplicate samples and a field blank was also carried out as part of this sampling exercise. The Laboratory Certificates of Analysis are presented in Appendix E.

6.2.4 QA/QC Results

Inter-laboratory and intra-laboratory duplicate samples were submitted for sample MW18CP. All of the samples (including the primary sample) revealed concentrations below the laboratory detection limit for each of the parameters analysed. The trip blank also revealed concentrations below the laboratory detection limit for all of the parameters tested. These results suggest that the analytical data which is of acceptable quality for the purposes and suitable for use in this investigation.

6.2.5 Groundwater Well Results

The results for the parameters of concern are presented in Table 4 below.

Table 4: Groundwater Well Sampling Results February 2013

Well ID	Trichloroethylene (TCE) µg/l	Tetrachloroethylene (PCE) µg/l
MW15CP	5.8	7.0
MW16CP	7.3	14
MW17CP	19	37
MW18CP	<0.5	<0.5
MW19CP	<0.5	<0.5
MW20CP	38	42

The groundwater results identified that the highest concentration of chlorinated solvent impact was found in MW20CP and the lowest (including below laboratory detection limit) concentrations were identified in MW15CP, MW18CP and MW19CP. This suggested that the likely edges of the chlorinated solvent impact at this location was between the groundwater monitoring locations MW16CP, MW17CP and MW18CP, and therefore it was decided to site the proposed soil vapour wells adjacent to these monitoring points.



6.3 Soil Vapour Well (SVW16-SVW18) Investigation

6.3.1 Vapour Well Details

Soil vapour wells SVW16, SVW17 and SVW18 were drilled and installed on 4 March 2013. The installation of the soil vapour wells was as per Section 4.2.1 of this report. The wells were allowed to stabilise for approximately one week and were sampled on 11 March 2013.

6.3.2 Sampling Methodology

The sampling methodology was as per Section 4.2.2 of this report.

6.3.3 Investigation Data QA/QC

QA/QC measures were integrated to the sampling program as per Section 4.2.3 of this report with the exception that there were no failures of canisters and it was possible to take both a replicate sample and a field blank in addition to samples from the 3 wells.

Sample analysis was conducted by Eurofins Air Toxics Ltd., in accordance with modified USEPA Method TO15. Eurofins Air Toxics Ltd is accredited by NELAP/Florida Department of Health for analyses of VOCs by the described method (Laboratory Accreditation No. E87680). Laboratory certificates of analysis are presented in Appendix C.

6.3.4 QA/QC Results

QA/QC measures were integrated to the sampling program as per Section 4.2.3 of this report with the exception that there were no failures of canisters and it was possible to take both a replicate sample and a field blank in addition to samples from the three No. wells.

As part of the QA/QC programme a replicate sample and a field blank were collected within the field. As part of the analytical run a laboratory blank was also run.

Detections were recorded for the field blank but none were revealed for laboratory blank. The detections within the field blank were consistent with fuel combustion emissions; it is therefore likely that the field blank was taken in the vicinity of a fuel exhaust emission. None of the parameters of concern were revealed in the field blank. The replicate sample for SVW16 revealed that all parameters tested were within acceptable limits of the primary sample and helium testing indicated that the sampling was not compromised from the shroud gas. This suggests that the analytical run provided data is of acceptable quality for the purposes of this investigation.

6.3.5 Soil Vapour Well Results

The results of the soil vapour samples collected from SVW16, SVW17 and SVW18 are presented in Table 5 below. The complete laboratory Certificate of Analysis is presented in Appendix E.

Table 5: Results from Soil Vapour Sampling Round March 2013

Sampling Location	Trichloroethylene (TCE) $\mu\text{g}/\text{m}^3$	Tetrachloroethylene (PCE) $\mu\text{g}/\text{m}^3$
SVW16	100	1300
SVW17	84	1300
SVW18	72	160

6.4 Bore Water samples

A groundwater bore is located to the south east of the area of concern (see Figure 2). This bore is understood to be screened within deeper water bearing deposits underlying the site. It is understood that this bore has not been used for many years, however, at the time of our inspection it was noted that water was seeping from bore fittings. As no pumping was being conducted, it appears that this bore is artesian and intersects a confined aquifer below the near surface unconfined aquifer (the subject of contamination assessment). These bore outlets sampled were to the southeast of the swimming pool on the Caravan Park



site. Bore water samples EB01 and EB02 were collected on 11 March 2013 and sent to SGS laboratories for analysis.

These samples tested below the laboratory detection limit for all of the parameters analysed. The full Certificate of Analysis is presented in Appendix E.

6.5 Investigation Conclusions and Recommendations

The soil vapour samples collected from SVW16, SVW17 and SVW18 revealed concentrations of the contaminants of concern at or below the final adopted remediation criteria.

These results are considered suitable to finalise the boundaries of the impacted area. Figures 1 and 2 indicate the approximate location of the area to be excised.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The area of impact on the caravan park site has been evaluated on the basis of the investigations carried out since August 2012. Soil vapour wells (SVW07, SVW08, SVW09, SVW12, SVW16, SVW17 and SVW18) have been positioned on proposed boundaries to delineate the area of impact. The soil vapour readings in these boundary wells indicate contaminant of concern concentrations below the final adopted remediation criteria. It is recommended that a licensed surveyor be engaged to accurately locate the soil vapour well locations defining the boundaries of this area.

The portion of the caravan park outside of the area of impact is considered suitable for removal from the Environmental Management Register once the area of impact has been excised from the allotment forming the caravan park site. This conclusion is contingent upon continued extraction (pumping) of impacted waters within the area of impact or implementation of other long or short term remediation/management measures to prevent further migration of contamination.

8.0 LIMITATIONS

Your attention is drawn to the document "Limitations", which is included in Appendix F of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

GOLDER ASSOCIATES PTY LTD

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal

Senior Environmental Engineer

sch4p4(6) Persor

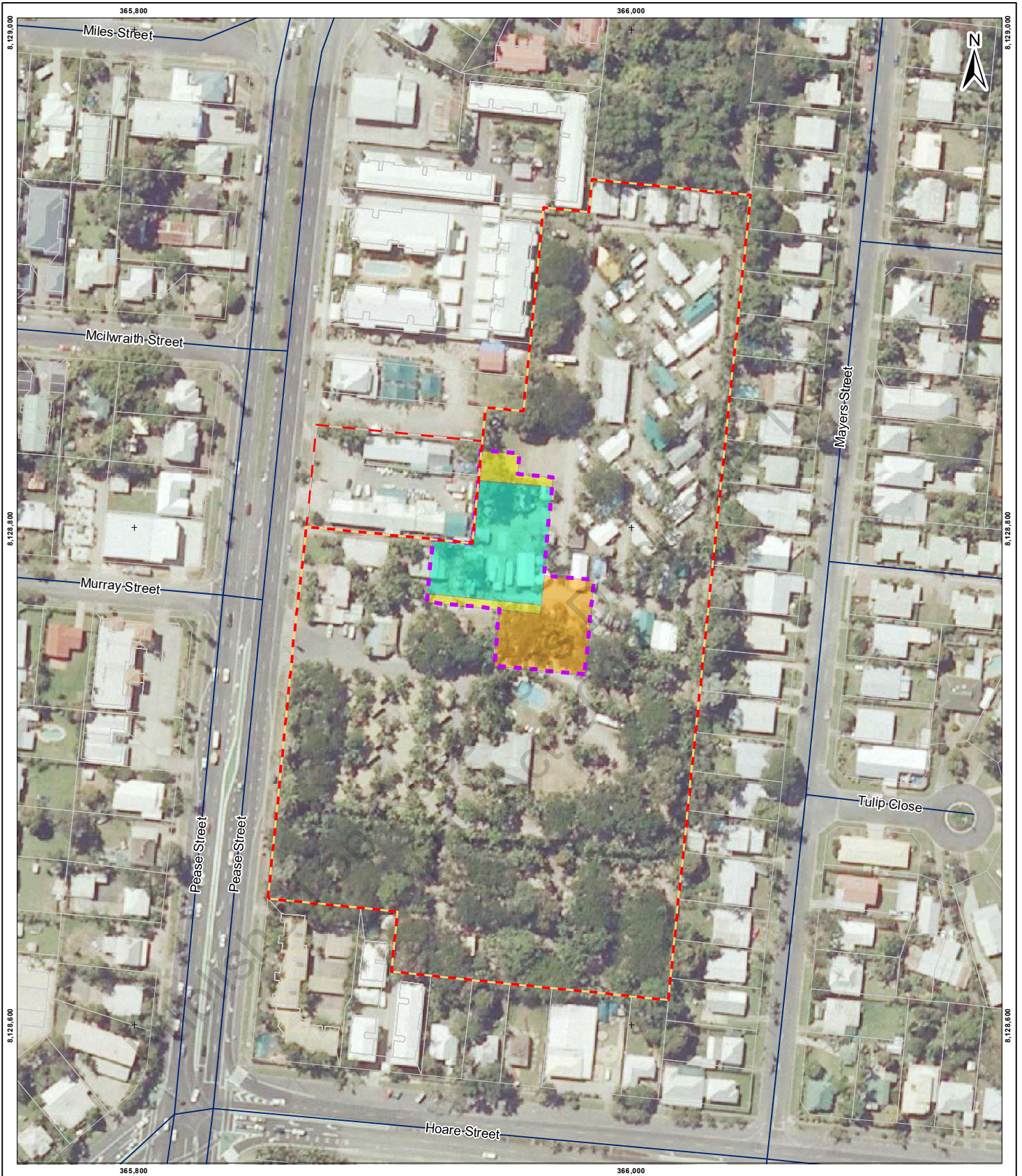
Principal Environmental Engineer

CMC/PKS/hlb

A.B.N. 64 006 107 857

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DELINEATION INVESTIGATIONS

HOSPITALITY SERVICES

SITE LOCATION & AREAS DELINEATED FOR EXCISE FROM CARAVAN PARK



LEGEND

Area To Be Excised

Area of Concern

- August Investigation 2012
- October Investigation 2012
- Nov - Mar Investigation 2013
- Caravan Park
- Kwikkleen
- Digital Cadastral Data

NOTES

All locations and excise boundaries are approximate.

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3. Aerial photography copyright The State of Queensland (Department of Natural Resources, Mines and Water) 2006.

0 5 10 20 30 40 50 metres

SCALE (at A3) 1:1,500

DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 087673045-040-R
DATE: 08 APR 2013
DRAWN: BAG
CHECKED: PKS

FIGURE 1





DELINEATION INVESTIGATIONS

HOSPITALITY SERVICES

**SAMPLING LOCATIONS
SEPT 2012 - MARCH 2013**



LEGEND

Soil Gas Well Locations

- August Investigation 2012
- October Investigation 2012
- December Investigation 2012
- January Investigation 2013

Groundwater Monitoring Wells Locations

- December Investigation 2012
- January Investigation 2013

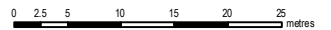
NOTES

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3. Aerial photography copyright The State of Queensland (Department of Natural Resources, Mines and Water) 2006.

- MIP Location August 2012
- Approximate Area To Be Excised



SCALE (at A3) 1:500

DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 087673045-040-R
DATE: 08 APR 2013
DRAWN: BAG
CHECKED: PKS

FIGURE 2





ADDITIONAL INVESTIGATIONS

HOSPITALITY SERVICES

INFERRED AREA OF ADDITIONAL IMPACT OCTOBER 2012



LEGEND

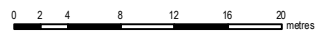
- PID Probe Locations & PID Reading (ppm) - 8 Nov 2012
- 15.7ppm
- PID Probe Locations & PID Reading (ppm) - 30 Nov 2012
- 13.4ppm
- ◆ GW Monitoring Well
- Inferred Area of Impact around SVW10 (Oct 2012)
- Cabins
- Caravan Park
- Kwikleen

NOTES

All locations are approximate.

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SCALE (at A3) 1:400

DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 087673045-040-R
DATE: 10 APR 2013
DRAWN: BAG
CHECKED: PKS

FIGURE 3





APPENDIX A

Soil Vapour Wells SVW08-SVW12 Laboratory Test Certificates

Published on Resources Disclosure Log
RTI Act 2009

10/31/2012

Mr. [sch4p4(6) Personal info]

Golder Associates, Australia
216 Draper Street

Cairns, Queensland 4870

Project Name: Kwikleen

Project #: 087673045

Workorder #: 1210378A

Dear Mr. [sch4p4(6) Personal info]

The following report includes the data for the above referenced project for sample(s) received on 10/17/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: [sch4p4(6) Personal info] at [sch4p4(6) Personal info] if you have any questions regarding the data in this report.

Regards,

[sch4p4(6) Personal information]

[sch4p4(6) Personal info]

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

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F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1210378A

Work Order Summary

CLIENT:	Mr. sch4p4(6) Person Golder Associates, Australia 216 Draper Street Cairns, Queensland 4870	BILL TO:	Accounts Payable Golder Associates, Australia PO BOX 6079 Hawthorne, Australia 3121
PHONE:	+61 7 4054 8200	P.O. #	Q3212
FAX:	+61 7 4054 8201	PROJECT #	087673045 Kwikleen
DATE RECEIVED:	10/17/2012	CONTACT:	sch4p4(6) Person
DATE COMPLETED:	10/31/2012		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SVW8	Modified TO-15	9.0 "Hg	15 psi
02A	SVW9	Modified TO-15	0.5 "Hg	15 psi
03A	SVW10	Modified TO-15	9.0 "Hg	15 psi
04A	SVW12	Modified TO-15	10.5 "Hg	15 psi
05A	FB01	Modified TO-15	9.0 "Hg	15 psi
06A	Lab Blank	Modified TO-15	NA	NA
07A	CCV	Modified TO-15	NA	NA
08A	LCS	Modified TO-15	NA	NA
08AA	LCSD	Modified TO-15	NA	NA

sch4p4(6) Personal information

CERTIFIED BY:

Technical Director

DATE: 10/31/12

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935

Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.

Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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**LABORATORY NARRATIVE
EPA Method TO-15
Golder Associates, Australia
Workorder# 1210378A**

Five 1 Liter Summa Canister samples were received on October 17, 2012. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample SVW10 due to the presence of high level target species.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SVW8

Lab ID#: 1210378A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	14	19	34	46
Chloroform	1.4	13	7.0	65
Trichloroethene	1.4	1.6	7.8	8.4
Bromodichloromethane	1.4	2.2	9.7	14
Toluene	1.4	1.8	5.4	6.6
Tetrachloroethene	1.4	24	9.8	160
m,p-Xylene	1.4	1.4	6.3	6.3
Naphthalene	5.8	6.7	30	35

Client Sample ID: SVW9

Lab ID#: 1210378A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	8.4	31	16	59
Acetone	21	24	50	56
Hexane	2.1	6.0	7.4	21
Cyclohexane	2.1	3.9	7.2	13
1,2-Dichloroethane	2.1	2.1	8.5	8.6
Toluene	2.1	52	7.9	200
Tetrachloroethene	2.1	3.2	14	21
m,p-Xylene	2.1	3.3	9.1	14
Styrene	2.1	2.8	8.9	12
Naphthalene	8.4	14	44	75

Client Sample ID: SVW10

Lab ID#: 1210378A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
trans-1,2-Dichloroethene	12	15	46	59
cis-1,2-Dichloroethene	12	730	46	2900
Trichloroethene	12	2600	62	14000
Tetrachloroethene	12	1000	78	6900

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVW12

Lab ID#: 1210378A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.6	2.9	8.4	16
Naphthalene	6.2	28	33	150

Client Sample ID: FB01

Lab ID#: 1210378A-05A

No Detections Were Found.

Published on Resources Disclosure Log
RTI Act 2009

Client Sample ID: SVW8

Lab ID#: 1210378A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102415	Date of Collection:	10/12/12 10:00:00 A
Dil. Factor:	2.89	Date of Analysis:	10/24/12 04:28 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	7.1	Not Detected
Freon 114	1.4	Not Detected	10	Not Detected
Chloromethane	14	Not Detected	30	Not Detected
Vinyl Chloride	1.4	Not Detected	3.7	Not Detected
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	5.8	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Ethanol	5.8	Not Detected	11	Not Detected
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	19	34	46
2-Propanol	5.8	Not Detected	14	Not Detected
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	5.8	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Hexane	1.4	Not Detected	5.1	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.3	Not Detected
Chloroform	1.4	13	7.0	65
1,1,1-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Cyclohexane	1.4	Not Detected	5.0	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.1	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.8	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.8	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
Trichloroethene	1.4	1.6	7.8	8.4
1,2-Dichloropropane	1.4	Not Detected	6.7	Not Detected
1,4-Dioxane	5.8	Not Detected	21	Not Detected
Bromodichloromethane	1.4	2.2	9.7	14
cis-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.9	Not Detected
Toluene	1.4	1.8	5.4	6.6
trans-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Tetrachloroethene	1.4	24	9.8	160
2-Hexanone	5.8	Not Detected	24	Not Detected

Client Sample ID: SVW8

Lab ID#: 1210378A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102415	Date of Collection:	10/12/12 10:00:00 A
Dil. Factor:	2.89	Date of Analysis:	10/24/12 04:28 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.6	Not Detected
Ethyl Benzene	1.4	Not Detected	6.3	Not Detected
m,p-Xylene	1.4	1.4	6.3	6.3
o-Xylene	1.4	Not Detected	6.3	Not Detected
Styrene	1.4	Not Detected	6.2	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.1	Not Detected
1,1,1,2-Tetrachloroethane	1.4	Not Detected	9.9	Not Detected
Propylbenzene	1.4	Not Detected	7.1	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.1	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected
Hexachlorobutadiene	5.8	Not Detected	62	Not Detected
Naphthalene	5.8	6.7	30	35

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: SVW9

Lab ID#: 1210378A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102416	Date of Collection:	10/12/12 10:45:00 A
Dil. Factor:	4.20	Date of Analysis:	10/24/12 04:55 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	2.1	Not Detected	10	Not Detected
Freon 114	2.1	Not Detected	15	Not Detected
Chloromethane	21	Not Detected	43	Not Detected
Vinyl Chloride	2.1	Not Detected	5.4	Not Detected
1,3-Butadiene	2.1	Not Detected	4.6	Not Detected
Bromomethane	21	Not Detected	82	Not Detected
Chloroethane	8.4	Not Detected	22	Not Detected
Freon 11	2.1	Not Detected	12	Not Detected
Ethanol	8.4	31	16	59
Freon 113	2.1	Not Detected	16	Not Detected
1,1-Dichloroethene	2.1	Not Detected	8.3	Not Detected
Acetone	21	24	50	56
2-Propanol	8.4	Not Detected	21	Not Detected
Carbon Disulfide	8.4	Not Detected	26	Not Detected
3-Chloropropene	8.4	Not Detected	26	Not Detected
Methylene Chloride	21	Not Detected	73	Not Detected
Methyl tert-butyl ether	2.1	Not Detected	7.6	Not Detected
trans-1,2-Dichloroethene	2.1	Not Detected	8.3	Not Detected
Hexane	2.1	6.0	7.4	21
1,1-Dichloroethane	2.1	Not Detected	8.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	8.4	Not Detected	25	Not Detected
cis-1,2-Dichloroethene	2.1	Not Detected	8.3	Not Detected
Tetrahydrofuran	2.1	Not Detected	6.2	Not Detected
Chloroform	2.1	Not Detected	10	Not Detected
1,1,1-Trichloroethane	2.1	Not Detected	11	Not Detected
Cyclohexane	2.1	3.9	7.2	13
Carbon Tetrachloride	2.1	Not Detected	13	Not Detected
2,2,4-Trimethylpentane	2.1	Not Detected	9.8	Not Detected
Benzene	2.1	Not Detected	6.7	Not Detected
1,2-Dichloroethane	2.1	2.1	8.5	8.6
Heptane	2.1	Not Detected	8.6	Not Detected
Trichloroethene	2.1	Not Detected	11	Not Detected
1,2-Dichloropropane	2.1	Not Detected	9.7	Not Detected
1,4-Dioxane	8.4	Not Detected	30	Not Detected
Bromodichloromethane	2.1	Not Detected	14	Not Detected
cis-1,3-Dichloropropene	2.1	Not Detected	9.5	Not Detected
4-Methyl-2-pentanone	2.1	Not Detected	8.6	Not Detected
Toluene	2.1	52	7.9	200
trans-1,3-Dichloropropene	2.1	Not Detected	9.5	Not Detected
1,1,2-Trichloroethane	2.1	Not Detected	11	Not Detected
Tetrachloroethene	2.1	3.2	14	21
2-Hexanone	8.4	Not Detected	34	Not Detected

Client Sample ID: SVW9

Lab ID#: 1210378A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102416	Date of Collection:	10/12/12 10:45:00 A
Dil. Factor:	4.20	Date of Analysis:	10/24/12 04:55 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	2.1	Not Detected	18	Not Detected
1,2-Dibromoethane (EDB)	2.1	Not Detected	16	Not Detected
Chlorobenzene	2.1	Not Detected	9.7	Not Detected
Ethyl Benzene	2.1	Not Detected	9.1	Not Detected
m,p-Xylene	2.1	3.3	9.1	14
o-Xylene	2.1	Not Detected	9.1	Not Detected
Styrene	2.1	2.8	8.9	12
Bromoform	2.1	Not Detected	22	Not Detected
Cumene	2.1	Not Detected	10	Not Detected
1,1,1,2-Tetrachloroethane	2.1	Not Detected	14	Not Detected
Propylbenzene	2.1	Not Detected	10	Not Detected
4-Ethyltoluene	2.1	Not Detected	10	Not Detected
1,3,5-Trimethylbenzene	2.1	Not Detected	10	Not Detected
1,2,4-Trimethylbenzene	2.1	Not Detected	10	Not Detected
1,3-Dichlorobenzene	2.1	Not Detected	13	Not Detected
1,4-Dichlorobenzene	2.1	Not Detected	13	Not Detected
alpha-Chlorotoluene	2.1	Not Detected	11	Not Detected
1,2-Dichlorobenzene	2.1	Not Detected	13	Not Detected
1,2,4-Trichlorobenzene	8.4	Not Detected	62	Not Detected
Hexachlorobutadiene	8.4	Not Detected	90	Not Detected
Naphthalene	8.4	14	44	75

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: SVW10

Lab ID#: 1210378A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102419	Date of Collection:	10/12/12 11:30:00 A
Dil. Factor:	23.1	Date of Analysis:	10/24/12 06:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	57	Not Detected
Freon 114	12	Not Detected	81	Not Detected
Chloromethane	120	Not Detected	240	Not Detected
Vinyl Chloride	12	Not Detected	30	Not Detected
1,3-Butadiene	12	Not Detected	26	Not Detected
Bromomethane	120	Not Detected	450	Not Detected
Chloroethane	46	Not Detected	120	Not Detected
Freon 11	12	Not Detected	65	Not Detected
Ethanol	46	Not Detected	87	Not Detected
Freon 113	12	Not Detected	88	Not Detected
1,1-Dichloroethene	12	Not Detected	46	Not Detected
Acetone	120	Not Detected	270	Not Detected
2-Propanol	46	Not Detected	110	Not Detected
Carbon Disulfide	46	Not Detected	140	Not Detected
3-Chloropropene	46	Not Detected	140	Not Detected
Methylene Chloride	120	Not Detected	400	Not Detected
Methyl tert-butyl ether	12	Not Detected	42	Not Detected
trans-1,2-Dichloroethene	12	15	46	59
Hexane	12	Not Detected	41	Not Detected
1,1-Dichloroethane	12	Not Detected	47	Not Detected
2-Butanone (Methyl Ethyl Ketone)	46	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	730	46	2900
Tetrahydrofuran	12	Not Detected	34	Not Detected
Chloroform	12	Not Detected	56	Not Detected
1,1,1-Trichloroethane	12	Not Detected	63	Not Detected
Cyclohexane	12	Not Detected	40	Not Detected
Carbon Tetrachloride	12	Not Detected	73	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	54	Not Detected
Benzene	12	Not Detected	37	Not Detected
1,2-Dichloroethane	12	Not Detected	47	Not Detected
Heptane	12	Not Detected	47	Not Detected
Trichloroethene	12	2600	62	14000
1,2-Dichloropropane	12	Not Detected	53	Not Detected
1,4-Dioxane	46	Not Detected	170	Not Detected
Bromodichloromethane	12	Not Detected	77	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	52	Not Detected
4-Methyl-2-pentanone	12	Not Detected	47	Not Detected
Toluene	12	Not Detected	44	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	52	Not Detected
1,1,2-Trichloroethane	12	Not Detected	63	Not Detected
Tetrachloroethene	12	1000	78	6900
2-Hexanone	46	Not Detected	190	Not Detected

Client Sample ID: SVW10

Lab ID#: 1210378A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102419	Date of Collection:	10/12/12 11:30:00 A
Dil. Factor:	23.1	Date of Analysis:	10/24/12 06:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	98	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	89	Not Detected
Chlorobenzene	12	Not Detected	53	Not Detected
Ethyl Benzene	12	Not Detected	50	Not Detected
m,p-Xylene	12	Not Detected	50	Not Detected
o-Xylene	12	Not Detected	50	Not Detected
Styrene	12	Not Detected	49	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	57	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	79	Not Detected
Propylbenzene	12	Not Detected	57	Not Detected
4-Ethyltoluene	12	Not Detected	57	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	57	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	57	Not Detected
1,3-Dichlorobenzene	12	Not Detected	69	Not Detected
1,4-Dichlorobenzene	12	Not Detected	69	Not Detected
alpha-Chlorotoluene	12	Not Detected	60	Not Detected
1,2-Dichlorobenzene	12	Not Detected	69	Not Detected
1,2,4-Trichlorobenzene	46	Not Detected	340	Not Detected
Hexachlorobutadiene	46	Not Detected	490	Not Detected
Naphthalene	46	Not Detected	240	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	109	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: SVW12

Lab ID#: 1210378A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102417	Date of Collection:	10/12/12 12:00:00 P
Dil. Factor:	3.11	Date of Analysis:	10/24/12 05:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.6	Not Detected	7.7	Not Detected
Freon 114	1.6	Not Detected	11	Not Detected
Chloromethane	16	Not Detected	32	Not Detected
Vinyl Chloride	1.6	Not Detected	4.0	Not Detected
1,3-Butadiene	1.6	Not Detected	3.4	Not Detected
Bromomethane	16	Not Detected	60	Not Detected
Chloroethane	6.2	Not Detected	16	Not Detected
Freon 11	1.6	Not Detected	8.7	Not Detected
Ethanol	6.2	Not Detected	12	Not Detected
Freon 113	1.6	Not Detected	12	Not Detected
1,1-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Acetone	16	Not Detected	37	Not Detected
2-Propanol	6.2	Not Detected	15	Not Detected
Carbon Disulfide	6.2	Not Detected	19	Not Detected
3-Chloropropene	6.2	Not Detected	19	Not Detected
Methylene Chloride	16	Not Detected	54	Not Detected
Methyl tert-butyl ether	1.6	Not Detected	5.6	Not Detected
trans-1,2-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Hexane	1.6	Not Detected	5.5	Not Detected
1,1-Dichloroethane	1.6	Not Detected	6.3	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.2	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Tetrahydrofuran	1.6	Not Detected	4.6	Not Detected
Chloroform	1.6	Not Detected	7.6	Not Detected
1,1,1-Trichloroethane	1.6	Not Detected	8.5	Not Detected
Cyclohexane	1.6	Not Detected	5.4	Not Detected
Carbon Tetrachloride	1.6	Not Detected	9.8	Not Detected
2,2,4-Trimethylpentane	1.6	Not Detected	7.3	Not Detected
Benzene	1.6	Not Detected	5.0	Not Detected
1,2-Dichloroethane	1.6	Not Detected	6.3	Not Detected
Heptane	1.6	Not Detected	6.4	Not Detected
Trichloroethene	1.6	2.9	8.4	16
1,2-Dichloropropane	1.6	Not Detected	7.2	Not Detected
1,4-Dioxane	6.2	Not Detected	22	Not Detected
Bromodichloromethane	1.6	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.6	Not Detected	7.0	Not Detected
4-Methyl-2-pentanone	1.6	Not Detected	6.4	Not Detected
Toluene	1.6	Not Detected	5.8	Not Detected
trans-1,3-Dichloropropene	1.6	Not Detected	7.0	Not Detected
1,1,2-Trichloroethane	1.6	Not Detected	8.5	Not Detected
Tetrachloroethene	1.6	Not Detected	10	Not Detected
2-Hexanone	6.2	Not Detected	25	Not Detected

Client Sample ID: SVW12

Lab ID#: 1210378A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102417	Date of Collection:	10/12/12 12:00:00 P
Dil. Factor:	3.11	Date of Analysis:	10/24/12 05:15 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.6	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.6	Not Detected	12	Not Detected
Chlorobenzene	1.6	Not Detected	7.2	Not Detected
Ethyl Benzene	1.6	Not Detected	6.8	Not Detected
m,p-Xylene	1.6	Not Detected	6.8	Not Detected
o-Xylene	1.6	Not Detected	6.8	Not Detected
Styrene	1.6	Not Detected	6.6	Not Detected
Bromoform	1.6	Not Detected	16	Not Detected
Cumene	1.6	Not Detected	7.6	Not Detected
1,1,2,2-Tetrachloroethane	1.6	Not Detected	11	Not Detected
Propylbenzene	1.6	Not Detected	7.6	Not Detected
4-Ethyltoluene	1.6	Not Detected	7.6	Not Detected
1,3,5-Trimethylbenzene	1.6	Not Detected	7.6	Not Detected
1,2,4-Trimethylbenzene	1.6	Not Detected	7.6	Not Detected
1,3-Dichlorobenzene	1.6	Not Detected	9.3	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.3	Not Detected
alpha-Chlorotoluene	1.6	Not Detected	8.0	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.3	Not Detected
1,2,4-Trichlorobenzene	6.2	Not Detected	46	Not Detected
Hexachlorobutadiene	6.2	Not Detected	66	Not Detected
Naphthalene	6.2	28	33	150

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: FB01

Lab ID#: 1210378A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102418	Date of Collection:	10/12/12 12:10:00 P
Dil. Factor:	2.89	Date of Analysis:	10/24/12 05:41 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	7.1	Not Detected
Freon 114	1.4	Not Detected	10	Not Detected
Chloromethane	14	Not Detected	30	Not Detected
Vinyl Chloride	1.4	Not Detected	3.7	Not Detected
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	5.8	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Ethanol	5.8	Not Detected	11	Not Detected
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	Not Detected	34	Not Detected
2-Propanol	5.8	Not Detected	14	Not Detected
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	5.8	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Hexane	1.4	Not Detected	5.1	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.3	Not Detected
Chloroform	1.4	Not Detected	7.0	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Cyclohexane	1.4	Not Detected	5.0	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.1	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.8	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.8	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
Trichloroethene	1.4	Not Detected	7.8	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.7	Not Detected
1,4-Dioxane	5.8	Not Detected	21	Not Detected
Bromodichloromethane	1.4	Not Detected	9.7	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.9	Not Detected
Toluene	1.4	Not Detected	5.4	Not Detected
trans-1,3-Dichloropropene	1.4	Not Detected	6.6	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.9	Not Detected
Tetrachloroethene	1.4	Not Detected	9.8	Not Detected
2-Hexanone	5.8	Not Detected	24	Not Detected

Client Sample ID: FB01

Lab ID#: 1210378A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102418	Date of Collection:	10/12/12 12:10:00 P
Dil. Factor:	2.89	Date of Analysis:	10/24/12 05:41 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.6	Not Detected
Ethyl Benzene	1.4	Not Detected	6.3	Not Detected
m,p-Xylene	1.4	Not Detected	6.3	Not Detected
o-Xylene	1.4	Not Detected	6.3	Not Detected
Styrene	1.4	Not Detected	6.2	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.1	Not Detected
1,1,1,2-Tetrachloroethane	1.4	Not Detected	9.9	Not Detected
Propylbenzene	1.4	Not Detected	7.1	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.1	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.7	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected
Hexachlorobutadiene	5.8	Not Detected	62	Not Detected
Naphthalene	5.8	Not Detected	30	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: Lab Blank

Lab ID#: 1210378A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102407	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 11:32 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1210378A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102407	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 11:32 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	92	70-130

Client Sample ID: CCV

Lab ID#: 1210378A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 09:01 AM

Compound	%Recovery
Freon 12	92
Freon 114	90
Chloromethane	106
Vinyl Chloride	92
1,3-Butadiene	90
Bromomethane	94
Chloroethane	94
Freon 11	90
Ethanol	96
Freon 113	86
1,1-Dichloroethene	95
Acetone	86
2-Propanol	95
Carbon Disulfide	91
3-Chloropropene	99
Methylene Chloride	95
Methyl tert-butyl ether	96
trans-1,2-Dichloroethene	93
Hexane	105
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	83
cis-1,2-Dichloroethene	91
Tetrahydrofuran	95
Chloroform	89
1,1,1-Trichloroethane	93
Cyclohexane	94
Carbon Tetrachloride	92
2,2,4-Trimethylpentane	99
Benzene	86
1,2-Dichloroethane	89
Heptane	98
Trichloroethene	78
1,2-Dichloropropane	89
1,4-Dioxane	79
Bromodichloromethane	90
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	95
Toluene	90
trans-1,3-Dichloropropene	94
1,1,2-Trichloroethane	84
Tetrachloroethene	80
2-Hexanone	82

Client Sample ID: CCV

Lab ID#: 1210378A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 09:01 AM

Compound	%Recovery
Dibromochloromethane	86
1,2-Dibromoethane (EDB)	87
Chlorobenzene	86
Ethyl Benzene	94
m,p-Xylene	95
o-Xylene	97
Styrene	95
Bromoform	88
Cumene	94
1,1,2,2-Tetrachloroethane	85
Propylbenzene	91
4-Ethyltoluene	92
1,3,5-Trimethylbenzene	87
1,2,4-Trimethylbenzene	92
1,3-Dichlorobenzene	86
1,4-Dichlorobenzene	83
alpha-Chlorotoluene	108
1,2-Dichlorobenzene	85
1,2,4-Trichlorobenzene	78
Hexachlorobutadiene	87
Naphthalene	72

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	103	70-130

Client Sample ID: LCS

Lab ID#: 1210378A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 09:31 AM

Compound	%Recovery
Freon 12	94
Freon 114	92
Chloromethane	109
Vinyl Chloride	98
1,3-Butadiene	92
Bromomethane	95
Chloroethane	98
Freon 11	92
Ethanol	66 Q
Freon 113	90
1,1-Dichloroethene	102
Acetone	88
2-Propanol	98
Carbon Disulfide	116
3-Chloropropene	114
Methylene Chloride	96
Methyl tert-butyl ether	88
trans-1,2-Dichloroethene	107
Hexane	106
1,1-Dichloroethane	95
2-Butanone (Methyl Ethyl Ketone)	87
cis-1,2-Dichloroethene	92
Tetrahydrofuran	93
Chloroform	93
1,1,1-Trichloroethane	97
Cyclohexane	96
Carbon Tetrachloride	95
2,2,4-Trimethylpentane	99
Benzene	88
1,2-Dichloroethane	89
Heptane	98
Trichloroethene	82
1,2-Dichloropropane	92
1,4-Dioxane	79
Bromodichloromethane	94
cis-1,3-Dichloropropene	102
4-Methyl-2-pentanone	90
Toluene	91
trans-1,3-Dichloropropene	98
1,1,2-Trichloroethane	85
Tetrachloroethene	82
2-Hexanone	81

Client Sample ID: LCS

Lab ID#: 1210378A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 09:31 AM

Compound	%Recovery
Dibromochloromethane	88
1,2-Dibromoethane (EDB)	90
Chlorobenzene	90
Ethyl Benzene	95
m,p-Xylene	99
o-Xylene	99
Styrene	97
Bromoform	89
Cumene	97
1,1,1,2-Tetrachloroethane	88
Propylbenzene	94
4-Ethyltoluene	89
1,3,5-Trimethylbenzene	88
1,2,4-Trimethylbenzene	92
1,3-Dichlorobenzene	88
1,4-Dichlorobenzene	84
alpha-Chlorotoluene	110
1,2-Dichlorobenzene	86
1,2,4-Trichlorobenzene	82
Hexachlorobutadiene	87
Naphthalene	61

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: LCSD

Lab ID#: 1210378A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102404	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 09:51 AM

Compound	%Recovery
Freon 12	92
Freon 114	91
Chloromethane	100
Vinyl Chloride	96
1,3-Butadiene	90
Bromomethane	94
Chloroethane	95
Freon 11	89
Ethanol	64 Q
Freon 113	87
1,1-Dichloroethene	99
Acetone	86
2-Propanol	96
Carbon Disulfide	114
3-Chloropropene	117
Methylene Chloride	94
Methyl tert-butyl ether	87
trans-1,2-Dichloroethene	105
Hexane	98
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	84
cis-1,2-Dichloroethene	92
Tetrahydrofuran	90
Chloroform	91
1,1,1-Trichloroethane	95
Cyclohexane	94
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	99
Benzene	88
1,2-Dichloroethane	88
Heptane	97
Trichloroethene	81
1,2-Dichloropropane	91
1,4-Dioxane	76
Bromodichloromethane	91
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	92
Toluene	91
trans-1,3-Dichloropropene	96
1,1,2-Trichloroethane	85
Tetrachloroethene	81
2-Hexanone	80

Client Sample ID: LCSD

Lab ID#: 1210378A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p102404	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 10/24/12 09:51 AM

Compound	%Recovery
Dibromochloromethane	86
1,2-Dibromoethane (EDB)	90
Chlorobenzene	89
Ethyl Benzene	95
m,p-Xylene	97
o-Xylene	98
Styrene	96
Bromoform	87
Cumene	97
1,1,1,2-Tetrachloroethane	88
Propylbenzene	94
4-Ethyltoluene	91
1,3,5-Trimethylbenzene	89
1,2,4-Trimethylbenzene	93
1,3-Dichlorobenzene	89
1,4-Dichlorobenzene	85
alpha-Chlorotoluene	108
1,2-Dichlorobenzene	88
1,2,4-Trichlorobenzene	85
Hexachlorobutadiene	90
Naphthalene	61

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	101	70-130



APPENDIX B

December 2012 MW14CP Borehole Log

Published on Resources Disclosure Log
RTI Act 2009



REPORT OF BOREHOLE: MW14CP

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 5/12/12

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services
 PROJECT: Kwikleen
 LOCATION: Pease Street
 JOB NO: 087673045

COORDS: MGA94 56
 SURFACE RL: DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 4.50 m

Drilling			Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	PIEZOMETER DETAILS
			0.0					TOPSOIL: Silty SAND fine to coarse grained, brown, some fine to medium gravels, dry, medium dense	D	MD		Gartic Cover Concrete
			0.15					Silty Sandy GRAVEL fine to coarse, angular, pale grey gravels, yellow red sand/silty, dry, medium dense	D	MD		Bentonite
			0.40					SAND fine to coarse grained, pale grey, dry, loose				Sand
			0.5						D			Blank
			1.0					becoming dry to moist				
			1.5	1.50					L			
			2.0						D-M			
			2.5	2.50				becoming wet				Sand
			3.0						W			
			3.10					Sandy CLAY high plasticity, dark brown, fine sands, moist, soft		M		
			3.5	3.50				becoming wet		S		Slotted
			3.90							W		
			4.0	4.30				CLAY high plasticity, grey, dark brown, some coarse sands, moist to wet, soft	M-W	S		
			4.30					CLAY high plasticity, mottled brown/grey, moist, firm	M	F		
			4.5					END OF BOREHOLE @ 4.50 m				

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for geotechnical purposes only, without attempt to assess possible contamination. Any references to potential contamination are for information only and do not necessarily indicate the presence or absence of soil or groundwater contamination.

GAP gINT FN. F01d
RL3

GAP 8.07.3 LIB.GLB Log GAP NON-CORED FULL PAGE 087673045 -SVM13- SVM15.GPJ <-DrawingFile> 08/04/2013 16:12 8.30.003

DRILLING/EXCAVATION METHOD

AS*	Auger Screwing	RD	Rotary blade or drag bit	NQ	Diamond Core - 47 mm
AD*	Auger Drilling	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
*V	V-Bit	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
*T	TC-Bit, e.g. ADT	RC	Reverse Circulation	HMLC	Diamond Core - 63mm
HA	Hand Auger	PT	Push Tube	BH	Tractor Mounted Backhoe
ADH	Hollow Auger	CT	Cable Tool Rig	EX	Tracked Hydraulic Excavator
DTC	Diatube Coring	JET	Jetting	EE	Existing Excavation
WB	Washbore or Bailer	NDD	Non-destructive digging	HAND	Excavated by Hand Methods

PENETRATION/EXCAVATION RESISTANCE

- L Low resistance.** Rapid penetration possible with little effort from the equipment used.
- M Medium resistance.** Excavation/possible at an acceptable rate with moderate effort from the equipment used.
- H High resistance** to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.
- R Refusal or Practical Refusal.** No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER

	Water level at date shown		Partial water loss
	Water inflow		Complete water loss

GROUNDWATER NOT OBSERVED The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.

GROUNDWATER NOT ENCOUNTERED The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18 30/80mm	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (s_v = peak value, s_r = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure tests
DCP	Dynamic cone penetration test
CPT	Static cone penetration test
CPT _u	Static cone penetration test with pore pressure (u) measurement

Ranking of Visually Observable Contamination and Odour (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)	SCR = Solid Core Recovery (%)	RQD = Rock Quality Designation (%)
$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$	$= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$



METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT REPORTS

<table border="0"> <tr><td></td><td>FILL</td></tr> <tr><td></td><td>GRAVEL (GP or GW)</td></tr> <tr><td></td><td>SAND (SP or SW)</td></tr> <tr><td></td><td>SILT (ML or MH)</td></tr> </table>		FILL		GRAVEL (GP or GW)		SAND (SP or SW)		SILT (ML or MH)	<table border="0"> <tr><td></td><td>CLAY (CL, CI or CH)</td></tr> <tr><td></td><td>ORGANIC SOILS (OL or OH or Pt)</td></tr> <tr><td></td><td>COBBLES or BOULDERS</td></tr> </table>		CLAY (CL, CI or CH)		ORGANIC SOILS (OL or OH or Pt)		COBBLES or BOULDERS
	FILL														
	GRAVEL (GP or GW)														
	SAND (SP or SW)														
	SILT (ML or MH)														
	CLAY (CL, CI or CH)														
	ORGANIC SOILS (OL or OH or Pt)														
	COBBLES or BOULDERS														

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

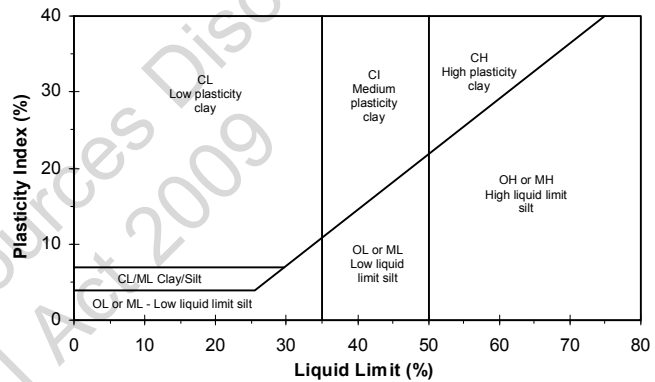
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726 – 1993, (Amdt1 – 1994 and Amdt2 – 1994), Appendix A. The material properties are assessed in the field by visual/tactile methods.

Particle Size

Major Division	Sub Division	Particle Size
BOULDERS		> 200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	20 to 63 mm
	Medium	6.0 to 20 mm
	Fine	2.0 to 6.0 mm
SAND	Coarse	0.6 to 2.0 mm
	Medium	0.2 to 0.6 mm
	Fine	0.075 to 0.2 mm
SILT		0.002 to 0.075 mm
CLAY		< 0.002 mm

Plasticity Properties



MOISTURE CONDITION

AS1726 - 1993

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays & Silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in the dry condition & may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sands and gravels tend to cohere.

CONSISTENCY AND DENSITY

AS1726 - 1993

Symbol	Term	Undrained Shear Strength	Symbol	Term	Density Index %	SPT "N" #
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15	0 to 4
S	Soft	12 to 25 kPa	L	Loose	15 to 35	4 to 10
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65	10 to 30
St	Stiff	50 to 100 kPa	D	Dense	65 to 85	30 to 50
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85	Above 50
H	Hard	Above 200 kPa				

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

SPT correlations are not stated in AS1726 – 1993, and may be subject to corrections for overburden pressure and equipment type.



APPENDIX C

December 2012 MW14CP & SVW08-SVW12 Laboratory Test Certificates

Published on Resources Disclosure Log
RTI Act 2009

12/22/2012

[Redacted] Personal inform

Golder Associates, Australia
216 Draper Street

Cairns, Queensland 4870

Project Name: Kwikleen
Project #: 087673045
Workorder #: 1212384A

Dear [Redacted] Personal ir

The following report includes the data for the above referenced project for sample(s) received on 12/17/2012 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: [Redacted] Personal information if you have any questions regarding the data in this report.

Regards,

[Redacted] Personal information

[Redacted] Personal info

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1212384A

Work Order Summary

CLIENT:	sch4p4(6) Personal inf Golder Associates, Australia 216 Draper Street Cairns, Queensland 4870	BILL TO:	Accounts Payable Golder Associates, Australia PO BOX 6079 Hawthorne, Australia 3121
PHONE:	+61 7 4054 8200	P.O. #	CQ3286
FAX:	+61 7 4054 8201	PROJECT #	087673045 Kwikleen
DATE RECEIVED:	12/17/2012	CONTACT:	sch4p4(6) Personal
DATE COMPLETED:	12/22/2012		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SVW13	Modified TO-15	9.5 "Hg	15 psi
02A	SVW14	Modified TO-15	11.0 "Hg	15 psi
03A	SVW15	Modified TO-15	9.5 "Hg	15 psi
04A	REP001	Modified TO-15	9.0 "Hg	15 psi
05A	FB001	Modified TO-15	9.5 "Hg	15 psi
06A	Lab Blank	Modified TO-15	NA	NA
06B	Lab Blank	Modified TO-15	NA	NA
07A	CCV	Modified TO-15	NA	NA
07B	CCV	Modified TO-15	NA	NA
08A	LCS	Modified TO-15	NA	NA
08AA	LCSD	Modified TO-15	NA	NA
08B	LCS	Modified TO-15	NA	NA
08BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: sch4p4(6) Personal information DATE: 12/22/12

Technical Director

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
 TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
 Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
 Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.
 180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020



**LABORATORY NARRATIVE
EPA Method TO-15
Golder Associates, Australia
Workorder# 1212384A**

Five 1 Liter Summa Canister samples were received on December 17, 2012. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Due to the linear calibration range of the instrument, the reporting limit for 1,2,4-Trichlorobenzene was raised from 2.0 ppbv to 5.0 ppbv.

Dilution was performed on samples SVW13, SVW14, SVW15, and REP001 due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SVW13

Lab ID#: 1212384A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
trans-1,2-Dichloroethene	7.4	14	29	54
cis-1,2-Dichloroethene	7.4	230	29	930
Trichloroethene	7.4	1500	40	8100
Tetrachloroethene	7.4	2200	50	15000

Client Sample ID: SVW14

Lab ID#: 1212384A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	8.0	180	32	700
Trichloroethene	8.0	2600	43	14000
Tetrachloroethene	8.0	2500	54	17000

Client Sample ID: SVW15

Lab ID#: 1212384A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	5.9	41	23	160
Chloroform	5.9	14	29	71
Trichloroethene	5.9	750	32	4000
Tetrachloroethene	5.9	1800	40	12000

Client Sample ID: REP001

Lab ID#: 1212384A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	5.8	42	23	170
Chloroform	5.8	14	28	69
Trichloroethene	5.8	700	31	3800
Toluene	5.8	9.7	22	37
Tetrachloroethene	5.8	1700	39	11000



Air Toxics

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: FB001

Lab ID#: 1212384A-05A

No Detections Were Found.

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RTI Act 2009

Client Sample ID: SVW13

Lab ID#: 1212384A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122108	Date of Collection:	12/14/12 8:10:00 AM
Dil. Factor:	14.8	Date of Analysis:	12/21/12 09:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	7.4	Not Detected	36	Not Detected
Freon 114	7.4	Not Detected	52	Not Detected
Chloromethane	74	Not Detected	150	Not Detected
Vinyl Chloride	7.4	Not Detected	19	Not Detected
1,3-Butadiene	7.4	Not Detected	16	Not Detected
Bromomethane	74	Not Detected	290	Not Detected
Chloroethane	30	Not Detected	78	Not Detected
Freon 11	7.4	Not Detected	42	Not Detected
Ethanol	30	Not Detected	56	Not Detected
Freon 113	7.4	Not Detected	57	Not Detected
1,1-Dichloroethene	7.4	Not Detected	29	Not Detected
Acetone	74	Not Detected	180	Not Detected
2-Propanol	30	Not Detected	73	Not Detected
Carbon Disulfide	30	Not Detected	92	Not Detected
3-Chloropropene	30	Not Detected	93	Not Detected
Methylene Chloride	74	Not Detected	260	Not Detected
Methyl tert-butyl ether	7.4	Not Detected	27	Not Detected
trans-1,2-Dichloroethene	7.4	14	29	54
Hexane	7.4	Not Detected	26	Not Detected
1,1-Dichloroethane	7.4	Not Detected	30	Not Detected
2-Butanone (Methyl Ethyl Ketone)	30	Not Detected	87	Not Detected
cis-1,2-Dichloroethene	7.4	230	29	930
Tetrahydrofuran	7.4	Not Detected	22	Not Detected
Chloroform	7.4	Not Detected	36	Not Detected
1,1,1-Trichloroethane	7.4	Not Detected	40	Not Detected
Cyclohexane	7.4	Not Detected	25	Not Detected
Carbon Tetrachloride	7.4	Not Detected	46	Not Detected
2,2,4-Trimethylpentane	7.4	Not Detected	34	Not Detected
Benzene	7.4	Not Detected	24	Not Detected
1,2-Dichloroethane	7.4	Not Detected	30	Not Detected
Heptane	7.4	Not Detected	30	Not Detected
Trichloroethene	7.4	1500	40	8100
1,2-Dichloropropane	7.4	Not Detected	34	Not Detected
1,4-Dioxane	30	Not Detected	110	Not Detected
Bromodichloromethane	7.4	Not Detected	50	Not Detected
cis-1,3-Dichloropropene	7.4	Not Detected	34	Not Detected
4-Methyl-2-pentanone	7.4	Not Detected	30	Not Detected
Toluene	7.4	Not Detected	28	Not Detected
trans-1,3-Dichloropropene	7.4	Not Detected	34	Not Detected
1,1,2-Trichloroethane	7.4	Not Detected	40	Not Detected
Tetrachloroethene	7.4	2200	50	15000
2-Hexanone	30	Not Detected	120	Not Detected

Client Sample ID: SVW13

Lab ID#: 1212384A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122108	Date of Collection:	12/14/12 8:10:00 AM
Dil. Factor:	14.8	Date of Analysis:	12/21/12 09:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	7.4	Not Detected	63	Not Detected
1,2-Dibromoethane (EDB)	7.4	Not Detected	57	Not Detected
Chlorobenzene	7.4	Not Detected	34	Not Detected
Ethyl Benzene	7.4	Not Detected	32	Not Detected
m,p-Xylene	7.4	Not Detected	32	Not Detected
o-Xylene	7.4	Not Detected	32	Not Detected
Styrene	7.4	Not Detected	32	Not Detected
Bromoform	7.4	Not Detected	76	Not Detected
Cumene	7.4	Not Detected	36	Not Detected
1,1,2,2-Tetrachloroethane	7.4	Not Detected	51	Not Detected
Propylbenzene	7.4	Not Detected	36	Not Detected
4-Ethyltoluene	7.4	Not Detected	36	Not Detected
1,3,5-Trimethylbenzene	7.4	Not Detected	36	Not Detected
1,2,4-Trimethylbenzene	7.4	Not Detected	36	Not Detected
1,3-Dichlorobenzene	7.4	Not Detected	44	Not Detected
1,4-Dichlorobenzene	7.4	Not Detected	44	Not Detected
alpha-Chlorotoluene	7.4	Not Detected	38	Not Detected
1,2-Dichlorobenzene	7.4	Not Detected	44	Not Detected
1,2,4-Trichlorobenzene	7.4	Not Detected	550	Not Detected
Hexachlorobutadiene	30	Not Detected	320	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: SVW14

Lab ID#: 1212384A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122109	Date of Collection:	12/14/12 8:40:00 AM
Dil. Factor:	16.0	Date of Analysis:	12/21/12 09:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	8.0	Not Detected	40	Not Detected
Freon 114	8.0	Not Detected	56	Not Detected
Chloromethane	80	Not Detected	160	Not Detected
Vinyl Chloride	8.0	Not Detected	20	Not Detected
1,3-Butadiene	8.0	Not Detected	18	Not Detected
Bromomethane	80	Not Detected	310	Not Detected
Chloroethane	32	Not Detected	84	Not Detected
Freon 11	8.0	Not Detected	45	Not Detected
Ethanol	32	Not Detected	60	Not Detected
Freon 113	8.0	Not Detected	61	Not Detected
1,1-Dichloroethene	8.0	Not Detected	32	Not Detected
Acetone	80	Not Detected	190	Not Detected
2-Propanol	32	Not Detected	79	Not Detected
Carbon Disulfide	32	Not Detected	100	Not Detected
3-Chloropropene	32	Not Detected	100	Not Detected
Methylene Chloride	80	Not Detected	280	Not Detected
Methyl tert-butyl ether	8.0	Not Detected	29	Not Detected
trans-1,2-Dichloroethene	8.0	Not Detected	32	Not Detected
Hexane	8.0	Not Detected	28	Not Detected
1,1-Dichloroethane	8.0	Not Detected	32	Not Detected
2-Butanone (Methyl Ethyl Ketone)	32	Not Detected	94	Not Detected
cis-1,2-Dichloroethene	8.0	180	32	700
Tetrahydrofuran	8.0	Not Detected	24	Not Detected
Chloroform	8.0	Not Detected	39	Not Detected
1,1,1-Trichloroethane	8.0	Not Detected	44	Not Detected
Cyclohexane	8.0	Not Detected	28	Not Detected
Carbon Tetrachloride	8.0	Not Detected	50	Not Detected
2,2,4-Trimethylpentane	8.0	Not Detected	37	Not Detected
Benzene	8.0	Not Detected	26	Not Detected
1,2-Dichloroethane	8.0	Not Detected	32	Not Detected
Heptane	8.0	Not Detected	33	Not Detected
Trichloroethene	8.0	2600	43	14000
1,2-Dichloropropane	8.0	Not Detected	37	Not Detected
1,4-Dioxane	32	Not Detected	120	Not Detected
Bromodichloromethane	8.0	Not Detected	54	Not Detected
cis-1,3-Dichloropropene	8.0	Not Detected	36	Not Detected
4-Methyl-2-pentanone	8.0	Not Detected	33	Not Detected
Toluene	8.0	Not Detected	30	Not Detected
trans-1,3-Dichloropropene	8.0	Not Detected	36	Not Detected
1,1,2-Trichloroethane	8.0	Not Detected	44	Not Detected
Tetrachloroethene	8.0	2500	54	17000
2-Hexanone	32	Not Detected	130	Not Detected

Client Sample ID: SVW14

Lab ID#: 1212384A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122109	Date of Collection:	12/14/12 8:40:00 AM
Dil. Factor:	16.0	Date of Analysis:	12/21/12 09:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	8.0	Not Detected	68	Not Detected
1,2-Dibromoethane (EDB)	8.0	Not Detected	61	Not Detected
Chlorobenzene	8.0	Not Detected	37	Not Detected
Ethyl Benzene	8.0	Not Detected	35	Not Detected
m,p-Xylene	8.0	Not Detected	35	Not Detected
o-Xylene	8.0	Not Detected	35	Not Detected
Styrene	8.0	Not Detected	34	Not Detected
Bromoform	8.0	Not Detected	83	Not Detected
Cumene	8.0	Not Detected	39	Not Detected
1,1,2,2-Tetrachloroethane	8.0	Not Detected	55	Not Detected
Propylbenzene	8.0	Not Detected	39	Not Detected
4-Ethyltoluene	8.0	Not Detected	39	Not Detected
1,3,5-Trimethylbenzene	8.0	Not Detected	39	Not Detected
1,2,4-Trimethylbenzene	8.0	Not Detected	39	Not Detected
1,3-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,4-Dichlorobenzene	8.0	Not Detected	48	Not Detected
alpha-Chlorotoluene	8.0	Not Detected	41	Not Detected
1,2-Dichlorobenzene	8.0	Not Detected	48	Not Detected
1,2,4-Trichlorobenzene	80	Not Detected	590	Not Detected
Hexachlorobutadiene	32	Not Detected	340	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: SVW15

Lab ID#: 1212384A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122110	Date of Collection:	12/14/12 9:30:00 AM
Dil. Factor:	11.8	Date of Analysis:	12/21/12 10:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.9	Not Detected	29	Not Detected
Freon 114	5.9	Not Detected	41	Not Detected
Chloromethane	59	Not Detected	120	Not Detected
Vinyl Chloride	5.9	Not Detected	15	Not Detected
1,3-Butadiene	5.9	Not Detected	13	Not Detected
Bromomethane	59	Not Detected	230	Not Detected
Chloroethane	24	Not Detected	62	Not Detected
Freon 11	5.9	Not Detected	33	Not Detected
Ethanol	24	Not Detected	44	Not Detected
Freon 113	5.9	Not Detected	45	Not Detected
1,1-Dichloroethene	5.9	Not Detected	23	Not Detected
Acetone	59	Not Detected	140	Not Detected
2-Propanol	24	Not Detected	58	Not Detected
Carbon Disulfide	24	Not Detected	73	Not Detected
3-Chloropropene	24	Not Detected	74	Not Detected
Methylene Chloride	59	Not Detected	200	Not Detected
Methyl tert-butyl ether	5.9	Not Detected	21	Not Detected
trans-1,2-Dichloroethene	5.9	Not Detected	23	Not Detected
Hexane	5.9	Not Detected	21	Not Detected
1,1-Dichloroethane	5.9	Not Detected	24	Not Detected
2-Butanone (Methyl Ethyl Ketone)	24	Not Detected	70	Not Detected
cis-1,2-Dichloroethene	5.9	41	23	160
Tetrahydrofuran	5.9	Not Detected	17	Not Detected
Chloroform	5.9	14	29	71
1,1,1-Trichloroethane	5.9	Not Detected	32	Not Detected
Cyclohexane	5.9	Not Detected	20	Not Detected
Carbon Tetrachloride	5.9	Not Detected	37	Not Detected
2,2,4-Trimethylpentane	5.9	Not Detected	28	Not Detected
Benzene	5.9	Not Detected	19	Not Detected
1,2-Dichloroethane	5.9	Not Detected	24	Not Detected
Heptane	5.9	Not Detected	24	Not Detected
Trichloroethene	5.9	750	32	4000
1,2-Dichloropropane	5.9	Not Detected	27	Not Detected
1,4-Dioxane	24	Not Detected	85	Not Detected
Bromodichloromethane	5.9	Not Detected	40	Not Detected
cis-1,3-Dichloropropene	5.9	Not Detected	27	Not Detected
4-Methyl-2-pentanone	5.9	Not Detected	24	Not Detected
Toluene	5.9	Not Detected	22	Not Detected
trans-1,3-Dichloropropene	5.9	Not Detected	27	Not Detected
1,1,2-Trichloroethane	5.9	Not Detected	32	Not Detected
Tetrachloroethene	5.9	1800	40	12000
2-Hexanone	24	Not Detected	97	Not Detected

Client Sample ID: SVW15

Lab ID#: 1212384A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122110	Date of Collection:	12/14/12 9:30:00 AM
Dil. Factor:	11.8	Date of Analysis:	12/21/12 10:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.9	Not Detected	50	Not Detected
1,2-Dibromoethane (EDB)	5.9	Not Detected	45	Not Detected
Chlorobenzene	5.9	Not Detected	27	Not Detected
Ethyl Benzene	5.9	Not Detected	26	Not Detected
m,p-Xylene	5.9	Not Detected	26	Not Detected
o-Xylene	5.9	Not Detected	26	Not Detected
Styrene	5.9	Not Detected	25	Not Detected
Bromoform	5.9	Not Detected	61	Not Detected
Cumene	5.9	Not Detected	29	Not Detected
1,1,2,2-Tetrachloroethane	5.9	Not Detected	40	Not Detected
Propylbenzene	5.9	Not Detected	29	Not Detected
4-Ethyltoluene	5.9	Not Detected	29	Not Detected
1,3,5-Trimethylbenzene	5.9	Not Detected	29	Not Detected
1,2,4-Trimethylbenzene	5.9	Not Detected	29	Not Detected
1,3-Dichlorobenzene	5.9	Not Detected	35	Not Detected
1,4-Dichlorobenzene	5.9	Not Detected	35	Not Detected
alpha-Chlorotoluene	5.9	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.9	Not Detected	35	Not Detected
1,2,4-Trichlorobenzene	5.9	Not Detected	440	Not Detected
Hexachlorobutadiene	24	Not Detected	250	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: REP001

Lab ID#: 1212384A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122018	Date of Collection:	12/14/12 9:50:00 AM
Dil. Factor:	11.6	Date of Analysis:	12/21/12 12:48 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.8	Not Detected	29	Not Detected
Freon 114	5.8	Not Detected	40	Not Detected
Chloromethane	58	Not Detected	120	Not Detected
Vinyl Chloride	5.8	Not Detected	15	Not Detected
1,3-Butadiene	5.8	Not Detected	13	Not Detected
Bromomethane	58	Not Detected	220	Not Detected
Chloroethane	23	Not Detected	61	Not Detected
Freon 11	5.8	Not Detected	32	Not Detected
Ethanol	23	Not Detected	44	Not Detected
Freon 113	5.8	Not Detected	44	Not Detected
1,1-Dichloroethene	5.8	Not Detected	23	Not Detected
Acetone	58	Not Detected	140	Not Detected
2-Propanol	23	Not Detected	57	Not Detected
Carbon Disulfide	23	Not Detected	72	Not Detected
3-Chloropropene	23	Not Detected	73	Not Detected
Methylene Chloride	58	Not Detected	200	Not Detected
Methyl tert-butyl ether	5.8	Not Detected	21	Not Detected
trans-1,2-Dichloroethene	5.8	Not Detected	23	Not Detected
Hexane	5.8	Not Detected	20	Not Detected
1,1-Dichloroethane	5.8	Not Detected	23	Not Detected
2-Butanone (Methyl Ethyl Ketone)	23	Not Detected	68	Not Detected
cis-1,2-Dichloroethene	5.8	42	23	170
Tetrahydrofuran	5.8	Not Detected	17	Not Detected
Chloroform	5.8	14	28	69
1,1,1-Trichloroethane	5.8	Not Detected	32	Not Detected
Cyclohexane	5.8	Not Detected	20	Not Detected
Carbon Tetrachloride	5.8	Not Detected	36	Not Detected
2,2,4-Trimethylpentane	5.8	Not Detected	27	Not Detected
Benzene	5.8	Not Detected	18	Not Detected
1,2-Dichloroethane	5.8	Not Detected	23	Not Detected
Heptane	5.8	Not Detected	24	Not Detected
Trichloroethene	5.8	700	31	3800
1,2-Dichloropropane	5.8	Not Detected	27	Not Detected
1,4-Dioxane	23	Not Detected	84	Not Detected
Bromodichloromethane	5.8	Not Detected	39	Not Detected
cis-1,3-Dichloropropene	5.8	Not Detected	26	Not Detected
4-Methyl-2-pentanone	5.8	Not Detected	24	Not Detected
Toluene	5.8	9.7	22	37
trans-1,3-Dichloropropene	5.8	Not Detected	26	Not Detected
1,1,2-Trichloroethane	5.8	Not Detected	32	Not Detected
Tetrachloroethene	5.8	1700	39	11000
2-Hexanone	23	Not Detected	95	Not Detected

Client Sample ID: REP001

Lab ID#: 1212384A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122018	Date of Collection:	12/14/12 9:50:00 AM
Dil. Factor:	11.6	Date of Analysis:	12/21/12 12:48 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.8	Not Detected	49	Not Detected
1,2-Dibromoethane (EDB)	5.8	Not Detected	44	Not Detected
Chlorobenzene	5.8	Not Detected	27	Not Detected
Ethyl Benzene	5.8	Not Detected	25	Not Detected
m,p-Xylene	5.8	Not Detected	25	Not Detected
o-Xylene	5.8	Not Detected	25	Not Detected
Styrene	5.8	Not Detected	25	Not Detected
Bromoform	5.8	Not Detected	60	Not Detected
Cumene	5.8	Not Detected	28	Not Detected
1,1,2,2-Tetrachloroethane	5.8	Not Detected	40	Not Detected
Propylbenzene	5.8	Not Detected	28	Not Detected
4-Ethyltoluene	5.8	Not Detected	28	Not Detected
1,3,5-Trimethylbenzene	5.8	Not Detected	28	Not Detected
1,2,4-Trimethylbenzene	5.8	Not Detected	28	Not Detected
1,3-Dichlorobenzene	5.8	Not Detected	35	Not Detected
1,4-Dichlorobenzene	5.8	Not Detected	35	Not Detected
alpha-Chlorotoluene	5.8	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.8	Not Detected	35	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	430	Not Detected
Hexachlorobutadiene	23	Not Detected	250	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	110	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: FB001

Lab ID#: 1212384A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122019	Date of Collection:	12/14/12 9:30:00 AM
Dil. Factor:	2.96	Date of Analysis:	12/21/12 02:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.5	Not Detected	7.3	Not Detected
Freon 114	1.5	Not Detected	10	Not Detected
Chloromethane	15	Not Detected	30	Not Detected
Vinyl Chloride	1.5	Not Detected	3.8	Not Detected
1,3-Butadiene	1.5	Not Detected	3.3	Not Detected
Bromomethane	15	Not Detected	57	Not Detected
Chloroethane	5.9	Not Detected	16	Not Detected
Freon 11	1.5	Not Detected	8.3	Not Detected
Ethanol	5.9	Not Detected	11	Not Detected
Freon 113	1.5	Not Detected	11	Not Detected
1,1-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Acetone	15	Not Detected	35	Not Detected
2-Propanol	5.9	Not Detected	14	Not Detected
Carbon Disulfide	5.9	Not Detected	18	Not Detected
3-Chloropropene	5.9	Not Detected	18	Not Detected
Methylene Chloride	15	Not Detected	51	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.3	Not Detected
trans-1,2-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Hexane	1.5	Not Detected	5.2	Not Detected
1,1-Dichloroethane	1.5	Not Detected	6.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.9	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Tetrahydrofuran	1.5	Not Detected	4.4	Not Detected
Chloroform	1.5	Not Detected	7.2	Not Detected
1,1,1-Trichloroethane	1.5	Not Detected	8.1	Not Detected
Cyclohexane	1.5	Not Detected	5.1	Not Detected
Carbon Tetrachloride	1.5	Not Detected	9.3	Not Detected
2,2,4-Trimethylpentane	1.5	Not Detected	6.9	Not Detected
Benzene	1.5	Not Detected	4.7	Not Detected
1,2-Dichloroethane	1.5	Not Detected	6.0	Not Detected
Heptane	1.5	Not Detected	6.1	Not Detected
Trichloroethene	1.5	Not Detected	8.0	Not Detected
1,2-Dichloropropane	1.5	Not Detected	6.8	Not Detected
1,4-Dioxane	5.9	Not Detected	21	Not Detected
Bromodichloromethane	1.5	Not Detected	9.9	Not Detected
cis-1,3-Dichloropropene	1.5	Not Detected	6.7	Not Detected
4-Methyl-2-pentanone	1.5	Not Detected	6.1	Not Detected
Toluene	1.5	Not Detected	5.6	Not Detected
trans-1,3-Dichloropropene	1.5	Not Detected	6.7	Not Detected
1,1,2-Trichloroethane	1.5	Not Detected	8.1	Not Detected
Tetrachloroethene	1.5	Not Detected	10	Not Detected
2-Hexanone	5.9	Not Detected	24	Not Detected

Client Sample ID: FB001

Lab ID#: 1212384A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122019	Date of Collection:	12/14/12 9:30:00 AM
Dil. Factor:	2.96	Date of Analysis:	12/21/12 02:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.5	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.5	Not Detected	11	Not Detected
Chlorobenzene	1.5	Not Detected	6.8	Not Detected
Ethyl Benzene	1.5	Not Detected	6.4	Not Detected
m,p-Xylene	1.5	Not Detected	6.4	Not Detected
o-Xylene	1.5	Not Detected	6.4	Not Detected
Styrene	1.5	Not Detected	6.3	Not Detected
Bromoform	1.5	Not Detected	15	Not Detected
Cumene	1.5	Not Detected	7.3	Not Detected
1,1,2,2-Tetrachloroethane	1.5	Not Detected	10	Not Detected
Propylbenzene	1.5	Not Detected	7.3	Not Detected
4-Ethyltoluene	1.5	Not Detected	7.3	Not Detected
1,3,5-Trimethylbenzene	1.5	Not Detected	7.3	Not Detected
1,2,4-Trimethylbenzene	1.5	Not Detected	7.3	Not Detected
1,3-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
1,4-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
alpha-Chlorotoluene	1.5	Not Detected	7.7	Not Detected
1,2-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
1,2,4-Trichlorobenzene	15	Not Detected	110	Not Detected
Hexachlorobutadiene	5.9	Not Detected	63	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: Lab Blank

Lab ID#: 1212384A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122005	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 06:45 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1212384A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122005	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	12/20/12 06:45 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: Lab Blank

Lab ID#: 1212384A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122107	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 08:18 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1212384A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122107	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 08:18 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	105	70-130

Client Sample ID: CCV

Lab ID#: 1212384A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 03:06 PM

Compound	%Recovery
Freon 12	106
Freon 114	106
Chloromethane	116
Vinyl Chloride	102
1,3-Butadiene	96
Bromomethane	127
Chloroethane	113
Freon 11	93
Ethanol	121
Freon 113	91
1,1-Dichloroethene	84
Acetone	104
2-Propanol	89
Carbon Disulfide	93
3-Chloropropene	94
Methylene Chloride	98
Methyl tert-butyl ether	85
trans-1,2-Dichloroethene	90
Hexane	89
1,1-Dichloroethane	88
2-Butanone (Methyl Ethyl Ketone)	100
cis-1,2-Dichloroethene	91
Tetrahydrofuran	89
Chloroform	94
1,1,1-Trichloroethane	96
Cyclohexane	93
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	92
Benzene	89
1,2-Dichloroethane	95
Heptane	95
Trichloroethene	97
1,2-Dichloropropane	91
1,4-Dioxane	97
Bromodichloromethane	100
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	95
Toluene	94
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	91
Tetrachloroethene	91
2-Hexanone	88

Client Sample ID: CCV

Lab ID#: 1212384A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 03:06 PM

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	95
Chlorobenzene	90
Ethyl Benzene	92
m,p-Xylene	95
o-Xylene	97
Styrene	96
Bromoform	104
Cumene	98
1,1,1,2-Tetrachloroethane	97
Propylbenzene	103
4-Ethyltoluene	94
1,3,5-Trimethylbenzene	100
1,2,4-Trimethylbenzene	92
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	99
alpha-Chlorotoluene	114
1,2-Dichlorobenzene	95
1,2,4-Trichlorobenzene	91
Hexachlorobutadiene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: CCV

Lab ID#: 1212384A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 04:32 PM

Compound	%Recovery
Freon 12	109
Freon 114	108
Chloromethane	117
Vinyl Chloride	107
1,3-Butadiene	98
Bromomethane	129
Chloroethane	95
Freon 11	95
Ethanol	88
Freon 113	93
1,1-Dichloroethene	86
Acetone	100
2-Propanol	90
Carbon Disulfide	94
3-Chloropropene	95
Methylene Chloride	96
Methyl tert-butyl ether	85
trans-1,2-Dichloroethene	88
Hexane	89
1,1-Dichloroethane	89
2-Butanone (Methyl Ethyl Ketone)	99
cis-1,2-Dichloroethene	90
Tetrahydrofuran	89
Chloroform	95
1,1,1-Trichloroethane	97
Cyclohexane	92
Carbon Tetrachloride	103
2,2,4-Trimethylpentane	92
Benzene	90
1,2-Dichloroethane	98
Heptane	96
Trichloroethene	99
1,2-Dichloropropane	96
1,4-Dioxane	101
Bromodichloromethane	104
cis-1,3-Dichloropropene	102
4-Methyl-2-pentanone	94
Toluene	94
trans-1,3-Dichloropropene	105
1,1,2-Trichloroethane	94
Tetrachloroethene	92
2-Hexanone	90

Client Sample ID: CCV

Lab ID#: 1212384A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 04:32 PM

Compound	%Recovery
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	98
Chlorobenzene	93
Ethyl Benzene	97
m,p-Xylene	101
o-Xylene	102
Styrene	100
Bromoform	109
Cumene	105
1,1,1,2-Tetrachloroethane	99
Propylbenzene	109
4-Ethyltoluene	103
1,3,5-Trimethylbenzene	110
1,2,4-Trimethylbenzene	102
1,3-Dichlorobenzene	108
1,4-Dichlorobenzene	108
alpha-Chlorotoluene	127
1,2-Dichlorobenzene	101
1,2,4-Trichlorobenzene	98
Hexachlorobutadiene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	112	70-130

Client Sample ID: LCS

Lab ID#: 1212384A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 04:17 PM

Compound	%Recovery
Freon 12	102
Freon 114	103
Chloromethane	117
Vinyl Chloride	102
1,3-Butadiene	96
Bromomethane	122
Chloroethane	108
Freon 11	94
Ethanol	115
Freon 113	86
1,1-Dichloroethene	88
Acetone	111
2-Propanol	94
Carbon Disulfide	106
3-Chloropropene	100
Methylene Chloride	90
Methyl tert-butyl ether	83
trans-1,2-Dichloroethene	94
Hexane	82
1,1-Dichloroethane	83
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	87
Tetrahydrofuran	82
Chloroform	89
1,1,1-Trichloroethane	90
Cyclohexane	86
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	83
Benzene	86
1,2-Dichloroethane	91
Heptane	89
Trichloroethene	94
1,2-Dichloropropane	88
1,4-Dioxane	96
Bromodichloromethane	96
cis-1,3-Dichloropropene	97
4-Methyl-2-pentanone	97
Toluene	88
trans-1,3-Dichloropropene	101
1,1,2-Trichloroethane	89
Tetrachloroethene	87
2-Hexanone	98

Client Sample ID: LCS

Lab ID#: 1212384A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 04:17 PM

Compound	%Recovery
Dibromochloromethane	96
1,2-Dibromoethane (EDB)	92
Chlorobenzene	89
Ethyl Benzene	88
m,p-Xylene	90
o-Xylene	93
Styrene	97
Bromoform	98
Cumene	93
1,1,1,2-Tetrachloroethane	94
Propylbenzene	98
4-Ethyltoluene	84
1,3,5-Trimethylbenzene	93
1,2,4-Trimethylbenzene	86
1,3-Dichlorobenzene	95
1,4-Dichlorobenzene	93
alpha-Chlorotoluene	107
1,2-Dichlorobenzene	90
1,2,4-Trichlorobenzene	89
Hexachlorobutadiene	89

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: LCSD

Lab ID#: 1212384A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 05:41 PM

Compound	%Recovery
Freon 12	104
Freon 114	106
Chloromethane	118
Vinyl Chloride	105
1,3-Butadiene	99
Bromomethane	125
Chloroethane	110
Freon 11	95
Ethanol	117
Freon 113	89
1,1-Dichloroethene	92
Acetone	115
2-Propanol	99
Carbon Disulfide	109
3-Chloropropene	102
Methylene Chloride	90
Methyl tert-butyl ether	86
trans-1,2-Dichloroethene	98
Hexane	82
1,1-Dichloroethane	86
2-Butanone (Methyl Ethyl Ketone)	97
cis-1,2-Dichloroethene	89
Tetrahydrofuran	86
Chloroform	91
1,1,1-Trichloroethane	92
Cyclohexane	86
Carbon Tetrachloride	96
2,2,4-Trimethylpentane	84
Benzene	87
1,2-Dichloroethane	91
Heptane	88
Trichloroethene	95
1,2-Dichloropropane	87
1,4-Dioxane	96
Bromodichloromethane	96
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	96
Toluene	88
trans-1,3-Dichloropropene	102
1,1,2-Trichloroethane	89
Tetrachloroethene	88
2-Hexanone	101

Client Sample ID: LCSD

Lab ID#: 1212384A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/20/12 05:41 PM

Compound	%Recovery
Dibromochloromethane	97
1,2-Dibromoethane (EDB)	93
Chlorobenzene	88
Ethyl Benzene	88
m,p-Xylene	90
o-Xylene	95
Styrene	97
Bromoform	97
Cumene	94
1,1,1,2-Tetrachloroethane	95
Propylbenzene	99
4-Ethyltoluene	85
1,3,5-Trimethylbenzene	94
1,2,4-Trimethylbenzene	88
1,3-Dichlorobenzene	96
1,4-Dichlorobenzene	94
alpha-Chlorotoluene	110
1,2-Dichlorobenzene	90
1,2,4-Trichlorobenzene	91
Hexachlorobutadiene	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	105	70-130

Client Sample ID: LCS

Lab ID#: 1212384A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 05:16 PM

Compound	%Recovery
Freon 12	98
Freon 114	101
Chloromethane	111
Vinyl Chloride	102
1,3-Butadiene	93
Bromomethane	122
Chloroethane	111
Freon 11	88
Ethanol	112
Freon 113	88
1,1-Dichloroethene	88
Acetone	101
2-Propanol	90
Carbon Disulfide	103
3-Chloropropene	98
Methylene Chloride	88
Methyl tert-butyl ether	81
trans-1,2-Dichloroethene	95
Hexane	81
1,1-Dichloroethane	83
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	89
Tetrahydrofuran	84
Chloroform	88
1,1,1-Trichloroethane	91
Cyclohexane	90
Carbon Tetrachloride	100
2,2,4-Trimethylpentane	86
Benzene	88
1,2-Dichloroethane	89
Heptane	89
Trichloroethene	95
1,2-Dichloropropane	88
1,4-Dioxane	96
Bromodichloromethane	97
cis-1,3-Dichloropropene	95
4-Methyl-2-pentanone	95
Toluene	87
trans-1,3-Dichloropropene	104
1,1,2-Trichloroethane	91
Tetrachloroethene	90
2-Hexanone	100

Client Sample ID: LCS

Lab ID#: 1212384A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 05:16 PM

Compound	%Recovery
Dibromochloromethane	98
1,2-Dibromoethane (EDB)	94
Chlorobenzene	90
Ethyl Benzene	90
m,p-Xylene	94
o-Xylene	94
Styrene	99
Bromoform	101
Cumene	94
1,1,1,2-Tetrachloroethane	96
Propylbenzene	100
4-Ethyltoluene	91
1,3,5-Trimethylbenzene	100
1,2,4-Trimethylbenzene	88
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	95
alpha-Chlorotoluene	117
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	92
Hexachlorobutadiene	92

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: LCS D

Lab ID#: 1212384A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122105	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 06:09 PM

Compound	%Recovery
Freon 12	99
Freon 114	104
Chloromethane	119
Vinyl Chloride	102
1,3-Butadiene	99
Bromomethane	122
Chloroethane	112
Freon 11	87
Ethanol	117
Freon 113	88
1,1-Dichloroethene	90
Acetone	95
2-Propanol	96
Carbon Disulfide	107
3-Chloropropene	100
Methylene Chloride	88
Methyl tert-butyl ether	83
trans-1,2-Dichloroethene	96
Hexane	82
1,1-Dichloroethane	83
2-Butanone (Methyl Ethyl Ketone)	96
cis-1,2-Dichloroethene	88
Tetrahydrofuran	83
Chloroform	88
1,1,1-Trichloroethane	90
Cyclohexane	86
Carbon Tetrachloride	94
2,2,4-Trimethylpentane	82
Benzene	87
1,2-Dichloroethane	89
Heptane	88
Trichloroethene	96
1,2-Dichloropropane	88
1,4-Dioxane	97
Bromodichloromethane	95
cis-1,3-Dichloropropene	97
4-Methyl-2-pentanone	95
Toluene	87
trans-1,3-Dichloropropene	98
1,1,2-Trichloroethane	86
Tetrachloroethene	89
2-Hexanone	96

Client Sample ID: LCSD

Lab ID#: 1212384A-08BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	2122105	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 12/21/12 06:09 PM

Compound	%Recovery
Dibromochloromethane	94
1,2-Dibromoethane (EDB)	94
Chlorobenzene	90
Ethyl Benzene	88
m,p-Xylene	87
o-Xylene	88
Styrene	94
Bromoform	99
Cumene	90
1,1,2,2-Tetrachloroethane	94
Propylbenzene	93
4-Ethyltoluene	83
1,3,5-Trimethylbenzene	92
1,2,4-Trimethylbenzene	81
1,3-Dichlorobenzene	91
1,4-Dichlorobenzene	88
alpha-Chlorotoluene	111
1,2-Dichlorobenzene	86
1,2,4-Trichlorobenzene	80
Hexachlorobutadiene	84

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	105	70-130

CLIENT DETAILS

Contact **sch4p4(6) Pers**
 Client **GOLDER ASSOCIATES PTY LTD**
 Address **PO BOX 5823
 216 Draper St
 CAIRNS
 CAIRNS QLD 4870**
 Telephone **07 4054 8200**
 Facsimile **07 4054 8201**
 Email **sch4p4(6) Personal information**
 Project **087673045 Kwikleen**
 Order Number **CQ 3284**
 Samples **1**

LABORATORY DETAILS

Manager **sch4p4(6) Pe**
 Laboratory **SGS Cairns Environmental**
 Address **Unit 2, 58 Comport St
 Portsmith QLD 4870**
 Telephone **+61 07 4035 5111**
 Facsimile **+61 07 4035 5122**
 Email **AU.Environmental.Cairns@sgs.com**
 SGS Reference **CE102092 R0**
 Report Number **0000004390**
 Date Reported **19 Dec 2012**
 Date Received **12 Dec 2012**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE114257.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Perso
Micro Supervisor

Sample Number	CE102092.001
Sample Matrix	Water
Sample Date	12 Dec 2012
Sample Name	MW14CP

Parameter Units LOR

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<50 †
1,2-dichloropropane	µg/L	0.5	<50 †
trans-1,3-dichloropropene	µg/L	0.5	<50 †
cis-1,3-dichloropropene	µg/L	0.5	<50 †
1,2-dibromoethane (EDB)	µg/L	0.5	<50 †

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<500 †
Chloromethane	µg/L	5	<500 †
Vinyl chloride (Chloroethene)	µg/L	0.3	<30 †
Bromomethane	µg/L	10	<1000 †
Chloroethane	µg/L	5	<500 †
Trichlorofluoromethane	µg/L	1	<100 †
1,1-dichloroethene	µg/L	0.5	<50 †
trans-1,2-dichloroethene	µg/L	0.5	<50 †
1,1-dichloroethane	µg/L	0.5	<50 †
cis-1,2-dichloroethene	µg/L	0.5	230
Bromochloromethane	µg/L	0.5	<50 †
1,2-dichloroethane	µg/L	0.5	<50 †
1,1,1-trichloroethane	µg/L	0.5	<50 †
1,1-dichloropropene	µg/L	0.5	<50 †
Carbon tetrachloride	µg/L	0.5	<50 †
Dibromomethane	µg/L	0.5	<50 †
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	440
1,1,2-trichloroethane	µg/L	0.5	<50 †
1,3-dichloropropane	µg/L	0.5	<50 †
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	1200
1,1,1,2-tetrachloroethane	µg/L	0.5	<50 †
1,1,2,2-tetrachloroethane	µg/L	0.5	<50 †
1,2,3-trichloropropane	µg/L	0.5	<50 †
1,2-dibromo-3-chloropropane	µg/L	0.5	<50 †
Hexachlorobutadiene	µg/L	0.5	<50 †

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Sample Number	CE102092.001
Sample Matrix	Water
Sample Date	12 Dec 2012
Sample Name	MW14CP

Parameter Units LOR

VOCs in Water Method: AN433/AN434 (continued)

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<50 †
Bromobenzene	µg/L	0.5	<50 †
2-chlorotoluene	µg/L	0.5	<50 †
4-chlorotoluene	µg/L	0.5	<50 †
1,3-dichlorobenzene	µg/L	0.5	<50 †
1,4-dichlorobenzene	µg/L	0.3	<50 †
1,2-dichlorobenzene	µg/L	0.5	<50 †
1,2,4-trichlorobenzene	µg/L	0.5	<50 †
1,2,3-trichlorobenzene	µg/L	0.5	<50 †

Surrogates

Dibromofluoromethane (Surrogate)	%	-	113
d4-1,2-dichloroethane (Surrogate)	%	-	112
d8-toluene (Surrogate)	%	-	100
Bromofluorobenzene (Surrogate)	%	-	120

Totals

Total Halogenated Hydrocarbons	µg/L	10	-
--------------------------------	------	----	---

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<50 †
Bromodichloromethane (THM)	µg/L	0.5	<50 †
Dibromochloromethane (THM)	µg/L	0.5	<50 †
Bromoform (THM)	µg/L	0.5	<50 †

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MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

AN433/AN434

METHODOLOGY SUMMARY

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	QFH	QC result is above the upper tolerance
LNR	Sample listed, but not received.	QFL	QC result is below the lower tolerance
*	This analysis is not covered by the scope of accreditation.	-	The sample was not analysed for this analyte
^	Performed by outside laboratory.	NVL	Not Validated
LOR	Limit of Reporting		
↑↓	Raised or Lowered Limit of Reporting		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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APPENDIX D

Feb-March 2013 MW15CP-MW20CP Borehole Logs

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REPORT OF BOREHOLE: MW15CP

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 13/2/13

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services

COORDS: MGA94 56

PROJECT: Kwikleen

SURFACE RL: DATUM: AHD

LOCATION: Pease Street

INCLINATION: -90°

JOB NO: 087673045

HOLE DEPTH: 4.00 m

Drilling			Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	PIEZOMETER DETAILS
			0.0		PID 0.00 m 2.0 ppm	X X X X		Silty SAND fine to coarse grained, dark brown, some fine sub-angular gravels, moist, loose	M	L		Concrete
			0.20		PID 0.20 m 2.6 ppm	X X X X		SAND fine to coarse grained, dark brown, some silt, moist, loose	M	L		
			0.5			X X X X						
			0.80			X X X X		SAND fine to coarse grained, pale brown, some silt, moist to wet, loose				
			1.0		PID 1.20 m 2.3 ppm	X X X X			M - W	L		Clean Washed Sand
			1.5			X X X X						
			1.70			X X X X						
			1.80		PID 1.80 m 1.4 ppm	X X X X		Clayey SAND fine grained, pale brown, high plasticity clay, wet, loose	W	L		
			2.0			X X X X		CLAY high plasticity, dark grey, moist, firm	M	F		
			2.20		PID 2.20 m 1.3 ppm	X X X X		Sandy CLAY high plasticity, dark grey, fine grained sand, moist, soft	M	S		
			2.40			X X X X						
			2.5			X X X X		CLAY high plasticity, mottled brown and grey, some fine sands, moist, firm				Slotted
			3.0		PID 2.80 m 1.6 ppm	X X X X			M	F		
			3.30			X X X X						
			3.40		PID 3.30 m 3.2 ppm	X X X X		Gravelly CLAY high plasticity, mottled brown and grey, some fine rounded/subrounded gravels, moist, stiff	M	St		
			3.5			X X X X		CLAY high plasticity, mottled brown and yellow brown, moist, very stiff				
			4.0		PID 3.80 m 3.4 ppm	X X X X			M	VSt		
			4.0					END OF BOREHOLE @ 4.00 m				

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01d
RL3

GAP 8.03 LIB:GLB Log GAP NON-CORED FULL PAGE 087673045-SVMW13-SVMW15-CPJ <DrawingFile>> 08/04/2013 15:56 8.30.003



REPORT OF BOREHOLE: MW16CP

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 13/2/13

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services
 PROJECT: Kwikleen
 LOCATION: Pease Street
 JOB NO: 087673045

COORDS: MGA94 56
 SURFACE RL: DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 4.00 m

Drilling			Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	PIEZOMETER DETAILS
			0.0		PID 0.10-0.30 m 0.5 ppm			Silty SAND fine to coarse grained, dark brown, some fine angular gravels, dry to moist, loose			
			0.5		PID 0.60-0.80 m 0.5 ppm						
			0.80								
			1.0		PID 1.30-1.50 m 0.2 ppm			SAND fine to coarse grained, yellow brown, moist, loose			
			1.5								
			1.80					becoming pale grey at 1.8 m, gravelly, fine, subrounded			
			2.0		PID 1.90-2.10 m 0.3 ppm			CLAY high plasticity, mottled grey brown, moist, firm			
			2.50		PID 2.20-2.40 m 0.3 ppm						
			2.5		PID 2.50-2.70 m 0.0 ppm			Clayey SAND fine to medium grained, mottled grey brown, high plasticity clay, moist, loose			
			2.90								
			3.0		PID 3.00-3.20 m 0.2 ppm			CLAY high plasticity, dark brown, some fine rounded/subrounded gravels, moist, soft			
			3.40								
			3.5					CLAY high plasticity, mottled grey and yellow brown, some fine rounded/subrounded gravels, moist, very stiff			
			4.0		PID 3.80-4.00 m 0.5 ppm						
			4.0					END OF BOREHOLE @ 4.00 m			
			4.5								
			5.0								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01d
RL3

GAP 8.03 LIB:GLB Log GAP NON-CORED FULL PAGE 08/04/2013 15:56 8.30.003



REPORT OF BOREHOLE: MW17CP

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 13/2/13

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services

COORDS: MGA94 56

PROJECT: Kwikleen

SURFACE RL: DATUM: AHD

LOCATION: Pease Street

INCLINATION: -90°

JOB NO: 087673045

SOLE DEPTH: 4.00 m

Drilling			Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	PIEZOMETER DETAILS
			0.0		PID 0.00-0.20 m 0.2 ppm			Gravelly SAND fine to coarse grained, yellow red/brown, angular gravels, some silt, dry to moist, loose	D - M	L	Concrete
			0.40								
			0.5		PID 0.50-0.70 m 0.2 ppm			Silty Sandy CLAY medium plasticity, dark brown, fine grained sand, dry to moist, stiff	D - M	St	Bentonite
			1.00	1.00	PID 1.00-1.20 m 0.1 ppm			SAND fine to coarse grained, pale brown, wet, loose			Clean Washed Sand
			1.5						W	L	
			2.0	2.10	PID 1.90-2.10 m 0.2 ppm			CLAY high plasticity, grey, some fine sands, moist, firm	M	F	Slotted
			2.5	2.70	PID 2.20-2.40 m 0.2 ppm			Silty Sandy CLAY medium plasticity, dark grey, fine grained sand, moist to wet, soft	M - W	S	
			3.0								
			3.5								
			4.0		PID 3.80-4.00 m 0.8 ppm						
			4.0					END OF BOREHOLE @ 4.00 m			
			4.5								
			5.0								

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GAP gINT FN. F01d
RL3

GAP 8.03 LIB:GLB Log GAP NON-CORED FULL PAGE 08/04/2013 15:56 8.30.003



REPORT OF BOREHOLE: MW18CP

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 14/2/13

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services

COORDS: MGA94 56

PROJECT: Kwikleen

SURFACE RL: DATUM: AHD

LOCATION: Pease Street

INCLINATION: -90°

JOB NO: 087673045

SOLE DEPTH: 4.00 m

Drilling			Sampling		Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	PIEZOMETER DETAILS	
			0.0		PID 0.00 m 0.0 ppm			Silty Gravelly SAND fine to coarse grained, dark brown, some fine to medium angular gravels, dry to moist, loose	D - M	L			Concrete
			0.20										
			0.50		PID 0.30 m 0.0 ppm PID 0.40 m 0.0 ppm PID 0.50 m 0.0 ppm PID 0.60 m 0.0 ppm PID 0.70 m 0.1 ppm PID 0.80 m 0.2 ppm PID 0.90 m 0.1 ppm PID 1.00 m 0.0 ppm PID 1.10 m 0.0 ppm PID 1.20 m 0.1 ppm PID 1.30 m 0.1 ppm PID 1.40 m 0.2 ppm PID 1.50 m 0.3 ppm PID 1.60 m 0.3 ppm PID 1.70 m 0.2 ppm PID 1.80 m 0.3 ppm PID 1.90 m 0.4 ppm PID 2.00 m 0.3 ppm			Sandy GRAVEL fine to medium grained, yellow red, some fine to coarse sands, dry to moist, medium dense	D - M	MD			Bentonite
			1.00					SAND fine to coarse grained, dark brown, some silt, moist, loose	M	L			
			1.30					Clayey SAND fine to coarse grained, grey, medium plasticity clay, moist, loose	M	L			
			2.30					SAND fine to coarse grained, grey, some fine subrounded gravels, wet, loose	W	L			Clean Washed Sand
			2.90					Sandy CLAY high plasticity, mottled grey brown, moist to wet, firm	M - W	F			Slotted
			3.50					CLAY high plasticity, mottled grey brown, moist, stiff	M	St			
			3.90					Gravelly CLAY high plasticity, mottled grey brown, fine subangular gravels, moist, stiff	M	St			
			4.0					CLAY mottled grey brown, moist, stiff	M	St			
			4.5					END OF BOREHOLE @ 4.00 m					
			5.0										

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GAP gINT FN. F01d
RL3

GAP 8.03 LIB:GLB Log GAP NON-CORED FULL PAGE 087673045-SVMW15-CPJ <<DrawingFile>> 08/04/2013 15:56 8.30.003



REPORT OF BOREHOLE: MW19CD

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 14/2/13

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services
 PROJECT: Kwikleen
 LOCATION: Pease Street
 JOB NO: 087673045

COORDS: MGA94 56
 SURFACE RL: DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 4.00 m

Drilling			Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	PIEZOMETER DETAILS
			0.0		PID 0.00 m 0.2 ppm			Silty Clayey SAND fine to coarse grained, dark brown, some fine gravels, moist, loose	M	L	Concrete
			0.20								
			0.5		PID 0.30 m 0.0 ppm PID 0.40 m 0.0 ppm PID 0.50 m 0.6 ppm			CLAY medium plasticity, yellow red, some fine to medium angular gravels, dry to moist, firm	D-M	F	Bentonite
			0.60								
			1.0		PID 0.60 m 0.0 ppm PID 0.70 m 0.2 ppm PID 0.80 m 0.0 ppm PID 0.90 m 0.0 ppm PID 1.00 m 0.7 ppm PID 1.10 m 1.9 ppm PID 1.20 m 1.8 ppm			Clayey SAND fine to medium grained, dark grey, moist, loose	M	L	Clean Washed Sand
			1.00								
			1.5		PID 1.10 m 1.9 ppm PID 1.20 m 1.8 ppm PID 1.30 m 0.5 ppm PID 1.40 m 0.4 ppm PID 1.50 m 0.5 ppm PID 1.60 m 0.6 ppm PID 1.70 m 0.4 ppm PID 1.80 m 0.7 ppm			CLAY high plasticity, dark grey, moist, soft			Slotted
			1.50								
			2.0		PID 1.40 m 0.4 ppm PID 1.50 m 0.5 ppm PID 1.60 m 0.6 ppm PID 1.70 m 0.4 ppm PID 1.80 m 0.7 ppm PID 1.90 m 0.7 ppm PID 2.00 m 0.4 ppm PID 2.10 m 0.8 ppm PID 2.20 m 0.7 ppm PID 2.30 m 0.8 ppm PID 2.40 m 1.1 ppm PID 2.50 m 0.7 ppm PID 2.60 m 0.8 ppm			Sandy CLAY high plasticity, grey, fine to medium sands, moist to wet, firm	M-W	F	
			2.10								
			3.0		PID 1.90 m 0.7 ppm PID 2.00 m 0.4 ppm PID 2.10 m 0.8 ppm PID 2.20 m 0.7 ppm PID 2.30 m 0.8 ppm PID 2.40 m 1.1 ppm PID 2.50 m 0.7 ppm PID 2.60 m 0.8 ppm PID 2.70 m 0.1 ppm PID 2.80 m 0.7 ppm PID 2.90 m 0.7 ppm PID 3.00 m 1.8 ppm PID 3.10 m 2.1 ppm PID 3.20 m 1.7 ppm PID 3.30 m 2.4 ppm PID 3.40 m 2.7 ppm PID 3.50 m 1.7 ppm			CLAY high plasticity, mottled brown/grey, moist, firm	M	F	
			3.00								
			3.5		PID 2.70 m 0.1 ppm PID 2.80 m 0.7 ppm PID 2.90 m 0.7 ppm PID 3.00 m 1.8 ppm PID 3.10 m 2.1 ppm PID 3.20 m 1.7 ppm PID 3.30 m 2.4 ppm PID 3.40 m 2.7 ppm PID 3.50 m 1.7 ppm PID 3.60 m 2.1 ppm PID 3.70 m 2.2 ppm PID 3.80 m 0.4 ppm PID 3.90 m 0.1 ppm			Gravelly CLAY high plasticity, mottled grey/brown, moist, stiff	M	St	
			3.60								
			4.0		PID 3.20 m 1.7 ppm PID 3.30 m 2.4 ppm PID 3.40 m 2.7 ppm PID 3.50 m 1.7 ppm PID 3.60 m 2.1 ppm PID 3.70 m 2.2 ppm PID 3.80 m 0.4 ppm PID 3.90 m 0.1 ppm			CLAY high plasticity, mottled grey/brown, moist, stiff	M	St	
			3.90					END OF BOREHOLE @ 4.00 m			
			4.5								
			5.0								

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01d
RL3

GAP 8.03 LIB:GLB Log GAP NON-CORED FULL PAGE 08/04/2013 15:57 8.30.003



REPORT OF BOREHOLE: MW20CP

SHEET: 1 OF 1

DRILL RIG: EZI Probe

CONTRACTOR: ASB

LOGGED: OS DATE: 14/2/13

CHECKED: CC DATE: 8/4/13

CLIENT: Hospitality Services
 PROJECT: Kwikleen
 LOCATION: Pease Street
 JOB NO: 087673045

COORDS: MGA94 56
 SURFACE RL: DATUM: AHD
 INCLINATION: -90°
 HOLE DEPTH: 4.00 m

Drilling			Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	PIEZOMETER DETAILS
			0.0	0.10	PID 0.20 m 0 ppm			Silty Gravelly SAND fine to coarse grained, dark brown, fine gravels, moist, loose	M	L		
			0.10	0.40	PID 0.30 m 1.4 ppm			Gravelly SAND fine to coarse grained, yellow red, fine to medium angular gravels				
			0.40	0.50	PID 0.40 m 0.5 ppm			Silty SAND fine to medium grained, brown, some clay, moist, loose				
			0.50	0.60	PID 0.50 m 0.6 ppm							
			0.60	0.80	PID 0.60 m 1.5 ppm							
			0.80	0.90	PID 0.70 m 1.1 ppm							
			0.90	1.00	PID 0.80 m 0.8 ppm							
			1.00	1.10	PID 0.90 m 1.2 ppm							
			1.10	1.20	PID 1.00 m 2.1 ppm							
			1.20	1.30	PID 1.10 m 2 ppm			SAND fine to coarse grained, pale grey, wet, loose				
			1.30	1.40	PID 1.20 m 0.5 ppm							
			1.40	1.50	PID 1.30 m 1.6 ppm							
			1.50	1.60	PID 1.40 m 1.3 ppm							
			1.60	1.70	PID 1.50 m 1.2 ppm							
			1.70	1.80	PID 1.60 m 1 ppm							
			1.80	1.90	PID 1.70 m 0.8 ppm							
			1.90	2.00	PID 1.80 m 0.1 ppm							
			2.00	2.10	PID 1.90 m 0.7 ppm							
			2.10	2.20	PID 2.00 m 1.4 ppm							
			2.20	2.30	PID 2.10 m 5.3 ppm			CLAY high plasticity, mottled grey/brown, moist, firm				
			2.30	2.40	PID 2.20 m 0 ppm							
			2.40	2.50	PID 2.30 m 0.8 ppm							
			2.50	2.60	PID 2.40 m 1.1 ppm							
			2.60	2.70	PID 2.50 m 0.6 ppm			Clayey SAND fine to medium grained, grey/brown orange, moist, loose				
			2.70	2.80	PID 2.60 m 0.5 ppm							
			2.80	2.90	PID 2.70 m 0.3 ppm							
			2.90	3.00	PID 2.80 m 0 ppm							
			3.00	3.10	PID 2.90 m 0.3 ppm							
			3.10	3.20	PID 3.00 m 0.1 ppm							
			3.20	3.30	PID 3.10 m 0.2 ppm							
			3.30	3.40	PID 3.20 m 0.6 ppm							
			3.40	3.50	PID 3.30 m 0.7 ppm			Silty CLAY high plasticity, dark grey, moist to wet, soft				
			3.50	3.60	PID 3.40 m 0.4 ppm							
			3.60	3.70	PID 3.50 m 0.8 ppm							
			3.70	3.80	PID 3.60 m 1.8 ppm							
			3.80	3.90	PID 3.70 m 1.1 ppm							
			3.90	4.00	PID 3.80 m 0.8 ppm							
			4.00		PID 3.90 m 2.1 ppm							
			4.00					END OF BOREHOLE @ 4.00 m				
			4.50									
			5.00									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01d
RL3

GAP 8.03 LIB:GIB Log GAP NON-CORED FULL PAGE 087673045-SVM13-SVM15.CPJ <<DrawingFile>> 08/04/2013 15:57 8.30.003

DRILLING/EXCAVATION METHOD

AS*	Auger Screwing	RD	Rotary blade or drag bit	NQ	Diamond Core - 47 mm
AD*	Auger Drilling	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
*V	V-Bit	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
*T	TC-Bit, e.g. ADT	RC	Reverse Circulation	HMLC	Diamond Core - 63mm
HA	Hand Auger	PT	Push Tube	BH	Tractor Mounted Backhoe
ADH	Hollow Auger	CT	Cable Tool Rig	EX	Tracked Hydraulic Excavator
DTC	Diatube Coring	JET	Jetting	EE	Existing Excavation
WB	Washbore or Bailer	NDD	Non-destructive digging	HAND	Excavated by Hand Methods

PENETRATION/EXCAVATION RESISTANCE

- L Low resistance.** Rapid penetration possible with little effort from the equipment used.
- M Medium resistance.** Excavation/possible at an acceptable rate with moderate effort from the equipment used.
- H High resistance** to penetration/excavation. Further penetration is possible at a slow rate and requires significant effort from the equipment.
- R Refusal or Practical Refusal.** No further progress possible without the risk of damage or unacceptable wear to the digging implement or machine.

These assessments are subjective and are dependent on many factors including the equipment power, weight, condition of excavation or drilling tools, and the experience of the operator.

WATER


Water level at date shown



Partial water loss



Water inflow



Complete water loss

GROUNDWATER NOT OBSERVED The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.

GROUNDWATER NOT ENCOUNTERED The borehole/test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18 30/80mm	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm seating Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
DS	Disturbed sample
BDS	Bulk disturbed sample
G	Gas Sample
W	Water Sample
FP	Field permeability test over section noted
FV	Field vane shear test expressed as uncorrected shear strength (s_v = peak value, s_r = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket penetrometer test expressed as instrument reading in kPa
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
WPT	Water pressure tests
DCP	Dynamic cone penetration test
CPT	Static cone penetration test
CPT _u	Static cone penetration test with pore pressure (u) measurement

Ranking of Visually Observable Contamination and Odour (for specific soil contamination assessment projects)

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%) $= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$	SCR = Solid Core Recovery (%) $= \frac{\sum \text{Length of cylindrical core recovered}}{\text{Length of core run}} \times 100$	RQD = Rock Quality Designation (%) $= \frac{\sum \text{Axial lengths of core} > 100 \text{ mm}}{\text{Length of core run}} \times 100$
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METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT REPORTS

<table border="0"> <tr><td></td><td>FILL</td></tr> <tr><td></td><td>GRAVEL (GP or GW)</td></tr> <tr><td></td><td>SAND (SP or SW)</td></tr> <tr><td></td><td>SILT (ML or MH)</td></tr> </table>		FILL		GRAVEL (GP or GW)		SAND (SP or SW)		SILT (ML or MH)	<table border="0"> <tr><td></td><td>CLAY (CL, CI or CH)</td></tr> <tr><td></td><td>ORGANIC SOILS (OL or OH or Pt)</td></tr> <tr><td></td><td>COBBLES or BOULDERS</td></tr> </table>		CLAY (CL, CI or CH)		ORGANIC SOILS (OL or OH or Pt)		COBBLES or BOULDERS
	FILL														
	GRAVEL (GP or GW)														
	SAND (SP or SW)														
	SILT (ML or MH)														
	CLAY (CL, CI or CH)														
	ORGANIC SOILS (OL or OH or Pt)														
	COBBLES or BOULDERS														

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay.

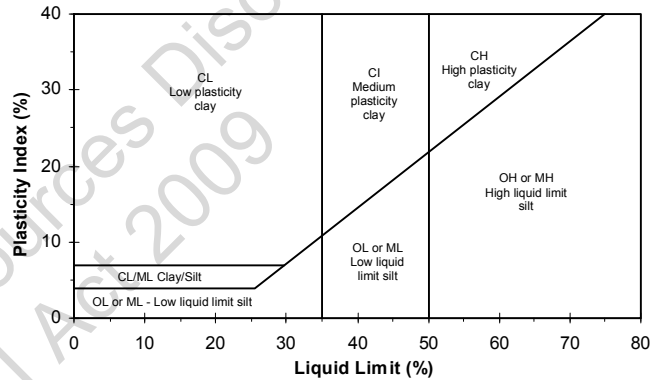
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil and Rock is classified and described in Reports of Boreholes and Test Pits using the preferred method given in AS1726 – 1993, (Amdt1 – 1994 and Amdt2 – 1994), Appendix A. The material properties are assessed in the field by visual/tactile methods.

Particle Size

Major Division	Sub Division	Particle Size
BOULDERS		> 200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	20 to 63 mm
	Medium	6.0 to 20 mm
	Fine	2.0 to 6.0 mm
SAND	Coarse	0.6 to 2.0 mm
	Medium	0.2 to 0.6 mm
	Fine	0.075 to 0.2 mm
SILT		0.002 to 0.075 mm
CLAY		< 0.002 mm

Plasticity Properties



MOISTURE CONDITION

AS1726 - 1993

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays & Silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in the dry condition & may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sands and gravels tend to cohere.

CONSISTENCY AND DENSITY

AS1726 - 1993

Symbol	Term	Undrained Shear Strength	Symbol	Term	Density Index %	SPT "N" #
VS	Very Soft	0 to 12 kPa	VL	Very Loose	Less than 15	0 to 4
S	Soft	12 to 25 kPa	L	Loose	15 to 35	4 to 10
F	Firm	25 to 50 kPa	MD	Medium Dense	35 to 65	10 to 30
St	Stiff	50 to 100 kPa	D	Dense	65 to 85	30 to 50
VSt	Very Stiff	100 to 200 kPa	VD	Very Dense	Above 85	Above 50
H	Hard	Above 200 kPa				

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

SPT correlations are not stated in AS1726 – 1993, and may be subject to corrections for overburden pressure and equipment type.



APPENDIX E

**Feb-Mar 2013 MW15CP-MW20CP (GW), BH15-BH20 (Soil),
EB01/EB02 (GW) and SVW16-SVW18 Laboratory Test
Certificates**

Published on Resource Disclosure Log
RTI Act 2009

3/27/2013

[Redacted]

Golder Associates, Australia
216 Draper Street

Cairns, Queensland 4870

Project Name: Kwikleen
Project #: 087673045
Workorder #: 1303260A

Dear [Redacted]

The following report includes the data for the above referenced project for sample(s) received on 3/14/2013 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: [Redacted] if you have any questions regarding the data in this report.

Regards,

[Redacted]

[Redacted]

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1303260A

Work Order Summary

CLIENT:	sch4p4(6) Personal infor Golder Associates, Australia 216 Draper Street Cairns, Queensland 4870	BILL TO:	Accounts Payable Golder Associates, Australia PO BOX 6079 Hawthorne, Australia 3121
PHONE:	+61 7 4054 8200	P.O. #	CQ 3303
FAX:	+61 7 4054 8201	PROJECT #	087673045 Kwikleen
DATE RECEIVED:	03/14/2013	CONTACT:	sch4p4(6) Personal
DATE COMPLETED:	03/27/2013		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SVW 16	Modified TO-15	10.8 "Hg	15 psi
02A	SVW 17	Modified TO-15	9.6 "Hg	15 psi
03A	SVW 18	Modified TO-15	11 "Hg	14.5 psi
04A	REP 001	Modified TO-15	10.4 "Hg	15.5 psi
05A	FB 001	Modified TO-15	6.6 "Hg	15 psi
06A	Lab Blank	Modified TO-15	NA	NA
07A	CCV	Modified TO-15	NA	NA
08A	LCS	Modified TO-15	NA	NA
08AA	LCSD	Modified TO-15	NA	NA

sch4p4(6) Personal information

CERTIFIED BY:

Technical Director

DATE: 03/27/13

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291, TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935

Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.

Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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**LABORATORY NARRATIVE
EPA Method TO-15
Golder Associates, Australia
Workorder# 1303260A**

Five 1 Liter Summa Canister samples were received on March 14, 2013. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

The field blank sample FB 001 has reportable levels of target compounds present.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SVW 16

Lab ID#: 1303260A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	6.3	6.4	12	12
Acetone	16	23	38	55
Chloroform	1.6	5.2	7.7	25
Trichloroethene	1.6	19	8.5	100
Toluene	1.6	1.7	6.0	6.4
Tetrachloroethene	1.6	190	11	1300

Client Sample ID: SVW 17

Lab ID#: 1303260A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	1.5	4.5	7.2	22
Trichloroethene	1.5	16	8.0	84
Tetrachloroethene	1.5	200	10	1300

Client Sample ID: SVW 18

Lab ID#: 1303260A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	6.3	9.4	12	18
Acetone	16	18	37	44
Chloroform	1.6	1.7	7.7	8.2
Trichloroethene	1.6	14	8.4	72
Toluene	1.6	3.1	5.9	12
Tetrachloroethene	1.6	23	11	160
m,p-Xylene	1.6	2.4	6.8	10

Client Sample ID: REP 001

Lab ID#: 1303260A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	6.3	7.3	12	14

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: REP 001

Lab ID#: 1303260A-04A

Chloroform	1.6	4.5	7.7	22
Trichloroethene	1.6	11	8.4	58
Tetrachloroethene	1.6	120	11	850

Client Sample ID: FB 001

Lab ID#: 1303260A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	5.2	74	9.8	140
Acetone	13	25	31	60
2-Propanol	5.2	7.0	13	17
Heptane	1.3	1.4	5.3	5.9
Toluene	1.3	18	4.9	69
Ethyl Benzene	1.3	1.3	5.6	5.6
m,p-Xylene	1.3	3.7	5.6	16
o-Xylene	1.3	1.4	5.6	5.9

Client Sample ID: SVW 16

Lab ID#: 1303260A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032027	Date of Collection:	3/11/13 12:45:00 PM
Dil. Factor:	3.16	Date of Analysis:	3/21/13 12:25 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.6	Not Detected	7.8	Not Detected
Freon 114	1.6	Not Detected	11	Not Detected
Chloromethane	16	Not Detected	33	Not Detected
Vinyl Chloride	1.6	Not Detected	4.0	Not Detected
1,3-Butadiene	1.6	Not Detected	3.5	Not Detected
Bromomethane	16	Not Detected	61	Not Detected
Chloroethane	6.3	Not Detected	17	Not Detected
Freon 11	1.6	Not Detected	8.9	Not Detected
Ethanol	6.3	6.4	12	12
Freon 113	1.6	Not Detected	12	Not Detected
1,1-Dichloroethene	1.6	Not Detected	6.3	Not Detected
Acetone	16	23	38	55
2-Propanol	6.3	Not Detected	16	Not Detected
Carbon Disulfide	6.3	Not Detected	20	Not Detected
3-Chloropropene	6.3	Not Detected	20	Not Detected
Methylene Chloride	16	Not Detected	55	Not Detected
Methyl tert-butyl ether	1.6	Not Detected	5.7	Not Detected
trans-1,2-Dichloroethene	1.6	Not Detected	6.3	Not Detected
Hexane	1.6	Not Detected	5.6	Not Detected
1,1-Dichloroethane	1.6	Not Detected	6.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.3	Not Detected	19	Not Detected
cis-1,2-Dichloroethene	1.6	Not Detected	6.3	Not Detected
Tetrahydrofuran	1.6	Not Detected	4.6	Not Detected
Chloroform	1.6	5.2	7.7	25
1,1,1-Trichloroethane	1.6	Not Detected	8.6	Not Detected
Cyclohexane	1.6	Not Detected	5.4	Not Detected
Carbon Tetrachloride	1.6	Not Detected	9.9	Not Detected
2,2,4-Trimethylpentane	1.6	Not Detected	7.4	Not Detected
Benzene	1.6	Not Detected	5.0	Not Detected
1,2-Dichloroethane	1.6	Not Detected	6.4	Not Detected
Heptane	1.6	Not Detected	6.5	Not Detected
Trichloroethene	1.6	19	8.5	100
1,2-Dichloropropane	1.6	Not Detected	7.3	Not Detected
1,4-Dioxane	6.3	Not Detected	23	Not Detected
Bromodichloromethane	1.6	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.6	Not Detected	7.2	Not Detected
4-Methyl-2-pentanone	1.6	Not Detected	6.5	Not Detected
Toluene	1.6	1.7	6.0	6.4
trans-1,3-Dichloropropene	1.6	Not Detected	7.2	Not Detected
1,1,2-Trichloroethane	1.6	Not Detected	8.6	Not Detected
Tetrachloroethene	1.6	190	11	1300
2-Hexanone	6.3	Not Detected	26	Not Detected

Client Sample ID: SVW 16

Lab ID#: 1303260A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032027	Date of Collection:	3/11/13 12:45:00 PM
Dil. Factor:	3.16	Date of Analysis:	3/21/13 12:25 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.6	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.6	Not Detected	12	Not Detected
Chlorobenzene	1.6	Not Detected	7.3	Not Detected
Ethyl Benzene	1.6	Not Detected	6.9	Not Detected
m,p-Xylene	1.6	Not Detected	6.9	Not Detected
o-Xylene	1.6	Not Detected	6.9	Not Detected
Styrene	1.6	Not Detected	6.7	Not Detected
Bromoform	1.6	Not Detected	16	Not Detected
Cumene	1.6	Not Detected	7.8	Not Detected
1,1,2,2-Tetrachloroethane	1.6	Not Detected	11	Not Detected
Propylbenzene	1.6	Not Detected	7.8	Not Detected
4-Ethyltoluene	1.6	Not Detected	7.8	Not Detected
1,3,5-Trimethylbenzene	1.6	Not Detected	7.8	Not Detected
1,2,4-Trimethylbenzene	1.6	Not Detected	7.8	Not Detected
1,3-Dichlorobenzene	1.6	Not Detected	9.5	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.5	Not Detected
alpha-Chlorotoluene	1.6	Not Detected	8.2	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.5	Not Detected
1,2,4-Trichlorobenzene	6.3	Not Detected	47	Not Detected
Hexachlorobutadiene	6.3	Not Detected	67	Not Detected
Naphthalene	6.3	Not Detected	33	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	85	70-130
4-Bromofluorobenzene	87	70-130

Client Sample ID: SVW 17

Lab ID#: 1303260A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032025	Date of Collection:	3/11/13 11:45:00 AM
Dil. Factor:	2.97	Date of Analysis:	3/20/13 11:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.5	Not Detected	7.3	Not Detected
Freon 114	1.5	Not Detected	10	Not Detected
Chloromethane	15	Not Detected	31	Not Detected
Vinyl Chloride	1.5	Not Detected	3.8	Not Detected
1,3-Butadiene	1.5	Not Detected	3.3	Not Detected
Bromomethane	15	Not Detected	58	Not Detected
Chloroethane	5.9	Not Detected	16	Not Detected
Freon 11	1.5	Not Detected	8.3	Not Detected
Ethanol	5.9	Not Detected	11	Not Detected
Freon 113	1.5	Not Detected	11	Not Detected
1,1-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Acetone	15	Not Detected	35	Not Detected
2-Propanol	5.9	Not Detected	14	Not Detected
Carbon Disulfide	5.9	Not Detected	18	Not Detected
3-Chloropropene	5.9	Not Detected	18	Not Detected
Methylene Chloride	15	Not Detected	52	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.4	Not Detected
trans-1,2-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Hexane	1.5	Not Detected	5.2	Not Detected
1,1-Dichloroethane	1.5	Not Detected	6.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.9	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.5	Not Detected	5.9	Not Detected
Tetrahydrofuran	1.5	Not Detected	4.4	Not Detected
Chloroform	1.5	4.5	7.2	22
1,1,1-Trichloroethane	1.5	Not Detected	8.1	Not Detected
Cyclohexane	1.5	Not Detected	5.1	Not Detected
Carbon Tetrachloride	1.5	Not Detected	9.3	Not Detected
2,2,4-Trimethylpentane	1.5	Not Detected	6.9	Not Detected
Benzene	1.5	Not Detected	4.7	Not Detected
1,2-Dichloroethane	1.5	Not Detected	6.0	Not Detected
Heptane	1.5	Not Detected	6.1	Not Detected
Trichloroethene	1.5	16	8.0	84
1,2-Dichloropropane	1.5	Not Detected	6.9	Not Detected
1,4-Dioxane	5.9	Not Detected	21	Not Detected
Bromodichloromethane	1.5	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.5	Not Detected	6.7	Not Detected
4-Methyl-2-pentanone	1.5	Not Detected	6.1	Not Detected
Toluene	1.5	Not Detected	5.6	Not Detected
trans-1,3-Dichloropropene	1.5	Not Detected	6.7	Not Detected
1,1,2-Trichloroethane	1.5	Not Detected	8.1	Not Detected
Tetrachloroethene	1.5	200	10	1300
2-Hexanone	5.9	Not Detected	24	Not Detected

Client Sample ID: SVW 17

Lab ID#: 1303260A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032025	Date of Collection:	3/11/13 11:45:00 AM
Dil. Factor:	2.97	Date of Analysis:	3/20/13 11:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.5	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.5	Not Detected	11	Not Detected
Chlorobenzene	1.5	Not Detected	6.8	Not Detected
Ethyl Benzene	1.5	Not Detected	6.4	Not Detected
m,p-Xylene	1.5	Not Detected	6.4	Not Detected
o-Xylene	1.5	Not Detected	6.4	Not Detected
Styrene	1.5	Not Detected	6.3	Not Detected
Bromoform	1.5	Not Detected	15	Not Detected
Cumene	1.5	Not Detected	7.3	Not Detected
1,1,2,2-Tetrachloroethane	1.5	Not Detected	10	Not Detected
Propylbenzene	1.5	Not Detected	7.3	Not Detected
4-Ethyltoluene	1.5	Not Detected	7.3	Not Detected
1,3,5-Trimethylbenzene	1.5	Not Detected	7.3	Not Detected
1,2,4-Trimethylbenzene	1.5	Not Detected	7.3	Not Detected
1,3-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
1,4-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
alpha-Chlorotoluene	1.5	Not Detected	7.7	Not Detected
1,2-Dichlorobenzene	1.5	Not Detected	8.9	Not Detected
1,2,4-Trichlorobenzene	5.9	Not Detected	44	Not Detected
Hexachlorobutadiene	5.9	Not Detected	63	Not Detected
Naphthalene	5.9	Not Detected	31	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	105	70-130

Client Sample ID: SVW 18

Lab ID#: 1303260A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032026	Date of Collection:	3/11/13 2:00:00 PM
Dil. Factor:	3.14	Date of Analysis:	3/21/13 12:08 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.6	Not Detected	7.8	Not Detected
Freon 114	1.6	Not Detected	11	Not Detected
Chloromethane	16	Not Detected	32	Not Detected
Vinyl Chloride	1.6	Not Detected	4.0	Not Detected
1,3-Butadiene	1.6	Not Detected	3.5	Not Detected
Bromomethane	16	Not Detected	61	Not Detected
Chloroethane	6.3	Not Detected	16	Not Detected
Freon 11	1.6	Not Detected	8.8	Not Detected
Ethanol	6.3	9.4	12	18
Freon 113	1.6	Not Detected	12	Not Detected
1,1-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Acetone	16	18	37	44
2-Propanol	6.3	Not Detected	15	Not Detected
Carbon Disulfide	6.3	Not Detected	20	Not Detected
3-Chloropropene	6.3	Not Detected	20	Not Detected
Methylene Chloride	16	Not Detected	54	Not Detected
Methyl tert-butyl ether	1.6	Not Detected	5.7	Not Detected
trans-1,2-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Hexane	1.6	Not Detected	5.5	Not Detected
1,1-Dichloroethane	1.6	Not Detected	6.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.3	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Tetrahydrofuran	1.6	Not Detected	4.6	Not Detected
Chloroform	1.6	1.7	7.7	8.2
1,1,1-Trichloroethane	1.6	Not Detected	8.6	Not Detected
Cyclohexane	1.6	Not Detected	5.4	Not Detected
Carbon Tetrachloride	1.6	Not Detected	9.9	Not Detected
2,2,4-Trimethylpentane	1.6	Not Detected	7.3	Not Detected
Benzene	1.6	Not Detected	5.0	Not Detected
1,2-Dichloroethane	1.6	Not Detected	6.4	Not Detected
Heptane	1.6	Not Detected	6.4	Not Detected
Trichloroethene	1.6	14	8.4	72
1,2-Dichloropropane	1.6	Not Detected	7.2	Not Detected
1,4-Dioxane	6.3	Not Detected	23	Not Detected
Bromodichloromethane	1.6	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.6	Not Detected	7.1	Not Detected
4-Methyl-2-pentanone	1.6	Not Detected	6.4	Not Detected
Toluene	1.6	3.1	5.9	12
trans-1,3-Dichloropropene	1.6	Not Detected	7.1	Not Detected
1,1,2-Trichloroethane	1.6	Not Detected	8.6	Not Detected
Tetrachloroethene	1.6	23	11	160
2-Hexanone	6.3	Not Detected	26	Not Detected

Client Sample ID: SVW 18

Lab ID#: 1303260A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032026	Date of Collection:	3/11/13 2:00:00 PM
Dil. Factor:	3.14	Date of Analysis:	3/21/13 12:08 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.6	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.6	Not Detected	12	Not Detected
Chlorobenzene	1.6	Not Detected	7.2	Not Detected
Ethyl Benzene	1.6	Not Detected	6.8	Not Detected
m,p-Xylene	1.6	2.4	6.8	10
o-Xylene	1.6	Not Detected	6.8	Not Detected
Styrene	1.6	Not Detected	6.7	Not Detected
Bromoform	1.6	Not Detected	16	Not Detected
Cumene	1.6	Not Detected	7.7	Not Detected
1,1,2,2-Tetrachloroethane	1.6	Not Detected	11	Not Detected
Propylbenzene	1.6	Not Detected	7.7	Not Detected
4-Ethyltoluene	1.6	Not Detected	7.7	Not Detected
1,3,5-Trimethylbenzene	1.6	Not Detected	7.7	Not Detected
1,2,4-Trimethylbenzene	1.6	Not Detected	7.7	Not Detected
1,3-Dichlorobenzene	1.6	Not Detected	9.4	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.4	Not Detected
alpha-Chlorotoluene	1.6	Not Detected	8.1	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.4	Not Detected
1,2,4-Trichlorobenzene	6.3	Not Detected	47	Not Detected
Hexachlorobutadiene	6.3	Not Detected	67	Not Detected
Naphthalene	6.3	Not Detected	33	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	92	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: REP 001

Lab ID#: 1303260A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032024	Date of Collection:	3/11/13 1:00:00 PM
Dil. Factor:	3.14	Date of Analysis:	3/20/13 11:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.6	Not Detected	7.8	Not Detected
Freon 114	1.6	Not Detected	11	Not Detected
Chloromethane	16	Not Detected	32	Not Detected
Vinyl Chloride	1.6	Not Detected	4.0	Not Detected
1,3-Butadiene	1.6	Not Detected	3.5	Not Detected
Bromomethane	16	Not Detected	61	Not Detected
Chloroethane	6.3	Not Detected	16	Not Detected
Freon 11	1.6	Not Detected	8.8	Not Detected
Ethanol	6.3	7.3	12	14
Freon 113	1.6	Not Detected	12	Not Detected
1,1-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Acetone	16	Not Detected	37	Not Detected
2-Propanol	6.3	Not Detected	15	Not Detected
Carbon Disulfide	6.3	Not Detected	20	Not Detected
3-Chloropropene	6.3	Not Detected	20	Not Detected
Methylene Chloride	16	Not Detected	54	Not Detected
Methyl tert-butyl ether	1.6	Not Detected	5.7	Not Detected
trans-1,2-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Hexane	1.6	Not Detected	5.5	Not Detected
1,1-Dichloroethane	1.6	Not Detected	6.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.3	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.6	Not Detected	6.2	Not Detected
Tetrahydrofuran	1.6	Not Detected	4.6	Not Detected
Chloroform	1.6	4.5	7.7	22
1,1,1-Trichloroethane	1.6	Not Detected	8.6	Not Detected
Cyclohexane	1.6	Not Detected	5.4	Not Detected
Carbon Tetrachloride	1.6	Not Detected	9.9	Not Detected
2,2,4-Trimethylpentane	1.6	Not Detected	7.3	Not Detected
Benzene	1.6	Not Detected	5.0	Not Detected
1,2-Dichloroethane	1.6	Not Detected	6.4	Not Detected
Heptane	1.6	Not Detected	6.4	Not Detected
Trichloroethene	1.6	11	8.4	58
1,2-Dichloropropane	1.6	Not Detected	7.2	Not Detected
1,4-Dioxane	6.3	Not Detected	23	Not Detected
Bromodichloromethane	1.6	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.6	Not Detected	7.1	Not Detected
4-Methyl-2-pentanone	1.6	Not Detected	6.4	Not Detected
Toluene	1.6	Not Detected	5.9	Not Detected
trans-1,3-Dichloropropene	1.6	Not Detected	7.1	Not Detected
1,1,2-Trichloroethane	1.6	Not Detected	8.6	Not Detected
Tetrachloroethene	1.6	120	11	850
2-Hexanone	6.3	Not Detected	26	Not Detected

Client Sample ID: REP 001

Lab ID#: 1303260A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032024	Date of Collection:	3/11/13 1:00:00 PM
Dil. Factor:	3.14	Date of Analysis:	3/20/13 11:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.6	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.6	Not Detected	12	Not Detected
Chlorobenzene	1.6	Not Detected	7.2	Not Detected
Ethyl Benzene	1.6	Not Detected	6.8	Not Detected
m,p-Xylene	1.6	Not Detected	6.8	Not Detected
o-Xylene	1.6	Not Detected	6.8	Not Detected
Styrene	1.6	Not Detected	6.7	Not Detected
Bromoform	1.6	Not Detected	16	Not Detected
Cumene	1.6	Not Detected	7.7	Not Detected
1,1,2,2-Tetrachloroethane	1.6	Not Detected	11	Not Detected
Propylbenzene	1.6	Not Detected	7.7	Not Detected
4-Ethyltoluene	1.6	Not Detected	7.7	Not Detected
1,3,5-Trimethylbenzene	1.6	Not Detected	7.7	Not Detected
1,2,4-Trimethylbenzene	1.6	Not Detected	7.7	Not Detected
1,3-Dichlorobenzene	1.6	Not Detected	9.4	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.4	Not Detected
alpha-Chlorotoluene	1.6	Not Detected	8.1	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.4	Not Detected
1,2,4-Trichlorobenzene	6.3	Not Detected	47	Not Detected
Hexachlorobutadiene	6.3	Not Detected	67	Not Detected
Naphthalene	6.3	Not Detected	33	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: FB 001

Lab ID#: 1303260A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032023	Date of Collection:	3/11/13 1:00:00 PM
Dil. Factor:	2.59	Date of Analysis:	3/20/13 10:51 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	Not Detected	6.4	Not Detected
Freon 114	1.3	Not Detected	9.0	Not Detected
Chloromethane	13	Not Detected	27	Not Detected
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
1,3-Butadiene	1.3	Not Detected	2.9	Not Detected
Bromomethane	13	Not Detected	50	Not Detected
Chloroethane	5.2	Not Detected	14	Not Detected
Freon 11	1.3	Not Detected	7.3	Not Detected
Ethanol	5.2	74	9.8	140
Freon 113	1.3	Not Detected	9.9	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Acetone	13	25	31	60
2-Propanol	5.2	7.0	13	17
Carbon Disulfide	5.2	Not Detected	16	Not Detected
3-Chloropropene	5.2	Not Detected	16	Not Detected
Methylene Chloride	13	Not Detected	45	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.7	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Hexane	1.3	Not Detected	4.6	Not Detected
1,1-Dichloroethane	1.3	Not Detected	5.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.2	Not Detected	15	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.1	Not Detected
Tetrahydrofuran	1.3	Not Detected	3.8	Not Detected
Chloroform	1.3	Not Detected	6.3	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.1	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.1	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	6.0	Not Detected
Benzene	1.3	Not Detected	4.1	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.2	Not Detected
Heptane	1.3	1.4	5.3	5.9
Trichloroethene	1.3	Not Detected	7.0	Not Detected
1,2-Dichloropropane	1.3	Not Detected	6.0	Not Detected
1,4-Dioxane	5.2	Not Detected	19	Not Detected
Bromodichloromethane	1.3	Not Detected	8.7	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.9	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.3	Not Detected
Toluene	1.3	18	4.9	69
trans-1,3-Dichloropropene	1.3	Not Detected	5.9	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	7.1	Not Detected
Tetrachloroethene	1.3	Not Detected	8.8	Not Detected
2-Hexanone	5.2	Not Detected	21	Not Detected

Client Sample ID: FB 001

Lab ID#: 1303260A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032023	Date of Collection:	3/11/13 1:00:00 PM
Dil. Factor:	2.59	Date of Analysis:	3/20/13 10:51 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	10	Not Detected
Chlorobenzene	1.3	Not Detected	6.0	Not Detected
Ethyl Benzene	1.3	1.3	5.6	5.6
m,p-Xylene	1.3	3.7	5.6	16
o-Xylene	1.3	1.4	5.6	5.9
Styrene	1.3	Not Detected	5.5	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.4	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.9	Not Detected
Propylbenzene	1.3	Not Detected	6.4	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.4	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.4	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.4	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.7	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.8	Not Detected
1,2,4-Trichlorobenzene	5.2	Not Detected	38	Not Detected
Hexachlorobutadiene	5.2	Not Detected	55	Not Detected
Naphthalene	5.2	Not Detected	27	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: Lab Blank

Lab ID#: 1303260A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032006	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 12:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1303260A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032006	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 12:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	88	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: CCV

Lab ID#: 1303260A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 09:53 AM

Compound	%Recovery
Freon 12	95
Freon 114	96
Chloromethane	90
Vinyl Chloride	89
1,3-Butadiene	90
Bromomethane	91
Chloroethane	93
Freon 11	94
Ethanol	90
Freon 113	96
1,1-Dichloroethene	98
Acetone	92
2-Propanol	95
Carbon Disulfide	92
3-Chloropropene	99
Methylene Chloride	88
Methyl tert-butyl ether	108
trans-1,2-Dichloroethene	104
Hexane	104
1,1-Dichloroethane	89
2-Butanone (Methyl Ethyl Ketone)	100
cis-1,2-Dichloroethene	96
Tetrahydrofuran	95
Chloroform	92
1,1,1-Trichloroethane	96
Cyclohexane	106
Carbon Tetrachloride	93
2,2,4-Trimethylpentane	98
Benzene	94
1,2-Dichloroethane	94
Heptane	102
Trichloroethene	92
1,2-Dichloropropane	86
1,4-Dioxane	93
Bromodichloromethane	94
cis-1,3-Dichloropropene	98
4-Methyl-2-pentanone	101
Toluene	93
trans-1,3-Dichloropropene	106
1,1,2-Trichloroethane	97
Tetrachloroethene	101
2-Hexanone	110

Client Sample ID: CCV

Lab ID#: 1303260A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 09:53 AM

Compound	%Recovery
Dibromochloromethane	104
1,2-Dibromoethane (EDB)	99
Chlorobenzene	96
Ethyl Benzene	107
m,p-Xylene	110
o-Xylene	110
Styrene	118
Bromoform	104
Cumene	117
1,1,1,2-Tetrachloroethane	87
Propylbenzene	105
4-Ethyltoluene	110
1,3,5-Trimethylbenzene	110
1,2,4-Trimethylbenzene	117
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	97
alpha-Chlorotoluene	108
1,2-Dichlorobenzene	97
1,2,4-Trichlorobenzene	101
Hexachlorobutadiene	104
Naphthalene	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: LCS

Lab ID#: 1303260A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 10:28 AM

Compound	%Recovery
Freon 12	99
Freon 114	103
Chloromethane	92
Vinyl Chloride	95
1,3-Butadiene	95
Bromomethane	96
Chloroethane	99
Freon 11	97
Ethanol	88
Freon 113	103
1,1-Dichloroethene	113
Acetone	94
2-Propanol	104
Carbon Disulfide	121
3-Chloropropene	121
Methylene Chloride	90
Methyl tert-butyl ether	114
trans-1,2-Dichloroethene	121
Hexane	109
1,1-Dichloroethane	94
2-Butanone (Methyl Ethyl Ketone)	104
cis-1,2-Dichloroethene	102
Tetrahydrofuran	99
Chloroform	98
1,1,1-Trichloroethane	102
Cyclohexane	115
Carbon Tetrachloride	100
2,2,4-Trimethylpentane	105
Benzene	99
1,2-Dichloroethane	95
Heptane	107
Trichloroethene	126
1,2-Dichloropropane	91
1,4-Dioxane	99
Bromodichloromethane	97
cis-1,3-Dichloropropene	104
4-Methyl-2-pentanone	106
Toluene	98
trans-1,3-Dichloropropene	111
1,1,2-Trichloroethane	102
Tetrachloroethene	106
2-Hexanone	118

Client Sample ID: LCS

Lab ID#: 1303260A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 10:28 AM

Compound	%Recovery
Dibromochloromethane	107
1,2-Dibromoethane (EDB)	105
Chlorobenzene	102
Ethyl Benzene	112
m,p-Xylene	118
o-Xylene	119
Styrene	126
Bromoform	106
Cumene	123
1,1,1,2-Tetrachloroethane	69 Q
Propylbenzene	111
4-Ethyltoluene	114
1,3,5-Trimethylbenzene	117
1,2,4-Trimethylbenzene	123
1,3-Dichlorobenzene	104
1,4-Dichlorobenzene	103
alpha-Chlorotoluene	112
1,2-Dichlorobenzene	106
1,2,4-Trichlorobenzene	120
Hexachlorobutadiene	114
Naphthalene	75

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: LCSD

Lab ID#: 1303260A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 10:51 AM

Compound	%Recovery
Freon 12	94
Freon 114	99
Chloromethane	90
Vinyl Chloride	95
1,3-Butadiene	97
Bromomethane	93
Chloroethane	95
Freon 11	93
Ethanol	91
Freon 113	101
1,1-Dichloroethene	112
Acetone	93
2-Propanol	102
Carbon Disulfide	119
3-Chloropropene	119
Methylene Chloride	87
Methyl tert-butyl ether	111
trans-1,2-Dichloroethene	121
Hexane	110
1,1-Dichloroethane	91
2-Butanone (Methyl Ethyl Ketone)	102
cis-1,2-Dichloroethene	103
Tetrahydrofuran	95
Chloroform	96
1,1,1-Trichloroethane	98
Cyclohexane	114
Carbon Tetrachloride	96
2,2,4-Trimethylpentane	104
Benzene	97
1,2-Dichloroethane	90
Heptane	105
Trichloroethene	121
1,2-Dichloropropane	90
1,4-Dioxane	98
Bromodichloromethane	93
cis-1,3-Dichloropropene	102
4-Methyl-2-pentanone	103
Toluene	96
trans-1,3-Dichloropropene	105
1,1,2-Trichloroethane	98
Tetrachloroethene	102
2-Hexanone	113

Client Sample ID: LCS D

Lab ID#: 1303260A-08AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3032004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/20/13 10:51 AM

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	100
Chlorobenzene	98
Ethyl Benzene	108
m,p-Xylene	115
o-Xylene	114
Styrene	120
Bromoform	103
Cumene	118
1,1,1,2-Tetrachloroethane	66 Q
Propylbenzene	108
4-Ethyltoluene	110
1,3,5-Trimethylbenzene	112
1,2,4-Trimethylbenzene	119
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	108
1,2-Dichlorobenzene	102
1,2,4-Trichlorobenzene	119
Hexachlorobutadiene	112
Naphthalene	74

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	98	70-130

CLIENT DETAILS

Contact sch4p4(6) Perso
 Client **GOLDER ASSOCIATES PTY LTD**
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 CAIRNS
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 Facsimile **07 4054 8201**
 Email sch4p4(6) Personal information
 Project **087673045 Kwikleen**
 Order Number **CQ 3428**
 Samples **16**

LABORATORY DETAILS

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 Laboratory **SGS Cairns Environmental**
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 Email **AU.Environmental.Cairns@sgs.com**
 SGS Reference **CE102827 R0**
 Report Number **0000005888**
 Date Reported **27 Feb 2013**
 Date Received **15 Feb 2013**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE115509.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Persona

Senior Lab Technician

sch4p4(6) Personal information

sch4p4(6) Pe

Lab Manager

sch4p4(6) Personal information

sch4p4(6) Perso

Micro Supervisor

Parameter	Units	LOR	CE102827.001	CE102827.002	CE102827.003	CE102827.004
Sample Number			CE102827.001	CE102827.002	CE102827.003	CE102827.004
Sample Matrix			Soil	Soil	Soil	Soil
Sample Date			13 Feb 2013	13 Feb 2013	13 Feb 2013	13 Feb 2013
Sample Name			MW15CP 1.5-1.7	MW15CP 1.8-2.0	MW16CP 2.2-2.4	MW16CP 2.5-2.7

VOC's in Soil Method: AN433/AN434

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Iodomethane	mg/kg	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Surrogates

Dibromofluoromethane (Surrogate)	%	-	89	85	103	81
d4-1,2-dichloroethane (Surrogate)	%	-	86	82	98	76
d8-toluene (Surrogate)	%	-	86	81	101	79
Bromofluorobenzene (Surrogate)	%	-	107	99	117	94

Full 8270 SVOC in Soil Method: AN420

SVCH (Cl Benzenes, Hydrocarbons & VOCs)

Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

d5-phenol (Surrogate)	%	-	94	99	91	91
d5-nitrobenzene (Surrogate)	%	-	92	98	92	88
2-fluorobiphenyl (Surrogate)	%	-	82	84	78	74
2,4,6-tribromophenol (Surrogate)	%	-	84	78	79	79
d14-p-terphenyl (Surrogate)	%	-	100	96	86	88

Sample Number	CE102827.001	CE102827.002	CE102827.003	CE102827.004
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	13 Feb 2013	13 Feb 2013	13 Feb 2013	13 Feb 2013
Sample Name	MW15CP 1.5-1.7	MW15CP 1.8-2.0	MW16CP 2.2-2.4	MW16CP 2.5-2.7

Parameter Units LOR

Moisture Content Method: AN002

% Moisture	%	0.5	9.0	29	26	15
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Parameter	Units	LOR	CE102827.005	CE102827.006	CE102827.007	CE102827.008
Sample Number			CE102827.005	CE102827.006	CE102827.007	CE102827.008
Sample Matrix			Soil	Soil	Soil	Soil
Sample Date			13 Feb 2013	13 Feb 2013	14 Feb 2013	14 Feb 2013
Sample Name			MW17CP 1.9-2.1	MW17CP 2.2-2.4	MW18CP 2.3-2.4	MW18CP 2.9-3.0

VOC's in Soil Method: AN433/AN434

Halogenated Aliphatics

Parameter	Units	LOR	CE102827.005	CE102827.006	CE102827.007	CE102827.008
Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Iodomethane	mg/kg	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Surrogates

Parameter	Units	LOR	CE102827.005	CE102827.006	CE102827.007	CE102827.008
Dibromofluoromethane (Surrogate)	%	-	91	85	94	79
d4-1,2-dichloroethane (Surrogate)	%	-	89	80	90	76
d8-toluene (Surrogate)	%	-	89	83	90	75
Bromofluorobenzene (Surrogate)	%	-	104	101	107	93

Full 8270 SVOC in Soil Method: AN420

SVCH (Cl Benzenes, Hydrocarbons & VOCs)

Parameter	Units	LOR	CE102827.005	CE102827.006	CE102827.007	CE102827.008
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Parameter	Units	LOR	CE102827.005	CE102827.006	CE102827.007	CE102827.008
d5-phenol (Surrogate)	%	-	90	86	86	95
d5-nitrobenzene (Surrogate)	%	-	86	82	80	88
2-fluorobiphenyl (Surrogate)	%	-	80	76	74	82
2,4,6-tribromophenol (Surrogate)	%	-	76	73	72	75
d14-p-terphenyl (Surrogate)	%	-	88	82	82	90

Sample Number	CE102827.005	CE102827.006	CE102827.007	CE102827.008
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	13 Feb 2013	13 Feb 2013	14 Feb 2013	14 Feb 2013
Sample Name	MW17CP 1.9-2.1	MW17CP 2.2-2.4	MW18CP 2.3-2.4	MW18CP 2.9-3.0

Parameter Units LOR

Moisture Content Method: AN002

% Moisture	%	0.5	11	26	13	20
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Parameter	Units	LOR	CE102827.009	CE102827.010	CE102827.011	CE102827.012
Sample Number			CE102827.009	CE102827.010	CE102827.011	CE102827.012
Sample Matrix			Soil	Soil	Soil	Soil
Sample Date			14 Feb 2013	14 Feb 2013	14 Feb 2013	14 Feb 2013
Sample Name			MW-18CP 3.5-3.6	MW19CP 1.0-1.1	MW19CP 2.9-3.0	MW19CP 3.3-3.4

VOC's in Soil Method: AN433/AN434

Halogenated Aliphatics

Parameter	Units	LOR	CE102827.009	CE102827.010	CE102827.011	CE102827.012
Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Iodomethane	mg/kg	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Surrogates

Parameter	Units	LOR	CE102827.009	CE102827.010	CE102827.011	CE102827.012
Dibromofluoromethane (Surrogate)	%	-	96	96	79	90
d4-1,2-dichloroethane (Surrogate)	%	-	93	96	75	87
d8-toluene (Surrogate)	%	-	95	97	80	89
Bromofluorobenzene (Surrogate)	%	-	116	118	91	106

Full 8270 SVOC in Soil Method: AN420

SVCH (Cl Benzenes, Hydrocarbons & VOCs)

Parameter	Units	LOR	CE102827.009	CE102827.010	CE102827.011	CE102827.012
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Parameter	Units	LOR	CE102827.009	CE102827.010	CE102827.011	CE102827.012
d5-phenol (Surrogate)	%	-	92	88	84	88
d5-nitrobenzene (Surrogate)	%	-	86	84	78	80
2-fluorobiphenyl (Surrogate)	%	-	80	70	72	74
2,4,6-tribromophenol (Surrogate)	%	-	76	76	75	80
d14-p-terphenyl (Surrogate)	%	-	90	84	76	80

Sample Number	CE102827.009	CE102827.010	CE102827.011	CE102827.012
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	14 Feb 2013	14 Feb 2013	14 Feb 2013	14 Feb 2013
Sample Name	MW-18CP 3.5-3.6	MW19CP 1.0-1.1	MW19CP 2.9-3.0	MW19CP 3.3-3.4

Parameter Units LOR

Moisture Content Method: AN002

% Moisture	%	0.5	17	17	18	16
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Parameter	Units	LOR	CE102827.013	CE102827.014	CE102827.015	CE102827.016
Sample Number			CE102827.013	CE102827.014	CE102827.015	CE102827.016
Sample Matrix			Soil	Soil	Soil	Soil
Sample Date			14 Feb 2013	14 Feb 2013	14 Feb 2013	14 Feb 2013
Sample Name			MW20CP 1.2-1.3	MW20CP 2.0-2.1	Dup01	TripBlank

VOC's in Soil Method: AN433/AN434

Halogenated Aliphatics

Parameter	Units	LOR	CE102827.013	CE102827.014	CE102827.015	CE102827.016
Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Iodomethane	mg/kg	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Surrogates

Parameter	Units	LOR	CE102827.013	CE102827.014	CE102827.015	CE102827.016
Dibromofluoromethane (Surrogate)	%	-	85	86	85	110
d4-1,2-dichloroethane (Surrogate)	%	-	82	83	84	105
d8-toluene (Surrogate)	%	-	83	86	84	109
Bromofluorobenzene (Surrogate)	%	-	101	105	104	122

Full 8270 SVOC in Soil Method: AN420

SVCH (Cl Benzenes, Hydrocarbons & VOCs)

Parameter	Units	LOR	CE102827.013	CE102827.014	CE102827.015	CE102827.016
Pentachloroethane	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Parameter	Units	LOR	CE102827.013	CE102827.014	CE102827.015	CE102827.016
d5-phenol (Surrogate)	%	-	89	90	90	89
d5-nitrobenzene (Surrogate)	%	-	80	82	78	82
2-fluorobiphenyl (Surrogate)	%	-	80	74	72	80
2,4,6-tribromophenol (Surrogate)	%	-	70	74	70	48
d14-p-terphenyl (Surrogate)	%	-	82	80	78	80

Sample Number	CE102827.013	CE102827.014	CE102827.015	CE102827.016
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	14 Feb 2013	14 Feb 2013	14 Feb 2013	14 Feb 2013
Sample Name	MW20CP 1.2-1.3	MW20CP 2.0-2.1	Dup01	TripBlank

Parameter	Units	LOR				
Moisture Content Method: AN002						
% Moisture	%	0.5	10	25	22	<0.5

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MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	QFH	QC result is above the upper tolerance
LNR	Sample listed, but not received.	QFL	QC result is below the lower tolerance
*	This analysis is not covered by the scope of accreditation.	-	The sample was not analysed for this analyte
^	Performed by outside laboratory.	NVL	Not Validated
LOR	Limit of Reporting		
↑↓	Raised or Lowered Limit of Reporting		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au.pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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CLIENT DETAILS

LABORATORY DETAILS

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Project	087673045 Kwikleen	SGS Reference	CE102844 R0
Order Number	CQ 3432	Report Number	0000005920
Samples	8	Date Reported	28 Feb 2013
		Date Received	18 Feb 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE115465.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Persona

Operations Manager

sch4p4(6) Per

Lab Manager

sch4p4(6) Perso

Micro Supervisor

Parameter	Units	LOR	CE102844.001	CE102844.002	CE102844.003	CE102844.004
Sample Number			CE102844.001	CE102844.002	CE102844.003	CE102844.004
Sample Matrix			Water	Water	Water	Water
Sample Date			18 Feb 2013	18 Feb 2013	18 Feb 2013	18 Feb 2013
Sample Name			MW15CP	MW16CP	MW17CP	MW18CP

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	1.4	3.8	8.2	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	5.8	7.3	19	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	7.0	14	37	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	98	99	101	98
d4-1,2-dichloroethane (Surrogate)	%	-	104	104	107	104
d8-toluene (Surrogate)	%	-	103	103	103	102
Bromofluorobenzene (Surrogate)	%	-	107	110	112	108

Totals

Total Halogenated Hydrocarbons	µg/L	10	-	-	-	-
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Trihalomethanes

Chloroform (THM)	µg/L	0.5	1.4	1.9	6.7	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	LOR	CE102844.005	CE102844.006	CE102844.007	CE102844.008
Sample Number			CE102844.005	CE102844.006	CE102844.007	CE102844.008
Sample Matrix			Water	Water	Water	Water
Sample Date			18 Feb 2013	18 Feb 2013	18 Feb 2013	18 Feb 2013
Sample Name			MW19CP	MW20CP	MWX01	TB01

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0.4	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	<0.5	21	<0.5	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	<0.5	38	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	<0.5	42	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	98	97	100	88
d4-1,2-dichloroethane (Surrogate)	%	-	103	103	108	104
d8-toluene (Surrogate)	%	-	102	103	100	102
Bromofluorobenzene (Surrogate)	%	-	110	113	110	109

Totals

Total Halogenated Hydrocarbons	µg/L	10	-	-	-	-
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Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	3.0	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

Published on Resources Disclosure Log
RTI Act 2009

METHOD

AN433/AN434

METHODOLOGY SUMMARY

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	QFH	QC result is above the upper tolerance
LNR	Sample listed, but not received.	QFL	QC result is below the lower tolerance
*	This analysis is not covered by the scope of accreditation.	-	The sample was not analysed for this analyte
^	Performed by outside laboratory.	NVL	Not Validated
LOR	Limit of Reporting		
↑↓	Raised or Lowered Limit of Reporting		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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 SGS Reference CE102844 R0
 Report Number 0000005920
 Date Reported 28 Feb 2013
 Date Received 18 Feb 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE115465.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

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 Operations Manager

sch4p4(6) Personal information
 Lab Manager

sch4p4(6) Personal information
 Micro Supervisor

Parameter	Units	LOR	CE102844.001	CE102844.002	CE102844.003	CE102844.004
Sample Number			CE102844.001	CE102844.002	CE102844.003	CE102844.004
Sample Matrix			Water	Water	Water	Water
Sample Date			18 Feb 2013	18 Feb 2013	18 Feb 2013	18 Feb 2013
Sample Name			MW15CP	MW16CP	MW17CP	MW18CP

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	1.4	3.8	8.2	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	5.8	7.3	19	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	7.0	14	37	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	98	99	101	98
d4-1,2-dichloroethane (Surrogate)	%	-	104	104	107	104
d8-toluene (Surrogate)	%	-	103	103	103	102
Bromofluorobenzene (Surrogate)	%	-	107	110	112	108

Totals

Total Halogenated Hydrocarbons	µg/L	10	-	-	-	-
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Trihalomethanes

Chloroform (THM)	µg/L	0.5	1.4	1.9	6.7	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	LOR	CE102844.005	CE102844.006	CE102844.007	CE102844.008
Sample Number			CE102844.005	CE102844.006	CE102844.007	CE102844.008
Sample Matrix			Water	Water	Water	Water
Sample Date			18 Feb 2013	18 Feb 2013	18 Feb 2013	18 Feb 2013
Sample Name			MW19CP	MW20CP	MWX01	TB01

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0.4	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	<0.5	21	<0.5	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	<0.5	38	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	<0.5	42	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	98	97	100	88
d4-1,2-dichloroethane (Surrogate)	%	-	103	103	108	104
d8-toluene (Surrogate)	%	-	102	103	100	102
Bromofluorobenzene (Surrogate)	%	-	110	113	110	109

Totals

Total Halogenated Hydrocarbons	µg/L	10	-	-	-	-
--------------------------------	------	----	---	---	---	---

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	3.0	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

Published on Resources Disclosure Log
RTI Act 2009

METHOD

AN433/AN434

METHODOLOGY SUMMARY

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	QFH	QC result is above the upper tolerance
LNR	Sample listed, but not received.	QFL	QC result is below the lower tolerance
*	This analysis is not covered by the scope of accreditation.	-	The sample was not analysed for this analyte
^	Performed by outside laboratory.	NVL	Not Validated
LOR	Limit of Reporting		
↑↓	Raised or Lowered Limit of Reporting		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This report must not be reproduced, except in full.

Environmental Division

CERTIFICATE OF ANALYSIS

<p>Work Order : EB1304611</p> <p>Client : GOLDER ASSOCIATES</p> <p>Contact : sch4p4(6) Personal info</p> <p>Address : 216 DRAPER STREET CAIRNS QLD, AUSTRALIA 4870</p> <p>E-mail : sch4p4@golder.com</p> <p>Telephone : +61 07 4054 8200</p> <p>Facsimile : +61 07 4052 1546</p> <p>Project : 087673045</p> <p>Order number : CQ3433</p> <p>C-O-C number : ----</p> <p>Sampler : ----</p> <p>Site : Kwikleen</p> <p>Quote number : EN/002/12</p>	<p>Page : 1 of 7</p> <p>Laboratory : Environmental Division Brisbane</p> <p>Contact : sch4p4(6) Personal info</p> <p>Address : 2 Byth Street Stafford QLD Australia 4053</p> <p>E-mail : sch4p4(6) Personal info@alsglobal.com</p> <p>Telephone : +61 3552 8668</p> <p>Facsimile : +61 7 3352 3662</p> <p>QC Level : NEPM 1999 Schedule B(3) and ALS QCS3 requirement</p> <p>Date Samples Received : 22-FEB-2013</p> <p>Issue Date : 04-MAR-2013</p> <p>No. of samples received : 2</p> <p>No. of samples analysed : 2</p>
--	--

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
sch4p4(6) Pe	Organic Chemist	Brisbane Inorganics
sch4p4(6) Pe	Organic Chemist	Brisbane Organics



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

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RTI Act 2009



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

DUP01B

Client sampling date / time

14-FEB-2013 15:00

Compound	CAS Number	LOR	Unit	EB1304611-002	---	---	---	---
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	---	1.0	%	25.0	---	---	---	---
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	0.5	mg/kg	<0.5	---	---	---	---
1,2-Dichloropropane	78-87-5	0.5	mg/kg	<0.5	---	---	---	---
cis-1,3-Dichloropropylene	10061-01-5	0.5	mg/kg	<0.5	---	---	---	---
trans-1,3-Dichloropropylene	10061-02-6	0.5	mg/kg	<0.5	---	---	---	---
1,2-Dibromoethane (EDB)	106-93-4	0.5	mg/kg	<0.5	---	---	---	---
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	5	mg/kg	<5	---	---	---	---
Chloromethane	74-87-3	5	mg/kg	<5	---	---	---	---
Vinyl chloride	75-01-4	5	mg/kg	<5	---	---	---	---
Bromomethane	74-83-9	5	mg/kg	<5	---	---	---	---
Chloroethane	75-00-3	5	mg/kg	<5	---	---	---	---
Trichlorofluoromethane	75-69-4	5	mg/kg	<5	---	---	---	---
1,1-Dichloroethene	75-35-4	0.5	mg/kg	<0.5	---	---	---	---
Iodomethane	74-88-4	0.5	mg/kg	<0.5	---	---	---	---
trans-1,2-Dichloroethene	156-60-5	0.5	mg/kg	<0.5	---	---	---	---
1,1-Dichloroethane	75-34-3	0.5	mg/kg	<0.5	---	---	---	---
cis-1,2-Dichloroethene	156-59-2	0.5	mg/kg	<0.5	---	---	---	---
1,1,1-Trichloroethane	71-55-6	0.5	mg/kg	<0.5	---	---	---	---
1,1-Dichloropropylene	563-58-6	0.5	mg/kg	<0.5	---	---	---	---
Carbon Tetrachloride	56-23-5	0.5	mg/kg	<0.5	---	---	---	---
1,2-Dichloroethane	107-06-2	0.5	mg/kg	<0.5	---	---	---	---
Trichloroethene	79-01-6	0.5	mg/kg	<0.5	---	---	---	---
Dibromomethane	74-95-3	0.5	mg/kg	<0.5	---	---	---	---
1,1,2-Trichloroethane	79-00-5	0.5	mg/kg	<0.5	---	---	---	---
1,3-Dichloropropane	142-28-9	0.5	mg/kg	<0.5	---	---	---	---
Tetrachloroethene	127-18-4	0.5	mg/kg	<0.5	---	---	---	---
1,1,1,2-Tetrachloroethane	630-20-6	0.5	mg/kg	<0.5	---	---	---	---
trans-1,4-Dichloro-2-butene	110-57-6	0.5	mg/kg	<0.5	---	---	---	---
cis-1,4-Dichloro-2-butene	1476-11-5	0.5	mg/kg	<0.5	---	---	---	---
1,1,2,2-Tetrachloroethane	79-34-5	0.5	mg/kg	<0.5	---	---	---	---
1,2,3-Trichloropropane	96-18-4	0.5	mg/kg	<0.5	File B	---	---	---
Pentachloroethane	76-01-7	0.5	mg/kg	<0.5	---	---	---	---



Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

DUP01B

Client sampling date / time

14-FEB-2013 15:00

Compound	CAS Number	LOR	Unit	EB1304611-002				
EP074E: Halogenated Aliphatic Compounds - Continued								
1,2-Dibromo-3-chloropropane	96-12-8	0.5	mg/kg	<0.5	----	----	----	----
Hexachlorobutadiene	87-68-3	0.5	mg/kg	<0.5	----	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	0.5	mg/kg	<0.5	----	----	----	----
Bromobenzene	108-86-1	0.5	mg/kg	<0.5	----	----	----	----
2-Chlorotoluene	95-49-8	0.5	mg/kg	<0.5	----	----	----	----
4-Chlorotoluene	106-43-4	0.5	mg/kg	<0.5	----	----	----	----
1,3-Dichlorobenzene	541-73-1	0.5	mg/kg	<0.5	----	----	----	----
1,4-Dichlorobenzene	106-46-7	0.5	mg/kg	<0.5	----	----	----	----
1,2-Dichlorobenzene	95-50-1	0.5	mg/kg	<0.5	----	----	----	----
1,2,4-Trichlorobenzene	120-82-1	0.5	mg/kg	<0.5	----	----	----	----
1,2,3-Trichlorobenzene	87-61-6	0.5	mg/kg	<0.5	----	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	0.5	mg/kg	<0.5	----	----	----	----
Bromodichloromethane	75-27-4	0.5	mg/kg	<0.5	----	----	----	----
Dibromochloromethane	124-48-1	0.5	mg/kg	<0.5	----	----	----	----
Bromoform	75-25-2	0.5	mg/kg	<0.5	----	----	----	----
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	133	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	115	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	130	----	----	----	----

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

MWX01B

Client sampling date / time

18-FEB-2013 15:00

Compound	CAS Number	LOR	Unit	EB1304611-001	---	---	---	---
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	---	---	---	---
1,2-Dichloropropane	78-87-5	5	µg/L	<5	---	---	---	---
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	---	---	---	---
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	---	---	---	---
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	---	---	---	---
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	---	---	---	---
Chloromethane	74-87-3	50	µg/L	<50	---	---	---	---
Vinyl chloride	75-01-4	50	µg/L	<50	---	---	---	---
Bromomethane	74-83-9	50	µg/L	<50	---	---	---	---
Chloroethane	75-00-3	50	µg/L	<50	---	---	---	---
Trichlorofluoromethane	75-69-4	50	µg/L	<50	---	---	---	---
1,1-Dichloroethene	75-35-4	5	µg/L	<5	---	---	---	---
Iodomethane	74-88-4	5	µg/L	<5	---	---	---	---
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	---	---	---	---
1,1-Dichloroethane	75-34-3	5	µg/L	<5	---	---	---	---
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	---	---	---	---
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	---	---	---	---
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	---	---	---	---
Carbon Tetrachloride	56-23-5	5	µg/L	<5	---	---	---	---
1,2-Dichloroethane	107-06-2	5	µg/L	<5	---	---	---	---
Trichloroethene	79-01-6	5	µg/L	<5	---	---	---	---
Dibromomethane	74-95-3	5	µg/L	<5	---	---	---	---
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	---	---	---	---
1,3-Dichloropropane	142-28-9	5	µg/L	<5	---	---	---	---
Tetrachloroethene	127-18-4	5	µg/L	<5	---	---	---	---
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	---	---	---	---
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	---	---	---	---
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	---	---	---	---
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	---	---	---	---
1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	---	---	---	---
Pentachloroethane	76-01-7	5	µg/L	<5	---	---	---	---
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	File B	---	---	---
Hexachlorobutadiene	87-68-3	5	µg/L	<5	---	---	---	---



Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

MWX01B

Client sampling date / time

18-FEB-2013 15:00

Compound	CAS Number	LOR	Unit	EB1304611-001	---	---	---	---
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EP074E: Halogenated Aliphatic Compounds - Continued

EP074F: Halogenated Aromatic Compounds

Chlorobenzene	108-90-7	5	µg/L	<5	---	---	---	---
Bromobenzene	108-86-1	5	µg/L	<5	---	---	---	---
2-Chlorotoluene	95-49-8	5	µg/L	<5	---	---	---	---
4-Chlorotoluene	106-43-4	5	µg/L	<5	---	---	---	---
1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	---	---	---	---
1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	---	---	---	---
1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	---	---	---	---
1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	---	---	---	---
1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	---	---	---	---

EP074G: Trihalomethanes

Chloroform	67-66-3	5	µg/L	<5	---	---	---	---
Bromodichloromethane	75-27-4	5	µg/L	<5	---	---	---	---
Dibromochloromethane	124-48-1	5	µg/L	<5	---	---	---	---
Bromoform	75-25-2	5	µg/L	<5	---	---	---	---

EP074S: VOC Surrogates

1,2-Dichloroethane-D4	17060-07-0	0.1	%	102	---	---	---	---
Toluene-D8	2037-26-5	0.1	%	95.5	---	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	94.6	---	---	---	---

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	52.7	133.7
Toluene-D8	2037-26-5	60.3	131.1
4-Bromofluorobenzene	460-00-4	59.2	126.6

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66.1	137.9
Toluene-D8	2037-26-5	79.2	119.6
4-Bromofluorobenzene	460-00-4	74.2	118

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CLIENT DETAILS

LABORATORY DETAILS

Contact sch4p4(6) Pers
 Client GOLDER ASSOCIATES PTY LTD
 Address PO BOX 5823
 216 Draper St
 CAIRNS
 CAIRNS QLD 4870
 Telephone 07 4054 8200
 Facsimile 07 4054 8201
 Email sch4p4@golder.com sch4p4@golder.com.au
 Project 087673045 Kwikleen - Water
 Order Number CQ 3304
 Samples 2

Manager sch4p4(6)
 Laboratory SGS Cairns Environmental
 Address Unit 2, 58 Comport St
 Portsmith QLD 4870
 Telephone +61 07 4035 5111
 Facsimile +61 07 4035 5122
 Email AU.Environmental.Cairns@sgs.com
 SGS Reference CE103195 R0
 Report Number 0000006466
 Date Reported 20 Mar 2013
 Date Received 12 Mar 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE116016.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal

Operations Manager

sch4p4(6) Pers

Lab Manager

sch4p4(6) Pers

Micro Supervisor

	Sample Number	CE103195.001	CE103195.002
	Sample Matrix	Water	Water
	Sample Date	11 Mar 2013	11 Mar 2013
	Sample Name	EB01	EB02
Parameter	Units	LOR	

VOCs in Water Method: AN433/AN434

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5
Chloromethane	µg/L	5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10
Chloroethane	µg/L	5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5
Iodomethane	µg/L	5	<5	<5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	106	105
d4-1,2-dichloroethane (Surrogate)	%	-	116	110
d8-toluene (Surrogate)	%	-	100	99
Bromofluorobenzene (Surrogate)	%	-	110	115

Other VOC Analytes in Water Method: AN433/AN434

Pentachloroethane	µg/L	5	<5	<5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	99	78
d4-1,2-dichloroethane (Surrogate)	%	-	94	120
d8-toluene (Surrogate)	%	-	92	94
Bromofluorobenzene (Surrogate)	%	-	96	96

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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APPENDIX F

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ATTACHMENT G

Report on Potential Groundwater Impacts Associated with Sewer Failures, Kwikleen Dry Cleaners/Cairns Villa Caravan Park, Pease Street, Cairns, Golder Associates Pty Ltd, Ref. No. 087673045-041-R-Rev0, dated 14 June 2013.

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14 June 2013

REPORT ON POTENTIAL GROUNDWATER IMPACTS ASSOCIATED WITH SEWER FAILURES

Kwikleen Dry Cleaners/Cairns Villa Caravan Park, Pease Street, Cairns

Submitted to:

Mr sch4p4(6) Person
32-36 Pease Street
Manunda QLD 4883

REPORT



Report Number. 087673045-041-R-Rev0

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Table of Contents

1.0 INTRODUCTION	1
2.0 BACKGROUND	1
2.1 General.....	1
2.2 Nature of Contaminant.....	1
2.3 Potential Sources of Contamination.....	1
2.4 Investigations and Remediation Measures	2
2.5 Joint Experts Findings	2
3.0 SEWER INFRASTRUCTURE FAILURES	3
4.0 DISCUSSION OF GROUNDWATER IMPACTS ASSOCIATED WITH SEWER FAILURES	4
5.0 CONCLUSIONS	5
6.0 LIMITATIONS	5

FIGURES

- Figure 1 Site Locality Plan
- Figure 2 Groundwater Abstraction and Monitoring Locations

APPENDICES

APPENDIX A

Site Layout Plan (Reproduced from 087673045-005-Rev0)

APPENDIX B

Schematic of Sewer Layout (PDR Engineers)

APPENDIX C

Limitations



1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) was engaged by Mr sch4p4(6) Personal to conduct a review of groundwater contamination findings following discovery of sewer pipe failures on the former laundry and dry cleaner site at Pease Street, Cairns.

This report provides a summary of the available information and our opinion of the potential implications of discharges from sewer pipe in relation to groundwater contamination.

2.0 BACKGROUND

2.1 General

Kwikleen Dry Cleaners & Launderers formerly operated on a property comprised of Lot 1 on RP745758 and Lot 9 on RP735336. Dry cleaning operations were performed on the site from approximately 1994 until early 2011. This land will be referred to as the "Bungee land".

The Cairns Villa and Leisure Park is situated immediately adjacent to the Bungee land and comprises Lot 1 on RP742725. The site has operated as a caravan park and camping ground for more than 25 years. In this report this land will be referred to as the "caravan park site".

A locality plan showing the two sites is shown on Figure 1.

The presence of chlorinated solvents was detected in groundwater samples during an investigation of the caravan park site in 2007. The primary chlorinated solvents (contaminants of concern) identified in the groundwater were Tetrachloroethene (PCE) and its breakdown products – Trichloroethylene (TCE) and cis-1,2-dichloroethene (cis DCE).

2.2 Nature of Contaminant

PCE, TCE and 1,2-DCE are known as chlorinated alkenes. They are low boiling point, volatile solvents. PCE is widely used in the Dry Cleaning industry with approximately 50% of the overall demand for PCE being the dry cleaning industry. Approximately 80% of drycleaners use PCE as their primary cleaning agent.

The product Perklone was used in dry cleaning operations on the Bungee land. A review of the Material Safety Data Sheet for Perklone prepared by the manufacturer identifies that it is made up of greater than 99% PCE.

Site history investigations did not identify that TCE or 1,2-DCE had been used by the dry cleaner on the Bungee land or that PCE, TCE or 1,2-DCE had been used during the operation of the caravan park site. In the natural environment TCE and 1,2-DCE are known breakdown products of PCE. These breakdown products are produced via a process known as Reductive Chlorination. The TCE and 1,2-DCE observed in the groundwater samples from the Bungee land and the caravan park site are considered to be a result of the reductive chlorination of PCE.

2.3 Potential Sources of Contamination

Golder conducted inspections and interviews at the Bungee site in January 2008 aimed at assessing former and current site activities and identifying locations where PCE may have been released to the environment. The results of these inspections and interviews were presented in Golder report 087673045-005-Rev0. The identified areas of concern were marked on the plan reproduced in Appendix A.

During interviews conducted in January 2008, Golder Associates was informed that the drycleaning process employed utilised 90% of the drycleaning fluid (PCE), resulting in 10% waste product recovered in two waste streams:

- A drycleaning residue or sludge containing the majority of the spent drycleaning fluid; and
- Grey water (less than 2 Litres per wash cycle) which typically contained some dissolved phase PCE.



Both of these waste products were reported to be collected and placed in sludge storage drums at the rear of the building. Sludge drums were then collected by a trade waste contractor for offsite disposal.

In recent discussions, Mr [sch4p4(6) F] has indicated that the grey water was collected and disposed to sewer along with other wash water from washing machines. These waters are understood to have been held in a storage tank which discharged to the interceptor pit on the southern side of the building (see Figure 2). Had this information been clarified earlier then the sewer would also have been identified as a potential area of concern. This issue is discussed further in Section 4.

2.4 Investigations and Remediation Measures

A number of groundwater investigations and assessments were carried out by other parties in 2007-2008 and by Golder in June 2009 (refer to Golder Report 087673045-007-R-Rev0). These investigations identified solvent impacted groundwater migrating in an easterly direction from the Bungee site to the adjacent caravan park site. To mitigate this risk, it was initially recommended that groundwater pumping be conducted from monitoring well MW4KK in the south east corner of the Bungee site (where the highest PCE concentrations were detected in April 2009), see Figure 2.

The remediation measures were subsequently extended in 2009 to include groundwater extraction from an additional three wells on the caravan park site - MW11CP, MW12CP and MW5CP, see Figure 2. A product recovery trench was also installed in October 2010 along part of the eastern boundary of the Bungee site to extract impacted groundwater and to mitigate movement of impacted groundwater between the sites.

All extracted groundwater has been discharged to sewer via an interceptor pit on the Bungee site, see Figure 2. For the total solvent concentrations detected (i.e less than 5000 ug/L), it is understood that this water was suitable for sewer disposal under the site's trade waste permit.

Regular groundwater monitoring was conducted until early 2012, to track the progress of remedial works.

In March 2012, Golder conducted an internal review of the remediation options (refer Golder letter 087673045-028-L-Rev01). Whilst groundwater extraction had not been continuous (due to equipment malfunctions and damage/interference with the system), it is estimated that more than 3.5 million litres of groundwater had been extracted from the commencement of pumping up to March 2012. Relevant findings of the review are summarised below:

- In December 2009 it was estimated that about 300 g of PCE was present in the groundwater on the caravan park site. Pumping from wells on the caravan park site (up to March 2012) had removed a total of about 1,000 g of PCE and pumping from caravan park and Bungee site wells and trench had removed about 3,200g of PCE. This information indicates that the source (or sources) of impact was much larger than originally assumed.

In light of the discovery of leaking sewer infrastructure, the above issue is discussed further in Section 4.

2.5 Joint Experts Findings

As part of subsequent legal proceedings between the caravan park site owner and Bungee, all available information was reviewed by Mr [sch4p4(6) P] (Golder) and Mr [sch4p4(6) P] (Birchwood Environmental) in June 2012 to produce a Joint Experts Report on the groundwater contamination detected on the caravan park site. A summary of agreed findings pertinent to this current report is provided below:

- The source of the PCE, TCE and 1,2-DCE on both the Bungee and caravan park site is a result of the use, handling and/or storage of PCE on the Bungee Land. On release of the PCE to the environment it has migrated vertically through the soils (vadose zone) to the water table where it has been transported via the groundwater onto the caravan park site. During this process the PCE has undergone reductive chlorination to produce the breakdown products TCE and 1,2-DCE which have also been observed in the groundwater monitoring results on both the Bungee land and the caravan park site.



REPORT ON POTENTIAL GROUNDWATER IMPACTS ASSOCIATED WITH SEWER FAILURES

- The conclusion that the source of the PCE is on the Bungee land is supported by the fact that the highest groundwater PCE concentrations have been identified on the Bungee Land and the identified impact on the caravan park site is located down gradient (groundwater flow) of the Bungee Land.
- The location of the source of the impact on the Bungee Land has not been conclusively identified. There is no clear evidence to confirm that the detected contamination is related to a single or multiple release events but it is considered likely that the observed impact is the result of the accumulation of a series of events. Activities that may have contributed to the groundwater impact on the Bungee Land include:
 - Storage of PCE
 - Operational activities (drycleaning) using PCE
 - Handling, storage and/or disposal of PCE sludges (resulting from dry cleaning)
 - Misadventure (trespass on the Bungee site) leading to discharge of PCE or PCE sludge on the Bungee land
- Activities where PCE or PCE sludge could discharge directly to the ground surface represent the highest opportunity for impact to have occurred. Although a small amount of ongoing seepage through sealed surfaces could have also contributed to the groundwater contamination detected.
- It is agreed that historical handling and storage of PCE sludges on unsealed land at the rear (eastern end) of the Bungee land had a high potential to result in impact. In 2007, LeVert Environmental sampled dry cleaning sludge from the Bungee site which was found to contain 76,000mg/kg PCE. Photographs from this time also showed uncovered open trays placed on wooden pallets on bare earth prior to decanting into drums. Soil impacted with PCE was identified under the trays indicating that there had been spillage of PCE impacted materials onto the ground. It is accepted that PCE and waste storage practices at the dry cleaner were improved following these observations with the waste dry cleaning sludges stored in drums in a sealed, undercover bunded area before they are collected for off-site disposal.
- Based on the information currently available it is not possible to determine when the PCE contamination on the Bungee land commenced or how long contamination of the land continued. It is known that the contamination occurred before April 2007 and considering the contamination had to have been transported onto the caravan park land via groundwater and the PCE had commenced degradation to produce DCE and 1,2-DCE, it is likely that the initial contamination on the Bungee land occurred prior to 2007.

Again it is noted that, had drycleaning grey water disposal to sewer been known about at the time of the Joint Experts review, this would have been highlighted as an activity that may have contributed to groundwater impact. Statements in relation to the mechanism with the highest opportunity for impact would also need to be revised given this new information. See further discussion in Section 4.

3.0 SEWER INFRASTRUCTURE FAILURES

The interceptor pit on the Bungee site discharges to the Cairns Regional Council sewer system. A schematic of the pipework and manhole layout (based on Council records) is presented in Appendix B.

In April 2013, a plumber conducting repairs to a leaking water main reported water leaking out from under the former laundry building floor slab. Further investigation discovered that the sewer line connecting the interceptor pit to manhole T75/6 was blocked. The plumber attempted to clear the sewer line but was unsuccessful.

Cairns Regional Council was contacted. Council officers inspected manhole T75/6 and at that time cleaned out some gravel and tree roots from the line upstream of this manhole. Officers later returned, cleaned out more tree roots and replaced part of the 150mm diameter sewer line upstream of the manhole. It is understood that this revealed that sewer line upstream of the manhole had been completely blocked with tree roots that had infiltrated the sewer through pipe joints.



It is further understood that the penetrating tree roots had forced open the pipe joints and this may have allowed the opportunity for some leakage of water out of the pipework into the surrounding pipe trench.

Mr [sch4p4(6) P] arranged for a CCTV inspection of the sewer pipeline (from the manhole to the end cap along the eastern site boundary) following the Council repairs. This inspection identified that the blockages had occurred at pipe joint locations about 0.2m and 2.7m south of manhole T75/6. It appears that the source of the roots was a large tree located east of the sewer line on the caravan park site. It is understood that Mr [sch4p4(6) P] engaged an arborist to provide opinion on the possible age of the root blockage and that this has indicated the blockage may have been present for more than 10 years.

This CCTV inspection also indicated that the end cap at the southern end of this pipe was not in place. It is uncertain whether this cap had rusted out previously or had been dislodged during the sewer cleaning process. Blockages within the sewer pipe are likely to have resulted in backflow discharging from this faulty end cap into the surrounding ground.

In addition to the above, it is understood that the plumber also uncovered and repaired a broken section of pipe work about 0.2m from the interceptor pit. It has been speculated that cumulative hydraulic pressure in the sewer pipe as a result of the root blockage may have caused this failure; however, confirmation of this as a failure mechanism or the age of this breakage is beyond the expertise of Golder. Discharge of waste water from the Bungee site to the surrounding ground are likely to have resulted from this breakage point.

4.0 DISCUSSION OF GROUNDWATER IMPACTS ASSOCIATED WITH SEWER FAILURES

Previous assessments of the potential cause of groundwater impact had identified activities where PCE or PCE sludge could discharge directly to the ground surface as representing the highest opportunity for impact to have occurred. With new information relating to sewer line failures and the regular discharge of dry cleaning grey water during the operation of this site, this previous conclusion needs to be reviewed.

An updated review of all historical data indicated the following:

- Monitoring well MW4KK in the south east corner of the Bungee site has continually recorded the highest groundwater contaminant concentrations (on both the Bungee and caravan park sites) since its installation in 2009. This suggests that this well is located closest to the potential source of groundwater impact. This well is located hydraulically downgradient from the interceptor pit and adjacent to the identified sewer breakage. The high concentrations detected prior to implementation of groundwater extraction (and disposal via sewer) could indicate that grey water discharge from the Bungee site may have been leaking from the broken sewer pipe before 2009.
- The groundwater concentrations and contamination delineation investigations do not suggest that the root blockages within the pipeline upgradient of manhole T75/6 represent a major site of historical or ongoing contamination impact to groundwater. It is noted, however, that some grey water discharge was likely to have been occurring through opened pipe joints. Grey water containing contaminants may have impacted upon adjacent soils and groundwater.
- The groundwater concentrations and contamination delineation investigations are consistent with an impact source located in close proximity to the broken end cap on the 150mm diameter sewer line.. Whilst historical discharge of grey water from this end cap cannot be discounted, the limited historical groundwater monitoring data at locations hydraulically downgradient of this location do not provide conclusive evidence that this was occurring prior to the commencement of groundwater extraction and discharge to the sewer.
- Groundwater monitoring results collected since the commencement of groundwater extraction (and disposal via the sewer) are consistent with 'looping' of collected impacted groundwater discharging from sewer pipeline failures, particularly from the broken pipe adjacent to the interceptor pit and the broken end cap. Looping of collected impacted groundwater also explain the lack of progress by the extraction system to remove impacted groundwater on the caravan park site.



5.0 CONCLUSIONS

Based on the above findings there are three key conclusions:

- The historical discharge of dry cleaning grey water into the sewer system and failures within the sewer system up gradient of manhole T75/6 are considered to be an important (and previously unidentified) potential source of groundwater impact.
- Disposal of extracted groundwater into the sewer system has resulted in discharges from sewer failures. This is likely to have resulted in recirculation and redistribution of impacted groundwater.
- The main discharge points from the sewer appear to have been the broken pipe near the interceptor pit and the broken end cap at the southern end of the 150mm diameter pipe. Some lesser discharge is likely to have occurred at root intrusion sites where pipe joints have opened. Although root blockages will have resulted in “back up” within the sewer pipe and therefore lead to increased discharge from the other failure points within the sewer system.

6.0 LIMITATIONS

Your attention is drawn to the document “Limitations”, which is included in Appendix C of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

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SITE INFRASTRUCTURE ASSESSMENT

HOSPITALITY SERVICES

SITE LOCALITY PLAN



- LEGEND**
- Streets
 - CaravanPark
 - Kwikkleen
 - Digital Cadastral Data

NOTES

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0 5 10 20 30 40 50 metres
SCALE (at A3) 1:1,500

DATUM GDA 94, PROJECTION MGA Zone 55

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FIGURE 1





SITE INFRASTRUCTURE ASSESSMENT

HOSPITALITY SERVICES

GROUNDWATER ABSTRACTION & MONITORING LOCATIONS



LEGEND

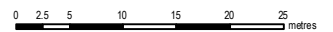
- Extraction Trench
- Caravan Park
- Kwikleen
- Monitoring & Extraction Wells**
- Extraction Sump
- Extraction Well
- Monitoring Well

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FIGURE 2



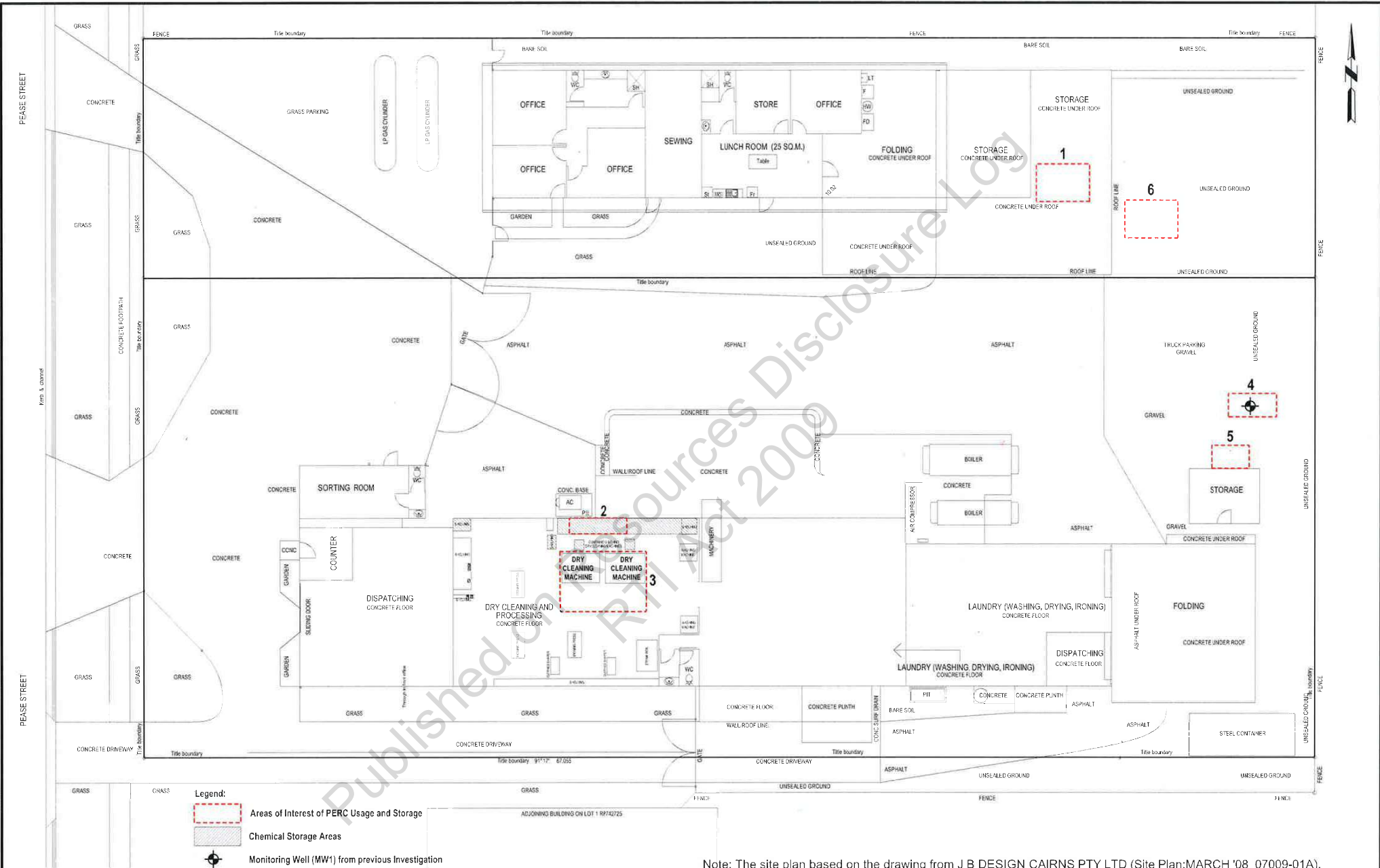


APPENDIX A

Site Layout Plan (Reproduced from 087673045-005-Rev0)

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- Legend:**
- Areas of Interest of PERC Usage and Storage
 - Chemical Storage Areas
 - Monitoring Well (MW1) from previous Investigation

Note: The site plan based on the drawing from J B DESIGN CAIRNS PTY LTD (Site Plan: MARCH '08 07009-01A).

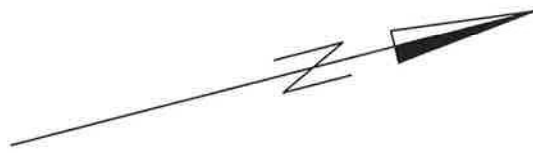
<p>Golder Associates www.golder.com GOLDER ASSOCIATES PTY LTD</p>	CLIENT Kwikleen Drycleaners		PROJECT Contamination Investigation	
	DRAWN AL/PAW	DATE 16/03/2009	TITLE AREAS OF INTEREST FOR PERC USAGE AND STORAGE	
	CHECKED PKS	DATE 17/03/2009	PROJECT No 087673045 005	FIGURE No 4
	SCALE 1:200		REV No 0	A3



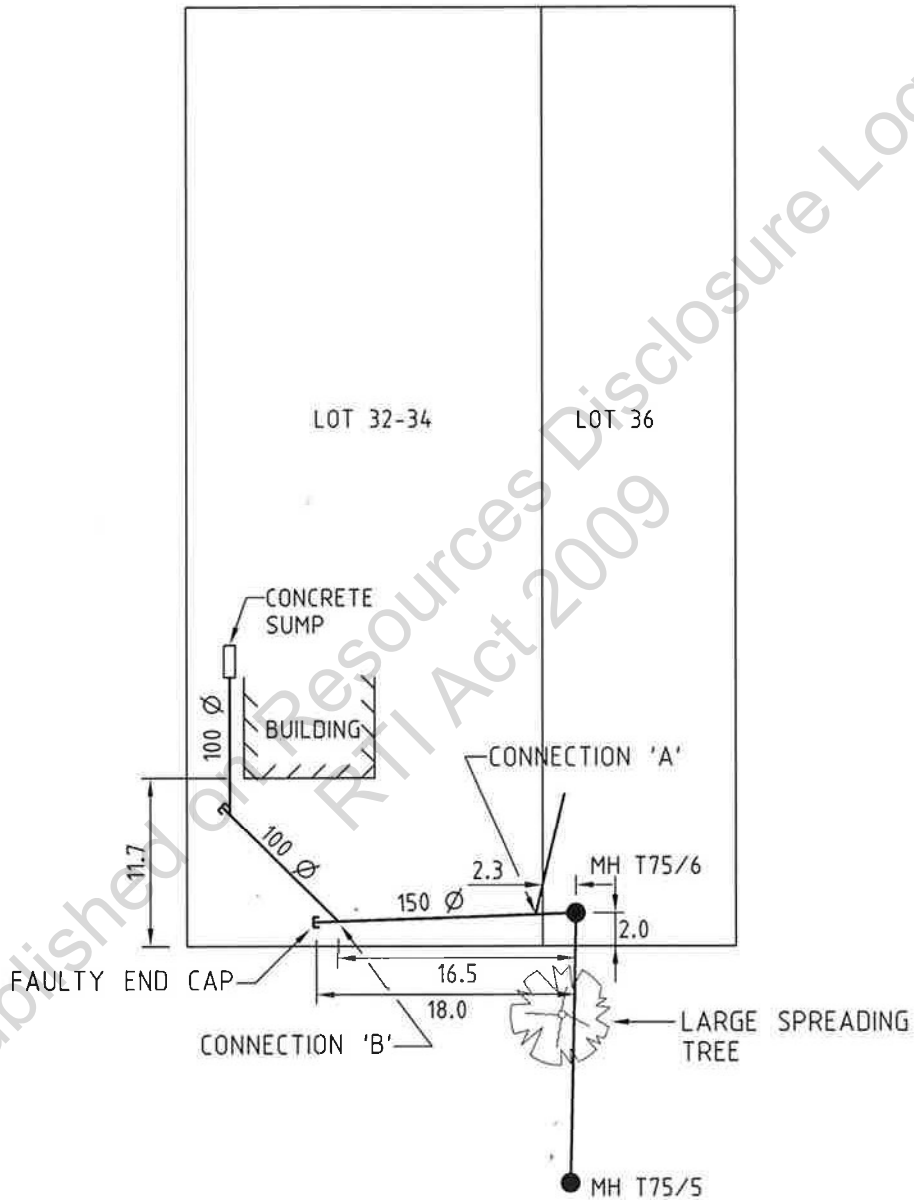
APPENDIX B

Schematic of Sewer Layout (PDR Engineers)

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SEWER DETAILS AT 32/34 PEASE STREET
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ATTACHMENT H

Amended Boundary Groundwater Monitoring September 2013, Golder Associates Pty Ltd,
Ref. No. Letter 087673045-045-L-Rev0, dated 14 October 2013.

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14 October 2013

Project No. 087673045-045-L-Rev0

sch4p4(6) Personā

Hospitality Services

~Transmission via email: sch@laundryqld.com.au~

AMENDED BOUNDARY GROUNDWATER MONITORING SEPTEMBER 2013.

Following Golder Proposal No. 087673045-044-L-Rev0 issued on 11 September 2013, please find herewith the results and interpretation of the recent groundwater monitoring event along the proposed excised boundary groundwater wells as per the Third Party Reviewer (TPR) request.

The following works were carried out:

- A groundwater sampling and analysis event was carried out on groundwater wells MWCP1, MWCP4, MWCP6, MWCP16, MWCP17 and MWCP18.
- Samples from well were analysed for volatile organic compounds.
- The sampling round included a single QA/QC field sample.
- A short letter report (this document) was prepared to detail and discuss the findings of this monitoring round.

Field Work

The selected wells were purged on 19 September 2013 and allowed to stabilise before sampling. The wells were then sampled by an experienced environmental scientist using bottom loading (Double Check Valve) disposable bailers. Each well was sampled using a new disposable bailer to ensure no cross contamination between sample locations. The samples were transferred into NATA accredited laboratory supplied sample containers and packed into an esky for transport to the laboratory (SGS).

A duplicate sample was also taken at MWCP18 for QA/QC purposes. The water samples were sent for analyses of volatile organic compounds under chain of custody conditions.

Results

The Laboratory Certificate of Analysis is attached. For the purpose of this report the previously identified contaminants of concern Trichloroethylene (TCE), Perchloroethylene (PCE) and are the focus of the following sections. The results are summarised below:

Table 1: September 2013 Groundwater Monitoring Results

Monitoring Location	TCE (µg/l)	PCE (µg/l)	cis-1,2-dichloroethene (µg/l)
MW1CP	170	42	390
MW4CP	2.0	<0.5	2.3
MW6CP	<0.5	3.0	25
MW16CP	180	12	320
MW17CP	210	100	89
MW18CP	0.9	<0.5	2.0

Golder Associates Pty Ltd

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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

A.B.N. 64 006 107 857

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Discussion

Concentrations of contaminants of concern recorded in water samples from MW4CP, MW6CP and MW18CP were close to or below the laboratory limits of reporting. These results are similar to the results of previously monitoring rounds at these locations and are not considered to represent a change or deterioration of conditions at these locations.

TCE and PCE concentrations in the water sample from MW1CP were higher than the previous monitoring round July 2012 but within the range of concentrations previously recorded at this location since 2007. Given the direction of groundwater flow (generally in an easterly trending direction), and in view of the historical fluctuations recorded at this location, this result is not considered to warrant a review of the western subdivision boundary.

The PCE concentration in the water sampled from MW16CP has remained relatively consistent since the previous round of sampling in February 2013. The TCE concentration at this location has increased by a factor of about 25. The PCE concentration in the water sampled from MW17CP has increased by a factor of about 3 since the previous round of sampling in February 2013. The TCE concentration at this location has increased by a factor of about 10.

The changes in concentrations detected in water samples from MW16CP and MW17CP may be attributed to either:

- The migration of impacted groundwater; or
- Fluctuations associated with sampling – at the very low detection levels (parts per billion) variations of the magnitude observed are within the bounds of what may be expected between sampling rounds.

In order to address the uncertainty associated with these recent results at MW16CP and MW17CP, and to confirm subdivision boundary locations, the following recommendations are made:

- A bottom loading pump should be installed at MWCP14 to collect impacted water detected at this previously identified “hotspot” and intercept possible migration of impact groundwater.
- Soil gas sampling and analysis be conducted from SVW16 and SVW17 (located adjacent to MW16CP and MW17CP, respectively) to confirm that the concentrations of PCE and TCE remain within acceptable limits at these locations.

Scheduling of Future Works

The following schedule is proposed to implement the above recommendations, pending approval of a cost proposal to be presented to Hospitality Services.

Table 2: Proposed Schedule of Tasks

Task	Time Frame
Installation of pump infrastructure into MW14CP	By 18 th October
Sampling of Gas Wells	By 5 th November (based on current availability of equipment and personnel)
Receipt of Laboratory Analysis	By 22 nd November (subject to laboratory turn around)
Presentation of results and issue of findings	By 30 th November (subject to receipt of laboratory results)

Limitations

Your attention is drawn to the document “Limitations”, which is attached to this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

Regards,
Golder Associates Pty Ltd

sch4p4(6) Personal information

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sch4p4(6) Personal

Senior Environmental Engineer

sch4p4(6) Pers

Principal Environmental Engineer

CMC/PKS/hlb

Attachments: Laboratory Certificate of Analysis
 Figure 1 – September 2013 GW Sampling Locations
 Limitations

\\cns1-s-file02\jobs\env\2008\087673045 - kwikleen dry cleaners, pease st\correspondence out\087673045-045-l-rev0 boundary gw sampling.docx

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RTI Act 2009

CLIENT DETAILS

LABORATORY DETAILS

Contact **sch4p4(6) Pers**
 Client **GOLDER ASSOCIATES PTY LTD**
 Address **PO BOX 5823
 216 Draper St
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 CAIRNS QLD 4870**
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 Email **sch4p4@golder.com**
 Project **087673045 Kwikleen**
 Order Number **MQ8775**
 Samples **7**

Manager **sch4p4(6)**
 Laboratory **SGS Cairns Environmental**
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 Portsmith QLD 4870**
 Telephone **+61 07 4035 5111**
 Facsimile **+61 07 4035 5122**
 Email **AU.Environmental.Cairns@sgs.com**
 SGS Reference **CE105952 R0**
 Report Number **0000011183**
 Date Reported **30 Sep 2013**
 Date Received **19 Sep 2013**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE120927.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal info

Operations Manager

sch4p4(6) Perso

Manager Northern QLD

sch4p4(6) Perso

Micro Supervisor / Quality Co-ordinator

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	CE105952.001 Water 19 Sep 2013 MW1CP	CE105952.002 Water 19 Sep 2013 MW4CP	CE105952.003 Water 19 Sep 2013 MW6CP	CE105952.004 Water 19 Sep 2013 MW16CP
-----------	-------	-----	--	---	---	---	--

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	6	5	6
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	1.1
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	1.1	<0.5	<0.5	3.3
trans-1,2-dichloroethene	µg/L	0.5	3.0	<0.5	<0.5	4.6
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	390	2.3	25	320
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	170	2.0	<0.5	180
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	42	<0.5	3.0	12
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenz ene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenz ene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenz ene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenz ene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	109	106	116	107
d4-1,2-dichloroethane (Surrogate)	%	-	110	109	120	109
d8-toluene (Surrogate)	%	-	102	97	99	101
Bromofluorobenz ene (Surrogate)	%	-	101	115	118	125

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	1.8	<0.5	<0.5	1.9
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	CE105952.005 Water 19 Sep 2013 MW17CP	CE105952.006 Water 19 Sep 2013 MW18CP	CE105952.007 Water 19 Sep 2013 DUP
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VOCs in Water Method: AN433/AN434

Fumigants

Parameter	Units	LOR	CE105952.005	CE105952.006	CE105952.007
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Parameter	Units	LOR	CE105952.005	CE105952.006	CE105952.007
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	1.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	2.4	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	2.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	89	2.0	2.2
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	210	0.9	1.1
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	1.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	100	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Parameter	Units	LOR	CE105952.005	CE105952.006	CE105952.007
Chlorobenz ene	µg/L	0.5	<0.5	<0.5	<0.5
Bromobenz ene	µg/L	0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenz ene	µg/L	0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenz ene	µg/L	0.5	<0.5	<0.5	<0.5

Surrogates

Parameter	Units	LOR	CE105952.005	CE105952.006	CE105952.007
Dibromofluoromethane (Surrogate)	%	-	104	103	109
d4-1,2-dichloroethane (Surrogate)	%	-	107	109	112
d8-toluene (Surrogate)	%	-	111	99	99
Bromofluorobenz ene (Surrogate)	%	-	112	115	117

Trihalomethanes

Parameter	Units	LOR	CE105952.005	CE105952.006	CE105952.007
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
<http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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DELINEATION INVESTIGATIONS

HOSPITALITY SERVICES

**MONITORING LOCATIONS
SEPTEMBER 2013**



LEGEND

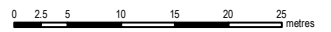
- Approximate Area To Be Excised
- Soil Gas Well Locations
- Groundwater Monitoring Locations

NOTES

All locations and excise boundaries are approximate.

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SCALE (at A3) 1:500

DATUM GDA 94. PROJECTION MGA Zone 55

PROJECT: 087673045-045-L
DATE: 14 OCT 2013
DRAWN: BAG
CHECKED: CC

FIGURE 1



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ATTACHMENT I

Soil Vapour Monitoring at SVW16 and SVW17 November 2013, Pease St. Caravan Park, Golder Associates Pty Ltd, Ref. No. Letter 087673045-048-L-Rev0, dated 25 November 2013.

Published on Resources Disclosure Log
RTI Act 2009

25 November 2013

Project No. 087673045-048-L-Rev0

sch4p4(6) Personal in

Hospitality Services

~Transmission via email: sch4@laundryqld.com.au~

SOIL VAPOUR MONITORING AT SVW16 AND SVW17 NOVEMBER 2013, PEASE ST. CARAVAN PARK.

Dear sch4p4

Further to our previous correspondence 087673045-048-L-Rev0 and recommendations dated 14 October 2013 please find herewith the results from the latest round of soil vapour sampling carried out at monitoring locations SVW16 and SVW17 within the Pease St. Caravan Park Site.

Scope of Works

Further to groundwater monitoring carried out at various groundwater boundary wells on 19 September, it was proposed to carry out further soil vapour monitoring at SVW16 and SVW17. The following tasks were completed:

The soil vapour monitoring wells were sampled on 6 November 2013. The procedure for sampling VOCs using evacuated canisters, and for the subsequent analysis, is described in USEPA Method TO-15. The method involves the collection of whole air samples in passivated electropolished stainless steel canisters. The VOCs are subsequently separated by gas chromatography (GC), and measured by mass selective (MS) detector or multi-detector techniques.

SUMMA canister sampling was conducted in accordance with Golder Technical Procedure TP13 'Soil Gas Bore Sampling' as outlined below:

- The sampling train consisted of PTFE tubing, a glass impinger (moisture trap), flow controller and a 1 Litre SUMMA canister;
- The soil vapour bore and sampling train (PTFE tubing and glass moisture trap) were purged with a volume equal to three times the total bore and sampling train volume, immediately prior to sample collection;
- Samples were collected in low volume (1 litre) SUMMA canisters to reduce the possibility of atmospheric breakthrough and a false negative result;
- SUMMA canisters were equipped with a flow restricting orifice and a vacuum gauge to enable sampling over a nominal one hour period, again minimising the potential for atmospheric breakthrough; and
- A shroud and tracer gas was used during collection of all primary soil vapour samples.

SUMMA canister sampling was carried out in accordance with Golder Test Method No. C9 "Canister (Evacuated) Sampling for VOC and Reduced Sulphur Compounds: In Ambient Air and Source Emissions".

Sample analysis was conducted by Eurofins Air Toxics Ltd., in accordance with modified USEPA Method TO15. Eurofins Air Toxics Ltd is accredited by NELAP/Florida Department of Health for analyses of VOCs by the described method (Laboratory Accreditation No. E87680). Laboratory certificates of analysis are attached at the end of this document.



Results

The results for Trichloroethene and Tetrachloroethene are provided in Table 1 below against the previously agreed guideline criteria. Results in red indicate exceedances.

Table 1: Results for November 2013 Soil Vapour Monitoring

	Assessment Value ($\mu\text{g}/\text{m}^3$)	SVW16 ($\mu\text{g}/\text{m}^3$)	SVW17 ($\mu\text{g}/\text{m}^3$)	Dup (SVW17) ($\mu\text{g}/\text{m}^3$)
Trichloroethene (TCE)	100	760	240	300
Tetrachloroethene (PCE)	2000	220	1800	2400

Discussion

Given the above results, a detailed report has not been prepared. Further consideration of these results in relation to the proposed boundary will be needed.

Limitations

Your attention is drawn to the document "Limitations", which is attached to this letter report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

Yours faithfully

Golder Associates Pty Ltd

sch4p4(6) Personal information

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sch4p4(6) Person

Senior Environmental Engineer

sch4p4(6) Person

Principal Environmental Engineer

CMC/PKS/hlb

Attachments: Eurofins Airtoxics Certificate of Analysis
Limitations

\\cns1-s-file02\jobslenv\2008\087673045 - kwikleen dry cleaners, pease st\correspondence out\087673045-048-l-rev0 soil vapour sampling results nov 2013.docx

11/22/2013

[redacted] Personal informat

Golder Associates, Australia
216 Draper Street

Cairns, Queensland 4870

Project Name: Kwikleen
Project #: 087673045
Workorder #: 1311157A

Dear [redacted] Personal inform

The following report includes the data for the above referenced project for sample(s) received on 11/8/2013 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: [redacted] Personal information if you have any questions regarding the data in this report.

Regards,

[redacted] Personal information

[redacted] Personal info

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1311157A

Work Order Summary

CLIENT:	sch4p4(6) Personal infor Golder Associates, Australia 216 Draper Street Cairns, Queensland 4870	BILL TO:	Accounts Payable Golder Associates, Australia PO BOX 6079 Hawthorne, Australia 3122
PHONE:	+61 7 4054 8200	P.O. #	MQ8810
FAX:	+61 7 4054 8201	PROJECT #	087673045 Kwikleen
DATE RECEIVED:	11/08/2013	CONTACT:	sch4p4(6) Personal
DATE COMPLETED:	11/22/2013		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SVW 17	TO-15	6.1 "Hg	14.9 psi
02A	SVW 16	TO-15	10 "Hg	15 psi
03A	FB 01	TO-15	9 "Hg	15 psi
04A	DUP 01	TO-15	9 "Hg	15 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

sch4p4(6) Personal information

CERTIFIED BY:

Technical Director

DATE: 11/22/13

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-13-6, UT NELAP CA009332013-4, VA NELAP - 460197, WA NELAP - C935
 Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
 Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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**LABORATORY NARRATIVE
EPA Method TO-15
Golder Associates, Australia
Workorder# 1311157A**

Four 1 Liter Summa Canister samples were received on November 08, 2013. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Due to the linear calibration range of the instrument, the reporting limit for Ethanol was raised from 2.0ppbv to 5.0ppbv.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SVW 17

Lab ID#: 1311157A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	5.1	14	9.5	27
Acetone	13	20	30	48
Hexane	1.3	2.3	4.4	8.1
2-Butanone (Methyl Ethyl Ketone)	5.1	7.8	15	23
Tetrahydrofuran	1.3	3.6	3.7	11
Trichloroethene	1.3	46	6.8	240
Toluene	1.3	16	4.8	58
Tetrachloroethene	1.3	270	8.6	1800
m,p-Xylene	1.3	3.6	5.5	16

Client Sample ID: SVW 16

Lab ID#: 1311157A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	15	25	36	60
cis-1,2-Dichloroethene	1.5	12	6.0	48
Chloroform	1.5	14	7.4	68
Trichloroethene	1.5	140	8.1	760
Toluene	1.5	5.7	5.7	21
Tetrachloroethene	1.5	32	10	220
m,p-Xylene	1.5	3.0	6.6	13

Client Sample ID: FB 01

Lab ID#: 1311157A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	14	17	34	40

Client Sample ID: DUP 01

Lab ID#: 1311157A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
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**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: DUP 01

Lab ID#: 1311157A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	1.4	55	7.7	300
Toluene	1.4	3.7	5.4	14
Tetrachloroethene	1.4	350	9.8	2400
m,p-Xylene	1.4	1.4	6.2	6.2

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Client Sample ID: SVW 17

Lab ID#: 1311157A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112019	Date of Collection:	11/6/13 9:00:00 AM
Dil. Factor:	2.53	Date of Analysis:	11/21/13 04:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	Not Detected	6.2	Not Detected
Freon 114	1.3	Not Detected	8.8	Not Detected
Chloromethane	13	Not Detected	26	Not Detected
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
1,3-Butadiene	1.3	Not Detected	2.8	Not Detected
Bromomethane	13	Not Detected	49	Not Detected
Chloroethane	5.1	Not Detected	13	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Ethanol	5.1	14	9.5	27
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	20	30	48
2-Propanol	5.1	Not Detected	12	Not Detected
Carbon Disulfide	5.1	Not Detected	16	Not Detected
3-Chloropropene	5.1	Not Detected	16	Not Detected
Methylene Chloride	13	Not Detected	44	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Hexane	1.3	2.3	4.4	8.1
1,1-Dichloroethane	1.3	Not Detected	5.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.1	7.8	15	23
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrahydrofuran	1.3	3.6	3.7	11
Chloroform	1.3	Not Detected	6.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Cyclohexane	1.3	Not Detected	4.4	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
2,2,4-Trimethylpentane	1.3	Not Detected	5.9	Not Detected
Benzene	1.3	Not Detected	4.0	Not Detected
1,2-Dichloroethane	1.3	Not Detected	5.1	Not Detected
Heptane	1.3	Not Detected	5.2	Not Detected
Trichloroethene	1.3	46	6.8	240
1,2-Dichloropropane	1.3	Not Detected	5.8	Not Detected
1,4-Dioxane	5.1	Not Detected	18	Not Detected
Bromodichloromethane	1.3	Not Detected	8.5	Not Detected
cis-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
4-Methyl-2-pentanone	1.3	Not Detected	5.2	Not Detected
Toluene	1.3	16	4.8	58
trans-1,3-Dichloropropene	1.3	Not Detected	5.7	Not Detected
1,1,2-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Tetrachloroethene	1.3	270	8.6	1800
2-Hexanone	5.1	Not Detected	21	Not Detected

Client Sample ID: SVW 17

Lab ID#: 1311157A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112019	Date of Collection:	11/6/13 9:00:00 AM
Dil. Factor:	2.53	Date of Analysis:	11/21/13 04:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.3	Not Detected	11	Not Detected
1,2-Dibromoethane (EDB)	1.3	Not Detected	9.7	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	3.6	5.5	16
o-Xylene	1.3	Not Detected	5.5	Not Detected
Styrene	1.3	Not Detected	5.4	Not Detected
Bromoform	1.3	Not Detected	13	Not Detected
Cumene	1.3	Not Detected	6.2	Not Detected
1,1,2,2-Tetrachloroethane	1.3	Not Detected	8.7	Not Detected
Propylbenzene	1.3	Not Detected	6.2	Not Detected
4-Ethyltoluene	1.3	Not Detected	6.2	Not Detected
1,3,5-Trimethylbenzene	1.3	Not Detected	6.2	Not Detected
1,2,4-Trimethylbenzene	1.3	Not Detected	6.2	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
alpha-Chlorotoluene	1.3	Not Detected	6.5	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected
Hexachlorobutadiene	5.1	Not Detected	54	Not Detected
Naphthalene	5.1	Not Detected	26	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	86	70-130
4-Bromofluorobenzene	110	70-130

Client Sample ID: SVW 16

Lab ID#: 1311157A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112020	Date of Collection:	11/6/13 10:30:00 AM
Dil. Factor:	3.03	Date of Analysis:	11/21/13 05:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.5	Not Detected	7.5	Not Detected
Freon 114	1.5	Not Detected	10	Not Detected
Chloromethane	15	Not Detected	31	Not Detected
Vinyl Chloride	1.5	Not Detected	3.9	Not Detected
1,3-Butadiene	1.5	Not Detected	3.4	Not Detected
Bromomethane	15	Not Detected	59	Not Detected
Chloroethane	6.1	Not Detected	16	Not Detected
Freon 11	1.5	Not Detected	8.5	Not Detected
Ethanol	6.1	Not Detected	11	Not Detected
Freon 113	1.5	Not Detected	12	Not Detected
1,1-Dichloroethene	1.5	Not Detected	6.0	Not Detected
Acetone	15	25	36	60
2-Propanol	6.1	Not Detected	15	Not Detected
Carbon Disulfide	6.1	Not Detected	19	Not Detected
3-Chloropropene	6.1	Not Detected	19	Not Detected
Methylene Chloride	15	Not Detected	53	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.5	Not Detected
trans-1,2-Dichloroethene	1.5	Not Detected	6.0	Not Detected
Hexane	1.5	Not Detected	5.3	Not Detected
1,1-Dichloroethane	1.5	Not Detected	6.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.1	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.5	12	6.0	48
Tetrahydrofuran	1.5	Not Detected	4.5	Not Detected
Chloroform	1.5	14	7.4	68
1,1,1-Trichloroethane	1.5	Not Detected	8.3	Not Detected
Cyclohexane	1.5	Not Detected	5.2	Not Detected
Carbon Tetrachloride	1.5	Not Detected	9.5	Not Detected
2,2,4-Trimethylpentane	1.5	Not Detected	7.1	Not Detected
Benzene	1.5	Not Detected	4.8	Not Detected
1,2-Dichloroethane	1.5	Not Detected	6.1	Not Detected
Heptane	1.5	Not Detected	6.2	Not Detected
Trichloroethene	1.5	140	8.1	760
1,2-Dichloropropane	1.5	Not Detected	7.0	Not Detected
1,4-Dioxane	6.1	Not Detected	22	Not Detected
Bromodichloromethane	1.5	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.5	Not Detected	6.9	Not Detected
4-Methyl-2-pentanone	1.5	Not Detected	6.2	Not Detected
Toluene	1.5	5.7	5.7	21
trans-1,3-Dichloropropene	1.5	Not Detected	6.9	Not Detected
1,1,2-Trichloroethane	1.5	Not Detected	8.3	Not Detected
Tetrachloroethene	1.5	32	10	220
2-Hexanone	6.1	Not Detected	25	Not Detected

Client Sample ID: SVW 16

Lab ID#: 1311157A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112020	Date of Collection:	11/6/13 10:30:00 AM
Dil. Factor:	3.03	Date of Analysis:	11/21/13 05:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.5	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.5	Not Detected	12	Not Detected
Chlorobenzene	1.5	Not Detected	7.0	Not Detected
Ethyl Benzene	1.5	Not Detected	6.6	Not Detected
m,p-Xylene	1.5	3.0	6.6	13
o-Xylene	1.5	Not Detected	6.6	Not Detected
Styrene	1.5	Not Detected	6.4	Not Detected
Bromoform	1.5	Not Detected	16	Not Detected
Cumene	1.5	Not Detected	7.4	Not Detected
1,1,2,2-Tetrachloroethane	1.5	Not Detected	10	Not Detected
Propylbenzene	1.5	Not Detected	7.4	Not Detected
4-Ethyltoluene	1.5	Not Detected	7.4	Not Detected
1,3,5-Trimethylbenzene	1.5	Not Detected	7.4	Not Detected
1,2,4-Trimethylbenzene	1.5	Not Detected	7.4	Not Detected
1,3-Dichlorobenzene	1.5	Not Detected	9.1	Not Detected
1,4-Dichlorobenzene	1.5	Not Detected	9.1	Not Detected
alpha-Chlorotoluene	1.5	Not Detected	7.8	Not Detected
1,2-Dichlorobenzene	1.5	Not Detected	9.1	Not Detected
1,2,4-Trichlorobenzene	6.1	Not Detected	45	Not Detected
Hexachlorobutadiene	6.1	Not Detected	65	Not Detected
Naphthalene	6.1	Not Detected	32	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	108	70-130

Client Sample ID: FB 01

Lab ID#: 1311157A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112107	Date of Collection:	11/6/13 9:30:00 AM
Dil. Factor:	2.88	Date of Analysis:	11/21/13 09:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	7.1	Not Detected
Freon 114	1.4	Not Detected	10	Not Detected
Chloromethane	14	Not Detected	30	Not Detected
Vinyl Chloride	1.4	Not Detected	3.7	Not Detected
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	5.8	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Ethanol	5.8	Not Detected	11	Not Detected
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	17	34	40
2-Propanol	5.8	Not Detected	14	Not Detected
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	5.8	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Hexane	1.4	Not Detected	5.1	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.2	Not Detected
Chloroform	1.4	Not Detected	7.0	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.8	Not Detected
Cyclohexane	1.4	Not Detected	5.0	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.1	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.7	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.8	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
Trichloroethene	1.4	Not Detected	7.7	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.6	Not Detected
1,4-Dioxane	5.8	Not Detected	21	Not Detected
Bromodichloromethane	1.4	Not Detected	9.6	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.5	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.9	Not Detected
Toluene	1.4	Not Detected	5.4	Not Detected
trans-1,3-Dichloropropene	1.4	Not Detected	6.5	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.8	Not Detected
Tetrachloroethene	1.4	Not Detected	9.8	Not Detected
2-Hexanone	5.8	Not Detected	24	Not Detected

Client Sample ID: FB 01

Lab ID#: 1311157A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112107	Date of Collection:	11/6/13 9:30:00 AM
Dil. Factor:	2.88	Date of Analysis:	11/21/13 09:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.6	Not Detected
Ethyl Benzene	1.4	Not Detected	6.2	Not Detected
m,p-Xylene	1.4	Not Detected	6.2	Not Detected
o-Xylene	1.4	Not Detected	6.2	Not Detected
Styrene	1.4	Not Detected	6.1	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.1	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.9	Not Detected
Propylbenzene	1.4	Not Detected	7.1	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.1	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.4	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected
Hexachlorobutadiene	5.8	Not Detected	61	Not Detected
Naphthalene	5.8	Not Detected	30	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	87	70-130
4-Bromofluorobenzene	110	70-130

Client Sample ID: DUP 01

Lab ID#: 1311157A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112108	Date of Collection:	11/6/13 9:30:00 AM
Dil. Factor:	2.88	Date of Analysis:	11/21/13 09:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	7.1	Not Detected
Freon 114	1.4	Not Detected	10	Not Detected
Chloromethane	14	Not Detected	30	Not Detected
Vinyl Chloride	1.4	Not Detected	3.7	Not Detected
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	5.8	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	8.1	Not Detected
Ethanol	5.8	Not Detected	11	Not Detected
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	Not Detected	34	Not Detected
2-Propanol	5.8	Not Detected	14	Not Detected
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	5.8	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Hexane	1.4	Not Detected	5.1	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.2	Not Detected
Chloroform	1.4	Not Detected	7.0	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.8	Not Detected
Cyclohexane	1.4	Not Detected	5.0	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.1	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.7	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.8	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
Trichloroethene	1.4	55	7.7	300
1,2-Dichloropropane	1.4	Not Detected	6.6	Not Detected
1,4-Dioxane	5.8	Not Detected	21	Not Detected
Bromodichloromethane	1.4	Not Detected	9.6	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.5	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.9	Not Detected
Toluene	1.4	3.7	5.4	14
trans-1,3-Dichloropropene	1.4	Not Detected	6.5	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.8	Not Detected
Tetrachloroethene	1.4	350	9.8	2400
2-Hexanone	5.8	Not Detected	24	Not Detected

Client Sample ID: DUP 01

Lab ID#: 1311157A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112108	Date of Collection:	11/6/13 9:30:00 AM
Dil. Factor:	2.88	Date of Analysis:	11/21/13 09:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.6	Not Detected
Ethyl Benzene	1.4	Not Detected	6.2	Not Detected
m,p-Xylene	1.4	1.4	6.2	6.2
o-Xylene	1.4	Not Detected	6.2	Not Detected
Styrene	1.4	Not Detected	6.1	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.1	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.9	Not Detected
Propylbenzene	1.4	Not Detected	7.1	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.1	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.1	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.4	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
1,2,4-Trichlorobenzene	5.8	Not Detected	43	Not Detected
Hexachlorobutadiene	5.8	Not Detected	61	Not Detected
Naphthalene	5.8	Not Detected	30	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	87	70-130
4-Bromofluorobenzene	107	70-130

Client Sample ID: Lab Blank

Lab ID#: 1311157A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112006	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 09:13 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1311157A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112006	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 09:13 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: Lab Blank

Lab ID#: 1311157A-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112106	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 08:29 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1311157A-05B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112106	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 08:29 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,1,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	85	70-130
4-Bromofluorobenzene	108	70-130

Client Sample ID: CCV

Lab ID#: 1311157A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 05:55 PM

Compound	%Recovery
Freon 12	116
Freon 114	114
Chloromethane	102
Vinyl Chloride	112
1,3-Butadiene	100
Bromomethane	115
Chloroethane	110
Freon 11	113
Ethanol	86
Freon 113	113
1,1-Dichloroethene	106
Acetone	104
2-Propanol	84
Carbon Disulfide	109
3-Chloropropene	99
Methylene Chloride	98
Methyl tert-butyl ether	92
trans-1,2-Dichloroethene	105
Hexane	94
1,1-Dichloroethane	104
2-Butanone (Methyl Ethyl Ketone)	106
cis-1,2-Dichloroethene	104
Tetrahydrofuran	92
Chloroform	104
1,1,1-Trichloroethane	104
Cyclohexane	103
Carbon Tetrachloride	112
2,2,4-Trimethylpentane	100
Benzene	116
1,2-Dichloroethane	109
Heptane	112
Trichloroethene	109
1,2-Dichloropropane	113
1,4-Dioxane	109
Bromodichloromethane	109
cis-1,3-Dichloropropene	110
4-Methyl-2-pentanone	99
Toluene	109
trans-1,3-Dichloropropene	96
1,1,2-Trichloroethane	100
Tetrachloroethene	109
2-Hexanone	81

Client Sample ID: CCV

Lab ID#: 1311157A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112002	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 05:55 PM

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	102
Chlorobenzene	100
Ethyl Benzene	104
m,p-Xylene	102
o-Xylene	102
Styrene	102
Bromoform	112
Cumene	101
1,1,2,2-Tetrachloroethane	104
Propylbenzene	101
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	108
1,2,4-Trimethylbenzene	109
1,3-Dichlorobenzene	110
1,4-Dichlorobenzene	109
alpha-Chlorotoluene	92
1,2-Dichlorobenzene	107
1,2,4-Trichlorobenzene	109
Hexachlorobutadiene	122
Naphthalene	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	111	70-130

Client Sample ID: CCV

Lab ID#: 1311157A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 05:59 PM

Compound	%Recovery
Freon 12	109
Freon 114	109
Chloromethane	94
Vinyl Chloride	107
1,3-Butadiene	94
Bromomethane	107
Chloroethane	106
Freon 11	105
Ethanol	78
Freon 113	106
1,1-Dichloroethene	100
Acetone	95
2-Propanol	79
Carbon Disulfide	104
3-Chloropropene	95
Methylene Chloride	93
Methyl tert-butyl ether	85
trans-1,2-Dichloroethene	101
Hexane	90
1,1-Dichloroethane	100
2-Butanone (Methyl Ethyl Ketone)	104
cis-1,2-Dichloroethene	98
Tetrahydrofuran	88
Chloroform	98
1,1,1-Trichloroethane	98
Cyclohexane	97
Carbon Tetrachloride	105
2,2,4-Trimethylpentane	94
Benzene	116
1,2-Dichloroethane	107
Heptane	109
Trichloroethene	108
1,2-Dichloropropane	111
1,4-Dioxane	111
Bromodichloromethane	108
cis-1,3-Dichloropropene	108
4-Methyl-2-pentanone	96
Toluene	109
trans-1,3-Dichloropropene	92
1,1,2-Trichloroethane	98
Tetrachloroethene	108
2-Hexanone	81

Client Sample ID: CCV

Lab ID#: 1311157A-06B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112102	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 05:59 PM

Compound	%Recovery
Dibromochloromethane	98
1,2-Dibromoethane (EDB)	101
Chlorobenzene	99
Ethyl Benzene	103
m,p-Xylene	102
o-Xylene	100
Styrene	101
Bromoform	109
Cumene	100
1,1,2,2-Tetrachloroethane	104
Propylbenzene	100
4-Ethyltoluene	108
1,3,5-Trimethylbenzene	107
1,2,4-Trimethylbenzene	109
1,3-Dichlorobenzene	108
1,4-Dichlorobenzene	108
alpha-Chlorotoluene	91
1,2-Dichlorobenzene	107
1,2,4-Trichlorobenzene	108
Hexachlorobutadiene	122
Naphthalene	96

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	86	70-130
4-Bromofluorobenzene	111	70-130

Client Sample ID: LCS

Lab ID#: 1311157A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 06:37 PM

Compound	%Recovery	Method Limits
Freon 12	118	70-130
Freon 114	118	70-130
Chloromethane	109	70-130
Vinyl Chloride	117	70-130
1,3-Butadiene	106	70-130
Bromomethane	120	70-130
Chloroethane	119	70-130
Freon 11	115	70-130
Ethanol	85	70-130
Freon 113	129	70-130
1,1-Dichloroethene	125	70-130
Acetone	102	70-130
2-Propanol	87	70-130
Carbon Disulfide	118	70-130
3-Chloropropene	110	70-130
Methylene Chloride	110	70-130
Methyl tert-butyl ether	95	70-130
trans-1,2-Dichloroethene	115	70-130
Hexane	101	70-130
1,1-Dichloroethane	111	70-130
2-Butanone (Methyl Ethyl Ketone)	114	70-130
cis-1,2-Dichloroethene	112	70-130
Tetrahydrofuran	95	70-130
Chloroform	107	70-130
1,1,1-Trichloroethane	106	70-130
Cyclohexane	109	70-130
Carbon Tetrachloride	113	70-130
2,2,4-Trimethylpentane	107	70-130
Benzene	122	70-130
1,2-Dichloroethane	111	70-130
Heptane	116	70-130
Trichloroethene	111	70-130
1,2-Dichloropropane	116	70-130
1,4-Dioxane	122	70-130
Bromodichloromethane	116	70-130
cis-1,3-Dichloropropene	111	70-130
4-Methyl-2-pentanone	104	70-130
Toluene	109	70-130
trans-1,3-Dichloropropene	93	70-130
1,1,2-Trichloroethane	101	70-130
Tetrachloroethene	110	70-130
2-Hexanone	89	70-130

Client Sample ID: LCS

Lab ID#: 1311157A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112003	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 06:37 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	105	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	104	70-130
m,p-Xylene	104	70-130
o-Xylene	101	70-130
Styrene	103	70-130
Bromoform	117	70-130
Cumene	103	70-130
1,1,2,2-Tetrachloroethane	104	70-130
Propylbenzene	103	70-130
4-Ethyltoluene	113	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	106	70-130
1,3-Dichlorobenzene	109	70-130
1,4-Dichlorobenzene	106	70-130
alpha-Chlorotoluene	96	70-130
1,2-Dichlorobenzene	107	70-130
1,2,4-Trichlorobenzene	103	70-130
Hexachlorobutadiene	114	70-130
Naphthalene	59 Q	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	112	70-130

Client Sample ID: LCS D

Lab ID#: 1311157A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 06:55 PM

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	114	70-130
Chloromethane	102	70-130
Vinyl Chloride	113	70-130
1,3-Butadiene	100	70-130
Bromomethane	113	70-130
Chloroethane	110	70-130
Freon 11	108	70-130
Ethanol	82	70-130
Freon 113	123	70-130
1,1-Dichloroethene	118	70-130
Acetone	96	70-130
2-Propanol	84	70-130
Carbon Disulfide	114	70-130
3-Chloropropene	106	70-130
Methylene Chloride	105	70-130
Methyl tert-butyl ether	91	70-130
trans-1,2-Dichloroethene	109	70-130
Hexane	94	70-130
1,1-Dichloroethane	104	70-130
2-Butanone (Methyl Ethyl Ketone)	106	70-130
cis-1,2-Dichloroethene	105	70-130
Tetrahydrofuran	89	70-130
Chloroform	103	70-130
1,1,1-Trichloroethane	102	70-130
Cyclohexane	105	70-130
Carbon Tetrachloride	108	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	119	70-130
1,2-Dichloroethane	109	70-130
Heptane	114	70-130
Trichloroethene	111	70-130
1,2-Dichloropropane	112	70-130
1,4-Dioxane	115	70-130
Bromodichloromethane	113	70-130
cis-1,3-Dichloropropene	108	70-130
4-Methyl-2-pentanone	101	70-130
Toluene	109	70-130
trans-1,3-Dichloropropene	91	70-130
1,1,2-Trichloroethane	100	70-130
Tetrachloroethene	108	70-130
2-Hexanone	88	70-130

Client Sample ID: LCSD

Lab ID#: 1311157A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112004	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/20/13 06:55 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	104	70-130
1,2-Dibromoethane (EDB)	103	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	104	70-130
o-Xylene	102	70-130
Styrene	102	70-130
Bromoform	114	70-130
Cumene	103	70-130
1,1,2,2-Tetrachloroethane	102	70-130
Propylbenzene	103	70-130
4-Ethyltoluene	114	70-130
1,3,5-Trimethylbenzene	107	70-130
1,2,4-Trimethylbenzene	106	70-130
1,3-Dichlorobenzene	108	70-130
1,4-Dichlorobenzene	105	70-130
alpha-Chlorotoluene	96	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	106	70-130
Hexachlorobutadiene	117	70-130
Naphthalene	59 Q	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	86	70-130
4-Bromofluorobenzene	112	70-130

Client Sample ID: LCS

Lab ID#: 1311157A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 06:44 PM

Compound	%Recovery	Method Limits
Freon 12	112	70-130
Freon 114	115	70-130
Chloromethane	103	70-130
Vinyl Chloride	113	70-130
1,3-Butadiene	103	70-130
Bromomethane	110	70-130
Chloroethane	112	70-130
Freon 11	108	70-130
Ethanol	84	70-130
Freon 113	124	70-130
1,1-Dichloroethene	120	70-130
Acetone	96	70-130
2-Propanol	83	70-130
Carbon Disulfide	114	70-130
3-Chloropropene	104	70-130
Methylene Chloride	104	70-130
Methyl tert-butyl ether	91	70-130
trans-1,2-Dichloroethene	110	70-130
Hexane	95	70-130
1,1-Dichloroethane	105	70-130
2-Butanone (Methyl Ethyl Ketone)	104	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	91	70-130
Chloroform	102	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	107	70-130
Carbon Tetrachloride	107	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	118	70-130
1,2-Dichloroethane	107	70-130
Heptane	112	70-130
Trichloroethene	108	70-130
1,2-Dichloropropane	112	70-130
1,4-Dioxane	132 Q	70-130
Bromodichloromethane	112	70-130
cis-1,3-Dichloropropene	106	70-130
4-Methyl-2-pentanone	102	70-130
Toluene	107	70-130
trans-1,3-Dichloropropene	88	70-130
1,1,2-Trichloroethane	98	70-130
Tetrachloroethene	108	70-130
2-Hexanone	90	70-130

Client Sample ID: LCS

Lab ID#: 1311157A-07B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 06:44 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	101	70-130
1,2-Dibromoethane (EDB)	101	70-130
Chlorobenzene	97	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	101	70-130
o-Xylene	100	70-130
Styrene	100	70-130
Bromoform	112	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	100	70-130
Propylbenzene	101	70-130
4-Ethyltoluene	109	70-130
1,3,5-Trimethylbenzene	106	70-130
1,2,4-Trimethylbenzene	105	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	93	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	102	70-130
Hexachlorobutadiene	110	70-130
Naphthalene	57 Q	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	87	70-130
4-Bromofluorobenzene	110	70-130

Client Sample ID: LCSD

Lab ID#: 1311157A-07BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 07:02 PM

Compound	%Recovery	Method Limits
Freon 12	108	70-130
Freon 114	110	70-130
Chloromethane	102	70-130
Vinyl Chloride	111	70-130
1,3-Butadiene	101	70-130
Bromomethane	109	70-130
Chloroethane	110	70-130
Freon 11	105	70-130
Ethanol	85	70-130
Freon 113	121	70-130
1,1-Dichloroethene	115	70-130
Acetone	94	70-130
2-Propanol	82	70-130
Carbon Disulfide	111	70-130
3-Chloropropene	104	70-130
Methylene Chloride	100	70-130
Methyl tert-butyl ether	88	70-130
trans-1,2-Dichloroethene	106	70-130
Hexane	96	70-130
1,1-Dichloroethane	102	70-130
2-Butanone (Methyl Ethyl Ketone)	105	70-130
cis-1,2-Dichloroethene	106	70-130
Tetrahydrofuran	90	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	98	70-130
Cyclohexane	103	70-130
Carbon Tetrachloride	106	70-130
2,2,4-Trimethylpentane	103	70-130
Benzene	119	70-130
1,2-Dichloroethane	106	70-130
Heptane	114	70-130
Trichloroethene	110	70-130
1,2-Dichloropropane	113	70-130
1,4-Dioxane	116	70-130
Bromodichloromethane	112	70-130
cis-1,3-Dichloropropene	108	70-130
4-Methyl-2-pentanone	101	70-130
Toluene	109	70-130
trans-1,3-Dichloropropene	87	70-130
1,1,2-Trichloroethane	96	70-130
Tetrachloroethene	104	70-130
2-Hexanone	86	70-130

Client Sample ID: LCSD

Lab ID#: 1311157A-07BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3112104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 11/21/13 07:02 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	100	70-130
1,2-Dibromoethane (EDB)	99	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
Styrene	99	70-130
Bromoform	110	70-130
Cumene	99	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Propylbenzene	100	70-130
4-Ethyltoluene	109	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	91	70-130
1,2-Dichlorobenzene	102	70-130
1,2,4-Trichlorobenzene	104	70-130
Hexachlorobutadiene	112	70-130
Naphthalene	57 Q	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130
1,2-Dichloroethane-d4	82	70-130
4-Bromofluorobenzene	112	70-130



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ATTACHMENT J

Cairns Villa Caravan Park - Final Confirmation of Area Impacted by Chlorinated Solvents,
Golder Associates Pty Ltd, Ref. No. 087673045-056-R-Rev1, dated 6 June 2014.

Published on Resources Disclosure Log
RTI Act 2009



6 June 2014

Cairns Villa Caravan Park - Final Confirmation of Area Impacted by Chlorinated Solvents

Submitted to:

Mr sch4p4(6) Person
32-36 Pease Street
Manunda QLD 4883

REPORT



22-095

Report Number. 087673045-056-R-Rev1

Distribution:

1 Electronic Copy Mr sch4p4(6) Person
1 Electronic Copy Contaminated Land Auditor

File B



Page 247 of 406



Table of Contents

1.0 INTRODUCTION	1
2.0 BACKGROUND	1
3.0 REMEDIATION CRITERIA	3
4.0 PUMPING REGIME	3
4.1 Pumping Locations	3
4.2 Pumping Monitoring	4
5.0 GROUNDWATER MONITORING	6
5.1 Scope	6
5.2 Sampling Methodology	6
5.3 Investigation Data QA/QC	6
5.4 QA/QC Results	6
5.5 Groundwater Well Results	7
5.6 Discussion of Groundwater Results	9
6.0 SOIL VAPOUR ASSESSMENT	9
6.1 Scope	9
6.2 Sampling Methodology	9
6.3 Investigation Data QA/QC	10
6.4 QA/QC Results	10
6.5 Soil Vapour Well Results	10
6.6 Discussion of Soil Vapour Results	11
7.0 REVIEW OF ALL BOUNDARY RESULTS	11
8.0 CONCLUSIONS AND RECOMMENDATIONS	12
9.0 LIMITATIONS	12



FIGURES

- Figure 1 – General Layout
- Figure 2 – Investigation and Remedial Pumping Locations
- Figure 3 – Originally Identified Area of Impact 2012
- Figure 4 – Amended Area of Impact 2013
- Figure 5 – Groundwater Levels December 2013

APPENDICES

APPENDIX A

Proposed Subdivision Plan

APPENDIX B

Groundwater Monitoring Reports December 2013 to April 2014

APPENDIX C

Laboratory Certificates – Groundwater Monitoring May 2014

APPENDIX D

Groundwater Monitoring QA/QC Summary Results

APPENDIX E

Summary of All Groundwater and Soil Vapour Results

APPENDIX F

Laboratory Certificates – Soil Vapour Samples May 2014

APPENDIX G

Limitations

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1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) was commissioned by Mr [sch4p4(6) Personal] to conduct monitoring and sampling at the Cairns Villa Caravan Park, Pease St, Manunda (Site). The aim of the monitoring and sampling works was to confirm the boundaries of the area of chlorinated solvent impact on the caravan park site. The overall objective of this report is to demonstrate that the clean area of the caravan park can be removed from the Environmental Management Register (EMR) once the contaminated area is subdivided from the clean areas into two new lot numbers.

This report describes the works conducted and the findings of the assessment.

2.0 BACKGROUND

A former dry cleaners site (Lot 1 on RP745758) owned by Mr [sch4p4(6) P] is situated adjacent to the Cairns Villa Caravan Park (Lot 1 on 742725), see Figure 1. The caravan park site has been the subject of a number of various investigations since the owners of the caravan park site identified the presence of chlorinated solvents in groundwater samples collected from their site in 2007.

The primary contaminants of concern (COCs) at the caravan park site are Tetrachloroethene (PCE) and its breakdown products – Trichloroethylene (TCE) and cis-1,2-dichloroethene (cis DCE). No free phase product has been observed in groundwater samples collected from the caravan park site during previous investigations or subsequent groundwater monitoring events.

Golder Report 087673045-007-Rev1 (July 2009) provides a summary of investigations prior to commencement of remedial works. Remedial works have been carried out on the caravan park site since late 2009.

The remediation works comprised groundwater extraction using bottom loading pumps in wells MW4KK (within the former dry cleaner site), MW11CP, MW12CP and MW5CP (see Figure 2). A product recovery trench was also installed in October 2010 along part of the eastern boundary of the former dry cleaner site (see Figure 2) to extract impacted groundwater and to mitigate movement of impacted groundwater between the sites. Extracted groundwater was disposed of to sewer under the dry cleaner site trade waste permit.

Golder prepared a Site Conceptual Model and Qualitative Risk Assessment report (0867673045-021-R-Rev0 in October 2011) aimed at identifying acceptable remediation criteria to allow removal of the caravan park site from the EMR. This report proposed the use of soil vapour concentrations as the basis of assessing suitability for future unrestricted site use. This assessment method and the agreed remediation criteria were accepted by the Third Party Reviewer (TPR) at that time.

The results of a Delineation Investigation undertaken by Golder are presented in report 087673045-033-R-Rev0 dated 20 August 2012. This Delineation Investigation comprised the utilisation of a Membrane Interface Probe (MIP) at 29 locations to provide real-time data to assist in the evaluation of the extent of chlorinated solvent impact. The MIP data was correlated against both groundwater sample concentrations and soil vapour concentrations from existing wells. The resulting interpreted extent of contamination of concern is marked on Figure 3. This interpreted area was “squared” and aligned against existing property boundaries, where possible, to simplify possible subdivision of this area from the remainder of the caravan park site.

The caravan park owner and Mr [sch4p4(6) P] subsequently entered into an agreement to subdivide the caravan park property, with Mr [sch4p4(6) P] purchasing the impacted area and the balance of the caravan park to be removed from the Environmental Management Register (EMR).

Following review of the Delineation Investigation report, the TPR responded that the Department of Environment and Heritage Protection (EHP) had concerns with the previously agreed remediation criteria and that subsequently the TPR’s risk assessment expert calculated lower criteria based on toxicity data published by the USEPA Integrated Risk Information System (IRIS). Golder subsequently reviewed the rationale and calculations utilised by the TPR’s risk assessment expert and agreed with the resulting amended remediation criteria outlined below. These amended remediation criteria were considered suitable to allow the most sensitive land use (standard residential).



Parameter	Amended Remediation Criteria ($\mu\text{g}/\text{m}^3$)
Trichloroethylene (TCE)	100
Tetrachloroethylene (PCE)	2,000

Further to the above, the TPR requested that confirmation soil gas wells be constructed on the proposed northern and southern boundaries of the subdivision to confirm that the amended remediation criteria was achieved prior to finalisation of these boundaries (the eastern boundary had been previously well defined by the results of investigations and monitoring). The results of subsequent investigations are described in Golder Report 087673045-040-Rev0 (10 April 2013) and resulted in an increase in the area of impact to the south. The defined area of impact, including additional buffers requested by the TPR are shown on Figure 4 and the resulting proposed subdivision is presented in Appendix A.

Progress on the proposed subdivision was halted in late April 2013, following the discovery of blocked and broken sewer pipes being used for the disposal of impacted groundwater. The sewer failure and potential impacts to groundwater were described in Golder Report 087673045-041-R-Rev0 (14 June 2013). It was concluded that the groundwater monitoring results collected since the commencement of groundwater extraction (and disposal via the sewer) were consistent with 'looping' of collected impacted groundwater discharging from sewer pipeline failures. Looping of collected impacted groundwater was also believed to explain the lack of progress by the extraction system to remove impacted groundwater on the caravan park site. Groundwater extraction and disposal to sewer was ceased whilst sewer repairs were conducted.

The proposed subdivision of the impacted portion of the caravan park site was recommenced in late August 2013. At this time, the TPR requested a status check of current groundwater conditions along the proposed boundaries prior to finalising submissions to EHP. The results of this groundwater sampling and analysis are presented in Golder letter 087673045-045-L-Rev0 (14 October 2013). Some increase in groundwater contaminant concentrations were noted at MW16CP and MW17CP. In order to address the uncertainty associated with these results and to confirm subdivision boundary locations that report recommended that:

- A bottom loading pump be installed at MW14CP to collect impacted water detected at this previously identified "hotspot" and intercept possible migration of impact groundwater.
- Soil gas sampling and analysis be conducted from SVW16 and SVW17 (located adjacent to MW16CP and MW17CP, respectively) to confirm that the concentrations of PCE and TCE at these locations.

Soil gas sampling was conducted on 6 November 2013 and the results are presented in Golder letter 087673045-048-L-Rev0 (25 November 2013). The results indicated soil gas concentrations exceeding the amended remediation criteria at both SVW16 and SVW17. These results suggested that the area of impact may have increased as a result of remedial pumping interruptions associated with sewer repairs and that the proposed subdivision boundary would need to be re-delineated and amended.

A meeting was held on 29 November 2013 between Golder, Mr s.73 Irrelevant, the caravan park owner and the TPR to discuss the above results. As a result of the meeting, it was agreed that:

- Re-delineation of the subdivision boundary was not desirable.
- A plan was required to ensure that the area along the currently proposed subdivision boundary is clear of chlorinated solvent impact.
- The plan would comprise a revised and monitored pumping regime, monthly monitoring of groundwater quality for a period of time and a final soil vapour assessment of soil vapour wells on the proposed southern subdivision boundary (i.e. SVW16 and SVW17).

This report describes and documents the implementation and findings of the agreed works.



3.0 REMEDIATION CRITERIA

Since agreement on the amended remediation criteria for this site, the National Environment Protection (Assessment of Site Contamination) Measure 1999 was amended in May 2013 (NEPM). The amended NEPM contains interim soil vapour health investigation levels (HILs) for volatile organic chlorinated compounds (including the contaminants of concern) for various land settings.

The NEPM provided the following key guidance in relation to HILs:

- The interim HILs provide Tier 1 guidance for health risks from soil contamination sources and groundwater plumes associated with this group of compounds.
- HILs are intentionally conservative.
- HILs are not intended to be clean-up levels.
- HIL exceedences do not imply that a risk is necessarily present but that further assessment may be justified. HILs are not intended to indicate a clear demarcation between acceptable and unacceptable. Marginal exceedences may not require quantitative Tier 2 risk assessment to conclude that further assessment is not necessary.
- In cases of minor exceedence of investigation or screening levels, a qualitative risk assessment may be sufficient to evaluate the potential impact.

In consideration of the above, the results of the current soil vapour sampling have been compared against the NEPM interim HIL (listed below). However, the previously adopted amended remediation criteria were still considered to be the appropriate health-based criteria to be used for determining the suitability of proposed boundary of impacted land to be excised from the caravan park property.

Parameter	Amended Remediation Criteria (µg/m ³)	NEPM Interim Health Investigation Level (µg/m ³)
Trichloroethylene (TCE)	100	20
Tetrachloroethylene (PCE)	2,000	2000

4.0 PUMPING REGIME

4.1 Pumping Locations

Figure 2 shows the location of monitoring well and sump pumping locations at both the caravan park and adjacent former dry cleaner site. A summary of the pumping locations is provided below:

- MW4KK – A bottom loading air powered pump was installed in October 2009 and has remained in place.
- MW11CP - A bottom loading air powered pump was installed in June 2010 and has remained in place.
- MW12CP - A bottom loading air powered pump was installed in June 2010 and has remained in place.
- MW5CP – A bottom loading air powered pump was installed in June 2010.
 - In October 2013 this pump was removed and installed into MW14CP.
 - In April 2014 a new pump was installed into MW5CP.
- MW14CP – A bottom loading air powered pump was installed in October 2013.
- Product recovery trench – An electric sump pump was installed in October 2010 and has remained in place.



Groundwater levels were measured in December 2013 (see Figure 5) to evaluate the need for additional pumping locations. The groundwater levels were generally about 0.5m lower than previous measurements undertaken in April 2013 but provided very similar indications of a relatively flat hydraulic gradient with flow at the southern end of the site generally in a south to south easterly direction. Following review of this information and groundwater contaminant concentrations it was concluded that MW17CP should not be equipped with a pump (as this may change contaminant migration towards the nominated southern boundary) and that MC20CP should be equipped as an alternative.

- MW20CP – A bottom loading air powered pump was purchased by Mr [sch4p4(6) P] and installed (by Golder) in early April 2014.

4.2 Pumping Monitoring

Pumps have been repaired and replaced at various locations since their original installation (apart from recently installed pumps at MW14CP and MW20CP). Mr [sch4p4(6) P] retains responsibility for the maintenance and operation of the pumping system. Breakages, vandalism and equipment failure had previously prevented continuous and effective operation of the pumping system. To address this issue, it was agreed in late November 2013 that more regular and rigorous monitoring of the system would be conducted. The revised monitoring regime is summarised below:

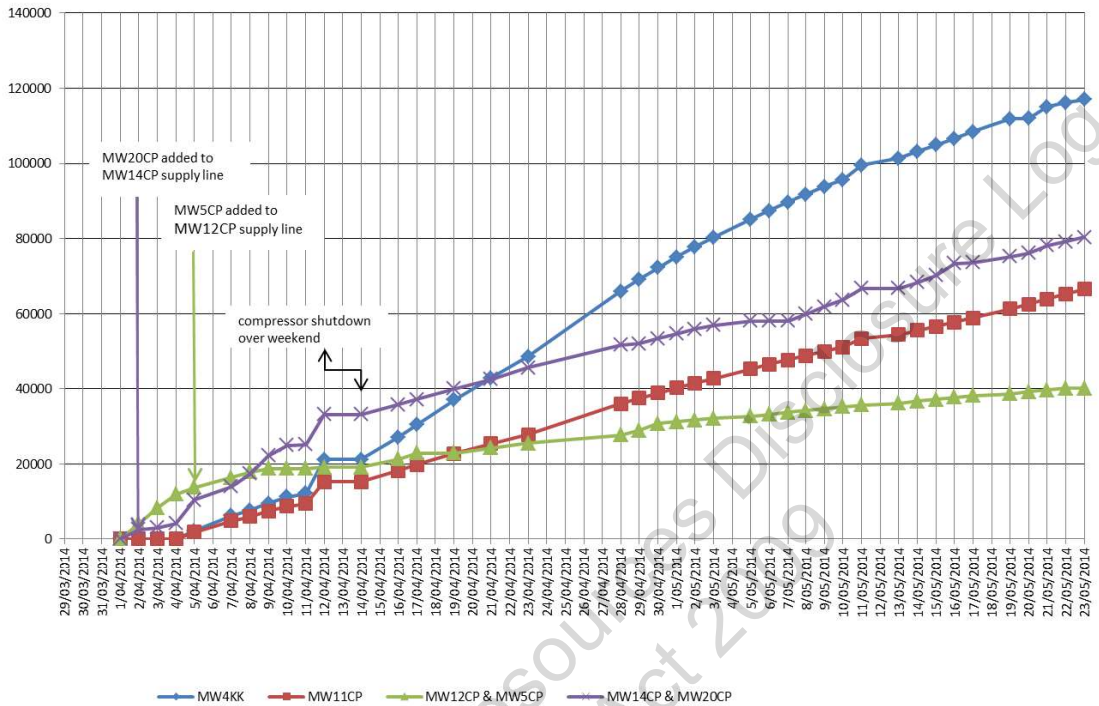
- A complete check of the pumping system operation and equipment was conducted by Golder in December 2013. Repairs including replacement of tubing to MW12CP (line found to be perished and leaking air) were conducted at this time and the system was confirmed to be fully operational on 18 December 2013.
- During monthly groundwater sampling, Golder personnel conducted a check of the pumps to confirm that they were operating and conducted maintenance to remove silt and other obstructions, where required.
- From December 2013 to March 2014, daily checks of the compressor operation were conducted by Mr [sch4p4(6) P] lessee at the former dry cleaner site (the records kept by the lessee were diary entries confirm the compressor was checked. Any issues, repairs or maintenance conducted by the lease were not recorded). When a new pump was installed by Golder at MW20CP in early April 2014, it was found that pumps in MW11CP and MW4KK were not pumping and that the air compressor appeared to be overloaded. Repairs were immediately conducted by Golder to recommence pumping again from these locations and Mr [sch4p4(6) P] was informed of the air compressor issue. A new larger compressor was subsequently ordered and installed by Mr [sch4p4(6) P]. Before the new compressor could be installed the existing air compressor was overloaded and stopped on Saturday 12 April 2014 and could not be repaired until Monday 14 April 2014.
- As a result of the issues noted in early April, the routine of monitoring and checks was amended to comprise:
 - Recording pump counter and sewer discharge meter readings every day (former dry cleaning site leasee)
 - Recording that air compressor was operational and any issues or repairs (former dry cleaning site leasee).
 - Providing the above information to Golder on a daily basis to allow issues with specific pumps to be identified and dealt with (former dry cleaning site leasee).
 - Independent check of the system on a minimum weekly basis (Golder). The operation of each pump, air lines and delivery lines were checked and minor maintenance was conducted (as required) to ensure the pumping system remained effective.



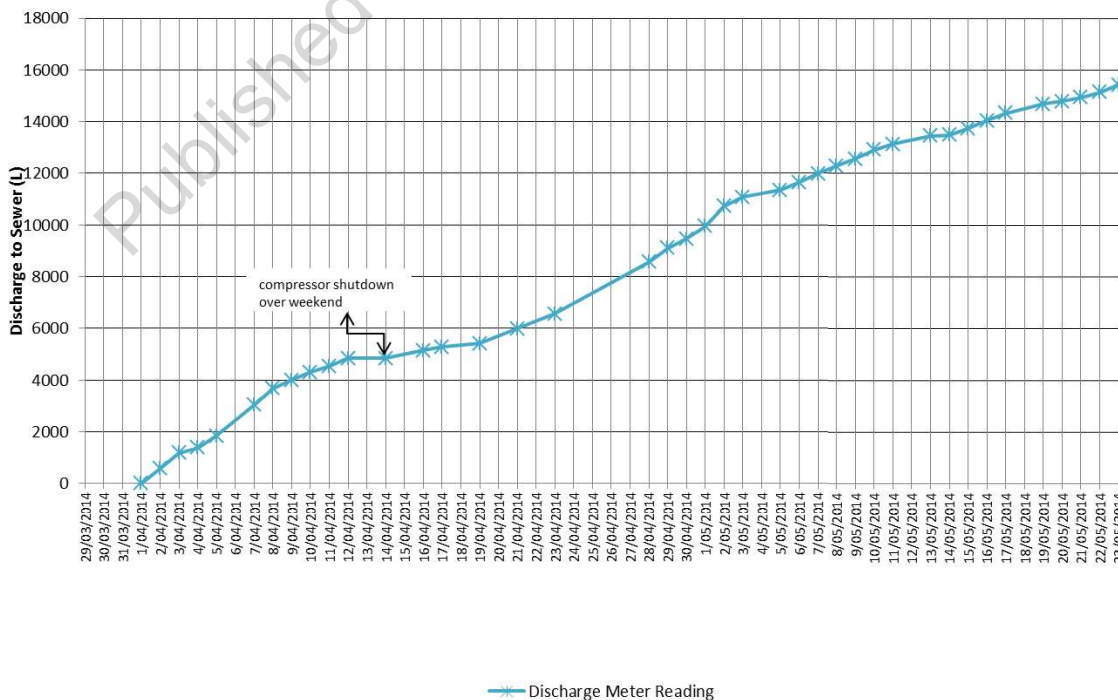
CAIRNS VILLA CARAVAN PARK

A summary of the pump counter readings and sewer discharge meter readings from April 2014 are provided below. The monitoring conducted between December 2013 and May 2014 demonstrates that, apart from minor shutdowns for repairs, the system has remained operational and pumping has been consistent.

Pumping System - Counter Readings (cumulative)



Pumping System - Flow Meter Discharge to Sewer (cumulative)





5.0 GROUNDWATER MONITORING

5.1 Scope

A groundwater sampling and analysis event was carried out on 19 December 2013 at groundwater wells MW1CP, MW3CP, MW4CP, MW5CP, MW12CP, MW13CP, MW15CP, MW16CP, MW17CP, MW18CP, MW19CP and MW20CP. The aim of this initial event was to provide an indication of groundwater contaminant levels at this time across the caravan park site.

Monthly groundwater sampling and analysis events were then carried out on groundwater wells MW1CP, MW15CP, MW16CP and MW17CP. The aim of this monitoring was to provide an indication of improvement in groundwater quality and to guide the timing of soil vapour testing along the proposed southern boundary.

The results of monitoring events from December 2013 to April 2014 (including laboratory certificates) were reported in each month. Copies of the monthly summary reports are presented in Appendix B.

The laboratory certificates for the May 2014 sampling event are presented in Appendix C.

5.2 Sampling Methodology

Groundwater sampling was conducted by an experienced environmental scientist.

For each groundwater sampling event, monitoring wells were gauged and purged and allowed to stabilise before sampling was conducted on the following day.

The wells were sampled using bottom loading (Double Check Valve) disposable bailers. Each well was sampled using a new disposable bailer to ensure no cross contamination between sample locations. The samples were transferred into NATA accredited laboratory supplied sample containers and packed into an esky for transport to the laboratory (SGS).

5.3 Investigation Data QA/QC

In order to meet data quality assurance/quality control (QA/QC) Objectives, the groundwater sample events were carried out in general accordance with standard Golder technical procedures and comprised generally:

- Recording all field data directly onto relevant standard internal Golder forms;
- Use of clean and well maintained length and location measurement equipment;
- Documented calibration of all field parameter measurement equipment;
- Standard decontamination of all non-dedicated sampling equipment prior to and between sampling events (where relevant);
- Use of laboratory supplied and prepared sample containers appropriate for particular analytes;
- Immediate placement and storage of collected samples into ice/brick-cooled containers on-site prior to storage at the site-designated refrigerators or dispatch to the laboratory in accordance with the project programme

A laboratory duplicate sample was also carried out as part of this sampling exercise.

5.4 QA/QC Results

The QA/QC results for each groundwater monitoring event are presented in Appendix D.

These results confirm that the analytical data is of acceptable quality and suitable for use in this assessment.



5.5 Groundwater Well Results

The results of the December groundwater monitoring round are presented along with a summary of all historical groundwater results in Appendix E.

A summary of the results for the parameters of concern at southern boundary locations from September 2013 to May 2014 are presented in Table 1.

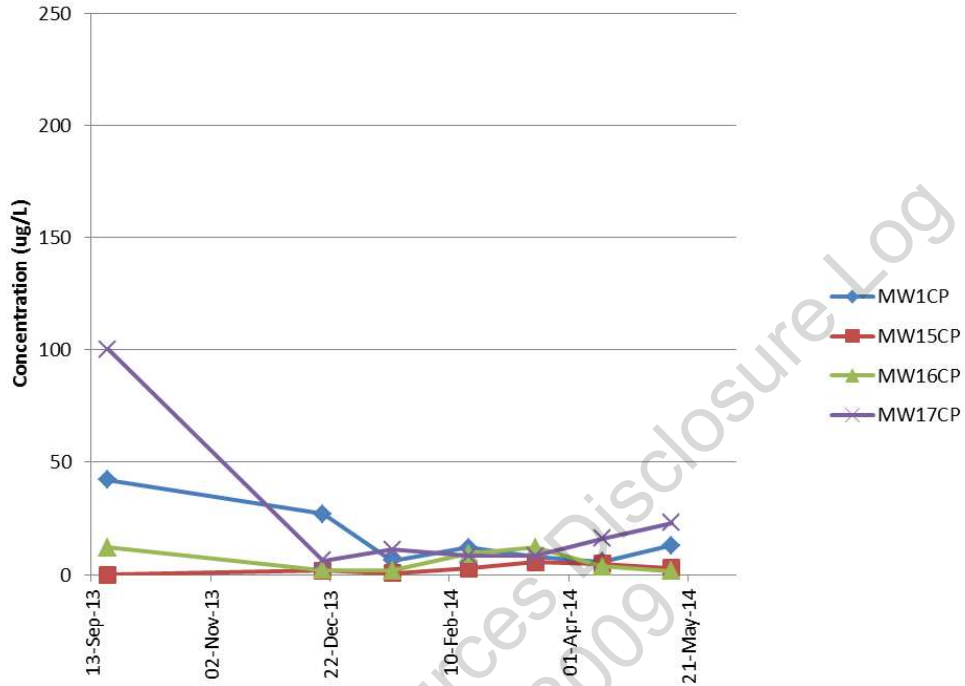
Table 1: September 2013 – April 2014 Groundwater Monitoring Results at Proposed Southern Boundary locations

Monitoring Location	Date	TCE (µg/l)	PCE (µg/l)
MW1CP	September 2013	170	42
	December 2013	120	27
	January 2014	7.2	6.3
	February 2014	10	12
	March 2014	7.0	8.1
	April 2014	2.2	5.7
	May 2014	8.8	13
MW15CP	September 2013	-	-
	December 2013	4.6	1.9
	January 2014	0.8	0.7
	February 2014	4.6	2.8
	March 2014	8.1	5.5
	April 2014	6.9	4.7
	May 2014	8.1	2.9
MW16CP	September 2013	180	12
	December 2013	13	2
	January 2014	8.1	1.7
	February 2014	17	9.3
	March 2014	32	12
	April 2014	23	3.6
	May 2014	30	1.5
MW17CP	September 2013	210	100
	December 2013	21	6.2
	January 2014	23	11
	February 2014	17	8.4
	March 2014	12	8.3
	April 2014	30	16
	May 2014	49	23

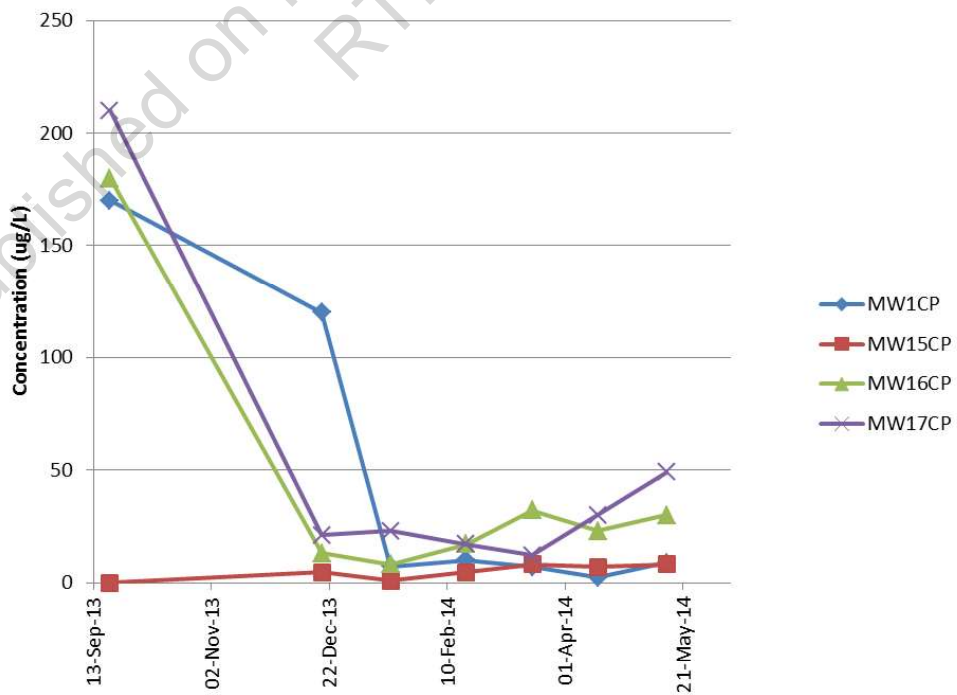
PCE and TCE concentrations since September 2013 are also plotted in the graphs below.



PCE Concentrations in Groundwater



TCE Concentrations in Groundwater





5.6 Discussion of Groundwater Results

Contaminant concentrations in all wells sampled in December 2013 were well below the highest concentrations previously detected at these locations and did not indicate a significant deterioration in groundwater conditions.

The groundwater results and graphs along the proposed southern boundary show a significant and sustained reduction in PCE and TCE concentrations compared to September 2013 results.

A slight increase in TCE and PCE at MW17CP has occurred since the installation of the pumping well at MW20CP and is believed to indicate localised changes as a result of contaminant recovery pumping rather than a deterioration of groundwater conditions in this area. Soil vapour results (discussed in Section 6) also indicate that these groundwater concentrations are not of concern.

6.0 SOIL VAPOUR ASSESSMENT

6.1 Scope

The most recent soil vapour sampling was conducted at gas wells SVW16 and SVW17 located on the proposed southern boundary. The soil vapour monitoring wells were sampled by an experienced Environmental Scientist on 12 May 2014.

6.2 Sampling Methodology

The procedure for sampling VOCs using evacuated canisters, and for the subsequent analysis, is described in USEPA Method TO-15. The method involves the collection of whole air samples in passivated electropolished stainless steel canisters. The VOCs are subsequently separated by gas chromatography (GC), and measured by mass selective (MS) detector or multi-detector techniques.

SUMMA canister sampling was conducted in accordance with Golder Technical Procedure TP13 'Soil Gas Bore Sampling' as outlined below:

- The sampling train consisted of PTFE tubing, a glass impinger (moisture trap), flow controller and a 1 Litre SUMMA canister;
- The soil vapour bore and sampling train (PTFE tubing and glass moisture trap) were purged with a volume equal to three times the total bore and sampling train volume, immediately prior to sample collection;
- Samples were collected in low volume (1 litre) SUMMA canisters to reduce the possibility of atmospheric breakthrough and a false negative result;
- SUMMA canisters were equipped with a flow restricting orifice and a vacuum gauge to enable sampling over a nominal one hour period, again minimising the potential for atmospheric breakthrough; and
- A shroud and tracer gas was used during collection of all primary soil vapour samples.

SUMMA canister sampling was carried out in accordance with Golder Test Method No. C9 "Canister (Evacuated) Sampling for VOC and Reduced Sulphur Compounds: In Ambient Air and Source Emissions".

Sample analysis was conducted by Eurofins Air Toxics Ltd., in accordance with modified USEPA Method TO15. Eurofins Air Toxics Ltd is accredited by NELAP/Florida Department of Health for analyses of VOCs by the described method (Laboratory Accreditation No. E87680). Laboratory certificates of analysis are presented in Appendix F.



6.3 Investigation Data QA/QC

The following QA/QC measures were included in the sampling program:

- Above ground sampling tubing and in-line moisture traps (i.e. impingers) were replaced before sampling each well to prevent cross contamination.
- A field blanks was collected for the sampling event. The field blank was obtained as an ambient air sample recovered from the sampling train prior to soil vapour sample collection to determine possible ambient air and sample train contaminants.
- A replicates sample (at SVW17) was collected for the sampling event to check for repeatability. Replicates are normally collected concurrently with the primary sample using a “T” piece. For the sampling event in May 2014, equipment issues prevented use of the “T” piece and, therefore, the replicate sample was collected immediately following the collection of the primary sample.
- Initial leak tests were conducted on each SUMMA canister prior to collection of sample to ensure that the canisters had not lost vacuum in transit and that flow controllers would not leak during collection of sample.
- Tracer gas (ultra high purity helium) was monitored within a shroud during collection of all primary soil vapour samples to assess the potential for atmospheric breakthrough and a false negative result.
- Chain of custody documentation was completed for all samples collected.

6.4 QA/QC Results

As part of the QA/QC program a replicate sample and a field blank were collected. As part of the analytical run two laboratory blanks were also run.

No detections were found for the parameters analysed within the field blank or either of the laboratory blanks.

Helium testing indicated that the sampling was not compromised from the shroud gas, suggesting that the analytical run provided data which is of acceptable quality for the purposes of this investigation

A number of high RPDs were identified for compounds between the primary sample SVW17 and the field duplicate. The field duplicate did not detect the contaminants of concern. As noted above, due to an equipment failure, the field duplicate could not be taken in conjunction with the primary sample and instead had to be taken after the primary had been collected. This method of sampling could have led to the differences observed for some analytes. This outcome was not considered to affect the overall results.

6.5 Soil Vapour Well Results

The results of the soil vapour samples collected from SVW16 and SVW17 are presented in Table 2 below.

Table 2: Results from Soil Vapour Sampling Round

Sampling Location	Trichloroethylene (TCE) µg/m ³	Tetrachloroethylene (PCE) µg/m ³
SVW16	Not Detected	Not Detected
SVW17	24	430
NEPM Interim HIL	20	2000
Amended Remediation Criteria	100	2000

A summary of all historical soil vapour results in presented in Appendix E



6.6 Discussion of Soil Vapour Results

The soil vapour results at SVW16 and SVW17 confirm PCE and TCE concentrations well below the amended remediation criteria.

We note that the TCE concentration at SVW17 was slightly above the NEPM interim HIL, however, as noted in Section 3, a marginal exceedence of this interim investigation level is not considered to be an issue of concern that would warrant further consideration at this site.

7.0 REVIEW OF ALL BOUNDARY RESULTS

Northern Boundary

Soil vapour results well below the amended remediation criteria (and below the NEPM interim HILs) were confirmed at soil vapour wells (SVW8 and SVW9) on the proposed northern boundary in October 2012 (Golder Report 087673045-040-Rev0, 10 April 2013). Groundwater gauging in April 2013 and December 2013 did not indicate a northward groundwater gradient and therefore the potential for contaminant migration towards this boundary is considered to be negligible.

Sampling of groundwater wells MW3CP and MW4CP in December 2013, near the proposed northern boundary, revealed concentrations of PCE below laboratory detection levels and TCE at concentrations up to 2.9 ug/L.

Given the above results, the proposed northern boundary is considered to be suitable to define the northern extent of the impacted area requiring subdivision from the remainder of the caravan park site.

Eastern Boundary

The eastern boundary was originally defined on the basis of the MIP delineation investigation, consideration of historical groundwater monitoring results and soil vapour results at SVW7 on the proposed eastern boundary (Golder Report 087673045-033-R-Rev0 dated 20 August 2012). The soil vapour results at SVW7 (TCE 12.5 ug/m³ and PCE 490 ug/m³) were well below the amended remediation criteria (and below the NEPM interim HILs) in July 2012. Groundwater gauging in April 2013 and December 2013 indicate some potential for groundwater movement to the south/south east and therefore the potential for contaminant migration towards this boundary is generally considered to be low with the highest risk at the south eastern end of the proposed subdivision area.

Sampling of groundwater wells MW18CP and MW19CP in December 2013, near the proposed eastern boundary at the southern end of the site, revealed concentrations of PCE below laboratory detection levels and TCE at concentrations up to 2.5 ug/L.

Given the above results and the implemented remedial pumping, the proposed eastern boundary is considered to be suitable to define the eastern extent of the impacted area requiring subdivision from the remainder of the caravan park site.

Southern Boundary

The southern boundary was originally defined by the series on groundwater and soil gas investigations (Golder Report 087673045-040-R-Rev0 dated 10 April 2013). Remedial pumping interruptions associated with sewer repairs are believed to have resulted in a deterioration of conditions in this area detected by groundwater and soil vapour results in October and November 2013, respectively (Golder Reports 087673045-045-L-Rev0, 14 October 2013 and 087673045-048-L-Rev0, 25 November 2013). Subsequent pumping and groundwater monitoring since December 2013 has indicated a significant and sustained improvement in groundwater conditions along the southern boundary. The soil vapour results at SVW16 and SVW17 on the proposed southern boundary were well below the amended remediation criteria (and below or close to the NEPM interim HILs) in May 2014.

Given the above results and the implemented remedial pumping, the proposed southern boundary is considered to be suitable to define the eastern extent of the impacted area requiring subdivision from the remainder of the caravan park site.



8.0 CONCLUSIONS AND RECOMMENDATIONS

The studies completed and summarised in this assessment are considered suitable to define the area of chlorinated solvent impact on the existing caravan park property (Lot 1 on RP 742725). This area of impact is contained within the boundaries shown on Figure 4 (and the survey plan in Appendix A). The balance of the existing caravan park site, outside of the area of impact, is defined as proposed Lot 20 (as shown on the survey plan in Appendix A).

The caravan park site (Lot 1 on RP 742725) is understood to have been previously removed from the EMR in 2006 on the basis of site investigations and the removal and validation of an underground fuel tank. The property was again listed on the EMR following the discovery of chlorinated solvents in groundwater samples in 2007. No other notifiable activities have occurred at the property since its original removal in 2006. Therefore the balance of the existing caravan park site (proposed Lot 20) is considered to be suitable for unrestricted use and it is recommended that this allotment be removed from the EMR on its gazettal.

It is further recommended that a Site Management Plan be prepared for the former drycleaner site and the area excised from the caravan park to manage ongoing groundwater and contamination control measures within these sites.

9.0 LIMITATIONS

Your attention is drawn to the document "Limitations", which is included in Appendix G of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

GOLDER ASSOCIATES PTY LTD

sch4p4(6) Personal information

sch4p4(6) Pe

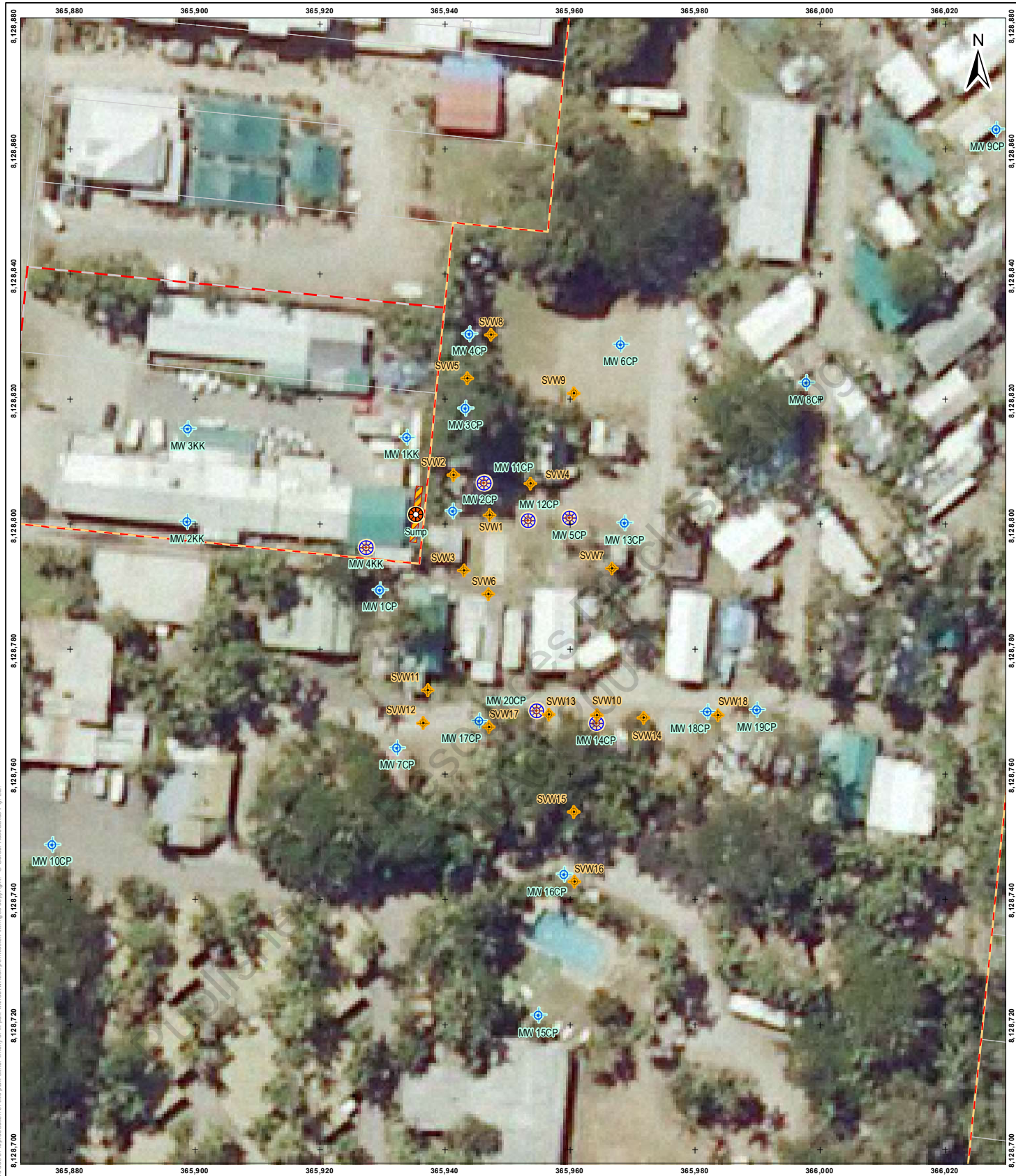
Principal Environmental Engineer

PKS/JSB/ps

A.B.N. 64 006 107 857

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CAIRNS VILLA CARAVAN PARK

MR sch4p4(6) Per

INVESTIGATION AND REMEDIAL PUMPING LOCATIONS

LEGEND

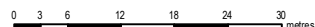
- Soil Gas Wells
 - Extraction Sump
 - Extraction Well
 - Monitoring Well
- Type**
- Extraction Trench
 - CaravanPark
 - Kwikkleen
 - Cadastral Boundary

NOTES

All locations derived via GPS & groundtruthed by Field staff.

COPYRIGHT

1. Base map data copyright Mapinfo Australia Pty Ltd.
2. DCDB copyright The State of Queensland (Department of Natural Resources, Mines and Water) 2011.

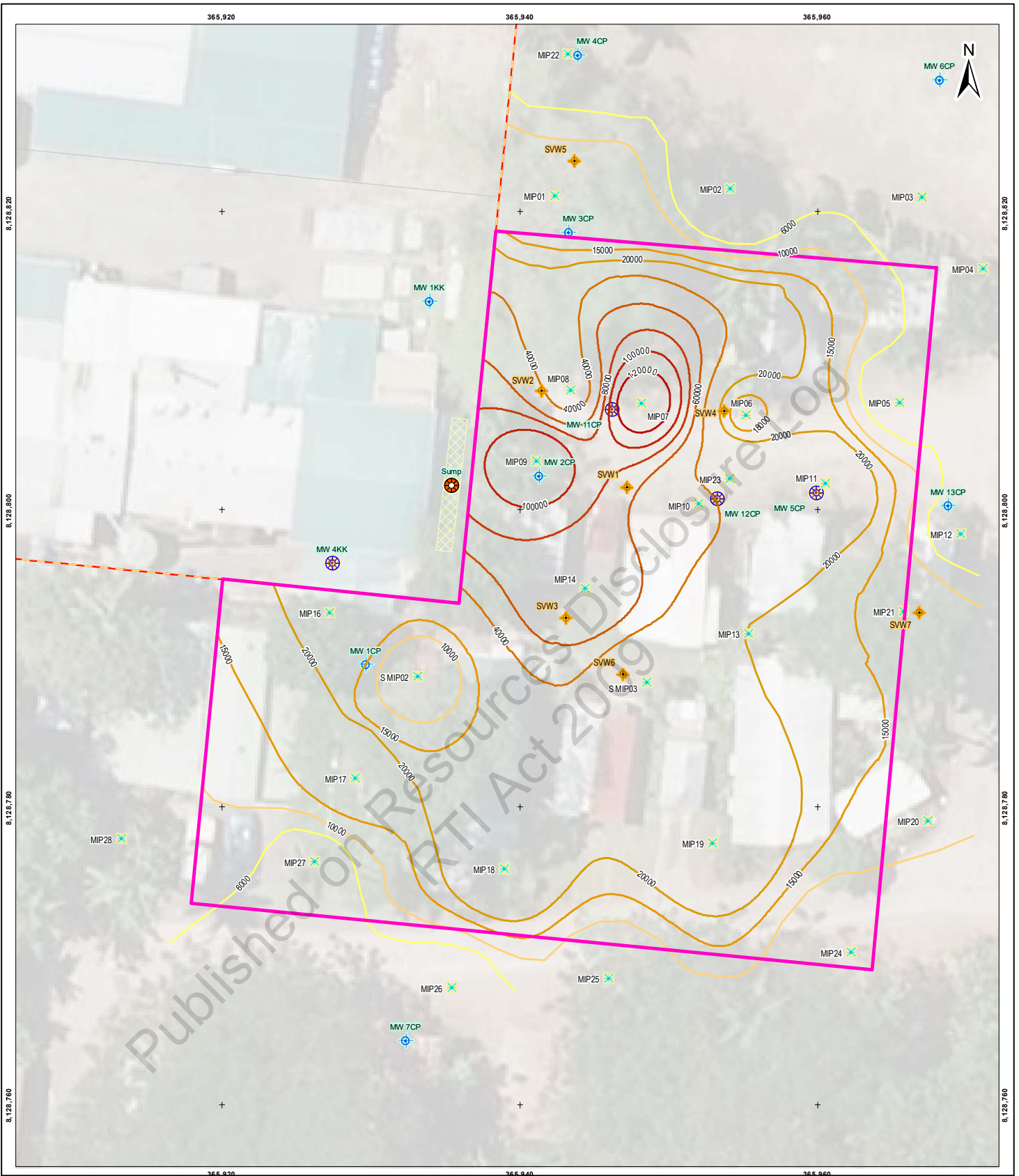


SCALE (at A3) 1:600
DATUM GDA94, PROJECTION MGA Zone 55

PROJECT: 087673045-056
DATE: 30 MAY 2014
DRAWN: SB
CHECKED: PKS

FIGURE 2





CAIRNS VILLA CARAVAN PARK

sch4p4(6) Person

ORIGINALLY IDENTIFIED AREA OF IMPACT 2012



LEGEND

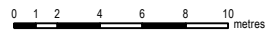
- Soil Gas Wells
- Area of Concern
- MIP Sample Locations
- Extraction Sump
- Extraction Well
- Monitoring Well
- Inferred MIP Contours (µV)

NOTES

All locations derived via GPS & groundtruthed by Field staff.

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SCALE (at A3) 1:250

DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 087673045-056
DATE: 30 may 2014
DRAWN: SB
CHECKED: PKS

FIGURE 3





CAIRNS VILLA CARAVAN PARK

MR sch4p4(6) Pe

AMENDED AREA OF IMPACT 2013

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2. DCDB copyright The State of Queensland (Department of Natural Resources, Mines and Water) 2011.
3. Aerial photography copyright The State of Queensland (Department of Natural Resources, Mines and Water) 2006.



LEGEND

Soil Gas Well Locations

- August Investigation 2012
- October Investigation 2012
- December Investigation 2012
- January Investigation 2013

Monitoring Wells

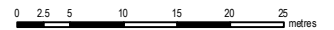
- Extraction Sump
- Extraction Well
- Area to be Exercised
- Extraction Trench

Groundwater Monitoring Wells Locations

- December Investigation 2012
- January Investigation 2013

NOTES

All locations are approximate.



SCALE (at A3) 1:500

DATUM GDA94, PROJECTION MGA Zone 55

PROJECT: 087673045-056-R
 DATE: 30 MAY 2014
 DRAWN: SB
 CHECKED: PKS

FIGURE 4





CAIRNS VILLA
CARAVAN PARK
sch4p4(6) Persor

GROUNDWATER LEVELS DECEMBER 2013

LEGEND

- Monitoring Well (Groundwater level - metres AHD)
- area to be exercised
- Caravan Park
- Kwikkleen
- Digital Cadastral Data

NOTES

All locations derived via GPS & groundtruthed by Field staff.

COPYRIGHT

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0 2.5 5 10 15 20 25 metres

SCALE (at A3) 1:500

DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 087673045-056
DATE: 30 MAY 2014
DRAWN: SB
CHECKED: PKS

FIGURE 5





APPENDIX A

Proposed Subdivision Plan

Published on Resources Disclosure Log
RTI Act 2009



Original information compiled from
RP742725 in the Department of Natural
Resources and Mines.

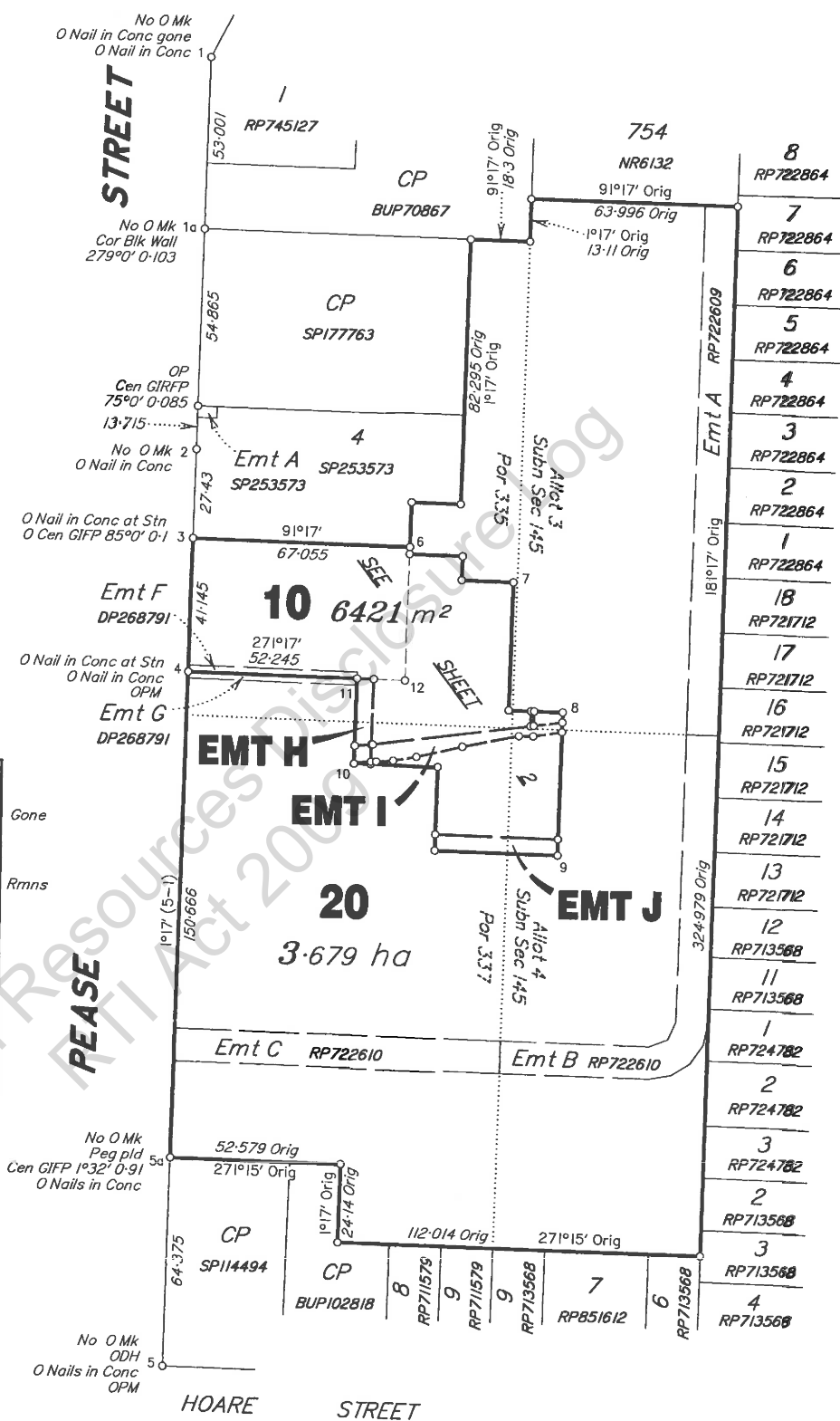
Peg placed at all new corners, unless
otherwise stated.

STN	TO	ORIGIN	BEARING	DIST
1	Nail Hole in Conc fd		279°10'	1-945
1	O Nail in Conc	IS163674	287°03'	2-05
1	O Nail in Conc	IS205976	240°37'50"	2-245
1a	Nail in Conc		256°20'20"	2-86
2	O Nail in Conc	SP253573	277°14'	1-933
4	O Nail in Conc	IS205976	272°18'30"	1-895
5	ODH	RP843602	270°17'	1-004
5	O Nail in Conc	IS77293	225°02'	2-16
5	O Nail in Conc	IS77293	208°33'	2-255
5a	O Nail in Conc	IS77293	271°15'	1-6
5a	O Nail in Conc	IS77293	315°10'	2-69
6	OIP	SP253573	181°17'	1-0
6	OIP	SP253573	91°17'	1-1
7	Nail in Conc fd		8°30'13"	14-705
7	Nail in Conc fd		175°51'45"	18-415
8	Nail in Conc fd		237°50'10"	16-74
9	Nail in Conc		300°41'	15-165
10	Nail in Conc fd		178°46'	0-99

REFERENCE MARKS

PM	ORIGIN	BEARING	DIST	NO
4-OPM	IS205976	184°59'20"	59-062	91735
5-OPM	SP114494	179°48'40"	38-31	91734

PERMANENT MARKS



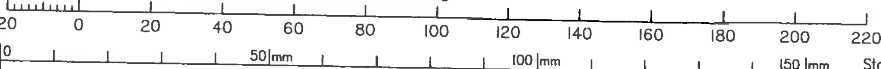
CHARLES O'NEILL PTY. LTD., ACN 010 329 174
hereby certify that the land comprised in this plan was surveyed by the
corporation, by Peter Sutton PENFOLD, Registered Surveyor, for whose
work the corporation accepts responsibility, under the supervision of Aidan
John DILLON, Cadastral Surveyor and that the plan is accurate, that the said
survey was performed in accordance with the Survey and Mapping
Infrastructure Act 2003 and Surveyors Act 2003 and associated Regulations
and Standards and that the said survey as completed on 28/03/2014.



sch4p4 (6) Person
Director
sch4p4 (6) Person
sch4p4 (6) Person
Director
sch4p4 (6) P

22-095 Date: 17/04/2014.

Scale 1:1500 - Lengths are in Metres.



Plan of Lots 10 & 20 and
Emts H, I & J in Lot 10

Cancelling Lot 1 on RP742725, Lot 1 on RP745758 &
Lot 9 on RP735336

LOCAL GOVERNMENT: CAIRNS REGIONAL COUNCIL LOCALITY: MANOORA

Meridian: RP742725

File B

Survey Records No

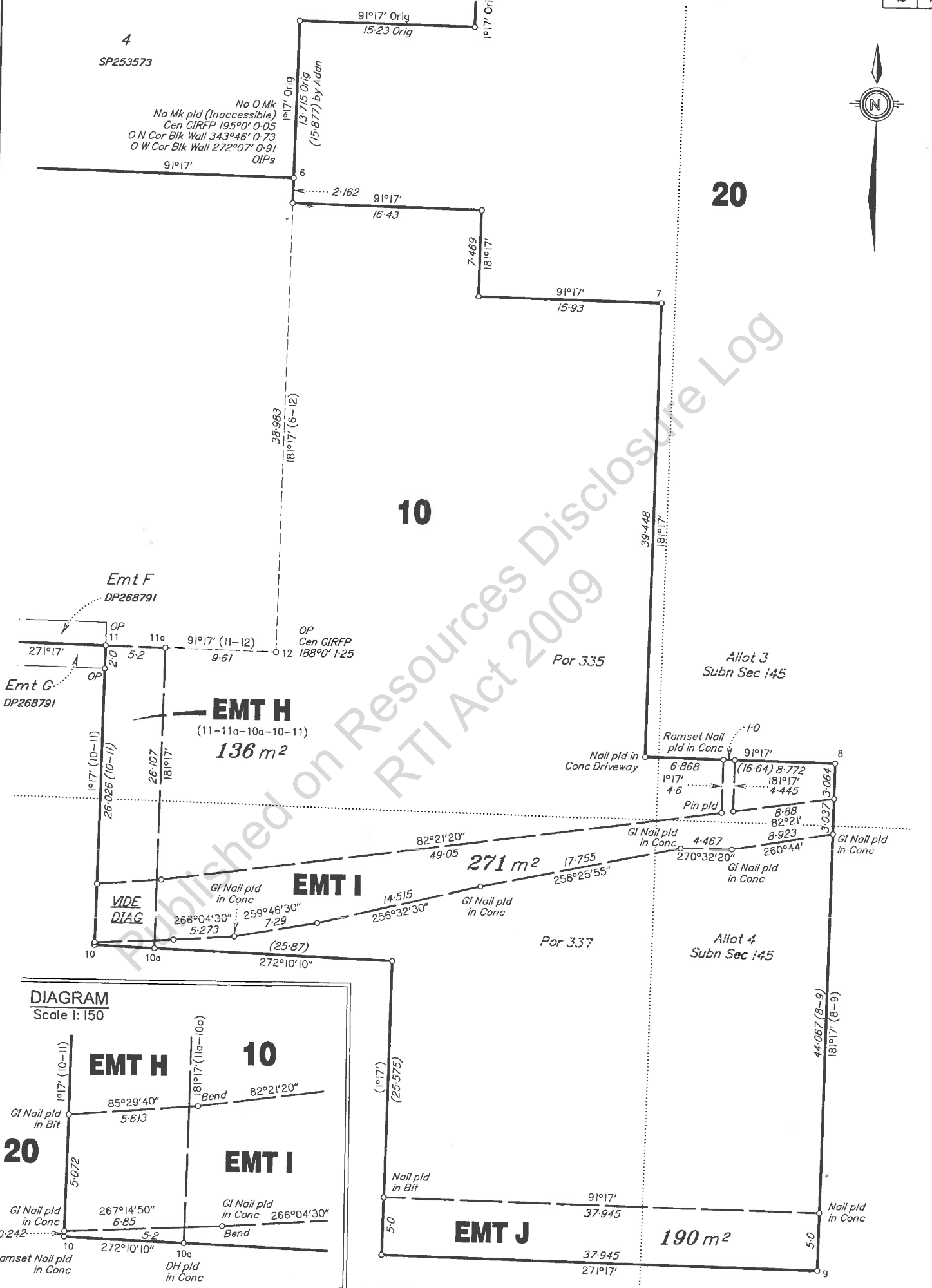
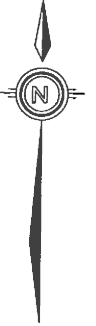
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Format: STANDARD



Page 207 of 406 SP262379

7363MCD-04 736395-04 17/04/2014



**WARNING : Folded or Mutilated Plans will not be accepted.
Plans may be rolled.
Information may not be placed in the outer margins.**

(Dealing No.)

5. Lodged by

(Include address, phone number, reference, and Lodger Code)

1. Certificate of Registered Owners or Lessees.

1/We NQ VILLAS PTY LIMITED A.C.N. 131 660 805
TRUSTEE UNDER INSTRUMENT 711779135
BUNGEE P.TY LTD A.C.N. 121 865 763
TRUSTEE UNDER INSTRUMENT 710387483

(Names in full)

* as Registered Owners of this land agree to this plan and dedicate the Public Use Land as shown hereon in accordance with Section 50 of the Land Title Act 1994.

* as Lessees of this land agree to this plan.

Signature of * Registered Owners * Lessees

Title Reference	Existing Description	Created		
		New Lots	Road	Secondary Interests
21290225	Lot 1 on RP742725.	10 & 20	---	EMTH, EMT I, EMT J
21366001	Lot 1 on RP745758	10	---	---
21275213	Lot 9 on RP735336	10	---	---

MORTGAGE ALLOCATIONS

Mortgage	Lots Fully Encumbered	Lots Partially Encumbered
711779171	20	10
710387484	---	10

ENCUMBRANCE EASEMENT ALLOCATIONS

Easement	Lots to be Encumbered
601349664 (Emt A on RP722609 and Emts B & C on RP722610)	20
To Issue (Emt G on SP268791)	20
To Issue (Emt F on SP268791)	10

BENEFIT EASEMENT ALLOCATIONS

Easement	Lots to be Benefited
To Issue (Emt F on SP268791)	20
To Issue (Emt G on SP268791)	10

Easements C & D on RP735336 (Nos. 601071238 & 601071239) are to be surrendered prior to registration of this plan

Lease 702492402 to be surrendered prior to registration of this plan

* Rule out whichever is inapplicable

2. Planning Body Approval

*
hereby approves this plan in accordance with the:
%

Dated this day of

..... #

..... #

* Insert the name of the Planning Body.
Insert designation of signatory or delegation

% Insert applicable approving legislation.

3. Plans with Community Management Statement :

CMS Number :

Name :

4. References :

Dept File :
Local Govt : 18/13/1746
Surveyor : 7363MCD

10 & 20 Allot 4 Subn Sec 145
Allot 3 Subn Sec 145
Por 337
Por 335

Lots Orig

7. Orig Grant Allocation :

8. Map Reference :
8064-32121

9. Parish:
CAIRNS

10. County:
NARES

11. Passed & Endorsed :

By : CHARLES O'NEILL PTY.LTD.
AGM 019 229 174
Date : 17/04/14
Signed : sch4p4(6) Personal in
Designation : Cadastral Surveyor

12. Building Format Plans only.

I certify that :
* As far as it is practical to determine, no part of the building shown on this plan encroaches onto adjoining lots or road;
* Part of the building shown on this plan encroaches onto adjoining * lots and road

Cadastral Surveyor/Director * Date
* delete words not required

13. Lodgement Fees :

Survey Deposit \$
Lodgement \$
..... New Titles \$
Photocopy \$
Postage \$
TOTAL \$

14. Insert Plan Number
SP262379
Page 269 of 406



APPENDIX B

Groundwater Monitoring Reports December 2013 to April 2014

Published on Resources Disclosure Log
RTI Act 2009

3 February 2014

Project No. 087673045-052-L-Rev0

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Hospitality Services

~Transmission via email: sch@laundryqld.com.au~

AMENDED BOUNDARY GROUNDWATER MONITORING RESULTS DECEMBER-JANUARY 2014.

Following Golder Proposal No. 087673045-051-L-Rev0 issued on 11 December 2013, please find herewith the results and interpretation of the recent groundwater monitoring events at the site including along the proposed excised boundary groundwater wells.

This monitoring event follows on from the groundwater monitoring programme instigated on 19 December 2013 as part of a programme of works outlined in Golder Document 087673045-051-L-Rev0 which was issued on 11 December 2013, to chart the progress of the groundwater pumping regime in the context of remediating the groundwaters situated beneath the caravan park at Pease Street.

The following works were carried out:

- A groundwater pump was moved from MW5CP to MW14CP and commissioned with associated earthworks and amendments to onsite equipment at the end of October 2013.
- A system appraisal was carried out on 17-18 December 2013 which included opening and replacing any air/water lines where necessary and testing all of the pumps, air lines and compressors to ensure that the system was fully operating.
- A groundwater sampling and analysis event was carried out on groundwater wells MW1CP, MW3CP, MW4CP, MW5CP, MW12CP, MW13CP, MW15CP, MW16CP, MW17CP, MW18CP, MW19CP and MW20CP on 19 December 2013.
- A groundwater sampling and analysis event was carried out on groundwater wells MW1CP, MW15CP, MW16CP and MW17CP on 17 January 2014.
- Samples from all wells were analysed for volatile organic compounds.
- The December sampling round included a single QA/QC field sample. (as subsequent monitoring rounds are for information purposes only no QA/QC has been scheduled for the 2014 boundary locations monthly groundwater monitoring as a cost saving measure for the client).
- A short letter report (this document) was prepared to detail and discuss the findings of these monitoring rounds and compare any findings with the previous September groundwater monitoring round.

Field Work 17-19 December 2013

All wells at the site were gauged on 17 December with the exception of the following wells which were either pumping at the time or appear to have been decommissioned:

- MW4KK – Pump
- MW8CP – No longer present
- MW11CP – Pump



- MW12CP - Pump
- MW7CP – No longer present
- MW14CP - Pump

All other wells were purged and allowed to stabilise before sampling. The wells were then sampled by an experienced environmental scientist on 19 December using bottom loading (Double Check Valve) disposable bailers. Each well was sampled using a new disposable bailer to ensure no cross contamination between sample locations. The samples were transferred into NATA accredited laboratory supplied sample containers and packed into an esky for transport to the laboratory (SGS).

A duplicate sample was also taken at MWCP18 for QA/QC purposes. The water samples were sent for analyses of volatile organic compounds under chain of custody conditions.

Field Work 16-17 January 2014

Four wells along boundary locations (MW1CP, MW15CP, MW16CP and MW17CP) were gauged and purged on 16 January and allowed to stabilise before sampling. The wells were then sampled as per previous exercises on 17 January 2014.

Results

The complete Laboratory Certificate of Analyses for the December and January monitoring rounds are attached. For the purpose of this report the previously identified contaminants of concern Trichloroethylene (TCE), Perchloroethylene (PCE) and are the focus of the following sections. The results are summarised for boundary locations MW1CP, MW15CP, MW16CP and MW17CP below:

Table 1: September 2013 – January 2014 Groundwater Monitoring Results at boundary locations

Monitoring Location	Date	TCE (µg/l)	PCE (µg/l)	cis-1,2-dichloroethene (µg/l)
MW1CP	September 2013	170	42	390
MW1CP	December 2013	120	27	130
MW1CP	January 2014	7.2	6.3	5.8
MW16CP	September 2013	180	12	320
MW16CP	December 2013	13	2	9.7
MW16CP	January 2014	8.1	1.7	5.4
MW17CP	September 2013	210	100	89
MW17CP	December 2013	21	6.2	9.7
MW17CP	January 2014	23	11	17

Discussion

Analytical results have revealed that groundwater concentrations of the contaminants of interest have largely decreased at all of the boundary locations of interest since the initial sampling round in September. This suggests that the current pumping regime has had a positive impact at the site.

Scheduling of Future Works

It is proposed to carry out boundary groundwater sampling for a minimum of 4 additional months after which soil gas monitoring shall be carried out.

Limitations

Your attention is drawn to the document “Limitations”, which is attached to this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather

to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

Regards,
Golder Associates Pty Ltd

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

Senior Environmental Engineer

sch4p4(6) Personal information

Principal Environmental Engineer

CMC/PKS/hlb

Attachments: Laboratory Certificate of Analysis
 Limitations

\\cns1-s-file02\jobs\env\2008\087673045 - kwikleen dry cleaners, pease st\correspondence out\087673045-052-l-rev0 boundary gw sampling jan 2014.docx

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RTI Act 2009

CLIENT DETAILS

LABORATORY DETAILS

Contact	sch4p4(6) Per	Manager	sch4p4(6) F
Client	GOLDER ASSOCIATES PTY LTD	Laboratory	SGS Cairns Environmental
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Facsimile	07 4054 8201	Facsimile	+61 07 4035 5122
Email	sch4p@golder.com	Email	AU.Environmental.Cairns@sgs.com
Project	087673045 Kwikleen	SGS Reference	CE107544 R0
Order Number	MQ8893	Report Number	0000013822
Samples	13	Date Reported	08 Jan 2014
		Date Received	19 Dec 2013

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE123534. LOR for vinyl chloride on sample 4 has been increased due to interferences from the sample matrix.

SIGNATORIES

sch4p4(6) Personal information	sch4p4(6) Personal information	sch4p4(6) Personal information
sch4p4(6) Personal Operations Manager	sch4p4(6) Per Manager Northern QLD	sch4p4(6) Pers Micro Supervisor / Quality Co-ordinator

Parameter	Units	LOR	CE107544.001 Water 19 Dec 2013 MW1CP	CE107544.002 Water 19 Dec 2013 MW4CP	CE107544.003 Water 19 Dec 2013 MW3CP	CE107544.004 Water 19 Dec 2013 MW5CP
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VOCs in Water Method: AN433/AN434

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<1.5†
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Iodomethane	µg/L	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	<5
trans-1,2-dichloroethene	µg/L	0.5	1.4	<0.5	1.5	1.0
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	130	1.4	450	270
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	120	2.9	<0.5	110
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	27	<0.5	<0.5	38
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	115	125	109	118
d4-1,2-dichloroethane (Surrogate)	%	-	107	106	103	109
d8-toluene (Surrogate)	%	-	105	118	127	104
Bromofluorobenzene (Surrogate)	%	-	103	100	87	109

Other VOC Analytes in Water Method: AN433/AN434

Pentachloroethane	µg/L	5	<5	<5	<5	<5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	76	121	91	115
d4-1,2-dichloroethane (Surrogate)	%	-	100	105	112	114
d8-toluene (Surrogate)	%	-	101	95	116	98
Bromofluorobenzene (Surrogate)	%	-	83	73	80	74

Parameter	Units	LOR	CE107544.005	CE107544.006	CE107544.007	CE107544.008
Sample Number			CE107544.005	CE107544.006	CE107544.007	CE107544.008
Sample Matrix			Water	Water	Water	Water
Sample Date			19 Dec 2013	19 Dec 2013	19 Dec 2013	19 Dec 2013
Sample Name			MW12CP	MW13CP	MW15CP	MW16CP

VOCs in Water Method: AN433/AN434

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	3.8	2.5	1.6	0.8
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	2.2	1.6	<0.5	<0.5
Iodomethane	µg/L	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	<5
trans-1,2-dichloroethene	µg/L	0.5	7.3	1.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	290	74	3.1	9.7
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	1600	190	4.6	13
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	800	100	1.9	2.0
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	125	120	123	113
d4-1,2-dichloroethane (Surrogate)	%	-	112	109	91	102
d8-toluene (Surrogate)	%	-	96	103	112	106
Bromofluorobenzene (Surrogate)	%	-	109	100	100	102

Other VOC Analytes in Water Method: AN433/AN434

Pentachloroethane	µg/L	5	<5	<5	<5	<5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	106	121	101	110
d4-1,2-dichloroethane (Surrogate)	%	-	125	109	93	95
d8-toluene (Surrogate)	%	-	84	88	96	101
Bromofluorobenzene (Surrogate)	%	-	87	75	73	70

Parameter	Units	LOR	CE107544.009	CE107544.010	CE107544.011	CE107544.012
Sample Number			CE107544.009	CE107544.010	CE107544.011	CE107544.012
Sample Matrix			Water	Water	Water	Water
Sample Date			19 Dec 2013	19 Dec 2013	19 Dec 2013	19 Dec 2013
Sample Name			MW-17CP	MW18CP	MW19CP	MW20CP

VOCs in Water Method: AN433/AN434

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	1.0	0.9	<0.3	3.9
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	1.7
Iodomethane	µg/L	5	<5	<5	<5	<5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	<5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	1.6
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	9.7	7.7	<0.5	52
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	21	2.5	<0.5	100
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	6.2	<0.5	<0.5	34
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	118	125	122	120
d4-1,2-dichloroethane (Surrogate)	%	-	105	109	111	110
d8-toluene (Surrogate)	%	-	119	102	101	101
Bromofluorobenzene (Surrogate)	%	-	103	113	105	106

Other VOC Analytes in Water Method: AN433/AN434

Pentachloroethane	µg/L	5	<5	<5	<5	<5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	105	106	98	128
d4-1,2-dichloroethane (Surrogate)	%	-	119	109	112	125
d8-toluene (Surrogate)	%	-	110	79	100	94
Bromofluorobenzene (Surrogate)	%	-	80	82	76	70

Sample Number	CE107544.013
Sample Matrix	Water
Sample Date	19 Dec 2013
Sample Name	MWX

Parameter	Units	LOR
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VOCs in Water Method: AN433/AN434

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
Chloromethane	µg/L	5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	0.9
Bromomethane	µg/L	10	<10
Chloroethane	µg/L	5	<5
Trichlorofluoromethane	µg/L	1	<1
1,1-dichloroethene	µg/L	0.5	<0.5
Iodomethane	µg/L	5	<5
Dichloromethane (Methylene chloride)	µg/L	5	<5
trans-1,2-dichloroethene	µg/L	0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	7.3
1,1,1-trichloroethane	µg/L	0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	2.5
Dibromomethane	µg/L	0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1
cis-1,4-dichloro-2-butene	µg/L	1	<1
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	120
d4-1,2-dichloroethane (Surrogate)	%	-	108
d8-toluene (Surrogate)	%	-	105
Bromofluorobenzene (Surrogate)	%	-	105

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Sample Number	CE107544.013	
Sample Matrix	Water	
Sample Date	19 Dec 2013	
Sample Name	MWX	
Parameter	Units	LOR

Other VOC Analytes in Water Method: AN433/AN434

Pentachloroethane	µg/L	5	<5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	125
d4-1,2-dichloroethane (Surrogate)	%	-	97
d8-toluene (Surrogate)	%	-	107
Bromofluorobenzene (Surrogate)	%	-	72

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MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
<http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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CLIENT DETAILS

LABORATORY DETAILS

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 Project 087673045 Kwikleen
 Order Number MQ8940
 Samples 5

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 Email AU.Environmental.Cairns@sgs.com
 SGS Reference CE107801 R0
 Report Number 0000014283
 Date Reported 29 Jan 2014
 Date Received 17 Jan 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE123980.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal

Operations Manager

sch4p4(6) Pe

Manager Northern QLD

sch4p4(6) Persc

Micro Supervisor / Quality Co-ordinator

Parameter	Units	LOR	CE107801.001	CE107801.002	CE107801.003	CE107801.004
Sample Number			CE107801.001	CE107801.002	CE107801.003	CE107801.004
Sample Matrix			Water	Water	Water	Water
Sample Date			17 Jan 2014	17 Jan 2014	17 Jan 2014	17 Jan 2014
Sample Name			MW1CP	MW15CP	MW16CP	MW17CP

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	5.8	<0.5	5.4	17
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	7.2	0.8	8.1	23
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	6.3	0.7	1.7	11
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	120	110	109	109
d4-1,2-dichloroethane (Surrogate)	%	-	119	117	114	111
d8-toluene (Surrogate)	%	-	103	104	106	106
Bromofluorobenzene (Surrogate)	%	-	117	116	112	114

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Sample on Hold Method:

Sample on Hold*	No unit	-	-	-	-	-
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Sample Number	CE107801.005
Sample Matrix	Water
Sample Date	17 Jan 2014
Sample Name	MWX

Parameter Units LOR

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	-
1,2-dichloropropane	µg/L	0.5	-
trans-1,3-dichloropropene	µg/L	0.5	-
cis-1,3-dichloropropene	µg/L	0.5	-
1,2-dibromoethane (EDB)	µg/L	0.5	-

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	-
Chloromethane	µg/L	5	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-
Bromomethane	µg/L	10	-
Chloroethane	µg/L	5	-
Trichlorofluoromethane	µg/L	1	-
1,1-dichloroethene	µg/L	0.5	-
trans-1,2-dichloroethene	µg/L	0.5	-
1,1-dichloroethane	µg/L	0.5	-
cis-1,2-dichloroethene	µg/L	0.5	-
Bromochloromethane	µg/L	0.5	-
1,2-dichloroethane	µg/L	0.5	-
1,1,1-trichloroethane	µg/L	0.5	-
1,1-dichloropropene	µg/L	0.5	-
Carbon tetrachloride	µg/L	0.5	-
Dibromomethane	µg/L	0.5	-
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	-
1,1,2-trichloroethane	µg/L	0.5	-
1,3-dichloropropane	µg/L	0.5	-
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-
1,2,3-trichloropropane	µg/L	0.5	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-
Hexachlorobutadiene	µg/L	0.5	-

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Sample Number	CE107801.005
Sample Matrix	Water
Sample Date	17 Jan 2014
Sample Name	MWX

Parameter Units LOR

VOCs in Water Method: AN433/AN434 (continued)

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	-
Bromobenzene	µg/L	0.5	-
2-chlorotoluene	µg/L	0.5	-
4-chlorotoluene	µg/L	0.5	-
1,3-dichlorobenzene	µg/L	0.5	-
1,4-dichlorobenzene	µg/L	0.3	-
1,2-dichlorobenzene	µg/L	0.5	-
1,2,4-trichlorobenzene	µg/L	0.5	-
1,2,3-trichlorobenzene	µg/L	0.5	-

Surrogates

Dibromofluoromethane (Surrogate)	%	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-
d8-toluene (Surrogate)	%	-	-
Bromofluorobenzene (Surrogate)	%	-	-

Trihalomethanes

Chloroform (THM)	µg/L	0.5	-
Bromodichloromethane (THM)	µg/L	0.5	-
Dibromochloromethane (THM)	µg/L	0.5	-
Bromoform (THM)	µg/L	0.5	-

Sample on Hold Method:

Sample on Hold*	No unit	-	HOLD
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MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

AN433/AN434

METHODOLOGY SUMMARY

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
<http://www.sgs.com.au/pv.sgs3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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27 February 2014

Document No. 087673045-053-L-Rev0

sch4p4(6) Personal i

Hospitality Services

~Transmission via email: sch4@laundryqld.com.au~

AMENDED BOUNDARY GROUNDWATER MONITORING RESULTS FEBRUARY 2014.

Dear sch4p4

Following Golder Proposal No. 087673045-051-L-Rev0 issued on 11 December 2013, please find herewith the results and interpretation of the recent groundwater monitoring events at the site including along the proposed excised boundary groundwater wells.

This monitoring event follows on from the groundwater monitoring programme instigated on 19 December 2013 as part of a programme of works outlined in Golder Document 087673045-051-L-Rev0 which was issued on 11 December 2013, to chart the progress of the groundwater pumping regime in the context of remediating the groundwaters situated beneath the caravan park at Pease Street.

The following works were carried out:

- A groundwater sampling and analysis event was carried out on groundwater wells MW1CP, MW15CP, MW16CP and MW17CP on 18 February 2014.
- Samples from the above wells were analysed for volatile organic compounds.
- A short letter report (this document) was prepared to detail and discuss the findings of these monitoring rounds and compare any findings with the previous groundwater monitoring rounds dating back to September 2013.

Field Work 17-18 February 2014

Four wells along boundary locations (MW1CP, MW15CP, MW16CP and MW17CP) were gauged and purged on 17 February and allowed to stabilise before sampling. The wells were then sampled as per previous exercises on 18 February 2014.

Results

The complete Laboratory Certificate of Analyses for the February monitoring round is attached. For the purpose of this report the previously identified contaminants of concern Trichloroethylene (TCE), Perchloroethylene (PCE) and cis-1,2-dichloroethene are the focus of the following sections. Historical results are summarised for boundary locations MW1CP, MW15CP, MW16CP and MW17CP below:



Table 1: September 2013 – February 2014 Groundwater Monitoring Results at boundary locations

Monitoring Location	Date	TCE (µg/l)	PCE (µg/l)	cis-1,2-dichloroethene (µg/l)
MW1CP	September 2013	170	42	390
	December 2013	120	27	130
	January 2014	7.2	6.3	5.8
	February 2014	10	12	9.7
MW15CP	September 2013	-	-	-
	December 2013	4.6	1.9	3.1
	January 2014	0.8	0.7	<0.5
	February 2014	4.6	2.8	2.6
MW16CP	September 2013	180	12	320
	December 2013	13	2	9.7
	January 2014	8.1	1.7	5.4
	February 2014	17	9.3	23
MW17CP	September 2013	210	100	89
	December 2013	21	6.2	9.7
	January 2014	23	11	17
	February 2014	17	8.4	9.5

Discussion

The recent analytical results have revealed that groundwater concentrations of the contaminants of interest have remained well below the concentrations detected in September. Concentrations in February rebounded slightly from those recorded in January and are generally similar to those recorded in December. The exception to this trend was MW17CP where concentrations continued to decrease.

It was noted that all pumps were operational at the time when sampling was conducted.

Limitations

Your attention is drawn to the document "Limitations", which is attached to this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

GOLDER ASSOCIATES PTY LTD

sch4p4(6) Personal information

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sch4p4(6) Personal i
Senior Environmental Engineer

sch4p4(6) Pers
Principal Environmental Engineer

CC/PS/hlb

Attachments: Laboratory Certificate of Analysis
Limitations

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CLIENT DETAILS

LABORATORY DETAILS

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 Project 087673045 Kwikleen
 Order Number MQ8834
 Samples 4

Manager sch4p4(6) F
 Laboratory SGS Cairns Environmental
 Address Unit 2, 58 Comport St
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 Telephone +61 07 4035 5111
 Facsimile +61 07 4035 5122
 Email AU.Environmental.Cairns@sgs.com
 SGS Reference CE108420 R0
 Report Number 0000015144
 Date Reported 25 Feb 2014
 Date Received 18 Feb 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE124987.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Persona

Operations Manager

sch4p4(6) Pe

Manager Northern QLD

sch4p4(6) Person

Micro Supervisor / Quality Co-ordinator

Parameter	Units	LOR	CE108420.001	CE108420.002	CE108420.003	CE108420.004
Sample Number			CE108420.001	CE108420.002	CE108420.003	CE108420.004
Sample Matrix			Water	Water	Water	Water
Sample Date			18 Feb 2014	18 Feb 2014	18 Feb 2014	18 Feb 2014
Sample Name			MW1CP	MW15CP	MW16CP	MW17CP

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	9.7	2.6	23	9.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	10	4.6	17	17
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	12	2.8	9.3	8.4
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	81	77	77	106
d4-1,2-dichloroethane (Surrogate)	%	-	119	117	113	99
d8-toluene (Surrogate)	%	-	94	101	99	102
Bromofluorobenzene (Surrogate)	%	-	92	98	99	99

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

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No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

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Samples analysed as received.
Solid samples expressed on a dry weight basis.

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The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
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26 March 2014

Document No. 087673045-054-L-Rev0

sch4p4(6) Personal i
Hospitality Services

~Transmission via email: sch@laundryqld.com.au~

AMENDED BOUNDARY GROUNDWATER MONITORING RESULTS MARCH 2014.

Dear sch4p4

Following Golder Proposal No. 087673045-051-L-Rev0 issued on 11 December 2013, please find herewith the results and interpretation of the recent groundwater monitoring events at the site including along the proposed excised boundary groundwater wells.

This monitoring event follows on from the groundwater monitoring programme instigated on 19 December 2013 as part of a programme of works outlined in Golder Document 087673045-051-L-Rev0 which was issued on 11 December 2013, to chart the progress of the groundwater pumping regime in the context of remediating the groundwaters situated beneath the caravan park at Pease Street.

The following works were carried out:

- A groundwater sampling and analysis event was carried out on groundwater wells MW1CP, MW15CP, MW16CP and MW17CP on 18 March 2014.
- Samples from the above wells were analysed for volatile organic compounds.
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Field Work 17-18 March 2014

Four wells along boundary locations (MW1CP, MW15CP, MW16CP and MW17CP) were gauged and purged on 17 March and allowed to stabilise before sampling. The wells were then sampled on 18 March 2014 as per previous monitoring events.

Results

The complete Laboratory Certificate of Analyses for the March monitoring round is attached. For the purpose of this report the previously identified contaminants of concern Trichloroethylene (TCE), Perchloroethylene (PCE) and cis-1,2-dichloroethene are the focus of the following sections. Historical results are summarised for boundary locations MW1CP, MW15CP, MW16CP and MW17CP below:



Table 1: September 2013 – March 2014 Groundwater Monitoring Results at boundary locations

Monitoring Location	Date	TCE (µg/l)	PCE (µg/l)	cis-1,2-dichloroethene (µg/l)
MW1CP	September 2013	170	42	390
	December 2013	120	27	130
	January 2014	7.2	6.3	5.8
	February 2014	10	12	9.7
	March 2014	7.0	8.1	5.1
MW15CP	September 2013	-	-	-
	December 2013	4.6	1.9	3.1
	January 2014	0.8	0.7	<0.5
	February 2014	4.6	2.8	2.6
	March 2014	8.1	5.5	7.3
MW16CP	September 2013	180	12	320
	December 2013	13	2	9.7
	January 2014	8.1	1.7	5.4
	February 2014	17	9.3	23
	March 2014	32	12	46
MW17CP	September 2013	210	100	89
	December 2013	21	6.2	9.7
	January 2014	23	11	17
	February 2014	17	8.4	9.5
	March 2014	12	8.3	35

Discussion

The recent analytical results have revealed that groundwater concentrations of the contaminants of interest have remained well below the concentrations detected in September. Concentrations at MW1CP have decreased slightly and are consistent with January 2014 levels. However, concentrations at MW15CP and MW16CP have increased with the largest increase observed for cis-1,2-dichloroethene at MW16CP. Concentrations of TCE and PCE decreased at MW17CP although there was an increase in cis-1,2-dichloroethene concentrations at this location. The marginal increases at MW15CP, MW16CP and MW17CP are considered to be the result of wet season conditions rather than a deterioration of pumping efficiency.

The current trends do not provide an indication that soil gas testing should be conducted before May 2014. Corresponding, the current trends do not indicate that pumping needs to be extended.

It was noted that all pumps were operational at the time when sampling was conducted.

Limitations

Your attention is drawn to the document "Limitations", which is attached to this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

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Senior Environmental Engineer

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Attachments: Laboratory Certificate of Analysis
Limitations

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Published on Resources Disclosure Log
RTI Act 2009

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 SGS Reference **CE108914 R0**
 Report Number **0000015947**
 Date Reported **25 Mar 2014**
 Date Received **18 Mar 2014**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE125927.

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 Operations Manager

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 Manager Northern QLD

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 Micro Supervisor / Quality Co-ordinator

Parameter	Units	LCR	Sample Number	Sample Matrix	Sample Date	Sample Name	Water	Water	Water	Water	
			CE108914.001		18 Mar 2014	MW1CP		CE108914.002		18 Mar 2014	MW1CP
								CE108914.003		18 Mar 2014	MW16CP
								CE108914.004		18 Mar 2014	MW17CP

VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	5.1	7.3	46	35
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	7.0	8.1	32	12
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	8.1	5.5	12	8.3
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	110	108	108	111
d4-1,2-dichloroethane (Surrogate)	%	-	111	109	110	112
d8-toluene (Surrogate)	%	-	95	96	98	96
Bromofluorobenzene (Surrogate)	%	-	95	94	94	89

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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30 April 2014

Document No. 087673045-055-L-Rev0

sch4p4(6) Personal i
Hospitality Services

~Transmission via email: sch@laundryqld.com.au~

AMENDED BOUNDARY GROUNDWATER MONITORING RESULTS APRIL 2014.

Dear sch4p4

Please find herewith the results and interpretation of the recent groundwater monitoring events at the site including along the proposed excised boundary groundwater wells.

This monitoring event follows on from the groundwater monitoring programme instigated on 19 December 2013 as part of a programme of works outlined in Golder Document 087673045-051-L-Rev0 (11 December 2013), to chart the progress of the groundwater pumping regime in the context of remediating the groundwaters situated beneath the caravan park at Pease Street.

The following works were carried out:

- A groundwater sampling and analysis event was carried out on groundwater wells MW1CP, MW15CP, MW16CP and MW17CP on 16 April 2014
- Samples from the above wells were analysed for volatile organic compounds
- A short letter report (this document) was prepared to detail and discuss the findings of these monitoring rounds and compare any findings with the previous groundwater monitoring rounds dating back to September 2013.

Field Work 15-16 April 2014

Four wells along boundary locations (MW1CP, MW15CP, MW16CP and MW17CP) were gauged and purged on 15 April and allowed to stabilise before sampling. The wells were then sampled on 16 April 2014 as per previous monitoring events.

It was noted that all pumps were operational at the time when sampling was conducted.

Results

The complete Laboratory Certificate of Analyses for the April monitoring round is attached. For the purpose of this report the previously identified contaminants of concern Trichloroethylene (TCE), Perchloroethylene (PCE) and cis-1,2-dichloroethene are the focus of the following sections. Historical results are summarised for boundary locations MW1CP, MW15CP, MW16CP and MW17CP below:



Table 1: September 2013 – April 2014 Groundwater Monitoring Results at boundary locations

Monitoring Location	Date	TCE (µg/l)	PCE (µg/l)	cis-1,2-dichloroethene (µg/l)
MW1CP	September 2013	170	42	390
	December 2013	120	27	130
	January 2014	7.2	6.3	5.8
	February 2014	10	12	9.7
	March 2014	7.0	8.1	5.1
	April 2014	2.2	5.7	0.5
MW15CP	September 2013	-	-	-
	December 2013	4.6	1.9	3.1
	January 2014	0.8	0.7	<0.5
	February 2014	4.6	2.8	2.6
	March 2014	8.1	5.5	7.3
	April 2014	6.9	4.7	3.1
MW16CP	September 2013	180	12	320
	December 2013	13	2	9.7
	January 2014	8.1	1.7	5.4
	February 2014	17	9.3	23
	March 2014	32	12	46
	April 2014	23	3.6	15
MW17CP	September 2013	210	100	89
	December 2013	21	6.2	9.7
	January 2014	23	11	17
	February 2014	17	8.4	9.5
	March 2014	12	8.3	35
	April 2014	30	16	20

Discussion

The recent analytical results have revealed that groundwater concentrations of the contaminants of interest have remained well below the concentrations detected in September. Concentrations at MW1CP, MW15CP and MW16CP have all decreased slightly from the previous concentrations detected in March. Minor increases in TCE and PCE concentrations were detected at MW17CP with a decrease in Cis-1,2-dichloroethene concentration. The minor increases observed at MW17CP are considered to be the result of wet season conditions rather than a deterioration of pumping efficiency.

Given the requirements of the Deed of Settlement and the current trends, soil gas testing is recommended to be completed in early May 2014. We have programed to undertake soil gas tests at boundary wells SVW16 and SVW17 on the 7th/8th May 2014.

Limitations

Your attention is drawn to the document "Limitations", which is attached to this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

GOLDER ASSOCIATES PTY LTD

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sch4p4(6) Person
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Attachments: Laboratory Certificate of Analysis
Limitations

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SGS Reference **CE109447 R0**
 Report Number **0000016733**
 Date Reported **29 Apr 2014**
 Date Received **16 Apr 2014**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

VOC's subcontracted to SGS Sydney, Unit 16 33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE126983.

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Manager Northern QLD

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Micro Supervisor / Quality Co-ordinator

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	CE109447.001 Water 16 Apr 2014 MW1CP	CE109447.002 Water 16 Apr 2014 MW15CP	CE109447.003 Water 16 Apr 2014 MW16CP	CE109447.004 Water 16 Apr 2014 MW17CP
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VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	0.5	3.1	15	20
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	2.2	6.9	23	30
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	5.7	4.7	3.6	16
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Dibromofluoromethane (Surrogate)	%	-	100	102	101	103
d4-1,2-dichloroethane (Surrogate)	%	-	108	106	103	106
d8-toluene (Surrogate)	%	-	93	97	99	93
Bromofluorobenzene (Surrogate)	%	-	95	100	104	102

Trihalomethanes

Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGY SUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
<http://www.sgs.com.au/pv.sgs3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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APPENDIX C

Laboratory Certificates – Groundwater Monitoring May 2014

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CHAIN OF CUSTODY/ANALYSIS REQUEST

Townsville Location
25 McIlwraith Street, SOUTH TOWNVILLE QLD 4810

Phone: (07) 4727 1700
Fax: (07) 4724 0511

Cairns Location
216 Draper Street, CAIRNS QLD 4810

Phone: (07) 4054 8200
Fax: (07) 4054 8201

Project No.: 087673045				CE 109936	TO BE COMPLETED BY LABORATORY			
Location: Kwikleen					Samples Received In: (Please tick appropriate box)			
Golder Order No.: Q000434								
Quote: <u>SGS/Golder National Master Services Agreement</u>								
Primary Contact: sch4p4(6) Persona				Appropriate Containers <input type="checkbox"/> Pretreated Containers <input type="checkbox"/> Chilled State <input type="checkbox"/> Other (Comment) <input type="checkbox"/>				
Sample Location	Sample No/Depth	No. of Jars/Bags	Sample Date	HAC's	PLEASE SEND RESULTS TO: Name: sch4p4(6) Personal information Email: <input type="text"/> Name: sch4p4(6) Personal information Email: <input type="text"/> PLEASE SEND INVOICE TO: Name: NQO Accounts Dept. Email: nqoaccounts@golder.com.au			
MW1CP		2	14/05/14	X				
MW15CP		2	14/05/14	X				
MW16CP		2	14/05/14	X				
MW17CP		2	14/05/14	X				
TEST REFERENCE NO.								
TURN AROUND TIME								

Special Instructions: Nominated turn-around time from time of submission to SGS. **Penalty Rates to apply** sch4p4(6) Personal information **in accordance with National Master Services Agreement.**

Special Instructions: **Please Supply in ESDAT Format**

Relinquished: sch4p4(6) Persona Date: 14/05/2014 Received by: Date: 14-5-14

Organisation: Golder Associates Time: 09:00 Organisation: Time: 10:30

CLIENT DETAILS

LABORATORY DETAILS

Contact: sch4p4(6) Pers
 Client: GOLDER ASSOCIATES PTY LTD
 Address: PO BOX 5823
 216 DRAPER ST
 QLD 4870

 Telephone: 07 4054 8200
 Facsimile: 07 4054 8201
 Email: sch4p4(6) gol der. com. au

 Project: 087673045 Kwikleen
 Order Number: MQ8834
 Samples: 4

Manager: sch4p4(6) f
 Laboratory: SGS Cairns Environmental
 Address: Unit 2, 58 Comport St
 Portsmith QLD 4870

 Telephone: +61 07 4035 5111
 Facsimile: +61 07 4035 5122
 Email: ALEnvironmental.Cairns@sgs.com

 SGS Reference: CE109936 R0
 Report Number: 0000017442
 Date Reported: 21 May 2014
 Date Received: 14 May 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

QC subcontracted to SGS Sydney, Unit 16/33 Maddox St Alexandria NSW 2015, NATA Accreditation Number: 2562, Site Number: 4354, SE127781.

SIGNATORIES

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

sch4p4(6) Personal information

Operations Manager

sch4p4(6) Personal information

Manager Northern QLD

sch4p4(6) Personal information

Micro Supervisor / Quality Co-ordinator

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	CE109936.001 Water 14 May 2014 MW1CP	CE109936.002 Water 14 May 2014 MW15CP	CE109936.003 Water 14 May 2014 MW16CP	CE109936.004 Water 14 May 2014 MW17CP
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VOCs in Water Method: AN433/AN434

Funig ants

Parameter	Units	LOR	CE109936.001	CE109936.002	CE109936.003	CE109936.004
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aliphatics

Parameter	Units	LOR	CE109936.001	CE109936.002	CE109936.003	CE109936.004
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10	<10	<10
Chloroethane	µg/L	5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	8.0	6.1	27	28
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	8.8	8.1	30	49
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene, PCE)	µg/L	0.5	13	2.9	1.5	23
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Halogenated Aromatics

Parameter	Units	LOR	CE109936.001	CE109936.002	CE109936.003	CE109936.004
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Surrogates

Parameter	Units	LOR	CE109936.001	CE109936.002	CE109936.003	CE109936.004
Dibromofluoromethane (Surrogate)	%	-	109	105	109	113
d4-1,2-dichloroethane (Surrogate)	%	-	114	109	115	116
d8-toluene (Surrogate)	%	-	97	103	105	96
Bromofluorobenzene (Surrogate)	%	-	93	105	101	97

Trihalomethanes

Parameter	Units	LOR	CE109936.001	CE109936.002	CE109936.003	CE109936.004
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5

Blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared to the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

No QC samples were reported for this job.

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METHOD

METHODOLOGYSUMMARY

AN433/AN434

VOCs and C6-C9 Hydrocarbons by GC-MS/P&T: VOCs are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol. Volatile liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

I S	In sufficient sample for analysis	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QL	QC result is below the lower tolerance
^	Performed by outside laboratory.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Sample analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: [http://www.sgs.com.au/pv.sgs/3/~media/Local/Australia/Documents/Technical %20Documents/ MP-AL-ENV-QA022%20QA%20QC%20Plan.pdf](http://www.sgs.com.au/pv.sgs/3/~media/Local/Australia/Documents/Technical%20Documents/MP-AL-ENV-QA022%20QA%20QC%20Plan.pdf)

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CLIENT DETAILS

LABORATORY DETAILS

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 Port Smith
 QLD 4870

Telephone 07 4035 5111
 Facsimile 07 40355122
 Email sch4p4(6)@sgs.com

Project CE109936 - 087673045 Kwikleen
 Order Number CE109936
 Samples 4

Manager sch4p4(6) Perso
 Laboratory SGS Alexandria Environmental
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 Alexandria NSW 2015

Telephone +61 2 8594 0400
 Facsimile +61 2 8594 0499
 Email au.environmental.sydney@sgs.com

SGS Reference SE127781 R0
 Report Number 0000082759
 Date Reported 20 May 2014

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client. This QA/QC Statement must be read in conjunction with the referenced Analytical Report. The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

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SAMPLE SUMMARY

Sample counts by matrix	4 Waters	Type of documentation received	COC
Date documentation received	15/5/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.7°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	1

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
CE109936.001	SE127781.001	LB057485	14 May 2014	15 May 2014	21 May 2014	15 May 2014	24 Jun 2014	20 May 2014
CE109936.002	SE127781.002	LB057485	14 May 2014	15 May 2014	21 May 2014	15 May 2014	24 Jun 2014	20 May 2014
CE109936.003	SE127781.003	LB057485	14 May 2014	15 May 2014	21 May 2014	15 May 2014	24 Jun 2014	20 May 2014
CE109936.004	SE127781.004	LB057485	14 May 2014	15 May 2014	21 May 2014	15 May 2014	24 Jun 2014	20 May 2014

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Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	CE109936.001	SE127781.001	%	40 - 130%	93
	CE109936.002	SE127781.002	%	40 - 130%	105
	CE109936.003	SE127781.003	%	40 - 130%	101
	CE109936.004	SE127781.004	%	40 - 130%	97
d4-1,2-dichloroethane (Surrogate)	CE109936.001	SE127781.001	%	40 - 130%	114
	CE109936.002	SE127781.002	%	40 - 130%	109
	CE109936.003	SE127781.003	%	40 - 130%	115
	CE109936.004	SE127781.004	%	40 - 130%	116
d8-toluene (Surrogate)	CE109936.001	SE127781.001	%	40 - 130%	97
	CE109936.002	SE127781.002	%	40 - 130%	103
	CE109936.003	SE127781.003	%	40 - 130%	105
	CE109936.004	SE127781.004	%	40 - 130%	96
Dibromofluoromethane (Surrogate)	CE109936.001	SE127781.001	%	40 - 130%	109
	CE109936.002	SE127781.002	%	40 - 130%	105
	CE109936.003	SE127781.003	%	40 - 130%	109
	CE109936.004	SE127781.004	%	40 - 130%	113

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Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number	Parameter	Units	LOR	Result	
LB057485.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		1,1-dichloroethene	µg/L	0.5	<0.5
		Iodomethane	µg/L	5	<5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2.0
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
	Surrogates	1,2,3-trichlorobenzene	µg/L	0.5	<0.5
		Dibromofluoromethane (Surrogate)	%	-	100
		d4-1,2-dichloroethane (Surrogate)	%	-	103
		d8-toluene (Surrogate)	%	-	103
	Trihalomethanes	Bromofluorobenzene (Surrogate)	%	-	90
		Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
Dibromochloromethane (THM)		µg/L	0.5	<0.5	
Bromoform (THM)		µg/L	0.5	<0.5	

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No duplicates were required for this job.

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Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB057485.002	Halogenated	1,1-dichloroethene	µg/L	0.5	44	45.45	60 - 140 97
	Aliphatics	1,2-dichloroethane	µg/L	0.5	49	45.45	60 - 140 108
		Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	48	45.45	60 - 140 105
	Halogenated	Chlorobenzene	µg/L	0.5	45	45.45	60 - 140 99
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.9	5	60 - 140 98
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.8	5	60 - 140 96
		d8-toluene (Surrogate)	µg/L	-	4.5	5	60 - 140 90
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140 98
	Trihalomethan	Chloroform (THM)	µg/L	0.5	39	45.45	60 - 140 86

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Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spikes were required for this job.

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Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

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Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

- * Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.

- IS Insufficient sample for analysis.
- LNR Sample listed, but not received.
- LOR Limit of reporting.
- QFH QC result is above the upper tolerance.
- QFL QC result is below the lower tolerance.

- ① At least 2 of 3 surrogates are within acceptance criteria.
- ② RPD failed acceptance criteria due to sample heterogeneity.
- ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
- ④ Recovery failed acceptance criteria due to matrix interference.
- ⑤ Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- ⑥ LOR was raised due to sample matrix interference.
- ⑦ LOR was raised due to dilution of significantly high concentration of analyte in sample.
- ⑧ Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
- ⑨ Recovery failed acceptance criteria due to sample heterogeneity.
- ⑩ LOR was raised due to high conductivity of the sample (required dilution).
- † Refer to Analytical Report comments for further information.

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service, available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx>. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This test report shall not be reproduced, except in full.

CLIENT DETAILS

Contact **sch4p4(6) Per**
 Client **GOLDER ASSOCIATES PTY LTD**
 Address **PO BOX 5823
 216 DRAPER ST
 QLD 4870**

 Telephone **07 4054 8200**
 Facsimile **07 4054 8201**
 Email **sch4p4(golder.com.au**

 Project **087673045 Kwikleen**
 Order Number **MQ8834**
 Samples **4**

LABORATORY DETAILS

Manager **sch4p4(6)**
 Laboratory **SGS Cairns Environmental**
 Address **Unit 2, 58 Comport St
 Portsmith QLD 4870**

 Telephone **+61 07 4035 5111**
 Facsimile **+61 07 4035 5122**
 Email **AU.Environmental.Cairns@sgs.com**

 Samples Received **Wed 14/5/2014**
 Report Due **Fri 23/5/2014**
 SGS Reference **CE109936**

SUBMISSION DETAILS

This is to confirm that 4 samples were received on Wednesday 14/5/2014. Results are expected to be ready by Friday 23/5/2014. Please quote SGS reference CE109936 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	4 Waters	Type of documentation received	COC
Date documentation received	14/5/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	Chilled
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice	Samples clearly labelled	Yes
Complete documentation received	Yes	Number of eskies/boxes received	1

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx> as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.

CLIENT DETAILS

Client **GOLDER ASSOCIATES PTY LTD**

Project **087673045 Kwikleen**

SUMMARY OF ANALYSIS

No.	Sample ID	VOCs in Water
001	MW1CP	47
002	MW15CP	47
003	MW16CP	47
004	MW17CP	47

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The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.

The numbers shown in the table indicate the number of results requested in each package.

Please indicate as soon as possible should your request differ from these details.

Testing as per table shall commence immediately unless the client intervenes with a request.



APPENDIX D

Groundwater Monitoring QA/QC Summary Results

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DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	SGS	Workorder Number:	CE107544
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	19/12/2013	Sample Medium:	Water

Sample Information

Number of Primary Samples:	4	Number of Triplicate Samples:	-
Number of Duplicate Samples:	1	Number of Other QAQC Samples:	-

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?		NA
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Trip Blank	NA	
Method Blank	NA	
Rinsate	NA	

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike was submitted as per QAQC plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
	All LCS were within the laboratory control limit.

Matrix Spike (MS) Analyses

Analyte Group	Comments
	All MS results were within the laboratory control limit.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			All results were within the laboratory control limits.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
	MW18	MWX	All results in primary and duplicate analysis below LOR, therefore no RPDs calculated.

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		All surrogate recoveries within acceptable control limits.

Overall Comments

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) Pers
Date: 29/05/2014

sch4p4(6) Personal
Date: 29/05/2014



DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	SGS	Workorder Number:	CE107801
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	17/01/2014	Sample Medium:	Water

Sample Information

Number of Primary Samples:	4	Number of Triplicate Samples:	-
Number of Duplicate Samples:	-	Number of Other QAQC Samples:	-

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?		NA
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Trip Blank	NA	
Method Blank	NA	
Rinsate	NA	

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike was submitted as per QAQC plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
	All LCS were within the laboratory control limit.

Matrix Spike (MS) Analyses

Analyte Group	Comments
	All MS results were within the laboratory control limit.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			All results were within the laboratory control limits.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		All surrogate recoveries within acceptable control limits.

Overall Comments

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) Per
Date: 29/05/2014

Checked By: sch4p4(6)
Date: 29/05/2014



DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	SGS	Workorder Number:	CE108420
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	18/02/2014	Sample Medium:	Water

Sample Information

Number of Primary Samples:	4	Number of Triplicate Samples:	-
Number of Duplicate Samples:	-	Number of Other QAQC Samples:	-

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?		NA
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Trip Blank	NA	
Method Blank	NA	
Rinsate	NA	

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike was submitted as per QAQC plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
	All LCS were within the laboratory control limit.

Matrix Spike (MS) Analyses

Analyte Group	Comments
	All MS results were within the laboratory control limit.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			All results were within the laboratory control limits.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		All surrogate recoveries within acceptable control limits.

Overall Comments

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) Pe
Date: 29/05/2014

Checked By: sch4p4(
Date: 29/05/2014



DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	SGS	Workorder Number:	CE108914
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	18/03/2014	Sample Medium:	Water

Sample Information

Number of Primary Samples:	4	Number of Triplicate Samples:	-
Number of Duplicate Samples:	-	Number of Other QAQC Samples:	-

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?		NA
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Trip Blank	NA	
Method Blank	NA	
Rinsate	NA	

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike was submitted as per QAQC plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
	All LCS were within the laboratory control limit.

Matrix Spike (MS) Analyses

Analyte Group	Comments
	All MS results were within the laboratory control limit.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			All results were within the laboratory control limits.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		All surrogate recoveries within acceptable control limits.

Overall Comments

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) Per
Date: 29/05/2014

Checked By: sch4p4(
Date: 29/05/2014



DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	SGS	Workorder Number:	CE109447
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	16/04/2014	Sample Medium:	Water

Sample Information

Number of Primary Samples:	4	Number of Triplicate Samples:	-
Number of Duplicate Samples:	-	Number of Other QAQC Samples:	-

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?		NA
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Trip Blank	NA	
Method Blank	NA	
Rinsate	NA	

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike was submitted as per QAQC plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
	All LCS were within the laboratory control limit.

Matrix Spike (MS) Analyses

Analyte Group	Comments
	No matrix spikes required.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			No laboratory duplicates required.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		All surrogate recoveries within acceptable control limits.

Overall Comments

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) Pd
Date: 29/05/2014

Checked By: sch4p4(l)
Date: 29/05/2014



DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	SGS	Workorder Number:	CE109936
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	14/05/2014	Sample Medium:	Water

Sample Information

Number of Primary Samples:	4	Number of Triplicate Samples:	-
Number of Duplicate Samples:	-	Number of Other QAQC Samples:	-

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel
All requested analysis completed?	Y	
Samples received intact and chilled?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?		NA
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Trip Blank	NA	
Method Blank	NA	
Rinsate	NA	

Trip Spike Information

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
				No trip spike was submitted as per QAQC plan.

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
	All LCS were within the laboratory control limit.

Matrix Spike (MS) Analyses

Analyte Group	Comments
	No matrix spikes required.

Laboratory Duplicates (LD) Analyses

Analyte Group	Analyte(s)	Sample ID	Comments
			No laboratory duplicates required.

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments

Field Triplicates (FT) Analyses

Analyte Group	Primary ID	Triplicate ID	Comments

Surrogate Compound Monitoring Analyses

Analyte Group	Analyte(s)	Comments
		All surrogate recoveries within acceptable control limits.

Overall Comments

This batch has been validated and is considered suitable for environmental interpretive use.

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) Persd
Date: 29/05/2014

Checked By: sch4p4(6)
Date: 29/05/2014



DATA VALIDATION SUMMARY SHEET

Project Name:	Kwikleen Dry Cleaners	Project Number:	087673045
Primary Laboratory:	Eurofins Air Toxics	Workorder Number:	1405350
Secondary Laboratory:	NA	Workorder Number:	NA
Date Sampled:	12/05/2014	Sample Medium:	Soil Vapour
Sample Information			
Number of Primary Samples:	2	Number of Triplicate Samples:	-
Number of Duplicate Samples:	1	Number of Other QAQC Samples:	1
Documentation and Sample Handling Information			
		Y/N	Comments
COC completed properly?		Y	Signed by both field scientists and labs personnel
All requested analysis completed?		Y	
Samples received intact and chilled?		Y	
Samples analysed within appropriate holding times?		Y	
Sample volumes sufficient for QC analysis?		Y	
Are there non-NATA accredited methods used?		N	
Chromatograms supplied as appropriate?			NA
Laboratory reports signed by authorised personnel?		Y	
QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)			
Type	Sample ID	Comments	
Field Blank	FB01	No detects in field blank.	
Method Blank	NA		
Rinsate	NA		
Trip Spike Information			
Analyte	Spike Concentrations	Recovery Concentration	% Recovery
			No trip spike was submitted as per QAQC plan.
Laboratory Control Spike (LCS) Analyses			
Analyte Group	Comments		
NA			
Matrix Spike (MS) Analyses			
Analyte Group	Comments		
NA			
Laboratory Duplicates (LD) Analyses			
Analyte Group	Analyte(s)	Sample ID	Comments
			No laboratory duplicates required.
Field Duplicates (FD) Analyses			
Analyte Group	Primary ID	Duplicate ID	Comments
Ethanol	SVW17	DUP01	RPD of 80%
Acetone	SVW17	DUP01	RPD of 61%
Trichloroethene	SVW17	DUP01	RPD of 107%
Toluene	SVW17	DUP01	RPD of 115%
Tetrachloroethene	SVW17	DUP01	RPD of 191%
m,p-Xylene	SVW17	DUP01	RPD of 92%
Surrogate Compound Monitoring Analyses			
Analyte Group	Analyte(s)	Comments	
		All surrogate recoveries within acceptable control limits.	
Overall Comments			
A number of high RPDs were recorded for compounds between the primary sample and the field duplicate. Due to an equipment failure, the field duplicate could not be taken in conjunction with the primary sample and instead had to be taken after the primary. This method of sampling could have led to the differences observed for some analytes. This is not considered to affect the overall results.			
This batch has been validated and is considered suitable for environmental interpretive use.			

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: sch4p4(6) P
Date: 29/05/2014

Checked By: sch4p4(
Date: 29/05/2014



APPENDIX E

Summary of All Groundwater and Soil Vapour Results

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Field_ID	Sampled_Date	SDG	ChemName	cis-1,2-Dichloroethene	Trichloroethylene	Tetrachloroethene
			output unit	µg/l	µg/l	µg/l
			LOR	Variable	Variable	Variable
MW1KK	30/04/2009	SE68964		5.1	26	8.5
MW1KK	28/09/2009	SE72570		44	500	90
MW1KK	9/02/2010	SE75787		36	400	400
MW1KK	17/06/2010	SE79195		30	340	53
MW1KK	14/07/2010	SE79866		24	360	86
MW1KK	18/08/2010	SE80754-R		21	360	55
MW1KK	21/09/2010	SE81613		34	460	80
MW1KK	21/10/2010	SE82422		25	330	27
MW1KK	23/11/2010	SE83518		26	340	33
MW1KK	6/01/2011	SE84456		9.5	280	28
MW1KK	17/02/2011	SE85555		9.7	92	8.8
MW1KK	17/03/2011	SE86297		6.4	120	12
MW1KK	30/05/2011	SE87927		15	160	15
MW1KK	29/06/2011	SE88590		16	200	13
MW1KK	29/07/2011	SE89143		6.1	44	4.8
MW1KK	31/08/2011	SE101504		6.5	33	2.8
MW1KK	30/09/2011	SE102344		16	130	8.5
MW1KK	31/10/2011	SE102988		12	100	9
MW1KK	25/11/2011	SE103639		14	120	7.5
MW1KK	13/12/2011	SE104058		<5	120	7.3
MW1KK	20/01/2012	SE104825		7.4	52	14
MW1KK	29/02/2012	SE105949		27	140	29
MW2KK	30/04/2009	SE68964		<5	<5	86
MW2KK	28/09/2009	SE72570		5.7	51	12
MW3KK	30/04/2009	SE68964		<5	<5	49
MW3KK	28/09/2009	SE72570		<5	8.8	150
MW3KK	9/02/2010	SE75787		1.3	6.8	120
MW4KK	30/04/2009	SE68964		640	550	1000
MW4KK	28/09/2009	SE72570		720	980	1300
MW4KK	16/10/2009	SE73085		660	970	2200
MW4KK	30/10/2009	SE73401-R2		700	1300	1900
MW4KK	1/12/2009	SE74208-R		1400	1700	3400
MW4KK	9/02/2010	SE75787		1300	1600	6700
MW4KK	19/05/2010	SE78399		1100	1300	11000
MW4KK	17/06/2010	SE79195		760	1100	13000
MW4KK	14/07/2010	SE79866		790	1100	14000
MW4KK	18/08/2010	SE80754-R		1200	1300	13000
MW4KK	21/09/2010	SE81613		1600	1300	14000
MW4KK	21/10/2010	SE82422		1300	540	11000
MW4KK	23/11/2010	SE83518		1800	560	6600
MW4KK	6/01/2011	SE84456		650	280	730
MW4KK	17/02/2011	SE85555		510	160	4700
MW4KK	17/03/2011	SE86297		330	62	510
MW4KK	30/05/2011	SE87927		2600	830	830
MW4KK	29/06/2011	SE88590		1100	610	21000
MW4KK	29/07/2011	SE89143		1000	310	2400
MW4KK	31/08/2011	SE101504		1200	220	2800
MW4KK	30/09/2011	SE102344		1800	650	14000
MW4KK	31/10/2011	SE102988		1000	460	10000
MW4KK	25/11/2011	SE103639		1000	680	11000
MW4KK	13/12/2011	SE104058		830	440	6800
MW4KK	20/01/2012	SE104825		1200	1000	8400
MW4KK	29/02/2012	SE105949		950	670	4600
MW1CP	Apr-07	Douglas Partners		20	63	520
MW1CP	Jul-07	Le Vert		68	95	785
MW1CP	Oct-07	Le Vert		52	225	329
MW1CP	Mar-08	Le Vert		11	8.7	8.2
MW1CP	11/12/2008	66170		<5	<5	<5
MW1CP	30/04/2009	SE68964		120	170	160
MW1CP	28/09/2009	SE72570		100	160	170
MW1CP	16/10/2009	SE73085		190	290	240
MW1CP	30/10/2009	SE73401-R2		61	160	130
MW1CP	1/12/2009	SE74208-R		57	99	240
MW1CP	9/02/2010	SE75787		4.2	7.8	31
MW1CP	17/06/2010	SE79195		140	69	110
MW1CP	14/07/2010	SE79866		140	83	140
MW1CP	18/08/2010	SE80754-R		96	78	200
MW1CP	21/09/2010	SE81613		61	58	160
MW1CP	21/10/2010	SE82422		54	56	380
MW1CP	23/11/2010	SE83518		330	150	590
MW1CP	6/01/2011	SE84456		4.6	7.2	96
MW1CP	17/02/2011	SE85555		2.6	0.7	16
MW1CP	17/03/2011	SE86297		<0.5	<0.5	6
MW1CP	30/05/2011	SE87927		240	64	110
MW1CP	29/06/2011	SE88590		4	6.8	33
MW1CP	29/07/2011	SE89143		160	18	36
MW1CP	31/08/2011	SE101504		230	32	44
MW1CP	30/09/2011	SE102344		220	70	94
MW1CP	31/10/2011	SE102988		43	9.2	45
MW1CP	25/11/2011	SE103639		84	37	84
MW1CP	13/12/2011	SE104058		110	51	89
MW1CP	20/01/2012	SE104825		<5	<5	<5
MW1CP	29/02/2012	SE105949		<5	<5	2.1
MW1CP	9/07/2012	SE109987-1		22	18	3.8
MW1CP	20/09/2013	CE105952		390	170	42
MW1CP	19/12/2013	CE107544 R0		130	120	27
MW1CP	17/01/2014	CE107801 R0		5.8	7.2	6.3
MW1CP	18/02/2014	CE108420 R0		9.7	10	12
MW1CP	18/03/2014	CE108914 R0		5.1	7	8.1
MW1CP	15/04/2014	CE109447 R0		0.5	2.2	5.7
MW1CP	14/05/2014	CE109936 R0		8	8.8	13

Field_ID	Sampled_Date	ChemName output unit LOR	ChemName		
			cis-1,2-Dichloroethene	Trichloroethylene	Tetrachloroethene
			µg/l	µg/l	µg/l
			Variable	Variable	Variable
		SDG			
MW2CP	Apr-07	Douglas Partners	31	110	360
MW2CP	Jul-07	Le Vert	222	170	526
MW2CP	Oct-07	Le Vert	291	814	2070
MW2CP	Mar-08	Le Vert	20	16	62
MW2CP	30/04/2009	SE68964	150	210	650
MW2CP	28/09/2009	SE72570	250	1400	650
MW2CP	16/10/2009	SE73085	130	610	1600
MW2CP	30/10/2009	SE73401-R2	69	410	970
MW2CP	1/12/2009	SE74208-R	200	440	3200
MW2CP	9/02/2010	SE75787	300	730	2600
MW2CP	5/05/2010	SE77981	140	830	4400
MW2CP	19/05/2010	SE78399	270	1600	3400
MW2CP	17/06/2010	SE79195	130	600	1900
MW2CP	14/07/2010	SE79866	150	580	2400
MW2CP	18/08/2010	SE80754-R	140	770	3400
MW2CP	21/09/2010	SE81613	200	410	7100
MW2CP	21/10/2010	SE82422	78	240	2600
MW2CP	23/11/2010	SE83518	80	200	2600
MW2CP	6/01/2011	SE84456	87	49	220
MW2CP	17/02/2011	SE85555	420	630	1700
MW2CP	17/03/2011	SE86297	150	64	180
MW2CP	30/05/2011	SE87927	190	900	3000
MW2CP	29/06/2011	SE88590	100	510	3100
MW2CP	29/07/2011	SE89143	79	120	800
MW2CP	31/08/2011	SE101504	58	200	610
MW2CP	30/09/2011	SE102344-R1	110	440	2100
MW2CP	31/10/2011	SE102988-R2	180	120	490
MW2CP	25/11/2011	SE103639	300	220	880
MW2CP	13/12/2011	SE104058	200	300	1300
MW2CP	20/01/2012	SE104825	110	1200	1900
MW2CP	29/02/2012	SE105949	180	1200	1200
MW2CP	09/07/12	SE109987-1	510	2000	3800
MW3CP	Apr-07	Douglas Partners	38	160	210
MW3CP	Jul-07	Le Vert	43	293	288
MW3CP	Oct-07	Le Vert	26	309	358
MW3CP	Mar-08	Le Vert	6.3	6.3	6.9
MW3CP	30/04/2009	SE68964	<50	210	110
MW3CP	28/09/2009	SE72570	28	170	86
MW3CP	9/02/2010	SE75787	27	95	75
MW3CP	09/07/12	SE109987-1	33	72	15
MW3CP	19/12/2013	CE107544 R0	450	<0.5	<0.5
MW4CP	Apr-07	Douglas Partners	6	7	110
MW4CP	Jul-07	Le Vert	36	24	171
MW4CP	Oct-07	Le Vert	<0.5	<0.5	10
MW4CP	Mar-08	Le Vert	1.6	0.6	3.8
MW4CP	30/04/2009	SE68964	<5	<5	<5
MW4CP	28/09/2009	SE72570	DRY	DRY	DRY
MW4CP	19/09/2013	CE105952	2.3	2	<0.5
MW4CP	19/12/2013	CE107544 R0	1.4	2.9	<0.5
MW5CP*	Apr-07	Douglas Partners	92	350	1000
MW5CP	Jul-07	Le Vert	80	462	1480
MW5CP	Oct-07	Le Vert	94	929	1980
MW5CP	Mar-08	Le Vert	63	39	73
MW5CP	30/04/2009	SE68964	<5	<5	<5
MW5CP	28/09/2009	SE72570	220	1700	1700
MW5CP	16/10/2009	SE73085	270	1800	1400
MW5CP	30/10/2009	SE73401-R2	110	1200	1000
MW5CP	1/12/2009	SE74208-R	320	1500	1800
MW5CP	9/02/2010	SE75787	250	700	1300
MW5CP	17/06/2010	SE79195	0.5	3.6	12
MW5CP	14/07/2010	SE79866	14	40	56
MW5CP	18/08/2010	SE80754-R	DRY	DRY	DRY
MW5CP	21/10/2010	SE82422	<0.5	3.6	13
MW5CP	23/11/2010	SE83518	1	4	10
MW5CP	6/01/2011	SE84456	8.9	93	240
MW5CP	17/02/2011	Could not be sampled	-	-	-
MW5CP	17/03/2011	SE85297	24	38.0	130
MW5CP	30/05/2011	SE87927	11	24.0	15
MW5CP	29/06/2011	SE88590	57	81.0	600
MW5CP	29/07/2011	SE89143	2.8	14.0	14
MW5CP	31/08/2011	SE101504	37	110.0	97
MW5CP	30/09/2011	SE102344	100	180.0	320
MW5CP	31/10/2011	SE102988	3.2	10	22
MW5CP	25/11/2011	SE103639	<0.5	27	69
MW5CP	13/12/2011	SE104058	1.3	8	29
MW5CP	20/01/2012	SE104825	44	44	1000
MW5CP	29/02/2012	SE105949	92	160	240
MW5CP	19/12/2013	CE107544 R0	270	110	38
MW6CP*	Apr-07	Douglas Partners	<0.5	20	70
MW6CP	Jul-07	Le Vert	8	8	<5
MW6CP	Oct-07	Le Vert	DRY	DRY	DRY
MW6CP	Mar-08	Le Vert	<0.5	1	1
MW6CP	30/04/2009	SE68964	<5	7.5	6.6
MW6CP	28/09/2009	SE72570	DRY	DRY	DRY
MW6CP	20/09/2013	CE105952	25	<0.5	3
MW7CP	Oct-07	Le Vert	<5	6	<5
MW7CP	Mar-08	Le Vert	1	2.1	11
MW7CP	30/04/2009	SE68964	<5	<5	<5
MW7CP	28/09/2009	SE72570	DRY	DRY	DRY



Field_ID	Sampled_Date	ChemName output unit LOG	cis-1,2-Dichloroethene	Trichloroethylene	Tetrachloroethene
			µg/l	µg/l	µg/l
			Variable	Variable	Variable
MW8CP	Oct-07	Le Vert	<5	<5	<5
MW8CP	Mar-08	Le Vert	<0.5	<0.5	<0.5
MW8CP	30/04/2009	SE68964	<5	<5	<5
MW8CP	29/09/2009	SE72570	<5	<5	<5
MW9CP	Oct-07	Le Vert	<5	<5	<5
MW9CP	Mar-08	Le Vert	<0.5	<0.5	<0.5
MW9CP	30/04/2009	SE68964	<5	7.1	6.8
MW9CP	28/09/2009	SE72570	<5	<5	<5
MW10CP	Oct-07	Le Vert	<5	<5	<5
MW10CP	Mar-08	Le Vert	1300	<0.5	2.6
MW10CP	30/04/2009	SE68964	<5	<5	89
MW10CP	28/09/2009	SE72570	<5	<5	<5
MW11CP	5/05/2010	SE77981	140	630	2200
MW11CP	19/05/2010	SE78399	140	670	3000
MW11CP	17/06/2010	SE79195	110	670	2500
MW11CP	14/07/2010	SE79866	94	650	2500
MW11CP	18/08/2010	SE80754-R	61	740	3000
MW11CP	21/09/2010	SE81613	52	830	3400
MW11CP	21/10/2010	SE82422	47	460	1600
MW11CP	23/11/2010	SE83518	71	1000	2700
MW11CP	6/01/2011	SE84456	59	990	3100
MW11CP	17/02/2011	SE85555	65	530	1500
MW11CP	17/03/2011	SE86297	59	440	1100
MW11CP	30/05/2011	SE87927	100	650	840
MW11CP	29/06/2011	SE88590	64	680	1100
MW11CP	29/07/2011	SE89143	79	290	590
MW11CP	31/08/2011	SE101504	35	190	270
MW11CP	30/09/2011	SE102344	55	610	1100
MW11CP	31/10/2011	SE102988	31	250	390
MW11CP	25/11/2011	SE103639	<50	730	1100
MW11CP	13/12/2011	SE104058	51	690	1000
MW11CP	20/01/2012	SE104825	56	1200	1400
MW11CP	29/02/2012	SE105949	29	300	400
MW12CP	5/05/2010	SE77981	390	1600	3800
MW12CP	19/05/2010	SE78399	270	1600	4100
MW12CP	17/06/2010	SE79195	270	1200	2200
MW12CP	14/07/2010	SE79866	220	2000	2500
MW12CP	18/08/2010	SE80754-R	180	1100	2600
MW12CP	21/09/2010	SE81613	150	1200	3400
MW12CP	21/10/2010	SE82422	130	570	1200
MW12CP	23/11/2010	SE83518	110	790	1400
MW12CP	6/01/2011	SE84456	57	760	1500
MW12CP	17/02/2011	SE85555	300	370	3600
MW12CP	17/03/2011	SE86297	91	400	1000
MW12CP	30/05/2011	SE87927	140	620	3400
MW12CP	29/06/2011	SE88590	190	740	1700
MW12CP	31/08/2011	SE101504	120	240	420
MW12CP	30/09/2011	SE102344	140	700	1400
MW12CP	31/10/2011	SE102988	1.1	2	5.4
MW12CP	25/11/2011	SE103639	110	560	1400
MW12CP	13/12/2011	SE104058	82	430	1300
MW12CP	20/01/2012	SE104825	190	760	2100
MW12CP	29/02/2012	SE105949	580	450	1000
MW12CP	19/12/2013	CE107544 R0	290	1600	800
MW13CP	5/05/2010	SE77981	25	160	440
MW13CP	19/05/2010	SE78399	26	120	350
MW13CP	17/06/2010	SE79195	14	67	190
MW13CP	14/07/2010	SE79866	14	110	180
MW13CP	18/08/2010	SE80754-R	8.1	100	220
MW13CP	21/09/2010	SE81613	16	58	160
MW13CP	21/10/2010	SE82422	25	91	110
MW13CP	23/11/2010	SE83518	30	130	120
MW13CP	6/01/2011	SE84456	32	210	150
MW13CP	17/02/2011	SE85555	23	61	65
MW13CP	17/03/2011	SE86297	19	59	66
MW13CP	30/05/2011	SE87927	15	49	52
MW13CP	29/06/2011	SE88590	9.8	58	52
MW13CP	29/07/2011	SE89143	11	14	9.3
MW13CP	31/08/2011	SE101504	2.7	13	5.5
MW13CP	30/09/2011	SE102344	20	50	30
MW13CP	31/10/2011	SE102988	13	52	23
MW13CP	25/11/2011	SE103639	15	73	27
MW13CP	13/12/2011	SE104058	19	64	23
MW13CP	20/01/2012	SE104825	27	83	31
MW13CP	29/02/2012	SE105949	23	61	33
MW13CP	09/07/12	SE109987-1	0.6	70	110
MW13CP	19/12/2013	CE107544 R0	74	190	100
MW14CP	12/12/12	CE102092	230	440	1200
MW15CP	18/02/13	CE102844	1.4	5.8	7
MW15CP	19/12/2013	CE107544 R0	3.1	4.6	1.9
MW15CP	17/01/2014	CE107801 R0	<0.5	0.8	0.7
MW15CP	18/02/2014	CE108420 R0	2.6	4.6	2.8
MW15CP	18/03/2014	CE108914 R0	7.3	8.1	5.5
MW15CP	15/04/2014	CE109447 R0	3.1	6.9	4.7
MW15CP	14/05/2014	CE109936 R0	8.1	8.1	2.9
MW16CP	18/02/13	CE102844	3.8	7.3	14
MW16CP	20/09/13	CE105952	320	180	12
MW16CP	19/12/2013	CE107544 R0	9.7	13	2
MW16CP	17/01/2014	CE107801 R0	5.4	8.1	1.7
MW16CP	18/02/2014	CE108420 R0	23	17	9.3
MW16CP	18/03/2014	CE108914 R0	46	32	12
MW16CP	15/04/2014	CE109447 R0	15	23	3.6
MW16CP	14/05/2014	CE109936 R0	27	30	1.5
MW17CP	18/02/13	CE102844	8.2	19	37
MW17CP	20/09/13	CE105952	89	210	100
MW17CP	19/12/2013	CE107544 R0	9.7	21	6.2
MW17CP	17/01/2014	CE107801 R0	17	23	11
MW17CP	18/02/2014	CE108420 R0	9.5	17	8.4
MW17CP	18/03/2014	CE108914 R0	35	12	8.3
MW17CP	15/04/2014	CE109447 R0	20	30	16
MW17CP	14/05/2014	CE109936 R0	28	49	23
MW18CP	18/02/13	CE102844	<LOR	<LOR	<LOR
MW18CP	20/09/13	CE105952	2	0.9	<LOR
MW18CP	19/12/2013	CE107544 R0	7.7	2.5	<0.5
MW19CP	18/02/13	CE102844	<LOR	<LOR	<LOR
MW19CP	19/12/2013	CE107544 R0	<0.5	<0.5	<0.5
MW20CP	18/02/13	CE102844	21	38	42
MW20CP	19/12/2013	CE107544 R0	52	100	34
Trench Pump	23/11/2010	SE83518	1100	1000	8600
Trench Pump	6/01/2011	SE84456	410	770	5500
Trench Pump	17/02/2011	Could not be sampled	-	-	-
Trench Pump	17/03/2011	SE86297	100	140	220
Trench Pump	30/05/2011	SE87927	960	740	14000
Trench Pump	29/06/2011	SE88590	160	190	1800
Trench Pump	29/07/2011	SE89143	100	140	790
Trench Pump	31/08/2011	SE101504	90	110	290
Trench Pump	30/09/2011	SE102344	150	270	650
Trench Pump	31/10/2011	SE102988	260	260	2000
Trench Pump	25/11/2011	SE103639	100	370	730
Trench Pump	13/12/2011	SE104058	32	110	230
Trench Pump	20/01/2012	SE104825	68	260	340
Trench Pump	29/02/2012	SE105949	110	140	590
Trench Pump	18/04/2013	64793	91	138	347
Holding Tank	18/04/2013	64793	73	112	247

All results are expressed as µg/L, unless otherwise specified.
Figures highlighted in orange represent the most recent set of results.

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
HAC's - HALOGENATED ALIPHATIC COMPOUNDS

Field ID	SDG	Sampled Date	cis-1,2-Dichloroethene	Trichloroethene (TCE)	Tetrachloroethene (PCE)
			ug/m ³	ug/m ³	ug/m ³
SVW01	1112524	20/12/11	ND	3700	170000
	1202418	15/02/12	1400	7800	84000
	1207359	13/07/12	7800	21000	86000
	1208098	30/07/12	3800	12000	53000
SVW02	1112524	20/12/11	1200	1800	80000
	1202418	15/02/12	-	-	-
	1207359	13/07/12	953	5800	21000
	1208098	30/07/12	630	7600	27000
SVW03	1112524	20/12/11	810	1000	65000
	1202418	15/02/12	360	1400	91000
	1207359	13/07/12	2500	15000	140000
	1208098	30/07/12	810	7900	120000
SVW04	1112524	20/12/11	<150	230	24000
	1202418	15/02/12	ND	1200	23000
	1207359	13/07/12	120	920	9400
	1208098	30/07/12	140	1600	12000
SVW05	1207359	13/07/12	ND	90	5800
	1208098	30/07/12	ND	68	5400
SVW06	1207359	13/07/12	200	3000	26000
	1208098	30/07/12	84	2300	32000
SVW07	1207359	13/07/12	ND	11	450
	1208098	30/07/12	ND	14	530
SVW08	1210378	12/10/12	ND	8.4	160
SVW09	1210378	12/10/12	ND	ND	21
SVW10	1210378	12/10/12	2900	14000	6900
SVW11	1212384	26/10/12	-	8400	34000
SVW12	1210378	12/10/12	ND	16	ND
SVW13	1212384	14/12/12	930	8100	15000
SVW14	1212384	14/12/12	700	14000	17000
SVW15	1212384	14/12/12	160	4000	12000
SVW16	1303260	11/03/13	ND	100	1300
	1311157	07/11/13	48	760	220
	1405350	12/05/14	ND	ND	ND
SVW17	1303260	11/03/13	ND	84	1300
	1311157	07/11/13	ND	240	1800
	1405350	12/05/14	ND	24	430
SVW18	1303260	11/03/13	ND	72	160

Comments

ND denotes Non Detect

SUMMARY OF ALL ANALYTICAL RESULTS - SOIL VAPOUR



APPENDIX F

Laboratory Certificates – Soil Vapour Samples May 2014

Published on Resources Disclosure Log
RTI Act 2009

5/22/2014

[Redacted]

Eurofins | mgt (formerly mgt Labmark Environmental Laboratorie
Unit 1, 21 Smallwood Place
Murarrie
Queensland 4162

Project Name: Kwikleen
Project #: 087673045
Workorder #: 1405350A

Dear [Redacted]

The following report includes the data for the above referenced project for sample(s) received on 5/19/2014 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: [Redacted] if you have any questions regarding the data in this report.

Regards,

[Redacted]

[Redacted]

Project Manager

A Eurofins Lancaster Laboratories Company

Eurofins Air Toxics, Inc.

180 Blue Ravine Road, Suite B
Folsom, CA 95630

T | 916-985-1000
F | 916-985-1020
www.airtoxics.com

WORK ORDER #: 1405350A

Work Order Summary

CLIENT: sch4p4(6) Personal information
Eurofins | mgt (formerly mgt Labmark Environmental Laboratories)
Unit 1, 21 Smallwood Place
Murarrie
Queensland 4162
+61 7 3902 4606

BILL TO: Accounts Payable
Eurofins | mgt (formerly mgt Labmark Environmental Laboratories)
2-5 Kingston Town Close
Oakleigh, Vic 3166

PHONE: +61 7 3902 4606

FAX:

DATE RECEIVED: 05/19/2014

DATE COMPLETED: 05/22/2014

P.O. # B14_083_418218

PROJECT # 087673045 Kwikleen

CONTACT: sch4p4(6) Personal information

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SVW16 (My11558)	TO-15	4.1 "Hg	15.2 psi
02A	SVW17 (My11559)	TO-15	7.6 "Hg	15 psi
03A	FB01 (My11560)	TO-15	11.6 "Hg	14.9 psi
04A	DUP01 (My11561)	TO-15	8.6 "Hg	15.3 psi
05A	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA

Published on Resource Disclosure
RTI Act 2009

CERTIFIED BY: sch4p4(6) Personal information

DATE: 05/22/14

Technical Director

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-13-6, UT NELAP CA009332013-4, VA NELAP - 460197, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2013, Expiration date: 10/17/2014.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins | mgt (formerly mgt Labmark Environmental Laboratories)
Workorder# 1405350A

Four 1 Liter Summa Canister (100% Certified) samples were received on May 19, 2014. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

The Chain of Custody (COC) was not relinquished properly. A signature and date was not provided by the field sampler.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN**

Client Sample ID: SVW16 (My11558)

Lab ID#: 1405350A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	4.7	5.7	8.9	11
Toluene	1.2	2.3	4.4	8.6
m,p-Xylene	1.2	3.4	5.1	15
o-Xylene	1.2	1.4	5.1	6.2
4-Ethyltoluene	1.2	1.7	5.8	8.2
1,2,4-Trimethylbenzene	1.2	2.5	5.8	12

Client Sample ID: SVW17 (My11559)

Lab ID#: 1405350A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	5.4	15	10	28
Acetone	14	25	32	60
Hexane	1.4	1.9	4.8	6.7
Benzene	1.4	1.5	4.3	4.8
Heptane	1.4	2.0	5.5	8.1
Trichloroethene	1.4	4.6	7.2	24
Toluene	1.4	5.0	5.1	19
Tetrachloroethene	1.4	63	9.2	430
m,p-Xylene	1.4	3.7	5.9	16
o-Xylene	1.4	1.5	5.9	6.4
4-Ethyltoluene	1.4	1.3 J	6.6	6.6 J
1,2,4-Trimethylbenzene	1.4	1.4	6.6	7.1

Client Sample ID: FB01 (My11560)

Lab ID#: 1405350A-03A

No Detections Were Found.

Client Sample ID: DUP01 (My11561)

Lab ID#: 1405350A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: DUP01 (My11561)

Lab ID#: 1405350A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethanol	5.7	6.2	11	12

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Client Sample ID: SVW16 (My11558)

Lab ID#: 1405350A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052124	Date of Collection:	5/12/14 12:45:00 PM
Dil. Factor:	2.36	Date of Analysis:	5/21/14 11:02 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	Not Detected	5.8	Not Detected
Freon 114	1.2	Not Detected	8.2	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	46	Not Detected
Chloroethane	4.7	Not Detected	12	Not Detected
Freon 11	1.2	Not Detected	6.6	Not Detected
Ethanol	4.7	5.7	8.9	11
Freon 113	1.2	Not Detected	9.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Acetone	12	Not Detected	28	Not Detected
2-Propanol	4.7	Not Detected	12	Not Detected
Carbon Disulfide	4.7	Not Detected	15	Not Detected
3-Chloropropene	4.7	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.2	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	Not Detected	14	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.5	Not Detected
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Cyclohexane	1.2	Not Detected	4.1	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.4	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.5	Not Detected
Benzene	1.2	Not Detected	3.8	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.8	Not Detected
Heptane	1.2	Not Detected	4.8	Not Detected
Trichloroethene	1.2	Not Detected	6.3	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
1,4-Dioxane	4.7	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.9	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.8	Not Detected
Toluene	1.2	2.3	4.4	8.6
trans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Tetrachloroethene	1.2	Not Detected	8.0	Not Detected
2-Hexanone	4.7	Not Detected	19	Not Detected

Client Sample ID: SVW16 (My11558)

Lab ID#: 1405350A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052124	Date of Collection:	5/12/14 12:45:00 PM
Dil. Factor:	2.36	Date of Analysis:	5/21/14 11:02 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.1	Not Detected
Chlorobenzene	1.2	Not Detected	5.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.1	Not Detected
m,p-Xylene	1.2	3.4	5.1	15
o-Xylene	1.2	1.4	5.1	6.2
Styrene	1.2	Not Detected	5.0	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	Not Detected	5.8	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.1	Not Detected
Propylbenzene	1.2	Not Detected	5.8	Not Detected
4-Ethyltoluene	1.2	1.7	5.8	8.2
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected
1,2,4-Trimethylbenzene	1.2	2.5	5.8	12
1,3-Dichlorobenzene	1.2	Not Detected	7.1	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.1	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.1	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.1	Not Detected
1,2,4-Trichlorobenzene	4.7	Not Detected	35	Not Detected
Hexachlorobutadiene	4.7	Not Detected	50	Not Detected
Naphthalene	4.7	Not Detected	25	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: SVW17 (My11559)

Lab ID#: 1405350A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052125	Date of Collection:	5/12/14 1:30:00 PM
Dil. Factor:	2.70	Date of Analysis:	5/21/14 11:28 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	6.7	Not Detected
Freon 114	1.4	Not Detected	9.4	Not Detected
Chloromethane	14	Not Detected	28	Not Detected
Vinyl Chloride	1.4	Not Detected	3.4	Not Detected
1,3-Butadiene	1.4	Not Detected	3.0	Not Detected
Bromomethane	14	Not Detected	52	Not Detected
Chloroethane	5.4	Not Detected	14	Not Detected
Freon 11	1.4	Not Detected	7.6	Not Detected
Ethanol	5.4	15	10	28
Freon 113	1.4	Not Detected	10	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Acetone	14	25	32	60
2-Propanol	5.4	Not Detected	13	Not Detected
Carbon Disulfide	5.4	Not Detected	17	Not Detected
3-Chloropropene	5.4	Not Detected	17	Not Detected
Methylene Chloride	14	Not Detected	47	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	4.9	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Hexane	1.4	1.9	4.8	6.7
1,1-Dichloroethane	1.4	Not Detected	5.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.4	Not Detected	16	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.4	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.0	Not Detected
Chloroform	1.4	Not Detected	6.6	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.4	Not Detected
Cyclohexane	1.4	Not Detected	4.6	Not Detected
Carbon Tetrachloride	1.4	Not Detected	8.5	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.3	Not Detected
Benzene	1.4	1.5	4.3	4.8
1,2-Dichloroethane	1.4	Not Detected	5.5	Not Detected
Heptane	1.4	2.0	5.5	8.1
Trichloroethene	1.4	4.6	7.2	24
1,2-Dichloropropane	1.4	Not Detected	6.2	Not Detected
1,4-Dioxane	5.4	Not Detected	19	Not Detected
Bromodichloromethane	1.4	Not Detected	9.0	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.1	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.5	Not Detected
Toluene	1.4	5.0	5.1	19
trans-1,3-Dichloropropene	1.4	Not Detected	6.1	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.4	Not Detected
Tetrachloroethene	1.4	63	9.2	430
2-Hexanone	5.4	Not Detected	22	Not Detected

Client Sample ID: SVW17 (My11559)

Lab ID#: 1405350A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052125	Date of Collection:	5/12/14 1:30:00 PM
Dil. Factor:	2.70	Date of Analysis:	5/21/14 11:28 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	10	Not Detected
Chlorobenzene	1.4	Not Detected	6.2	Not Detected
Ethyl Benzene	1.4	Not Detected	5.9	Not Detected
m,p-Xylene	1.4	3.7	5.9	16
o-Xylene	1.4	1.5	5.9	6.4
Styrene	1.4	Not Detected	5.8	Not Detected
Bromoform	1.4	Not Detected	14	Not Detected
Cumene	1.4	Not Detected	6.6	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.3	Not Detected
Propylbenzene	1.4	Not Detected	6.6	Not Detected
4-Ethyltoluene	1.4	1.3 J	6.6	6.6 J
1,3,5-Trimethylbenzene	1.4	Not Detected	6.6	Not Detected
1,2,4-Trimethylbenzene	1.4	1.4	6.6	7.1
1,3-Dichlorobenzene	1.4	Not Detected	8.1	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.1	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.0	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.1	Not Detected
1,2,4-Trichlorobenzene	5.4	Not Detected	40	Not Detected
Hexachlorobutadiene	5.4	Not Detected	58	Not Detected
Naphthalene	5.4	Not Detected	28	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: FB01 (My11560)

Lab ID#: 1405350A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052126	Date of Collection:	5/12/14 1:40:00 PM
Dil. Factor:	3.28	Date of Analysis:	5/21/14 11:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.6	Not Detected	8.1	Not Detected
Freon 114	1.6	Not Detected	11	Not Detected
Chloromethane	16	Not Detected	34	Not Detected
Vinyl Chloride	1.6	Not Detected	4.2	Not Detected
1,3-Butadiene	1.6	Not Detected	3.6	Not Detected
Bromomethane	16	Not Detected	64	Not Detected
Chloroethane	6.6	Not Detected	17	Not Detected
Freon 11	1.6	Not Detected	9.2	Not Detected
Ethanol	6.6	Not Detected	12	Not Detected
Freon 113	1.6	Not Detected	12	Not Detected
1,1-Dichloroethene	1.6	Not Detected	6.5	Not Detected
Acetone	16	Not Detected	39	Not Detected
2-Propanol	6.6	Not Detected	16	Not Detected
Carbon Disulfide	6.6	Not Detected	20	Not Detected
3-Chloropropene	6.6	Not Detected	20	Not Detected
Methylene Chloride	16	Not Detected	57	Not Detected
Methyl tert-butyl ether	1.6	Not Detected	5.9	Not Detected
trans-1,2-Dichloroethene	1.6	Not Detected	6.5	Not Detected
Hexane	1.6	Not Detected	5.8	Not Detected
1,1-Dichloroethane	1.6	Not Detected	6.6	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.6	Not Detected	19	Not Detected
cis-1,2-Dichloroethene	1.6	Not Detected	6.5	Not Detected
Tetrahydrofuran	1.6	Not Detected	4.8	Not Detected
Chloroform	1.6	Not Detected	8.0	Not Detected
1,1,1-Trichloroethane	1.6	Not Detected	8.9	Not Detected
Cyclohexane	1.6	Not Detected	5.6	Not Detected
Carbon Tetrachloride	1.6	Not Detected	10	Not Detected
2,2,4-Trimethylpentane	1.6	Not Detected	7.7	Not Detected
Benzene	1.6	Not Detected	5.2	Not Detected
1,2-Dichloroethane	1.6	Not Detected	6.6	Not Detected
Heptane	1.6	Not Detected	6.7	Not Detected
Trichloroethene	1.6	Not Detected	8.8	Not Detected
1,2-Dichloropropane	1.6	Not Detected	7.6	Not Detected
1,4-Dioxane	6.6	Not Detected	24	Not Detected
Bromodichloromethane	1.6	Not Detected	11	Not Detected
cis-1,3-Dichloropropene	1.6	Not Detected	7.4	Not Detected
4-Methyl-2-pentanone	1.6	Not Detected	6.7	Not Detected
Toluene	1.6	Not Detected	6.2	Not Detected
trans-1,3-Dichloropropene	1.6	Not Detected	7.4	Not Detected
1,1,2-Trichloroethane	1.6	Not Detected	8.9	Not Detected
Tetrachloroethene	1.6	Not Detected	11	Not Detected
2-Hexanone	6.6	Not Detected	27	Not Detected

Client Sample ID: FB01 (My11560)

Lab ID#: 1405350A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052126	Date of Collection:	5/12/14 1:40:00 PM
Dil. Factor:	3.28	Date of Analysis:	5/21/14 11:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.6	Not Detected	14	Not Detected
1,2-Dibromoethane (EDB)	1.6	Not Detected	13	Not Detected
Chlorobenzene	1.6	Not Detected	7.6	Not Detected
Ethyl Benzene	1.6	Not Detected	7.1	Not Detected
m,p-Xylene	1.6	Not Detected	7.1	Not Detected
o-Xylene	1.6	Not Detected	7.1	Not Detected
Styrene	1.6	Not Detected	7.0	Not Detected
Bromoform	1.6	Not Detected	17	Not Detected
Cumene	1.6	Not Detected	8.1	Not Detected
1,1,2,2-Tetrachloroethane	1.6	Not Detected	11	Not Detected
Propylbenzene	1.6	Not Detected	8.1	Not Detected
4-Ethyltoluene	1.6	Not Detected	8.1	Not Detected
1,3,5-Trimethylbenzene	1.6	Not Detected	8.1	Not Detected
1,2,4-Trimethylbenzene	1.6	Not Detected	8.1	Not Detected
1,3-Dichlorobenzene	1.6	Not Detected	9.9	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.9	Not Detected
alpha-Chlorotoluene	1.6	Not Detected	8.5	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.9	Not Detected
1,2,4-Trichlorobenzene	6.6	Not Detected	49	Not Detected
Hexachlorobutadiene	6.6	Not Detected	70	Not Detected
Naphthalene	6.6	Not Detected	34	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: DUP01 (My11561)

Lab ID#: 1405350A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052127	Date of Collection:	5/12/14 1:50:00 PM
Dil. Factor:	2.86	Date of Analysis:	5/22/14 12:20 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.4	Not Detected	7.1	Not Detected
Freon 114	1.4	Not Detected	10	Not Detected
Chloromethane	14	Not Detected	30	Not Detected
Vinyl Chloride	1.4	Not Detected	3.6	Not Detected
1,3-Butadiene	1.4	Not Detected	3.2	Not Detected
Bromomethane	14	Not Detected	56	Not Detected
Chloroethane	5.7	Not Detected	15	Not Detected
Freon 11	1.4	Not Detected	8.0	Not Detected
Ethanol	5.7	6.2	11	12
Freon 113	1.4	Not Detected	11	Not Detected
1,1-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Acetone	14	Not Detected	34	Not Detected
2-Propanol	5.7	Not Detected	14	Not Detected
Carbon Disulfide	5.7	Not Detected	18	Not Detected
3-Chloropropene	5.7	Not Detected	18	Not Detected
Methylene Chloride	14	Not Detected	50	Not Detected
Methyl tert-butyl ether	1.4	Not Detected	5.2	Not Detected
trans-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Hexane	1.4	Not Detected	5.0	Not Detected
1,1-Dichloroethane	1.4	Not Detected	5.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.7	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	1.4	Not Detected	5.7	Not Detected
Tetrahydrofuran	1.4	Not Detected	4.2	Not Detected
Chloroform	1.4	Not Detected	7.0	Not Detected
1,1,1-Trichloroethane	1.4	Not Detected	7.8	Not Detected
Cyclohexane	1.4	Not Detected	4.9	Not Detected
Carbon Tetrachloride	1.4	Not Detected	9.0	Not Detected
2,2,4-Trimethylpentane	1.4	Not Detected	6.7	Not Detected
Benzene	1.4	Not Detected	4.6	Not Detected
1,2-Dichloroethane	1.4	Not Detected	5.8	Not Detected
Heptane	1.4	Not Detected	5.9	Not Detected
Trichloroethene	1.4	Not Detected	7.7	Not Detected
1,2-Dichloropropane	1.4	Not Detected	6.6	Not Detected
1,4-Dioxane	5.7	Not Detected	21	Not Detected
Bromodichloromethane	1.4	Not Detected	9.6	Not Detected
cis-1,3-Dichloropropene	1.4	Not Detected	6.5	Not Detected
4-Methyl-2-pentanone	1.4	Not Detected	5.8	Not Detected
Toluene	1.4	Not Detected	5.4	Not Detected
trans-1,3-Dichloropropene	1.4	Not Detected	6.5	Not Detected
1,1,2-Trichloroethane	1.4	Not Detected	7.8	Not Detected
Tetrachloroethene	1.4	Not Detected	9.7	Not Detected
2-Hexanone	5.7	Not Detected	23	Not Detected

Client Sample ID: DUP01 (My11561)

Lab ID#: 1405350A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052127	Date of Collection:	5/12/14 1:50:00 PM
Dil. Factor:	2.86	Date of Analysis:	5/22/14 12:20 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.4	Not Detected	12	Not Detected
1,2-Dibromoethane (EDB)	1.4	Not Detected	11	Not Detected
Chlorobenzene	1.4	Not Detected	6.6	Not Detected
Ethyl Benzene	1.4	Not Detected	6.2	Not Detected
m,p-Xylene	1.4	Not Detected	6.2	Not Detected
o-Xylene	1.4	Not Detected	6.2	Not Detected
Styrene	1.4	Not Detected	6.1	Not Detected
Bromoform	1.4	Not Detected	15	Not Detected
Cumene	1.4	Not Detected	7.0	Not Detected
1,1,2,2-Tetrachloroethane	1.4	Not Detected	9.8	Not Detected
Propylbenzene	1.4	Not Detected	7.0	Not Detected
4-Ethyltoluene	1.4	Not Detected	7.0	Not Detected
1,3,5-Trimethylbenzene	1.4	Not Detected	7.0	Not Detected
1,2,4-Trimethylbenzene	1.4	Not Detected	7.0	Not Detected
1,3-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
1,4-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
alpha-Chlorotoluene	1.4	Not Detected	7.4	Not Detected
1,2-Dichlorobenzene	1.4	Not Detected	8.6	Not Detected
1,2,4-Trichlorobenzene	5.7	Not Detected	42	Not Detected
Hexachlorobutadiene	5.7	Not Detected	61	Not Detected
Naphthalene	5.7	Not Detected	30	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: Lab Blank

Lab ID#: 1405350A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052107	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 02:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1405350A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052107	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	5/21/14 02:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,1,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: CCV

Lab ID#: 1405350A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052105	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 12:23 PM

Compound	%Recovery
Freon 12	100
Freon 114	100
Chloromethane	98
Vinyl Chloride	101
1,3-Butadiene	98
Bromomethane	102
Chloroethane	98
Freon 11	99
Ethanol	107
Freon 113	99
1,1-Dichloroethene	102
Acetone	95
2-Propanol	98
Carbon Disulfide	98
3-Chloropropene	98
Methylene Chloride	99
Methyl tert-butyl ether	99
trans-1,2-Dichloroethene	98
Hexane	96
1,1-Dichloroethane	99
2-Butanone (Methyl Ethyl Ketone)	95
cis-1,2-Dichloroethene	100
Tetrahydrofuran	95
Chloroform	101
1,1,1-Trichloroethane	98
Cyclohexane	100
Carbon Tetrachloride	98
2,2,4-Trimethylpentane	99
Benzene	96
1,2-Dichloroethane	99
Heptane	96
Trichloroethene	117
1,2-Dichloropropane	98
1,4-Dioxane	92
Bromodichloromethane	99
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	90
Toluene	97
trans-1,3-Dichloropropene	98
1,1,2-Trichloroethane	95
Tetrachloroethene	95
2-Hexanone	90

Client Sample ID: CCV

Lab ID#: 1405350A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052105	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 12:23 PM

Compound	%Recovery
Dibromochloromethane	97
1,2-Dibromoethane (EDB)	98
Chlorobenzene	97
Ethyl Benzene	98
m,p-Xylene	98
o-Xylene	96
Styrene	99
Bromoform	99
Cumene	96
1,1,2,2-Tetrachloroethane	75
Propylbenzene	96
4-Ethyltoluene	97
1,3,5-Trimethylbenzene	95
1,2,4-Trimethylbenzene	96
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	95
alpha-Chlorotoluene	98
1,2-Dichlorobenzene	94
1,2,4-Trichlorobenzene	74
Hexachlorobutadiene	73
Naphthalene	93

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: LCS

Lab ID#: 1405350A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 11:13 AM

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Freon 114	112	70-130
Chloromethane	106	70-130
Vinyl Chloride	109	70-130
1,3-Butadiene	107	70-130
Bromomethane	113	70-130
Chloroethane	110	70-130
Freon 11	110	70-130
Ethanol	115	70-130
Freon 113	124	70-130
1,1-Dichloroethene	125	70-130
Acetone	106	70-130
2-Propanol	110	70-130
Carbon Disulfide	100	70-130
3-Chloropropene	110	70-130
Methylene Chloride	118	70-130
Methyl tert-butyl ether	111	70-130
trans-1,2-Dichloroethene	95	70-130
Hexane	109	70-130
1,1-Dichloroethane	114	70-130
2-Butanone (Methyl Ethyl Ketone)	106	70-130
cis-1,2-Dichloroethene	125	70-130
Tetrahydrofuran	107	70-130
Chloroform	113	70-130
1,1,1-Trichloroethane	112	70-130
Cyclohexane	113	70-130
Carbon Tetrachloride	112	70-130
2,2,4-Trimethylpentane	111	70-130
Benzene	109	70-130
1,2-Dichloroethane	113	70-130
Heptane	112	70-130
Trichloroethene	108	70-130
1,2-Dichloropropane	108	70-130
1,4-Dioxane	108	70-130
Bromodichloromethane	115	70-130
cis-1,3-Dichloropropene	116	70-130
4-Methyl-2-pentanone	109	70-130
Toluene	108	70-130
trans-1,3-Dichloropropene	104	70-130
1,1,2-Trichloroethane	106	70-130
Tetrachloroethene	106	70-130
2-Hexanone	111	70-130

Client Sample ID: LCS

Lab ID#: 1405350A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052103	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 11:13 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	115	70-130
1,2-Dibromoethane (EDB)	110	70-130
Chlorobenzene	107	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	110	70-130
o-Xylene	107	70-130
Styrene	113	70-130
Bromoform	117	70-130
Cumene	111	70-130
1,1,2,2-Tetrachloroethane	107	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	111	70-130
1,3,5-Trimethylbenzene	108	70-130
1,2,4-Trimethylbenzene	109	70-130
1,3-Dichlorobenzene	109	70-130
1,4-Dichlorobenzene	107	70-130
alpha-Chlorotoluene	119	70-130
1,2-Dichlorobenzene	108	70-130
1,2,4-Trichlorobenzene	105	70-130
Hexachlorobutadiene	105	70-130
Naphthalene	89	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: LCSD

Lab ID#: 1405350A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 11:37 AM

Compound	%Recovery	Method Limits
Freon 12	114	70-130
Freon 114	118	70-130
Chloromethane	111	70-130
Vinyl Chloride	116	70-130
1,3-Butadiene	113	70-130
Bromomethane	120	70-130
Chloroethane	116	70-130
Freon 11	116	70-130
Ethanol	122	70-130
Freon 113	130	70-130
1,1-Dichloroethene	133 Q	70-130
Acetone	109	70-130
2-Propanol	117	70-130
Carbon Disulfide	104	70-130
3-Chloropropene	114	70-130
Methylene Chloride	124	70-130
Methyl tert-butyl ether	117	70-130
trans-1,2-Dichloroethene	100	70-130
Hexane	115	70-130
1,1-Dichloroethane	120	70-130
2-Butanone (Methyl Ethyl Ketone)	115	70-130
cis-1,2-Dichloroethene	134 Q	70-130
Tetrahydrofuran	111	70-130
Chloroform	120	70-130
1,1,1-Trichloroethane	117	70-130
Cyclohexane	118	70-130
Carbon Tetrachloride	116	70-130
2,2,4-Trimethylpentane	118	70-130
Benzene	115	70-130
1,2-Dichloroethane	117	70-130
Heptane	117	70-130
Trichloroethene	113	70-130
1,2-Dichloropropane	114	70-130
1,4-Dioxane	114	70-130
Bromodichloromethane	121	70-130
cis-1,3-Dichloropropene	122	70-130
4-Methyl-2-pentanone	114	70-130
Toluene	114	70-130
trans-1,3-Dichloropropene	102	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	106	70-130
2-Hexanone	112	70-130

Client Sample ID: LCSD

Lab ID#: 1405350A-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3052104	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/21/14 11:37 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	113	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	107	70-130
Ethyl Benzene	106	70-130
m,p-Xylene	109	70-130
o-Xylene	106	70-130
Styrene	112	70-130
Bromoform	116	70-130
Cumene	111	70-130
1,1,2,2-Tetrachloroethane	108	70-130
Propylbenzene	111	70-130
4-Ethyltoluene	112	70-130
1,3,5-Trimethylbenzene	108	70-130
1,2,4-Trimethylbenzene	109	70-130
1,3-Dichlorobenzene	110	70-130
1,4-Dichlorobenzene	108	70-130
alpha-Chlorotoluene	119	70-130
1,2-Dichlorobenzene	109	70-130
1,2,4-Trichlorobenzene	115	70-130
Hexachlorobutadiene	112	70-130
Naphthalene	100	60-140

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	98	70-130



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager [Redacted]
 Collected by: (Print and Sign) [Redacted] [Redacted]
 Company GOLDER ASSOCIATES Email [Redacted] @golder.com.au
 Address 216 Draper St City Cairns State QLD Zip 4870
 Phone 0417 122 829 Fax _____

Project Info: P.O. # <u>Q 000 427</u> Project # <u>087673045</u> Project Name <u>Kwikleen</u>	Turn Around Time: <input type="checkbox"/> Normal <input type="checkbox"/> Rush specify _____	<i>Lab Use Only</i> Pressurized by: _____ Date: _____ Pressurization Gas: _____ N ₂ He
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Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt	Final (psi)
	SUW16	37394	12/5/14	12:45	TO15 + Helium	-30	-5		
	SUW17	35546	12/5/14	13:30	TO15 + Helium	-27	-7		
	FB01	33643	12/5/14	13:40	TO15	-30	-13		
	DUP01	30822	12/5/14	13:50	TO15 + Helium	-30	-10		

Relinquished by: (signature) <u>[Redacted]</u> Date/Time <u>14/5/14 17:00</u>	Received by: (signature) <u>[Redacted]</u> Date/Time <u>13/5 8:30am</u>	Notes: <u>Report: 418218</u>
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	
Relinquished by: (signature) _____ Date/Time _____	Received by: (signature) _____ Date/Time _____	

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
					Yes No None	

WEST PRINTING & GRAPHICS (818) 704-6000

Sample Receipt Advice

Company name: **Golder Associates Pty Ltd (Qld)**

Contact name: sch4p4(6) Personal info

Client job number: KWIKLEEN 087673045

COC number: Not provided

Turn around time: 5 Day

Date/Time received: May 13, 2014 8:30 AM

Eurofins | mgt reference: **418218**

Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- Organic samples had Teflon liners.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

sch4p4(6) Personal info on Phone : (+61) 8 8947 1557 or by e.mail sch4p4(6) Personal info@eurofins.com.au

Results will be delivered electronically via e.mail to sch4p4(6) Personal info sch4p4(6) Personal info@golder.com.au.

Eurofins | mgt Sample Receipt

Company Name: Golder Associates Pty Ltd (Qld)
Address: 147 Coronation Dve
 Milton
 QLD 4064
Client Job No.: KWIKLEEN 087673045

Order No.:
Report #: 418218
Phone: (07) 3721 5400
Fax: (07) 3721 5401

Received: May 13, 2014 8:30 AM
Due: May 20, 2014
Priority: 5 Day
Contact Name: sch4p4(6) Person

Eurofins | mgt Client Manager: sch4p4(6) Person

TO15 (standard 62-compound list) (1L)

Sample Detail

laboratory where analysis is conducted	
Melbourne Laboratory - NATA Site # 1254 & 14271	
Sydney Laboratory - NATA Site # 18217	
Brisbane Laboratory - NATA Site # 20794	
Internal Laboratory	X

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
W16	May 12, 2014	12:45PM	Air	B14-My11558	X
W17	May 12, 2014	12:45PM	Air	B14-My11559	X
301	May 12, 2014	12:45PM	Air	B14-My11560	X
JP01	May 12, 2014	12:45PM	Air	B14-My11561	X

Golder Associates Pty Ltd
 147 Coronation Dve
 Milton
 QLD 4064

Attention:

sch4p4(6) Personal

Report
418218-A

Client Reference

KWIKLEEN 087673045

Received Date

May 13, 2014

Client Sample ID			SVW16	SVW17	FB01	DUP01
Sample Matrix			Air	Air	Air	Air
Eurofins mgt Sample No.			B14-My11558	B14-My11559	B14-My11560	B14-My11561
Date Sampled			May 12, 2014	May 12, 2014	May 12, 2014	May 12, 2014
Test/Reference		LOR	Unit			
Soil Vapour (Summa Canister)						
TO15 (standard 62-compound list) (1L)			see attached	see attached	see attached	see attached

Published on Resources Disclosure Log
 DR
 RTI Act 2009

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

mg/l: milligrams per litre

ug/l: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within
TEQ	Toxic Equivalency Quotient

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Comments
Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

sch4p4(6) Pers

Client Services

Glenn Jackson
Laboratory Manager

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

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APPENDIX G

Limitations

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LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd ("Golder") subject to the following limitations:

This Document has been prepared for the particular purpose outlined in Golder's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

The scope and the period of Golder's Services are as described in Golder's proposal, and are subject to restrictions and limitations. Golder did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Golder in regards to it.

Conditions may exist which were undetectable given the limited nature of the enquiry Golder was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Golder for incomplete or inaccurate data supplied by others.

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At Golder Associates we strive to be the most respected global company providing consulting, design, and construction services in earth, environment, and related areas of energy. Employee owned since our formation in 1960, our focus, unique culture and operating environment offer opportunities and the freedom to excel, which attracts the leading specialists in our fields. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees who operate from offices located throughout Africa, Asia, Australasia, Europe, North America, and South America.

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www.golder.com

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216 Draper Street
Cairns, Queensland 4870
Australia
T: +61 7 4054 8200

ATTACHMENT K

Registered Plan

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REGISTRATION CONFIRMATION STATEMENT

DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND

Title Reference : 50977238

This is the current status of the title as at 11:02 on 21/01/2015

REGISTERED OWNER

Dealing No: 716200348 12/12/2014

NQ VILLAS PTY LIMITED A.C.N. 131 660 805

TRUSTEE

UNDER INSTRUMENT 711779135

ESTATE AND LAND

Estate in Fee Simple

LOT 20 SURVEY PLAN 262379

County of NARES

Parish of CAIRNS

Local Government: CAIRNS

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 20106187 (ALLOT 4 SUBN SEC 145)
Deed of Grant No. 20108157 (POR 337)
Deed of Grant No. 20109043 (POR 335)
Deed of Grant No. 20109133 (ALLOT 3 SUBN SEC 145)
2. EASEMENT IN GROSS No 601349664 (N598417) 19/02/1969
BURDENING THE LAND
TO COUNCIL OF THE CITY OF CAIRNS
OVER EASEMENT A ON RP722609 AND
EASEMENTS B AND C ON RP722610
3. MORTGAGE No 711779171 08/07/2008 at 15:22
ST.GEORGE BANK LIMITED A.C.N. 055 513 070
4. EASEMENT No 716200333 12/12/2014 at 12:52
benefiting the land over
EASEMENT F ON SP268791
5. EASEMENT No 716200334 12/12/2014 at 12:52
burdening the land to
LOT 1 ON RP745758
OVER EASEMENT G ON SP268791
6. EASEMENT No 716266780 19/01/2015 at 13:36
benefiting the land over
EASEMENT H ON SP262379
7. EASEMENT No 716266781 19/01/2015 at 13:36
benefiting the land over
EASEMENT I ON SP262379

REGISTRATION CONFIRMATION STATEMENT

DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND

Title Reference : 50977238

EASEMENTS, ENCUMBRANCES AND INTERESTS (Continued)

8. EASEMENT IN GROSS No 716266784 19/01/2015 at 13:37
burdening the land
CAIRNS REGIONAL COUNCIL
over
EASEMENTS K AND L ON SP268792

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

DEALINGS REGISTERED

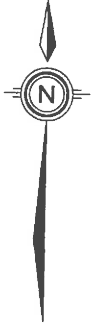
716266780 EASEMENT
716266781 EASEMENT
716266782 SURVEY PLAN
716266784 EAS IN GROSS

Caution - Charges do not necessarily appear in order of priority

** End of Confirmation Statement **

EV Dann
Registrar of Titles and Registrar of Water Allocations

Lodgement No: 3553240
Email: info@prestonlaw.com.au
PRESTON LAW
Office: CAIRNS
Box: 39



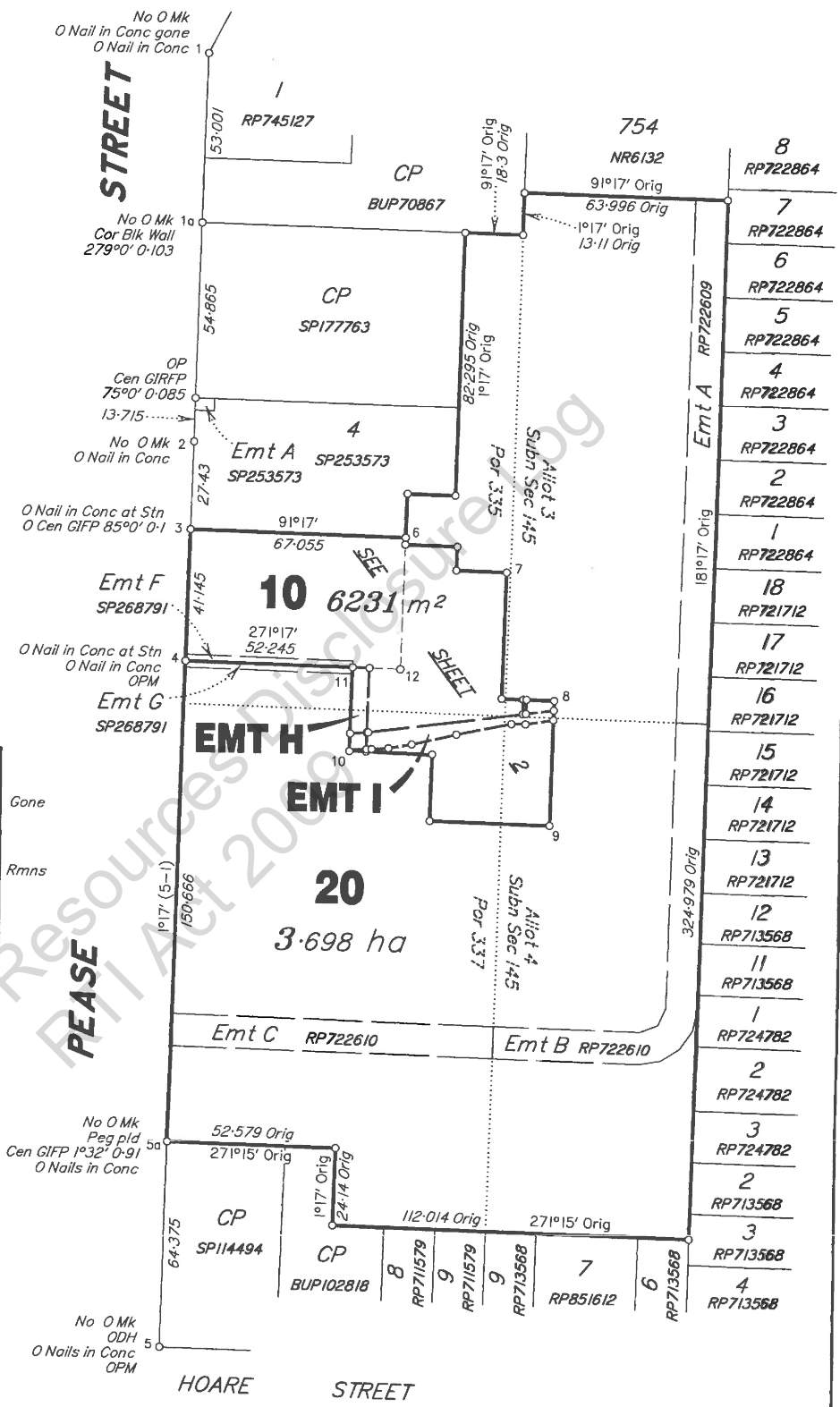
Original information compiled from RP742725 in the Department of Natural Resources and Mines.

Peg placed at all new corners, unless otherwise stated.

STN	TO	ORIGIN	BEARING	DIST
1	Nail Hole in Conc fd		279°10'	1-945
1	O Nail in Conc	IS163674	287°03'	2-05
1	O Nail in Conc	IS205976	240°37'50"	2-245
1a	Nail in Conc		256°20'20"	2-86
2	O Nail in Conc	SP253573	277°14'	1-933
4	O Nail in Conc	IS205976	272°18'30"	1-895
5	ODH	RP843602	270°17'	1-004
5	O Nail in Conc	IS77293	225°02'	2-16
5	O Nail in Conc	IS77293	208°33'	2-255
5a	O Nail in Conc	IS77293	271°15'	1-6
5a	O Nail in Conc	IS77293	315°10'	2-69
6	OIP	SP253573	181°17'	1-0
6	OIP	SP253573	91°17'	1-1
7	Nail in Conc fd		8°30'13"	14-705
7	Nail in Conc fd		175°51'45"	18-415
8	Nail in Conc fd		237°50'10"	16-74
10	Nail in Conc fd		178°46'	0-99

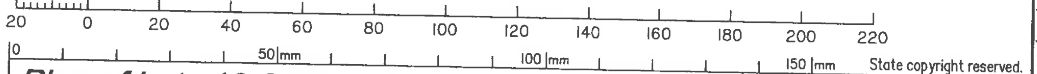
PERMANENT MARKS

PM	ORIGIN	BEARING	DIST	NO
4-OPM	IS205976	184°59'20"	59-062	91735
5-OPM	SP114494	179°48'40"	38-31	91734



REFERENCE MARKS

Scale 1:1500 - Lengths are in Metres.



Plan of Lots 10 & 20 and Emts H & I in Lot 10

Cancelling Lot 1 on RP742725, Lot 1 on RP745758 & Lot 9 on RP735336

LOCAL GOVERNMENT: CAIRNS REGIONAL LOCALITY: MANOORA

Meridian: RP742725

File B

Survey Records No

Scale: 1:1500

Format: STANDARD



Page 3 of 3 SP262379

CHARLES O'NEILL PTY. LTD. (ACN 010 329 174)
I hereby certify that the land comprised in this plan was surveyed by the corporation, by Peter Sutton PENFOLD, Registered Surveyor, for whose work the corporation accepts responsibility, under the supervision of Aidan John DILLON, Cadastral Surveyor and that the plan is accurate, that the said survey was performed in accordance with the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003 and associated Regulations and Standards and that the said survey as completed on 14/08/2014.

sch4p4(6) Personal info
Director
sch4p4(6) Personal info
Director
Date: 15/8/2014
22-095



7363MCD-04B 7363B5-04B 14/08/2014

716200348

\$494.20
12/12/2014 12:53

CS 400 NT

**WARNING : Folded or Mutilated Plans will not be accepted.
Plans may be rolled.
Information may not be placed in the outer margins.**

5. Lodged by

Preston Law
Level 1, 59 McLeod Street
Cairns QLD 4870
Tel: +61 7 4052 0700
Email: info@prestonlaw.com.au

Lodger
Code:
189

(Include address, phone number, reference, and Lodger Code)

1. Certificate of Registered Owners or Lessees.

1/We NO VILLAS PTY LIMITED A.C.N. 131 660 805
TRUSTEE UNDER INSTRUMENT 711779135
BUNGEE PTY LTD A.C.N. 121 865 763
TRUSTEE UNDER INSTRUMENT 710387483

(Names in full)

* as Registered Owners of this land agree to this plan and dedicate the Public Use Land as shown hereon in accordance with Section 50 of the Land Title Act 1994.

* as Lessees of this land agree to this plan.

Signature of * Registered Owners * Lessees

BUNGEE PTY LTD ACN 121 865 763
sch4p4(6) Personal information sch4p4(6) Personal information
Director Director

NO VILLAS PTY LIMITED ACN 131 660 805

sch4p4(6) Personal information

SOLE DIRECTOR

* Rule out whichever is inapplicable

2. Planning Body Approval

* CAIRNS REGIONAL COUNCIL
hereby approves this plan in accordance with the :

%
SUSTAINABLE PLANNING ACT 2009
DATE OF APPLICATION : 3 SEPTEMBER 2013

Dated this TWENTY-SEVENTH day of AUGUST 2014
sch4p4(6) Pers

DELEGATED OFFICER
GRAHAM BOYD, MANAGER
DEVELOPMENT AND
REGULATORY SERVICES

* Insert the name of the Planning Body.

% Insert applicable approving legislation.

Insert designation of signatory or delegation

3. Plans with Community Management Statement :

CMS Number :

Name :

22-095

4. References :

Dept File :

Local Govt : 18/13/1746

Surveyor : 7363MCD File

6. Existing

Title Reference	Description	Created		
		New Lots	Road	Secondary Interests
21290225	Lot 1 on RP742725.	10 & 20	---	EMTH, EMT 1
21366001	Lot 1 on RP745758	10	---	---
21275213	Lot 9 on RP735336	10	---	---

MORTGAGE ALLOCATIONS

Mortgage	Lots Fully Encumbered	Lots Partially Encumbered
711779171	20	10
710387484	---	10

ENCUMBRANCE EASEMENT ALLOCATIONS

Easement	Lots to be Encumbered
601349664 (Emt A on RP722609 and Emts B & C on RP722610)	20
(Emt G on SP268791)	20
(Emt F on SP268791)	10

BENEFIT EASEMENT ALLOCATIONS

Easement	Lots to be Benefited
(Emt F on SP268791)	20
(Emt G on SP268791)	10

Easement F on SP268791, so far as it affects Lot 10, to be extinguished in terms of Sec 87(b) of the Land Title Act 1994.

Easements D & E on RP735336 (Nos. 601071238 & 601071239) are to be surrendered prior to registration of this plan

Lease 702492402 to be surrendered prior to registration of this plan

SP268791 to be registered prior to this plan.

10 & 20 Allot 4 Subn Sec 145
Allot 3 Subn Sec 145
Por 337
Por 335

Lots Orig

7. Orig Grant Allocation :

8. Map Reference :
8064-32121

9. Parish:
CAIRNS

10. County:
NARES

11. Passed & Endorsed :

By : CHARLES O'NEILL PTY.LTD.
ACN 010 329 174
Date : 15/8/14
Signed : sch4p4(6) P
Designation :Cadastral Surveyor.....

12. Building Format Plans only.

I certify that :
* As far as it is practical to determine, no part of the building shown on this plan encroaches onto adjoining lots or road;
* Part of the building shown on this plan encroaches onto adjoining * lots and road

Cadastral Surveyor/Director * Date
* delete words not required

13. Lodgement Fees :

Survey Deposit \$
Lodgement \$
..... New Titles \$
Photocopy \$
Postage \$
TOTAL \$

14. Insert Plan Number Page 379 of 406
SP262379

ATTACHMENT L

Auditor's Report

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23 January 2015

Waste and Contaminated Land Section
c/o Permit and Licence Management
Queensland Department of Environment and Heritage Protection
400 George Street
Brisbane, Queensland 4000

Dear Sir or Madam,

RE: Auditor Addendum Letter Regarding Subdivision of Lot 1 on RP742725

1.0 Introduction and Background

This summary Addendum Letter has been completed under the Queensland Government Department of Environment and Heritage Protection (EHP) Code of Conduct and guidelines for a Contaminated Land Auditor. This is also in accordance with the provisions of Chapter 7, Part 8 of the *Environmental Protection Act 1994*. The conditions of sch4p4(6) Pes appointment (Approval No. CLA0004) as a Queensland Contaminated Land Auditor (CLA) are pursuant to the provisions of Section 573 of the *Environmental Protection Act 1994*.

The subject site is located at the Cairns Villa Caravan Park, Pease St, Manunda, Queensland. Golder Associates Pty Ltd (Golder) was contracted by sch4p4(6) Personal info to act as the Environmental Consultant and to perform the environmental assessment works at the site. The caravan park site (formerly Lot 1 on RP742725) has been the subject of a number of various environmental investigations, firstly by GHD in 2005 and then since 2007 by Golder after the owners of the caravan park site identified the presence of chlorinated solvents in groundwater.

The Auditor notes that the GHD report included the removal and validation of an underground storage tank (UST). The EPA subsequently removed the whole of the caravan park from the Environmental Management Register (EMR). The site was then re-listed on the EMR for *hazardous contaminant* when contamination was found in the groundwater. The EMR reference number for the site is ID No. 13083 and file No. BNE26227.

Recently, the site has been investigated with the specific objective of delineating the extent of contamination so that the site can be subdivided to allow the uncontaminated portion of the site to be removed from the EMR, while the contaminated portion of the site will remain on the EMR under a Site Management Plan (SMP). To meet this objective, Golder has completed a series of groundwater and soil vapour assessments, with the most recent assessment reported in *Cairns Villa Caravan Park - Final Confirmation of Area Impacted by Chlorinated Solvents* (6 June 2014). All of the relevant Golder reports are included in Golder's submission to EHP dated 23 January 2015.

2.0 Discussion

Based on the results of the Golder assessment, a subdivision plan has been lodged which separates the impacted area (Lot 20 on SP262379) from the clean area of Lot 20 on SP262379 (Attachment K of the Golder submission to EHP). As the Golder cover letter notes, the subdivision plan was recently amended to move the southern boundary of Lot 10 on SP262379 by 5 metres to the north.

The CLA prepared an Auditor Summary Report (10 June 2014) that has been included as Attachment L in the Golder submission to EHP. The report summarises the review of the Golder Associates reports and includes the following discussion regarding the assessment of the location of the southern boundary of proposed Lot 10.

“Southern Boundary

The southern boundary was originally defined by the series on groundwater and soil gas investigations from April 2013. Remedial pumping interruptions associated with sewer repairs are believed to have resulted in a deterioration of conditions in this area detected by groundwater and soil vapour results in October and November 2013, respectively. Subsequent pumping and groundwater monitoring since December 2013 has indicated a significant and sustained improvement in groundwater conditions along the southern boundary.

The soil vapour results on the proposed southern boundary were well below the amended remediation criteria (and below or close to the NEPM interim HILs) in May 2014.

Given the above results and the implemented remedial pumping, the proposed southern boundary is considered to be suitable to define the southern extent of the impacted area requiring subdivision from the remainder of the caravan park site.”

The CLA confirms that the analytical results from soil vapour well SVW16 (with all results below the level of reporting) and groundwater well MW 16CP, which are both located on the revised location of the proposed southern boundary, demonstrate that the area to the south of the revised boundary is suitable to be removed from the EMR.

The CLA also confirms that he agrees with the Golder’s conclusion that Lot 20 on SP262379 is suitable for unrestricted land use and with the recommendation that Lot 20 be removed from the EMR. An Site Management Plan (SMP) will be prepared for Lot 10 in the near future, but the CLA agrees that the removal of Lot 20 from the EMR should not be contingent on an SMP being approved for Lot 10.

If you have any questions, please do not hesitate to contact the undersigned on sch4p4(6) Pers or by email at sch@jimsoltau.com.

Yours sincerely,

Jim Soltau & Associates

sch4p4(6) Personal information

sch4p4(6) Perso

Principal

Attachment: Statutory Declaration

**Auditor Summary Report of the Site
Investigations at the Cairns Villa
Caravan Park, Pease St, Manunda,
Queensland**

Project No. 20160

Prepared for the Department of Environment and Heritage Protection

10 June 2014

Jim Soltau & Associates

Prepared by:

Jim Soltau & Associates

P.O. Box 2128

Toowong, QLD 4066

Issued by:

sch4p4(6) Personal informati

sch4p4(6) Pe
Principal

Date of Issue: 10 June 2014

Contents

1.0	Introduction.....	2
1.1	Background.....	2
1.2	Role of the Auditor	2
2.0	Objectives.....	3
3.0	Scope of Works	4
4.0	Site Details.....	5
4.1	Site Description.....	5
4.1.1	Site Features and Infrastructure.....	5
4.1.2	Surrounding Land Use	5
4.1.3	Geology.....	5
4.1.4	Hydrology / Hydrogeology.....	5
4.2	Site History and Previous Investigation Reports	6
4.2.1	Summary of Site History From GHD Report	6
4.2.2	Summary of Previous Remediation and Assessment Works Conducted by Golder	7
5.0	Final Confirmation of Area Impacted by Chlorinated Solvents Report.....	9
5.1	Groundwater Investigation Works.....	9
5.2	Soil Vapour Investigation Works	9
5.3	Review of Boundary Results.....	9
6.0	QA/QC review.....	11
6.1	RPD Results	11
6.2	Trip Blank and Trip Spike Samples.....	11
6.3	Laboratory QA/QC	11
6.4	Summary of QA/QC	11
7.0	Conclusions	12
8.0	Assessment Against the Prescribed Criteria.....	13
9.0	Statement of Site Suitability.....	15
10.0	Statement of Limitations	16
11.0	References	17

List of Appendices

Appendix A Statutory Declaration

1.0 Introduction

1.1 Background

This summary review has been completed under the Queensland Government Department of Environment and Heritage Protection (EHP) Code of Conduct and guidelines for a Contaminated Land Auditor. This is also in accordance with the provisions of Chapter 7, Part 8 of the *Environmental Protection Act 1994*. The conditions of [sch4p4(6)]'s appointment as a Queensland contaminated land Auditor (Approval No. CLA0004) are pursuant to the provisions of Section 573 of the *Environmental Protection Act 1994*.

This report summarises the review conducted by [sch4p4(6)], the approved Third Party Reviewer (now Environmental Auditor) in 2007 for Lot 1 on RP742725, of the report titled *Cairns Villa Caravan Park - Final Confirmation of Area Impacted by Chlorinated Solvents* dated 6 June 2014;

The site is located at the Cairns Villa Caravan Park, Pease St, Manunda, Queensland. Golder Associates Pty Ltd (Golder) was contracted by Mr [sch4p4(6) Person] to act as the Environmental Consultant and to perform the environmental assessment works at the site.

Lot 1 on RP742725 is listed on the Environmental Management Register (EMR) for 'hazardous contaminants'. The site is not listed on the Contaminated Land Register (CLR).

The site was investigated in order to delineate the extent of contamination with the aim to subdivide the site and allow for the removal of the uncontaminated portion of the site from the EMR, while the balance of the site remains on the EMR under a Site Management Plan (SMP).

1.2 Role of the Auditor

Mr. [sch4p4(6)], a Principal at Jim Soltau & Associates, was engaged by Mr [sch4p4(6) Person] to act as the Auditor. Generally, the Auditor's role is to facilitate EHP's review of the works performed by Golder and to provide an independent certification of the implementation of the remediation and investigation works at the site with respect to the suitability of the site to be removed from the EMR.

Activities undertaken by the Auditor included:

- A site inspection during the assessment works on 17 February 2010.
- Review of the Golder *Final Confirmation of Area Impacted by Chlorinated Solvents* report and review of quality assurance sampling to confirm the accuracy of results obtained, final approval of investigation report.
- Review of a number of Golder reports over the last 5 years regarding progressive groundwater remediation and assessments.
- Production of this Auditor summary report.

2.0 Objectives

The Golder *Final Confirmation of Area Impacted by Chlorinated Solvents* report stated that the overall objective of their report was to demonstrate that the clean area of the caravan park can be removed from the Environmental Management Register (EMR) once the contaminated area is subdivided from the clean areas into two new lot numbers.

The Auditor agrees that this was the objective of the assessment works conducted by Golder.

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3.0 Scope of Works

The scope of works over five years including the activities of groundwater remediation, groundwater monitoring events and soil vapour monitoring are outlined in the historical reports summarised in **Section 4.2**. The works have cumulated in the soil vapour sampling presented in **Section 5.2** and the results summarised in **Section 5.3**.

The Auditor has assessed that the Golder report was prepared in general compliance with the following documents:

- *Guide to the Sampling and Investigation of Potentially Contaminated Soil*, Part 1: Non volatile and Semi volatile Compounds, AS4482.1, Australian Standard, 2005;
- *Guide to the Sampling and Investigation of Potentially Contaminated Soil*, Part 2: Volatile Substances, AS4482.2, Australian Standard, 1999;
- The National Environment Protection (Site Contamination) Measure 1999, as amended by the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1);
- Queensland Department of Environment and Heritage Protection, 2013, *Guideline for contaminated land professionals*; and
- Queensland Department of Environment and Heritage Protection, 2012, *Guideline for assessing a suitably qualified person*.

The Auditor notes that the analytical results were compared to both the formerly agreed upon remediation criteria for the site, as well as the amended National Environment Protection (Assessment of Site Contamination) Measure (NEPM) (amended in May 2013). The amended NEPM contains interim soil vapour health investigation levels (HILs) for volatile organic chlorinated compounds (including the contaminants of concern) for various land settings.

The Auditor confirms that these are the appropriate guidelines to reference in order to assess the contamination status of the site.

4.0 Site Details

4.1 Site Description

4.1.1 Site Features and Infrastructure

The location of the site is presented on Figure 1 in the Golder report.

The site is located at Cairns Villa Caravan Park, Pease St, Manunda, Queensland and is located adjacent to a former dry cleaners site owned by Mr [sch4p4(6)]

The site is relatively flat and sparsely vegetated with grass and large trees. Site infrastructure includes a mix of self-contained villas, free standing cabins and more than 50 sites for transit caravans. Other features include the main administration building, a large saltwater swimming pool, game room and a laundromat. The only waste stored on the site is a range of standard domestic waste created by the residents.

The main elements of the site description were presented in the first report completed on the site by GHD in May 2005 (*Cairns Villa & Leisure Park, 28 Pease Street, Cairns Site Investigation and Validation Report*).

4.1.2 Surrounding Land Use

GHD's description of the surrounding land use was as follows:

"The site is bounded to the north, east, south and west by the following property:

» North: The northern most boundary of the site abuts an environmental park that is a large parcel of undeveloped land consisting of large trees and shrubs. The environmental park extends northward terminating at Anderson Street.

» The site is separated from its eastern occupants by an easement. The easement is an open earthen lined drain that extends along the majority of the eastern boundary and then crosses the site to the south terminating at box culverts passing under Pease Street. Residential property occupies the eastern boundary on the opposite side of the easement along Mayer Street.

» Residential housing is located along the southern boundary of the site.

» The western boundary extends directly along a portion of Pease Street encompassing the main site administration/reception building and entry off Pease Street. Directly north of the main reception building is a dry cleaning and launderers business (Kwikclean) followed by a terra cotta business and residential units up to the intersection. A Shell branded Fuel Service Station is located at the intersection of Pease Street and Anderson Street. The service station is positioned greater than 400 metres to the north of the site.

» There are a number of small businesses operating along Pease Street opposite the site.

4.1.3 Geology

The Cairns Regional Geology 1:100,000 Department of Natural Resources & Mines (DNR&M) Geological Map Series Data, 2000, indicated the site overlays geology which is a mix of Amphibolite, Phyllite, Mica Schist, Metaarenite, Gniess and Migmatite.

4.1.4 Hydrology / Hydrogeology

The Department of Natural Resources and Mines (DNR&M) does not hold comprehensive records regarding groundwater usage in the area. Data provided by the Department shows that the nearest registered bore is greater than 2 kilometres from the site.

The current site owners installed one groundwater bore approximately 2 years ago to a depth of approximately 42 m midway along the site towards the eastern boundary greater than 500 m from the location of the UST. No drilling records were provided by the site owner in relation to this groundwater bore.

The site is serviced with a reticulated water supply and groundwater usage from the installed bore is limited to irrigation of gardens during drier periods throughout the year.”

Surface water and stormwater originating on the site flows into onsite constructed drains and eventually into the large easement drain that cuts directly across the site and along the eastern boundary. The easement flows offsite into the adjoining environmental park to the north.”

The Auditor has assessed GHD’s description of the site and believes it is appropriate to refer to it in June 2014.

4.2 Site History and Previous Investigation Reports

The caravan park site has been the subject of a number of various investigations, firstly by GHD in 2005 and then since 2007 after the owners of the caravan park site identified the presence of chlorinated solvents in groundwater.

4.2.1 Summary of Site History From GHD Report

As noted in Section 4.1, the first site assessment was conducted by GHD in 2005. The following site history has been taken from the GHD report:

“Previous site owners of the Cairns Villa and Leisure Park (formally known as the Cole Caravan Park) were consulted to ascertain past operation history of the site. A chronology of site owners and records of their discussion is presented in the following sections.

» Prior to 1966 the property was a poultry farm operated by the Cole family. The immediate surrounding area was predominantly rural with few residential or established businesses.

» The Cole Caravan Park was established by the Cole family around the year 1966.

» Bill Cole reported that two (2) underground fuel storage tanks were installed in the driveway off Pease Street in 1968. According to Bill Cole the tanks were a 1x 500 gallon standard fuel and 1 x 1,000 gallon super fuel tank. Two Golden Fleece fuel bowzers were also installed near the tanks for fuel dispensing.

» The 500 gallon standard UST was decommissioned in 1972. It was reported that fuel dispensed from this tank contained water at times when the level in the tank was low. The 500 gallon tank was emptied and filled with sand. The associated fuel bowser was removed as part of tank decommissioning. The 1,000 gallon tank and bowser remained operational at the time.

» The property was purchased from the Cole’s by the Olholm’s in 1973. The Olholm’s continued to operate the site as an ongoing caravan and Villa Park. It is understood that fuel continued to be dispensed from the reported 1,000 gallon tank in the driveway. The Olholm’s sold the property to New Concept Developments in 1987.

» New Concepts Developments, Mr Adrian Walter, reported that fuel dispensing from the remaining UST continued for approximately 12 months after the purchase of the property in 1987. Following this the tank was emptied and the remaining fuel bowser was removed from the site in late 1987. A garden bed was established over the tank and around the location of the former bowzers. The metal frame which provided cover for the bowzers remains in the established garden bed. Prior to selling the property in 1994 New Concept Developments notified Cairns City Council that a UST was located on the property. The reported size of the UST was 17,000 litres, which was subsequently reported on a Flammable and Combustible Liquid Licence issued by Council for the property.

It was confirmed following discussion with an Environmental Protection Agency (EPA) Contaminated Land Officer on 22 November 2004, that EPA notification of a ‘notifiable activity’ occurring on the site was received from Cairns City Council in 1994 listing the New Concept Developments site on the EMR.”

The Auditor notes that the GHD report included the removal and validation of the UST. The EPA subsequently removed the whole of the caravan park from the EMR. The site was then re-listed on the EMR for *hazardous contaminant* when contamination was found in the groundwater as discussed by Golder below. The EMR reference number for the site is ID No. 13083 and file No. BNE26227.

4.2.2 Summary of Previous Remediation and Assessment Works Conducted by Golder

Golder Report 087673045-007-Rev1 (July 2009) provides a summary of investigations prior to commencement of remedial works. Remedial works have been carried out on the caravan park site since late 2009.

The primary contaminants of concern (COCs) at the caravan park site are Tetrachloroethene (PCE) and its breakdown products – Trichloroethylene (TCE) and cis-1,2-dichloroethene (cis DCE). No free phase product has been observed in groundwater samples collected from the caravan park site during previous investigations or subsequent groundwater monitoring events.

The remediation works comprised groundwater extraction using bottom loading pumps in one well within the former dry cleaner site and three wells within the caravan park site. A product recovery trench was also installed in October 2010 along part of the eastern boundary of the former dry cleaner site to extract impacted groundwater and to mitigate movement of impacted groundwater between the sites. Extracted groundwater was disposed of to sewer under the dry cleaner site trade waste permit.

Golder prepared a Site Conceptual Model and Qualitative Risk Assessment report (0867673045-021-R-Rev0) in October 2011 aimed at identifying acceptable remediation criteria to allow removal of the caravan park site from the EMR. This report proposed the use of soil vapour concentrations as the basis of assessing suitability for future unrestricted site use. This assessment method and the agreed remediation criteria were accepted by the Auditor (then Third Party Reviewer [TPR]).

A Delineation Investigation (087673045-033-R-Rev0) was undertaken by Golder dated 20 August 2012. This Delineation Investigation comprised the utilisation of a Membrane Interface Probe (MIP) at 29 locations to provide real-time data to assist in the evaluation of the extent of chlorinated solvent impact. The MIP data was correlated against both groundwater sample concentrations and soil vapour concentrations from existing wells in order to interpret the extent of contamination. This interpreted area was “squared” and aligned against existing property boundaries, where possible, to simplify possible subdivision of this area from the remainder of the caravan park site.

Further to the above, the Auditor requested that confirmation soil gas wells be constructed on the proposed northern and southern boundaries of the subdivision to confirm that the amended remediation criteria was achieved prior to finalisation of these boundaries (the eastern boundary had been previously well defined by the results of investigations and monitoring). The results of subsequent investigations are described in the April 2013 Golder Report (087673045-040-Rev0) and resulted in an increase in the area of impact to the south. The defined area of impact, including additional buffers requested by the Auditor resulted in the proposed subdivision boundaries.

Progress on the proposed subdivision was halted in late April 2013, following the discovery of blocked and broken sewer pipes being used for the disposal of impacted groundwater. The sewer failure and potential impacts to groundwater were described in the June 2013 Golder Report (087673045-041-R-Rev0). It was concluded that the groundwater monitoring results collected since the commencement of groundwater extraction (and disposal via the sewer) were consistent with ‘looping’ of collected impacted groundwater discharging from sewer pipeline failures. Looping of collected impacted groundwater was also believed to explain the lack of progress by the extraction system to remove impacted groundwater on the caravan park site. Groundwater extraction and disposal to sewer was ceased whilst sewer repairs were conducted.

The proposed subdivision of the impacted portion of the caravan park site was recommenced in late August 2013. At this time, the Auditor requested a status check of current groundwater conditions along the proposed boundaries prior to finalising submissions to EHP. The results of this groundwater sampling and analysis are presented in the Golder letter dated 14 October 2013 (087673045-045-L-Rev0). Some increase in groundwater contaminant concentrations were noted at MW16CP and MW17CP.

In order to address the uncertainty associated with these results and to confirm subdivision boundary locations that report recommended that:

- A bottom loading pump should be installed at MW14CP to collect impacted water detected at this previously identified “hotspot” and intercept possible migration of impact groundwater.
- Soil gas sampling and analysis should be conducted from SVW16 and SVW17 (located adjacent to MW16CP and MW17CP, respectively) to confirm that the concentrations of PCE and TCE at these locations.

Soil gas sampling was conducted on 6 November 2013 and the results are presented in the Golder letter dated 25 November 2013 (087673045-048-L-Rev0). The results indicated soil gas concentrations exceeding the amended remediation criteria at both SVW16 and SVW17. These results suggested that the area of impact may have increased as a result of remedial pumping interruptions associated with sewer repairs and that the proposed subdivision boundary would need to be re-delineated and amended.

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5.0 Final Confirmation of Area Impacted by Chlorinated Solvents Report

It is understood that the assessment works were completed in order to allow for the removal of the uncontaminated portion of the site from the EMR, while the balance of the site remains on the EMR under a SMP.

5.1 Groundwater Investigation Works

A groundwater sampling and analysis event was carried out on 19 December 2013 on twelve (12) monitoring wells. The aim of this initial event was to provide an indication of groundwater contaminant levels at this time across the caravan park site.

Additional, four wells were also monitored on a monthly basis. The aim of this monitoring was to provide an indication of improvement in groundwater quality and to guide the timing of soil vapour testing along the proposed southern boundary.

Contaminant concentrations in all wells sampled in December 2013 were well below the highest concentrations previously detected at these locations and did not indicate a significant deterioration in groundwater conditions.

The groundwater results and graphs along the proposed southern boundary show a significant and sustained reduction in PCE and TCE concentrations compared to September 2013 results.

A slight increase in TCE and PCE at MW17CP has occurred since the installation of the pumping well at MW20CP and is believed to indicate localised changes as a result of contaminant recovery pumping rather than a deterioration of groundwater conditions in this area.

5.2 Soil Vapour Investigation Works

The most recent soil vapour sampling was conducted at gas wells SVW16 and SVW17 located on the proposed southern boundary on 12 May 2014.

The soil vapour results at SVW16 and SVW17 confirm PCE and TCE concentrations well below the amended remediation criteria. The TCE concentration at SVW17 was slightly above the NEPM interim HIL, however, a marginal exceedance of this interim investigation level was not considered to be an issue of concern that would warrant further consideration at this site.

5.3 Review of Boundary Results

Northern Boundary

Soil vapour results well below the amended remediation criteria (and below the NEPM interim HILs) were confirmed at soil vapour wells on the proposed northern boundary in October 2012.

Groundwater gauging in April 2013 and December 2013 did not indicate a northward groundwater gradient and therefore the potential for contaminant migration towards this boundary is considered to be negligible. Sampling of groundwater wells in December 2013, near the proposed northern boundary, revealed concentrations of PCE below laboratory detection levels and TCE at concentrations up to 2.9 µg/L.

Given the above results, the proposed northern boundary is considered to be suitable to define the northern extent of the impacted area requiring subdivision from the remainder of the caravan park site.

Eastern Boundary

The eastern boundary was originally defined on the basis of the MIP delineation investigation, consideration of historical groundwater monitoring results and soil vapour results on the proposed eastern boundary in August 2012. The soil vapour results at the eastern boundary were well below the amended remediation criteria (and below the NEPM interim HILs) in July 2012. Groundwater gauging in April 2013 and December 2013 indicate some potential for groundwater movement to the south/south east and therefore the potential for contaminant migration towards this boundary is generally considered to be low with the highest risk at the south eastern end of the proposed subdivision area.

Sampling of groundwater wells in December 2013, near the proposed eastern boundary at the southern end of the site, revealed concentrations of PCE below laboratory detection levels and TCE at concentrations up to 2.5 µg/L.

Given the above results and the implemented remedial pumping, the proposed eastern boundary is considered to be suitable to define the eastern extent of the impacted area requiring subdivision from the remainder of the caravan park site.

Southern Boundary

The southern boundary was originally defined by the series on groundwater and soil gas investigations from April 2013. Remedial pumping interruptions associated with sewer repairs are believed to resulted in a deterioration of conditions in this area detected by groundwater and soil vapour results in October and November 2013, respectively. Subsequent pumping and groundwater monitoring since December 2013 has indicated a significant and sustained improvement in groundwater conditions along the southern boundary. The soil vapour results on the proposed southern boundary were well below the amended remediation criteria (and below or close to the NEPM interim HILs) in May 2014.

Given the above results and the implemented remedial pumping, the proposed southern boundary is considered to be suitable to define the southern extent of the impacted area requiring subdivision from the remainder of the caravan park site.

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6.0 QA/QC review

6.1 RPD Results

One duplicate was collected during the groundwater monitoring works for a total of twenty four (24) primary samples. All results for the primary and duplicate sample were below the laboratory limit of reporting. The Australian Standard states that one duplicate per 20 primary samples should be collected and analysed. The Golder report did not quite meet this rate of duplicate sampling.

One soil vapour duplicate was collected for QA/QC purposes. No detections were found for the parameters analysed within the field blank.

A number of high RPDs were identified for compounds between the primary sample SVW17 and the field duplicate. The field duplicate did not detect the contaminants of concern. As discussed within the report, due to an equipment failure, the field duplicate could not be taken in conjunction with the primary sample and instead had to be taken after the primary had been collected. This method of sampling could have led to the differences observed for some analytes. This outcome was not considered to affect the overall results.

6.2 Trip Blank and Trip Spike Samples

No trip blank, rinsate or trip spike samples were analysed during the groundwater monitoring works.

One soil vapour field blank was collected for QA/QC purposes. No detections were found for the parameters analysed within the field blank.

6.3 Laboratory QA/QC

A review of the laboratory QA / QC reports indicated that there were no non-conformances noted.

The Sample Receipt Notifications did not note any concerns with the batches that were submitted.

6.4 Summary of QA/QC

In summary, all QA/QC data was found to conform with acceptable limits, excepted as noted and discussed. Any outlying results are not expected to affect the outcomes of the assessment works.

Based upon a review of the laboratory and field QA/QC data, the Auditor agrees that the results presented are considered suitable for interpretation.

7.0 Conclusions

Golder presented the following conclusions and recommendations relating to the assessment works conducted at the site:

- The studies completed and summarised in this assessment are considered suitable to define the area of chlorinated solvent impact on the existing caravan park property (Lot 1 on RP 742725). This area of impact is contained within the boundaries shown of the survey plan. The balance of the existing caravan park site, outside of the area of impact, is defined as proposed Lot 20.
- The caravan park site (Lot 1 on RP 742725) is understood to have been previously removed from the EMR in 2006 on the basis of site investigations and the removal and validation of an underground fuel tank. The property was again listed on the EMR following the discovery of chlorinated solvents in groundwater samples in 2007. No other notifiable activities have occurred at the property since its original removal in 2006. Therefore the balance of the existing caravan park site (proposed Lot 20) is considered to be suitable for unrestricted use and it is recommended that this allotment be removed from the EMR on its gazettal.
- It is further recommended that a Site Management Plan be prepared for the former drycleaner site and the area excised from the caravan park to manage ongoing groundwater and contamination control measures within these sites.

The Auditor agrees with the conclusions and recommendations as presented by Golder.

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8.0 Assessment Against the Prescribed Criteria

An assessment has been undertaken by the Auditor of the GHD 2005 report and various Golder assessment reports against the Prescribed Criteria under Section 115C of the Environmental Protection Regulations 2008. The auditor notes that the Prescribed Criteria have been summarised from the GHD and Golder reports in this audit report and the list below refers to the references in this report. The results of the assessment are outlined in **Table 8.1** below.

Table 8.1: Assessment of Report Against the Prescribed Criteria

Prescribed Criteria	Section of Auditor's report summarising compliance with the prescribed criteria	Auditor confirmation that criteria has been satisfied
a) the report or plan accurately includes the following information about the site, the subject of the report or plan —		
(i) the reasons for listing the site on the environmental management register or contaminated land register;	Section 4.2	Yes
(ii) a description of all surface and subsurface infrastructure on the site, including details of the location, size and type of the infrastructure;	Summarised in Section 4.1.1.	Yes
(iii) a description of the surrounding area of the site, including the following— (A) a description of all category A environmentally sensitive areas in the surrounding area; (B) a description of all category B environmentally sensitive areas in the surrounding area; (C) the location of all water, watercourses and wetlands in the surrounding area; (D) the location of all stormwater drainage in the surrounding area; (E) a description of land uses in the surrounding area, including sensitive land uses that may affect the safety of the site or cause a risk to human health or another part of the environment; (F) a description of all activities carried out in the surrounding area that may affect the safety of the site or cause a risk to human health or another part of the environment;	Summarised in Section 4.1.2. A search of environmentally sensitive areas did not identify any Category A or Category B environmentally sensitive areas within 500 metres of the site.	Yes
(iv) for any waste disposed of, or stored on the site, that contains, or may potentially contain, hazardous contaminants, details of the location, volume and type of waste disposed of, or stored, on the site;	Summarised in Section 4.1.1.	Yes
(v) for the waste mentioned in paragraph (iv), details of any potential contamination of the site caused by disposing or storing the waste on the site;	N.A.	Yes
(vi) a description of the geology and hydrogeology of the site;	Summarised in Sections 4.1.3. and 4.1.4.	Yes
(vii) details of any environmentally relevant activities or notifiable activities carried out on the site, including the materials used and waste produced during the carrying out of the activities;	N.A.	Yes
(viii) details of any earthworks carried out on the site, including the materials used and waste produced during the earthworks;	N.A. No earthworks were carried out at the site	Yes

(ix)	if work was carried out on the site to remediate contaminated land— (A) the contamination levels recorded on the site before the work was carried out; and (B) the contamination levels recorded on the site after the work was carried out;	Section 5.0 and Section 6.0	Yes
b)			
(i)	if the report or plan provides evidence that the site is suitable for a stated use, whether the site is suitable for that stated use; and	Sections 7.0 and 9.0	Yes
(ii)	whether the site is contaminated in a way that is a risk to another part of the environment or human health; and	Sections 4.2.2 and 5.0	Yes
(iii)	if the report or plan provides evidence that the site is contaminated, the extent to which the site is contaminated and the uses that may be suitable for the site; and	Sections 7.0 and 9.0. An SMP will be prepared by Golder for proposed Lot 10 where contamination remains.	Yes
(iv)	if the plan sets out the objectives to be achieved and maintained under the plan— (A) the proposed objectives are appropriate for the site; and (B) the proposed methods to achieve and maintain the objectives are appropriate for the site; and	Sections 7.0 and 9.0. An SMP will be prepared by Golder for proposed Lot 10 where contamination remains.	Yes
(v)	if the plan sets out monitoring and reporting compliance measures for the site, the reporting and compliance measures are appropriate for the site.	Section 9.0., An SMP will be prepared by Golder for proposed Lot 10 where contamination remains.	Yes

9.0 Statement of Site Suitability

The Auditor has completed the review of the Golder report entitled *Cairns Villa Caravan Park - Final Confirmation of Area Impacted by Chlorinated Solvents*. Based on this review, the Auditor concludes that the report complies with the prescribed criteria under Section 115C of the Environmental Protection Regulations 2008 and adequately addresses the potential for contamination at the site and advises that, in the opinion of the Auditor, proposed Lot 20 is suitable for unrestricted use and removal from the EMR, while the balance of the site (proposed Lot 10) should remain on the EMR under a SMP. Groundwater monitoring should continue at a minimum of one monitoring event per year on proposed Lot 10.

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10.0 Statement of Limitations

Jim Soltau & Associates (JSA) has chosen an appropriate level of effort to prepare this report by the Auditor. The activities performed, constitute all activities, appropriate and necessary under the circumstances, to produce the report. Based on the inspection of the site and the Golder reports, it is JSA's opinion that the potential environmental liabilities associated with the site are as discussed in these reports.

We do not assume any liability for misrepresentation or for items not visible, accessible or present during the site inspections and/or meetings. We also do not assume any liability for materials or works, which are imported onto or undertaken on the site following the date of the assessment. There is no investigation that is thorough enough to preclude the presence of material, which presently, or in the future, may be considered hazardous at the site.

Furthermore, to completely understand the recommendations and conclusions outlined in site investigation documents, they must be read in their entirety. This is because these reports are site-specific with relevant information contained in the body of the reports as well as supporting tables and documentation.

Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. Conclusions contained in this report are based upon information, data and reports provided by others and on the assumption that all relevant information has been provided to JSA by Golder. Where assessments of the works conducted to reduce or mitigate any environmental liability identified in this report are made, such assessments are based upon the information available at the time.

JSA has prepared this report solely for Mr sch4p4(6) Person and the Queensland Department of Environment and Heritage Protection in accordance with generally accepted consulting practices and for the intended purposes. This report may not be relied upon by any other party without the explicit written agreement of JSA, which may be given to potential future purchasers of the site on request. No other warranty, expressed or implied, is made as to the professional advice included in this report.

11.0 References

- Guide to the Sampling and Investigation of Potentially Contaminated Soil*, Part 1: Non volatile and Semi volatile Compounds, AS4482.1, Australian Standard, 2005;
- Guide to the Sampling and Investigation of Potentially Contaminated Soil*, Part 2: Volatile Substances, AS4482.2, Australian Standard, 1999;
- The National Environment Protection (Site Contamination) Measure 1999, as amended by the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1);
- Queensland Department of Environment and Heritage Protection, 2013, *Guideline for contaminated land professionals*;
- Queensland Department of Environment and Heritage Protection, 2012, *Guideline for assessing a suitably qualified person*;
- GHD Cairns Villa & Leisure Park, 28 Pease Street, Cairns Site Investigation and Validation Report (May 2005);
- Golder Associates Pty Ltd, Cairns Villa Caravan Park - Final Confirmation of Area Impacted by Chlorinated Solvents, dated 30 May 2014.
- Golder Associates Pty Ltd, Groundwater Assessment Pease Street (July 2009)
- Golder Associates Pty Ltd, Conceptual Site Model & Qualitative Risk Assessment, Caravan Park Site Remediation, Pease St, Manunda dated October 2011.
- Golder Associates Pty Ltd, Delineation Investigation, Cairns Villa Caravan Park dated 20 August 2012.
- Golder Associates Pty Ltd, Delineation Investigation September 2012 - March 2013, Cairns Villa Caravan Park, dated 10 April 2013.
- Golder Associates Pty Ltd, Report on Potential Groundwater Impacts Associated with Sewer Failures, Kwikleen Dry Cleaners/Cairns Villa Caravan Park, Pease Street, Cairns, dated 14 June 2013.
- Golder Associates Pty Ltd, Amended Boundary Groundwater Monitoring September 2013, dated 14 October 2013.
- Golder Associates Pty Ltd, Soil Vapour Monitoring at SVW16 and SVW17 November 2013, Pease St. Caravan Park, dated 25 November 2013.

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Appendix A

Statutory Declaration

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STATUTORY DECLARATION

Address of Site Investigated: 28 Pease Street, Manuda, (Cairns) QLD

Real Property Description: Lot 1 on SP742725, County of Nares, Parish of Cairns

Title of Reports: Auditor Summary Report of the Site Investigations at the Cairns Villa Caravan Park, Pease Street, Manuda, Queensland (10 June 2014) and Auditor Addendum Letter Regarding Subdivision of Lot 1 on RP742725 (23 January 2014).

I, sch4p4(6) P, of Jim Soltau & Associates, do solemnly and sincerely declare that:

- I was the Environmental Auditor and report preparer of the subject report which summarises the remediation and investigation of the subject site located ;
- I am a member of Environmental Institute of Australia and New Zealand (EIANZ) and my qualifications and experience relevant to this remediation and validation have been presented to the Environmental Protection Agency as required under Appendix 6 of the Environmental Protection Agency Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland;
- I have not knowingly included any false, misleading or incomplete information in the reports;
- I have not knowingly failed to reveal any relevant information or document to the administering authority; and

I certify that:

- the Auditor summary report and the various Golder Associates reports summarised in the Auditor report address the relevant matters for the remediation and investigation processes and are factually correct;
- the opinions expressed in the Auditor summary report are honestly and reasonably held;
- the health and environmental risks associated with the contamination have been addressed; and
- the newly subdivided Lot 20 on SP262379 is suitable for low density residential use and is suitable to be removed from the Environmental Management Register (EMR) while Lot 10 on SP262379 is to remain on the EMR and is suitable to be managed under a Site Management Plan.

I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the *Oaths Act 1867*.

Signature

.....

Name

sch4p4(6) Person

Taken and Declared before me at Brisbane this 23rd day of January 2015.

Witness (Justice of the Peace/~~Commissioner for Declarations~~)

Name (Print Name)

.....
AURORA MARIA STEPHENS

Signature

sch4p4(6) Personal information



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