1904037 - R8 SDMS

Ackerman, Joyce

From:	Stovall - CDPHE, Curtis <curtis.stovall@state.co.us>
Sent:	Thursday, January 18, 2018 6:48 AM
To:	Patrick Medland
Cc:	Thomas Krasovec; Ackerman, Joyce; Dave Folkes, PE; Walker - CDPHE, David; Jackie Rowley
Subject:	Fwd: FW: reporting limits/MDLs for ttoal soil
Attachments:	Project Limits 18018293 - svoc.xlsx

Hi Patrick,

Thanks for forwarding the spreadsheet. We recommend that you specify the "low level" testing procedures for SVOCs. We understand that there could be matrix issues, but the low level analysis should provide more useful data. Also, please have them test for 1,4-dioxane using 8270D LL, rather than 8260C.

Thanks,
Curt
---------- Forwarded message ----------
From: **Patrick Medland** <PMedland@geosyntec.com>
Date: Wed, Jan 17, 2018 at 7:54 PM
Subject: FW: reporting limits/MDLs for ttoal soil
To: "Stovall - CDPHE, Curtis" <curtis.stovall@state.co.us>

Good evening Curt,

As I spoke to you earlier today, here are the RLs/MDLs for SVOCs at both "routine" and "low level" analyses. As Dave noted below, these depend on the matrix and/or high detections of other SVOCs.

Can you let me know if these RLs are acceptable for your needs in assessing potential PAH impacts? Based on my conversation with Dave, running a SIM analysis includes a few extra hurdles, and may not be feasible if there are any SVOCs with relatively high concentrations.

Thanks,

Patrick

Patrick Medland

Scientist

Geosyntec Consultants

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From: Dunlap, Dave [mailto:David.Dunlap@testamericainc.com]
Sent: Wednesday, January 17, 2018 2:17 PM
To: Patrick Medland <PMedland@Geosyntec.com>
Subject: reporting limits/MDLs for ttoal soil

Patrick

VOC, SVOC, metals/Hg included.

The SVOC has "Routine" and "Low level"options

No matter which is done, it there are high detections or matrix issues, we will need to dilute the samples, thereby raising the attached limits.

Let me know which is needed – I think there is still time to change to low level if needed.

Dave

DAVID DUNLAP
Project Manager

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Method Description	Method Code	Prep Method	Analyte Description	CAS Number	RL	MDL	Units
Volatile Organic Compounds by GC/MS	8260C	5030C_H	Acetone	67-64-1	1.00	0.158	mg/Kg
			Benzene	71-43-2	0.250	0.0981	mg/Kg
			Bromoform	75-25-2	0.250	0.131	mg/Kg
			Bromomethane	74-83-9	0.250	0.225	mg/Kg
			2-Butanone (MEK)	78-93-3	0.250	0.145	mg/Kg
			Carbon disulfide	75-15-0	0.250	0.151	mg/Kg
			Carbon tetrachloride	56-23-5	0.250	0.166	mg/Kg
			Chlorobenzene	108-90-7	0.250	0.0787	mg/Kg
			Chlorobromomethane	74-97-5	0.250	0.0961	mg/Kg
			Chlorodibromomethane	124-48-1	0.250	0.120	mg/Kg
			Chloroethane	75-00-3	0.250	0.129	mg/Kg
			Chloroform	67-66-3	0.250	0.106	mg/Kg
			Chloromethane	74-87-3	0.250	0.193	mg/Kg
			cis-1,2-Dichloroethene	156-59-2	0.250	0.0787	mg/Kg
			cis-1,3-Dichloropropene	10061-01-5	0.250	0.0799	mg/Kg
			Cyclohexane	110-82-7	0.250	0.0611	mg/Kg
			1,2-Dibromo-3-Chloropropane	96-12-8	0.250	0.154	mg/Kg
			1,2-Dibromoethane	106-93-4	0.250	0.137	mg/Kg
			1,2-Dichlorobenzene	95-50-1	0.250	0.201	mg/Kg
			1,3-Dichlorobenzene	541-73-1	0.250	0.0797	mg/Kg
			1,4-Dichlorobenzene	106-46-7	0.250	0.0510	mg/Kg
			Dichlorobromomethane	75-27-4	0.250	0.118	mg/Kg
			Dichlorodifluoromethane	75-71-8	0.250	0.146	mg/Kg
			1,1-Dichloroethane	75-34-3	0.250	0.0905	mg/Kg
			1,2-Dichloroethane	107-06-2	0.250	0.0726	mg/Kg
			1,1-Dichloroethene	75-35-4	0.250	0.143	mg/Kg
			1,2-Dichloropropane	78-87-5	0.250	0.123	mg/Kg
			1,4-Dioxane	123-91-1	50.0	1.83	mg/Kg
			Ethylbenzene	100-41-4	0.250	0.108	mg/Kg
			2-Hexanone	591-78-6	0.250	0.210	mg/Kg
			Isopropylbenzene	98-82-8	0.250	0.116	mg/Kg
			Methyl acetate	79-20-9	1.25	0.295	mg/Kg
			Methylcyclohexane	108-87-2	0.250	0.105	mg/Kg
			Methylene Chloride	75-09-2	0.250	0.118	mg/Kg
			4-Methyl-2-pentanone (MIBK)	108-10-1	0.250	0.0928	mg/Kg
			Methyl tert-butyl ether	1634-04-4	0.250	0.184	mg/Kg
			m-Xylene & p-Xylene	179601-23-1	0.250	0.0937	mg/Kg
			o-Xylene	95-47-6	0.250	0.122	mg/Kg
			Styrene	100-42-5	0.250	0.0666	mg/Kg
			1,1,2,2-Tetrachloroethane	79-34-5	0.250	0.149	mg/Kg
			Tetrachloroethene	127-18-4	0.250	0.100	mg/Kg
			Tetrahydrofuran	109-99-9	0.500	0.374	mg/Kg
			Toluene	108-88-3	0.250	0.0843	mg/Kg
			trans-1,2-Dichloroethene	156-60-5	0.250	0.127	mg/Kg
			trans-1,3-Dichloropropene	10061-02-6	0.250	0.0864	mg/Kg
			1,2,3-Trichlorobenzene	87-61-6	0.250	0.104	mg/Kg
			1,2,4-Trichlorobenzene	120-82-1	0.250	0.0806	mg/Kg
			1,1,1-Trichloroethane	71-55-6	0.250	0.126	mg/Kg
			1,1,2-Trichloroethane	79-00-5	0.250	0.120	mg/Kg
			Trichloroethene	79-01-6	0.250	0.0751	mg/Kg
			Trichlorofluoromethane	75-69-4	0.250	0.0728	mg/Kg
			1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.250	0.0955	mg/Kg
			Vinyl chloride	75-01-4	0.250	0.184	mg/Kg
			4-Bromofluorobenzene (Surr)	460-00-4			mg/Kg
			Dibromofluoromethane (Surr)	1868-53-7			mg/Kg

			1,2-Dichloroethane-d4 (Surr)	17060-07-0			mg/Kg
			Toluene-d8 (Surr)	2037-26-5			mg/Kg
Semivolatile Organic Compounds (GC/MS)	8270D	3541	Acenaphthene	83-32-9	0.0670	0.0224	mg/Kg
ROUTINE LEVEL			Acenaphthylene	208-96-8	0.0670	0.0226	mg/Kg
			Acetophenone	98-86-2	0.670	0.0230	mg/Kg
			Anthracene	120-12-7	0.0670	0.0246	mg/Kg
			Atrazine	1912-24-9	0.670	0.0461	mg/Kg
			Benzaldehyde	100-52-7	0.670	0.0218	mg/Kg
			Benzo[a]anthracene	56-55-3	0.0670	0.0265	mg/Kg
			Benzo[a]pyrene	50-32-8	0.0670	0.0276	mg/Kg
			Benzo[b]fluoranthene	205-99-2	0.0670	0.0289	mg/Kg
			Benzo[g,h,i]perylene	191-24-2	0.0670	0.0289	mg/Kg
			Benzo[k]fluoranthene	207-08-9	0.0670	0.0231	mg/Kg
			1,1'-Biphenyl	92-52-4	0.330	0.0264	mg/Kg
			Bis(2-chloroethoxy)methane	111-91-1	0.330	0.0192	mg/Kg
			Bis(2-chloroethyl)ether	111-44-4	0.0670	0.0197	mg/Kg
			Bis(2-ethylhexyl) phthalate	117-81-7	0.670	0.224	mg/Kg
			4-Bromophenyl phenyl ether	101-55-3	0.330	0.0318	mg/Kg
			Butyl benzyl phthalate	85-68-7	0.330	0.248	mg/Kg
			Caprolactam	105-60-2	1.70	0.158	mg/Kg
			Carbazole	86-74-8	0.0670	0.0285	mg/Kg
			4-Chloroaniline	106-47-8	0.330	0.0187	mg/Kg
			4-Chloro-3-methylphenol	59-50-7	0.330	0.0351	mg/Kg
			2-Chloronaphthalene	91-58-7	0.0670	0.0217	mg/Kg
			2-Chlorophenol	95-57-8	0.330	0.0239	mg/Kg
			4-Chlorophenyl phenyl ether	7005-72-3	0.330	0.0239	mg/Kg
			Chrysene	218-01-9	0.0670	0.0260	mg/Kg
			Dibenz(a,h)anthracene	53-70-3	0.0670	0.0276	mg/Kg
			Dibenzofuran	132-64-9	0.330	0.0267	mg/Kg
			3,3'-Dichlorobenzidine	91-94-1	0.330	0.139	mg/Kg
			2,4-Dichlorophenol	120-83-2	0.0670	0.0272	mg/Kg
			Diethyl phthalate	84-66-2	0.330	0.0295	mg/Kg
			2,4-Dimethylphenol	105-67-9	0.330	0.0257	mg/Kg
			Dimethyl phthalate	131-11-3	0.330	0.0232	mg/Kg
			Di-n-butyl phthalate	84-74-2	0.330	0.0265	mg/Kg
			4,6-Dinitro-2-methylphenol	534-52-1	1.70	0.616	mg/Kg
			2,4-Dinitrophenol	51-28-5	3.30	0.675	mg/Kg
			2,4-Dinitrotoluene	121-14-2	0.330	0.0442	mg/Kg
			2,6-Dinitrotoluene	606-20-2	0.330	0.0231	mg/Kg
			Di-n-octyl phthalate	117-84-0	0.330	0.0395	mg/Kg
			Fluoranthene	206-44-0	0.0670	0.0263	mg/Kg
			Fluorene	86-73-7	0.0670	0.0238	mg/Kg
			Hexachlorobenzene	118-74-1	0.0670	0.0268	mg/Kg
			Hexachlorobutadiene	87-68-3	0.0670	0.0210	mg/Kg
			Hexachlorocyclopentadiene	77-47-4	0.330	0.0283	mg/Kg
			Hexachloroethane	67-72-1	0.330	0.0239	mg/Kg
			Indeno[1,2,3-cd]pyrene	193-39-5	0.0670	0.0258	mg/Kg
			Isophorone	78-59-1	0.330	0.0184	mg/Kg
			2-Methylnaphthalene	91-57-6	0.0670	0.0256	mg/Kg
			2-Methylphenol	95-48-7	0.330	0.0294	mg/Kg
			Methylphenol, 3 & 4	106-44-5	0.330	0.0295	mg/Kg
			Naphthalene	91-20-3	0.0670	0.0240	mg/Kg
			2-Nitroaniline	88-74-4	1.70	0.114	mg/Kg
			3-Nitroaniline	99-09-2	1.70	0.0972	mg/Kg
			4-Nitroaniline	100-01-6	1.70	0.119	mg/Kg
			Nitrobenzene	98-95-3	0.670	0.0255	mg/Kg
			2-Nitrophenol	88-75-5	0.330	0.0244	mg/Kg

			4-Nitrophenol	100-02-7	1.70	0.350	mg/Kg
			N-Nitrosodi-n-propylamine	621-64-7	0.0670	0.0226	mg/Kg
			N-Nitrosodiphenylamine	86-30-6	0.330	0.0524	mg/Kg
			2,2'-oxybis[1-chloropropane]	108-60-1	0.0670	0.0217	mg/Kg
			Pentachlorophenol	87-86-5	1.70	0.631	mg/Kg
			Phenanthrene	85-01-8	0.0670	0.0279	mg/Kg
			Phenol	108-95-2	0.330	0.0451	mg/Kg
			Pyrene	129-00-0	0.0670	0.0297	mg/Kg
			Pyridine	110-86-1	0.330	0.0319	mg/Kg
			1,2,4,5-Tetrachlorobenzene	95-94-3	0.330	0.0239	mg/Kg
			2,3,4,6-Tetrachlorophenol	58-90-2	0.330	0.0267	mg/Kg
			2,4,5-Trichlorophenol	95-95-4	0.330	0.0317	mg/Kg
			2,4,6-Trichlorophenol	88-06-2	0.330	0.0292	mg/Kg
			2-Fluorobiphenyl	321-60-8			mg/Kg
			2-Fluorophenol (Surr)	367-12-4			mg/Kg
			Nitrobenzene-d5 (Surr)	4165-60-0			mg/Kg
			Phenol-d5 (Surr)	4165-62-2			mg/Kg
			Terphenyl-d14 (Surr)	1718-51-0			mg/Kg
			2,4,6-Tribromophenol (Surr)	118-79-6			mg/Kg
Metals (ICP)	6010C	3050B	Silver	7440-22-4	0.500	0.105	mg/Kg
			Arsenic	7440-38-2	1.00	0.277	mg/Kg
			Barium	7440-39-3	20.0	1.07	mg/Kg
			Cadmium	7440-43-9	0.500	0.0364	mg/Kg
			Chromium	7440-47-3	0.500	0.123	mg/Kg
			Lead	7439-92-1	1.00	0.247	mg/Kg
			Selenium	7782-49-2	1.00	0.516	mg/Kg
Mercury (CVAA)	7471B	7471B_Prep	Mercury	7439-97-6	0.0330	0.00739	mg/Kg
Semivolatile Organic Compounds by GC/MS - Lov	8270D_LL	3541_LL	Acenaphthene	83-32-9	0.00670	0.00224	mg/Kg
LOW LEVEL			Acenaphthylene	208-96-8	0.00670	0.00226	mg/Kg
			Acetophenone	98-86-2	0.0670	0.00230	mg/Kg
			Anthracene	120-12-7	0.00670	0.00246	mg/Kg
			Atrazine	1912-24-9	0.0670	0.00461	mg/Kg
			Benzaldehyde	100-52-7	0.0670	0.00218	mg/Kg
			Benzo[a]anthracene	56-55-3	0.00670	0.00265	mg/Kg
			Benzo[a]pyrene	50-32-8	0.00670	0.00276	mg/Kg
			Benzo[b]fluoranthene	205-99-2	0.00670	0.00289	mg/Kg
			Benzo[g,h,i]perylene	191-24-2	0.00670	0.00289	mg/Kg
			Benzo[k]fluoranthene	207-08-9	0.00670	0.00231	mg/Kg
			1,1'-Biphenyl	92-52-4	0.0330	0.00264	mg/Kg
			Bis(2-chloroethoxy)methane	111-91-1	0.0330	0.00192	mg/Kg
			Bis(2-chloroethyl)ether	111-44-4	0.00670	0.00197	mg/Kg
			Bis(2-ethylhexyl) phthalate	117-81-7	0.0667	0.0224	mg/Kg
			4-Bromophenyl phenyl ether	101-55-3	0.0330	0.00318	mg/Kg
			Butyl benzyl phthalate	85-68-7	0.0330	0.0248	mg/Kg
			Caprolactam	105-60-2	0.170	0.0158	mg/Kg
			Carbazole	86-74-8	0.00670	0.00285	mg/Kg
			4-Chloroaniline	106-47-8	0.0330	0.00187	mg/Kg
			4-Chloro-3-methylphenol	59-50-7	0.0330	0.00351	mg/Kg
			2-Chloronaphthalene	91-58-7	0.00670	0.00217	mg/Kg
			2-Chlorophenol	95-57-8	0.0330	0.00239	mg/Kg
			4-Chlorophenyl phenyl ether	7005-72-3	0.0330	0.00239	mg/Kg
			Chrysene	218-01-9	0.00670	0.00260	mg/Kg
			Dibenz(a,h)anthracene	53-70-3	0.00670	0.00276	mg/Kg
			Dibenzofuran	132-64-9	0.0330	0.00267	mg/Kg
			3,3'-Dichlorobenzidine	91-94-1	0.0330	0.0139	mg/Kg

			2,4-Dichlorophenol	120-83-2	0.00670	0.00272	mg/Kg
			Diethyl phthalate	84-66-2	0.0330	0.00295	mg/Kg
			2,4-Dimethylphenol	105-67-9	0.0330	0.00257	mg/Kg
			Dimethyl phthalate	131-11-3	0.0330	0.00232	mg/Kg
			Di-n-butyl phthalate	84-74-2	0.0330	0.00265	mg/Kg
			4,6-Dinitro-2-methylphenol	534-52-1	0.170	0.0616	mg/Kg
			2,4-Dinitrophenol	51-28-5	0.330	0.0675	mg/Kg
			2,4-Dinitrotoluene	121-14-2	0.0330	0.00442	mg/Kg
			2,6-Dinitrotoluene	606-20-2	0.0330	0.00231	mg/Kg
			Di-n-octyl phthalate	117-84-0	0.0330	0.00395	mg/Kg
			Fluoranthene	206-44-0	0.00670	0.00263	mg/Kg
			Fluorene	86-73-7	0.00670	0.00238	mg/Kg
			Hexachlorobenzene	118-74-1	0.00670	0.00268	mg/Kg
			Hexachlorobutadiene	87-68-3	0.00670	0.00210	mg/Kg
			Hexachlorocyclopentadiene	77-47-4	0.0330	0.00283	mg/Kg
			Hexachloroethane	67-72-1	0.0330	0.00239	mg/Kg
			Indeno[1,2,3-cd]pyrene	193-39-5	0.00670	0.00258	mg/Kg
			Isophorone	78-59-1	0.0330	0.00184	mg/Kg
			2-Methylnaphthalene	91-57-6	0.00670	0.00256	mg/Kg
			2-Methylphenol	95-48-7	0.0330	0.00294	mg/Kg
			Methylphenol, 3 & 4	106-44-5	0.0330	0.00295	mg/Kg
			Naphthalene	91-20-3	0.00670	0.00240	mg/Kg
			2-Nitroaniline	88-74-4	0.170	0.0114	mg/Kg
			3-Nitroaniline	99-09-2	0.170	0.00972	mg/Kg
			4-Nitroaniline	100-01-6	0.170	0.0119	mg/Kg
			Nitrobenzene	98-95-3	0.0667	0.00255	mg/Kg
			2-Nitrophenol	88-75-5	0.0330	0.00244	mg/Kg
			4-Nitrophenol	100-02-7	0.170	0.0350	mg/Kg
			N-Nitrosodi-n-propylamine	621-64-7	0.00670	0.00226	mg/Kg
			N-Nitrosodiphenylamine	86-30-6	0.0330	0.00524	mg/Kg
			2,2'-oxybis[1-chloropropane]	108-60-1	0.00670	0.00217	mg/Kg
			Pentachlorophenol	87-86-5	0.170	0.0631	mg/Kg
			Phenanthrene	85-01-8	0.00670	0.00279	mg/Kg
			Phenol	108-95-2	0.0330	0.00451	mg/Kg
			Pyrene	129-00-0	0.00670	0.00297	mg/Kg
			Pyridine	110-86-1	0.0330	0.00319	mg/Kg
			1,2,4,5-Tetrachlorobenzene	95-94-3	0.0330	0.00239	mg/Kg
			2,3,4,6-Tetrachlorophenol	58-90-2	0.0330	0.00267	mg/Kg
			2,4,5-Trichlorophenol	95-95-4	0.0330	0.00317	mg/Kg
			2,4,6-Trichlorophenol	88-06-2	0.0330	0.00292	mg/Kg
			2-Fluorobiphenyl	321-60-8			mg/Kg
			2-Fluorophenol (Surr)	367-12-4			mg/Kg
			Nitrobenzene-d5 (Surr)	4165-60-0			mg/Kg
			Phenol-d5 (Surr)	4165-62-2			mg/Kg
			Terphenyl-d14 (Surr)	1718-51-0			mg/Kg
			2,4,6-Tribromophenol (Surr)	118-79-6			mg/Kg