

Appendix 3.4b Soil Pollutant Concentrations for TPH Indicator Pollutants from Site Investigation

Appendix 3.4b Soil pollutant concentrations for TPH indicator pollutants from site investigation

2013 Additional Site Investigation

Date of Issue: 07/09/2013
Client: Civil Engineering and Development Department
Service Order No.: GE/2012/24.08
Project: Demolition of Building and Structures in the Proposed Kennedy Town Comprehensive Development Area Site

ALS Lab ID		HK1319666001	HK1319666002	HK1320123001	HK1320125001	HK1320125002	HK1320125003	HK132012600	HK132012600	HK132012600	HK132012600	HK132013200	HK132013200	HK132013800	HK132013800	HK132013800	HK132049700
Client Sample ID		BD1	BD1	BD1	BD1	BD1	BD1	BD1	BD3	BD3	BD3	BD3	BD3	BD3	BD3	BD3	BD2
Sampling Date	Unit	0.0M-0.5M	0.5M-1.5M	1.5M-3.0M	3.0M-4.5M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M	0.0M-0.5M	0.5M-1.5M	1.5M-3.0M	3.0M-4.5M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M	0.0M-0.5M	
		19/07/2013	19/07/2013	20/07/2013	22/07/2013	22/07/2013	22/07/2013	23/07/2013	23/07/2013	23/07/2013	24/07/2013	24/07/2013	25/07/2013	25/07/2013	25/07/2013	29/07/2013	
Metals																	
Chromium (VI)	Hexavalent Chromium	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mercury	Mercury	mg/kg	1.6	0.7	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	2	2	0.8	<0.2	<0.2	<0.2	1.8
Chromium (III)	Trivalent Chromium	mg/kg	16	9	5	4	2	3	3	2	6	27	4	15	3	3	17
Cadmium	Cadmium	mg/kg	1.4	0.3	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	0.4	0.2	<0.2	<0.2	<0.2	<0.2	0.4
Copper	Copper	mg/kg	269	28	6	14	2	3	2	1	50	19	49	13	1	1	112
Lead	Lead	mg/kg	578	189	46	60	126	23	18	14	409	203	900	83	10	12	356
Zinc	Zinc	mg/kg	1410	166	54	120	95	144	164	44	367	164	85	92	109	48	421
Total Petroleum Hydrocarbons (TPH)																	
C6 - C8	C6 - C8 Fraction	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C9 - C16	C9 - C16 Fraction	mg/kg	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
C17 - C35	C17 - C35 Fraction	mg/kg	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Monocyclic Aromatic Hydrocarbons (MAH)																	
Benzene	Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	meta- & para-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	ortho-Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	Xylenes (Total)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Polycyclic Aromatic Hydrocarbons (PAHs)																	
Naphthalene	Naphthalene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	Acenaphthylene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	Acenaphthene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	Fluorene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	Phenanthrene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Anthracene	Anthracene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	Fluoranthene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.525	<0.500	<0.500	<0.500	<0.500	<0.500	0.525
Pyrene	Pyrene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.591	<0.500	<0.500	<0.500	<0.500	<0.500	0.533
Benz(a)anthracene	Benz(a)anthracene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	Chrysene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	Benzo(b)fluoranthene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.507	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(k)fluoranthene	Benzo(k)fluoranthene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	Benzo(a)pyrene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenzo(a,h)anthracene	Dibenzo(a,h)anthracene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500

	BD1	BD1	BD1	BD1	BD1	BD1	BD1	BD1	BD3	BD3	BD3	BD3	BD3	BD3	BD3	BD3	BD2
	0.0M-0.5M	0.5M-1.5M	1.5M-3.0M	3.0M-4.5M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M	0.0M-0.5M	0.5M-1.5M	1.5M-3.0M	3.0M-4.5M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M	0.0M-0.5M		

Total TPH	mg/kg	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5	352.5
C6 - C8 Fraction	mg/kg	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
C6 - C8 Fraction	%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%	0.71%
C9 - C16 Fraction	%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%	28.37%
C17 - C35 Fraction	%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%	70.92%

Average % (C6-C8) / TPH 0.65%

Benzene	mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Toluene	mg/kg	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Ethylbenzene	mg/kg	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Xylenes (Total)	mg/kg	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Indicator Compounds	mg/kg	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Indicator compounds / C6-C8 % 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0% 64.0%

Average % Indicator compounds / (C6- 58.5%

Appendix 3.4b Soil pollutant concentrations for TPH indicator pollutants from site investigation

2013 Additional Site Investigation

Date of Issue:
Client:
Service Order No.:
Project:

ALS Lab ID		HK132049700	HK132049700	HK132049700	HK132050200	HK132050200	HK132065600	HK132065600	HK132096300	HK132096300	HK132136000	HK132136000	HK132136000
Client Sample ID		BD2	BD4	BD4	BD2	BD2	BD2	BD2	BD4	BD4	BD4	BD4	BD4
Sampling Date	Unit	0.5M-1.5M	0.0M-0.5M	0.5M-1.5M	1.5M-3.0M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M	1.5M-3.0M	3.0M-4.5M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M
Metals		0	0	0	0	0	0	0	0	0	0	0	0
Chromium (VI)	Hexavalent Chromium	mg/kg	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Mercury	Mercury	mg/kg	0.9	1.3	0.6	7.9	<0.2	<0.2	<0.2	6.9	1.9	0.8	<0.2
Chromium (III)	Trivalent Chromium	mg/kg	19	20	4	11	4	2	2	11	19	3	3
Cadmium	Cadmium	mg/kg	1	1.5	0.6	0.5	<0.2	<0.2	0.3	1.5	0.5	<0.2	<0.2
Copper	Copper	mg/kg	302	232	64	72	2	2	1	109	82	12	4
Lead	Lead	mg/kg	605	546	292	280	11	14	61	990	191	86	14
Zinc	Zinc	mg/kg	1100	1190	362	574	71	97	105	1170	453	188	106
Total Petroleum Hydrocarbons (TPH)			0	0	0	0	0	0	0	0	0	0	0
C6 - C8	C6 - C8 Fraction	mg/kg	<5	7	27	<5	<5	<5	<5	10	<5	<5	0
C9 - C16	C9 - C16 Fraction	mg/kg	<200	1660	3790	<200	<200	<200	<200	2370	<200	<200	<200
C17 - C35	C17 - C35 Fraction	mg/kg	<500	3400	5510	<500	<500	<500	<500	3280	<500	<500	<500
Monocyclic Aromatic Hydrocarbons (MAH)			0	0	0	0	0	0	0	0	0	0	0
Benzene	Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	Ethylbenzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	meta- & para-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	ortho-Xylene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)	Xylenes (Total)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Polycyclic Aromatic Hydrocarbons (PAHs)			0	0	0	0	0	0	0	0	0	0	0
Naphthalene	Naphthalene	mg/kg	<0.500	<0.500	4.58	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthylene	Acenaphthylene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Acenaphthene	Acenaphthene	mg/kg	<0.500	<0.500	0.79	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Fluorene	Fluorene	mg/kg	<0.500	0.882	2.61	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Phenanthrene	Phenanthrene	mg/kg	<0.500	1.5	6.51	2.05	<0.500	<0.500	<0.500	2.99	<0.500	<0.500	<0.500
Anthracene	Anthracene	mg/kg	<0.500	<0.500	0.642	0.534	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoranthene	Fluoranthene	mg/kg	0.653	<0.500	<0.500	3.88	<0.500	<0.500	<0.500	<0.500	<0.500	0.769	<0.500
Pyrene	Pyrene	mg/kg	0.644	0.758	1.65	4.27	<0.500	<0.500	<0.500	0.965	<0.500	0.956	<0.500
Benzo(a)anthracene	Benzo(a)anthracene	mg/kg	<0.500	<0.500	<0.500	1.82	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Chrysene	Chrysene	mg/kg	<0.500	<0.500	<0.500	1.98	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(b)fluoranthene	Benzo(b)fluoranthene	mg/kg	0.592	<0.500	<0.500	2.69	<0.500	<0.500	<0.500	<0.500	<0.500	0.537	<0.500
Benzo(k)fluoranthene	Benzo(k)fluoranthene	mg/kg	<0.500	<0.500	<0.500	0.84	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(a)pyrene	Benzo(a)pyrene	mg/kg	<0.500	<0.500	<0.500	2.18	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene	mg/kg	<0.500	<0.500	<0.500	1.72	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Dibenzo(a,h)anthracene	Dibenzo(a,h)anthracene	mg/kg	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	mg/kg	<0.500	<0.500	<0.500	1.74	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500

	BD2	BD4	BD4	BD2	BD2	BD2	BD2	BD4	BD4	BD4	BD4	BD4
	0.5M-1.5M	0.0M-0.5M	0.5M-1.5M	1.5M-3.0M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M	1.5M-3.0M	3.0M-4.5M	4.5M-6.0M	6.0M-7.5M	7.5M-9.0M

Total TPH	mg/kg	352.5	5067	9327	352.5	352.5	352.5	352.5	5660	352.5	352.5	352.5	352.5
C6 - C8 Fraction	mg/kg	2.5	7	27	2.5	2.5	2.5	2.5	10	2.5	2.5	2.5	2.5
C6 - C8 Fraction	%	0.71%	0.14%	0.29%	0.71%	0.71%	0.71%	0.71%	0.18%	0.71%	0.71%	0.71%	0.71%
C9 - C16 Fraction	%	28.37%	32.76%	40.63%	28.37%	28.37%	28.37%	28.37%	41.87%	28.37%	28.37%	28.37%	28.37%
C17 - C35 Fraction	%	70.92%	67.10%	59.08%	70.92%	70.92%	70.92%	70.92%	57.95%	70.92%	70.92%	70.92%	70.92%

Average % (C6-C8) / TPH 0.65%

Benzene	mg/kg	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Toluene	mg/kg	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Ethylbenzene	mg/kg	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Xylenes (Total)	mg/kg	1	1	1	1	1	1	1	1	1	1	1	1
Total Indicator Compounds	mg/kg	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6

Indicator compounds / C6-C8 % 64.0% 22.9% 5.9% 64.0% 64.0% 64.0% 64.0% 64.0% 16.0% 64.0% 64.0% 64.0% 64.0%

Average % Indicator compounds / (C6-C8) 58.5%