

APPENDIX E

ANALYSIS OF TEST RESULTS

ANALYSIS OF THE METALS IN SOIL

Elements	Unit	Test Method	MDL mg/kg	TP-1E depth 1.50 m	TP-2E depth 1.50 m	TP-3E depth 1.50 m	TP-4E depth 1.50 m	TP-5E depth 1.50 m	crustal abundance	Dutch Values		USA values	Canadian values
										Safe limit	Intervention values		
Arsenic	As mg/kg	APHA3120B	0.12	0.754	0.657	0.989	0.727	0.694		29	55	3	26
Barium	Ba mg/kg	APHA3120B	0.12	36.13	35.56	40.53	33.89	40.54	425	160	665	220000	2000
Beryllium	Be mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.8	1.1	30	2300	8
Boron	B mg/kg	APHA3120B	0.09	15.46	14.23	15.6	13.21	15.7	10			230000	
Cadmium	Cd mg/kg	APHA3120B	0.02	0.411	0.403	0.419	0.398	0.409	0.2	0.8	12	980	22
Chromium (Total)	Cr mg/kg	APHA3120B	0.01	24.45	23.62	25.83	23.6	24.56	100	100	380	180000	87
Insoluble salt													
Copper	Cu mg/kg	APHA3120B	0.01	3.693	3.75	4.081	32.97	3.894	55	36	190	47000	91
Iron (Total)	Fe mg/kg	APHA3120B	0.09	5432	5310	5632	5240	5516	5.63			820000	600
Lead	Pb mg/kg	APHA3120B	0.01	1.932	1.986	2.003	3.326	2.033	12.5	85	530	800	
Manganese	Mn mg/kg	APHA3120B	0.02	206.3	201.9	192.7	196.5	201.2	950			26000	
Molybdenum	Mo mg/kg	APHA3120B	0.01	0.388	0.402	0.406	0.359	0.355	1.5	3	200	5800	
Nickel	Ni mg/kg	APHA3120B	0.02	27.56	22.83	33.99	28.99	31.77	75	35	210	12000	89
Selenium	Se mg/kg	APHA3120B	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.05	0.7	100	5800	2.9
Vanadium	V mg/kg	APHA3120B	0.01	15.47	14.84	15.06	13.8	15.55	135	42	250	5800	130
Zinc	Zn mg/kg	APHA3120B	0.02	13.94	13.18	14.38	33.52	14.01	70	140	720	350000	410
Mercury	Hg mg/kg	APHA3120B	0.003	0.074	0.152	<0.003	<0.003	0.022	0.08	0.3	10	46	50
				9.1	8.6	8.8	8.8	8.9					

Elements	Unit	Test Method	MDL mg/kg	TP-6E depth 1.50 m	TP-7E depth 1.50 m	TP-8E depth 1.50 m	TP-9E depth 1.50 m	TP-10E depth 1.50 m	crustal abunda nce	Dutch Values		USA values	Can adia n valu es
										Safe limit	Intervention values		
Arsenic	As	APHA3120B	0.12	0.624	0.85	0.836	0.836	0.555		29	55	3	26
Barium	Ba	APHA3120B	0.12	40.04	73.59	35.14	32.8	34.44	425	160	665	220000	2000
Beryllium	Be	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.8	1.1	30	2300	8
Boron	B	APHA3120B	0.09	17.64	17.34	32.86	17.19	43.97	10			230000	
Cadmium	Cd	APHA3120B	0.02	0.432	0.422	0.468	0.437	0.438	0.2	0.8	12	980	22
Chromium (Total)	Cr	APHA3120B	0.01	27.3	26.03	24.78	22.01	24.26	100	100	380	180000	87
Insoluble salt													
Copper	Cu	APHA3120B	0.01	3.704	3.744	4.207	3.814	5.018	55	36	190	47000	91
Iron (Total)	Fe	APHA3120B	0.09	5698	5451	5671	5167	5561	5.63 %			820000	600
Lead	Pb	APHA3120B	0.01	2.049	1.984	2.732	2.56	2.035	12.5	85	530	800	
Manganese	Mn	APHA3120B	0.02	199.1	179.9	218.4	208.7	221	950			26000	
Molybdenum	Mo	APHA3120B	0.01	0.366	0.374	0.392	0.361	0.358	1.5	3	200	5800	
Nickel	Ni	APHA3120B	0.02	34.77	36.98	24.31	22.97	26.11	75	35	210	12000	89
Selenium	Se	APHA3120B	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.05	0.7	100	5800	2.9
Vanadium	V	APHA3120B	0.01	15.7	15.13	16.74	15.46	16.76	135	42	250	5800	130
Zinc	Zn	APHA3120B	0.02	14.47	13.42	14.27	12.99	14.9	70	140	720	350000	410
Mercury	Hg	APHA3120B BS1377 P.3 CL 9	0.003	<0.003	0.096	0.034	0.042	<0.003	0.08	0.3	10	46	50
pH				8.6	8.9	8.8	8.5	8.8					

Elements	Unit	Test Method	MDL mg/kg	TP- 11E depth 1.50 m	TP- 12E depth 1.50 m	TP-13E depth 1.50 m	TP- 14E depth 1.50 m	TP- 15E depth 1.50 m	crustal abundance	Dutch Values		USA values	Canadian values
										Safe limit	Intervention values		
Arsenic	As	APHA3120B	0.12	1.04	0.892	1.032	0.678	1.015		29	55	3	26
Barium	Ba	APHA3120B	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	425	160	665	220000	2000
Beryllium	Be	APHA3120B	0.01	16.43	28.67	14.6	15.13	15.71	2.8	1.1	30	2300	8
Boron	B	APHA3120B	0.09	0.389	0.407	0.408	0.39	0.399	10			230000	
Cadmium	Cd	APHA3120B	0.02	22.77	23.14	22.8	22.35	23.26	0.2	0.8	12	980	22
Chromium (Total)	Cr	APHA3120B	0.01						100	100	380	180000	87
Insoluble salt													
Copper	Cu	APHA3120B	0.01	3.741	3.836	3.771	3.73	3.793	55	36	190	47000	91
Iron (Total)	Fe	APHA3120B	0.09	5152	5507	5308	5232	5142	5.63			820000	600
Lead	Pb	APHA3120B	0.01	1.887	1.894	1.68	1.838	1.609	12.5	85	530	800	
Manganese	Mn	APHA3120B	0.02	194.1	210.3	200.7	202.1	197.2	950			26000	
Molybdenum	Mo	APHA3120B	0.01	0.379	0.359	0.313	0.327	0.281	1.5	3	200	5800	
Nickel	Ni	APHA3120B	0.02	26.4	26.05	16.56	24.97	25.91	75	35	210	12000	89
Selenium	Se	APHA3120B	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.05	0.7	100	5800	2.9
Vanadium	V	APHA3120B	0.01	15	15.81	15.36	14.62	14.47	135	42	250	5800	130
Zinc	Zn	APHA3120B	0.02	12.14	13.28	11.92	12.39	11.77	70	140	720	350000	410
Mercury	Hg	APHA3120B	0.003	<0.00	0.056	<0.003	<0.00	<0.00	0.08	0.3	10	46	50
PH				8.7	8.6	8.6	8.5	9					

Elements	Unit	Test Method	MDL mg/kg	TP-16E depth 1.50 m	TP-16 depth 1.50 m	TP-17 depth 1.50 m	TP-18 depth 1.50 m	TP-19 depth 1.50 m	crustal abundance	Dutch Values		USA values	Canadian values
										Safe limit	Intervention values		
Arsenic	As	APHA3120B		1.04	0.892	1.032	0.678	1.015				Safe limit	Safe limit
Barium	Ba	APHA3120B	0.12	37.55	36.17	37.01	36.75	35.22		29	55	3	26
Beryllium	Be	APHA3120B	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	425	160	665	220000	2000
Boron	B	APHA3120B	0.01	16.43	28.67	14.6	15.13	15.71	2.8	1.1	30	2300	8
Cadmium	Cd	APHA3120B	0.09	0.389	0.407	0.408	0.39	0.399	10			230000	
Cadmium	Cd	APHA3120B	0.02	22.77	23.14	22.8	22.35	23.26	0.2	0.8	12	980	22
Chromium (Total)	Cr	APHA3120B	0.01						100	100	380	180000	87
Insoluble salt													
Copper	Cu	APHA3120B	0.01	3.741	3.836	3.771	3.73	3.793	55	36	190	47000	91
Iron (Total)	Fe	APHA3120B	0.09	5152	5507	5308	5232	5142	5.63			820000	600
Lead	Pb	APHA3120B	0.01	1.887	1.894	1.68	1.838	1.609	12.5	85	530	800	
Manganese	Mn	APHA3120B	0.02	194.1	210.3	200.7	202.1	197.2	950			26000	
Molybdenum	Mo	APHA3120B	0.01	0.379	0.359	0.313	0.327	0.281	1.5	3	200	5800	
Nickel	Ni	APHA3120B	0.02	26.4	26.05	16.56	24.97	25.91	75	35	210	12000	89
Selenium	Se	APHA3120B	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.05	0.7	100	5800	2.9
Vanadium	V	APHA3120B	0.01	15	15.81	15.36	14.62	14.47	135	42	250	5800	130
Zinc	Zn	APHA3120B	0.02	12.14	13.28	11.92	12.39	11.77	70	140	720	350000	410
Mercury	Hg	APHA3120B	0.003	<0.00	0.056	<0.003	<0.00	<0.00	0.08	0.3	10	46	50
				8.7	8.6	8.6	8.5	9					

Elements	Unit	Test Method	MDL mg/kg	TP- 20E depth 1.50 m	TP-21 depth 1.50 m	TP-22 depth 1.50 m	crustal abundance		Dutch Values		USA values	Canadian values
									Safe limit	Intervention values		
Arsenic	As	APHA3120B	0.12	0.795	0.717	0.741			29	55	3	26
Barium	Ba	APHA3120B	0.12	<0.01	<0.01	<0.01	425		160	665	220000	2000
Beryllium	Be	APHA3120B	0.01	13.84	19.57	17	2-8		1.1	30	2300	8
Boron	B	APHA3120B	0.09	0.399	0.409	0.412	10				230000	
Cadmium	Cd	APHA3120B	0.02	23.04	26.07	24.43	0-2		0.8	12	980	22
Chromium (Total)	Cr	APHA3120B	0.01				100		100	380	180000	87
Insoluble salt												
Copper	Cu	APHA3120B	0.01	3.582	3.365	3.481	55		36	190	47000	91
Iron (Total)	Fe	APHA3120B	0.09	5273	5483	5358	5-63 %				820000	600
Lead	Pb	APHA3120B	0.01	2.219	2.377	2.064	12.5		85	530	800	
Manganese	Mn	APHA3120B	0.02	207.1	178	191.4	950				26000	
Molybdenum	Mo	APHA3120B	0.01	0.322	0.305	0.323	1-5		3	200	5800	
Nickel	Ni	APHA3120B	0.02	24.07	23.84	22.79	75		35	210	12000	89
Selenium	Se	APHA3120B	0.1	<0.10	<0.10	<0.10	0-05		0.7	100	5800	2.9
Vanadium	V	APHA3120B	0.01	14.19	15.4	15.38	135		42	250	5800	130
Zinc	Zn	APHA3120B	0.02	13.27	11.93	12.13	70		140	720	350000	410
Mercury	Hg	APHA3120B	0.003	<0.00	<0.00	<0.003	0.08		0.3	10	46	50
pH*		BS1377 P.3 CL 9		8.4	8.8	9.3						
Note: * DAC Accredited												

Remarks The target values, intervention values and indicative levels for metals and arsenic, depend on the clay content and/or the organic matter content.

The values are for regional survey levels set by environmental agencies of the countries for determining the safe levels at which there is no health hazard. These levels / values of different elements/compounds mostly refer to levels where the carcinogenic impact is nil. Targeted to mainly for carcinogenic level

Magnesium occurs naturally in high concentration in soil and is not environmentally indicative

Beryllium is Eco toxicological and is sensitive as it can affect environment at levels far lower than humans.

pH*

Ph in soil mostly affects the agriculture and crop. The effect of Ph in soil of Industrial area has no significance as no crop is likely to be grown in the area. Besides the area being occupied by marine sediment the slight alkalinity of the soil is natural.

Beryllium is ecotoxicological and is sensitive as it can affect environment at levels far lower than humans.

Beryllium

ANALYSIS OF THE METALS IN GROUND WATER

Table 2 Comparison of Analysis with various world standards.

Elements	Unit	Test Method	MDL mg/L	BH-1	BH-2	BH-3	BH-4	BH-5	Crustal abundances	Dutch target level	Dutch remediation levels	USA standard of ground water	canadian standards for groundwater	Indian drinking water standards	WHO standards
Arsenic*	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	1.8			0.00		0.05	0.01
Barium*	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	425	7.2	60	160.00	1	625	0.7
Beryllium*	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.8	200	625	19.00		-	
Boron*	mg/L	APHA3120B	0.09	3.085	3.035	2.797	2.824	2.432	10	0.5	15	19.00	1.5	1	2.4
Cadmium*	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.2			0.69		0.01	0.003
Calcium*	mg/L	APHA3120B	0.11	235.8	474.4	460	462.2	305.3	4.15%	0.06	6	13.00		75	75
Chromium Total)* Cr	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	100			180000 .00	0.99		0.05
Copper*	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	55	2.5	30	28.00	0.007	0.05	2
Iron (Total)*	mg/L	APHA3120B	0.09	0.279	0.006	<0.09	<0.09	<0.09	5.63 %	1.3	75	350.00	0.03	-0.3	0.01
Lead*	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	12.5			14.00		0.05	0.01
Magnesium	mg/L	APHA3120B	0.1	518.2	1566	1488	1374	1021	2.33%	24	800			30	50
Manganese*	mg/L	APHA3120B	0.02	0.233	0.622	0.606	0.107	0.117	950			28.00	0.05	-0.1	
Molybdenum	mg/L	APHA3120B	0.01	<0.01	0.013	0.013	<0.01	0.013	1.5					300	

Elements	Unit	Test Method	MDL mg/L	BH-1	BH-2	BH-3	BH-4	BH-5	Crustal abundances	Dutch target level	Dutch remediation levels	USA standard of ground water	canadian standards for groundwater	Indian drinking water standards	WHO standards
Nickel *	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	75			26.00		75	0.07
Selenium *	mg/L	APHA3120B	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.05	2.1	75	0.52	0.005	0.01	0.04
Sodium	mg/L	APHA3120B	0.12	594.8	13700	12850	12220	8763	2.36%				200	-200	50
Vanadium	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	135	0.07	160	8.60		-0.2	
Zinc*	mg/L	APHA3120B	0.02	<0.02	0.006	<0.02	<0.02	0.013	70			370.00	0.03	5	5
Mercury	mg/L	APHA3120B	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.08	1.2	70	0.02	0.0005	0.001	0.006
Sulphate*	mg/L	APHA3120B		1853	3008	2310	3084	2264		24	800	250.00		200	
Chloride*	mg/L	BS1377 P.3 CL 7		8799	23349	22637	22281	15191	130	0.01	0.3	250.00	120	250	0.7
pH*	mg/L	BS1377 P.3 CL 9		7.3	7.5	7.5	7.8	7.6				6.5-8.5	6.5-8.5	6.5-8	
Carbonates	mg/L	ASTM D 1067-11		Nil	Nil	Nil	Nil	Nil		100				-	
Bicarbonates	mg/L	ASTM D 1067-11		1776	507	556	519	701						-	
Total Alkalinity as CaCO ₃	mg/L	APHA		1455	416	455	426	574						150	
Total Hardness as CaCO ₃	mg/L	APHA		2740	7685	7325	6858	5000				61	500	300	500

Elements	Unit	Test Method	MDL mg/L	BH-1	BH-2	BH-3	BH-4	BH-5	Crustal abundances	Dutch target level	Dutch remediation levels	USA standard of ground water	canadian standards for groundwater	Indian drinking water standards	WHO standards
pH*				7.06	7.48	7.45	7.67	7.55		6.5- 8.5		6.5-8.5			
Conductivity	ms/cm			30.72	64.59	63.67	62.1	48.31				500 mg/L			8.5
TDS	ppt			15.37	32.32	31.85	31.05	24.15				370.00			1400
Salinity	pSu			18.95	43.58	42.87	41.6	31.35							1000

ANALYSIS OF THE ORGANIC COMPOUNDS IN SOIL

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

Test Parameter	unit	MDL	Meathod	Samle location/ bore hole numbers			Remark
				TP-6E	TP-12E	TP-22E	
Total Organic Carbon	%	0.01	Walkley-black method	Analysis Results			safe values as per USA
				0.04	0.05	0.05	
1	TPH C8-C38 ALIPHATIC	mg/kg	USEPA 8015D	<0.1	<0.1	<0.1	5800
2	TPH C6-C8 AROMATIC[1]	mg/kg	USPA 8260C	<0.1	<0.1	<0.1	4300
3	TPH C10-C22 AROMATIC	mg/kg	USEPA 8270D	<0.1	<0.1	<0.1	4300
TOTAL PETROLEUM HYDROCARBONS (TPHCWG)							
4	Benzene[1]	µg/kg	USEPA 8260C	<0.52	<0.52	<0.52	5.1
5	Toluene[1]	µg/kg	USEPA 8260C	<0.54	<0.54	<0.54	700 µg/litre/ odour at f 24 µg/litre.
6	Ethylbenzene[1]	µg/kg	USEPA 8260C	<0.44	<0.44	<0.44	25
7	m & p- Xylene[1]	µg/kg	USEPA 8260C	<1.14	<1.14	<1.14	240
8	o-Xylene[1]	µg/kg	USEPA 8260C	<0.55	<0.55	<0.55	280
9	BTEX[1]	µg/kg	USEPA 8260C	<3.19	<3.19	<3.19	280
POLYNUCLEAR AROMATIC HYDROCARBONS							
10	Naphthalene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	17
11	Acenaphthylene	mg/kg	USEPA 8270D				
12	Acenaphthene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	4500
13	Fluorene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	3000
14	Phenanthrene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	phenanthrene degradation (k ₁) was measured at 0.0269 l/hr with a half-life (t _{1/2}) of 25.8 hrs
15	Anthracene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	23000
16	Fluoranthene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	3000
17	Pyrene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	2300
18	Benz(a)anthracene	mg/kg	USEPA 8270D	<0.05	<0.05	<0.05	21

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

						Samle location/ bore hole numbers				
					</					

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

Test Parameter	unit	MDL	Meathod	Samle location/ bore hole numbers				safe values as per USA	Remark
				TP-6E	TP-12E	TP-22E			
				Analysis Results					
Vinyl chloride[1]	µg/kg	0.88	USEPA 8260C	<0.88	<0.88	1.7			
Bromomethane[1]	µg/kg	0.67	USEPA 8260C	<0.67	<0.67	3			
Chloroethane[1]	µg/kg	0.28	USEPA 8260C	<0.28	<0.28	5700			
Trichlorofluoromethane[1]	µg/kg	0.63	USEPA 8260C	<0.63	<0.63	3600			
Acetonitrile[1]	µg/kg	1.81	USEPA 8260C	<1.81	<1.81	340			
Acetone[1]	µg/kg	2.75	USEPA 8260C	<2.75	<2.75	67000			
Diethyl ether[1]	µg/kg	1.03	USEPA 8260C	<1.03	<1.03	23000			
1,1-Dichloroethene[1]	µg/kg	0.91	USEPA 8260C	<0.91	<0.91	100			
Iodomethane[1]	µg/kg	0.87	USEPA 8260C	<0.87	<0.87			non carcenogenic	
Propionitrile[1]	µg/kg	0.77	USEPA 8260C	<0.77	<0.77	5 mg/kg			
Acrylonitrile[1]	µg/kg	0.85	USEPA 8260C	<0.85	<0.85	1.1			
Methylene chloride[1]	µg/kg	1.21	USEPA 8260C	<1.21	<1.21	320			
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98	USEPA 8260C	<0.98	<0.98	2800			
Allyl chloride[1]	µg/kg	0.57	USEPA 8260C	<0.57	<0.57	0.69			
Carbon disulfide[1]	µg/kg	0.35	USEPA 8260C	<0.35	<0.35	350			
trans-1,2-Dichloroethene[1]	µg/kg	0.96	USEPA 8260C	<0.96	<0.96	2300			

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

					Samle location/ bore hole numbers				
Test Parameter		unit	MDL	Meathod	TP-6E	TP-12E	TP-22E		
					Analysis Results			safe values as per USA	
					Analysis Results			Remark	
MTBE[1]	µg/kg	0.81	USEPA 8260C	<0.81	<0.81	<0.81	210		
1,1-Dichloroethane[1]	µg/kg	0.55	USEPA 8260C	<0.55	<0.55	<0.55	16		
Chloroprene[1]	µg/kg	3.11	USEPA 8260C	<3.11	<3.11	<3.11	0.044		
2-Butanone (MEK)[1]	µg/kg	6.81	USEPA 8260C	<6.81	<6.81	<6.81	19000		
Methacrylonitrile[1]	µg/kg	0.79	USEPA 8260C	<0.79	<0.79	<0.79	10		
cis-1,2-Dichloroethene[1]	µg/kg	0.5	USEPA 8260C	<0.50	<0.50	<0.50	230		
Bromochloromethane[1]	µg/kg	0.9	USEPA 8260C	<0.90	<0.90	<0.90	63		
Chloroform[1]	µg/kg	0.6	USEPA 8260C	<0.60	<0.60	<0.60	1.4		
Methyl acrylate[1]	µg/kg	0.9	USEPA 8260C	<0.90	<0.90	<0.90	61		
2,2-Dichloropropane[1]	µg/kg	0.79	USEPA 8260C	<0.79	<0.79	<0.79	9400		
Tetrahydrofuran[1]	µg/kg	1.64	USEPA 8260C	<1.64	<1.64	<1.64	9400		
1,2-Dichlorethane[1]	µg/kg	0.86	USEPA 8260C	<0.86	<0.86	<0.86	2		
1,1,1-Trichloroethane[1]	µg/kg	0.55	USEPA 8260C	<0.55	<0.55	<0.55	3600		
1,1-Dichloropropene[1]	µg/kg	0.64	USEPA 8260C	<0.64	<0.64	<0.64		diffused in vs volatile	
Carbon Tetrachloride[1]	µg/kg	0.61	USEPA 8260C	<0.61	<0.61	<0.61	2.9		
Benzene[1]	µg/kg	0.52	USEPA 8260C	<0.52	<0.52	<0.52	5.1		

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

Test Parameter	unit	MDL	Meathod	Samle location/ bore hole numbers				Analysis Results	safe values as per USA	Remark
				TP-6E	TP-12E	TP-22E				
Dibromomethane[1]	µg/kg	0.9	USEPA 8260C	<0.90	<0.90	9.9				
1,2-Dichloropropane[1]	µg/kg	0.51	USEPA 8260C	<0.51	<0.51	1.2				
Trichloroethene[1]	µg/kg	0.76	USEPA 8260C	<0.76	<0.76	1.9				
Bromodichloromethane[1]	µg/kg	0.74	USEPA 8260C	<0.74	<0.74	1.3				
Methyl methacrylate[1]	µg/kg	0.9	USEPA 8260C	<0.90	<0.90	1900				
cis-1,3-Dichloropropene[1]	µg/kg	0.39	USEPA 8260C	<0.39	<0.39	8.2				
4-Methyl-2-pentanone (MIBK)[1]	µg/kg	2.57	USEPA 8260C	<2.57	<2.57	14000				
trans-1,3-Dichloropropene[1]	µg/kg	0.61	USEPA 8260C	<0.61	<0.61	8.2				
1,1,2-Trichloroethane[1]	µg/kg	0.59	USEPA 8260C	<0.59	<0.59	0.63				
83 Toluene[1]	µg/kg	0.54	USEPA 8260C	<0.54	<0.54					700 µg/litre/ odour at f 24 µg/litre
84 1,3-Dichloropropane[1]	µg/kg	0.89	USEPA 8260C	<0.89	<0.89	2300				
85 Ethyl methacrylate[1]	µg/kg	0.78	USEPA 8260C	<0.78	<0.78	760				
86 2-Hexanone[1]	µg/kg	3.4	USEPA 8260C	<3.40	<3.40	130				
87 Dibromochloromethane[1]	µg/kg	<0.35	USEPA 8260C	<0.35	<0.35	39				
88 1,2-Dibromoethane-EDB[1]	µg/kg	<0.88	USEPA 8260C	<0.88	<0.88	0.16				
89 Tetrachloroethene[1]	µg/kg	<0.78	USEPA 8260C	<0.78	<0.78	39				
90 1,1,1,2-Tetrachloroethane[1]	µg/kg	<0.34	USEPA 8260C	<0.34	<0.34	8.8				
91 Chlorobenzene[1]	µg/kg	<0.59	USEPA 8260C	<0.59	<0.59	130				
92 Ethylbenzene[1]	µg/kg	<0.44	USEPA 8260C	<0.44	<0.44	25				
93 m & p- Xylene[1]	µg/kg	<1.14	USEPA 8260C	<1.14	<1.14	240				

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

						Samle location/ bore hole numbers				
	Test Parameter	unit	MDL	Meathod	TP-6E	TP-12E	TP-22E			
					Analysis Results				safe values as per USA	Remark
94	Bromoform[1]	µg/kg	<0.63	USEPA 8260C	<0.63	<0.63	<0.63	86		
95	cis-1,4-Dichloro-2-butene[1]	µg/kg	<0.63	USEPA 8260C	<0.63	<0.63	<0.63	0.0094		
96	Styrene[1]	µg/kg	<0.64	USEPA 8260C	<0.64	<0.64	<0.64	3500		
97	1,1,2,2-Tetrachloroethane[1]	µg/kg	<0.95	USEPA 8260C	<0.95	<0.95	<0.95	8.8		
98	o-Xylene[1]	µg/kg	<0.55	USEPA 8260C	<0.55	<0.55	<0.55	280		
99	1,2,3-Trichloropropane[1]	µg/kg	<0.92	USEPA 8260C	<0.92	<0.92	<0.92	0.11		
100	trans-1,4-Dichloro-2-butene[1]	µg/kg	<1.43	USEPA 8260C	<1.43	<1.43	<1.43	0.0094/3.20E-02		
101	Isopropylbenzene[1]	µg/kg	<0.38	USEPA 8260C	<0.38	<0.38	<0.38	990		
102	Bromobenzene[1]	µg/kg	<0.69	USEPA 8260C	<0.69	<0.69	<0.69	180		
103	n-Propylbenzene[1]	µg/kg	<0.60	USEPA 8260C	<0.60	<0.60	<0.60	2400		
104	2-Chlorotoluene[1]	µg/kg	<0.86	USEPA 8260C	<0.86	<0.86	<0.86	2300		
105	4-Chlorotoluene[1]	µg/kg	<0.72	USEPA 8260C	<0.72	<0.72	<0.72	2300		
106	1,3,5-Trimethylbenzene[1]	µg/kg	<0.43	USEPA 8260C	<0.43	<0.43	<0.43	150		
107	Pentachloroethane[1]	µg/kg	<0.89	USEPA 8260C	<0.89	<0.89	<0.89	36		
108	tert-Butylbenzene[1]	µg/kg	<0.50	USEPA 8260C	<0.50	<0.50	<0.50	12000		
109	1,2,4-Trimethylbenzene[1]	µg/kg	<0.40	USEPA 8260C	<0.40	<0.40	<0.40	180		
110	sec-Butylbenzene[1]	µg/kg	<0.55	USEPA 8260C	<0.55	<0.55	<0.55	12000		
									Volatilization takes place on exposure	
111	1,3-Dichlorobenzene[1]	µg/kg	<0.52	USEPA 8260C	<0.52	<0.52	<0.52			
112	1,4-Dichlorobenzene[1]	µg/kg	<0.59	USEPA 8260C	<0.59	<0.59	<0.59	11		
113	p-Isopropyltoluene (p-Cymene)[1]	µg/kg	<0.52	USEPA 8260C	<0.52	<0.52	<0.52		Non carcinogenic	
114	1,2-Dichlorobenzene[1]	µg/kg	<0.73	USEPA 8260C	<0.73	<0.73	<0.73	930		
115	n-Butylbenzene[1]	µg/kg	<0.65	USEPA 8260C	<0.65	<0.65	<0.65	5800		
116	1,2-Dibromo-3-Chloropropane[1]	µg/kg	<1.25	USEPA 8260C	<1.25	<1.25	<1.25	0.064		
117	1,2,4-Trichlorobenzene[1]	µg/kg	<0.69	USEPA 8260C	<0.69	<0.69	<0.69	26		

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

						Samle location/ bore hole numbers			
						TP-6E	TP-12E	TP-22E	
						safe values as per USA			
						Analysis Results			Remark
									Vaporises on exposure so presence in soil least expected
118	Naphthalene[1]	µg/kg	<1.29	USEPA 8260C	<1.29	<1.29	<1.29	<1.29	
119	Hexachlorobutadiene[1]	µg/kg	<0.76	USEPA 8260C	<0.76	<0.76	<0.76	<0.76	5.3
120	1,2,3-Trichlorobenzene[1]	µg/kg	<0.86	USEPA 8260C	<0.86	<0.86	<0.86	<0.86	93
121	TIC's	µg/kg	ND	USEPA 8260C	ND	ND	ND	ND	
SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's									
122	N-Nitrosodimethylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	0.034
123	Pyridine	mg/kg	1.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	120
124	Phenol	mg/kg	2.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	25000
125	Aniline	mg/kg	3.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	400
126	Bis(2-ehhloroethyl) ether	mg/kg	4.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	1
127	2-Chlorophenol	mg/kg	5.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	580
128	1,3-Dichlorobenzene	mg/kg	6.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	Volatilization
129	1,4-Dichlorobenzene	mg/kg	7.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	11
130	Benzyl alcohol	mg/kg	8.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8200
131	2-Methylphenol	mg/kg	9.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	4100
132	1,2-Dichlorobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	930
133	Bis(2-chloroisopropyl) ether	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	4700
134	4-Methylphenol/3-Methylphenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8200
135	N-Nitrosodi-n-propylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	0.33
136	Hexachloroethane	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8
137	Nitrobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	22
138	Isophorone	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2400
139	2,4-Dimethylphenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	1600
140	2-Nitrophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	Degrades in 64 days
141	Bis(2-chloroethoxy)methane	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	250
142	2,4-Dichlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	250

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

						Samle location/ bore hole numbers					
	Test Parameter		unit	MDL	Meathod	TP-6E	TP-12E	TP-22E			
						Analysis Results				safe values as per USA	Remark
143	1,2,4-Trichlorobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	26		
144	Naphthalene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	17		
145	4-Chloroaniline	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	11		
146	Hexachlorobutadiene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	5.3		
147	4-Chloro-3-methylphenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8200		
148	2-Methylnaphthalene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	300		
149	1-Methylnaphthalene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	73		
150	Hexachlorocyclopentadiene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	0.75		
151	2,4,6-Trichlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	82		
152	2,4,5-Trichlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8200		
153	2-Chloronaphthalene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	6000		
154	2-Nitroaniline	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	800		
155	1,4-Dinitrobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8.2		
156	Dimethyl phthalate	mg/kg	0.02	USEPA 8270D						Not classifiable as to human carcinogenicity	
157	1,3-Dinitrobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8.2		
158	2,6-Dinitrotoluene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	1.5		
159	1,2-Dinitrobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8.2		
160	Acenaphthylene	mg/kg	0.02	USEPA 8270D							
		mg/kg								This compound may be sensitive to prolonged exposure to light.	
161	3-Nitroaniline	mg/kg	0.02	USEPA 8270D							
162	Acenaphthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	4500		
163	2,4-Dinitrophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	160		
		mg/kg								This compound will partially exist in the anion form in the environment and anions generally do not	
164	4-Nitrophenol	mg/kg	0.02	USEPA 8270D							

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

					Samle location/ bore hole numbers					
				unit	MDL	Meathod	TP-6E	TP-12E	TP-22E	
							safe values as per USA			
							Analysis Results			Remark
										adsorb more strongly to soils
165	2,4-Dinitrotoluene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	7.4	
166	Dibenzofuran	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	100	
167	2,3,5,6-Tetrachlorophenol	mg/kg	0.02	USEPA 8270D						volatilization in soil is noted
168	2,3,4,6-Tetrachlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2500	
169	Diethyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	66000	
170	4-Chlrophenyl phenyl ether	mg/kg	0.02	USEPA 8270D					.	volatilization takes place, in 39 days
171	4-Nitroaniline	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	110	
172	4,6-Dinitro-2-methylphenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	6.6	
173	Fluorene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	3000	
174	N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	470	
175	1,2-Diphenylhydrazine (as azobenzene)	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2.9	melting point 11 degree, Not classifiable as to human carcinogenicity
176	4-Bromophenyl phenyl ether	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	0.96	
177	Hexachlorobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	4	
178	Pentachlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	4	

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

Test Parameter	unit	MDL	Meathod	Samle location/ bore hole numbers			Analysis Results	safe values as per USA	Remark
				TP-6E	TP-12E	TP-22E			
179 Phenanthrene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02		phenanthrene degradation measured at 0.0269 l/hr with a half-life (t(1/2)) of 25.8 hrs. Not classifiable as to human carcinogenicity
180 Anthracene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	23000	
181 Carbazole	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	330(ug/kg)	
182 Di-n-butyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	8200	
183 Fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	3000	
184 Benzidine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	0.01	
185 3,3'-Dimethylbenzidine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02		sensitive to exposure to light and prolonged exposure to air
186 Pyrene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2300	
187 Butyl benzyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	1200	
188 Bis(2-ethylhexyl) adipate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	1900	
189 Bis(2-ethylhexyl) phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	160	
190 3,3'-Dichlorobenzidine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	5.1	
191 Benz(a)anthracene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	21	
192 Chrysene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2100	
193 Di-n-octyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	820	
194 Benzo(b)fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	21	
195 Benzo(k)fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	210	
196 Benzo(a)pyrene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2.1	
197 Indeno(1,2,3-cd)pyrene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	21	
198 Dibenz(a,h)anthracene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	2.1	

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.									
Test Parameter		unit	MDL	Method	Sample location/ bore hole numbers				
					TP-6E	TP-12E	TP-22E		
					Analysis Results			safe values as per USA	Remark
199	Benzo(g,h,i)perylene	mg/kg	0.02	USEPA 8270D					Degrades in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for each of these reactions in air is estimated to be 4.4-4.5 hours
200	TIC's	mg/kg	-	USEPA 8270D	nd	ND	ND		

ANALYSIS OF THE ORGANIC COMPOUNDS IN GROUND WATER

Table -4 Comparisons of analysed results with world standards.

Tests	Unit	MDL	Test Method	Test Results					
				BH-01	BH-02	BH-03	BH-04	BH-05	USA standards for Tap water
I. CHEMICAL ANALYSIS:									
Ammoniacal Nitrogen	mg/l	0.02	APHA 4500 NH ₃ (F)	1.60	0.04	0.03	2.25	0.9	
Flouride ^[1]	mg/l	0.1	APHA 4500 F ⁻ (D)	0.9	1.5	1.5	1.6	1.5	12.000000
Nitrate	mg/l	0.02	APHA 450 NO ₃ (E)	0.40	0.04	0.31	0.22	0.13	100.000000
Nitrite	mg/l	0.02	APHA 450 NO ₂ (B)	0.03	0.03	0.03	<0.02	<0.02	10.000000
Phosphate as PO ₄	mg /l	0.6	APHA 4500 P (C)	1.3	0.7	0.8	0.6	<0.6	safe
BTEX									
Benzene ^[1]	µg/l	0.57	USEPA 8260 C	<0.57	<0.57	<0.57	<0.57	<0.57	0.460000
Toluene ^[1]	µg/l	0.88	USEPA 8260 C	587	199	164	<0.88	<0.88	1.500000
Ethylbenzene ^[1]	µg/l	0.88	USEPA 8260 C	<0.88	<0.88	<0.88	<0.88	<0.88	1.500000
Xylene (total) ^[1]	µg/l	2.69	USEPA 8260 C	<2.69	<2.69	<2.69	<2.69	<2.69	19.000000
BTEX ^[1]	µg/l	5.02	USEPA 8260 C	587	199	164	<5.02	<5.02	
TOTAL PETROLEUM HYDROCARBONS (TPHCWG)									
TPH C8-C38 ALIPHATIC	mg/L	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	universal standard
TPH C6-C8 AROMATIC ^[1]	mg/L	0.01	USEPA 8260C	<0.01	<0.01	<0.01	<0.01	<0.01	no universal standard
TPH C10-C22 AROMATIC	mg/L	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.1	no universal standard

Table -4 Comparisons of analysed results with world standards.

Tests		Unit	MDL	Test Method	Test Results						
					BH-01	BH-02	BH-03	BH-04	BH-05		
POLYNUCLEAR AROMATIC HYDROCARBONS											
Naphthalene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.170000
Acenaphthylene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	
Acenaphthene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	53.000000
Fluorene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	29.000000
Phenanthrene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	180.000000
Anthracene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	180.000000
Fluoranthene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	80.000000
Pyrene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	12.000000
Benz(a)anthracene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.030000
Chrysene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	25.000000
Benzo(b)fluoranthene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.250000
Benzo(k)fluoranthene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	2.500000
Benzo(a)pyrene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.025000
Indeno(1,2,3-cd)pyrene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.250000
Dibenz(a,h)anthracene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.025000
Benzo(g,h,i)perylene				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.025000
Polynuclear Aromatic Hydrocarbons (PAHs)				µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	0.000100
POLYCHLORINATED BIPHENYLS											

3,3',4,4'-Tetrachlorobiphenyl (PCB77)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.006000
3,4,4',5'-Tetrachlorobiphenyl (PCB81)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.000400
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2,3,4,4',5'-Pentachlorobiphenyl (PCB114)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.000001
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.011000
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.000004
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	μg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
Total PCBs	μg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	

SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's

N-Nitrosodimethylamine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00
Pyridine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	2.00
Phenol	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	580.00
Aniline	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	13.00

Bis(2-chloroethyl) ether	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	
2-Chlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	9.10	
1,3-Dichlorobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
1,4-Dichlorobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.48	
Benzyl alcohol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	200.00	
2-Methylphenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	93.00	
1,2-Dichlorobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	30.00	
Bis(2-chloroisopropyl) ether	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
4-Methylphenol/3-Methylphenol	mg/L	0.001	USEPA 8270D		0.058	<0.001	<0.001	<0.001	<0.001	<0.001		
N-Nitrosodi-n-propylamine	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	
Hexachloroethane	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.33	
Nitrobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.14	
Isophorone	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	78.00	
2,4-Dimethylphenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	36.00	
2-Nitrophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
Bis(2-chloroethoxy)methane	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	5.90	
2,4-Dichlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	4.60	

1,2,4-Trichlorobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.40	
Naphthalene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.17	
4-Chloroaniline	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.37	
Hexachlorobutadiene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.14	
4-Chloro-3-methylphenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	140.00	
2-Methylnaphthalene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	3.60	
1-Methylnaphthalene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.10	
Hexachlorocyclopentadiene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.04	
2,4,6-Trichlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.20	
2,4,5-Trichlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	120.00	
2-Chloronaphthalene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	75.00	
2-Nitroaniline	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	19.00	
1,4-Dinitrobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.20	
Dimethyl phthalate	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
1,3-Dinitrobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.20	
2,6-Dinitrotoluene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.05	
1,2-Dinitrobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.19	
Acenaphthylene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		

3-Nitroaniline	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Acenaphthene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	53.00
2,4-Dinitrophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	3.90
4-Nitrophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
2,4-Dinitrotoluene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.24
Dibenzofuran	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.79
2,3,5,6-Tetrachlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
2,3,4,6-Tetrachlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	24.00
Diethyl phthalate	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1500.00
4-Chlorophenyl phenyl ether	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
4-Nitroaniline	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	3.80
4,6-Dinitro-2-methylphenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Fluorene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	29.00
N-nitrosodiphenylamine (diphenylamine)	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	12.00
1,2-Diphenylhydrazine (as azobenzene)	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.08
4-Bromophenyl phenyl ether	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Hexachlorobenzene	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01
Pentachlorophenol	mg/L	0.001	USEPA 8270D		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	

Phenanthrene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	180.00
Anthracene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	180.00
Carbazole	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	
Di-n-butyl phthalate	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	90.00
Fluoranthene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	80.00
Benzidine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	0.00
3,3'-Dimethylbenzidine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	
Pyrene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	12.00
Butyl benzyl phthalate	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	16.00
Bis(2-ethylhexyl) adipate	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	65.00
Bis(2-ethylhexyl) phthalate	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	5.60
3,3'-Dichlorobenzidine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	0.13
Benz(a)anthracene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	0.03
Chrysene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	25.00
Di-n-octyl phthalate	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	20.00
Benzo(b)fluoranthene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	0.25
Benzo(k)fluoranthene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	2.50
Benzo(a)pyrene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	0.03

Indeno(1,2,3-cd)pyrene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.25
Dibenz(a,h)anthracene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.03
Benzo(g,h,i)perylene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
TIC's	mg/L	-	USEPA 8270D	ND	ND	ND	ND	ND	ND	
VOLATILE ORGANIC COMPOUNDS + TIC's										
Dichlorodifluoromethane ^[1]	µg/L	0.92	USEPA 8260C	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	20.00
Chloromethane ^[1]	µg/L	0.84	USEPA 8260C	<0.84	<0.84	<0.84	<0.84	<0.84	<0.84	19.00
Vinyl chloride ^[1]	µg/L	3.13	USEPA 8260C	<3.13	<3.13	<3.13	<3.13	<3.13	<3.13	0.02
Bromomethane ^[1]	µg/L	2.08	USEPA 8260C	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	0.75
Chloroethane ^[1]	µg/L	0.63	USEPA 8260C	<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	2100.00
Trichlorofluoromethane ^[1]	µg/L	0.58	USEPA 8260C	<0.58	<0.58	<0.58	<0.58	<0.58	<0.58	800.00
Acetonitrile ^[1]	µg/L	1.52	USEPA 8260C	<1.52	<1.52	<1.52	<1.52	<1.52	<1.52	13.00
Acetone ^[1]	µg/L	3.23	USEPA 8260C	<3.23	<3.23	<3.23	<3.23	<3.23	<3.23	1400.00
Diethyl ether ^[1]	µg/L	0.92	USEPA 8260C	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	390.00
1,1-Dichloroethene ^[1]	µg/L	0.96	USEPA 8260C	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	28.00
Iodomethane ^[1]	µg/L	0.71	USEPA 8260C	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	
Propionitrile ^[1]	µg/L	0.35	USEPA 8260C	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	

Acrylonitrile ^[1]	μg/L	1.27	USEPA 8260C	<1.27	<1.27	<1.27	<1.27	<1.27	0.05
Methylene chloride ^[1]	μg/L	1.90	USEPA 8260C	<1.90	<1.90	<1.90	<1.90	<1.90	
1,1,2-Trichlorotrifluoroethane (CFC-113) ^[1]	μg/L	1.01	USEPA 8260C	<1.01	<1.01	<1.01	<1.01	<1.01	1000.00
Allyl chloride ^[1]	μg/L	0.93	USEPA 8260C	<0.93	<0.93	<0.93	<0.93	<0.93	0.21
Carbon disulfide ^[1]	μg/L	1.79	USEPA 8260C	<1.79	<1.79	<1.79	<1.79	<1.79	81.00
trans-1,2-Dichloroethene ^[1]	μg/L	0.88	USEPA 8260C	<0.88	<0.88	<0.88	<0.88	<0.88	36.00
MTBE ^[1]	μg/L	1.44	USEPA 8260C	<1.44	<1.44	<1.44	<1.44	<1.44	14.00
1,1-Dichloroethane ^[1]	μg/L	0.69	USEPA 8260C	<0.69	<0.69	<0.69	<0.69	<0.69	2.80
Chloroprene ^[1]	μg/L	1.21	USEPA 8260C	<1.21	<1.21	<1.21	<1.21	<1.21	0.02
2-Butanone (MEK) ^[1]	μg/L	3.84	USEPA 8260C	<3.84	<3.84	<3.84	<3.84	<3.84	560.00
Methacrylonitrile ^[1]	μg/L	1.09	USEPA 8260C	<1.09	<1.09	<1.09	<1.09	<1.09	
cis-1,2-Dichloroethene ^[1]	μg/L	0.56	USEPA 8260C	<0.56	<0.56	<0.56	<0.56	<0.56	3.60
Bromochloromethane ^[1]	μg/L	1.02	USEPA 8260C	<1.02	<1.02	<1.02	<1.02	<1.02	8.30
Chloroform ^[1]	μg/L	1.18	USEPA 8260C	<1.18	<1.18	<1.18	<1.18	<1.18	0.22
Methyl acrylate ^[1]	μg/L	0.66	USEPA 8260C	<0.66	<0.66	<0.66	<0.66	<0.66	4.20
2,2-Dichloropropane ^[1]	μg/L	1.41	USEPA 8260C	<1.41	<1.41	<1.41	<1.41	<1.41	340.00

Tetrahydrofuran ^[1]	µg/L	1.70	USEPA 8260C
1,2-Dichloroethane ^[1]	µg/L	0.46	USEPA 8260C
1,1,1-Trichloroethane ^[1]	µg/L	0.95	USEPA 8260C
1,1-Dichloropropene ^[1]	µg/L	1.24	USEPA 8260C
Carbon Tetrachloride ^[1]	µg/L	0.52	USEPA 8260C
Benzene ^[1]	µg/L	0.57	USEPA 8260C
Dibromomethane ^[1]	µg/L	0.51	USEPA 8260C
1,2-Dichloropropane ^[1]	µg/L	0.64	USEPA 8260C
Trichloroethene ^[1]	µg/L	0.89	USEPA 8260C
Bromodichloromethane ^[1]	µg/L	1.06	USEPA 8260C
Methyl methacrylate ^[1]	µg/L	1.31	USEPA 8260C
cis-1,3-Dichloropropene ^[1]	µg/L	1.17	USEPA 8260C
4-Methyl-2-pentanone (MIBK) ^[1]	µg/L	3.30	USEPA 8260C
trans-1,3-Dichloropropene ^[1]	µg/L	1.17	USEPA 8260C
1,1,2-Trichloroethane ^[1]	µg/L	0.92	USEPA 8260C
Toluene ^[1]	µg/L	0.88	USEPA 8260C
1,3-Dichloropropane ^[1]	µg/L	0.77	USEPA 8260C

<1.70	<1.70	<1.70	<1.70	<1.70	<1.70	340.00
<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	0.17
<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	800.00
<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	
<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	0.46
<0.57	<0.57	<0.57	<0.57	<0.57	<0.57	0.46
<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	0.83
<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	0.14
<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	0.28
<1.06	<1.06	<1.06	<1.06	<1.06	<1.06	0.13
<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	140.00
<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	0.47
<3.30	<3.30	<3.30	<3.30	<3.30	<3.30	630.00
<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	0.47
<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	0.04
587	199	164	<0.88	<0.88	<0.88	110.00
<0.77	<0.77	<0.77	<0.77	<0.77	<0.77	37.00

Ethyl methacrylate ^[1]	µg/L	1.07	USEPA 8260C
2-Hexanone ^[1]	µg/L	2.19	USEPA 8260C
Dibromochloromethane ^[1]	µg/L	0.82	USEPA 8260C
1,2-Dibromoethane-EDB ^[1]	µg/L	0.63	USEPA 8260C
Tetrachloroethene ^[1]	µg/L	0.63	USEPA 8260C
1,1,1,2-Tetrachloroethane ^[1]	µg/L	1.04	USEPA 8260C
Chlorobenzene ^[1]	µg/L	0.6	USEPA 8260C
Ethylbenzene ^[1]	µg/L	0.88	USEPA 8260C
m & p- Xylene ^[1]	µg/L	1.90	USEPA 8260C
Bromoform ^[1]	µg/L	0.75	USEPA 8260C
cis-1,4-Dichloro-2-butene ^[1]	µg/L	1.11	USEPA 8260C
Styrene ^[1]	µg/L	0.83	USEPA 8260C
1,1,2,2-Tetrachloroethane ^[1]	µg/L	0.91	USEPA 8260C
o-Xylene ^[1]	µg/L	0.79	USEPA 8260C
1,2,3-Trichloropropane ^[1]	µg/L	1.20	USEPA 8260C
trans-1,4-Dichloro-2-butene ^[1]	µg/L	1.52	USEPA 8260C
Isopropylbenzene ^[1]	µg/L	0.96	USEPA 8260C

<1.07	<1.07	<1.07	<1.07	<1.07	<1.07	63.00
<2.19	<2.19	<2.19	<2.19	<2.19	<2.19	3.80
<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	0.87
<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	4.10
<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	0.50
<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	0.57
<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	22.00
<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	1.50
<1.90	<1.90	<1.90	<1.90	<1.90	<1.90	19.00
<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	3.30
<1.11	<1.11	<1.11	<1.11	<1.11	<1.11	0.00
<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	120.00
<0.91	<0.91	<0.91	<0.91	<0.91	<0.91	0.57
<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	19.00
<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	0.00
<1.52	<1.52	<1.52	<1.52	<1.52	<1.52	0.00
<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	45.00

Bromobenzene ^[1]		µg/L	1.19	USEPA 8260C	<1.19	<1.19	<1.19	<1.19	<1.19	6.20
n-Propylbenzene ^[1]		µg/L	1.26	USEPA 8260C	<1.26	<1.26	<1.26	<1.26	<1.26	66.00
2-Chlorotoluene ^[1]		µg/L	1.29	USEPA 8260C	<1.29	<1.29	<1.29	<1.29	<1.29	24.00
4-Chlorotoluene ^[1]		µg/L	1.22	USEPA 8260C	<1.22	<1.22	<1.22	<1.22	<1.22	25.00
1,3,5-Trimethylbenzene ^[1]		µg/L	1.08	USEPA 8260C	<1.08	<1.08	<1.08	<1.08	<1.08	6.00
Pentachloroethane ^[1]		µg/L	1.18	USEPA 8260C	<1.18	<1.18	<1.18	<1.18	<1.18	0.65
tert-Butylbenzene ^[1]		µg/L	1.06	USEPA 8260C	<1.06	<1.06	<1.06	<1.06	<1.06	69.00
1,2,4-Trimethylbenzene ^[1]		µg/L	1.05	USEPA 8260C	<1.05	<1.05	<1.05	<1.05	<1.05	
sec-Butylbenzene ^[1]		µg/L	0.97	USEPA 8260C	<0.97	<0.97	<0.97	<0.97	<0.97	
1,3-Dichlorobenzene ^[1]		µg/L	0.94	USEPA 8260C	<0.94	<0.94	<0.94	<0.94	<0.94	30.00
1,4-Dichlorobenzene ^[1]		µg/L	1.25	USEPA 8260C	<1.25	<1.25	<1.25	<1.25	<1.25	100.00
p-Isopropyltoluene (p-Cymene) ^[1]		µg/L	1.50	USEPA 8260C	<1.50	<1.50	<1.50	<1.50	<1.50	0.00
1,2-Dichlorobenzene ^[1]		µg/L	0.93	USEPA 8260C	<0.93	<0.93	<0.93	<0.93	<0.93	0.40
n-Butylbenzene ^[1]		µg/L	1.88	USEPA 8260C	<1.88	<1.88	<1.88	<1.88	<1.88	100.00
1,2-Dibromo-3-Chloropropane ^[1]		µg/L	2.50	USEPA 8260C	<2.50	<2.50	<2.50	<2.50	<2.50	0.00
1,2,4-Trichlorobenzene ^[1]		µg/L	1.78	USEPA 8260C	<1.78	<1.78	<1.78	<1.78	<1.78	0.40
Naphthalene ^[1]		µg/L	3.92	USEPA 8260C	<3.92	<3.92	<3.92	<3.92	<3.92	0.17

Hexachlorobutadiene ^[1]			μg/L	1.40	USEPA 8260C	<1.40	<1.40	<1.40	<1.40	<1.40	<1.40	0.14
1,2,3-Trichlorobenzene ^[1]			μg/L	0.93	USEPA 8260C	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	0.70
TIC's			μg/L	-	USEPA 8260C	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	

APPENDIX F

TRIAL PIT AND STOCK PILE PHOTOGRAPHS

PHOTOGRAPHS OF TRIAL PITS

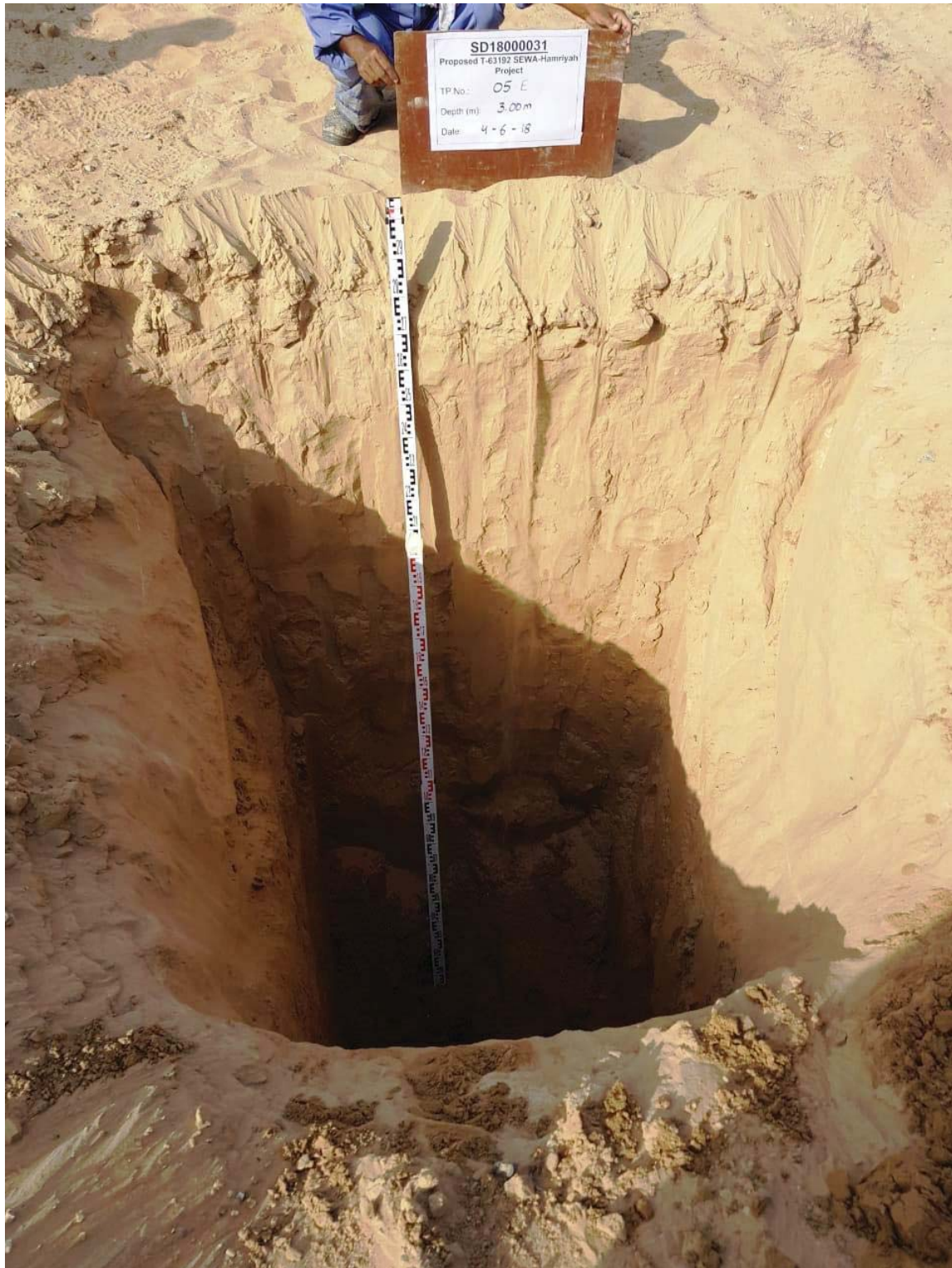
TP: 01E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS***TP: 02E, Depth: 0.00 – 3.00m***

PHOTOGRAPHS OF TRIAL PITS***TP: 03E, Depth: 0.00 – 3.00m***

PHOTOGRAPHS OF TRIAL PITS

TP: 04E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 05E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 06E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 07E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS



TP: 08E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 09E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 10E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 11E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 12E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 14E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 15E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 16E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 20E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 21E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 22E, Depth: 0.00 – 3.00m

PHOTOGRAPHS OF TRIAL PITS

TP: 15 Stock Pile, Depth: 0.00 – 0.50m

PHOTOGRAPHS OF TRIAL PITS

TP: 16 Stock Pile, Depth: 0.00 – 0.50m

PHOTOGRAPHS OF TRIAL PITS

TP: 17 Stock Pile, Depth: 0.00 – 0.50m

PHOTOGRAPHS OF TRIAL PITS

TP: 18 Stock Pile, Depth: 0.00 – 0.50m

PHOTOGRAPHS OF TRIAL PITS

TP: 19 Stock Pile, Depth: 0.00 – 0.50m

APPENDIX G

LABORATORY ACCREDITATIONS

Certificate of Accreditation

شهادة الاعتماد

Certificate Number	NAL 062	رقم الشهادة
Date of Issuance	2013-11-27	تاريخ الإصدار
Valid Until	2020-01-24	صالح إلى
Issued To		صادر إلى
CAB ID	L-16-00135	رقم جهة تقييم المطابقة
CAB Name	Arab Center for Engineering studies	اسم جهة تقييم المطابقة
CAB Type	Testing Laboratories	نوع جهة تقييم المطابقة
CAB Address	Industrial City of Abu Dhabi (ICAD-1) Sector M-41 , Plot 166C5	عنوان جهة تقييم المطابقة
Accredited according to	ISO/IEC 17025:2005	اعتمدت وفقاً لـ



معالي الدكتور راشد بن أحمد بن فهد
وزير دولة
رئيس مجلس إدارة هيئة الإمارات للمواصفات والمقاييس

تعتبر هذه الشهادة صالحة وقابلة للتحديث وإعادة الإصدار حتى تاريخ الانتهاء الممنون أعلاه شريطة استمرار الجهة المذكورة أعلاه في تطبيق المواصفات والأدلة سالفة الذكر. وتحمل الجهة مسئولية الشهادات الصادرة عنها وتخضع مجالات الاعتماد المذكورة في وثيقة المجال المرجقة لعمليات متابعة لاحقة من قبل نظام الاعتماد الوطني

This is an electronic certificate and does not require stamp and signature.
Visit ESMA website www.esma.gov.ae to verify this certification.
Any alternation or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع.
للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت والدخول إلى خدمة الاستعلام عن المستندات الصادرة www.esma.gov.ae
أي كسكط أو تغيير في هذه الشهادة يلغونها.

هاتف 2944434
فاكس 2944428
Tel.: +971 4 2944434
Fax: +971 4 2944428

ص.ب 48666 دبي، الإمارات العربية المتحدة
P.O.BOX 48666, Dubai - United Arab Emirates

هاتف 24032700
فاكس 26715999
Tel.: +971 2 4032700
Fax: +971 2 6715999

ص.ب 2166 أبو ظبي، الإمارات العربية المتحدة
P.O.BOX 2166, Abu Dhabi - United Arab Emirates



Scope Appendix

Certificate Number	NAL 062		رقم الشهادة
Date of Issuance	2017-01-25		تاريخ الإصدار
Appendix Number	NAL 062-A-1		رقم الملحق
Subject	Emirates National Accreditation System Accreditation Scope Appendix	نظام الاعتماد الوطني الإماراتي ملحق مجالات الاعتماد	العنوان
Issued To			صادر إلى
CAB Name	Arab Center for Engineering studies		اسم جهة تقييم المطابقة
CAB Type	Testing and Calibration Laboratories	مختبرات الفحص و المعايرة	نوع جهة تقييم المطابقة
CAB Sub Type	Testing Laboratories	مختبرات فحص	فرع جهة تقييم المطابقة

#	Test Material Matrix	Types of Test / Properties Measured	Tested Method / Standard
1	Concrete	Compressive Strength of Cubes including curing	BS EN 12390-3:2009; BS EN 12390-2:2009
2	Concrete	Density of Hardened Concrete	BS EN 12390-7: 2009
3	Concrete	Water Absorption of Concrete	BS1881 : 2011 Part 122
4	Concrete	Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration	ASTM C1202 : 2012
5	Concrete	Water Permeability	DIN 1048 : 1991 Part 5
6	Aggregates	Determination of particle size distribution	BS 812-103.1:1985
7	Aggregates	Flakiness index of coarse aggregate	BS 812-105.1:1989
8	Aggregates	Elongation index of coarse aggregate	BS 812-105.2:1990
9	Aggregates	Determination of moisture content	BS 812-109:1990
10	Aggregates	Determination of particle densities and water absorption	BS 812 Part 2: 1995 (Amd.10379 -99) Cl.5.3; 5.4; 5.5

This scope of accreditation is invalid without certificate of accreditation and cannot be used as a separate document.

مجال الاعتماد غير صالح بدون شهادة الاعتماد ولا يمكن استخدامه كوثيقة منفصلة

This is an electronic certificate and does not require stamp and signature. Visit ESMA website www.esma.gov.ae to verify this certification. Any alternation or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع. للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت www.esma.gov.ae والدخول إلى خدمة الاستعلام عن المستندات الصادرة أي كشط أو تغيير في هذه الشهادة بلغها.



Scope Appendix

11	Soil for civil engineering purposes	Determination of Particle Size Distribution	BS 1377:1990 Part 2 Amd. 9027-96, Cl.9.2
12	Soil for civil engineering purposes	Determination of Dry Density-Moisture Content Relationship using 4,5kg Rammer	BS 1377:1990 Part 4 Amd. 13925-02, Cl.3.5&3.6
13	Soil for civil engineering purposes	Determination of California Bearing Ratio (CBR)	BS 1377:1990 Part 4 Amd. 13925-02, Cl. 7.2. 3.2.
14	Soil for civil engineering purposes	Determination of In-situ Density by Sand Replacement Method (Large Pouring Cylinder)	BS 1377:1990 Part 9 Amd. 8264-95, Cl. 2.2
15	Concrete	Determination of chloride content of hardened concrete	BS 1881:2015 Part 124 Cl 12.1
16	Concrete	Determination of sulphate content of hardened concrete	BS 1881:2015 Part 124 Cl 12.2
17	Soil	Determination of pH Value of soil	BS 1377:1990 Part 3 Amd. 9028-96 Cl.9
18	Soil	Determination of the sulphate content of soil (water extract and acid extract)	BS 1377:1990 Part 3 Amd. 9028-96 Cl 5.2 & 5.3
19	Soil	Determination of the chloride content of soil(water extract and acid extract)	BS 1377:1990 Part 3 Amd. 9028-96 Cl 7.2 & 7.3
20	Ground Water	Determination of the sulphate content of ground water	BS 1377:1990 Part 3 Amd. 9028-96 Cl 5.4
21	Ground Water	Determination of the chloride content of ground water	BS 1377:1990 Part 3 Amd. 9028-96 Cl 7.2
22	Ground Water	Determination of the pH value	BS 1377:1990 Part 3 Amd. 9028-96 Cl 9
23	Soil and Sediments	Determination of Metals by ICP-OES: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, V, Zn	SOP005 and SOP004, based on APHA3120(B) & USEPA 3050B by ICP-OES
24	Soil and Sediments	Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry (GC MS)	SOP013 & SOP015 based on USEPA 8260C & USEPA 5035A By Gas Chromatography / Mass Spectrometry (GC MS)
25	Soil and Sediments	Petroleum Hydrocarbons-Diesel Range Petroleum Hydrocarbons (DRO)	USEPA 8015D and USEPA 3550C
26	Soil and Sediments	Petroleum Hydrocarbons-Gasoline Range Petroleum Hydrocarbons (GRO)	USEPA 8015D and USEPA 5035A

This scope of accreditation is invalid without certificate of accreditation and cannot be used as a separate document.

مجال الاعتماد غير صالح بدون شهادة الاعتماد ولا يمكن استخدامه كوثيقة منفصلة

This is an electronic certificate and does not require stamp and signature. Visit ESMA website www.esma.gov.ae to verify this certification. Any alternation or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع. للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت www.esma.gov.ae والدخول إلى خدمة الإعلام عن المستندات الصادرة أي كسب أو تغيير في هذه الشهادة يلغيها.

Scope Appendix

27	Water: Ambient Water, Drinking Water, Wastewater	Determination of Metals by ICP-OES: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, V, Zn	SOP005 and SOP003, based on APHA3120(B) & APHA 3030 B & F by ICP-OES
28	Water: Ambient Water, Drinking Water, Wastewater	Volatile Organic Compounds by Gas Chromatography / Mass Spectrometry (GC MS)	SOP013 & SOP014 based on USEPA 8260C & USEPA 5030C By Gas Chromatography / Mass Spectrometry (GC MS)
29	Water: Ambient Water, Drinking Water, Wastewater	Petroleum Hydrocarbons- Diesel Range Petroleum Hydrocarbons (DRO)	USEPA 8015D and USEPA 3510C
30	Water: Ambient Water, Drinking Water, Wastewater	Petroleum Hydrocarbons- Gasoline Range Petroleum Hydrocarbons (GRO)	USEPA 8015D and USEPA 5030C
31	Water: Ambient Water, Drinking Water, Wastewater	pH	APHA 4500 H+ B
32	Water: Ambient Water, Drinking Water, Wastewater	Chloride Content	APHA4500 Cl- B
33	Water: Ambient Water, Drinking Water, Wastewater	Sulphate Content	APHA 4500 SO42- C
34	Water: Ambient Water, Drinking Water, Wastewater	Total Dissolved Solids	APHA 2540 C
35	Water: Ambient Water, Drinking Water, Wastewater	Total Suspended Solids	APHA 2540 D
36	Water: Ambient Water, Drinking Water, Wastewater	Biological Oxygen Demand , 5 -Day BOD Test	APHA 5210 B
37	Water: Ambient Water, Drinking Water, Wastewater	Total & Dissolved Organic Carbon (TOC) By High Temperature Combustion Method	APHA 5310 B & SOP018
38	Water: Ambient water, Drinking water	Total Alkalinity to pH 4.4	APHA 2320 B
39	Water: Ambient water, Drinking water	Carbonates & Bicarbonates	APHA 2320 B
40	Water: Ambient water, Drinking water	Chemical Oxygen Demand (COD)	APHA 5220 B
41	Water: Ambient water, Drinking water	Oil and Grease	APHA 5520 B
42	Water: Ambient water, Drinking water	Calcium	APHA 3500Ca B
43	Water: Ambient water, Drinking water	Magnesium	APHA 3500Mg B

This scope of accreditation is invalid without certificate of accreditation and cannot be used as a separate document.

مجال الاعتماد غير صالح بدون شهادة الاعتماد ولا يمكن استخدامه كوثيقة منفصلة

This is an electronic certificate and does not require stamp and signature. Visit ESMA website www.esma.gov.ae to verify this certification. Any alteration or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع. للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت www.esma.gov.ae والدخول إلى خدمة الإعلام عن المستندات الصادرة أي كسب أو تغيير في هذه الشهادة يلغيها.

Scope Appendix

44	Water: Ambient water, Drinking water	Total Hardness as CaCO ₃	APHA 2340 C
45	Water: Ambient water, Drinking water	Electrical Conductivity @25C°	APHA 2510 B
46	Water: Ambient water, Drinking water	Fluoride	APHA 4500 F- D
47	Air	Determination Of Nitrogen Oxides (NO, NO ₂ , NO _x), CO, CO ₂ , SO ₂ , O ₂ , and CxHy Emissions from Stationary and Combustion Sources , Boilers and Incinerators Using Portable Fluegas Analyzer	SOP 046 based on USEPA CTM 30; USEPA CTM 34; EPA Method 1; EPA Method 7E; EPA Method 6C; 40CFR, Part 60, Appendix A, Method 20;ASTM D6522-11
48	Air	Ambient Air Quality Monitoring by AQM65:SO ₂ , CO, NO ₂ , NO _x , O ₃ and particulate matter (TSP, PM ₁ , PM _{2.5} and PM ₁₀)	In-house method SOP 042 using AQM 65
49	Air	Total Suspended Particulate Matter (TSPM, Respirable Suspended Particulate Matter (RSPM-PM ₁₀ , 4, 2.5 & 1)	SOP 043 using ESampler
50	Noise	Occupational and Environmental Noise	SOP047 based on ISO 1996
51	Water: Drinking Water	Total Coliforms (IDEXX Method)	SOP016, based on APHA 9223B by IDEXX COLILERT & COLILERT-18 (drinking water only)
52	Water:Ambient Water, Drinking Water, Wastewater	Total Coliforms ((Membrane Filtration M-d)	APHA 9222B, SOP022
53	Water:Ambient Water, Drinking Water, Wastewater	Fecal Coliforms (IDEXX Method)	SOP016, based on APHA 9223B by IDEXX COLILERT-18
54	Water:Ambient Water, Drinking Water, Wastewater	Fecal Coliforms ((Membrane Filtration M-d)	APHA 9222D, SOP023
55	Water:Ambient Water, Drinking Water, Wastewater	E-coli (IDEXX Method)	SOP016, based on APHA 9223B by IDEXX COLILERT and by IDEXX COLILERT and COLILERT-18 (drinking water) & COLILERT-18 (waste waters,ambient waters)
56	Water:Ambient Water, Drinking Water, Wastewater	E-coli ((Membrane Filtration M-d))	APHA 9222G, SOP024
57	Water:Ambient Water, Drinking Water, Wastewater	Enterococci (IDEXX Method)	SOP017, based on ASTM D6503 -99 (2009) by IDEXX Enterolert

This scope of accreditation is invalid without certificate of accreditation and cannot be used as a separate document.

مجال الاعتماد غير صالح بدون شهادة الاعتماد ولا يمكن استخدامه كوثيقة منفصلة

This is an electronic certificate and does not require stamp and signature. Visit ESMA website www.esma.gov.ae to verify this certification.

Any alternation or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع. للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت www.esma.gov.ae والدخول إلى خدمة الاستعلام عن المستندات الصادرة أي كسب أو تغيير في هذه الشهادة بلغيتها.

Scope Appendix

58	Water	Enumeration of Enterococci (MF Method)	APHA 9230 C
59	Water	Sampling for Legionella Bacteria on Water System	BS 7592:2008
60	Water	Detection & Enumeration of Legionella Sp (Membrane Filtration method)	ISO 11731-2:2004
61	Water	Heterotrophic plate count by Enzyme Substrate Method	APHA 9215 E
62	Water	Heterotrophic plate count by Pour Plate Method	APHA 9215 B
63	Food	Aerobic Plate Count	Bacteriological Analytical Manual (BAM)-Chapter 3, USFDA
64	Food	Enumeration of Enterobacteraceae	Method 2.3.1, Manual of Microbiological Methods for the Food and Drink Industry, Campden and Chorelywood for Research Association
65	Food	Enumeration of Coliforms by Colony Count Method	Method 2.2.1, Manual of Microbiological Methods for the Food and Drink Industry, Campden and Chorelywood for Research Association
66	Food	Enumeration of Coliforms by MPN Method	Method 9.71, Compendium of Methods for the Microbiological Examination of Foods, 5th Edition
67	Food	Enumeration of E-Coli by MPN Method	Method 9.91, Compendium of Methods for the Microbiological Examination of Foods, 5th Edition
68	Food	Detection of Salmonella Spp	Method 3.1.2, Manual of Microbiological Methods for the food and Drink Industry, Campden and Chorelywood for Research Association
69	Field Sampling & Testing	Standard Penetration Test (SPT)	BS 1377 Part 9:1990; Cl.3.3
70	Field Sampling & Testing	Soil Sampling	BS 5930:1999, Cl. 22
71	Field Sampling & Testing	Rotary Core Drilling	BS 5930:1999, Cl.20.7
72	Field Sampling & Testing	Ground Water Level Measurement	BS 5930:1999, Cl. 23.2.1 to 23.2.3; Cl. 23.2.7 & 23.2.8 & SOP021
73	Field Sampling & Testing	Ground Water Sampling	BS 5930:1999, Cl. 23.3

This scope of accreditation is invalid without certificate of accreditation and cannot be used as a separate document.

مجال الاعتماد غير صالح بدون شهادة الاعتماد ولا يمكن استخدامه كوثيقة منفصلة

This is an electronic certificate and does not require stamp and signature. Visit ESMA website www.esma.gov.ae to verify this certification. Any alternation or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع. للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت www.esma.gov.ae والدخول إلى خدمة الاستعلام عن المستندات الصادرة أي كسب أو تغيير في هذه الشهادة بلغيتها.

Scope Appendix

74	Rock Cores	Unconfined Compressive Strength including preparation of rock cores	ASTM D7012-2014, Method C and ASTM D4543-2008
75	Rock Cores	Rock quality designation	BS 5930:1999, Cl.44.4.4
76	Rock Cores	Core recovery	BS 5930:1999, Cl.44.4.4
77	Description and Classification	Description and Classification of Rocks	BS 5930:1999, Cl.44
78	Description and Classification	Soil Description	BS 5930:1999, Cl.41
79	Soil	Determination of water (moisture) content of soil and rock by mass.	BS1377 : Part 2 :1990 (Amd.9027:96), Cl.3.2
80	Soil	Determination of Liquid Limit , Plastic Limit and Plasticity Index of Soil	BS 1377:1990 Part 2 Amd. 9027-96 Cl 4.3,4.4,4.5, 5.3 and 5.4
81	Soil	Sedimentation by Hydrometer Method	BS1377 : Part 2 :1990 (Amd.9027:96), Cl.9.5
82	Reporting	Reporting	BS 5930: 2015, Section 10
83	Transparent and opaque liquids	Kinematic Viscosity	ASTM D445-15a
84	Petroleum products	Flash and Fire Points by Cleveland Open Cup	ASTM D92-16
85	Petroleum products	Acid Number of Petroleum Products by Potentiometric Titration	ASTM D664-11a
86	Petroleum products	Base Number of Petroleum Products by Potentiometric Titration	ASTM D2896-15
87	Petroleum products, lubricating oils and additives	Determination of water in petroleum products, lubricating oils and additives	ASTM D6304-16
88	Insulating oil	Dielectric Breakdown Voltage of insulating oil	ASTM D877-13 BS EN 60156:1996/ IEC156:1995
89	Crude Petroleum and Liquid Petroleum	Density, Relative Density (Specific Gravity) or API Gravity	ASTM D1298-12b
End			
Program Manager			

This scope of accreditation is invalid without certificate of accreditation and cannot be used as a separate document.

مجال الاعتماد غير صالح بدون شهادة الاعتماد ولا يمكن استخدامه كوثيقة منفصلة

This is an electronic certificate and does not require stamp and signature. Visit ESMA website www.esma.gov.ae to verify this certification. Any alternation or modification on this certificate will affect its validity.

هذه الشهادة صدرت إلكترونياً ولا تحتاج إلى ختم وتوقيع. للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت www.esma.gov.ae والدخول إلى خدمة الإعلام عن المستندات الصادرة أي كسب أو تغيير في هذه الشهادة بلغيتها.



Land & Marine Surveying



Pavement Studies & Evaluation



Geophysical Studies



Arab Center
For Engineering Studies

المركز العربي
للدراستات الهندسية

ACES Network

ACES Regional Centers of Excellence



Corporate Headquarters

PO Box 5504 Amman, 11183 Jordan
Tel: 962-6-5810940
Fax: 962-6-5828817
e.mail: acescorp@aces-int.com
www.aces-int.com

ACES-Dubai

Tel: +971-4-8856466
Fax: +971-4-8856460
e.mail: acesdubai@aces-int.com