

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	Safe limit	Safe limit	
Arsenic	As	mg/kg	APHA3120B	0.12	0.624	0.85	0.836	0.836	0.555		29	55	3	26
Barium	Ba	mg/kg	APHA3120B	0.12	40.04	73.59	35.14	32.8	34.44	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	17.64	17.34	32.86	17.19	43.97	10			230000	
Cadmium	Cd	mg/kg	APHA3120B	0.02	0.432	0.422	0.468	0.437	0.438	0-2	0.8	12	980	22
Chromium (Total)	Cr	mg/kg	APHA3120B	0.01	27.3	26.03	24.78	22.01	24.26	100	100	380	180000	87
Insoluble salt														
Copper	Cu	mg/kg	APHA3120B	0.01	3.704	3.744	4.207	3.814	5.018	55	36	190	47000	91
Iron (Total)	Fe	mg/kg	APHA3120B	0.09	5698	5451	5671	5167	5561	5-63 %			820000	600
Lead	Pb	mg/kg	APHA3120B	0.01	2.049	1.984	2.732	2.56	2.035	12.5	85	530	800	
Manganese	Mn	mg/kg	APHA3120B	0.02	199.1	179.9	218.4	208.7	221	950			26000	
Molybdneum	Mo	mg/kg	APHA3120B	0.01	0.366	0.374	0.392	0.361	0.358	1-5	3	200	5800	
Nickel	Ni	mg/kg	APHA3120B	0.02	34.77	36.98	24.31	22.97	26.11	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	15.7	15.13	16.74	15.46	16.76	135	42	250	5800	130
Zinc	Zn	mg/kg	APHA3120B	0.02	14.47	13.42	14.27	12.99	14.9	70	140	720	350000	410
Mercury	Hg	mg/kg	APHA3120B BS1377 P.3 CL 9	0.003	<0.00 3	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	Safe limit	Safe limit	
				1.04	0.892	1.032	0.678	1.015						
Arsenic	As	mg/kg	APHA3120B	0.12	37.55	36.17	37.01	36.75	35.22		29	55	3	26
Barium	Ba	mg/kg	APHA3120B	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	425	160	665	220000	2000
Beryllium	Be	mg/kg	APHA3120B	0.01	16.43	28.67	14.6	15.13	15.71	2.8	1.1	30	2300	8
Boron	B	mg/kg	APHA3120B	0.09	0.389	0.407	0.408	0.39	0.399	10			230000	
Cadmium	Cd	mg/kg	APHA3120B	0.02	22.77	23.14	22.8	22.35	23.26	0.2	0.8	12	980	22
Chromium (Total)	Cr	mg/kg	APHA3120B	0.01						100	100	380	180000	87
Insoluble salt														
Copper	Cu	mg/kg	APHA3120B	0.01	3.741	3.836	3.771	3.73	3.793	55	36	190	47000	91
Iron (Total)	Fe	mg/kg	APHA3120B	0.09	5152	5507	5308	5232	5142	5.63			820000	600
Lead	Pb	mg/kg	APHA3120B	0.01	1.887	1.894	1.68	1.838	1.609	12.5	85	530	800	
Manganese	Mn	mg/kg	APHA3120B	0.02	194.1	210.3	200.7	202.1	197.2	950			26000	
Molybdenum	Mo	mg/kg	APHA3120B	0.01	0.379	0.359	0.313	0.327	0.281	1.5	3	200	5800	
Nickel	Ni	mg/kg	APHA3120B	0.02	26.4	26.05	16.56	24.97	25.91	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	15.81	15.36	14.62	14.47	135	42	250	5800	130
Zinc	Zn	mg/kg	APHA3120B	0.02	12.14	13.28	11.92	12.39	11.77	70	140	720	350000	410
Mercury	Hg	mg/kg	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			Safe limit
				1.04	0.892	1.032	0.678	1.015		29	55	3	26	
Arsenic	As	mg/kg	APHA3120B	0.12	37.55	36.17	37.01	36.75	35.22					
Barium	Ba	mg/kg	APHA3120B	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	425	160	665	220000	2000
Beryllium	Be	mg/kg	APHA3120B	0.01	16.43	28.67	14.6	15.13	15.71	2.8	1.1	30	2300	8
Boron	B	mg/kg	APHA3120B	0.09	0.389	0.407	0.408	0.39	0.399	10			230000	
Cadmium	Cd	mg/kg	APHA3120B	0.02	22.77	23.14	22.8	22.35	23.26	0.2	0.8	12	980	22
Chromium (Total)	Cr	mg/kg	APHA3120B	0.01						100	100	380	180000	87
Insoluble salt														
Copper	Cu	mg/kg	APHA3120B	0.01	3.741	3.836	3.771	3.73	3.793	55	36	190	47000	91
Iron (Total)	Fe	mg/kg	APHA3120B	0.09	5152	5507	5308	5232	5142	5.63			820000	600
Lead	Pb	mg/kg	APHA3120B	0.01	1.887	1.894	1.68	1.838	1.609	12.5	85	530	800	
Manganese	Mn	mg/kg	APHA3120B	0.02	194.1	210.3	200.7	202.1	197.2	950			26000	
Molybdenum	Mo	mg/kg	APHA3120B	0.01	0.379	0.359	0.313	0.327	0.281	1.5	3	200	5800	
Nickel	Ni	mg/kg	APHA3120B	0.02	26.4	26.05	16.56	24.97	25.91	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	15.81	15.36	14.62	14.47	135	42	250	5800	130
Zinc	Zn	mg/kg	APHA3120B	0.02	12.14	13.28	11.92	12.39	11.77	70	140	720	350000	410
Mercury	Hg	mg/kg	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	Canada n values	
										Safe limit	Intervention values	Safe limit	Safe limit	
				0.795	0.717	0.741								
Arsenic	As	mg/kg	APHA3120B	0.12	34.8	40.55	36.92				29	55	3	26
Barium	Ba	mg/kg	APHA3120B	0.12	<0.01	<0.01	<0.01		425		160	665	220000	2000
Beryllium	Be	mg/kg	APHA3120B	0.01	13.84	19.57	17		2.8		1.1	30	2300	8
Boron	B	mg/kg	APHA3120B	0.09	0.399	0.409	0.412		10				230000	
Cadmium	Cd	mg/kg	APHA3120B	0.02	23.04	26.07	24.43				0.8	12	980	22
Chromium (Total)	Cr	mg/kg	APHA3120B	0.01					100		100	380	180000	87
Insoluble salt														
Copper	Cu	mg/kg	APHA3120B	0.01	3.582	3.365	3.481		55		36	190	47000	91
Iron (Total)	Fe	mg/kg	APHA3120B	0.09	5273	5483	5358		5.63 %				820000	600
Lead	Pb	mg/kg	APHA3120B	0.01	2.219	2.377	2.064		12.5		85	530	800	
Manganese	Mn	mg/kg	APHA3120B	0.02	207.1	178	191.4		950				26000	
Molybdenum	Mo	mg/kg	APHA3120B	0.01	0.322	0.305	0.323		1.5		3	200	5800	
Nickel	Ni	mg/kg	APHA3120B	0.02	24.07	23.84	22.79		75		35	210	12000	89
Selenium	Se	mg/kg	APHA3120B	0.1	<0.10	<0.10	<0.10		0.05		0.7	100	5800	2.9
Vanadium	V	mg/kg	APHA3120B	0.01	14.19	15.4	15.38		135		42	250	5800	130
Zinc	Zn	mg/kg	APHA3120B	0.02	13.27	11.93	12.13		70		140	720	350000	410
Mercury	Hg	mg/kg	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 null. 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* As	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	1.8			0.00		0.05	0.01
Barium* Ba	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* Be	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.8	200	625	19.00		-	
Boron* B	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* Cd	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.2			0.69		0.01	0.003
Calcium* Ca	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	30	0.05
Copper* Cu	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)* Fe	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* Pb	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	mg/L	APHA3120B	0.1	518.2	1566	1488	1374	1021	2.33%	24	800			30	50
Manganese* Mn	mg/L	APHA3120B	0.02	0.233	0.622	0.606	0.107	0.117	950			28.00	0.05	-0.1	
Molybdneum Mo	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 * Ni	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	75			26.00		75	0.07
Selenium* Se	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 Na	mg/L	APHA3120B	0.12	594.8	13700	12850	12220	8763	2.36%				200	-200	50
Vanadium V	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	135	0.07	160	8.60		-0.2	
Zinc* Zn	mg/L	APHA3120B	0.02	<0.02	0.006	<0.02	<0.02	0.013	70			370.00	0.03	5	5
Mercury Hg	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* SO ₄	mg/L	APHA3120B		1853	3008	2310	3084	2264		24	800	250.00		200	
Chloride* Cl	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			8.5
Conductivity	ms/cm			30.72	64.59	63.67	62.1	48.31				500 mg/L			1400
TDS	ppt			15.37	32.32	31.85	31.05	24.15				370.00			1000
Salinity	pSu			18.95	43.58	42.87	41.6	31.35							

ANALYSIS OF THE ORGANIC COMPOUNDS IN SOIL

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

	Test Parameter	unit	MDL	Method	Sample location/ bore hole numbers			safe values as per USA	Remark
					TP-6E	TP-12E	TP-22E		
					Analysis Results				
	Total Organic Carbon	%	0.01	Walkley-black method	0.04	0.05	0.05		no defind parameter
1	TPH C8-C38 ALIPHATIC	mg/kg	0.1	USEPA 8015D	<0.1	<0.1	<0.1	5800	
2	TPH C6-C8 AROMATIC[1]	mg/kg	0.1	USPA 8260C	<0.1	<0.1	<0.1	4300	
3	TPH C10-C22 AROMATIC	mg/kg	0.1	USEPA 8270D	<0.1	<0.1	<0.1	4300	
TOTAL PETROLEUM HYDROCARBONS (TPHCWG)									
4	Benzene[1]	µg/kg	0.52	USEPA 8260C	<0.52	<0.52	<0.52	5.1	
5	Toluene[1]	µg/kg	0.54	USEPA 8260C	<0.54	<0.54	<0.54		700 µg/litre/ odour at f 24 µg/litre.
6	Ethylbenzene[1]	µg/kg	0.44	USEPA 8260C	<0.44	<0.44	<0.44	25	
7	m & p- Xylene[1]	µg/kg	1.14	USEPA 8260C	<1.14	<1.14	<1.14	240	
8	o-Xylene[1]	µg/kg	0.55	USEPA 8260C	<0.55	<0.55	<0.55	280	
9	BTEX[1]	µg/kg	3.19	USEPA 8260C	<3.19	<3.19	<3.19	280	
POLYNUCLEAR AROMATIC HYDROCARBONS									
10	Naphthalene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	17	
11	Acenaphthylene	mg/kg	0.02	USEPA 8270D					
12	Acenaphthene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	4500	
13	Fluorene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	3000	
14	Phenanthrene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05		phenanthrene degradation (k1) was measured at 0.0269 l/hr with a half-life (t(1/2)) of 25.8 hrs
15	Anthracene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	23000	
16	Fluoranthene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	3000	
17	Pyrene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	2300	
18	Benz(a)anthracene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	21	

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

	Test Parameter	unit	MDL	Method	Sample location/ bore hole numbers				Remark
					TP-6E	TP-12E	TP-22E	safe values as per USA	
					Analysis Results				
19	Chrysene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	2100	
20	Benzo(b)fluoranthene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	21	
21	Benzo(k)fluoranthene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	210	
22	Benzo(a)pyrene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	2.1	
23	Indeno(1,2,3-cd)pyrene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	21	
24	Dibenz(a,h)anthracene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	2.1	
25	Benzo(g,h,i)perylene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05		non carcinogenic
26	Polynuclear Aromatic Hydrocarbons (PAHs)	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	0.0001	
POLYCHLORINATED BIPHENYLS									
27	3,3',4,4'-Tetrachlorobiphenyl (PCB77)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.49	
28	3,4,4',5-Tetrachlorobiphenyl (PCB81)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.048	
29	2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.49	
30	2,3,4,4',5-Pentachlorobiphenyl (PCB114)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.49	
31	2,3',4,4',5-Pentachlorobiphenyl (PCB118)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.49	
32	2',3,4,4',5-Pentachlorobiphenyl (PCB123)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.49	
33	3,3',4,4',5-Pentachlorobiphenyl (PCB126)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.00015	
34	2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.5	
35	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.5	
36	2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.5	
37	3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.00051	
38	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.52	
39	Total PCBs	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	0.5	
VOLATILE ORGANIC COMPOUNDS (VOCs) + TIC's									
	Dichlorodifluoromethane[1]	µg/kg	0.6	USEPA 8260C	<0.60	<0.60	<0.60	37	
	Chloromethane[1]	µg/kg	0.81	USEPA 8260C	<0.81	<0.81	<0.81	46	

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

Test Parameter	unit	MDL	Method	Sample 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	<0.88	1.7	
Bromomethane[1]	µg/kg	0.67	USEPA 8260C	<0.67	<0.67	<0.67	3	
Chloroethane[1]	µg/kg	0.28	USEPA 8260C	<0.28	<0.28	<0.28	5700	
Trichlorofluoromethane[1]	µg/kg	0.63	USEPA 8260C	<0.63	<0.63	<0.63	3600	
Acetonitrile[1]	µg/kg	1.81	USEPA 8260C	<1.81	<1.81	<1.81	340	
Acetone[1]	µg/kg	2.75	USEPA 8260C	<2.75	<2.75	<2.75	67000	
Diethyl ether[1]	µg/kg	1.03	USEPA 8260C	<1.03	<1.03	<1.03	23000	
1,1-Dichloroethene[1]	µg/kg	0.91	USEPA 8260C	<0.91	<0.91	<0.91	100	
Iodomethane[1]	µg/kg	0.87	USEPA 8260C	<0.87	<0.87	<0.87		non carcenogenic
Propionitrile[1]	µg/kg	0.77	USEPA 8260C	<0.77	<0.77	<0.77	5 mg/kg	
Acrylonitrile[1]	µg/kg	0.85	USEPA 8260C	<0.85	<0.85	<0.85	1.1	
Methylene chloride[1]	µg/kg	1.21	USEPA 8260C	<1.21	<1.21	<1.21	320	
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98	USEPA 8260C	<0.98	<0.98	<0.98	2800	
Allyl chloride[1]	µg/kg	0.57	USEPA 8260C	<0.57	<0.57	<0.57	0.69	
Carbon disulfide[1]	µg/kg	0.35	USEPA 8260C	<0.35	<0.35	<0.35	350	
trans-1,2-Dichloroethene[1]	µg/kg	0.96	USEPA 8260C	<0.96	<0.96	<0.96	2300	

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

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

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

	Test Parameter	unit	MDL	Method	Sample location/ bore hole numbers			safe values as per USA	Remark
					TP-6E	TP-12E	TP-22E		
					Analysis Results				
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	
111	1,3-Dichlorobenzene[1]	µg/kg	<0.52	USEPA 8260C	<0.52	<0.52	<0.52		Volatilization takes place on exposure
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.

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

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

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

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

	Test Parameter	unit	MDL	Method	Sample location/ bore hole numbers			safe values as per USA	Remark
					TP-6E	TP-12E	TP-22E		
					Analysis Results				
									adsorb more strongly to soils
165	2,4-Dinitrotoluene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	7.4	
166	Dibenzofuran	mg/kg	0.02	USEPA 8270D	<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	2500	
169	Diethyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	66000	
170	4-Chlorophenyl 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	110	
172	4,6-Dinitro-2-methylphenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	6.6	
173	Fluorene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	3000	
174	N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02	USEPA 8270D	<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	2.9	
176	4-Bromophenyl phenyl ether	mg/kg	0.02	USEPA 8270D					melting point 11 degree, Not classifiable as to human carcinogenicity
177	Hexachlorobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	0.96	
178	Pentachlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	4	

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

	Test Parameter	unit	MDL	Method	Sample location/ bore hole numbers			safe values as per USA	Remark
					TP-6E	TP-12E	TP-22E		
					Analysis Results				
179	Phenanthrene	mg/kg	0.02	USEPA 8270D	<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	23000	
181	Carbazole	mg/kg	0.02	USEPA 8270D	<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	8200	
183	Fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	3000	
184	Benzidine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	0.01	
185	3,3'-Dimethylbenzidine	mg/kg	0.02	USEPA 8270D	<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	2300	
187	Butyl benzyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	1200	
188	Bis(2-ethylhexyl) adipate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	1900	
189	Bis(2-ethylhexyl) phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	160	
190	3,3'-Dichlorobenzidine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	5.1	
191	Benz(a)anthracene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	21	
192	Chrysene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	2100	
193	Di-n-octyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	820	
194	Benzo(b)fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	21	
195	Benzo(k)fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	210	
196	Benzo(a)pyrene	mg/kg	0.02	USEPA 8270D	<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	21	
198	Dibenz(a,h)anthracene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	2.1	

Table-3 Comparison of Organic & hydrocarbon compounds in Soil with world Standards.									
Test Parameter	unit	MDL	Method	Sample location/ bore hole numbers			safe values as per USA	Remark	
				TP-6E	TP-12E	TP-22E			
Analysis Results									
199	Benzo(g,hi)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					USA standards for Tap water
				BH-01	BH-02	BH-03	BH-04	BH-05	
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	<0.05	<0.05	0.170000
Acenaphthylene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	
Acenaphthene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	53.000000
Fluorene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	29.000000
Phenanthrene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	180.000000
Anthracene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	180.000000
Fluoranthene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	80.000000
Pyrene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	12.000000
Benz(a)anthracene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	0.030000
Chrysene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	25.000000
Benzo(b)fluoranthene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	0.250000
Benzo(k)fluoranthene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	2.500000
Benzo(a)pyrene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	0.025000
Indeno(1,2,3-cd)pyrene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<0.05	<0.05	<0.05	0.250000
Dibenz(a,h)anthracene		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<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	<0.05	<0.05	0.025000
Polynuclear Aromatic Hydrocarbons (PAHs)		µg/l	0.05	USEPA 8270 D		<0.05	<0.05	<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	0.006000
3,4,4',5-Tetrachlorobiphenyl (PCB81)	µg/l	0.02	USEPA 8270D	<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	0.004000
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.000001
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.011000
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.004000
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.000004
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	0.004000
Total PCBs	µg/l	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	0.00
Pyridine	mg/L	0.001	USEPA 8270D	<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	580.00
Aniline	mg/L	0.001	USEPA 8270D	<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	0.01
2-Chlorophenol	mg/L	0.001	USEPA 8270D	<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	
1,4-Dichlorobenzene	mg/L	0.001	USEPA 8270D	<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	200.00
2-Methylphenol	mg/L	0.001	USEPA 8270D	<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	30.00
Bis(2-chloroisopropyl) ether	mg/L	0.001	USEPA 8270D	<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	
N-Nitrosodi-n-propylamine	mg/L	0.001	USEPA 8270D	<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	0.33
Nitrobenzene	mg/L	0.001	USEPA 8270D	<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	78.00
2,4-Dimethylphenol	mg/L	0.001	USEPA 8270D	<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	
Bis(2-chloroethoxy)methane	mg/L	0.001	USEPA 8270D	<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	4.60

1,2,4-Trichlorobenzene	mg/L	0.001	USEPA 8270D		<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	0.17
4-Chloroaniline	mg/L	0.001	USEPA 8270D		<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	0.14
4-Chloro-3-methylphenol	mg/L	0.001	USEPA 8270D		<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	3.60
1-Methylnaphthalene	mg/L	0.001	USEPA 8270D		<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	0.04
2,4,6-Trichlorophenol	mg/L	0.001	USEPA 8270D		<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	120.00
2-Chloronaphthalene	mg/L	0.001	USEPA 8270D		<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	19.00
1,4-Dinitrobenzene	mg/L	0.001	USEPA 8270D		<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	
1,3-Dinitrobenzene	mg/L	0.001	USEPA 8270D		<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	0.05
1,2-Dinitrobenzene	mg/L	0.001	USEPA 8270D		<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	

3-Nitroaniline	mg/L	0.001	USEPA 8270D	<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	53.00
2,4-Dinitrophenol	mg/L	0.001	USEPA 8270D	<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	
2,4-Dinitrotoluene	mg/L	0.001	USEPA 8270D	<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	0.79
2,3,5,6-Tetrachlorophenol	mg/L	0.001	USEPA 8270D	<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	24.00
Diethyl phthalate	mg/L	0.001	USEPA 8270D	<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	
4-Nitroaniline	mg/L	0.001	USEPA 8270D	<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	
Fluorene	mg/L	0.001	USEPA 8270D	<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	12.00
1,2-Diphenylhydrazine (as azobenzene)	mg/L	0.001	USEPA 8270D	<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	
Hexachlorobenzene	mg/L	0.001	USEPA 8270D	<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	

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	0.25
Dibenz(a,h)anthracene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	0.03
Benzo(g,hi)perylene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	
TIC's	mg/L	-	USEPA 8270D	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	20.00
Chloromethane ^[1]	µg/L	0.84	USEPA 8260C	<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	0.02
Bromomethane ^[1]	µg/L	2.08	USEPA 8260C	<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	2100.00
Trichlorofluoromethane ^[1]	µg/L	0.58	USEPA 8260C	<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	13.00
Acetone ^[1]	µg/L	3.23	USEPA 8260C	<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	390.00
1,1-Dichloroethene ^[1]	µg/L	0.96	USEPA 8260C	<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	
Propionitrile ^[1]	µg/L	0.35	USEPA 8260C	<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	<1.70	<1.70	<1.70	<1.70	<1.70	340.00
1,2-Dichlorethane ^[1]	µg/L	0.46	USEPA 8260C	<0.46	<0.46	<0.46	<0.46	<0.46	0.17
1,1,1-Trichloroethane ^[1]	µg/L	0.95	USEPA 8260C	<0.95	<0.95	<0.95	<0.95	<0.95	800.00
1,1-Dichloropropene ^[1]	µg/L	1.24	USEPA 8260C	<1.24	<1.24	<1.24	<1.24	<1.24	
Carbon Tetrachloride ^[1]	µg/L	0.52	USEPA 8260C	<0.52	<0.52	<0.52	<0.52	<0.52	0.46
Benzene ^[1]	µg/L	0.57	USEPA 8260C	<0.57	<0.57	<0.57	<0.57	<0.57	0.46
Dibromomethane ^[1]	µg/L	0.51	USEPA 8260C	<0.51	<0.51	<0.51	<0.51	<0.51	0.83
1,2-Dichloropropane ^[1]	µg/L	0.64	USEPA 8260C	<0.64	<0.64	<0.64	<0.64	<0.64	0.14
Trichloroethene ^[1]	µg/L	0.89	USEPA 8260C	<0.89	<0.89	<0.89	<0.89	<0.89	0.28
Bromodichloromethane ^[1]	µg/L	1.06	USEPA 8260C	<1.06	<1.06	<1.06	<1.06	<1.06	0.13
Methyl methacrylate ^[1]	µg/L	1.31	USEPA 8260C	<1.31	<1.31	<1.31	<1.31	<1.31	140.00
cis-1,3-Dichloropropene ^[1]	µg/L	1.17	USEPA 8260C	<1.17	<1.17	<1.17	<1.17	<1.17	0.47
4-Methyl-2-pentanone (MIBK) ^[1]	µg/L	3.30	USEPA 8260C	<3.30	<3.30	<3.30	<3.30	<3.30	630.00
trans-1,3-Dichloropropene ^[1]	µg/L	1.17	USEPA 8260C	<1.17	<1.17	<1.17	<1.17	<1.17	0.47
1,1,2-Trichloroethane ^[1]	µg/L	0.92	USEPA 8260C	<0.92	<0.92	<0.92	<0.92	<0.92	0.04
Toluene ^[1]	µg/L	0.88	USEPA 8260C	587	199	164	<0.88	<0.88	110.00
1,3-Dichloropropane ^[1]	µg/L	0.77	USEPA 8260C	<0.77	<0.77	<0.77	<0.77	<0.77	37.00

Ethyl methacrylate ^[1]	µg/L	1.07	USEPA 8260C	<1.07	<1.07	<1.07	<1.07	<1.07	63.00
2-Hexanone ^[1]	µg/L	2.19	USEPA 8260C	<2.19	<2.19	<2.19	<2.19	<2.19	3.80
Dibromochloromethane ^[1]	µg/L	0.82	USEPA 8260C	<0.82	<0.82	<0.82	<0.82	<0.82	0.87
1,2-Dibromoethane-EDB ^[1]	µg/L	0.63	USEPA 8260C	<0.63	<0.63	<0.63	<0.63	<0.63	4.10
Tetrachloroethene ^[1]	µg/L	0.63	USEPA 8260C	<0.63	<0.63	<0.63	<0.63	<0.63	0.50
1,1,1,2-Tetrachloroethane ^[1]	µg/L	1.04	USEPA 8260C	<1.04	<1.04	<1.04	<1.04	<1.04	0.57
Chlorobenzene ^[1]	µg/L	0.6	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	22.00
Ethylbenzene ^[1]	µg/L	0.88	USEPA 8260C	<0.88	<0.88	<0.88	<0.88	<0.88	1.50
m & p- Xylene ^[1]	µg/L	1.90	USEPA 8260C	<1.90	<1.90	<1.90	<1.90	<1.90	19.00
Bromoform ^[1]	µg/L	0.75	USEPA 8260C	<0.75	<0.75	<0.75	<0.75	<0.75	3.30
cis-1,4-Dichloro-2-butene ^[1]	µg/L	1.11	USEPA 8260C	<1.11	<1.11	<1.11	<1.11	<1.11	0.00
Styrene ^[1]	µg/L	0.83	USEPA 8260C	<0.83	<0.83	<0.83	<0.83	<0.83	120.00
1,1,2,2-Tetrachloroethane ^[1]	µg/L	0.91	USEPA 8260C	<0.91	<0.91	<0.91	<0.91	<0.91	0.57
o-Xylene ^[1]	µg/L	0.79	USEPA 8260C	<0.79	<0.79	<0.79	<0.79	<0.79	19.00
1,2,3-Trichloropropane ^[1]	µg/L	1.20	USEPA 8260C	<1.20	<1.20	<1.20	<1.20	<1.20	0.00
trans-1,4-Dichloro-2-butene ^[1]	µg/L	1.52	USEPA 8260C	<1.52	<1.52	<1.52	<1.52	<1.52	0.00
Isopropylbenzene ^[1]	µg/L	0.96	USEPA 8260C	<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	0.14
1,2,3-Trichlorobenzene ^[1]	µg/L	0.93	USEPA 8260C	<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.	

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



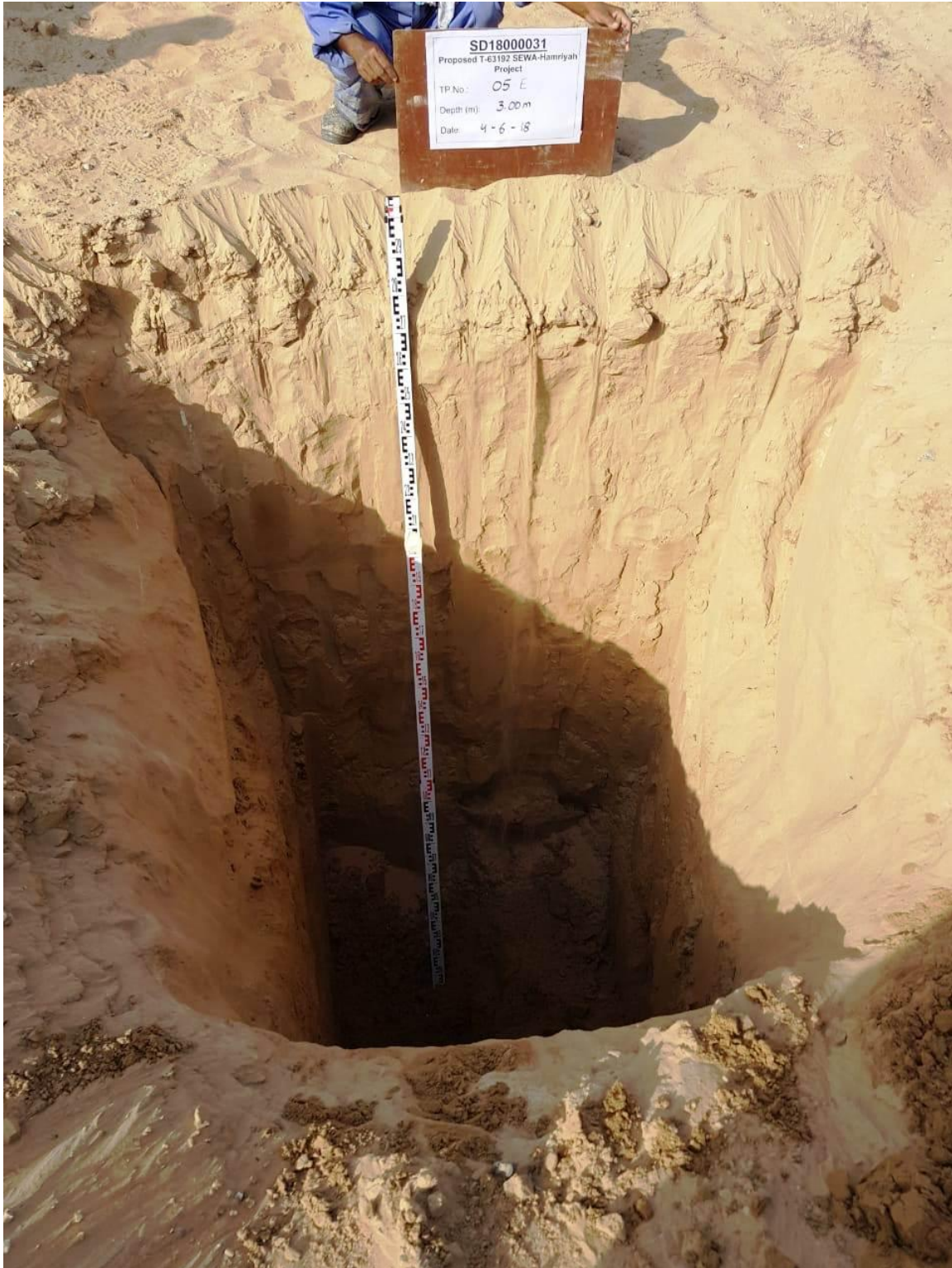
TP: 03E, Depth: 0.00 – 3.00m

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 الإعتاماد

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	مختبرات فحص	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 و المقاييس



This certificate is invalid without the attached scope of accreditation and shall remain valid until the expiration date above, subject to continuing compliance with the requirements of the accreditation system.

تعتبر هذه الشهادة صالحة وقابلة للتحديث و إعادة الإصدار حتى تاريخ الإنتهاء المدون أعلاه شريطة إستمرار الجهة المذكورة أعلاه في تطبيق المواصفات و الأدلة سالفه الذكر. و تتحمل الجهة مسئولية الشهادات الصادرة عنها و تخضع مجالات الإعتاماد المذكورة في وثيقة المجال المرفقة لعمليات متابعة لاحقة من قبل نظام الإعتاماد الوطني

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

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للتأكد من صحة هذه الشهادة يرجى زيارة موقعنا على الإنترنت و الدخول إلى خدمة الإستعلام عن المستندات الصادرة www.esma.gov.ae أى كشط أو تغيير في هذه الشهادة يلغيها.

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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

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

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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

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

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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 S042- 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

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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 C _x H _y 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

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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

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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			

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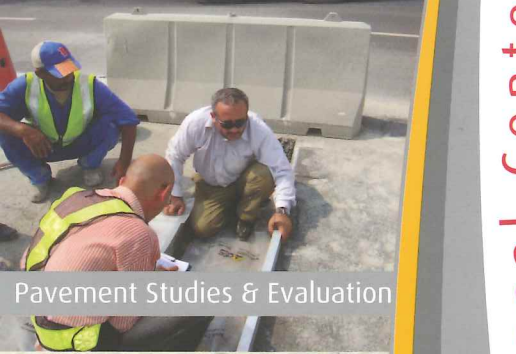
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