HAMRIYAH POWER PLANT PROJECT

TECNICAS REUNIDAS

PROJECT No.: 70150

ENVIRONMENTAL CONTAMINATION SURVEY

FINAL REPORT

REVISION	DATE	PURPOSE OF ISSUE	PREPARED	REVIEWED	APPROVED
01	18/07/2018		LHM/MFO	BSH	IAK
00	28/06/2018		LHM	BSH	IAK

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1. INTRODUCTION

This document presents the final report of the Environmental Contamination Survey that has been carried out by Tecnicas Reunidas beside the already existing Hamriyah Power and Water Plants. In these grounds, a new Green field power generation plant – Hamriyah IPP shall be implemented within the Hamriyah Complex, situated adjacent to Hamriyah port in the emirate of Sharjah, United Arab Emirates.

The purpose of the Environmental Contamination Survey is to identify and assess the potentially contaminated soil and groundwater in the area covered by the Project that may have occurred through previous activities.

The survey consists of site investigations works, laboratory analysis and reporting.

The strategy of Environmental Contamination Survey is based on the conclusions and recommendations of the Desk Study "Soil and Groundwater Sampling Plan" executed by Mr. Mott MacDonald, 09 April 2018.

The present document includes the conclusions based on laboratory analysis results.

2. CODES AND STANDARDS

There are no published soil and groundwater quality standards in the United Arab Emirates (UAE).

Therefore, Dutch Standards have been considered for of soil and groundwater contamination levels/quality assessment. Where these standards do not provide limits for certain parameters, other appropriate international standards (e.g. USEPA) have been applied for comparison.

In addition, the survey has been executed based on the following relevant Standards and Codes of Practice:

BS 5930: 1999+A2:2015, "Code of Practice for Site Investigations".
BS 10175: "Code of Practice for Investigation of potentially contaminated sites"
BS 1377:1990 "Methods of Test for Soils for Engineering Purposes".
BS EN 1997-2:2007, BS EN ISO 22476-2:2005+A1:2011, BS EN ISO, 22476-3:2005+A1:2011, BS EN ISO 22476-1:2012.

3. SITE INVESTIGATIONS

The environmental site investigations have been developed according to the following sampling plan:

Note: The trial-pits and boreholes positions are approximate. The coordinates are presented below.

Groundwater investigations works

During the period from 03rd to 06th June, five (05) boreholes were drilled. The boring was advanced by using rotary drilling method with polymer circulation. The following table summarizes the boreholes data:

Borehole No	Drilled Depth	Ground Elevation (SHMD)	Easting	Northing	Drilling Start Date	Drilling Finish Date
BH-01	10.0	4.124	346967.64	2817009.765	06/06/18	06/06/18
BH-02	10.0	4.191	346750.828	2816883.039	03/06/18	03/06/18
BH-03	10.0	4.532	347121.221	2816929.515	03/06/18	03/06/18
BH-04	10.0	4.312	346878.005	2816754.554	04/06/18	04/06/18
BH-05	10.0	4.632	347034.111	2816667.854	04/06/18	04/06/18

The logs of the boreholes are presented in Appendix B of the document Attached, “SD18000031- Environmental Testing - Final report”.

The standpipe piezometers were installed in boreholes BH-01, BH-02, BH- 03, BH-04 & BH-05. The piezometers were installed as per BS 5930: Cl.23. Each monitoring well was composed of slotted pipes (continuous slots), 50mm diameter PVC screen followed with PVC solid pipe, gravel filter extends from bottom of the borehole up to the water table, followed by bentonite seal of 1.0m, which is further followed by a filter gravel pack up to the surface.

A week after the wells have been installed, the groundwater samples were collected. The wells were purged of three times their volume of water to sample collection in order to ensure a representative sample is collected.

The groundwater measurements were taken in situ: total dissolved solids (TDS), pH, temperature, salinity/ electrical conductivity (EC). The results are presented in below table:

Test	Unit	BH-01	BH-02	BH-03	BH-04	BH-05
pH*		7.06	7.48	7.45	7.67	7.55
Conductivity	ms/cm	30.72	64.59	63.67	62.10	48.31
TDS	ppt	15.37	32.32	31.85	31.05	24.15
Salinity	pSu	18.95	43.58	42.87	41.60	31.35

Five (5) groundwater samples were taken from piezometer and sent to the laboratory for further testing.

In addition, five (5) additional groundwater samples have been collected the first week of July in order to obtain representative results at different periods for evaluating the groundwater fluctuations and changes in groundwater quality.

The details are presented in the Appendix C “Field Tests” of document Attached “SD18000031- Environmental Testing - Final report”

Soil investigations works

Eighteen (18) trial pits were excavated up to a depths of 0.5 to 3.00 m below existing ground level at the specified locations within the site (6 TP located at laydown area and 12 TP located at the main Plant area). The trial pits were excavated mechanically.

In addition, 5 soil samples were collected from the existing sand stockpile at laydown area, at least 0.3m below the stockpile surface (0.5-1m depending on the depth of the stockpile).

The following table summarizes the trial pits:

Test pit No.	Ground Elevation (m SHMD)	Coordinates		Trial Pit Size	Excavation Depth (m)	Excavation date
		Easting	Northing			
TP-01E	4.532	347016.165	2816742.736	1.50 x 1.50	3.00	05/06/18
TP-02E	4.712	347112.770	2816904.114	1.50 x 1.50	3.00	05/06/18
TP-03E	4.100	346953.307	2816818.540	1.50 x 1.50	3.00	05/06/18
TP-04E	4.201	347001.591	2816898.691	1.50 x 1.50	3.00	04/06/18
TP-05E	4.325	346861.189	2816815.445	1.50 x 1.50	3.00	04/06/16
TP-06E	4.151	346932.378	2816939.980	1.50 x 1.50	3.00	04/06/18
TP-07E	3.432	346826.237	2816876.663	1.50 x 1.50	3.00	04/06/18
TP-08E	3.480	346851.863	2816920.132	1.50 x 1.50	3.00	04/06/18
TP-09E	4.241	346760.146	2816918.904	1.50 x 1.50	3.00	04/06/18
TP-10E	3.352	346785.313	2816960.056	1.50 x 1.50	3.00	04/06/18
TP-11E	4.311	346721.623	2816942.494	1.50 x 1.50	3.00	04/06/18
TP-12E	4.435	347199.135	2816956.492	1.50 x 1.50	3.00	05/06/18
TP-13E	4.481	347334.596	2816906.337	1.50 x 1.50	3.00	05/06/18
TP-14E	5.040	347261.034	2817097.951	1.50 x 1.50	3.00	05/06/18
TP-15E	44.778	347312.733	2817184.160	1.50 x 1.50	3.00	05/06/18
TP-16E	4.725	347384.893	2817304.147	1.50 x 1.50	3.00	05/06/18
TP-20E	4.225	347340.610	2817048.539	1.50 x 1.50	3.00	05/06/18
TP-21E	44.581	347392.309	2817135.435	1.50 x 1.50	3.00	05/06/18
TP-22E	16.302	347458.833	2817243.148	1.50 x 1.50	3.00	05/06/18
TP-15 Stock Pile	-	-	-	1.50 x 1.50	0.50	06/06/18
TP-16 Stock Pile	-	-	-	1.50 x 1.50	0.50	06/06/18
TP-17 Stock Pile	-	-	-	1.50 x 1.50	0.50	06/06/18
TP-18 Stock Pile	-	-	-	1.50 x 1.50	0.50	06/06/18
TP-19 Stock Pile	-	-	-	1.50 x 1.50	0.50	06/06/18

The sampling was carried out in accordance with BS 5930:2015.

Eighteen (18) soil samples were collected from trial pits executed in the main Plant area and laydown area and 5 soil samples were taken from the existing sand stockpile.

During the first week of July, five (5) soil samples were collected within boreholes influence areas to complete the soil investigations strategy.

The following table summarizes the trial pits:

Test pit No.	Ground Elevation (m SHMD)	Coordinates		Trial Pit Size	Excavation Depth (m)	Excavation date
		Easting	Northing			
BH-1E	4.054	346968.979	2817008.734	1.50 x 1.50	2.00	04/07/18
BH-2E	4.137	346750.682	2816883.126	1.50 x 1.50	2.00	04/07/18
BH-3E	4.526	347119.840	2816930.409	1.50 x 1.50	2.00	04/07/18
BH-4E	4.422	346877.994	2816754.626	1.50 x 1.50	2.00	04/07/18
BH-5E	4.573	347022.161	2816670.929	1.50 x 1.50	2.00	04/07/18

The logs of the test pit are presented in Appendix B of document attached.

Also asbestos were analysed in specific locations (TP-03E, TP-04E, TP-05E, TP-06E, TP-07E and TP-15E).

The following table summarizes the trial pits:

TP No.	Test	Method	Unit	Result
TP-03E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-04E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-05E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-06E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-07E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-15E	Asbestos Content	USEPA 600/R-93/116	-	Absent

No asbestos content were found.

The results of laboratory tests are detailed in the Appendix D of document attached “SD18000031- Environmental Testing - Final report”.

4. LABORATORY TESTING

The groundwater samples have been analysed based on the following analytical programme:

Water	
pH	APHA4500
BTEX	USEPA8260
Total Petroleum Hydrocarbon (TPHCWG)	USEPA8015D
Poly Aromatic Hydrocarbon (PAHs)	USEPA8270 D
Heavy Metals (suits of 17 Metals: arsenic, barium, beryllium, boron, cadmium, chromium (III), chromium (VI), copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, zinc)	APHA 3120B ASTMD1067 B
Alkalinity	APHA 3120B
calcium	
Magnesium	
Sodium	
Potassium	APHA 4500
Total Ammonical nitrogen	APHA2340B
Hardness	BS1377P.3 CL.7
Chloride	APHA 4500
Fluoride	BS1377P.3CL.5
Sulphate	APHA 4500
Nitrate	APHA 4500
Nitrite	APHA 4500
Phosphate	
Poly Chlorinated Biphenyls 2,3,3',4,4',5,5'- (PCB 189), Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167), ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157), Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156), ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169), Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) M, Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118), Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105), Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114), Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126), Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77), Tetrachlorobiphenyl, 3,4,4',5- (PCB 81), Total PCBs	USEPA8270 D
Volatile Organic Compounds +TIC's	USEPA8260C
Semi volatile Organic Compounds+TIC's	USEPA8270 D

For soil sampling, the following tests have been completed:

Test	Test Method
Soil	
pH	BS1377 P.3 CL 9
Total Organic carbon	APHA 5310
BTEX	USEPA8260
Total Petroleum Hydrocarbon (TPHCWG)	USEPA8015D
Poly Aromatic Hydrocarbon (PAHs)	USEPA8270D
Heavy Metals (suits of 17 Metals: arsenic, barium, beryllium, boron, cadmium, chromium (III), chromium (VI), copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, zinc)	APHA 3120B
Asbestos	

Poly Chlorinated Biphenyls 2,3,3',4,4',5,5'- (PCB 189), Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167), ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157), Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156), ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169), Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)M, Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118), Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105), Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114), Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126), Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77), Tetrachlorobiphenyl, 3,4,4',5- (PCB 81), Total PCBs	USEPA8270 D
Volatile Organic Compounds +TIC's	USEPA8260C
Semi volatile Organic Compounds+TIC's	USEPA8270D

For asbestos sampling test method used was USEPA 600/R-93/116.

The results of laboratory tests are detailed in the Appendix D of document attached "SD18000031- Environmental Testing - Final report".

5. CONSIDERATIONS

Based on the information gathered on site and in laboratory, in the present section are shown the results of the environmental contamination survey.

For further detail, laboratory analysis are presented in the Appendix D and Appendix E of document attached “SD18000031- Environmental Testing - Final report” and also in item 6.0. “Results of the contamination assessment” within the mentioned attachment.

In absence of soil and groundwater quality standards in the United Arab Emirates (UAE), Dutch Standard “Soil Remediation Circular 2013, version of 1 July 2013” has been considered for of soil and groundwater contamination levels/quality assessment. Where these standards do not provide limits for certain parameters, Regional Screening Level (RSL) from USEPA Standards have been applied for comparison.

Soil sampling results

As can be observed in the soil results, the parameters analysed of Heavy metals, BTEX, TPH, PAH, VOC and SVOC are below the intervention values of Dutch Standard and also, the regional screening values of US EPA Standards.

Groundwater sampling results

According to the groundwater results, the parameters analysed of Heavy Metals, BTEX, TPH, PAH, VOC and SVOC are below the intervention values of Dutch Standard and regional screening values of US EPA Standards.

6. ATTACHMENTS

Attachment 1: ACES Report “SD18000031- Environmental Testing - Final report”

GEOTECHNICAL SITE INVESTIGATION FOR PROPOSED SEWA HAMRIYAH POWER PLANT HAMRIYAH AREA, SHARJAH – U.A.E.

Report No.	SD18000031
Revision No.	Rev.00
Status	Final Report
Date	15th July 2018

PREPARED FOR
M/S. TECNICAS REUNIDAS
ABU DHABI - U.A.E.

Revision History						
Rev.00	15th July 2018	**Final Report for Approval**				
Rev.00	23rd June 2018	**Draft Report For Review**	SAV	KUR	ABO	MJA
Revision No.	**Date**	**Description**	**Prepared**	**Checked**	**QA Check**	**Approved**

Messrs.: TECNICAS REUNIDAS
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Ref.: SD18000031-Rev.00
Date: 15th July 2018

SUBJECT: GEOTECHNICAL INVESTIGATION FOR
Proposed SEWA Hamriyah Power Plant,
Hamriyah Area, Sharjah – U.A.E.

Dear Sirs,

Arab Center for Engineering Studies (ACES) is pleased to submit this report on the Environmental Investigation carried out for the **Proposed SEWA Hamriyah Power Plant** at Hamriyah Area in Sharjah, UAE. The investigation was carried out according to our proposal ref. no. PS180000323- Rev-01**,** dated 26th April 2017 and in accordance with the Client's Purchase order reference no. 7015023700, suppl.01 dated 09th June 2018.

This final report includes the results and findings of the field and laboratory investigations.

In the event that additional information or clarifications are required, please contact our office at your convenience. We would like to take this opportunity to thank you for your confidence and look forward to be of service to you in the near future.

Sincerely yours,
ARAB CENTER FOR ENGINEERING STUDIES
(ACES - DUBAI)

Eng. Mohammed J. Ahmed
Manager, Geotechnical Department
ACES - Dubai

ACES Confidentiality & Proprietary Rights

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1.0 INTRODUCTION

This final report presents the results of the environmental study carried out for the **Proposed SEWA Hamriyah Power Plant** at Hamriyah Area, in Sharjah, U.A.E.

1.1 Purpose of Study

The purpose of the study is to identify and assess the potentially contaminated soil and groundwater in the area covered by the Project, and is based on the results of environmental investigation works.

1. Determination of soil and groundwater contamination is performed on soil samples obtained after excavation and on groundwater samples from piezometers at positions defined on desk study and site visit.

1.2 Scope of Works

The scope of work for the environmental study consists of field studies and laboratory analysis. The field portion of the investigation employed test boring and excavation of trial pits, as primary investigative techniques; additionally piezometers were also installed for sampling of ground waters to determine the specified parameters. Laboratory studies included performing testing for the prescribed chemical suites on selected samples.

The project scope of works consists of the following:

1. Collecting information and maps particular to the project site.
2. Making inspection visits to the site to collect information about the present land use, surface topography, and geological features.
3. Drilling of five (05) boreholes up to a depth of 10.0 m each.
4. Excavation of five (05) trial pits near the boreholes locations upto 2.0mbelow the existing ground level.
5. Excavation of thirteen (13) trial pits at the plant and six (6) trial pits at the laydown area upto the specified depths within the site.
6. Collection of five (5) stockpile soil samples at the existing laydown area.
7. Installation of five (05) Standpipe Piezometers for GW sampling at specified locations (BH-01 to BH-05).
8. Conducting laboratory testing on selected soil and water samples as per agreed testing requirements of the Contract (RFQ. 70150-00-YC-CIO-TRE-150)
9. Preparing final report as per the project requirements.

1.3 Standards and Codes of Practice

Unless otherwise specified in this document, all equipment's, materials and procedures associated with this work comply with current editions of following relevant Standards and Codes of Practice.

1. BS 5930: 2015, "Code of Practice for Site Investigations".
2. BS 10175: "Code of Practice for Investigation of potentially contaminated sites"

3. BS EN 1997-2:2007. BS EN ISO 22476-2:2005+A1:2011, BS EN ISO 22476-3:2005+A1:2011, BS EN ISO 22478-1:2012.
4. Dutch Standards, USEPA or UK Soil or Groundwater Screening Values

2.0 PROJECT & SITE DESCRIPTION

The project is Hamriyah Power Plant Project. The project consists of construction of Green Field Power generation plant. This Hamriyah IPP shall be implemented as an Independent power producer (IPP) within the Hamriyah Complex, situated adjacent to Hamriyah port in the emirate of Sharjah, United Arab Emirates.

The site is located at Hamriyah Port in Sharjah – U.A. E. The Google map showing the location of the site is shown below.

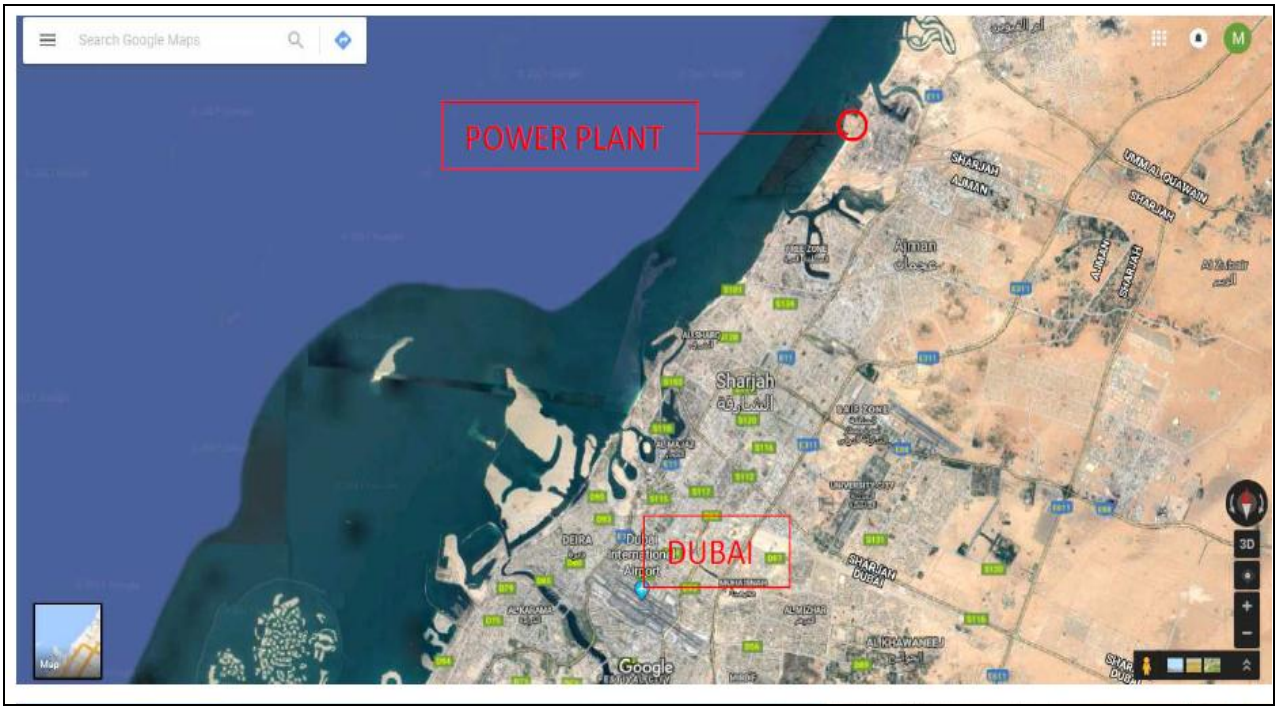

Figure 1: Google Image of SEWA Hamriyah Power Plant - Project Location

At the time of investigation the site was uneven and was easily accessible. Ground levels are related to Sharjah Halcrow Municipality Datum (SHMD) & co-ordinates to WGS-84. General site layout plan is presented below:

Figure 2: Typical Site Photographs

A general site plan showing the project layout and all the test locations is presented in **Appendix A**, A Google Image showing the environmental test locations is presented in the figure below.

Figure 3: Google Image showing field test locations

3.0 FIELD WORKS

The field works in the investigation campaign consisted of drilling of boreholes and collection of soil from the trial pits & water samples from the piezometers for prescribed environmental samples. The details of test methods employed for each above stated field testing are provided in table below **Table 1**.

Table 1: Details of Field Testing and test methods

Type of Test	Test Name
Soil Sampling	Field investigation sampling in the ground BS 5930 Clause 22
Soil description	Soil description BS 5930 Clause 41 & Clark and Walker
Ground water Level measurement	Field Investigation Method of determining ground water pressure BS 5930 Clause 23.2 Cl. 27.5 & Cl. 47.2.7
Piezometer Installation	Field Investigation Ground Water ACES - MS-016 (BS 5930: Cl. 23)

The details of each component of field testing are briefly discussed in the following sections of the report.

3.1 Drilling of Boreholes

During the period from 03rd to 06th June, five (05) environmental boreholes will be drilled to maximum depth of 10.0m below existing ground with depths and at locations agreed with the Client. The boring was advanced by using rotary drilling method with polymer circulation. The following **Table 2** summarizes the borehole information:

Table 2: Summary of Boreholes

Borehole No	Drilled Depth	Ground Elevation (SHMD)	Easting	Northing	Drilling Start Date	Drilling Finish Date
BH-01	10.0	4.124	346967.64	2817009.765	06/06/18	06/06/18
BH-02	10.0	4.191	346750.828	2816883.039	03/06/18	03/06/18
BH-03	10.0	4.532	347121.221	2816929.515	03/06/18	03/06/18
BH-04	10.0	4.312	346878.005	2816754.554	04/06/18	04/06/18
BH-05	10.0	4.632	347034.111	2816667.854	04/06/18	04/06/18

The locations of the boreholes were set-out based on site conditions taking into account any site constraints and hazards including the presence of buried services. The borehole location is shown on the site plan attached in **Appendix A**. The borehole logs are presented in **Appendix B1.**

General photograph during drilling of boreholes were taken as presented below:

Figure 4: General photograph during drilling of boreholes

3.2 Installation of Standpipe Piezometers

In order to monitor ground water levels and to take representative samples of five (5 Nos) of standpipe piezometers were installed in boreholes BH-01, BH-02, BH- 03, BH-04 & BH-05. The piezometers were installed as per BS 5930: 2015, Cl.23. Each monitoring well was composed of slotted pipes (continuous slots), 50mm diameter PVC screen followed with PVC solid pipe, gravel filter extends from bottom of the borehole up to the water table, followed by bentonite seal of 1.0m, which is further followed by a filter gravel pack up to the surface .

The procedure adopted for installing the piezometer is given below.

3.2.1 Procedure for Installation of Piezometers

Piezometers are installed at each drilled borehole for monitoring of water level and sampling of groundwater samples to monitor the ground water levels.

Typical drawing of piezometer installation details is presented in Figure 5.0 below. Piezometer pipes with diameter 50mm are provided in threaded sections and assembled on site. PVC pipes of required lengths are joined together at their ends and with a filter screen at the lower end.

The bottom end of the PVC pipe is plugged to prevent entry of soil into the pipe.
The PVC pipes are installed into the hole vertically to the required depth with the filter screen at the lower end. The length of PVC is 50cm above the ground level.

The annular space between the PVC pipe and the borehole are filled with clean gravel.

The monitoring wells are made of 1.0m sections of HDPE tubing with slotted piping intersecting the groundwater table. A filter pack comprising clean, washed, well-rounded, siliceous gravel was installed around the slotted sections.

The grading of the gravel pack material was determined by the SUBCONTRACTOR depending on the strata encountered. Bentonite pellets are placed on top of the filter to form an upper seal not less than 0.5 m thick.

The remainder of the exploratory hole was filled with cement/bentonite grout or bentonite pellets to within 1.0m of ground level.

The wells are then extend approximately 0.5m above ground level and are protected with a metal casing.

Monitoring of ground water table was commenced after 24 hours after the installation of piezometer using water level meter for few days.

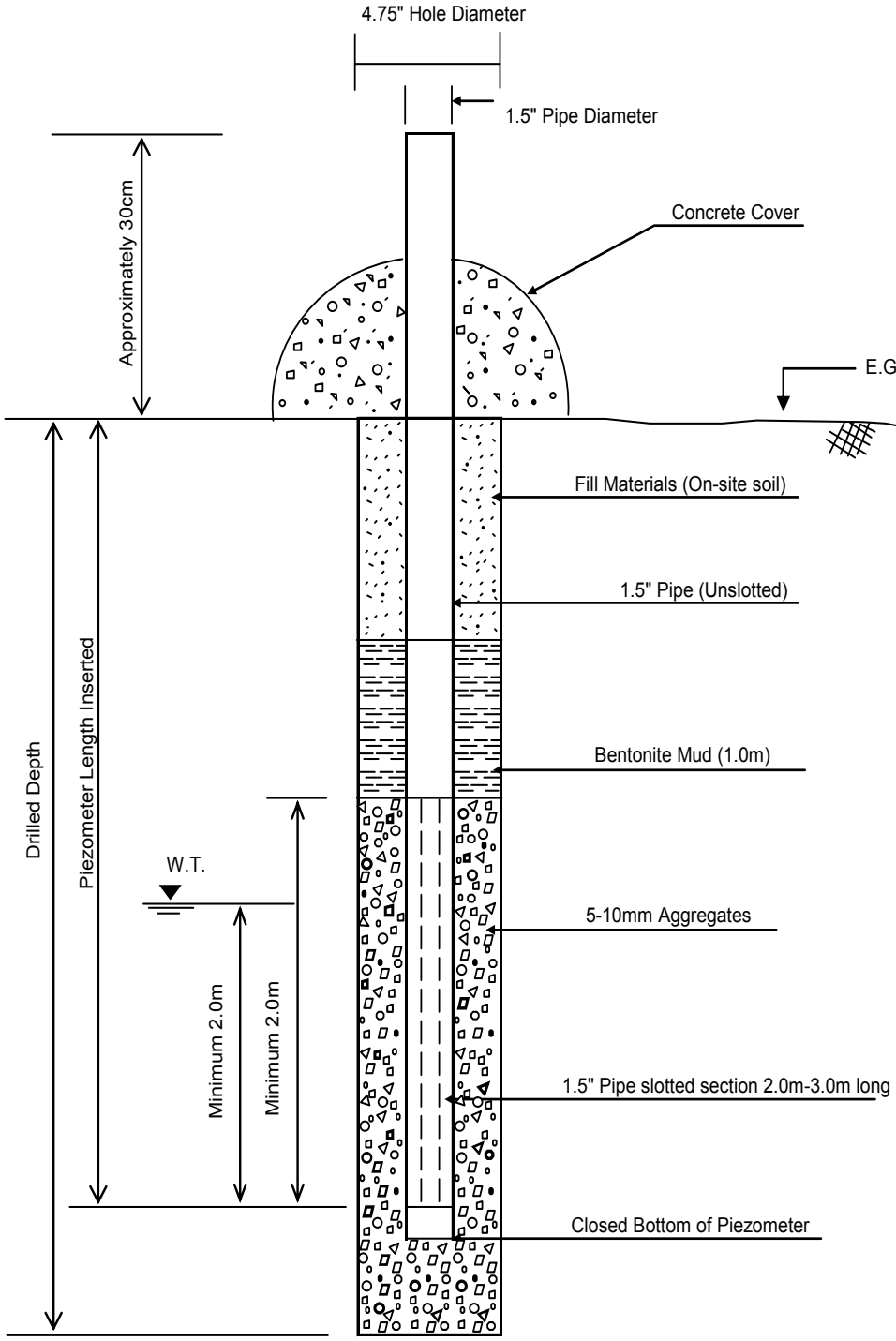

Figure 5: Typical Sketch of Piezometer Installation

Table 3: Standpipe Location and Installation data

BH No.	Total Depth (m)	Length of Screen Section (m)	Remarks
BH-01	9.00	3.00	Groundwater table was not encountered in all the installed piezometers.
BH-02	9.00	3.00	
BH-03	9.00	3.00	
BH-04	9.00	3.00	
BH-05	9.00	3.00	

Groundwater levels were measured from the installed piezometers using dip meter after the installation. The piezometer readings are presented in **Appendix C1**.

3.3 Sampling

3.3.1 Soil Sampling (Near boreholes)

Additional five (05) soil samples were collected from the trial pits at the nearest borehole locations by excavating manually. Each soil sample was collected in clean unused laboratory supplied containers and stored in cool boxes containing ice packs for transportation to an accredited laboratory for further testing.

3.3.2 Ground Water Sampling

A week after the wells have been installed, the ground water samples were collected. The ground water depth and well depth below the surface was determined using oil/water interface probe and wells will be purged of three times their volume of the water sample to sample collection in order to ensure a representative sample is collected. The water samples were collected in clean unused laboratory supplied containers and stored in cool boxes containing ice packs for transportation to an accredited laboratory for further testing.

3.4 In-situ test of Ground Water Samples

After purging the piezometers, the in situ measurements of groundwater samples were carried out at the site for total dissolved solids (TDS), pH, temperature, salinity/ electrical conductivity (EC) for each of the boreholes. The results are presented in below table.

Table 4: Summary of Insitu Test Results of Water samples

Test	Unit	BH-01	BH-02	BH-03	BH-04	BH-05
pH*	-	7.06	7.48	7.45	7.67	7.55
Conductivity	ms/cm	30.72	64.59	63.67	62.10	48.31
TDS	ppt	15.37	32.32	31.85	31.05	24.15
Salinity	pSu	18.95	43.58	42.87	41.60	31.35
Temperature	°C	28	28	29	28.2	28.1

The results are presented in **Appendix C2**.

3.5 Excavation of Trial Pits

A total of nineteen (19) trials pits i.e. thirteen (13) trial pits in the plant area and six (6) trial pits at the laydown area were excavated up to a depth of 3.00 m below existing ground level. The trial pits were excavated mechanically. Five (05) small pits were carried out manually to collect the stockpile samples at the existing laydown area. Additionally five trial pits near the environment

boreholes were also excavated upto 2.0m mechanically. The following table summarizes the boreholes.

Table 5: Summary of Trial pit Information

Test pit No.	Ground Elevation (m SHMD)	Coordinates		Trial Pit Size	Excavation Depth (m)	Excavation date
		Easting	Northing			
TP-01E	4.532	347016.165	2816742.736	1.50 x 1.50	3.00	05/06/18
TP-02E	4.712	347112.770	2816904.114	1.50 x 1.50	3.00	05/06/18
TP-03E	4.100	346953.307	2816818.540	1.50 x 1.50	3.00	05/06/18
TP-04E	4.201	347001.591	2816898.691	1.50 x 1.50	3.00	04/06/18
TP-05E	4.325	346861.189	2816815.445	1.50 x 1.50	3.00	04/06/16
TP-06E	4.151	346932.378	2816939.980	1.50 x 1.50	3.00	04/06/18
TP-07E	3.432	346826.237	2816876.663	1.50 x 1.50	3.00	04/06/18
TP-08E	3.480	346851.863	2816920.132	1.50 x 1.50	3.00	04/06/18
TP-09E	4.241	346760.146	2816918.904	1.50 x 1.50	3.00	04/06/18
TP-10E	3.352	346785.313	2816960.056	1.50 x 1.50	3.00	04/06/18
TP-11E	4.311	346721.623	2816942.494	1.50 x 1.50	3.00	04/06/18
TP-12E	4.435	347199.135	2816956.492	1.50 x 1.50	3.00	05/06/18
TP-13E	4.481	347334.596	2816906.337	1.50 x 1.50	3.00	05/06/18
TP-14E	5.040	347261.034	2817097.951	1.50 x 1.50	3.00	05/06/18
TP-15E	44.778	347312.733	2817184.160	1.50 x 1.50	3.00	05/06/18
TP-16E	4.725	347384.893	2817304.147	1.50 x 1.50	3.00	05/06/18
TP-20E	4.225	347340.610	2817048.539	1.50 x 1.50	3.00	05/06/18
TP-21E	44.581	347392.309	2817135.435	1.50 x 1.50	3.00	05/06/18
TP-22E	16.302	347458.833	2817243.148	1.50 x 1.50	3.00	05/06/18
Stock Pile15	11.789	347313.475	2817183.490	1.50 x 1.50	0.50	06/06/18
Stock Pile16	6.430	347379.709	2817287.328	1.50 x 1.50	0.50	06/06/18
Stock Pile17	5.448	347290.165	2817079.467	1.50 x 1.50	0.50	06/06/18
Stock Pile18	11.503	347351.320	2817160.750	1.50 x 1.50	0.50	06/06/18
Stock Pile19	16.282	347438.080	2817252.608	1.50 x 1.50	0.50	06/06/18
BH-1E	4.054	346968.979	2817008.734	1.50 x 1.50	2.00	04/07/18
BH-2E	4.137	346750.682	2816883.126	1.50 x 1.50	2.00	04/07/18
BH-3E	4.526	347119.840	2816930.409	1.50 x 1.50	2.00	04/07/18
BH-4E	4.422	346877.994	2816754.626	1.50 x 1.50	2.00	04/07/18
BH-5E	4.573	347022.161	2816670.929	1.50 x 1.50	2.00	04/07/18

The locations of the trial pits were set-out by ACES at locations provided by the client. The strata's encountered were visually described and representative bulk samples were carefully collected from the sides and bottom of the pits. Sampling was carried out in accordance with BS 5930:2015 The logs of the test pit are presented in **Appendix B2.**

3.5.1 Trial-pit methodology

Trial pitting for the laydown area and proposed Plant area were carried out using the mechanical excavator with a bucket in 200mm layers to 3.0m depth.

As the trial pit is advanced, the spoil was segregated in such a way that it can be used to backfill the pit in the same order that it was removed (i.e. topsoil should be excavated and stockpiled separately from other soil layers).

Excavated materials are placed away from the side of the trial pit at a distance equivalent to the trial pit depth to reduce the risk of the trial pit collapsing.

General Photographs during trial pit excavation are also presented below:

Figure 6: Typical Photographs during Trial Pit Excavation

3.6 Soil Sampling

As specified soil samples & stock pile samples were collected from trial pits. The details and no of requested tests are presented below:

Table 6: Summary of Environmental Testing for Soil Samples

TP. No.	Depth (m)	TEST REQUIRED	No. OF TESTS
TP-01E	1.50	See Table 7 below	1
TP-02E	1.50		1
TP-03E	1.50		1
TP-04E	1.50		1
TP-05E	1.50		1
TP-06E	1.50		1
TP-07E	1.50		1
TP-08E	1.50		1
TP-09E	1.50		1
TP-10E	1.50		1
TP-11E	1.50		1

TP-12E	1.50		1
TP-13E	1.50		1
TP-14E	1.50		1
TP-15E	1.50		1
TP-16E	1.50		1
TP-20E	1.50		1
TP-21E	1.50		1
TP-22E	1.50		1
TP-15 Stock Pile	0.50		1
TP-16 Stock Pile	0.50		1
TP-17 Stock Pile	0.50		1
TP-18 Stock Pile	0.50		1
TP-19 Stock Pile	0.50		1
BH- 01E	1.00		1
BH- 02E	1.00		1
BH- 03E	1.00		1
BH- 04E	1.00		1
BH- 05E	1.00		1

To avoid cross contamination, sampling devices was properly decontaminated prior to every sampling as per the specifications and brushed to remove any loose material, rinsing in tap water, washing with phosphate free detergent, followed by rinse in distilled water and air drying.

Table 7: List of Tests and Test Methods for Soil Samples

Test	Test Method
Soil	**BS1377 P.3 CL 9**
pH	**APHA 5310**
Total Organic carbon	**USEPA8260**
BTEX	**USEPA8015D**
Total Petroleum Hydrocarbon (TPHCWG)	**USEPA8270D**
Poly Aromatic Hydrocarbon (PAHs)	**APHA 3120B**
Heavy Metals (suits of 17 Metals: arsenic, barium, beryllium, boron, cadmium, chromium (III), chromium (VI), copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, zinc)	
Asbestos	**USEPA8270 D**

Poly Chlorinated Biphenyls 2,3,3',4,4',5,5'- (PCB 189), Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167), ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157), Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156), ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169), Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)M, Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118), Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105), Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114), Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126), Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77), Tetrachlorobiphenyl, 3,4,4',5- (PCB 81), Total PCBs		**USEPA8260C** **USEPA8270D**
Volatile Organic Compounds +TIC's		
Semi volatile Organic Compounds+TIC's		

3.7 Ground Water Sampling Ground water samples from piezometer were collected and sent to our laboratory for further testing. The details and no of requested test are presented below:

Table 8: Summary of Environmental Testing for Water Samples

BH. No.	Depth (m)	TEST REQUIRED	No. OF TESTS
BH-01	2.53	See Table 9 below	2
BH-02	2.43		2
BH-03	2.56		2
BH-04	2.34		2
BH-05	2.51		2

Table 9: List of Tests and Test Methods for Water Samples

Water	
pH	APHA4500
BTEX	USEPA8260
Total Petroleum Hydrocarbon (TPHCWG)	USEPA8015D
Poly Aromatic Hydrocarbon (PAHs)	USEPA8270 D
Heavy Metals (suits of 17 Metals: arsenic, barium, beryllium, boron, cadmium, chromium (III), chromium (VI), copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, zinc)	APHA 3120B ASTMD1067 B
Alkalinity	APHA 3120B
calcium	
Magnesium	
Sodium	

Potassium		APHA 4500
Total Ammonical nitrogen		APHA2340B
Hardness		BS1377P.3 CL.7
Chloride		APHA 4500
Fluoride		BS1377P.3CL.5
Sulphate		APHA 4500
Nitrate		APHA 4500
Nitrite		APHA 4500
Phosphate		
Poly Chlorinated Biphenyls 2,3,3',4,4',5,5'- (PCB 189), Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167), ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157), Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156), ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169), Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) M, Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118), Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105), Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114), Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126), Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77), Tetrachlorobiphenyl, 3,4,4',5- (PCB 81), Total PCBs		USEPA8270 D
Volatile Organic Compounds +TIC's		USEPA8260C
Semi volatile Organic Compounds+TIC's		USEPA8270 D

3.8 Site safety

ACES staff was fully committed for implementing the Health and Safety measures for all personnel who were working at this project. Effective methods were adopted to ensure the policies and procedures are communicated to, and properly understood by all crew personnel and followed throughout the operations, controlled by inspection visits of the safety representative.

It is concluded that no accidents/ incidents occurred during the period of site investigation work for this project.

3.9 Site Clean Out

Following the completion of field works, the location of each borehole was cleaned-off bentonite remains, cuttings and the surface reinstated with surrounding sand.

4.0 LABORATORY TESTING

In order to determine the chemical properties of the ground materials (soil and water samples) laboratory testing's were carried out water samples collected from boreholes and soil samples

collected from trial pits, stockpile and boreholes “unsaturated soils located above the groundwater level as per testing suite provided by the client. Laboratory tests were performed on selected samples according to following Standards:

Table 10: List of Tests and Standard Test Methods

Test	Test Method
Soil	
pH	**BS1377 P.3 CL 9**
Total Organic carbon	**APHA 5310**
BTEX	**USEPA8260**
Total Petroleum Hydrocarbon (TPHCWG)	**USEPA8015D**
Poly Aromatic Hydrocarbon (PAHs)	**USEPA8270D**
Heavy Metals (suits of 17 Metals: arsenic, barium, beryllium, boron, cadmium, chromium (III), chromium (VI), copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, zinc)	**APHA 3120B**
Asbestos	
Poly Chlorinated Biphenyls 2,3,3',4,4',5,5'- (PCB 189), Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167), ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157), Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156), ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169), Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123)M, Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118), Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105), Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114), Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126), Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77), Tetrachlorobiphenyl, 3,4,4',5- (PCB 81), Total PCBs	**USEPA8270 D**
Volatile Organic Compounds +TIC's	**USEPA8260C**
Semi volatile Organic Compounds+TIC's	**USEPA8270D**
Water	
pH	**APHA4500**
BTEX	**USEPA8260**
Total Petroleum Hydrocarbon (TPHCWG)	**USEPA8015D**
Poly Aromatic Hydrocarbon (PAHs)	**USEPA8270 D**
Heavy Metals (suits of 17 Metals: arsenic, barium, beryllium, boron, cadmium, chromium (III), chromium (VI), copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, vanadium, zinc)	**APHA 3120B**
Alkalinity	**ASTMD1067 B** **APHA 3120B**

Cacium		
Magnessium		
Sodium		
Potassium		**APHA 4500**
Total Ammonical nitrogen		**APHA2340B**
Hardness		**BS1377P.3 CL.7**
Chloride		**APHA 4500**
Fluoride		**BS1377P.3CL.5**
Sulphate		**APHA 4500**
Nitrate		**APHA 4500**
Nitrite		**APHA 4500**
Phosphate		
Poly Chlorinated Biphenyls 2,3,3',4,4',5,5'- (PCB 189), Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167), ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157), Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156), ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169), Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) M, Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118), Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105), Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114), Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126), Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77), Tetrachlorobiphenyl, 3,4,4',5- (PCB 81), Total PCBs		**USEPA8270 D**
Volatile Organic Compounds +TIC's		**USEPA8260C**
Semi volatile Organic Compounds+TIC's		**USEPA8270 D**
Reporting (Factual without optional scope)		

5.0 RESULTS

The results obtained from the laboratory analysis for Soil & Water tests are presented in **Appendix D.** Summary of the soil and water results are presented in the table below.

ANALYSIS OF SOIL			
Test Parameter	**Test Method**	**Test Results**	
		Min Value	**Max Value**
TOTAL ORGANIC CARBON			
Total Organic Carbon	Walkey-black Method	0.01	0.07

ANALYSIS OF SOIL			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
BTEX			
Benzene	USEPA 8260C	<0.52	<0.52
Toluene		<0.54	<0.54
Ethylbenzene		<0.44	<0.44
m & p- Xylene		<1.14	<1.14
o-Xylene		<0.55	<0.55
BTEX		<3.19	<3.19
TOTAL PETROLEUM HYDROCARBONS			
TPH C8-C38 ALIPHATIC	USEPA 8015D	<0.1	<0.1
TPH C6-C8 AROMATIC	USEPA 8260C	<0.1	<0.1
TPH C10-C22 AROMATIC	USEPA 8270D	<0.1	<0.1
POLYNUCLEAR AROMATIC HYDROCARBONS			
Naphthalene	USEPA 8270D	<0.05	<0.05
Acenaphthylene		<0.05	<0.05
Acenaphthene		<0.05	<0.05
Fluorene		<0.05	<0.05
Phenanthrene		<0.05	<0.05
Anthracene		<0.05	<0.05
Fluoranthene		<0.05	<0.05
Pyrene		<0.05	<0.05
Benz(a)anthracene		<0.05	<0.05
Chrysene		<0.05	<0.05
Benzo(b)fluoranthene		<0.05	<0.05
Benzo(k)fluoranthene		<0.05	<0.05
Benzo(a)pyrene		<0.05	<0.05
Indeno(1,2,3-cd)pyrene		<0.05	<0.05
Dibenz(a,h)anthracene		<0.05	<0.05
Benzo(g,h,i)perylene		<0.05	<0.05
Polynuclear Aromatid Hydrocarbons (PAHs)		<0.05	<0.05
POLYCHLORINATED BIPHENYLS			
3,3',4,4'-Tetrachlorobiphenyl	USEPA 8270D	<0.01	<0.01
3,4,4',5-Tetrachlorobiphenyl		<0.01	<0.01
2,3,3',4,4'-Pentachlorobiphenyl		<0.01	<0.01
2,3,4,4',5-Pentachlorobiphenyl		<0.01	<0.01
2,3',4,4',5-Pentachlorobiphenyl		<0.01	<0.01
2',3,4,4',5-Pentachlorobiphenyl		<0.01	<0.01
3,3',4,4',5-Pentachlorobiphenyl		<0.01	<0.01
2,3,3',4,4',5-Hexachlorobiphenyl		<0.01	<0.01
2,3,3',4,4',5'-Hexachlorobiphenyl		<0.01	<0.01
2,3',4,4',5,5'-Hexachlorobiphenyl		<0.01	<0.01
3,3',4,4',5,5'-Hexachlorobiphenyl		<0.01	<0.01
2,3,3',4,4',5,5'-Heptachlorobiphenyl		<0.01	<0.01
Total PCBs		<0.01	<0.01
VOLATILE ORGANIC COMPOUNDS (VOCs) + TIC's			
Dichlorodifluoromethane[1]	USEPA 8260C	<0.60	<0.60
Chloromethane[1]		<0.81	<0.81
Vinyl chloride[1]		<0.88	<0.88

ANALYSIS OF SOIL			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Bromomethane[1]		<0.67	<0.67
Chloroethane[1]		<0.28	<0.28
Trichlorofluoromethane[1]		<0.63	<0.63
Acetonitrile[1]		<1.81	<1.81
Acetone[1]		<2.75	<2.75
Diethyl ether[1]		<1.03	<1.03
1,1-Dichloroethene[1]		<0.91	<0.91
Iodomethane[1]		<0.87	<0.87
Propionitrile[1]		<0.77	<0.77
Acrylonitrile[1]		<0.85	<0.85
Methylene chloride[1]		<1.21	<1.21
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]		<0.98	<0.98
Allyl chloride[1]		<0.57	<0.57
Carbon disulfide[1]		<0.35	<0.35
trans-1,2-Dichloroethene[1]		<0.96	<0.96
MTBE[1]		<0.81	<0.81
1,1-Dichloroethane[1]		<0.55	<0.55
Chloroprene[1]		<3.11	<3.11
2-Butanone (MEK)[1]		<6.81	<6.81
Methacrylonitrile[1]		<0.79	<0.79
cis-1,2-Dichloroethene[1]		<0.50	<0.50
Bromochloromethane[1]		<0.90	<0.90
Chloroform[1]		<0.60	<0.60
Methyl acrylate[1]		<0.90	<0.90
2,2-Dichloropropane[1]		<0.79	<0.79
Tetrahydrofuran[1]		<1.64	<1.64
1,2-Dichlorethane[1]		<0.86	<0.86
1,1,1-Trichloroethane[1]		<0.55	<0.55
1,1-Dichloropropene[1]		<0.64	<0.64
Carbon Tetrachloride[1]		<0.61	<0.61
Benzene[1]		<0.52	<0.52
Dibromomethane[1]		<0.90	<0.90
1,2-Dichloropropane[1]		<0.51	<0.51
Trichloroethene[1]		<0.76	<0.76
Bromodichloromethane[1]		<0.74	<0.74
Methyl methacrylate[1]		<0.90	<0.90
cis-1,3-Dichloropropene[1]		<0.39	<0.39
4-Methyl-2-pentanone (MIBK)[1]		<2.57	<2.57
trans-1,3-Dichloropropene[1]		<0.61	<0.61
1,1,2-Trichloroethane[1]		<0.59	<0.59
Toluene[1]		<0.54	<0.54
1,3-Dichloropropane[1]		<0.89	<0.89
Ethyl methacrylate[1]		<0.78	<0.78
2-Hexanone[1]		<3.40	<3.40
Dibromochloromethane[1]		<0.35	<0.35
1,2-Dibromoethane-EDB[1]		<0.88	<0.88
Tetrachloroethene[1]		<0.78	<0.78
1,1,1,2-Tetrachloroethane[1]		<0.34	<0.34
Chlorobenzene[1]		<0.59	<0.59
Ethylbenzene[1]		<0.44	<0.44
m & p- Xylene[1]		<1.14	<1.14

ANALYSIS OF SOIL			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Bromoform[1]		<0.63	<0.63
cis-1,4-Dichloro-2-butene[1]		<0.63	<0.63
Styrene[1]		<0.64	<0.64
1,1,2,2-Tetrachloroethane[1]		<0.95	<0.95
o-Xylene[1]		<0.55	<0.55
1,2,3-Trichloropropane[1]		<0.92	<0.92
trans-1,4-Dichloro-2-butene[1]		<1.43	<1.43
Isopropylbenzene[1]		<0.38	<0.38
Bromobenzene[1]		<0.69	<0.69
n-Propylbenzene[1]		<0.60	<0.60
2-Chlorotoluene[1]		<0.86	<0.86
4-Chlorotoluene[1]		<0.72	<0.72
1,3,5-Trimethylbenzene[1]		<0.43	<0.43
Pentachloroethane[1]		<0.89	<0.89
tert-Butylbenzene[1]		<0.50	<0.50
1,2,4-Trimethylbenzene[1]		<0.40	<0.40
sec-Butylbenzene[1]		<0.55	<0.55
1,3-Dichlorobenzene[1]		<0.52	<0.52
1,4-Dichlorobenzene[1]		<0.59	<0.59
p-Isopropyltoluene (p-Cymene)[1]		<0.52	<0.52
1,2-Dichlorbenzene[1]		<0.73	<0.73
n-Butylbenzene[1]		<0.65	<0.65
1,2-Dibromo-3-Chloropropane[1]		<1.25	<1.25
1,2,4-Trichlorobenzene[1]		<0.69	<0.69
Naphthalene[1]		<1.29	<1.29
Hexachlorobutadiene[1]		<0.76	<0.76
1,2,3-Trichlorobenzene[1]		<0.86	<0.86
TIC's	NIST Library Search	ND	ND
SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's			
N-Nitrosodimethylamine	USEPA 8270D	<0.02	<0.02
Pyridine		<0.02	<0.02
Phenol		<0.02	<0.02
Aniline		<0.02	<0.02
Bis(2-chhloroethyl) ether		<0.02	<0.02
2-Chlorophenol		<0.02	<0.02
1,3-Dichlorobenzene		<0.02	<0.02
1,4-Dichlorobenzene		<0.02	<0.02
Benzyl alcohol		<0.02	<0.02
2-Methylphenol		<0.02	<0.02
1,2-Dichlorobenzene		<0.02	<0.02
Bis(2-chloroisopropyl) ether		<0.02	<0.02
4-Methylphenol/3-Methylphenol		<0.02	<0.02
N-Nitrosodi-n-propylamine		<0.02	<0.02
Hexachloroethane		<0.02	<0.02
Nitrobenzene		<0.02	<0.02
Isophorone		<0.02	<0.02
2,4-Dimethylphenol		<0.02	<0.02
2-Nitrophenol		<0.02	<0.02
Bis(2-chloroethoxy)methane		<0.02	<0.02
2,4-Dichlorophenol		<0.02	<0.02
1,2,4-Trichlorobenzene		<0.02	<0.02

ANALYSIS OF SOIL			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Naphthalene		<0.02	<0.02
4-Chloroaniline		<0.02	<0.02
Hexachlorobutadiene		<0.02	<0.02
4-Chloro-3-methylphenol		<0.02	<0.02
2-Methylnaphthalene		<0.02	<0.02
1-Methylnaphthalene		<0.02	<0.02
Hexachlorocyclopentadiene		<0.02	<0.02
2,4,6-Trichlorophenol		<0.02	<0.02
2,4,5-Trichlorophenol		<0.02	<0.02
2-Chloronaphthalene		<0.02	<0.02
2-Nitroaniline		<0.02	<0.02
1,4-Dinitrobenzene		<0.02	<0.02
Dimethyl phthalate		<0.02	<0.02
1,3-Dinitrobenzene		<0.02	<0.02
2,6-Dinitrotoluene		<0.02	<0.02
1,2-Dinitrobenzene		<0.02	<0.02
Acenaphthylene		<0.02	<0.02
3-Nitroaniline		<0.02	<0.02
Acenaphthene		<0.02	<0.02
2,4-Dinitrophenol		<0.02	<0.02
4-Nitrophenol		<0.02	<0.02
2,4-Dinitrotoluene		<0.02	<0.02
Dibenzofuran		<0.02	<0.02
2,3,5,6-Tetrachlorophenol		<0.02	<0.02
2,3,4,6-Tetrachlorophenol		<0.02	<0.02
Diethyl phthalate		<0.02	<0.02
4-Chlrophenyl phenyl ether		<0.02	<0.02
4-Nitroaniline		<0.02	<0.02
4,6-Dinitro-2-methylphenol		<0.02	<0.02
Fluorene		<0.02	<0.02
N-nitrosodiphenylamine (diphenylamine)		<0.02	<0.02
1,2-Diphenylhydrazine (as azobenzene)		<0.02	<0.02
4-Bromophenyl phenyl ether		<0.02	<0.02
Hexachlorobenzene		<0.02	<0.02
Pentachlorophenol		<0.02	<0.02
Phenanthrene		<0.02	<0.02
Anthracene		<0.02	<0.02
Carbazole		<0.02	<0.02
Di-n-butyl phthalate		<0.02	<0.02
Fluoranthene		<0.02	<0.02
Benzidine		<0.02	<0.02
3,3'-Dimethylbenzidine		<0.02	<0.02
Pyrene		<0.02	<0.02
Butyl benzyl phthalate		<0.02	<0.02
Bis(2-ethylhexyl) adipate		<0.02	<0.02
Bis(2-ethylhexyl) phthalate		<0.02	<0.02
3,3'-Dichlorobenzidine		<0.02	<0.02
Benz(a)anthracene		<0.02	<0.02
Chrysene		<0.02	<0.02
Di-n-octyl phthalate		<0.02	<0.02

ANALYSIS OF SOIL			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Benzo(b)fluoranthene		<0.02	<0.02
Benzo(k)fluoranthene		<0.02	<0.02
Benzo(a)pyrene		<0.02	<0.02
Indeno(1,2,3-cd)pyrene		<0.02	<0.02
Dibenz(a,h)anthracene		<0.02	<0.02
Benzo(g,hi)perylene		<0.02	<0.02
TIC's	NIST Library Search	ND	ND

ANALYSIS OF WATER			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
CHEMICAL ANALYSIS			
Ammoniacal Nitrogen	APHA 4500 NH3 (F)	0.03	2.25
Flouride[1]	APHA 4500 F- (D)	0.70	1.90
Nitrate	APHA 450 NO3 (E)	<0.02	0.40
Nitrite	APHA 450 NO2 (B)	<0.02	0.26
Phosphate as PO4	APHA 4500 P (C)	<0.6	1.30
ORAGANIC BTEX			
Benzene	USEPA 8260C	<0.57	<0.57
Toluene		<0.88	587
Ethylbenzene		<0.88	<0.88
Xylene		<2.69	<2.69
BTEX		<5.02	587
TOTAL PETROLEUM HYDROCARBONS (TPHCWG)			
TPH C8-C38 ALIPHATIC	USEPA 8015D	<0.01	<0.01
TPH C6-C8 AROMATIC	USEPA 8260C	<0.01	<0.1
TPH C10-C22 AROMATIC	USEPA 8270D	<0.01	<0.1
POLYNUCLEAR AROMATIC HYDROCARBONS			
Naphthalene	USEPA 8270D	<0.05	<0.05
Acenaphthylene		<0.05	<0.05
Acenaphthene		<0.05	<0.05
Fluorene		<0.05	<0.05
Phenanthrene		<0.05	<0.05
Anthracene		<0.05	<0.05
Fluoranthene		<0.05	<0.05
Pyrene		<0.05	<0.05
Benz(a)anthracene		<0.05	<0.05
Chrysene		<0.05	<0.05
Benzo(b)fluoranthene		<0.05	<0.05
Benzo(k)fluoranthene		<0.05	<0.05
Benzo(a)pyrene		<0.05	<0.05
Indeno(1,2,3-cd)pyrene		<0.05	<0.05
Dibenz(a,h)anthracene		<0.05	<0.05
Benzo(g,h,i)perylene		<0.05	<0.05
Polynuclear Aromatid Hydrocarbons (PAHs)		<0.05	<0.05
POLYCHLORINATED BIPHENYLS			
3,3',4,4'-Tetrachlorobiphenyl	USEPA 8270D	<0.02	<0.02
3,4,4',5-Tetrachlorobiphenyl		<0.02	<0.02
2,3,3',4,4'-Pentachlorobiphenyl		<0.02	<0.02

ANALYSIS OF WATER			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
2,3,4,4',5-Pentachlorobiphenyl		<0.02	<0.02
2,3',4,4',5-Pentachlorobiphenyl		<0.02	<0.02
2',3,4,4',5-Pentachlorobiphenyl		<0.02	<0.02
3,3',4,4',5-Pentachlorobiphenyl		<0.02	<0.02
2,3,3',4,4',5-Hexachlorobiphenyl		<0.02	<0.02
2,3,3',4,4',5'-Hexachlorobiphenyl		<0.02	<0.02
2,3',4,4',5,5'-Hexachlorobiphenyl		<0.02	<0.02
3,3',4,4',5,5'-Hexachlorobiphenyl		<0.02	<0.02
2,3,3',4,4',5,5'-Heptachlorobiphenyl		<0.02	<0.02
Total PCBs		<0.02	<0.02
SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's			
N-Nitrosodimethylamine	USEPA 8270D	<0.01	<0.01
Pyridine		<0.01	<0.01
Phenol		<0.01	<0.01
Aniline		<0.01	<0.01
Bis(2-chhloroethyl) ether		<0.01	<0.01
2-Chlorophenol		<0.01	<0.01
1,3-Dichlorobenzene		<0.01	<0.01
1,4-Dichlorobenzene		<0.01	<0.01
Benzyl alcohol		<0.01	<0.01
2-Methylphenol		<0.01	<0.01
1,2-Dichlorobenzene		<0.01	<0.01
Bis(2-chloroisopropyl) ether		<0.01	<0.01
4-Methylphenol/3-Methylphenol		<0.01	<0.01
N-Nitrosodi-n-propylamine		<0.01	<0.01
Hexachloroethane		<0.01	<0.01
Nitrobenzene		<0.01	<0.01
Isophorone		<0.01	<0.01
2,4-Dimethylphenol		<0.01	<0.01
2-Nitrophenol		<0.01	<0.01
Bis(2-chloroethoxy)methane		<0.01	<0.01
2,4-Dichlorophenol		<0.01	<0.01
1,2,4-Trichlorobenzene		<0.01	<0.01
Naphthalene		<0.01	<0.01
4-Chloroaniline		<0.01	<0.01
Hexachlorobutadiene		<0.01	<0.01
4-Chloro-3-methylphenol		<0.01	<0.01
2-Methylnaphthalene		<0.01	<0.01
1-Methylnaphthalene		<0.01	<0.01
Hexachlorocyclopentadiene		<0.01	<0.01
2,4,6-Trichlorophenol		<0.01	<0.01
2,4,5-Trichlorophenol		<0.01	<0.01
2-Chloronaphthalene		<0.01	<0.01
2-Nitroaniline		<0.01	<0.01
1,4-Dinitrobenzene		<0.01	<0.01
Dimethyl phthalate		<0.01	<0.01
1,3-Dinitrobenzene		<0.01	<0.01
2,6-Dinitrotoluene		<0.01	<0.01
1,2-Dinitrobenzene		<0.01	<0.01
Acenaphthylene		<0.01	<0.01

ANALYSIS OF WATER			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
3-Nitroaniline		<0.01	<0.01
Acenaphthene		<0.01	<0.01
2,4-Dinitrophenol		<0.01	<0.01
4-Nitrophenol		<0.01	<0.01
2,4-Dinitrotoluene		<0.01	<0.01
Dibenzofuran		<0.01	<0.01
2,3,5,6-Tetrachlorophenol		<0.01	<0.01
2,3,4,6-Tetrachlorophenol		<0.01	<0.01
Diethyl phthalate		<0.01	<0.01
4-Chlrophenyl phenyl ether		<0.01	<0.01
4-Nitroaniline		<0.01	<0.01
4,6-Dinitro-2-methylphenol		<0.01	<0.01
Fluorene		<0.01	<0.01
N-nitrosodiphenylamine (diphenylamine)		<0.01	<0.01
1,2-Diphenylhydrazine (as azobenzene)		<0.01	<0.01
4-Bromophenyl phenyl ether		<0.01	<0.01
Hexachlorobenzene		<0.01	<0.01
Pentachlorophenol		<0.01	<0.01
Phenanthrene		<0.01	<0.01
Anthracene		<0.01	<0.01
Carbazole		<0.01	<0.01
Di-n-butyl phthalate		<0.01	<0.01
Fluoranthene		<0.01	<0.01
Benzidine		<0.01	<0.01
3,3'-Dimethylbenzidine		<0.01	<0.01
Pyrene		<0.01	<0.01
Butyl benzyl phthalate		<0.01	<0.01
Bis(2-ethylhexyl) adipate		<0.01	<0.01
Bis(2-ethylhexyl) phthalate		<0.01	<0.01
3,3'-Dichlorobenzidine		<0.01	<0.01
Benz(a)anthracene		<0.01	<0.01
Chrysene		<0.01	<0.01
Di-n-octyl phthalate		<0.01	<0.01
Benzo(b)fluoranthene		<0.01	<0.01
Benzo(k)fluoranthene		<0.01	<0.01
Benzo(a)pyrene		<0.01	<0.01
Indeno(1,2,3-cd)pyrene		<0.01	<0.01
Dibenz(a,h)anthracene		<0.01	<0.01
Benzo(g,hi)perylene		<0.01	<0.01
TIC's	NIST Library Search	ND	ND
VOLATILE ORGANIC COMPOUNDS (VOCs) + TIC's			
Dichlorodifluoromethane[1]	USEPA 8260C	<0.92	<0.92
Chloromethane[1]		<0.84	<0.84
Vinyl chloride[1]		<3.13	<3.13
Bromomethane[1]		<2.08	<2.08
Chloroethane[1]		<0.63	<0.63
Trichlorofluoromethane[1]		<0.58	<0.58
Acetonitrile[1]		<1.52	<1.52
Acetone[1]		<3.23	<3.23

ANALYSIS OF WATER			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Diethyl ether[1]		<0.92	<0.92
1,1-Dichloroethene[1]		<0.96	<0.96
Iodomethane[1]		<0.71	<0.71
Propionitrile[1]		<0.35	<0.35
Acrylonitrile[1]		<1.27	<1.27
Methylene chloride[1]		<1.90	<1.90
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]		<1.01	<1.01
Allyl chloride[1]		<0.93	<0.93
Carbon disulfide[1]		<1.79	<1.79
trans-1,2-Dichloroethene[1]		<0.88	<0.88
MTBE[1]		<1.44	<1.44
1,1-Dichloroethane[1]		<0.69	<0.69
Chloroprene[1]		<1.21	<1.21
2-Butanone (MEK)[1]		<3.84	<3.84
Methacrylonitrile[1]		<1.09	<1.09
cis-1,2-Dichloroethene[1]		<0.56	<0.56
Bromochloromethane[1]		<1.02	<1.02
Chloroform[1]		<1.18	<1.18
Methyl acrylate[1]		<0.66	<0.66
2,2-Dichloropropane[1]		<1.41	<1.41
Tetrahydrofuran[1]		<1.70	<1.70
1,2-Dichlorethane[1]		<0.46	<0.46
1,1,1-Trichloroethane[1]		<0.95	<0.95
1,1-Dichloropropene[1]		<1.24	<1.24
Carbon Tetrachloride[1]		<0.52	<0.52
Benzene[1]		<0.57	<0.57
Dibromomethane[1]		<0.51	<0.51
1,2-Dichloropropane[1]		<0.64	<0.64
Trichloroethene[1]		<0.89	<0.89
Bromodichloromethane[1]		<1.06	<1.06
Methyl methacrylate[1]		<1.31	<1.31
cis-1,3-Dichloropropene[1]		<1.17	<1.17
4-Methyl-2-pentanone (MIBK)[1]		<3.30	<3.30
trans-1,3-Dichloropropene[1]		<1.17	<1.17
1,1,2-Trichloroethane[1]		<0.92	<0.92
Toluene[1]		<0.88	587
1,3-Dichloropropane[1]		<0.77	<0.77
Ethyl methacrylate[1]		<1.07	<1.07
2-Hexanone[1]		<2.19	<2.19
Dibromochloromethane[1]		<0.82	<0.82
1,2-Dibromoethane-EDB[1]		<0.63	<0.63
Tetrachloroethene[1]		<0.63	<0.63
1,1,1,2-Tetrachloroethane[1]		<1.04	<1.04
Chlorobenzene[1]		<0.60	<0.60
Ethylbenzene[1]		<0.88	<0.88
m & p- Xylene[1]		<1.90	<1.90
Bromoform[1]		<0.75	<0.75
cis-1,4-Dichloro-2-butene[1]		<1.11	<1.11
Styrene[1]		<0.83	<0.83
1,1,2,2-Tetrachloroethane[1]		<0.91	<0.91
o-Xylene[1]		<0.79	<0.79

ANALYSIS OF WATER			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
1,2,3-Trichloropropane[1]		<1.20	<1.20
trans-1,4-Dichloro-2-butene[1]		<1.52	<1.52
Isopropylbenzene[1]		<0.96	<0.96
Bromobenzene[1]		<1.19	<1.19
n-Propylbenzene[1]		<1.26	<1.26
2-Chlorotoluene[1]		<1.29	<1.29
4-Chlorotoluene[1]		<1.22	<1.22
1,3,5-Trimethylbenzene[1]		<1.08	<1.08
Pentachloroethane[1]		<1.18	<1.18
tert-Butylbenzene[1]		<1.06	<1.06
1,2,4-Trimethylbenzene[1]		<1.05	<1.05
sec-Butylbenzene[1]		<0.97	<0.97
1,3-Dichlorobenzene[1]		<0.94	<0.94
1,4-Dichlorobenzene[1]		<1.25	<1.25
p-Isopropyltoluene (p-Cymene)[1]		<1.50	<1.50
1,2-Dichlorbenzene[1]		<0.93	<0.93
n-Butylbenzene[1]		<1.88	<1.88
1,2-Dibromo-3-Chloropropane[1]		<2.50	<2.50
1,2,4-Trichlorobenzene[1]		<1.78	<1.78
Naphthalene[1]		<3.92	<3.92
Hexachlorobutadiene[1]		<1.40	<1.40
1,2,3-Trichlorobenzene[1]		<0.93	<0.93
TIC's	NIST Library Search	ND	ND

METALS IN SOIL			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Arsenic As	APHA3120B	0.555	1.171
Barium Ba		25.79	73.59
Beryllium Be		<0.01	<0.01
Boron B		11.11	43.97
Cadmium Cd		0.326	0.468
Chromium (Total) Cr		21.16	27.30
Copper Cu		3.297	5.018
Iron (Total) Fe		4671	5632
Lead Pb		1.457	3.326
Manganese Mn		140.0	221.0
Molybdenum Mo		0.177	0.406
Nickel Ni		14.34	36.98
Selenium Se		<0.10	0.10
Vanadium V		11.02	15.86
Zinc Zn		10.84	14.76
Mercury Hg		<0.003	0.096
pH*	BS1377 P.3 CL9	8.4	9.7

METALS IN WATER			
Test Parameter	Test Method	Test Results	
		Min Value	Max Value
Arsenic* As	APHA3120B	<0.12	<0.12
Barium* Ba		<0.12	<0.12

METALS IN WATER				
Test Parameter		Test Method	Test Results	
			Min Value	Max Value
Beryllium*	Be		<0.01	<0.01
Boron*	B		2.432	3.394
Cadmium*	Cd		<0.02	<0.02
Calcium*	Ca		235.8	496.2
Chromium (Total)*	Cr		<0.01	<0.01
Copper*	Cu		<0.01	<0.01
Iron (Total)*	Fe		0.006	0.346
Lead*	Pb		<0.01	<0.01
Magnesium	Mg		493.5	1566
Manganese*	Mn		<0.02	0.622
Molybdenum	Mo		<0.01	0.015
Nickel *	Ni		<0.02	0.02
Potassium	K		234.9	481.0
Selenium*	Se		<0.10	<0.10
Sodium	Na		594.8	13700
Vanadium	V		<0.01	<0.01
Zinc*	Zn		0.006	0.02
Mercury	Hg		<0.003	0.003
Sulphate*	SO_4	BS1377 P.3 CL 5	1853	3147
Chloride*	Cl	BS1377 P.3 CL 7	8799	23349
pH*		BS1377 P.3 CL9	7.2	7.8
Carbonates		ASTM D 1067-11	Nil	Nil
Bicarbonates		ASTM D 1067-11	507	1776
Total Alkalinity as $CaCO_3$		APHA	416	1455
Total Hardness as $CaCO_3$			2563	7685
ON SITE TEST				
Test Parameter		Test Method	Test Results	
			Min Value	Max Value
pH*		BS1377 P.3:1990	7.06	7.67
Conductivity			30.72	64.59
TDS			15.37	32.32
Salinity			18.95	43.58

6.0 RESULTS OF THE CONTAMINATION ASSESSMENT

Hamiriyah Power Plant Project is being developed in an already demarcated area in which various industrial activities are going on. The area is also already exposed to pumping and storage of the gas and petroleum products. **Hamiriyah** being a free port the area is previously exposed to the various materials which pass through this area. The analysis of the samples both soil and ground water will therefore have a component of the various elements and compounds which pass through this area. This is particularly true for hydrocarbon products and as well as for the volatiles as gas, which is transported through this area from oil field nearby.

Geologically, the area is a flat terrain very near to the sea. It does not have any drainage lines which cancel the possibility of any elements being carried in to the area from the surroundings by drainage.

Being a sea shore, the area is covered by sand. Regionally the area is covered by recent marine and wind born superficial deposits. The constant winnowing of the superficial sediment increases the possibility of concentration of the heavy metals in the soil. This may diminish as the surrounding area is built up

In the light of the above setting, both geological and manmade, the results of both the ground water and the soil are evaluated. These results are also compared against the natural abundance of elements on the surface of the earth. This gives a view whether presence of these elements is abnormal.

6.1 Analysis of the metals in soil

The sample analysis was analyzed and comparison made with the crustal abundance of the various metals analyzed. It has been found that values of all the metals analyzed were found in lesser than the crustal abundance limits for the geological setting. Therefore, it implies that there is nothing abnormal in the natural setting which needs immediate attention.

The analysis of the metals was also compared with the regional survey limits set by various organization for health point of view. In this the limits set for carcinogenic studies were taken. The values are compared with the regional survey level standards of Dutch and USA for industrial soil.

It has been found that

- All the analysis fall far below the limits set for raising concerns of health.
- All the levels are far below the remediation values.
- It may also be noted that all the levels are below the Residential soil levels also.
- The analysis also reveals that there has been no heavy mineral concentration in the area due to the winnowing action of winds and sea waves.
- The analysis decipher that the matals in the soil is well below the limits of safety and therefore environmentally safe therefore no intervention is needed.

The results and corresponding values against which they are compared are presented in **Appendix -E.**

6.2 Analysis of the metals in Ground water

In the light of the physiography and general geology of the area and the human activity, the results of the ground water are evaluated. World over, the norms for ground water are different and are mostly determined by local geology. The concentration of the various elements is depended in their availability in the aquifer from where the ground water is extracted. As such there are no universal parameters for ground water. That is why absolute safe parameters, for all the elements and compounds quoted in the analysis, are not available. The area being very near to sea, it is assumed that there will be incursion of sea water.

The parameters, fixed by various agencies, are dependent on the usage of the water. Most of the parameters quoted in this study are the parameters fixed for the usage of ground water for drinking purpose. It is also to be noted that the safe limits of metals quoted in the literature for the intake of various metals is as part of diet (which includes water also) and as per kg of the body weight.

To get a general view, on the elements analyzed, these elements are compared with data on the crustal abundance of such elements. From the comparison it is seen that the metals present in the ground water is far less than the crustal abundance. This indicates that the aquifer is not enriched in any of these elements**. Therefore, it implies that there is nothing abnormal in the natural setting which needs immediate attention**.

Comparisons with standards of various countries and organizations.

The analyses of the metals are also compared with the regional survey limits set by various organizations from human health point of view.

In this study two values of Dutch studies are quoted these values are target values that is the safe values another value is remediation values that is the values at which it is necessary to take a corrective measure to bring the values to target level.

The USA values quoted are the values safe for carcinogenic point of view.

The analysis of the bore holes data are compared with the available data from Indian, Canada and WHO studies also, to ascertain if the data from analysis deviates from any well-known International Norm.

The studies of the analysis following inferences are made;

- It has been found that majority of analysis fall far below the limits set for raising concerns of health.
- All the levels are far below the remediation values therefore no intervention is needed.
- The elements analyzed are also below the target level (that is the optimal levels where no health hazard is indicated) as per Dutch and USA standards.
- The values for non-metals and compounds are not universally prescribed. This is because these are more local and highly dependent on local geological, physiographic and climatic condition.
- The limits of chloride, sulphate, bicarbonates total alkalinity, hardness, carbonates, bi-carbonates are not defined universally.
- It is seen that Na, Chloride, sulphate, total alkalinity, total hardness and bi-carbonates are on higher side. This is attributed to the nature of the aquifer being located within recent marine sediments and in close proximity of the sea.
- All these elements are treatable if the water is to be used for drinking purposes therefore do not pose any problem.
- The water can be treated after post extraction.
- However, if the water is to be used for construction purposes the presence of chlorine, sulphate will have a bearing. For safe construction activity Sulphate upto 4000ppm is used but safe limit is around 1500ppm. The safe limit for chlorite is 2000ppm.

The safe limits for metals as per different standards are presented in **Appendix -E**

6.3 Analysis of the organic compounds in soil

Hydrocarbons are not naturally occurring substances in the soil except in the area where there are petroleum shows, therefore there is no natural level with which these analysis can be compared. Most of the organic Hydrocarbon compounds are produced from hydrocarbons or

synthesized in laboratories or factories therefore in whatever percentage they are present they indicates a polluted environment. Constant research takes place to find the safe limits of these compounds.

There are huge number of organic compounds which have been synthesized and mostly used for industries and medicine. There are no universal norms/ survey limits set about these compounds. Most of the limits set by various countries group large number of compound into a group and prescribe a safe limit for a group of compounds.

In the analysis provided it has been found that the only standards available for most of the compounds analyzed are from the USA. Therefore, all these analysis have been compared with the survey levels and safety limits prescribed by various organizations of USA and adopted by the country.

There are large number of compounds for which no limit has been prescribed. Where no limits are prescribed it is found the limits have been set for direct intake by humans or fish etc. As soil is not taken as direct intake by humans etc , therefore these parameter do not apply in the present studies. It is also found that many of these chemicals are found to be non carcinogenic therefore no safe levels have been prescribed.

It is also found that many of these compounds are not stable for long time.

The analysis of the data reveals that the analyzed results are far below the known safe limits, thus area is not polluted **and there is no cause for further action.**

The analytic result of soil and the safe limits are presented in **Appendix E**.

6.4 Analysis of the organic compounds in ground water

Hydrocarbons are not naturally occurring substances in Ground water except in the area where there are petroleum shows surface, therefore there is no natural level with which these analysis can be compared, Most of the organic Hydrocarbon compounds are produced from hydrocarbons or synthesized in laboratories or factories therefore in whatever percentage they are present they indicate a polluted environment. Constant research takes place to find the safe limits of these compounds.

It is found that no country or study has set standards for the hydrocarbons in ground water. This itself clearly indicates that these compounds are not expected in the nature therefore their presence in whatever amount in groundwater amounts to be a pollutant. Secondly most of these compounds are manufactured therefore their presence in nature hence in ground water is not expected. However safety limits are set for Tap water as human beings may come in contact while workings in the environment were these compounds are manufactured.

In present case we have compared the analytic results with the **standards of tap wate**r as ground water may be used for drinking purposes and also as this area is near the port were petroleum and its products are produced or transported.

In the analysis provided it has been found that the only standards for tape water are available from the USA. All other countries have mostly grouped these compounds and provided standards for the group. In such case it has been found that the standards recommended by USA are more useful for comparisons.

There are large number of compounds for which no limit has been prescribed, where no limits are prescribed it is found the limit of intake directly has been prescribed per kg of human or animal weight. Therefore those values have no relevance where in present care.. It is also found that many of these chemicals are found to be non carcinogenic therefore no safe levels have been prescribed.

It is also found that many of these compounds are not stable for long time therefore cannot exist in soil therefore no limits can have been set.

The analysis of the data reveals that the analyzed results are far below the known safe limits for tap water therefore there is no cause for further action.

The analysis reveals that the area has not been polluted by hydrocarbon

The analyses of the results and the safe limits are presented in **Appendix- E.**

7.0 IMPORTANT NOTES

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8.0 SOFT COPY

Electronic copy of the contents of this report & appendices is attached to this report.

APPENDIX A

SITE PLAN


TP-16E
TP-22E
TP16E-Stock Pile
TP19E-Stock Pile
TP-15E
TP-21E
TP15E-Stock Pile
TP18E-Stock Pile
TP17E-Stock Pile
TP-20E
TP-14E
TP-13E
TP-12E
BH-03
BH-3E
BH-1E
TP-02E
BH-01
TP-04E
TP-06E
TP-08E
TP-10E
TP-03E
TP-07E
TP-09E
TP-01E
TP-05E
BH-02
BH-2E
BH-4E
BH-04
BH-05
BH-5E
© 2018 Google
Image © 2018 DigitalGlobe
Google earth
2005
Imagery Date: 5/4/2018 40 R 347149.43 m E 2816982.27 m N elev 6 m eye alt 1.33 km


TP-11E
TP-09E
TP-10E
BH-02
TP-08E
TP-07E
TP-05E
BH-1E
TP-06E
BH-01
BH-04
BH-4E
TP-03E
TP-04E
TP-01E
BH-03
BH-3E
TP-02E
BH-05
BH-5E
TP-12E
TP-14E
TP16E-Stock Pile
TP-16E
TP-15E
TP17E-Stock Pile
TP18E-Stock Pile
TP19E-Stock Pile
TP-20E
TP-21E
TP-22E
TP-13E
© 2018 Google
Image © 2018 DigitalGlobe
Google earth
2005
Imagery Date: 5/4/2018 40 R 347150.22 m E 2817132.32 m N elev 4 m eye alt 1.18 km

APPENDIX B

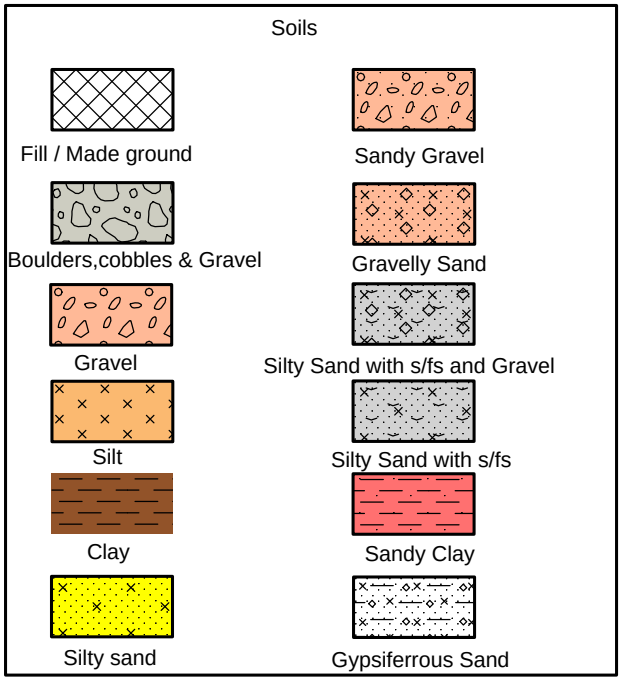
LOGS OF BORING & LOGS OF TRIAL PIT

APPENDIX B1

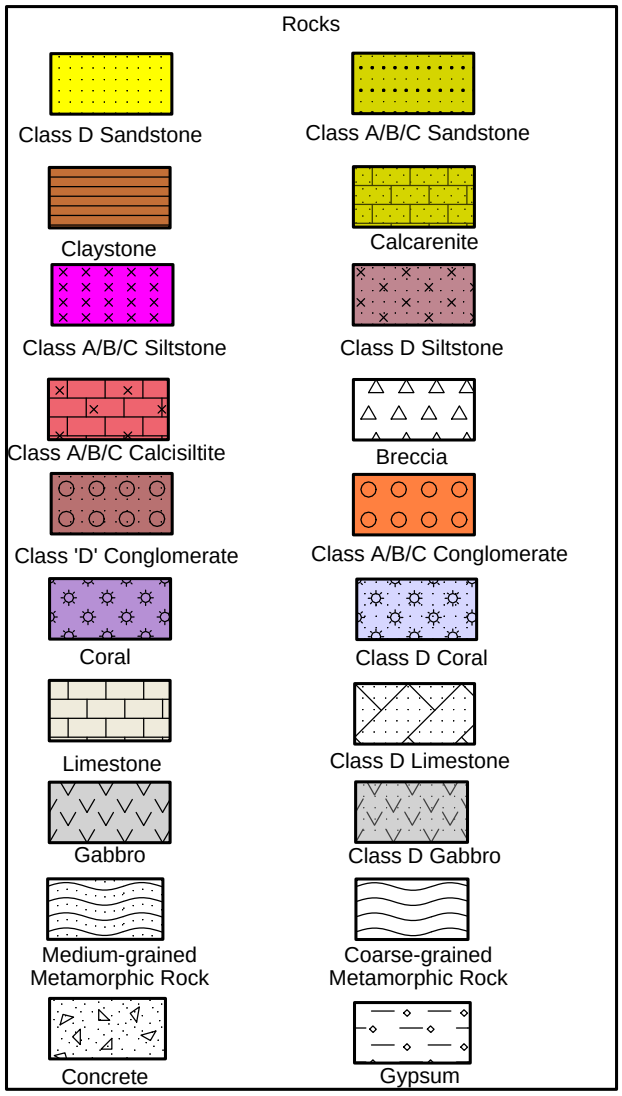
LOGS OF BORING

LEGEND TO BOREHOLE LOGS

Soils



Rocks



RELATIVE DENSITY OF GRANULAR SOILS

(BS 5930 : 1999-A2:2010)

SPT N Value (Blows/300mm)	Relative Density	Angle of Internal Friction *
0 - 4	Very loose	< 30°
4 - 10	Loose	30° - 35°
10 - 30	Medium dense	35° - 40°
30 - 50	Dense	40° - 45°
> 50	Very dense	> 45°

* After Meyerhof

CONSISTENCY OF COHESIVE SOILS

(BS 5930 : 1999-A2:2010)

Consistency	Undrained Shear Strength (kN/m²)
Very Soft	< 20
Soft	20 - 40
Firm	40 - 75
Stiff	75 - 150
Very Stiff	150 - 300
Hard	> 300

ROCK STRENGTH CLASSIFICATION

(BS 5930 : 1999-A2:2010)

Unconfined Compressive Strength (MN/m²)	Description
0.6 - 1.0	Extremely Weak
1 - 5	Very Weak
5 - 25	Weak
25 - 50	Medium Strong
50 - 100	Strong
100 - 200	Very Strong
> 200	Extremely Strong

APPROACH 4 CLASSIFICATION INCORPORATING MATERIAL AND MASS FEATURES (BS 5930 : 1999-A2:2010)		
Class	Classifier	Typical characteristics
A	Unweathered	Original strength, colour, fracture spacing
B	Partially weathered	Slightly reduced strength, slightly closer fracture spacing, weathering penetrating in from fractures, brown oxidation
C	Distinctly weathered	Further weakened, much closer fracture spacing grey reduction
D	Destructured	Greatly weakened, mottled, ordered lithorelics in matrix becoming weakened and disordered, bedding disturbed
E	Residual or reworked	Matrix with occasional altered random or 'apparent' lithorelics, beddding destroyed. Classed as reworked when foreign inclusions are present as a result of transportation.

Borehole Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Borehole No. BH-01** Sheet 1 of 1	ACES

Total Depth (m): 10 Ground Level (m): 4.124 Coordinates: N= 2,817,009.77 E= 346,967.64	Drilling Method: ROTARY DRILLING Boring Started: 06/06/18 Boring Completed: 06/06/18 Rig: RD-14 Driller: Adem	Drilling Medium: Polymer Boring Dia. (mm): 140/125 Core Dia. (mm): 85 Casing Dia. (mm): 136 Casing Depth (m): 10.00 Water Depth (m): 2.53

Scale (m)	Samples: Type and Number	Samples: Depth (m)	SPT Records: Field Records 0-15 (cm)	15-30 (cm)	30-45 (cm)	N Blows	Core Recovery: TCR (%)	SCR (%)	RQD (%)	UCS (MPa)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
0	DB1	0 - 0.5	-	-	-	-					**Dense**. brown, silty, fine to medium SAND.	(0.50) 0.5	3.62	
1	SPT1	0.5 - 0.95	5	6	6	12					**Medium dense to loose**. brown, silty, fine to medium SAND.	(1.45) 1.95	2.17	
2	SPT2	1.5 - 1.95	2	2	2	4					ROLLING. [Brown silty, fine to medium SAND]			
6	R1	2 - 10	-	-	-	-						(8.05)		
											END OF BORING.	10	-5.88	

Undisturbed Sample Key:	Disturbed Sample Key:	Abbreviations:	Remarks:
CS: Core Sample	P:Percussion	Ground Water Table	• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)
DB: Drive Barrel	SPT:Standard Penetration Test	TCR: Total Core Recovery	• Ground water table was encountered at 2.53m depth, i.e. R.L: +1.594m SHMD.
SH: Shelby Tube	AU:Auger	SCR: Solid Core Recovery	• Strength assessment of rock is based on UCS results.
		RQD: Rock Quality Designation	• Rock core description is based on BS 5930 : 2015.
		UCS:Unconfined Comp. Strength	
		NI: Non Intact Core	

Logged By: Jameel

Checked By: Engr. Savithri

Borehole Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Borehole No.** **BH-02** Sheet 1 of 1	ACES

Total Depth (m): 10 Ground Level (m): 4.191 Coordinates: N= 2,816,883.04 E= 346,750.83	Drilling Method: ROTARY DRILLING Boring Started: 03/06/18 Boring Completed: 03/06/18 Rig: RD-14 Driller: Adem	Drilling Medium: Polymer Boring Dia. (mm): 140/125 Core Dia. (mm): 85 Casing Dia. (mm): 136 Casing Depth (m): 10.00 Water Depth (m): 2.43

Scale (m)	Samples: Type and Number	Samples: Depth (m)	SPT Records: Field Records 0-15 (cm)	15-30 (cm)	30-45 (cm)	N Blows	Core Recovery: TCR (%)	SCR (%)	RQD (%)	UCS (MPa)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 0.5	-	-	-	-					Brown, silty, slightly gravelly, fine to medium SAND. Gravel sized fragments of basic rock.	(0.50) 0.5	3.69	
1	SPT1	0.5 - 0.95	15	19	22	41					**Dense**. brown, silty, slightly gravelly, fine to medium SAND. Gravel sized fragments of basic rock.	(1.00) 1.5	2.69	
2	SPT2	1.5 - 1.95	13	24	24	48					**Dense**, brown, silty, fine to medium SAND.	(0.45) 1.95	2.24	
3											ROLLING. [Brown silty, fine to medium SAND]			
4														
5														
6	R1	2 - 10	-	-	-	-						(8.05)		
7														
8														
9											END OF BORING.	10	-5.81	

Undisturbed Sample Key:	Disturbed Sample Key:	Abbreviations:	Remarks:
CS: Core Sample	P:Percussion	Ground Water Table	• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)
DB: Drive Barrel	SPT:Standard Penetration Test	TCR: Total Core Recovery	• Ground water table was encountered at 2.43m depth, i.e. R.L: +1.761m SHMD.
SH: Shelby Tube	AU:Auger	SCR: Solid Core Recovery	• Strength assessment of rock is based on UCS results.
		RQD: Rock Quality Designation	• Rock core description is based on BS 5930 : 2015.
		UCS:Unconfined Comp. Strength	
		NI: Non Intact Core	

Logged By: Jameel

Checked By: Engr. Savithri

Borehole Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Borehole No. BH-03** Sheet 1 of 1	ACES

Total Depth (m): 10 Ground Level (m): 4.532 Coordinates: N= 2,816,929.52 E= 347,121.22	Drilling Method: ROTARY DRILLING Boring Started: 03/06/18 Boring Completed: 03/06/18 Rig: RD-14 Driller: Adem	Drilling Medium: Polymer Boring Dia. (mm): 140/125 Core Dia. (mm): 85 Casing Dia. (mm): 136 Casing Depth (m): 10.00 Water Depth (m): 2.56

Scale (m)	Samples: Type and Number	Samples: Depth (m)	SPT Records: Field Records 0-15 (cm)	15-30 (cm)	30-45 (cm)	N Blows	Core Recovery: TCR (%)	SCR (%)	RQD (%)	UCS (MPa)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
0	DB1	0 - 0.5	-	-	-	-					Brown, silty, fine to medium SAND.	(0.50) 0.5	4.03	
1	SPT1	0.5 - 0.95	12	17	20	37					**Dense**, brown, silty, fine to medium SAND.	(1.45)		
2	SPT2	1.5 - 1.95	20	30	20	50						1.95	2.58	
3											ROLLING. [Brown silty, fine to medium SAND]			
4														
5														
6	R1	2 - 10	-	-	-	-						(8.05)		
7														
8														
9														
											END OF BORING.	10	-5.47	

Undisturbed Sample Key:	Disturbed Sample Key:	Abbreviations:	Remarks:
CS: Core Sample	P:Percussion	Ground Water Table	• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)
DB: Drive Barrel	SPT:Standard Penetration Test	TCR: Total Core Recovery	• Ground water table was encountered at 2.56m depth, i.e. R.L: +1.972m SHMD.
SH: Shelby Tube	AU:Auger	SCR: Solid Core Recovery	• Strength assessment of rock is based on UCS results.
		RQD: Rock Quality Designation	• Rock core description is based on BS 5930 : 2015.
		UCS:Unconfined Comp. Strength	
		NI: Non Intact Core	

Logged By: Jameel

Checked By: Engr. Savithri

Borehole Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Borehole No.** **BH-04** Sheet 1 of 1	ACES

Total Depth (m): 10 Ground Level (m): 4.312 Coordinates: N= 2,816,754.55 E= 346,878.01	Drilling Method: ROTARY DRILLING Boring Started: 04/06/18 Boring Completed: 04/06/18 Rig: RD-14 Driller: Adem	Drilling Medium: Polymer Boring Dia. (mm): 140/125 Core Dia. (mm): 85 Casing Dia. (mm): 136 Casing Depth (m): 10.00 Water Depth (m): 2.34

Scale (m)	Samples: Type and Number	Samples: Depth (m)	SPT Records: Field Records 0-15 (cm)	15-30 (cm)	30-45 (cm)	N Blows	Core Recovery: TCR (%)	SCR (%)	RQD (%)	UCS (MPa)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
0	DB1	0 - 0.5	-	-	-	-					Brown, silty, fine to medium SAND.	(0.50) 0.5	3.81	
1	SPT1	0.5 - 0.95	14	19	21	40					**Dense**, brown, silty, fine to medium SAND.	(1.00) 1.5	2.81	
2	SPT2	1.5 - 1.92	21	31	19/12.5	>50					**Very dense**, brown, silty, fine to medium SAND.	(0.45) 1.95	2.36	
											ROLLING. [Brown silty, fine to medium SAND]			
6	R1	2 - 10	-	-	-	-						(8.05)		
											END OF BORING.	10	-5.69	

Undisturbed Sample Key:	Disturbed Sample Key:	Abbreviations:	Remarks:
CS: Core Sample	P:Percussion	Ground Water Table	• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)
DB: Drive Barrel	SPT:Standard Penetration Test	TCR: Total Core Recovery	• Ground water table was encountered at 2.34m depth, i.e. R.L: +1.972m SHMD.
SH: Shelby Tube	AU:Auger	SCR: Solid Core Recovery	• Strength assessment of rock is based on UCS results.
		RQD: Rock Quality Designation	• Rock core description is based on BS 5930 : 2015.
		UCS:Unconfined Comp. Strength	
		NI: Non Intact Core	

Logged By: Jameel

Checked By: Engr. Savithri

Borehole Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Borehole No. BH-05** Sheet 1 of 1	ACES

Total Depth (m): 10 Ground Level (m): 4.632 Coordinates: N= 2,816,667.85 E= 347,034.11	Drilling Method: ROTARY DRILLING Boring Started: 04/06/18 Boring Completed: 04/06/18 Rig: RD-14 Driller: Adem	Drilling Medium: Polymer Boring Dia. (mm): 140/125 Core Dia. (mm): 85 Casing Dia. (mm): 136 Casing Depth (m): 10.00 Water Depth (m): 2.51

Scale (m)	Samples: Type and Number	Samples: Depth (m)	SPT Records: Field Records 0-15 (cm)	15-30 (cm)	30-45 (cm)	N Blows	Core Recovery: TCR (%)	SCR (%)	RQD (%)	UCS (MPa)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 0.5	-	-	-	-					Brown, silty, slightly gravelly, slightly shelly, fine to medium SAND.	(0.50) 0.5	4.13	
	SPT1	0.5 - 0.95	13	18	17	35					**Dense to Medium dense**, brown, silty, fine to medium SAND.	(1.45)		
2	SPT2	1.5 - 1.95	2	5	12	17						1.95	2.68	
											ROLLING. [Brown silty, fine to medium SAND]			
3														
4														
5														
6	R1	2 - 10	-	-	-	-						(8.05)		
7														
8														
9											END OF BORING.	10	-5.37	

Undisturbed Sample Key:	Disturbed Sample Key:	Abbreviations:	Remarks:
CS: Core Sample	P:Percussion	Ground Water Table	• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)
DB: Drive Barrel	SPT:Standard Penetration Test	TCR: Total Core Recovery	• Ground water table was encountered at 2.51m depth, i.e. R.L: +2.122m SHMD.
SH: Shelby Tube	AU:Auger	SCR: Solid Core Recovery	• Strength assessment of rock is based on UCS results.
		RQD: Rock Quality Designation	• Rock core description is based on BS 5930 : 2015.
		UCS:Unconfined Comp. Strength	
		NI: Non Intact Core	

Logged By: Jameel

Checked By: Engr. Savithri

APPENDIX B2

LOGS OF TRIAL PIT

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No. TP-01E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.532 Coordinates: N= 2,816,742.74 E= 347,016.17	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.53	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.53	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-02E** Sheet 1 of 1	ACES

		Size of Test Pit		
Ground Level (m): 4.712 Coordinates: N= 2,816,904.11 E= 347,112.77	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.71	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.71	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No. TP-03E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.100 Coordinates: N= 2,816,818.54 E= 346,953.31	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.10	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.10	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-04E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.201 Coordinates: N= 2,816,898.69 E= 347,001.59	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.20	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.20	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-05E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.325 Coordinates: N= 2,816,815.45 E= 346,861.19	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.33	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.33	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-06E** Sheet 1 of 1	ACES

		Size of Test Pit		
Ground Level (m): 4.151 Coordinates: N= 2,816,939.98 E= 346,932.38	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.15	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.15	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-07E** Sheet 1 of 1	ACES

		Size of Test Pit		
Ground Level (m): 3.432 Coordinates: N= 2,816,876.66 E= 346,826.24	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	2.43	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	0.43	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-08E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 3.480 Coordinates: N= 2,816,920.13 E= 346,851.86	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown,silty, fine to medium SAND.	(1) 1	2.48	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	0.48	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-09E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.241 Coordinates: N= 2,816,918.90 E= 346,760.15	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.24	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.24	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-10E** Sheet 1 of 1	ACES

		Size of Test Pit		
Ground Level (m): 3.352 Coordinates: N= 2,816,960.06 E= 346,785.31	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	2.35	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	0.35	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-11E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.311 Coordinates: N= 2,816,942.49 E= 346,721.62	Excavation Method: MECHANICAL Excavation Date: 04/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.31	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.31	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-12E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.435 Coordinates: N= 2,816,956.49 E= 347,199.14	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.44	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.44	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-13E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.481 Coordinates: N= 2,816,906.34 E= 347,334.60	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.48	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.48	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-14E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 5.040 Coordinates: N= 2,817,097.95 E= 347,261.03	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	4.04	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	2.04	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-15 Stock Pile** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 11.789 Coordinates: N= 2,817,183.49 E= 347,313.48	Excavation Method: MECHANICAL Excavation Date: 06/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		0.5	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 0.5	Brown, silty, fine to medium SAND.	(0.5)		
				0.5	11.29	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-15E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 44.778 Coordinates: N= 2,817,184.16 E= 347,312.73	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	43.78	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	41.78	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-16 Stock Pile** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 6.430 Coordinates: N= 2,817,287.33 E= 347,379.71	Excavation Method: MECHANICAL Excavation Date: 06/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		0.5	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 0.5	Brown, silty, fine to medium SAND.	(0.5)		
				0.5	5.93	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No. TP-16E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.725 Coordinates: N= 2,817,304.15 E= 347,384.89	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	3.73	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	1.73	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-17 Stock Pile** Sheet 1 of 1	ACES

		Size of Test Pit		
Ground Level (m): 5.448 Coordinates: N= 2,817,079.47 E= 347,290.17	Excavation Method: MECHANICAL Excavation Date: 06/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		0.5	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 0.5	Brown, silty, fine to medium SAND.	(0.5)		
				0.5	4.95	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-18 Stock Pile** Sheet 1 of 1	

Ground Level (m): 11.503 Coordinates: N= 2,817,160.75 E= 347,351.32	Excavation Method: MECHANICAL Excavation Date: 06/06/18 Water Depth (m): NE	Size of Test Pit		
		Depth (m)	Length (m)	Width (m)
		0.5	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 0.5	Brown, silty, fine to medium SAND.	(0.5)		
				0.5	11.00	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-19 Stock Pile** Sheet 1 of 1	ACES

		Size of Test Pit		
Ground Level (m): 16.282 Coordinates: N= 2,817,252.61 E= 347,438.08	Excavation Method: MECHANICAL Excavation Date: 06/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		0.5	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 0.5	Brown, silty, fine to medium SAND.	(0.5)		
				0.5	15.78	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-20E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 4.225 Coordinates: N= 2,817,048.54 E= 347,340.61	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1)		
1				1	3.23	
	DB2	1 - 2	Brown, silty, fine SAND.			
2				(2)		
	DB3	2 - 3				
3				3	1.23	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-21E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 44.581 Coordinates: N= 2,817,135.44 E= 347,392.31	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	43.58	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	41.58	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

Test Pit Log

Project: Proposed SEWA Hamriyah Power Plant Project Ref. No.: SD18000031 Location: Sharjah Client: M/S. TECNICAS REUNIDAS	**Test Pit No.** **TP-22E** Sheet 1 of 1	

		Size of Test Pit		
Ground Level (m): 16.302 Coordinates: N= 2,817,243.15 E= 347,458.83	Excavation Method: MECHANICAL Excavation Date: 05/06/18 Water Depth (m): NE	Depth (m)	Length (m)	Width (m)
		3	1.50	1.50

Scale (m)	Samples: Type and Number	Samples: Depth (m)	Description of Strata	Depth (Thickness) (m)	Reduced Level (m)	Legend
1	DB1	0 - 1	Brown, silty, fine to medium SAND.	(1) 1	15.30	
2	DB2	1 - 2	Brown, silty, fine SAND.	(2)		
3	DB3	2 - 3		3	13.30	

END OF TRIAL PIT.

Remarks:

* The samples were described in accordance with BS 5930 : 2015.
• Ground level are related to Sharjah Halcrow Municipality Datum. (SHMD)

Sample Key:

DB: (Bulk Sample)

Abbreviations:

Ground Water Table NE : Not Encountered

Logged By: Jameel

Checked By: Engr. Savithri

APPENDIX C

FIELD TESTS

APPENDIX C1

GROUNDWATER TABLE READINGS FROM INSTALLED STANDPIPE PIEZOMETERS

GROUND WATER TABLE READINGS IN PIEZOMETER

Client	**M/S. TECNICAS REUNIDAS**	**Report No.**	**SD18000031**
Consultant	**NP**	**Date Reported**	**July 15, 2018**
Project Name	**Proposed SEWA Hamriyah Power Plant**	**Request No.**	**SD18000031**

Piezometer No.	Elevation (mSHMD)	Date	Time	Ground Water depth Below EGL (m)	GW Reduced Level (DMD) (m RL)
BH-01	4.124	12/06/18	7:40 AM	2.53	1.59
BH-02	4.191	12/06/18	7:55 AM	2.43	1.76
BH-03	4.532	12/06/18	7:50 AM	2.56	1.97
BH-04	4.312	12/06/18	7:45 AM	2.34	1.97
BH-05	4.632	12/06/18	7:35 AM	2.51	2.12

APPENDIX C2

IN-SITU TEST RESULTS OF WATER SAMPLES

In-situ Test Result of Water Samples								
Client	M/S. TECNICAS REUNIDAS			Request No.			SD18000031	
Project	Proposed SEWA Hamriyah Power Plant			Date Received			12/06/2018	
Sample Description	Ground Water			Date Tested			18/06/2018	
Elements	Unit	Test Method	MDL mg/L	Results				
				BH-1	BH-2	BH-3	BH-4	BH-5
pH*	-			7.06	7.48	7.45	7.67	7.55
Conductivity	ms/cm			30.72	64.59	63.67	62.10	48.31
TDS	ppt			15.37	32.32	31.85	31.05	24.15
Salinity	pSu			18.95	43.58	42.87	41.60	31.35
Temperature	°C			28	28	29	28.2	28.1

Note: * DAC Accredited

APPENDIX D

LABORATORY TEST RESULTS

APPENDIX D1

CHEMICAL TEST RESULTS OF WATER SAMPLES

ANALYSIS OF WATER

TEST REPORT ON ANALYSIS OF WATER

Owner	M/S. TECNICAS REUNIDAS	**Report No.**	SD18000031
Contractor	N.P.	**Date Reported**	15/07/18
Consultant	N.P.	**Sample No.**	SD18000031
Project No.	N.P.	**Request No.**	SD18000031
Project Name	Proposed SEWA Hamriyah Power Plant	**Client Reference**	Request Dated 13/06/2018(SC18-096 and S/D18-0031)

Sample Description	Water	**Sample Size**	5 Samples
Source	BH - 1,2,3,4,5	**Sampling Date**	12/06/18
Sample Location	Site	**Sampling Cert. No.**	N.P.
Lot No.	N.P.	**Sampling Method**	N.P.
Lot Size	N.P.	**Sampled By**	Client's Rep.

Test Method	See Below	**Sample Brt. In By**	Client's Rep.
Test Method Var.	None	**Date Received**	13/06/18
Tested By:	Princess, Hans	**Date Tested**	13 - 19/06/2018

I. CHEMICAL ANALYSIS:

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
Ammoniacal Nitrogen	mg/l	0.02	APHA 4500 NH_3 (F)	1.60	0.04	0.03	2.25	0.9	Not defined	Not defined
Flouride[1]	mg/l	0.1	APHA 4500 F^- (D)	0.9	1.5	1.5	1.6	1.5	Not defined	Not defined
Nitrate	mg/l	0.02	APHA 450 NO_3 (E)	0.40	0.04	0.31	0.22	0.13	Not defined	1.00E+04
Nitrite	mg/l	0.02	APHA 450 NO_2 (B)	0.03	0.03	0.03	<0.02	<0.02	Not defined	1.00E+03
Phosphate as PO_4	mg /l	0.6	APHA 4500 P (C)	1.3	0.7	0.8	0.6	<0.6	Not defined	Not defined

II. ORGANICS:

BTEX

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
Benzene[1]	µg/l	0.57	USEPA 8260 C	<0.57	<0.57	<0.57	<0.57	<0.57	30	5.0E+00
Toluene[1]	µg/l	0.88		587	199	164	<0.88	<0.88	1000	1.0E+03
Ethylbenzene[1]	µg/l	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	150	7.0E+02
Xylene (total)[1]	µg/l	2.69		<2.69	<2.69	<2.69	<2.69	<2.69	70	1.0E+04
BTEX[1]	µg/l	5.02		587	199	164	<5.02	<5.02	-	-

TOTAL PETROLEUM HYDROCARBONS (TPHCWG)

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
TPH C8-C38 ALIPHATIC	mg/L	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	Not defined	Not defined
TPH C6-C8 AROMATIC[1]	mg/L	0.01	USEPA 8260C	<0.01	<0.01	<0.01	<0.01	<0.01	Not defined	Not defined
TPH C10-C22 AROMATIC	mg/L	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.1	Not defined	Not defined

POLYNUCLEAR AROMATIC HYDROCARBONS

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
Naphthalene	µg/l	0.05	USEPA 8270 D	<0.05	<0.05	<0.05	<0.05	<0.05	70	1.50E+05
Acenaphthylene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.40E+05
Acenaphthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.40E+05
Fluorene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.90E+05
Phenanthrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	5	2.20E+05
Anthracene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	5	2.20E+06
Fluoranthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	1	2.90E+05
Pyrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.20E+05
Benz(a)anthracene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.5	2.00E+03
Chrysene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.2	2.00E+05
Benzo(b)fluoranthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.00E+03
Benzo(k)fluoranthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.00E+04
Benzo(a)pyrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.0E-01
Indeno(1,2,3-cd)pyrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.00E+03
Dibenz(a,h)anthracene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.00E+02
Benzo(g,h,i)perylene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.20E+05
Polynuclear Aromatic Hydrocarbons (PAHs)	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	-	-

POLYCHLORINATED BIPHENYLS

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	µg/l	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
3,4,4',5-Tetrachlorobiphenyl (PCB81)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined
Total PCBs	µg/l	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	0.01	Not defined

SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
N-Nitrosodimethylamine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.00E+00
Pyridine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	30	7.30E+03
Phenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	2000	2.20E+06
Aniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.60E+04
Bis(2-chhloroethyl) ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.90E+02
2-Chlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	100	3.70E+04
1,3-Dichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	50	6.00E+04
1,4-Dichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	50	7.5E+01
Benzyl alcohol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+05
2-Methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.70E+05
1,2-Dichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	50	6.0E+02
Bis(2-chloroisopropyl) ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+03
4-Methylphenol/3-Methylphenol	mg/L	0.001		0.058	<0.001	<0.001	<0.001	<0.001	Not defined	3.70E+05
N-Nitrosodi-n-propylamine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+01
Hexachloroethane	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.10E+03
Nitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
Isophorone	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+05
2,4-Dimethylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+05
2-Nitrophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
Bis(2-chloroethoxy)methane	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.90E+02
2,4-Dichlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	30	2.20E+04
1,2,4-Trichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	7.0E+01

Naphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	70	1.50E+05
4-Chloroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Hexachlorobutadiene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.60E+03
4-Chloro-3-methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
2-Methylnaphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+04
1-Methylnaphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.00E+03
Hexachlorocyclopentadiene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.0E+01
2,4,6-Trichlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	7.30E+03
2,4,5-Trichlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	7.30E+05
2-Chloronaphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	6	5.80E+05
2-Nitroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+00
1,4-Dinitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+02
Dimethyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.80E+06
1,3-Dinitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+02
2,6-Dinitrotoluene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.00E+02
1,2-Dinitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Acenaphthylene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.40E+05
3-Nitroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+03
Acenaphthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.40E+05
2,4-Dinitrophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
4-Nitrophenol	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
2,4-Dinitrotoluene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.00E+02
Dibenzofuran	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+04
2,3,5,6-Tetrachlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	2.20E+05
2,3,4,6-Tetrachlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	2.20E+05
Diethyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.80E+06
4-Chlrophenyl phenyl ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.40E-02
4-Nitroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.00E+04
4,6-Dinitro-2-methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Fluorene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+05
N-nitrosodiphenylamine (diphenylamine)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.80E+05
1,2-Diphenylhydrazine (as azobenzene)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.90E+03
4-Bromophenyl phenyl ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.40E+01
Hexachlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.5	1.0E+00
Pentachlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	3	1.0E+00
Phenanthrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	5	2.20E+05
Anthracene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	5	2.20E+06
Carbazole	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.00E+04
Di-n-butyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Fluoranthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	1	2.90E+05
Benzidine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	8.90E-01

3,3'-Dimethylbenzidine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Pyrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+05
Butyl benzyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Bis(2-ethylhexyl) adipate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Bis(2-ethylhexyl) phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	6.0E+00
3,3'-Dichlorobenzidine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.50E+02
Benz(a)anthracene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.5	Not defined
Chrysene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.2	2.00E+05
Di-n-octyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+04
Benzo(b)fluoranthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.00E+03
Benzo(k)fluoranthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.00E+04
Benzo(a)pyrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.0E-01
Indeno(1,2,3-cd)pyrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.00E+03
Dibenz(a,h)anthracene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.00E+02
Benzo(g,hi)perylene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.20E+05
TIC's	mg/L	-		ND	ND	ND	ND	ND	-	-

VOLATILE ORGANIC COMPOUNDS + TIC's

Tests	Unit	MDL	Test Method	Test Results						
				BH-01	BH-02	BH-03	BH-04	BH-05	Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
Dichlorodifluoromethane[1]	µg/L	0.92	USEPA 8260C	<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	Not defined
Chloromethane[1]	µg/L	0.84		<0.84	<0.84	<0.84	<0.84	<0.84	Not defined	1.60E+04
Vinyl chloride[1]	µg/L	3.13		<3.13	<3.13	<3.13	<3.13	<3.13	5	2.0E+00
Bromomethane[1]	µg/L	2.08		<2.08	<2.08	<2.08	<2.08	<2.08	Not defined	1.00E+04
Chloroethane[1]	µg/L	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	2.90E+06
Trichlorofluoromethane[1]	µg/L	0.58		<0.58	<0.58	<0.58	<0.58	<0.58	Not defined	2.20E+06
Acetonitrile[1]	µg/L	1.52		<1.52	<1.52	<1.52	<1.52	<1.52	Not defined	2.30E+05
Acetone[1]	µg/L	3.23		<3.23	<3.23	<3.23	<3.23	<3.23	Not defined	6.60E+06
Diethyl ether[1]	µg/L	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	Not defined
1,1-Dichloroethene[1]	µg/L	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	10.00	Not defined
Iodomethane[1]	µg/L	0.71		<0.71	<0.71	<0.71	<0.71	<0.71	Not defined	1.00E+04
Propionitrile[1]	µg/L	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.90E+03
Acrylonitrile[1]	µg/L	1.27		<1.27	<1.27	<1.27	<1.27	<1.27	5.00	3.80E+02
Methylene chloride[1]	µg/L	1.90		<1.90	<1.90	<1.90	<1.90	<1.90	Not defined	5.0E+00
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/L	1.01		<1.01	<1.01	<1.01	<1.01	<1.01	Not defined	Not defined
Allyl chloride[1]	µg/L	0.93		<0.93	<0.93	<0.93	<0.93	<0.93	Not defined	7.30E+04
Carbon disulfide[1]	µg/L	1.79		<1.79	<1.79	<1.79	<1.79	<1.79	Not defined	7.30E+05
trans-1,2-Dichloroethene[1]	µg/L	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	Not defined	Not defined
MTBE[1]	µg/L	1.44		<1.44	<1.44	<1.44	<1.44	<1.44	9.4	7.30E+04
1,1-Dichloroethane[1]	µg/L	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	10.00	Not defined
Chloroprene[1]	µg/L	1.21		<1.21	<1.21	<1.21	<1.21	<1.21	Not defined	Not defined
2-Butanone (MEK)[1]	µg/L	3.84		<3.84	<3.84	<3.84	<3.84	<3.84	Not defined	4.40E+06

Methacrylonitrile[1]	µg/L	1.09		<1.09	<1.09	<1.09	<1.09	<1.09	Not defined	1.50E+04
cis-1,2-Dichloroethene[1]	µg/L	0.56		<0.56	<0.56	<0.56	<0.56	<0.56	20	Not defined
Bromochloromethane[1]	µg/L	1.02		<1.02	<1.02	<1.02	<1.02	<1.02	Not defined	2.90E+05
Chloroform[1]	µg/L	1.18		<1.18	<1.18	<1.18	<1.18	<1.18	400.00	8.0E+01(F)
Methyl acrylate[1]	µg/L	0.66		<0.66	<0.66	<0.66	<0.66	<0.66	Not defined	1.50E+04
2,2-Dichloropropane[1]	µg/L	1.41		<1.41	<1.41	<1.41	<1.41	<1.41	80	3.00E+03
Tetrahydrofuran[1]	µg/L	1.70		<1.70	<1.70	<1.70	<1.70	<1.70	300.00	2.70E+04
1,2-Dichlorethane[1]	µg/L	0.46		<0.46	<0.46	<0.46	<0.46	<0.46	400.00	5.0E+00
1,1,1-Trichloroethane[1]	µg/L	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	300.00	2.0E+02
1,1-Dichloropropene[1]	µg/L	1.24		<1.24	<1.24	<1.24	<1.24	<1.24	Not defined	3.80E+02
Carbon Tetrachloride[1]	µg/L	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	5.0E+00
Benzene[1]	µg/L	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	30	5.0E+00
Dibromomethane[1]	µg/L	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	Not defined	2.70E+01
1,2-Dichloropropane[1]	µg/L	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	80	5.0E+00
Trichloroethene[1]	µg/L	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	500.00	Not defined
Bromodichloromethane[1]	µg/L	1.06		<1.06	<1.06	<1.06	<1.06	<1.06	Not defined	8.0E+01(F)
Methyl methacrylate[1]	µg/L	1.31		<1.31	<1.31	<1.31	<1.31	<1.31	Not defined	3.70E+05
cis-1,3-Dichloropropene[1]	µg/L	1.17		<1.17	<1.17	<1.17	<1.17	<1.17	Not defined	3.80E+02
4-Methyl-2-pentanone (MIBK)[1]	µg/L	3.30		<3.30	<3.30	<3.30	<3.30	<3.30	Not defined	5.80E+05
trans-1,3-Dichloropropene[1]	µg/L	1.17		<1.17	<1.17	<1.17	<1.17	<1.17	Not defined	2.00E+03
1,1,2-Trichloroethane[1]	µg/L	0.92	USEPA 8260C	<0.92	<0.92	<0.92	<0.92	<0.92	130.00	5.0E+00
Toluene[1]	µg/L	0.88		587	199	164	<0.88	<0.88	1000	1.0E+03
1,3-Dichloropropane[1]	µg/L	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	1000	2.00E+03
Ethyl methacrylate[1]	µg/L	1.07		<1.07	<1.07	<1.07	<1.07	<1.07	Not defined	6.60E+05
2-Hexanone[1]	µg/L	2.19		<2.19	<2.19	<2.19	<2.19	<2.19	Not defined	3.70E+04
Dibromochloromethane[1]	µg/L	0.82		<0.82	<0.82	<0.82	<0.82	<0.82	Not defined	8.0E+01(F)
1,2-Dibromoethane-EDB[1]	µg/L	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	5.0E-02
Tetrachloroethene[1]	µg/L	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	40	Not defined
1,1,1,2-Tetrachloroethane[1]	µg/L	1.04		<1.04	<1.04	<1.04	<1.04	<1.04	Not defined	Not defined
Chlorobenzene[1]	µg/L	0.6		<0.60	<0.60	<0.60	<0.60	<0.60	180	1.0E+02
Ethylbenzene[1]	µg/L	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	150	7.0E+02
m & p- Xylene[1]	µg/L	1.90		<1.90	<1.90	<1.90	<1.90	<1.90	70 (mixed isomers)	1.0E+04 Xylenes in general
Bromoform[1]	µg/L	0.75		<0.75	<0.75	<0.75	<0.75	<0.75	Not defined	8.0E+01(F)
cis-1,4-Dichloro-2-butene[1]	µg/L	1.11		<1.11	<1.11	<1.11	<1.11	<1.11	Not defined	Not defined
Styrene[1]	µg/L	0.83		<0.83	<0.83	<0.83	<0.83	<0.83	300	1.0E+02
1,1,2,2-Tetrachloroethane[1]	µg/L	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	Not defined	Not defined
o-Xylene[1]	µg/L	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	70 (mixed isomers)	1.0E+04 Xylenes in general
1,2,3-Trichloropropane[1]	µg/L	1.20		<1.20	<1.20	<1.20	<1.20	<1.20	Not defined	Not defined
trans-1,4-Dichloro-2-butene[1]	µg/L	1.52		<1.52	<1.52	<1.52	<1.52	<1.52	Not defined	Not defined
Isopropylbenzene[1]	µg/L	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	Not defined	Not defined
Bromobenzene[1]	µg/L	1.19		<1.19	<1.19	<1.19	<1.19	<1.19	Not defined	Not defined

n-Propylbenzene[1]	µg/L	1.26		<1.26	<1.26	<1.26	<1.26	<1.26	Not defined	Not defined
2-Chlorotoluene[1]	µg/L	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	Not defined
4-Chlorotoluene[1]	µg/L	1.22		<1.22	<1.22	<1.22	<1.22	<1.22	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/L	1.08		<1.08	<1.08	<1.08	<1.08	<1.08	Not defined	Not defined
Pentachloroethane[1]	µg/L	1.18		<1.18	<1.18	<1.18	<1.18	<1.18	Not defined	Not defined
tert-Butylbenzene[1]	µg/L	1.06		<1.06	<1.06	<1.06	<1.06	<1.06	Not defined	Not defined
1,2,4-Trimethylbenzene[1]	µg/L	1.05		<1.05	<1.05	<1.05	<1.05	<1.05	Not defined	Not defined
sec-Butylbenzene[1]	µg/L	0.97		<0.97	<0.97	<0.97	<0.97	<0.97	Not defined	Not defined
1,3-Dichlorobenzene[1]	µg/L	0.94		<0.94	<0.94	<0.94	<0.94	<0.94	50	Not defined
1,4-Dichlorobenzene[1]	µg/L	1.25	USEPA 8260C	<1.25	<1.25	<1.25	<1.25	<1.25	50	7.5E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/L	1.50		<1.50	<1.50	<1.50	<1.50	<1.50	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/L	0.93		<0.93	<0.93	<0.93	<0.93	<0.93	50	6.0E+02
n-Butylbenzene[1]	µg/L	1.88		<1.88	<1.88	<1.88	<1.88	<1.88	Not defined	Not defined
1,2-Dibromo-3-Chloropropane[1]	µg/L	2.50		<2.50	<2.50	<2.50	<2.50	<2.50	Not defined	2.0E-01
1,2,4-Trichlorobenzene[1]	µg/L	1.78		<1.78	<1.78	<1.78	<1.78	<1.78	10	7.0E+01
Naphthalene[1]	µg/L	3.92		<3.92	<3.92	<3.92	<3.92	<3.92	70.00	Not defined
Hexachlorobutadiene[1]	µg/L	1.40		<1.40	<1.40	<1.40	<1.40	<1.40	Not defined	Not defined
1,2,3-Trichlorobenzene[1]	µg/L	0.93		<0.93	<0.93	<0.93	<0.93	<0.93	10	Not defined
TIC's	µg/L	-		N.D.	N.D.	N.D.	N.D.	N.D.	-	-

Notes:

1. ISO/IEC 17025-2005 Accredited Test: [1]-ENAS
2. The test results relate only to the item(s) tested. This report shall not be reproduced except in full, without written approval of ACES.
3. 22nd Edition of APHA Methods is used.
4. **ND**: Not Detected.
5. In absence of reference values within Dutch Intervention Values (2017) and US EPA (2017) MCL; limit values from "Texas Risk Reduction Program" were considered.

ANALYSIS OF WATER ADDITIONAL WORKS

TEST REPORT ON ANALYSIS OF WATER

Owner	ACES - Dubai	**Report No.**	HMR18006041
Contractor	Not Provided	**Date Reported**	15/07/18
Consultant	Not Provided	**Sample No.**	HMS18004019
Project No.	Not Provided	**Request No.**	HMQ18004019
Project Name	Not Provided	**Client Reference**	Request Dated 08/07/2018(SC18-096 and SD18000031)

Sample Description	Water	**Sample Size**	5 Samples
Source	PZ BH-01E,02E,03E,04E,05E	**Sampling Date**	08/07/18
Sample Location	Site	**Sampling Cert. No.**	Not Provided
Lot No.	Not Provided	**Sampling Method**	Not Provided
Lot Size	Not Provided	**Sampled By**	Client's Rep.

Test Method	See Below	**Sample Brt. In By**	Client's Rep.
Test Method Var.	None	**Date Received**	08/07/18
Tested By:	Princess	**Date Tested**	09 - 14/07/2018

I. CHEMICAL ANALYSIS:

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater	US EPA (2017) MCL (µg/l
				BH-01E	BH-02E	BH-03E	BH-04E	BH-05E		
Ammoniacal Nitrogen	mg/l	0.02	APHA 4500 NH_3 (F)	1.26	0.65	1.55	2.7	1.6	Not defined	Not defined
Flouride[1]	mg/l	0.1	APHA 4500 F^- (D)	1.3	0.7	1.9	1.9	1.8	Not defined	Not defined
Nitrate	mg/l	0.02	APHA 450 NO_3 (E)	0.04	0.09	<0.02	0.04	0.09	Not defined	1.00E+04
Nitrite	mg/l	0.02	APHA 450 NO_2 (B)	<0.02	0.26	<0.02	<0.02	<0.02	Not defined	1.00E+03
Phosphate as PO_4	mg /l	0.6	APHA 4500 P (C)	<0.6	<0.6	<0.6	<0.6	<0.6	Not defined	Not defined

II. ORGANICS:

BTEX

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
				BH-01E	BH-02E	BH-03E	BH-04E	BH-05E		
Benzene[1]	µg/l	0.57	USEPA 8260 C	<0.57	<0.57	<0.57	<0.57	<0.57	30	5.0E+00
Toluene[1]	µg/l	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	1000	1.0E+03
Ethylbenzene[1]	µg/l	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	150	7.0E+02
Xylene (total)[1]	µg/l	2.69		<2.69	<2.69	<2.69	<2.69	<2.69	70	1.0E+04
BTEX[1]	µg/l	5.02		<5.02	<5.02	<5.02	<5.02	<5.02	-	-

VOLATILE ORGANIC COMPOUNDS + TIC's

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
				BH-01E	BH-02E	BH-03E	BH-04E	BH-05E		
Dichlorodifluoromethane[1]	µg/L	0.92	USEPA 8260C	<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	Not defined
Chloromethane[1]	µg/L	0.84		<0.84	<0.84	<0.84	<0.84	<0.84	Not defined	1.60E+04
Vinyl chloride[1]	µg/L	3.13		<3.13	<3.13	<3.13	<3.13	<3.13	5	2.0E+00
Bromomethane[1]	µg/L	2.08		<2.08	<2.08	<2.08	<2.08	<2.08	Not defined	1.00E+04
Chloroethane[1]	µg/L	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	2.90E+06
Trichlorofluoromethane[1]	µg/L	0.58		<0.58	<0.58	<0.58	<0.58	<0.58	Not defined	2.20E+06
Acetonitrile[1]	µg/L	1.52		<1.52	<1.52	<1.52	<1.52	<1.52	Not defined	2.30E+05
Acetone[1]	µg/L	3.23		<3.23	<3.23	<3.23	<3.23	<3.23	Not defined	6.60E+06

Diethyl ether[1]	µg/L	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	Not defined
1,1-Dichloroethene[1]	µg/L	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	10.00	Not defined
Iodomethane[1]	µg/L	0.71		<0.71	<0.71	<0.71	<0.71	<0.71	Not defined	1.00E+04
Propionitrile[1]	µg/L	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.90E+03
Acrylonitrile[1]	µg/L	1.27		<1.27	<1.27	<1.27	<1.27	<1.27	5.00	3.80E+02
Methylene chloride[1]	µg/L	1.90		<1.90	<1.90	<1.90	<1.90	<1.90	Not defined	5.0E+00
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/L	1.01		<1.01	<1.01	<1.01	<1.01	<1.01	Not defined	Not defined
Allyl chloride[1]	µg/L	0.93		<0.93	<0.93	<0.93	<0.93	<0.93	Not defined	7.30E+04
Carbon disulfide[1]	µg/L	1.79		<1.79	<1.79	<1.79	<1.79	<1.79	Not defined	7.30E+05
trans-1,2-Dichloroethene[1]	µg/L	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	Not defined	Not defined
MTBE[1]	µg/L	1.44		<1.44	<1.44	<1.44	<1.44	<1.44	9.4	7.30E+04
1,1-Dichloroethane[1]	µg/L	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	10.00	Not defined
Chloroprene[1]	µg/L	1.21		<1.21	<1.21	<1.21	<1.21	<1.21	Not defined	Not defined
2-Butanone (MEK)[1]	µg/L	3.84		<3.84	<3.84	<3.84	<3.84	<3.84	Not defined	4.40E+06
Methacrylonitrile[1]	µg/L	1.09		<1.09	<1.09	<1.09	<1.09	<1.09	Not defined	1.50E+04
cis-1,2-Dichloroethene[1]	µg/L	0.56		<0.56	<0.56	<0.56	<0.56	<0.56	20	Not defined
Bromochloromethane[1]	µg/L	1.02		<1.02	<1.02	<1.02	<1.02	<1.02	Not defined	2.90E+05
Chloroform[1]	µg/L	1.18		<1.18	<1.18	<1.18	<1.18	<1.18	400.00	8.0E+01(F)
Methyl acrylate[1]	µg/L	0.66		<0.66	<0.66	<0.66	<0.66	<0.66	Not defined	1.50E+04
2,2-Dichloropropane[1]	µg/L	1.41		<1.41	<1.41	<1.41	<1.41	<1.41	80	3.00E+03
Tetrahydrofuran[1]	µg/L	1.70	USEPA 8260C	<1.70	<1.70	<1.70	<1.70	<1.70	300.00	2.70E+04
1,2-Dichlorethane[1]	µg/L	0.46		<0.46	<0.46	<0.46	<0.46	<0.46	400.00	5.0E+00
1,1,1-Trichloroethane[1]	µg/L	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	300.00	2.0E+02
1,1-Dichloropropene[1]	µg/L	1.24		<1.24	<1.24	<1.24	<1.24	<1.24	Not defined	3.80E+02
Carbon Tetrachloride[1]	µg/L	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	5.0E+00
Benzene[1]	µg/L	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	30	5.0E+00
Dibromomethane[1]	µg/L	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	Not defined	2.70E+01
1,2-Dichloropropane[1]	µg/L	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	80	5.0E+00
Trichloroethene[1]	µg/L	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	500.00	Not defined
Bromodichloromethane[1]	µg/L	1.06		<1.06	<1.06	<1.06	<1.06	<1.06	Not defined	8.0E+01(F)
Methyl methacrylate[1]	µg/L	1.31		<1.31	<1.31	<1.31	<1.31	<1.31	Not defined	3.70E+05
cis-1,3-Dichloropropene[1]	µg/L	1.17		<1.17	<1.17	<1.17	<1.17	<1.17	Not defined	3.80E+02
4-Methyl-2-pentanone (MIBK)[1]	µg/L	3.30		<3.30	<3.30	<3.30	<3.30	<3.30	Not defined	5.80E+05
trans-1,3-Dichloropropene[1]	µg/L	1.17		<1.17	<1.17	<1.17	<1.17	<1.17	Not defined	2.00E+03
1,1,2-Trichloroethane[1]	µg/L	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	130.00	5.0E+00
Toluene[1]	µg/L	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	1000	1.0E+03
1,3-Dichloropropane[1]	µg/L	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	1000	2.00E+03
Ethyl methacrylate[1]	µg/L	1.07		<1.07	<1.07	<1.07	<1.07	<1.07	Not defined	6.60E+05
2-Hexanone[1]	µg/L	2.19		<2.19	<2.19	<2.19	<2.19	<2.19	Not defined	3.70E+04
Dibromochloromethane[1]	µg/L	0.82		<0.82	<0.82	<0.82	<0.82	<0.82	Not defined	8.0E+01(F)
1,2-Dibromoethane-EDB[1]	µg/L	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	5.0E-02

Tetrachloroethene[1]	µg/L	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	40	Not defined
1,1,1,2-Tetrachloroethane[1]	µg/L	1.04		<1.04	<1.04	<1.04	<1.04	<1.04	Not defined	Not defined
Chlorobenzene[1]	µg/L	0.6		<0.60	<0.60	<0.60	<0.60	<0.60	180	1.0E+02
Ethylbenzene[1]	µg/L	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	150	7.0E+02
m & p- Xylene[1]	µg/L	1.90		<1.90	<1.90	<1.90	<1.90	<1.90	70 (mixed isomers)	1.0E+04 Xylenes in general
Bromoform[1]	µg/L	0.75		<0.75	<0.75	<0.75	<0.75	<0.75	Not defined	8.0E+01(F)
cis-1,4-Dichloro-2-butene[1]	µg/L	1.11		<1.11	<1.11	<1.11	<1.11	<1.11	Not defined	Not defined
Styrene[1]	µg/L	0.83		<0.83	<0.83	<0.83	<0.83	<0.83	300	1.0E+02
1,1,2,2-Tetrachloroethane[1]	µg/L	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	Not defined	Not defined
o-Xylene[1]	µg/L	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	70 (mixed isomers)	1.0E+04 Xylenes in general
1,2,3-Trichloropropane[1]	µg/L	1.20		<1.20	<1.20	<1.20	<1.20	<1.20	Not defined	Not defined
trans-1,4-Dichloro-2-butene[1]	µg/L	1.52		<1.52	<1.52	<1.52	<1.52	<1.52	Not defined	Not defined
Isopropylbenzene[1]	µg/L	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	Not defined	Not defined
Bromobenzene[1]	µg/L	1.19		<1.19	<1.19	<1.19	<1.19	<1.19	Not defined	Not defined
n-Propylbenzene[1]	µg/L	1.26		<1.26	<1.26	<1.26	<1.26	<1.26	Not defined	Not defined
2-Chlorotoluene[1]	µg/L	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	Not defined
4-Chlorotoluene[1]	µg/L	1.22	USEPA 8260C	<1.22	<1.22	<1.22	<1.22	<1.22	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/L	1.08		<1.08	<1.08	<1.08	<1.08	<1.08	Not defined	Not defined
Pentachloroethane[1]	µg/L	1.18		<1.18	<1.18	<1.18	<1.18	<1.18	Not defined	Not defined
tert-Butylbenzene[1]	µg/L	1.06		<1.06	<1.06	<1.06	<1.06	<1.06	Not defined	Not defined
1,2,4-Trimethylbenzene[1]	µg/L	1.05		<1.05	<1.05	<1.05	<1.05	<1.05	Not defined	Not defined
sec-Butylbenzene[1]	µg/L	0.97		<0.97	<0.97	<0.97	<0.97	<0.97	Not defined	Not defined
1,3-Dichlorobenzene[1]	µg/L	0.94		<0.94	<0.94	<0.94	<0.94	<0.94	50	Not defined
1,4-Dichlorobenzene[1]	µg/L	1.25		<1.25	<1.25	<1.25	<1.25	<1.25	50	7.5E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/L	1.50		<1.50	<1.50	<1.50	<1.50	<1.50	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/L	0.93		<0.93	<0.93	<0.93	<0.93	<0.93	50	6.0E+02
n-Butylbenzene[1]	µg/L	1.88		<1.88	<1.88	<1.88	<1.88	<1.88	Not defined	Not defined
1,2-Dibromo-3-Chloropropane[1]	µg/L	2.50		<2.50	<2.50	<2.50	<2.50	<2.50	Not defined	2.0E-01
1,2,4-Trichlorobenzene[1]	µg/L	1.78		<1.78	<1.78	<1.78	<1.78	<1.78	10	7.0E+01
Naphthalene[1]	µg/L	3.92		<3.92	<3.92	<3.92	<3.92	<3.92	70.00	Not defined
Hexachlorobutadiene[1]	µg/L	1.40		<1.40	<1.40	<1.40	<1.40	<1.40	Not defined	Not defined
1,2,3-Trichlorobenzene[1]	µg/L	0.93		<0.93	<0.93	<0.93	<0.93	<0.93	10	Not defined
TIC's	µg/L	-		N.D.	N.D.	N.D.	N.D.	N.D.	-	-

TOTAL PETROLEUM HYDROCARBONS (TPHCWG)

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
				BH-01E	BH-02E	BH-03E	BH-04E	BH-05E		
TPH C8-C38 ALIPHATIC	mg/L	0.01	USEPA 8015D	<0.01	<0.01	<0.01	<0.01	<0.01	Not defined	Not defined
TPH C6-C8 AROMATIC[1]	mg/L	0.01	USEPA 8260C	<0.01	<0.01	<0.01	<0.01	<0.01	Not defined	Not defined
TPH C10-C22 AROMATIC	mg/L	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	Not defined	Not defined

POLYNUCLEAR AROMATIC HYDROCARBONS

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
				BH-01E	BH-02E	BH-03E	BH-04E	BH-05E		
Naphthalene	µg/l	0.05	USEPA 8270 D	<0.05	<0.05	<0.05	<0.05	<0.05	70	1.50E+05
Acenaphthylene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.40E+05
Acenaphthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.40E+05
Fluorene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.90E+05
Phenanthrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	5	2.20E+05
Anthracene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	5	2.20E+06
Fluoranthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	1	2.90E+05
Pyrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.20E+05
Benz(a)anthracene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.5	2.00E+03
Chrysene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.2	2.00E+05
Benzo(b)fluoranthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.00E+03
Benzo(k)fluoranthene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.00E+04
Benzo(a)pyrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.0E-01
Indeno(1,2,3-cd)pyrene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.00E+03
Dibenz(a,h)anthracene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.00E+02
Benzo(g,h,i)perylene	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	0.05	2.20E+05
Polynuclear Aromatic Hydrocarbons (PAHs)	µg/l	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	-	-

POLYCHLORINATED BIPHENYLS

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
				BH-01E	BH-02E	BH-03E	BH-04E	BH-05E		
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	µg/l	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
3,4,4',5-Tetrachlorobiphenyl (PCB81)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined
Total PCBs	µg/l	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	Not defined

SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) Groundwater (µg/l)	US EPA (2017) MCL (µg/l
				BH-01	BH-02	BH-03	BH-04	BH-05		
N-Nitrosodimethylamine	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.00E+00
Pyridine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	30	7.30E+03
Phenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	2000	2.20E+06
Aniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.60E+04
Bis(2-chhloroethyl) ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.90E+02
2-Chlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	100	3.70E+04
1,3-Dichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	50	6.00E+04
1,4-Dichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	50	7.5E+01
Benzyl alcohol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+05
2-Methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.70E+05
1,2-Dichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	50	6.0E+02
Bis(2-chloroisopropyl) ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+03
4-Methylphenol/3-Methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.70E+05
N-Nitrosodi-n-propylamine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+01
Hexachloroethane	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.10E+03
Nitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
Isophorone	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+05
2,4-Dimethylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+05
2-Nitrophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
Bis(2-chloroethoxy)methane	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.90E+02
2,4-Dichlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	30	2.20E+04
1,2,4-Trichlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	7.0E+01
Naphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	70	1.50E+05
4-Chloroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Hexachlorobutadiene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.60E+03
4-Chloro-3-methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
2-Methylnaphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+04
1-Methylnaphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.00E+03
Hexachlorocyclopentadiene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.0E+01
2,4,6-Trichlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	7.30E+03
2,4,5-Trichlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	7.30E+05
2-Chloronaphthalene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	6	5.80E+05
2-Nitroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+00
1,4-Dinitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+02
Dimethyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.80E+06
1,3-Dinitrobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+02
2,6-Dinitrotoluene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.00E+02

1,2-Dinitrobenzene	mg/L	0.001	USEPA 8270D	<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Acenaphthylene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.40E+05
3-Nitroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+03
Acenaphthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.40E+05
2,4-Dinitrophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
4-Nitrophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.50E+04
2,4-Dinitrotoluene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	3.00E+02
Dibenzofuran	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+04
2,3,5,6-Tetrachlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	2.20E+05
2,3,4,6-Tetrachlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	10	2.20E+05
Diethyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	5.80E+06
4-Chlrophenyl phenyl ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.40E-02
4-Nitroaniline	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.00E+04
4,6-Dinitro-2-methylphenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Fluorene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.90E+05
N-nitrosodiphenylamine (diphenylamine)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.80E+05
1,2-Diphenylhydrazine (as azobenzene)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.90E+03
4-Bromophenyl phenyl ether	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.40E+01
Hexachlorobenzene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.5	1.0E+00
Pentachlorophenol	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	3	1.0E+00
Phenanthrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	5	2.20E+05
Anthracene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	5	2.20E+06
Carbazole	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	1.00E+04
Di-n-butyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Fluoranthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	1	2.90E+05
Benzidine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	8.90E-01
3,3'-Dimethylbenzidine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Pyrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.20E+05
Butyl benzyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Bis(2-ethylhexyl) adipate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	Not defined
Bis(2-ethylhexyl) phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	6.0E+00
3,3'-Dichlorobenzidine	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	4.50E+02
Benz(a)anthracene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.5	Not defined
Chrysene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.2	2.00E+05
Di-n-octyl phthalate	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	7.30E+04
Benzo(b)fluoranthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.00E+03
Benzo(k)fluoranthene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.00E+04
Benzo(a)pyrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.0E-01
Indeno(1,2,3-cd)pyrene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.00E+03
Dibenz(a,h)anthracene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	Not defined	2.00E+02
Benzo(g,hi)perylene	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.05	2.20E+05
TIC's	mg/L	-		ND	ND	ND	ND	ND	-	-

Notes:

1. ISO/IEC 17025-2005 Accredited Test: [1]-ENAS
2. The test results relate only to the item(s) tested. This report shall not be reproduced except in full, without written
3. 22nd Edition of APHA Methods is used.
4. **ND**: Not Detected.

METALS IN WATER

Test Report on Metals in Water												
Client	M/S. TECNICAS REUNIDAS							Request No.		SD18000031		
Project	Proposed SEWA Hamriyah Power Plant							Date Received		12/06/2018		
Sample Description	Ground Water							Date Tested		18/06/2018		
Elements		Unit	Test Method	MDL mg/L	Results							
					BH-1	BH-2	BH-3	BH-4	BH-5	Dutch Intervention Value µg/L	Dutch Intervention Value mg/L	US EPA (2017) µg/L
Arsenic*	As	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	60	0.06	1.0E+01
Barium*	Ba	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	625	0.625	2.0E+03
Beryllium*	Be	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	15	0.015	4.0E+00
Boron*	B	mg/L	APHA3120B	0.09	3.085	3.035	2.797	2.824	2.432	-	-	-
Cadmium*	Cd	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	6	0.006	5.0E+00
Calcium*	Ca	mg/L	APHA3120B	0.11	235.8	474.4	460.0	462.2	305.3	-	-	-
Chromium (Total)*	Cr	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	0.03	1.0E+02
Copper*	Cu	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	75	0.075	1.3E+03
Iron (Total)*	Fe	mg/L	APHA3120B	0.09	0.279	0.006	<0.09	<0.09	<0.09	-	-	-
Lead*	Pb	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-
Magnesium	Mg	mg/L	APHA3120B	0.10	518.2	1566	1488	1374	1021	-	-	-
Manganese*	Mn	mg/L	APHA3120B	0.02	0.233	0.622	0.606	0.107	0.117	-	-	-
Molybdneum	Mo	mg/L	APHA3120B	0.01	<0.01	0.013	0.013	<0.01	0.013	300	0.3	-
Nickel *	Ni	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	75	0.075	-
Potassium	K	mg/L	APHA3120B	0.10	234.9	467.6	448.1	443.1	325.0	-	-	-
Selenium*	Se	mg/L	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	-	5.0E+01
Sodium	Na	mg/L	APHA3120B	0.12	594.8	13700	12850	12220	8763	-	-	-
Vanadium	V	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-
Zinc*	Zn	mg/L	APHA3120B	0.02	<0.02	0.006	<0.02	<0.02	0.013	800	0.8	-
Mercury	Hg	mg/L	APHA3120B	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.3	0.0003	2.0E+00
Sulphate*	SO_4	mg/L	BS1377 P.3 CL 5		1853	3008	2310	3084	2264	-	-	-
Chloride*	Cl	mg/L	BS1377 P.3 CL 7		8799	23349	22637	22281	15191	-	-	-
pH*			BS1377 P.3 CL 9		7.3	7.5	7.5	7.8	7.6	-	-	-
Carbonates		mg/L	ASTM D 1067-11		Nil	Nil	Nil	Nil	Nil	-	-	-
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	-	-	-
Total Hardness as $CaCo_3$		mg/L	APHA		2740	7685	7325	6858	5000	-	-	-

Note: *DAC Accredited

METALS IN WATER ADDITIONAL WORKS

Test Report on Metals in Water

Client	M/S. TECNICAS REUNIDAS	Request No.	SD18000031
Project	Proposed SEWA Hamriyah Power Plant	Date Received	07/07/2018
Sample Description	Ground Water	Date Tested	09-11/07/2018

Elements		Unit	Test Method	MDL mg/L	Results							
					BH-01E	BH-02E	BH-03E	BH-04E	BH-05E	Dutch Intervention Value µg/L	Dutch Intervention Value mg/L	US EPA (2017) µg/L
Arsenic*	As	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	60	0.06	1.0E+01
Barium*	Ba	mg/L	APHA3120B	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	625	0.625	2.0E+03
Beryllium*	Be	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	15	0.015	4.0E+00
Boron*	B	mg/L	APHA3120B	0.09	3.394	3.332	3.148	3.324	3.153	-	-	-
Cadmium*	Cd	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	6	0.006	5.0E+00
Calcium*	Ca	mg/L	APHA3120B	0.11	205.8	408.1	344.9	496.2	363.4	-	-	-
Chromium (Total)*	Cr	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	0.03	1.0E+02
Copper*	Cu	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	75	0.075	1.3E+03
Iron (Total)*	Fe	mg/L	APHA3120B	0.09	0.346	<0.09	<0.09	<0.09	<0.09	-	-	-
Lead*	Pb	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-
Magnesium	Mg	mg/L	APHA3120B	0.10	493.5	1177	1144	1385	1214	-	-	-
Manganese*	Mn	mg/L	APHA3120B	0.02	0.104	<0.02	0.164	0.034	0.110	-	-	-
Molybdneum	Mo	mg/L	APHA3120B	0.01	<0.01	<0.01	0.014	<0.01	0.015	300	0.3	-
Nickel *	Ni	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	75	0.075	-
Potassium	K	mg/L	APHA3120B	0.10	239.3	405.0	380.1	481.0	400.3	-	-	-
Selenium*	Se	mg/L	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	-	5.0E+01
Sodium	Na	mg/L	APHA3120B	0.12	5560	10250	9645	11890	10080	-	-	-
Vanadium	V	mg/L	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-
Zinc*	Zn	mg/L	APHA3120B	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	800	0.8	-
Mercury	Hg	mg/L	APHA3120B	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.3	0.0003	2.0E+00
Sulphate*	SO_4	mg/L	BS1377 P.3 CL 5		2053	2762	2511	3147	2702	-	-	-
Chloride*	Cl	mg/L	BS1377 P.3 CL 7		9378	18773	18062	22499	18595	-	-	-
pH*			BS1377 P.3 CL 9		7.4	7.4	7.2	7.5	7.5	-	-	-
Carbonates		mg/L	ASTM D 1067-11		Nil	Nil	Nil	Nil	Nil	-	-	-
Bicarbonates		mg/L	ASTM D 1067-11		1087	773	785	556	592	-	-	-
Total Alkalinity as $CaCo_3$		mg/L	APHA		891	634	644	455	485	-	-	-
Total Hardness as $CaCo_3$		mg/L	APHA		2563	5905	5610	6988	5947	-	-	-

Note: * DAC Accredited

APPENDIX D2

CHEMICAL TEST RESULTS OF SOIL SAMPLES

ANALYSIS OF SOIL

TEST REPORT ON ANALYSIS OF SOIL

Owner	M/S. TECNICAS REUNIDAS	**Report No.**	SD18000031
Contractor	N.P.	**Date Reported**	15/07/18
Consultant	N.P.	**Sample No.**	SD18000031
Project No.	N.P.	**Request No.**	SD18000031
Project Name	Proposed SEWA Hamriyah Power Plant	**Client Reference**	Request dated 10/06/2018 (SC18-096)
Sample Description	Soil	**Sample Size**	23 samples/2 kg each
Source	See below	**Sampling Date**	09/06/18
Sample Location	See below	**Sampling Cert. No.**	N.P.
Lot No.	N.P.	**Sampling Method**	N.P.
Lot Size	N.P.	**Sampled By**	Client's Rep.
Test Method Var.	None	**Sample Brt. In By**	Client's Rep.
Tested By:	Winelen, Hans	**Date Received**	10/06/18
		Date Tested	10 - 13/06/2018

TOTAL ORGANIC CARBON :

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E		
Total Organic Carbon	%	0.01	Walkley-black method	0.04	0.04	0.03	0.04	0.04	0.04	-	

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E		
Total Organic Carbon	%	0.01	Walkley-black method	0.05	0.04	0.05	0.04	0.03	0.05	-	

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E		
Total Organic Carbon	%	0.01	Walkley-black method	0.05	0.01	0.02	0.05	0.05	0.05	-	

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-15	TP-16	TP-17	TP-18	TP-19		
Total Organic Carbon	%	0.01	Walkley-black method	0.07	0.03	0.03	0.06	0.01		

BTEX

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E		
Benzene[1]	µg/kg	0.52	USEPA 8260C	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	110	2.5E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	17 (mixed isomers)	2.40E+03
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55		2.8E+03
BTEX[1]	µg/kg	3.19		<3.19	<3.19	<3.19	<3.19	<3.19	<3.19	-	

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E		
Benzene[1]	µg/kg	0.52	USEPA 8260C	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	110	2.5E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	17 (mixed isomers)	2.40E+03
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55		2.8E+03
BTEX[1]	µg/kg	3.19		<3.19	<3.19	<3.19	<3.19	<3.19	<3.19	-	

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E		
Benzene[1]	µg/kg	0.52	USEPA 8260C	<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	110	2.5E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	17 (mixed isomers)	2.40E+03
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55		2.8E+03
BTEX[1]	µg/kg	3.19		<3.19	<3.19	<3.19	<3.19	<3.19	<3.19	-	

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-15	TP-16	TP-17	TP-18	TP-19		
Benzene[1]	µg/kg	0.52	USEPA 8260C	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	110	2.5E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	17 (mixed isomers)	2.40E+03
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55		2.8E+03
BTEX[1]	µg/kg	3.19		<3.19	<3.19	<3.19	<3.19	<3.19	-	-

TOTAL PETROLEUM HYDROCARBONS (TPHCWG)

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E		
TPH C8-C38 ALIPHATIC	mg/kg	0.1	USEPA 8015D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5000.00	3500000
TPH C6-C8 AROMATIC[1]	mg/kg	0.1	USPA 8260C	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		4.20E+02
TPH C10-C22 AROMATIC	mg/kg	0.1	USEPA 8270D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		6.00E+02

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E		
TPH C8-C38 ALIPHATIC	mg/kg	0.1	USEPA 8015D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5000.00	3500000
TPH C6-C8 AROMATIC[1]	mg/kg	0.1	USPA 8260C	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		4.20E+02
TPH C10-C22 AROMATIC	mg/kg	0.1	USEPA 8270D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		6.00E+02

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E		
TPH C8-C38 ALIPHATIC	mg/kg	0.1	USEPA 8015D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5000.00	3500000
TPH C6-C8 AROMATIC[1]	mg/kg	0.1	USPA 8260C	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		4.20E+02
TPH C10-C22 AROMATIC	mg/kg	0.1	USEPA 8270D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		6.00E+02

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-15	TP-16	TP-17	TP-18	TP-19		
TPH C8-C38 ALIPHATIC	mg/kg	0.1	USEPA 8015D	<0.1	<0.1	<0.1	<0.1	<0.1	5000.00	3500000
TPH C6-C8 AROMATIC[1]	mg/kg	0.1	USPA 8260C	<0.1	<0.1	<0.1	<0.1	<0.1		4.20E+02
TPH C10-C22 AROMATIC	mg/kg	0.1	USEPA 8270D	<0.1	<0.1	<0.1	<0.1	<0.1		6.00E+02

POLYNUCLEAR AROMATIC HYDROCARBONS

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E		
Naphthalene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	1.7E+01
Acenaphthylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	Not defined
Acenaphthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.5E+04
Fluorene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	3.0E+04
Phenanthrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.3E+05

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
Fluoranthene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	3.0E+04
Pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.3E+04
Benz(a)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+01
Chrysene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+03
Benzo(b)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+00
Benzo(g,h,i)perylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Polynuclear Aromatic Hydrocarbons (PAHs)	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40	-

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
Naphthalene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	1.7E+01
Acenaphthylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	Not defined
Acenaphthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.5E+04
Fluorene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	3.0E+04
Phenanthrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.3E+05
Fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	3.0E+04
Pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.3E+04
Benz(a)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+01
Chrysene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+03
Benzo(b)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+00
Benzo(g,h,i)perylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Polynuclear Aromatic Hydrocarbons (PAHs)	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40	-

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
Naphthalene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	1.7E+01
Acenaphthylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	Not defined
Acenaphthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.5E+04
Fluorene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	3.0E+04
Phenanthrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.3E+05
Fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	3.0E+04
Pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.3E+04
Benz(a)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+01
Chrysene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+03
Benzo(b)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+00

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
Indeno(1,2,3-cd)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+00
Benzo(g,h,i)perylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Polynuclear Aromatic Hydrocarbons (PAHs)	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	40	

Test Parameter	Unit	MDL	Test Method	Test Results						
				TP-15	TP-16	TP-17	TP-18	TP-19	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
Naphthalene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	1.7E+01
Acenaphthylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	Not defined
Acenaphthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.5E+04
Fluorene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	3.0E+04
Phenanthrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.3E+05
Fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	3.0E+04
Pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.3E+04
Benz(a)anthracene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+01
Chrysene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+03
Benzo(b)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+00
Benzo(g,h,i)perylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Polynuclear Aromatic Hydrocarbons (PAHs)	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40	

POLYCHLORINATED BIPHENYLS

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.16
3,4,4',5-Tetrachlorobiphenyl (PCB81)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.05
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.0002
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.51
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.001
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.52
Total PCBs	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.00	Not defined

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.16
3,4,4',5-Tetrachlorobiphenyl (PCB81)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.05
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.0002
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.51
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.001
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.52
Total PCBs	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.00	Not defined

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.16
3,4,4',5-Tetrachlorobiphenyl (PCB81)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.05
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.0002
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.51
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.001
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.52
Total PCBs	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.00	Not defined

Test Parameter	Unit	MDL	Test Method	Test Results						
				TP-15	TP-16	TP-17	TP-18	TP-19	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.16
3,4,4',5-Tetrachlorobiphenyl (PCB81)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.05
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.0002
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.51
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.001
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.52
Total PCBs	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	1.00	Not defined

VOLATILE ORGANIC COMPOUNDS (VOCs) + TIC's

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E		
Dichlorodifluoromethane[1]	µg/kg	0.60	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	Not defined
Chloromethane[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	Not defined	4.6E+02
Vinyl chloride[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	0.1	1.7E+00
Bromomethane[1]	µg/kg	0.67		<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	Not defined	8.6E+01
Chloroethane[1]	µg/kg	0.28		<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	Not defined	5.7E+04
Trichlorofluoromethane[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	3.5E+05
Acetonitrile[1]	µg/kg	1.81		<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	Not defined	3.4E+03
Acetone[1]	µg/kg	2.75		<2.75	<2.75	<2.75	<2.75	<2.75	<2.75	Not defined	6.7E+05
Diethyl ether[1]	µg/kg	1.03		<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	Not defined	Not defined
1,1-Dichloroethene[1]	µg/kg	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	<0.91	0.3	Not defined
Iodomethane[1]	µg/kg	0.87		<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	Not defined	Not defined
Propionitrile[1]	µg/kg	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	<0.77	Not defined	Not defined
Acrylonitrile[1]	µg/kg	0.85		<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	Not defined	1.1E+00
Methylene chloride[1]	µg/kg	1.21		<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	Not defined	1.0E+03
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98		<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	Not defined	2.8E+04
Allyl chloride[1]	µg/kg	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	<0.57	Not defined	3.2E+00
Carbon disulfide[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.9E+00
trans-1,2-Dichloroethene[1]	µg/kg	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	1 (aggr)	Not defined
MTBE[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	100	2.1E+02
1,1-Dichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	0.3	Not defined
Chloroprene[1]	µg/kg	3.11		<3.11	<3.11	<3.11	<3.11	<3.11	<3.11	Not defined	Not defined
2-Butanone (MEK)[1]	µg/kg	6.81		<6.81	<6.81	<6.81	<6.81	<6.81	<6.81	Not defined	1.9E+05
Methacrylonitrile[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	Not defined	1.0E+02
cis-1,2-Dichloroethene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	Not defined
Bromochloromethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.3E+00
Chloroform[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	5.6	1.4E+00
Methyl acrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	6.1E+02
2,2-Dichloropropane[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	2 (aggr)	Not defined
Tetrahydrofuran[1]	µg/kg	1.64		<1.64	<1.64	<1.64	<1.64	<1.64	<1.64	7	9.4E+04
1,2-Dichlorethane[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	2.0E+00
1,1,1-Trichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	15	3.6E+04
1,1-Dichloropropene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	Not defined	Not defined
Carbon Tetrachloride[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	2.9E+00
Benzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Dibromomethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	9.9E+01
1,2-Dichloropropane[1]	µg/kg	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	2 (aggr)	1.2E+00
Trichloroethene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	<0.76	2.5	Not defined
Bromodichloromethane[1]	µg/kg	0.74		<0.74	<0.74	<0.74	<0.74	<0.74	<0.74	Not defined	Not defined
Methyl methacrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.9E+04
cis-1,3-Dichloropropene[1]	µg/kg	0.39		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	Not defined	Not defined
4-Methyl-2-pentanone (MIBK)[1]	µg/kg	2.57		<2.57	<2.57	<2.57	<2.57	<2.57	<2.57	Not defined	1.4E+05
trans-1,3-Dichloropropene[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	Not defined
1,1,2-Trichloroethane[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	10	5.0E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
1,3-Dichloropropane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	2 (aggr)	2.3E+04
Ethyl methacrylate[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	Not defined	7.6E+03
2-Hexanone[1]	µg/kg	3.40		<3.40	<3.40	<3.40	<3.40	<3.40	<3.40	Not defined	1.3E+03

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
Dibromochloromethane[1]	µg/kg	0.35	USEPA 8260C	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	3.90E+01
1,2-Dibromoethane-EDB[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	Not defined	1.60E-01
Tetrachloroethene[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	8.8	Not defined
1,1,1,2-Tetrachloroethane[1]	µg/kg	0.34		<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	Not defined	8.80E+00
Chlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	Not defined	1.30E+03
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	110	2.50E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	17	2.40E+03
Bromoform[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	75	8.60E+01
cis-1,4-Dichloro-2-butene[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	9.40E-03
Styrene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	86	3.50E+04
1,1,2,2-Tetrachloroethane[1]	µg/kg	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	Not defined	8.80E+00
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	17	2.8E+03
1,2,3-Trichloropropane[1]	µg/kg	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	1.10E-01
trans-1,4-Dichloro-2-butene[1]	µg/kg	1.43		<1.43	<1.43	<1.43	<1.43	<1.43	<1.43	Not defined	3.20E-02
Isopropylbenzene[1]	µg/kg	0.38		<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	Not defined	Not defined
Bromobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	Not defined	1.80E+03
n-Propylbenzene[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	2.40E+04
2-Chlorotoluene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	Not defined
4-Chlorotoluene[1]	µg/kg	0.72		<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/kg	0.43		<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	Not defined	1.50E+03
Pentachloroethane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	Not defined	3.60E+01
tert-Butylbenzene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	Not defined	1.20E+05
1,2,4-Trimethylbenzene[1]	µg/kg	0.40		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	Not defined	1.80E+03
sec-Butylbenzene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	Not defined	1.20E+05
1,3-Dichlorobenzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	19 (aggr)	Not defined
1,4-Dichlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	19 (aggr)	1.10E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/kg	0.73		<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	19 (aggr)	9.30E+03
n-Butylbenzene[1]	µg/kg	0.65		<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	Not defined	5.80E+04
1,2-Dibromo-3-Chloropropane[1]	µg/kg	1.25		<1.25	<1.25	<1.25	<1.25	<1.25	<1.25	Not defined	6.40E-02
1,2,4-Trichlorobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	11 (aggr)	1.10E+02
Naphthalene[1]	µg/kg	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	1.70E+01
Hexachlorobutadiene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	<0.76	Not defined	5.30E+00
1,2,3-Trichlorobenzene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	9.30E+02
TIC's	µg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	ND		

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
Dichlorodifluoromethane[1]	µg/kg	0.60	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	Not defined
Chloromethane[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	Not defined	4.6E+02
Vinyl chloride[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	0.1	1.7E+00
Bromomethane[1]	µg/kg	0.67		<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	Not defined	8.6E+01
Chloroethane[1]	µg/kg	0.28		<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	Not defined	5.7E+04
Trichlorofluoromethane[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	3.5E+05
Acetonitrile[1]	µg/kg	1.81		<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	Not defined	3.4E+03
Acetone[1]	µg/kg	2.75		<2.75	<2.75	<2.75	<2.75	<2.75	<2.75	Not defined	6.7E+05
Diethyl ether[1]	µg/kg	1.03		<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	Not defined	Not defined
1,1-Dichloroethene[1]	µg/kg	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	<0.91	0.3	Not defined
Iodomethane[1]	µg/kg	0.87		<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	Not defined	Not defined
Propionitrile[1]	µg/kg	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	<0.77	Not defined	Not defined
Acrylonitrile[1]	µg/kg	0.85		<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	Not defined	1.1E+00

Test Parameter	Unit	MDL		Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98		<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	Not defined	2.8E+04
Allyl chloride[1]	µg/kg	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	<0.57	Not defined	3.2E+00
Carbon disulfide[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.9E+00
trans-1,2-Dichloroethene[1]	µg/kg	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	1 (aggr)	Not defined
MTBE[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	100	2.1E+02
1,1-Dichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	0.3	Not defined
Chloroprene[1]	µg/kg	3.11		<3.11	<3.11	<3.11	<3.11	<3.11	<3.11	Not defined	Not defined
2-Butanone (MEK)[1]	µg/kg	6.81		<6.81	<6.81	<6.81	<6.81	<6.81	<6.81	Not defined	1.9E+05
Methacrylonitrile[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	Not defined	1.0E+02
cis-1,2-Dichloroethene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	Not defined
Bromochloromethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.3E+00
Chloroform[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	5.6	1.4E+00
Methyl acrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	6.1E+02
2,2-Dichloropropane[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	2 (aggr)	Not defined
Tetrahydrofuran[1]	µg/kg	1.64		<1.64	<1.64	<1.64	<1.64	<1.64	<1.64	7	9.4E+04
1,2-Dichlorethane[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	2.0E+00
1,1,1-Trichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	15	3.6E+04
1,1-Dichloropropene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	Not defined	Not defined
Carbon Tetrachloride[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	2.9E+00
Benzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Dibromomethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	9.9E+01
1,2-Dichloropropane[1]	µg/kg	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	2 (aggr)	1.2E+00
Trichloroethene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	<0.76	2.5	Not defined
Bromodichloromethane[1]	µg/kg	0.74	USEPA 8260C	<0.74	<0.74	<0.74	<0.74	<0.74	<0.74	Not defined	Not defined
Methyl methacrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.9E+04
cis-1,3-Dichloropropene[1]	µg/kg	0.39		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	Not defined	Not defined
4-Methyl-2-pentanone (MIBK)[1]	µg/kg	2.57		<2.57	<2.57	<2.57	<2.57	<2.57	<2.57	Not defined	1.4E+05
trans-1,3-Dichloropropene[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	Not defined
1,1,2-Trichloroethane[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	10	5.0E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
1,3-Dichloropropane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	2 (aggr)	2.3E+04
Ethyl methacrylate[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	Not defined	7.6E+03
2-Hexanone[1]	µg/kg	3.40		<3.40	<3.40	<3.40	<3.40	<3.40	<3.40	Not defined	1.3E+03
Dibromochloromethane[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	3.90E+01
1,2-Dibromoethane-EDB[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	Not defined	1.60E-01
Tetrachloroethene[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	8.8	Not defined
1,1,1,2-Tetrachloroethane[1]	µg/kg	0.34		<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	Not defined	8.80E+00
Chlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	Not defined	1.30E+03
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	110	2.50E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	17	2.40E+03
Bromoform[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	75	8.60E+01
cis-1,4-Dichloro-2-butene[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	9.40E-03
Styrene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	86	3.50E+04
1,1,2,2-Tetrachloroethane[1]	µg/kg	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	Not defined	8.80E+00
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	17	2.8E+03
1,2,3-Trichloropropane[1]	µg/kg	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	1.10E-01
trans-1,4-Dichloro-2-butene[1]	µg/kg	1.43		<1.43	<1.43	<1.43	<1.43	<1.43	<1.43	Not defined	3.20E-02
Isopropylbenzene[1]	µg/kg	0.38		<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	Not defined	Not defined
Bromobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	Not defined	1.80E+03

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
n-Propylbenzene[1]	µg/kg	0.60	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	2.40E+04
2-Chlorotoluene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	Not defined
4-Chlorotoluene[1]	µg/kg	0.72		<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/kg	0.43		<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	Not defined	1.50E+03
Pentachloroethane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	Not defined	3.60E+01
tert-Butylbenzene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	Not defined	1.20E+05
1,2,4-Trimethylbenzene[1]	µg/kg	0.40		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	Not defined	1.80E+03
sec-Butylbenzene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	Not defined	1.20E+05
1,3-Dichlorobenzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	19 (aggr)	Not defined
1,4-Dichlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	19 (aggr)	1.10E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/kg	0.73		<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	19 (aggr)	9.30E+03
n-Butylbenzene[1]	µg/kg	0.65		<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	Not defined	5.80E+04
1,2-Dibromo-3-Chloropropane[1]	µg/kg	1.25		<1.25	<1.25	<1.25	<1.25	<1.25	<1.25	Not defined	6.40E-02
1,2,4-Trichlorobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	11 (aggr)	1.10E+02
Naphthalene[1]	µg/kg	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	1.70E+01
Hexachlorobutadiene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	<0.76	Not defined	5.30E+00
1,2,3-Trichlorobenzene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	9.30E+02
TIC's	µg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	ND	-	-

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
Dichlorodifluoromethane[1]	µg/kg	0.60	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	Not defined
Chloromethane[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	Not defined	4.6E+02
Vinyl chloride[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	0.1	1.7E+00
Bromomethane[1]	µg/kg	0.67		<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	Not defined	8.6E+01
Chloroethane[1]	µg/kg	0.28		<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	Not defined	5.7E+04
Trichlorofluoromethane[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	3.5E+05
Acetonitrile[1]	µg/kg	1.81		<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	Not defined	3.4E+03
Acetone[1]	µg/kg	2.75		<2.75	<2.75	<2.75	<2.75	<2.75	<2.75	Not defined	6.7E+05
Diethyl ether[1]	µg/kg	1.03		<1.03	<1.03	<1.03	<1.03	<1.03	<1.03	Not defined	Not defined
1,1-Dichloroethene[1]	µg/kg	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	<0.91	0.3	Not defined
Iodomethane[1]	µg/kg	0.87		<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	Not defined	Not defined
Propionitrile[1]	µg/kg	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	<0.77	Not defined	Not defined
Acrylonitrile[1]	µg/kg	0.85		<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	Not defined	1.1E+00
Methylene chloride[1]	µg/kg	1.21		<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	Not defined	1.0E+03
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98		<0.98	<0.98	<0.98	<0.98	<0.98	<0.98	Not defined	2.8E+04
Allyl chloride[1]	µg/kg	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	<0.57	Not defined	3.2E+00
Carbon disulfide[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.9E+00
trans-1,2-Dichloroethene[1]	µg/kg	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	1 (aggr)	Not defined
MTBE[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	100	2.1E+02
1,1-Dichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	0.3	Not defined
Chloroprene[1]	µg/kg	3.11		<3.11	<3.11	<3.11	<3.11	<3.11	<3.11	Not defined	Not defined
2-Butanone (MEK)[1]	µg/kg	6.81		<6.81	<6.81	<6.81	<6.81	<6.81	<6.81	Not defined	1.9E+05
Methacrylonitrile[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	Not defined	1.0E+02
cis-1,2-Dichloroethene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	Not defined
Bromochloromethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.3E+00
Chloroform[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	5.6	1.4E+00
Methyl acrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	6.1E+02
2,2-Dichloropropane[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	2 (aggr)	Not defined
Tetrahydrofuran[1]	µg/kg	1.64		<1.64	<1.64	<1.64	<1.64	<1.64	<1.64	7	9.4E+04

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
1,2-Dichlorethane[1]	µg/kg	0.86	USEPA 8260C	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	2.0E+00
1,1,1-Trichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	15	3.6E+04
1,1-Dichloropropene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	Not defined	Not defined
Carbon Tetrachloride[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	2.9E+00
Benzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Dibromomethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	9.9E+01
1,2-Dichloropropane[1]	µg/kg	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	2 (aggr)	1.2E+00
Trichloroethene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	<0.76	2.5	Not defined
Bromodichloromethane[1]	µg/kg	0.74		<0.74	<0.74	<0.74	<0.74	<0.74	<0.74	Not defined	Not defined
Methyl methacrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.9E+04
cis-1,3-Dichloropropene[1]	µg/kg	0.39		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	Not defined	Not defined
4-Methyl-2-pentanone (MIBK)[1]	µg/kg	2.57		<2.57	<2.57	<2.57	<2.57	<2.57	<2.57	Not defined	1.4E+05
trans-1,3-Dichloropropene[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	Not defined
1,1,2-Trichloroethane[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	10	5.0E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
1,3-Dichloropropane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	2 (aggr)	2.3E+04
Ethyl methacrylate[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	Not defined	7.6E+03
2-Hexanone[1]	µg/kg	3.40		<3.40	<3.40	<3.40	<3.40	<3.40	<3.40	Not defined	1.3E+03
Dibromochloromethane[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	3.90E+01
1,2-Dibromoethane-EDB[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	<0.88	Not defined	1.60E-01
Tetrachloroethene[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	8.8	Not defined
1,1,1,2-Tetrachloroethane[1]	µg/kg	0.34		<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	Not defined	8.80E+00
Chlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	Not defined	1.30E+03
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	110	2.50E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	17	2.40E+03
Bromoform[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	75	8.60E+01
cis-1,4-Dichloro-2-butene[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	9.40E-03
Styrene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	86	3.50E+04
1,1,2,2-Tetrachloroethane[1]	µg/kg	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	<0.95	Not defined	8.80E+00
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	17	2.8E+03
1,2,3-Trichloropropane[1]	µg/kg	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	1.10E-01
trans-1,4-Dichloro-2-butene[1]	µg/kg	1.43		<1.43	<1.43	<1.43	<1.43	<1.43	<1.43	Not defined	3.20E-02
Isopropylbenzene[1]	µg/kg	0.38		<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	Not defined	Not defined
Bromobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	Not defined	1.80E+03
n-Propylbenzene[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	2.40E+04
2-Chlorotoluene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	Not defined
4-Chlorotoluene[1]	µg/kg	0.72		<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/kg	0.43		<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	Not defined	1.50E+03
Pentachloroethane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	<0.89	Not defined	3.60E+01
tert-Butylbenzene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	Not defined	1.20E+05
1,2,4-Trimethylbenzene[1]	µg/kg	0.40		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	Not defined	1.80E+03
sec-Butylbenzene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	<0.55	Not defined	1.20E+05
1,3-Dichlorobenzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	19 (aggr)	Not defined
1,4-Dichlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	19 (aggr)	1.10E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/kg	0.73		<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	19 (aggr)	9.30E+03
n-Butylbenzene[1]	µg/kg	0.65		<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	Not defined	5.80E+04
1,2-Dibromo-3-Chloropropane[1]	µg/kg	1.25		<1.25	<1.25	<1.25	<1.25	<1.25	<1.25	Not defined	6.40E-02
1,2,4-Trichlorobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	<0.69	11 (aggr)	1.10E+02
Naphthalene[1]	µg/kg	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	1.70E+01
Hexachlorobutadiene[1]	µg/kg	0.76	USEPA 8260C	<0.76	<0.76	<0.76	<0.76	<0.76	<0.76	Not defined	5.30E+00
1,2,3-Trichlorobenzene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	9.30E+02
TIC's	µg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	ND		

Test Parameter	Unit	MDL	Test Method	Test Results						
				TP-15	TP-16	TP-17	TP-18	TP-19	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
Dichlorodifluoromethane[1]	µg/kg	0.60	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	Not defined
Chloromethane[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	Not defined	4.6E+02
Vinyl chloride[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	0.1	1.7E+00
Bromomethane[1]	µg/kg	0.67		<0.67	<0.67	<0.67	<0.67	<0.67	Not defined	8.6E+01
Chloroethane[1]	µg/kg	0.28		<0.28	<0.28	<0.28	<0.28	<0.28	Not defined	5.7E+04
Trichlorofluoromethane[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	3.5E+05
Acetonitrile[1]	µg/kg	1.81		<1.81	<1.81	<1.81	<1.81	<1.81	Not defined	3.4E+03
Acetone[1]	µg/kg	2.75		<2.75	<2.75	<2.75	<2.75	<2.75	Not defined	6.7E+05
Diethyl ether[1]	µg/kg	1.03		<1.03	<1.03	<1.03	<1.03	<1.03	Not defined	Not defined
1,1-Dichloroethene[1]	µg/kg	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	0.3	Not defined
Iodomethane[1]	µg/kg	0.87		<0.87	<0.87	<0.87	<0.87	<0.87	Not defined	Not defined
Propionitrile[1]	µg/kg	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	Not defined	Not defined
Acrylonitrile[1]	µg/kg	0.85		<0.85	<0.85	<0.85	<0.85	<0.85	Not defined	1.1E+00
Methylene chloride[1]	µg/kg	1.21		<1.21	<1.21	<1.21	<1.21	<1.21	Not defined	1.0E+03
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98		<0.98	<0.98	<0.98	<0.98	<0.98	Not defined	2.8E+04
Allyl chloride[1]	µg/kg	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	Not defined	3.2E+00
Carbon disulfide[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.9E+00
trans-1,2-Dichloroethene[1]	µg/kg	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	1 (aggr)	Not defined
MTBE[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	100	2.1E+02
1,1-Dichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	0.3	Not defined
Chloroprene[1]	µg/kg	3.11		<3.11	<3.11	<3.11	<3.11	<3.11	Not defined	Not defined
2-Butanone (MEK)[1]	µg/kg	6.81		<6.81	<6.81	<6.81	<6.81	<6.81	Not defined	1.9E+05
Methacrylonitrile[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	Not defined	1.0E+02
cis-1,2-Dichloroethene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	1	Not defined
Bromochloromethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.3E+00
Chloroform[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	5.6	1.4E+00
Methyl acrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	6.1E+02
2,2-Dichloropropane[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	2 (aggr)	Not defined
Tetrahydrofuran[1]	µg/kg	1.64		<1.64	<1.64	<1.64	<1.64	<1.64	7	9.4E+04
1,2-Dichlorethane[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	2.0E+00
1,1,1-Trichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	15	3.6E+04
1,1-Dichloropropene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	Not defined	Not defined
Carbon Tetrachloride[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	2.9E+00
Benzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Dibromomethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	9.9E+01
1,2-Dichloropropane[1]	µg/kg	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	2 (aggr)	1.2E+00
Trichloroethene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	2.5	Not defined
Bromodichloromethane[1]	µg/kg	0.74		<0.74	<0.74	<0.74	<0.74	<0.74	Not defined	Not defined
Methyl methacrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.9E+04
cis-1,3-Dichloropropene[1]	µg/kg	0.39		<0.39	<0.39	<0.39	<0.39	<0.39	Not defined	Not defined
4-Methyl-2-pentanone (MIBK)[1]	µg/kg	2.57		<2.57	<2.57	<2.57	<2.57	<2.57	Not defined	1.4E+05
trans-1,3-Dichloropropene[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	Not defined
1,1,2-Trichloroethane[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	10	5.0E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
1,3-Dichloropropane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	2 (aggr)	2.3E+04

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-15	TP-16	TP-17	TP-18	TP-19		
Ethyl methacrylate[1]	µg/kg	0.78	USEPA 8260C	<0.78	<0.78	<0.78	<0.78	<0.78	Not defined	7.6E+03
2-Hexanone[1]	µg/kg	3.40		<3.40	<3.40	<3.40	<3.40	<3.40	Not defined	1.3E+03
Dibromochloromethane[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	3.90E+01
1,2-Dibromoethane-EDB[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	Not defined	1.60E-01
Tetrachloroethene[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	8.8	Not defined
1,1,1,2-Tetrachloroethane[1]	µg/kg	0.34		<0.34	<0.34	<0.34	<0.34	<0.34	Not defined	8.80E+00
Chlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	Not defined	1.30E+03
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	110	2.50E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	17	2.40E+03
Bromoform[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	75	8.60E+01
cis-1,4-Dichloro-2-butene[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	9.40E-03
Styrene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	86	3.50E+04
1,1,2,2-Tetrachloroethane[1]	µg/kg	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	Not defined	8.80E+00
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	17	2.8E+03
1,2,3-Trichloropropane[1]	µg/kg	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	1.10E-01
trans-1,4-Dichloro-2-butene[1]	µg/kg	1.43		<1.43	<1.43	<1.43	<1.43	<1.43	Not defined	3.20E-02
Isopropylbenzene[1]	µg/kg	0.38		<0.38	<0.38	<0.38	<0.38	<0.38	Not defined	Not defined
Bromobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	Not defined	1.80E+03
n-Propylbenzene[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	2.40E+04
2-Chlorotoluene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	Not defined
4-Chlorotoluene[1]	µg/kg	0.72		<0.72	<0.72	<0.72	<0.72	<0.72	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/kg	0.43		<0.43	<0.43	<0.43	<0.43	<0.43	Not defined	1.50E+03
Pentachloroethane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	Not defined	3.60E+01
tert-Butylbenzene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	Not defined	1.20E+05
1,2,4-Trimethylbenzene[1]	µg/kg	0.40		<0.40	<0.40	<0.40	<0.40	<0.40	Not defined	1.80E+03
sec-Butylbenzene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	Not defined	1.20E+05
1,3-Dichlorobenzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	19 (aggr)	Not defined
1,4-Dichlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	19 (aggr)	1.10E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/kg	0.73		<0.73	<0.73	<0.73	<0.73	<0.73	19 (aggr)	9.30E+03
n-Butylbenzene[1]	µg/kg	0.65		<0.65	<0.65	<0.65	<0.65	<0.65	Not defined	5.80E+04
1,2-Dibromo-3-Chloropropane[1]	µg/kg	1.25		<1.25	<1.25	<1.25	<1.25	<1.25	Not defined	6.40E-02
1,2,4-Trichlorobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	11 (aggr)	1.10E+02
Naphthalene[1]	µg/kg	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	1.70E+01
Hexachlorobutadiene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	Not defined	5.30E+00
1,2,3-Trichlorobenzene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	9.30E+02
TIC's	µg/kg	-	NIST Library Search	ND	ND	ND	ND	ND		

SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E		
N-Nitrosodimethylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.4E-02
Pyridine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	11	1.2E+03
Phenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	14	2.5E+05
Aniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.0E+02
Bis(2-chhloroethyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+00
2-Chlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.8E+03
1,3-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,4-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+01
Benzyl alcohol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
1,2-Dichlorobenzene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	9.3E+03
Bis(2-chloroisopropyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Methylphenol/3-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
N-Nitrosodi-n-propylamine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.3E-01
Hexachloroethane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+00
Nitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.2E+01
Isophorone	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.4E+03
2,4-Dimethylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+04
2-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Bis(2-chloroethoxy)methane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
2,4-Dichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
1,2,4-Trichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
Naphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.70E+01
4-Chloroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	30	Not defined
Hexachlorobutadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.3E+00
4-Chloro-3-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+03
1-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.3E+01
Hexachlorocyclopentadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.5E+00
2,4,6-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+02
2,4,5-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Chloronaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+03
1,4-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Dimethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	82	Not defined
1,3-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
2,6-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.5E+00
1,2-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Acenaphthylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
3-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Acenaphthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.5E+04
2,4-Dinitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+03
4-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,4-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.4E+00
Dibenzofuran	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+03
2,3,5,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,3,4,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+04
Diethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	53	6.60E+05
4-Chlrophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
4,6-Dinitro-2-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Fluorene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
1,2-Diphenylhydrazine (as azobenzene)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.6E+01
4-Bromophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Hexachlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2	9.6E-01
Pentachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Phenanthrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	12	4.0E+00
Anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+05
Carbazole	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E	TP-6E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
Di-n-butyl phthalate	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	36	8.20E+04
Fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
Benzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E-02
3,3'-Dimethylbenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.1E+00
Pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+04
Butyl benzyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.20E+03
Bis(2-ethylhexyl) adipate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.90E+03
Bis(2-ethylhexyl) phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.60E+02
3,3'-Dichlorobenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.10E+00
Benz(a)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Chrysene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH	2.1E+03
Di-n-octyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+03
Benzo(b)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+00
Benzo(g,hi)perylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH	Not defined
TIC's	mg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	ND	-	-

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
N-Nitrosodimethylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.4E-02
Pyridine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	11	1.2E+03
Phenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	14	2.5E+05
Aniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.0E+02
Bis(2-chhloroethyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+00
2-Chlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.8E+03
1,3-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,4-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+01
Benzyl alcohol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,2-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	9.3E+03
Bis(2-chloroisopropyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Methylphenol/3-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
N-Nitrosodi-n-propylamine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.3E-01
Hexachloroethane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+00
Nitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.2E+01
Isophorone	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.4E+03
2,4-Dimethylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+04
2-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Bis(2-chloroethoxy)methane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
2,4-Dichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
1,2,4-Trichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
Naphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.70E+01
4-Chloroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	30	Not defined
Hexachlorobutadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.3E+00
4-Chloro-3-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+03
1-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.3E+01
Hexachlorocyclopentadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.5E+00
2,4,6-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+02

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-7E	TP-8E	TP-9E	TP-10E	TP-11E	TP-12E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
2,4,5-Trichlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Chloronaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+03
1,4-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Dimethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	82	Not defined
1,3-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
2,6-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.5E+00
1,2-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Acenaphthylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
3-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Acenaphthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.5E+04
2,4-Dinitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+03
4-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,4-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.4E+00
Dibenzofuran	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+03
2,3,5,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,3,4,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+04
Diethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	53	6.60E+05
4-Chlrophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
4,6-Dinitro-2-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Fluorene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
1,2-Diphenylhydrazine (as azobenzene)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.6E+01
4-Bromophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Hexachlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2	9.6E-01
Pentachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Phenanthrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	12	4.0E+00
Anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+05
Carbazole	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Di-n-butyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	36	8.20E+04
Fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
Benzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E-02
3,3'-Dimethylbenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.1E+00
Pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+04
Butyl benzyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.20E+03
Bis(2-ethylhexyl) adipate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.90E+03
Bis(2-ethylhexyl) phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.60E+02
3,3'-Dichlorobenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.10E+00
Benz(a)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Chrysene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	41 (total of 10 PAH	2.1E+03
Di-n-octyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+03
Benzo(b)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+00
Benzo(g,hi)perylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	Not defined
TIC's	mg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	ND	-	-

Test Parameter	Unit	MDL	Test Method	Test Results							
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
N-Nitrosodimethylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.4E-02
Pyridine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	11	1.2E+03
Phenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	14	2.5E+05
Aniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.0E+02
Bis(2-chhloroethyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+00
2-Chlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.8E+03
1,3-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,4-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+01
Benzyl alcohol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,2-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	9.3E+03
Bis(2-chloroisopropyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Methylphenol/3-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
N-Nitrosodi-n-propylamine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.3E-01
Hexachloroethane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+00
Nitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.2E+01
Isophorone	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.4E+03
2,4-Dimethylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+04
2-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Bis(2-chloroethoxy)methane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
2,4-Dichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
1,2,4-Trichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
Naphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.70E+01
4-Chloroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	30	Not defined
Hexachlorobutadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.3E+00
4-Chloro-3-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+03
1-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.3E+01
Hexachlorocyclopentadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.5E+00
2,4,6-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+02
2,4,5-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Chloronaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+03
1,4-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Dimethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	82	Not defined
1,3-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
2,6-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.5E+00
1,2-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Acenaphthylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
3-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Acenaphthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.5E+04
2,4-Dinitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+03
4-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,4-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.4E+00
Dibenzofuran	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+03
2,3,5,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,3,4,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+04
Diethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	53	6.60E+05
4-Chlrophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02

Test Parameter	Unit	MDL	Test Method	Test Results						Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-14E	TP-15E	TP-16E	TP-20E	TP-21E	TP-22E		
4,6-Dinitro-2-methylphenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Fluorene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
1,2-Diphenylhydrazine (as azobenzene)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.6E+01
4-Bromophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Hexachlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2	9.6E-01
Pentachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Phenanthrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	12	4.0E+00
Anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+05
Carbazole	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Di-n-butyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	36	8.20E+04
Fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
Benzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E-02
3,3'-Dimethylbenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.1E+00
Pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+04
Butyl benzyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.20E+03
Bis(2-ethylhexyl) adipate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.90E+03
Bis(2-ethylhexyl) phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.60E+02
3,3'-Dichlorobenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.10E+00
Benz(a)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Chrysene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	41 (total of 10 PAH	2.1E+03
Di-n-octyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+03
Benzo(b)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+00
Benzo(g,hi)perylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH	Not defined
TIC's	mg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	ND	-	

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-15	TP-16	TP-17	TP-18	TP-19		
N-Nitrosodimethylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.4E-02
Pyridine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	11	1.2E+03
Phenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	14	2.5E+05
Aniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.0E+02
Bis(2-chhloroethyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+00
2-Chlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.8E+03
1,3-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,4-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+01
Benzyl alcohol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,2-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	9.3E+03
Bis(2-chloroisopropyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Methylphenol/3-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
N-Nitrosodi-n-propylamine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.3E-01
Hexachloroethane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+00
Nitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.2E+01
Isophorone	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.4E+03
2,4-Dimethylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+04
2-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Bis(2-chloroethoxy)methane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03

Test Parameter	Unit	MDL	Test Method	Test Results						
				TP-15	TP-16	TP-17	TP-18	TP-19	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
2,4-Dichlorophenol	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
1,2,4-Trichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
Naphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.70E+01
4-Chloroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	30	Not defined
Hexachlorobutadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.3E+00
4-Chloro-3-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+03
1-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.3E+01
Hexachlorocyclopentadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.5E+00
2,4,6-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+02
2,4,5-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Chloronaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+03
1,4-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Dimethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	82	Not defined
1,3-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
2,6-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.5E+00
1,2-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Acenaphthylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
3-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Acenaphthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.5E+04
2,4-Dinitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+03
4-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,4-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.4E+00
Dibenzofuran	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+03
2,3,5,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,3,4,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+04
Diethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	53	6.60E+05
4-Chlrophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
4,6-Dinitro-2-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Fluorene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
1,2-Diphenylhydrazine (as azobenzene)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.6E+01
4-Bromophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Hexachlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	2	9.6E-01
Pentachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Phenanthrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	12	4.0E+00
Anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+05
Carbazole	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Di-n-butyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	36	8.20E+04
Fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
Benzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E-02
3,3'-Dimethylbenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.1E+00
Pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+04
Butyl benzyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.20E+03
Bis(2-ethylhexyl) adipate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.90E+03
Bis(2-ethylhexyl) phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.60E+02
3,3'-Dichlorobenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.10E+00
Benz(a)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Chrysene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	(total of 10 PA	2.1E+03
Di-n-octyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+03

Test Parameter	Unit	MDL	Test Method	Test Results						
				TP-15	TP-16	TP-17	TP-18	TP-19	Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
Benzo(b)fluoranthene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+00
Benzo(g,hi)perylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH	Not defined
TIC's	mg/kg	-	NIST Library Search	ND	ND	ND	ND	ND		

Notes: 1. The results relate only to the items tested.

2. Tests marked with [1] are ENAS accredited in compliance with ISO/IEC 17025-2005 Standard.
3. **MDL**: Method Detection Limit. **ND**: Not Detected
4. Aggregate: For the composition of the aggregate parameters, see Annex N of the Dutch Soil Quality Regulation.

ANALYSIS OF SOIL ADDITIONAL WORKS

TEST REPORT ON ANALYSIS OF SOIL

Owner	ACES - Dubai	**Report No.**	HMR18006048
Contractor	Not Provided	**Date Reported**	15/07/18
Consultant	Not Provided	**Sample No.**	HMS18004020
Project No.	Not Provided	**Request No.**	HMQ18004020
Project Name	Not Provided	**Client Reference**	Request Dated 08/07/2018 (SC18-096 and SD18000031)
Sample Description	Soil	**Sample Size**	5 Samples
Source	BH TP-01E, TP-02E, TP-03E, TP-04E, TP-05E, Depth 1.0m	**Sampling Date**	08/07/18
Sample Location	Site	**Sampling Cert. No.**	Not Provided
Lot No.	Not Provided	**Sampling Method**	Not Provided
Lot Size	Not Provided	**Sampled By**	Client's Rep.
Test Method	See below	**Sample Brt. In By**	Client's Rep.
Test Method Var.	None	**Date Received**	08/07/18
Tested By:	Hans, Winelen	**Date Tested**	10 - 14/07/2018

II. CHEMICAL ANALYSIS:

TOTAL ORGANIC CARBON :

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
Total Organic Carbon	%	0.01	Walkley-black method	0.01	0.03	0.02	0.02	0.03	-	-

II. ORGANICS:

BTEX

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
Benzene[1]	µg/kg	0.52	USEPA 8260 C	<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	110	2.5E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	17 (mixed isomers)	2.40E+03
o- Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55		2.8E+03
BTEX[1]	µg/kg	3.19		<3.19	<3.19	<3.19	<3.19	<3.19	-	

VOLATILE ORGANIC COMPOUNDS (VOCs) + TIC's

Tests	Unit	MDL	Test Method	Test Results					Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
Dichlorodifluoromethane[1]	µg/kg	0.60	USEPA 8260C	<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	Not defined
Chloromethane[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	Not defined	4.6E+02
Vinyl chloride[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88	0.1	1.7E+00
Bromomethane[1]	µg/kg	0.67		<0.67	<0.67	<0.67	<0.67	<0.67	Not defined	8.6E+01
Chloroethane[1]	µg/kg	0.28		<0.28	<0.28	<0.28	<0.28	<0.28	Not defined	5.7E+04
Trichlorofluoromethane[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	3.5E+05
Acetonitrile[1]	µg/kg	1.81		<1.81	<1.81	<1.81	<1.81	<1.81	Not defined	3.4E+03
Acetone[1]	µg/kg	2.75		<2.75	<2.75	<2.75	<2.75	<2.75	Not defined	6.7E+05
Diethyl ether[1]	µg/kg	1.03		<1.03	<1.03	<1.03	<1.03	<1.03	Not defined	Not defined

1,1-Dichloroethene[1]	µg/kg	0.91		<0.91	<0.91	<0.91	<0.91	<0.91	0.3	Not defined
Iodomethane[1]	µg/kg	0.87		<0.87	<0.87	<0.87	<0.87	<0.87	Not defined	Not defined
Propionitrile[1]	µg/kg	0.77		<0.77	<0.77	<0.77	<0.77	<0.77	Not defined	Not defined
Acrylonitrile[1]	µg/kg	0.85		<0.85	<0.85	<0.85	<0.85	<0.85	Not defined	1.1E+00
Methylene chloride[1]	µg/kg	1.21		<1.21	<1.21	<1.21	<1.21	<1.21	Not defined	1.0E+03
1,1,2-Trichlorotrifluoroethane (CFC-113)[1]	µg/kg	0.98		<0.98	<0.98	<0.98	<0.98	<0.98	Not defined	2.8E+04
Allyl chloride[1]	µg/kg	0.57		<0.57	<0.57	<0.57	<0.57	<0.57	Not defined	3.2E+00
Carbon disulfide[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35	Not defined	2.9E+00
trans-1,2-Dichloroethene[1]	µg/kg	0.96		<0.96	<0.96	<0.96	<0.96	<0.96	1 (aggr)	Not defined
MTBE[1]	µg/kg	0.81		<0.81	<0.81	<0.81	<0.81	<0.81	100	2.1E+02
1,1-Dichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	0.3	Not defined
Chloroprene[1]	µg/kg	3.11		<3.11	<3.11	<3.11	<3.11	<3.11	Not defined	Not defined
2-Butanone (MEK)[1]	µg/kg	6.81		<6.81	<6.81	<6.81	<6.81	<6.81	Not defined	1.9E+05
Methacrylonitrile[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	Not defined	1.0E+02
cis-1,2-Dichloroethene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	1	Not defined
Bromochloromethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.3E+00
Chloroform[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	5.6	1.4E+00
Methyl acrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	6.1E+02
2,2-Dichloropropane[1]	µg/kg	0.79		<0.79	<0.79	<0.79	<0.79	<0.79	2 (aggr)	Not defined
Tetrahydrofuran[1]	µg/kg	1.64		<1.64	<1.64	<1.64	<1.64	<1.64	7	9.4E+04
1,2-Dichlorethane[1]	µg/kg	0.86	USEPA 8260C	<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	2.0E+00
1,1,1-Trichloroethane[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	15	3.6E+04
1,1-Dichloropropene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	Not defined	Not defined
Carbon Tetrachloride[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	2.9E+00
Benzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	1.1	5.1E+00
Dibromomethane[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	9.9E+01
1,2-Dichloropropane[1]	µg/kg	0.51		<0.51	<0.51	<0.51	<0.51	<0.51	2 (aggr)	1.2E+00
Trichloroethene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	2.5	Not defined
Bromodichloromethane[1]	µg/kg	0.74		<0.74	<0.74	<0.74	<0.74	<0.74	Not defined	Not defined
Methyl methacrylate[1]	µg/kg	0.90		<0.90	<0.90	<0.90	<0.90	<0.90	Not defined	1.9E+04
cis-1,3-Dichloropropene[1]	µg/kg	0.39		<0.39	<0.39	<0.39	<0.39	<0.39	Not defined	Not defined
4-Methyl-2-pentanone (MIBK)[1]	µg/kg	2.57		<2.57	<2.57	<2.57	<2.57	<2.57	Not defined	1.4E+05
trans-1,3-Dichloropropene[1]	µg/kg	0.61		<0.61	<0.61	<0.61	<0.61	<0.61	Not defined	Not defined
1,1,2-Trichloroethane[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	10	5.0E+00
Toluene[1]	µg/kg	0.54		<0.54	<0.54	<0.54	<0.54	<0.54	32	4.7E+04
1,3-Dichloropropane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	2 (aggr)	2.3E+04
Ethyl methacrylate[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78	Not defined	7.6E+03
2-Hexanone[1]	µg/kg	3.40		<3.40	<3.40	<3.40	<3.40	<3.40	Not defined	1.3E+03
Dibromochloromethane[1]	µg/kg	0.35		<0.35	<0.35	<0.35	<0.35	<0.35		
1,2-Dibromoethane-EDB[1]	µg/kg	0.88		<0.88	<0.88	<0.88	<0.88	<0.88		
Tetrachloroethene[1]	µg/kg	0.78		<0.78	<0.78	<0.78	<0.78	<0.78		

1,1,1,2-Tetrachloroethane[1]	µg/kg	0.34	USEPA 8260C	<0.34	<0.34	<0.34	<0.34	<0.34	Not defined	8.80E+00
Chlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	Not defined	1.30E+03
Ethylbenzene[1]	µg/kg	0.44		<0.44	<0.44	<0.44	<0.44	<0.44	110	2.50E+01
m & p- Xylene[1]	µg/kg	1.14		<1.14	<1.14	<1.14	<1.14	<1.14	17	2.40E+03
Bromoform[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	75	8.60E+01
cis-1,4-Dichloro-2-butene[1]	µg/kg	0.63		<0.63	<0.63	<0.63	<0.63	<0.63	Not defined	9.40E-03
Styrene[1]	µg/kg	0.64		<0.64	<0.64	<0.64	<0.64	<0.64	86	3.50E+04
1,1,2,2-Tetrachloroethane[1]	µg/kg	0.95		<0.95	<0.95	<0.95	<0.95	<0.95	Not defined	8.80E+00
o-Xylene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	17	2.8E+03
1,2,3-Trichloropropane[1]	µg/kg	0.92		<0.92	<0.92	<0.92	<0.92	<0.92	Not defined	1.10E-01
trans-1,4-Dichloro-2-butene[1]	µg/kg	1.43		<1.43	<1.43	<1.43	<1.43	<1.43	Not defined	3.20E-02
Isopropylbenzene[1]	µg/kg	0.38		<0.38	<0.38	<0.38	<0.38	<0.38	Not defined	Not defined
Bromobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	Not defined	1.80E+03
n-Propylbenzene[1]	µg/kg	0.60		<0.60	<0.60	<0.60	<0.60	<0.60	Not defined	2.40E+04
2-Chlorotoluene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	Not defined
4-Chlorotoluene[1]	µg/kg	0.72		<0.72	<0.72	<0.72	<0.72	<0.72	Not defined	Not defined
1,3,5-Trimethylbenzene[1]	µg/kg	0.43		<0.43	<0.43	<0.43	<0.43	<0.43	Not defined	1.50E+03
Pentachloroethane[1]	µg/kg	0.89		<0.89	<0.89	<0.89	<0.89	<0.89	Not defined	3.60E+01
tert-Butylbenzene[1]	µg/kg	0.50		<0.50	<0.50	<0.50	<0.50	<0.50	Not defined	1.20E+05
1,2,4-Trimethylbenzene[1]	µg/kg	0.40		<0.40	<0.40	<0.40	<0.40	<0.40	Not defined	1.80E+03
sec-Butylbenzene[1]	µg/kg	0.55		<0.55	<0.55	<0.55	<0.55	<0.55	Not defined	1.20E+05
1,3-Dichlorobenzene[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	19 (aggr)	Not defined
1,4-Dichlorobenzene[1]	µg/kg	0.59		<0.59	<0.59	<0.59	<0.59	<0.59	19 (aggr)	1.10E+01
p-Isopropyltoluene (p-Cymene)[1]	µg/kg	0.52		<0.52	<0.52	<0.52	<0.52	<0.52	Not defined	Not defined
1,2-Dichlorbenzene[1]	µg/kg	0.73		<0.73	<0.73	<0.73	<0.73	<0.73	19 (aggr)	9.30E+03
n-Butylbenzene[1]	µg/kg	0.65		<0.65	<0.65	<0.65	<0.65	<0.65	Not defined	5.80E+04
1,2-Dibromo-3-Chloropropane[1]	µg/kg	1.25		<1.25	<1.25	<1.25	<1.25	<1.25	Not defined	6.40E-02
1,2,4-Trichlorobenzene[1]	µg/kg	0.69		<0.69	<0.69	<0.69	<0.69	<0.69	11 (aggr)	1.10E+02
Naphthalene[1]	µg/kg	1.29		<1.29	<1.29	<1.29	<1.29	<1.29	Not defined	1.70E+01
Hexachlorobutadiene[1]	µg/kg	0.76		<0.76	<0.76	<0.76	<0.76	<0.76	Not defined	5.30E+00
1,2,3-Trichlorobenzene[1]	µg/kg	0.86		<0.86	<0.86	<0.86	<0.86	<0.86	Not defined	9.30E+02
TIC's	µg/kg	-		ND	ND	ND	ND	ND		

TOTAL PETROLEUM HYDROCARBONS (TPHCWG)

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
TPH C8-C38 ALIPHATIC	mg/kg	0.1	USEPA 8015D	<0.1	<0.1	<0.1	<0.1	<0.1	5000.00	3500000
TPH C6-C8 AROMATIC[1]	mg/kg	0.1	USPA 8260C	<0.1	<0.1	<0.1	<0.1	<0.1		4.20E+02
TPH C10-C22 AROMATIC	mg/kg	0.1	USEPA 8270D	<0.1	<0.1	<0.1	<0.1	<0.1		6.00E+02

POLYCHLORINATED BIPHENYLS

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
3,3',4,4'-Tetrachlorobiphenyl (PCB77)	mg/kg	0.01	USEPA 8270D	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.16
3,4,4',5-Tetrachlorobiphenyl (PCB81)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.05
2,3,3',4,4'-Pentachlorobiphenyl (PCB105)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2,3,4,4',5-Pentachlorobiphenyl (PCB114)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5-Pentachlorobiphenyl (PCB118)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
2',3,4,4',5-Pentachlorobiphenyl (PCB123)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.49
3,3',4,4',5-Pentachlorobiphenyl (PCB126)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.0002
2,3,3',4,4',5-Hexachlorobiphenyl (PCB156)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB157)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.50
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB167)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.51
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB169)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.001
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB189)	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	-	0.52
Total PCBs	mg/kg	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	1.00	Not defined

POLYNUCLEAR AROMATIC HYDROCARBONS

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
Naphthalene	mg/kg	0.05	USEPA 8270D	<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	1.7E+01
Acenaphthylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	Not defined
Acenaphthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	4.5E+04
Fluorene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	3.0E+04
Phenanthrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.3E+05
Fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	3.0E+04
Pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.3E+04
Benz(a)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+01
Chrysene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH	2.1E+03
Benzo(b)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	Not defined	2.1E+00
Benzo(g,h,i)perylene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40 (total of 10 PAH)	Not defined
Polynuclear Aromatic Hydrocarbons (PAHs)	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	40	-

SEMI-VOLATILE ORGANIC COMPOUNDS + TIC's

Test Parameter	Unit	MDL	Test Method	Test Results					Dutch Intervention Value mg/kg	US EPA (2017) Industrial Soil mg/kg
				TP-1E	TP-2E	TP-3E	TP-4E	TP-5E		
N-Nitrosodimethylamine	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.4E-02
Pyridine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	11	1.2E+03
Phenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	14	2.5E+05
Aniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.0E+02
Bis(2-chhloroethyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+00
2-Chlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.8E+03
1,3-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,4-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+01
Benzyl alcohol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
1,2-Dichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	9.3E+03
Bis(2-chloroisopropyl) ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Methylphenol/3-Methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
N-Nitrosodi-n-propylamine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.3E-01
Hexachloroethane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+00
Nitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.2E+01
Isophorone	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.4E+03
2,4-Dimethylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+04
2-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Bis(2-chloroethoxy)methane	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
2,4-Dichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+03
1,2,4-Trichlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
Naphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.70E+01
4-Chloroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	30	Not defined
Hexachlorobutadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.3E+00
4-Chloro-3-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+03
1-Methylnaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.3E+01
Hexachlorocyclopentadiene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.5E+00
2,4,6-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+02
2,4,5-Trichlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
2-Chloronaphthalene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.0E+03
1,4-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
Dimethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	82	Not defined
1,3-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01
2,6-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.5E+00
1,2-Dinitrobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+01

Acenaphthylene	mg/kg	0.02	USEPA 8270D	<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
3-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Acenaphthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	4.5E+04
2,4-Dinitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.6E+03
4-Nitrophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,4-Dinitrotoluene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	7.4E+00
Dibenzofuran	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E+03
2,3,5,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
2,3,4,6-Tetrachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.5E+04
Diethyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	53	6.60E+05
4-Chlrophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
4-Nitroaniline	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.1E+02
4,6-Dinitro-2-methylphenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Fluorene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
N-nitrosodiphenylamine (diphenylamine)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+04
1,2-Diphenylhydrazine (as azobenzene)	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.6E+01
4-Bromophenyl phenyl ether	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Hexachlorobenzene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	2	9.6E-01
Pentachlorophenol	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Phenanthrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	12	4.0E+00
Anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+05
Carbazole	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	Not defined
Di-n-butyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	36	8.20E+04
Fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	3.0E+04
Benzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.0E-02
3,3'-Dimethylbenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.1E+00
Pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.3E+04
Butyl benzyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.20E+03
Bis(2-ethylhexyl) adipate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.90E+03
Bis(2-ethylhexyl) phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	1.60E+02
3,3'-Dichlorobenzidine	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	5.10E+00
Benz(a)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Chrysene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	1 (total of 10 PAH	2.1E+03
Di-n-octyl phthalate	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	8.2E+03
Benzo(b)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+01
Benzo(k)fluoranthene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.10E+02
Benzo(a)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	2.1E+00
Indeno(1,2,3-cd)pyrene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02		2.1E+01
Dibenz(a,h)anthracene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	Not defined	2.1E+00
Benzo(g,hi)perylene	mg/kg	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	40 (total of 10 PAH)	Not defined
TIC's	mg/kg	-	NIST Library Search	ND	ND	ND	ND	ND	-	-

Notes:

1. ISO/IEC 17025-2005 Accredited Test: [1]-ENAS
2. The test results relate only to the item(s) tested. This report shall not be reproduced except in full, without written approval of
3. 22nd Edition of APHA Methods is used.

METALS IN SOIL

Test Report on Metals in Soil									Permissible Reference Values	
Client	M/S. TECNICAS REUNIDAS			Request No.	SD18000031					
Project	Proposed SEWA Hamriyah Power Plant			Date Received	09/06/2018					
Sample Description	Soil			Date Tested	13-18/06/2018					
Elements	Unit	Test Method	MDL mg/kg	Results						
				TP-1E Depth 1.50m	TP-2E Depth 1.50m	TP-3E Depth 1.50m	TP-4E Depth 1.50m	TP-5E Depth 1.50m	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil (mg/kg)
Arsenic As	mg/kg	APHA3120B	0.12	0.754	0.657	0.989	0.727	0.694	76	3.0E+00 (inorganic)
Barium Ba	mg/kg	APHA3120B	0.12	36.13	35.56	40.53	33.89	40.54	Not defined	2.2E+05
Beryllium Be	mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	2.3E+03
Boron B	mg/kg	APHA3120B	0.09	15.46	14.23	15.60	13.21	15.70	Not defined	2.3E+05
Cadmium Cd	mg/kg	APHA3120B	0.02	0.411	0.403	0.419	0.398	0.409	13	9.8E+02 (DIET)
Chromium (Total) Cr	mg/kg	APHA3120B	0.01	24.45	23.62	25.83	23.60	24.56	180 (Cr-III)	
Copper Cu	mg/kg	APHA3120B	0.01	3.693	3.750	4.081	32.97	3.894	190	4.7E+04
Iron (Total) Fe	mg/kg	APHA3120B	0.09	5432	5310	5632	5240	5516	Not defined	8.2E+05
Lead Pb	mg/kg	APHA3120B	0.01	1.932	1.986	2.003	3.326	2.033	530	8.0 E+02
Manganese Mn	mg/kg	APHA3120B	0.02	206.3	201.9	192.7	196.5	201.2	Not defined	2.6E+04 (non diet)
Molybdneum Mo	mg/kg	APHA3120B	0.01	0.388	0.402	0.406	0.359	0.355	190	5.8E+03
Nickel Ni	mg/kg	APHA3120B	0.02	27.56	22.83	33.99	28.99	31.77	100	
Selenium Se	mg/kg	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100[1]	5.8E+03
Vanadium V	mg/kg	APHA3120B	0.01	15.47	14.84	15.06	13.80	15.55	250[1]	5.8E+03
Zinc Zn	mg/kg	APHA3120B	0.02	13.94	13.18	14.38	33.52	14.01	720	3.5E+05
Mercury Hg	mg/kg	APHA3120B	0.003	0.074	0.152	<0.003	<0.003	0.022	36	4.6E+01
pH*		BS1377 P.3 CL 9		9.1	8.6	8.8	8.8	8.9		

Note: * DAC Accredited

Note 1: Indicative Level for severe contamination

Test Report on Metals in Soil									Permissible Reference Values	
Client	M/S. TECNICAS REUNIDAS				Request No.		SD18000031			
Project	Proposed SEWA Hamriyah Power Plant				Date Received		09/06/2018			
Sample Description	Soil				Date Tested		13-18/06/2018			
Elements	Unit	Test Method	MDL mg/kg	Results						
				TP-6E Depth 1.50m	TP-7E Depth 1.50m	TP-8E Depth 1.50m	TP-9E Depth 1.50m	TP-10E Depth 1.50m	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil (mg/kg)
Arsenic As	mg/kg	APHA3120B	0.12	0.624	0.850	0.836	0.836	0.555	76	3.0E+00 (inorganic)
Barium Ba	mg/kg	APHA3120B	0.12	40.04	73.59	35.14	32.80	34.44	Not defined	2.2E+05
Beryllium Be	mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	2.3E+03
Boron B	mg/kg	APHA3120B	0.09	17.64	17.34	32.86	17.19	43.97	Not defined	2.3E+05
Cadmium Cd	mg/kg	APHA3120B	0.02	0.432	0.422	0.468	0.437	0.438	13	9.8E+02 (DIET)
Chromium (Total) Cr	mg/kg	APHA3120B	0.01	27.30	26.03	24.78	22.01	24.26	180 (Cr-III)	
Copper Cu	mg/kg	APHA3120B	0.01	3.704	3.744	4.207	3.814	5.018	190	4.7E+04
Iron (Total) Fe	mg/kg	APHA3120B	0.09	5698	5451	5671	5167	5561	Not defined	8.2E+05
Lead Pb	mg/kg	APHA3120B	0.01	2.049	1.984	2.732	2.560	2.035	530	8.0 E+02
Manganese Mn	mg/kg	APHA3120B	0.02	199.1	179.9	218.4	208.7	221.0	Not defined	2.6E+04 (non diet)
Molybdneum Mo	mg/kg	APHA3120B	0.01	0.366	0.374	0.392	0.361	0.358	190	5.8E+03
Nickel Ni	mg/kg	APHA3120B	0.02	34.77	36.98	24.31	22.97	26.11	100	
Selenium Se	mg/kg	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100[1]	5.8E+03
Vanadium V	mg/kg	APHA3120B	0.01	15.70	15.13	16.74	15.46	16.76	250[1]	5.8E+03
Zinc Zn	mg/kg	APHA3120B	0.02	14.47	13.42	14.27	12.99	14.90	720	3.5E+05
Mercury Hg	mg/kg	APHA3120B	0.003	<0.003	0.096	0.034	0.042	<0.003	36	4.6E+01
pH*		BS1377 P.3 CL 9		8.6	8.9	8.8	8.5	8.8		

Note: * DAC Accredited

Note 1: Indicative Level for severe contamination

Test Report on Metals in Soil									Permissible Reference Values	
Client	M/S. TECNICAS REUNIDAS			Request No.	SD18000031					
Project	Proposed SEWA Hamriyah Power Plant			Date Received	09/06/2018					
Sample Description	Soil			Date Tested	13-18/06/2018					
Elements	Unit	Test Method	MDL mg/kg	Results						
				TP-11E Depth 1.50m	TP-12E Depth 1.50m	TP-14E Depth 1.50m	TP-15E Depth 1.50m	TP-15 Stock Pile Depth 0.50m	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil (mg/kg)
Arsenic As	mg/kg	APHA3120B	0.12	1.040	0.892	1.032	0.678	1.015	76	3.0E+00 (inorganic)
Barium Ba	mg/kg	APHA3120B	0.12	37.55	36.17	37.01	36.75	35.22	Not defined	2.2E+05
Beryllium Be	mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	2.3E+03
Boron B	mg/kg	APHA3120B	0.09	16.43	28.67	14.60	15.13	15.71	Not defined	2.3E+05
Cadmium Cd	mg/kg	APHA3120B	0.02	0.389	0.407	0.408	0.390	0.399	13	9.8E+02 (DIET)
Chromium (Total) Cr	mg/kg	APHA3120B	0.01	22.77	23.14	22.80	22.35	23.26	180 (Cr-III)	
Copper Cu	mg/kg	APHA3120B	0.01	3.741	3.836	3.771	3.730	3.793	190	4.7E+04
Iron (Total) Fe	mg/kg	APHA3120B	0.09	5152	5507	5308	5232	5142	Not defined	8.2E+05
Lead Pb	mg/kg	APHA3120B	0.01	1.887	1.894	1.680	1.838	1.609	530	8.0 E+02
Manganese Mn	mg/kg	APHA3120B	0.02	194.1	210.3	200.7	202.1	197.2	Not defined	2.6E+04 (non diet)
Molybdneum Mo	mg/kg	APHA3120B	0.01	0.379	0.359	0.313	0.327	0.281	190	5.8E+03
Nickel Ni	mg/kg	APHA3120B	0.02	26.40	26.05	16.56	24.97	25.91	100	
Selenium Se	mg/kg	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100[1]	5.8E+03
Vanadium V	mg/kg	APHA3120B	0.01	15.00	15.81	15.36	14.62	14.47	250[1]	5.8E+03
Zinc Zn	mg/kg	APHA3120B	0.02	12.14	13.28	11.92	12.39	11.77	720	3.5E+05
Mercury Hg	mg/kg	APHA3120B	0.003	<0.003	0.056	<0.003	<0.003	<0.003	36	4.6E+01
pH*		BS1377 P.3 CL 9		8.7	8.6	8.6	8.5	9.0		

Note: * DAC Accredited

Note 1: Indicative Level for severe contamination

Test Report on Metals in Soil									Permissible Reference Value	
Client	M/S. TECNICAS REUNIDAS			Request No.	SD18000031					
Project	Proposed SEWA Hamriyah Power Plant			Date Received	09/06/2018					
Sample Description	Soil			Date Tested	13-18/06/2018					
Elements	Unit	Test Method	MDL mg/kg	Results						
				TP-16E Depth 1.50m	TP-16 Stock Pile Depth 0.50m	TP-17 Stock Pile Depth 0.50m	TP-18 Stock Pile Depth 0.50m	TP-19 Stock Pile Depth 0.50m	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil (mg/kg)
Arsenic As	mg/kg	APHA3120B	0.12	0.896	0.927	1.131	1.012	0.662	76	3.0E+00 (inorganic)
Barium Ba	mg/kg	APHA3120B	0.12	32.09	40.56	33.71	28.77	33.80	Not defined	2.2E+05
Beryllium Be	mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	2.3E+03
Boron B	mg/kg	APHA3120B	0.09	14.50	15.72	12.25	15.04	26.11	Not defined	2.3E+05
Cadmium Cd	mg/kg	APHA3120B	0.02	0.385	0.397	0.364	0.348	0.395	13	9.8E+02 (DIET)
Chromium (Total) Cr	mg/kg	APHA3120B	0.01	21.54	23.51	20.72	20.28	24.27	180 (Cr-III)	
Copper Cu	mg/kg	APHA3120B	0.01	3.819	3.505	3.391	3.339	3.647	190	4.7E+04
Iron (Total) Fe	mg/kg	APHA3120B	0.09	5064	5374	4667	4522	5296	Not defined	8.2E+05
Lead Pb	mg/kg	APHA3120B	0.01	1.499	1.661	1.894	1.542	2.031	530	8.0 E+02
Manganese Mn	mg/kg	APHA3120B	0.02	206.0	199.2	179.1	180.8	196.0	Not defined	2.6E+04 (non diet)
Molybdneum Mo	mg/kg	APHA3120B	0.01	0.278	0.326	0.304	0.328	0.376	190	5.8E+03
Nickel Ni	mg/kg	APHA3120B	0.02	21.23	26.75	16.92	19.99	26.69	100	
Selenium Se	mg/kg	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100[1]	5.8E+03
Vanadium V	mg/kg	APHA3120B	0.01	14.07	15.86	12.75	12.98	15.55	250[1]	5.8E+03
Zinc Zn	mg/kg	APHA3120B	0.02	12.17	12.02	10.98	10.84	13.78	720	3.5E+05
Mercury Hg	mg/kg	APHA3120B	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	36	4.6E+01
pH*		BS1377 P.3 CL 9		8.5	9.1	8.6	8.7	8.4		

Note: * DAC Accredited

Note 1: Indicative Level for severe contamination

Test Report on Metals in Soil								
Client	M/S. TECNICAS REUNIDAS				Request No.	SD18000031		Permissible Reference Values
Project	Proposed SEWA Hamriyah Power Plant				Date Received	09/06/2018		
Sample Description	Soil				Date Tested	13-18/06/2018		
Elements	Unit	Test Method	MDL mg/kg	Results				
				TP-20E Depth 1.50m	TP-21E Depth 1.50m	TP-22E Depth 1.50m	Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil (mg/kg)
Arsenic As	mg/kg	APHA3120B	0.12	0.795	0.717	0.741	76	3.0E+00 (inorganic)
Barium Ba	mg/kg	APHA3120B	0.12	34.80	40.55	36.92	Not defined	2.2E+05
Beryllium Be	mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	30	2.3E+03
Boron B	mg/kg	APHA3120B	0.09	13.84	19.57	17.00	Not defined	2.3E+05
Cadmium Cd	mg/kg	APHA3120B	0.02	0.399	0.409	0.412	13	9.8E+02 (DIET)
Chromium (Total) Cr	mg/kg	APHA3120B	0.01	23.04	26.07	24.43	180 (Cr-III)	
Copper Cu	mg/kg	APHA3120B	0.01	3.582	3.365	3.481	190	4.7E+04
Iron (Total) Fe	mg/kg	APHA3120B	0.09	5273	5483	5358	Not defined	8.2E+05
Lead Pb	mg/kg	APHA3120B	0.01	2.219	2.377	2.064	530	8.0 E+02
Manganese Mn	mg/kg	APHA3120B	0.02	207.1	178.0	191.4	Not defined	2.6E+04 (non diet)
Molybdneum Mo	mg/kg	APHA3120B	0.01	0.322	0.305	0.323	190	5.8E+03
Nickel Ni	mg/kg	APHA3120B	0.02	24.07	23.84	22.79	100	
Selenium Se	mg/kg	APHA3120B	0.10	<0.10	<0.10	<0.10	100[1]	5.8E+03
Vanadium V	mg/kg	APHA3120B	0.01	14.19	15.40	15.38	250[1]	5.8E+03
Zinc Zn	mg/kg	APHA3120B	0.02	13.27	11.93	12.13	720	3.5E+05
Mercury Hg	mg/kg	APHA3120B	0.003	<0.003	<0.003	<0.003	36	4.6E+01
pH*		BS1377 P.3 CL 9		8.4	8.8	9.3		

Note: * DAC Accredited

Note 1: Indicative Level for severe contamination

METALS IN SOIL ADDITIONAL WORKS

Test Report on Metals in Soil									Permissible Reference Values	
Client	M/S. TECNICAS REUNIDAS			Request No.	SD18000031					
Project	Proposed SEWA Hamriyah Power Plant			Date Received	07/07/2018					
Sample Description	Soil			Date Tested	09-14/07/2018					
Elements	Unit	Test Method	MDL mg/kg	Results					Dutch Intervention values (2013) mg/kg	US EPA (2017) Industrial Soil (mg/kg)
				BH-01E Depth 1.50m	BH-02E Depth 1.50m	BH-03E Depth 1.50m	BH-04E Depth 1.50m	BH-05E Depth 1.50m		
Arsenic As	mg/kg	APHA3120B	0.12	0.931	0.923	1.024	1.036	1.171	76	3.0E+00 (inorganic)
Barium Ba	mg/kg	APHA3120B	0.12	25.79	30.43	29.51	31.07	26.96	Not defined	2.2E+05
Beryllium Be	mg/kg	APHA3120B	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	30	2.3E+03
Boron B	mg/kg	APHA3120B	0.09	13.23	13.13	11.25	11.48	11.11	Not defined	2.3E+05
Cadmium Cd	mg/kg	APHA3120B	0.02	0.379	0.373	0.366	0.344	0.326	13	9.8E+02 (DIET)
Chromium (Total) Cr	mg/kg	APHA3120B	0.01	21.64	23.04	22.51	21.76	21.16	180 (Cr-III)	
Copper Cu	mg/kg	APHA3120B	0.01	3.989	3.973	3.869	4.007	3.467	190	4.7E+04
Iron (Total) Fe	mg/kg	APHA3120B	0.09	5146	5148	5056	5020	4671	Not defined	8.2E+05
Lead Pb	mg/kg	APHA3120B	0.01	1.474	1.590	1.611	1.457	1.510	530	8.0 E+02
Manganese Mn	mg/kg	APHA3120B	0.02	188.5	175.8	152.6	174.7	140.0	Not defined	2.6E+04 (non diet)
Molybdneum Mo	mg/kg	APHA3120B	0.01	0.214	0.182	0.181	0.218	0.177	190	5.8E+03
Nickel Ni	mg/kg	APHA3120B	0.02	14.58	20.42	26.02	14.34	21.10	100	
Selenium Se	mg/kg	APHA3120B	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	100[1]	5.8E+03
Vanadium V	mg/kg	APHA3120B	0.01	13.41	13.34	12.50	12.76	11.02	250[1]	5.8E+03
Zinc Zn	mg/kg	APHA3120B	0.02	13.12	14.76	12.17	11.80	11.64	720	3.5E+05
Mercury Hg	mg/kg	APHA3120B	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	36	4.6E+01
pH*		BS1377 P.3 CL 9		8.8	8.9	9.3	9.7	9.4		

Note: * DAC Accredited

Note 1: Indicative Level for severe contamination

APPENDIX D3

CHEMICAL TEST RESULTS OF ASBESTOS

CHEMICAL ANALYSIS OF SOIL

Client	M/S. TECNICAS REUNIDAS	**Report No.**	SD18000031
Contractor	N.P.	**Date Reported**	18/07/2018
Consultant	N.P.	**Sample No.**	See below
Project No.	N.P.	**Request No.**	SD18000031
Project Name	Proposed SEWA Hamriyah Power Plant	**Client Reference**	N.P.
Sample Desc.	Soil	**Sampled By**	ACES
Date Received	03/07/2018	**Sample Brt in by.**	ACES
Date Tested	03-16/07/2018	**Tested by**	SC
Remarks	The material does not contain any of the 6 regulated asbestos minerals.		

TP No.	Test	Method	Unit	Result
TP-03E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-04E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-05E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-06E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-07E	Asbestos Content	USEPA 600/R-93/116	-	Absent
TP-15E	Asbestos Content	USEPA 600/R-93/116	-	Absent

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	Safe limit	Safe limit
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
Insoluable 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	
Molybdneum 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 abundance	Dutch Values		USA values	Canadian values
										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	1800000	87
Insoluable 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	0.003	<0.003	0.096	0.034	0.042	<0.003	0.08	0.3	10	46	50
pH		BS1377 P.3 CL 9		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
				1.04	0.892	1.032	0.678	1.015		Safe limit	Intervention values	Safe limit	Safe limit
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
Insoluable 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	
Molybdneum 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
				1.04	0.892	1.032	0.678	1.015		Safe limit	Intervention values	Safe limit	Safe limit
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
Insoluable 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	
Molybdneum 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	Canadian values
				0.795	0.717	0.741				Safe limit	Intervention values	Safe limit	Safe limit
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			0·2	0.8	12	980	22
Chromium (Total) Cr	mg/kg	APHA3120B	0.01						100	100	380	180000	87
Insoluable 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	
Molybdneum 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 nill.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	Beryllium is ecotoxicological and is sensitive as it can affect environment at levels far lower than humans.

ANALYSIS OF THE METALS IN GROUND WATER

Table 2 Comparision 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	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 Comparision of Organic & haydrocorbon 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
	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 Comparision of Organic & haydrocorbon 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
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 carcenogenic
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 Comparision of Organic & haydrocorbon 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
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 Comparision of Organic & haydrocorbon 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
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 Comparision of Organic & haydrocorbon 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
	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 Comparision of Organic & haydrocorbon 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	
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 carcenogenic
114	1,2-Dichlorbenzene[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 Comparision of Organic & haydrocorbon 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
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-chhloroethyl) 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		Volatilization
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		Degrades in 64 days
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	

Table-3 Comparision of Organic & haydrocorbon 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	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 Comparision of Organic & haydrocorbon 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
									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-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	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 Comparision of Organic & haydrocorbon 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
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 Comparision of Organic & haydrocorbon 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
199	Benzo(g,hi)perylene	mg/kg	0.02	USEPA 8270D						Degrades in the atmosphere by reaction with photochemically-produced hydroxyl radi cals; 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	<0.05	<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-chhloroethyl) 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-Chlrophenyl 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-Dichlorbenzene[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

United Arab Emirates

هيئة الإمارات للمواصفات والمقاييس
Emirates Authority For Standardization & Metrology

Certificate of Accreditation

شهادة الإعتماد

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**		**اعتُمدت وفقا 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 و قابلة للتحديث و إعادة الإصدار حتى تاريخ الإنتهاء المدون أعلاه شريطة إستمرار الجهة المذكورة أعلاه فى تطبيق المواصفات و الأدلة سالفة الذكر. و تتحمل الجهة مسئولية الشهادات الصادرة عنها و تخضع مجالات الإعتماد المذكورة فى وثيقة المجال المرفقة لعمليات متابعة لاحقة من قبل نظام الإعتماد الوطنى

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أى كشط أو تغيير فى هذه الشهادة يلغيها.

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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 الإعتماد الوطنى الإماراتى ملحق مجالات الإعتماد	**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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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 ot 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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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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44	Water: Ambient water, Drinking water	Total Hardness as CaCO3	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, NO2, NOx), CO, CO2, SO2, O2, 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:SO2, CO, NO2, NOX, O3 and particulate matter (TSP, PM1, PM2.5 and PM 10	In-house method SOP 042 using AQM 65
49	Air	Total Suspended Particulate Matter (TSPM, Respirable Suspened Particulate Matter (RSPM-PM10, 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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Scope Appendix

74	Rock Cores	Unconfined Compresive 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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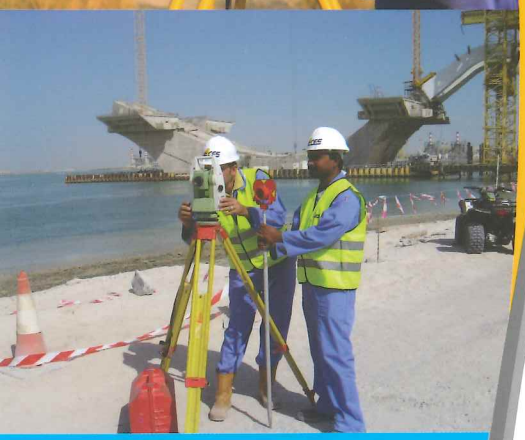
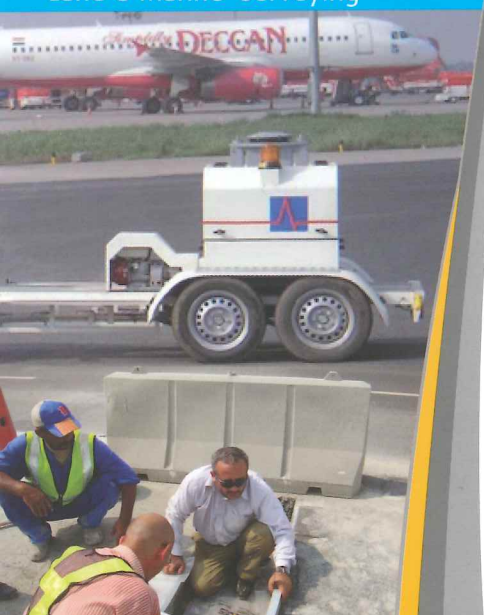
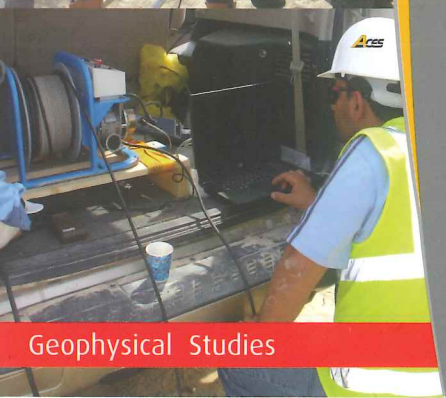


Land & Marine Surveying



Pavement Studies & Evaluation



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