



Materials Recovery and Energy Centre (MREC), Crymlyn Burrows

Site Investigation Factual Report



Document Reference Number: B15974EX / 12635 / R4960

June 2012

Jacobs Engineering UK Limited, Sheldon Court, Wagon Lane, Coventry Road, Sheldon, Birmingham, B26 3DU

Tel: 0121 700 1250 Fax: 121 700 1251

Registered Office: 1180 Eskdale Road, Winnersh, Wokingham, RG41 5TU, UK
Registered in England and Wales No. 2594504

Document Control Sheet

BPP 04 F8
Version 7 April 2011

Client: Neath Port Talbot County Borough Council Project No: B15974EX
 Project: Materials Recovery and Energy Centre (MREC), Crymlyn Burrows
 Document Title: Site Investigation Factual Report
 Ref. No: 12635 / R4960

	Originated by	Checked by	Reviewed by	Approved by
ORIGINAL	NAME Miles Bevan Peter Knight	NAME Kevin Boyle	NAME Kevin Boyle	NAME Hugh Masters-Williams
DATE	INITIALS <i>PK</i>	INITIALS <i>KB</i>	INITIALS <i>KB</i>	INITIALS HMW
June 2012	Document Status	Final		

REVISION	NAME	NAME	NAME	NAME
DATE	INITIALS	INITIALS	INITIALS	INITIALS
	Document Status			

REVISION	NAME	NAME	NAME	NAME
DATE	INITIALS	INITIALS	INITIALS	INITIALS
	Document Status			

REVISION	NAME	NAME	NAME	NAME
DATE	INITIALS	INITIALS	INITIALS	INITIALS
	Document Status			

Jacobs Engineering U.K. Limited

This document has been prepared by a division, subsidiary or affiliate of Jacobs Engineering U.K. Limited ("Jacobs") in its professional capacity as consultants in accordance with the terms and conditions of Jacobs' contract with the commissioning party (the "Client"). Regard should be had to those terms and conditions when considering and/or placing any reliance on this document. No part of this document may be copied or reproduced by any means without prior written permission from Jacobs. If you have received this document in error, please destroy all copies in your possession or control and notify Jacobs.

Any advice, opinions, or recommendations within this document (a) should be read and relied upon only in the context of the document as a whole; (b) do not, in any way, purport to include any manner of legal advice or opinion; (c) are based upon the information made available to Jacobs at the date of this document and on current UK standards, codes, technology and construction practices as at the date of this document. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Jacobs has been made. No liability is accepted by Jacobs for any use of this document, other than for the purposes for which it was originally prepared and provided. Following final delivery of this document to the Client, Jacobs will have no further obligations or duty to advise the Client on any matters, including development affecting the information or advice provided in this document.

This document has been prepared for the exclusive use of the Client and unless otherwise agreed in writing by Jacobs, no other party may use, make use of or rely on the contents of this document. Should the Client wish to release this document to a third party, Jacobs may, at its discretion, agree to such release provided that (a) Jacobs' written agreement is obtained prior to such release; and (b) by release of the document to the third party, that third party does not acquire any rights, contractual or otherwise, whatsoever against Jacobs and Jacobs, accordingly, assume no duties, liabilities or obligations to that third party; and (c) Jacobs accepts no responsibility for any loss or damage incurred by the Client or for any conflict of Jacobs' interests arising out of the Client's release of this document to the third party.

Contents

1	Introduction	1
1.1	Background	1
1.2	Report Structure	1
1.3	Limitations	1
2	Site Details	2
2.1	Site Description and Location	2
2.2	Site History	2
2.3	Site Geology and Hydrogeology	3
2.4	Hydrology and Flooding	4
3	Ground Investigation	5
3.1	Introduction	5
3.2	Description of Fieldwork	5
3.3	Groundwater Sampling	6
3.4	Laboratory Testing Chemical Analysis	6
4	Geo-Environmental Analysis	7
4.1	Introduction	7
4.2	Topsoil	7
4.3	Made Ground	7
4.4	Sand	7
4.5	Groundwater	8
5	Summary of Findings	9
	References	10

Tables

Table 3-A	Details of Boreholes Drilled	5
Table 4-A	Ground Conditions	7
Table 4-B	Groundwater Conditions	8

Appendices

Appendix A	Figures
Appendix B	Ground Investigation Data
Appendix C	Groundwater Monitoring Data

1 Introduction

1.1 Background

Jacobs Engineering UK Limited (Jacobs) has been commissioned by Neath Port Talbot County Borough Council (NPTCBC) to carry out an investigation of groundwater contamination at the Materials Recovery and Energy Centre (MREC) at Crymlyn Burrows.

A Phase 1 Environmental Site Assessment was undertaken by Jacobs in February 2012 which found visual and olfactory evidence of hydrocarbon contamination within a damaged existing storm water attenuation pipe adjacent to the southern boundary of the site where a new access road (the Fabian Way Link Road) is being constructed close to the boundary.

The contamination is believed to be entering the attenuation pipe from the surrounding soil and groundwater and appears to be associated with the existence of old pipelines which ran east-west along the new access road and have now been removed. However, site personnel at the MREC report that hydrocarbon contamination has been observed in the petrol interceptor since work on the removal of the pipeline was undertaken.

Further to the Phase 1 Environmental Site Assessment Jacobs Engineering UK Limited (Jacobs) has been commissioned by Neath Port Talbot County Borough Council (NPTCBC) to carry out an investigation of groundwater contamination at the Materials Recovery and Energy Centre (MREC) at Crymlyn Burrows. The purpose of the ground investigation was to establish the presence of and groundwater contamination and comment on the whether the contamination is entering the ground beneath MREC or is an existing 'on-site' source.

1.2 Report Structure

Sections 2-4 of this report describe the works carried out to investigate the extent and nature of the hydrocarbon contamination of the soils and groundwater and which discusses the nature and extent of contaminants detected in the soils and groundwater boreholes.

1.3 Limitations

This report was prepared by Jacobs for the sole use of Neath Port Talbot County Borough Council. This report shall not be relied upon or transferred to any other parties. If an unauthorised third party comes into possession of this report, they rely on its contents at their own risk.

The findings and opinions conveyed via this report are based on information obtained from a variety of sources as detailed within this report and which Jacobs believes is reliable. Nevertheless, Jacobs cannot and does not guarantee the authenticity or reliability of the information. No attempt has been made to verify independently any data collected by others from other sources.

2.1 Site Description and Location

The MREC site is located approximately 4Km to the south west of Neath and 5Km to the east of Swansea, to the north of A438 (Fabian Way) at approximate National Grid Reference SS69832 93360. It site occupies an area of approximately 5.4Ha, approximately 600m long and 90m wide.

The site is predominantly flat and comprises an office/admin block at the western end near the entrance, with the main MREC building and the recycling extension building to the east. The majority of the site is covered by concrete hard standing with the entrance and exit to the site at the western end of the site. There is a gatehouse and a weighbridge at the entrance and a weighbridge at the exit. A concrete access road runs around the facility. Refer to site layout drawing in Appendix A.

The site is currently used as a waste processing facility which includes the delivery of municipal waste, separation and shredding, recycling, bio-drying and manufacture of refuse derived fuel (RDF) for offsite energy generation.

Land use surrounding the site appears to be as follows:

- to the north: a railway line runs west-east to the immediate north of the site beyond which is the Tennant Canal and Crymlym Bog which is a SSSI, a RAMSAR site and a Special Area of Conservation (SAC). Tir John landfill stands 500m to the north west.
- to the east: undeveloped land to the immediate east beyond which is the Amazon distribution centre.
- to the south: construction works have commenced on the Fabian Way Link Road which will link Fabian Way in the west with an existing roundabout adjacent to Amazon distribution centre in the east. A new industrial building (Kings Dock) is located south of the link road beyond which are light industrial works buildings. The Linamar plant (formerly Visteon) is located to the south east. Crymlyn Burrows sand dunes lie further to the south.
- to the west: the land is occupied by a waste transfer operation, beyond which lies the Gower Chemical Works, which is located in former railway buildings.

The nearest off-site residences are located approximately 300m to the south.

2.2 Site History

On site

The site was largely undeveloped until around 1915 when the whole area saw rapid development. The site was used as rail sidings, possibly as a holding area for ore and coal for local industry and export. The site remained (and expanded) in use as rail sidings until around 1970 when the sidings were removed.

By 1979 the site had been developed as a Freightliner Terminal which occupied the site until around 1990, when the terminal closed. Thereafter the site remained unused until the construction of the MREC facility.

Off site

The Pritchard (later Crymlyn) Chemical Works is shown to the west of the site, from the earliest mapping (1880), and was renamed as Crymlyn Chemical Works around 1915. The chemical works was demolished around 1960.

The Kings Dock Tinsplate works was developed to the south of the site around 1900, along with a number of houses. The docks were expanded around 1920 and another large tinsplate works was constructed to the south and east (the Elba Tinsplate Co.).

The A483 road (known as Fabian Way) was constructed around 1970 linking Swansea with the M4 motorway at Baglan, Port Talbot. During the 1960s the Ford Motor Company constructed their factory adjacent the A483, near the site.

The Gower Chemical Works appeared prior to 1989, occupying the former railway sheds and warehouses to the west of the study site.

2.3 Site Geology and Hydrogeology

The geological map for Swansea indicates that the site is underlain by present day blown sands; these sands extend from the coast to the edge of Crymlyn Bog. The drift geology is underlain by Carboniferous Sandstones of the Upper Pennant Measures. The Lower Cwmgorse Marine Band is shown running east to west across the site. The Upper Pennant Measures are underlain by the Carboniferous Middle and Lower Coal Measures.

The report of an Environmental Ground Investigation undertaken by Gibb in 1998 recorded ground conditions on the site as follows:

- Made Ground: present across the site comprising dense gravels and occasional cobbles of ash, coal and slag between 0.5 and 1.6 metres thickness.
- Recent Deposits: encountered across the site underlying the Made Ground, comprising loose to medium dense sand with occasional gravels, bands of peat and occasional bands of soft clay/silt. Thickness varied between 0.1 and 0.9 metres.
- Alluvial Deposits: encountered across the site, comprising very soft to soft clay/silt, bands of peat, dense gravels and silty sand. The full thickness was not penetrated but was recorded between 13 and 19 metres thick.

The Superficial Deposits and the Carboniferous rocks underlying the site are classified by the Environment Agency as 'Secondary A' Aquifers with high leaching potential soils.

Previous investigations in the area have indicated a groundwater divide running approximately north-east to south-west through the centre of the Gower Chemical Works site (located west of the site). Groundwater to the south of the divide was inferred to flow southerly to south westerly towards Swansea Bay with groundwater to the north flowing northerly to north-westerly towards the Tennant Canal. In addition, an investigation within the Visteon Industrial Park to the south of the site indicated a groundwater flow to the south and south west.

Recent groundwater monitoring for the proposed Link Road recorded shallow groundwater between 0.6 and 2.2m Below Ground Level (BGL) with the average depth being 1.4mBGL.

2.4 Hydrology and Flooding

The Tennant Canal is the closest surface water body to the site and has been designated by the Environment Agency as Grade E – Poor Quality. Crymlyn Bog, which is an SSSI and an SAC, lies immediately to the north of the canal.

Storm water drainage at the site is collected by an on-site storm water attenuation pipe which discharges offsite to a sewer via oil/petrol interceptor and a hydro-brake. The attenuation pipe is 1200mm diameter and approx 400m long. Flow from the attenuation pipe is restricted by a 150mm diameter pipe outlet which is provided with a penstock which can be manually closed in the event of a spillage of contaminants on site. The discharge then passes through a Class 1 bypass interceptor into a pumping chamber before being discharged to the mains sewer. (A condition survey of the attenuation pipe was undertaken in 2010 and groundwater was noted entering the pipe at several locations along the length).

3 Ground Investigation

3.1 Introduction

The scope of the ground investigation and laboratory testing was set out in a proposal to NPTCBC dated 27 April 2012, as follows:

- Nine (mini-rig) boreholes drilled to a target 5m depth with installations in the six holes on the southern boundary of the site, to monitor and sample groundwater.
- Obtain soil samples for chemical analysis from each hole.
- Obtain two sets of groundwater samples on two separate visits for chemical analysis.
- Testing suite for soil and groundwater samples would comprise;
 - TPH - CWG (C5-35) Aliphatic/Aromatic Split (with CWG banding - Ali C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35) (Aro - >C6-7,>7-8,>8-10,>C10-12,>12-16,>16-21,>21-35);
 - Semi Volatile Organic Compounds (SVOC) - target list including PAHs
 - Total Organic Carbon,
 - pH

3.2 Description of Fieldwork

As proposed, 9 No. boreholes were drilled between 17th May and 18th May 2012. Three boreholes were located along the northern boundary of the site and six boreholes were located adjacent to the boundary fence along the southern boundary of the site.

BH No	OS Grid Reference	Ground Level (mAOD)	BH Depth (mBGL)	Date Completed
BH1	E 269709 / N 193377	8.15	4.00	17/05/12
BH2	E 269843 / N 193407	7.79	4.00	17/05/12
BH3	E 269984 / N 193447	7.53	2.70	17/05/12
BH4	E 269695 / N 193293	8.00	5.00	18/05/12
BH5	E 269753 / N 193306	7.62	4.00	18/05/12
BH6	E 269808 / N 193318	7.62	4.00	18/05/12
BH7	E 269867 / N 193332	7.57	3.00	18/05/12
BH8	E 269919 / N 193344	7.37	3.00	18/05/12
BH9	E 270000 / N 193362	7.41	3.00	17/05/12

Table 3-A Details of Boreholes Drilled

The locations are indicated on Figure 2 in Appendix A.

Each borehole consisted of a hand dug trial hole to a depth of 1.2m BGL, to confirm the absence of buried services at each location. Investigation below 1.2m BGL was carried out using a Dando Terrier 2002 rig to carry out window sampling.

Logs detailing the ground profile encountered at each exploratory point are presented in Appendix B, along with photographs of the recovered samples.

Samples of both the soils and groundwater were taken for laboratory testing during the ground investigation works. The results certificates are included within Appendix B.

3.3 Groundwater Sampling

Groundwater sampling and monitoring wells were installed in the boreholes carried out along the southern edge of the site (BH4 to BH9).

Subsequent visits were carried out on both 22 May 2012 and 7 June 2012 to sample the groundwater and carry out further laboratory testing. The laboratory results are included within Appendix C.

3.4 Laboratory Testing Chemical Analysis

Chemical analysis testing was carried out in accordance with the proposals set out in Section 3.1. 1No sample was scheduled for analysis from sample location shown in Table 3-B

Sample Location	Sample Depth	Chemical Analysis
BH2	2.00-3.00	<ul style="list-style-type: none"> TPH - CWG (C5-35) Aliphatic/Aromatic Split (with CWG banding - Ali C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>21-35; Aro - >C6-7,>7-8,>8-10,>C10-12,>12-16,>16-21,>21-35); Semi Volatile Organic Compounds (SVOC) - target list including PAHs Total Organic Carbon, pH
TP3	0.8	
BH4	2.00-3.00	
BH4	4.00-4.50	
BH5	1.80-2.00	
BH5	3.00-4.00	
BH6	1.80-2.00	
BH6	3.00-4.00	
BH7	1.80-2.00	
BH8	1.70-2.00	
BH9	1.60-2.00	

Table 3-B Soil samples sent for Chemical Analysis

4 Geo-Environmental Analysis

4.1 Introduction

The ground conditions were consistent in all the windowless sample holes.

A summary of proven ground conditions is presented as Table 4-A;

Stratum Encountered and Typical Description	Thickness (m)	Typical depth to base (m BGL)
Topsoil	0.1 – 0.6	0.1
Made Ground Brown orange and black slightly silty slightly gravelly fine to medium sand with low cobble content. Gravel is angular to sub-angular fine to coarse of limestone and slag.	0 – 2.7	1.5
Sand Dark grey (turning to light grey with depth) slightly silty fine to medium Sand. Strong Hydrocarbon odour noted within the dark grey Sand	1.5 – 4.0 ⁽¹⁾	4.0 + ⁽¹⁾

⁽¹⁾ Base of unit not proven

Table 4-A Ground Conditions

4.2 Topsoil

Topsoil was encountered in BH1 and BH 8 to depths of 0.25m and 0.6m bgl.

4.3 Made Ground

Made Ground was encountered in all the boreholes and is generally described as brown orange and black slightly silty slightly gravelly fine to medium sand with low cobble content. The coarser fractions are generally described as including limestone, sandstone, ash, coal, slag, brick or concrete. Made Ground was encountered to a maximum depth of 2.7m bgl with a thickness range between 0.5m and 2.7m. No visual or olfactory evidence of hydrocarbon contamination was noted in the Made Ground.

4.4 Sand

Sand was encountered beneath the Made Ground to a depth of 4m bgl with the thickness of the Sand layer recorded on site varying between 1.1m and 3.5m. The Sand was running/blowing beneath the Made Ground and therefore the full depth of Sand was not proven. The Sand was generally described as dark grey slightly silty fine to medium Sand. Very Strong Hydrocarbon odours were noted in the sands in BH5 and BH6 at 1.6m bgl. Slight hydrocarbon odours were noted at greater depth in these holes. Hydrocarbon odours were also noted in BH2, BH4, BH7, BH8, where it is described as 'strong', and in BH9. The borehole logs do not record any free phase hydrocarbon contamination but there was a visible sheen of oil on the groundwater in BH7 at 1,45m bgl.

4.5 Groundwater

Groundwater strikes were recorded in Made Ground encountered within BH1 and BH7 and within Sand in BH2, BH8 and BH9. Groundwater seepage was encountered in BH1 (1.9m), BH2 (2.1m), BH7 (1.45m), BH8 (1.3m) & BH9 (1.3m).

During the ground investigation evidence of oil contamination was noted in BH7 with the seepage by the supervising Engineer. No other seepages were recorded. No hydrocarbon odour was reported from the samples obtained for testing.

Sand was running/blowing beneath the Made Ground which caused difficulty when attempting to drill to depth and prevented installation of standpipes in BH1, BH2 and BH3 and restricted installation depths in boreholes BH4 to BH9.

As no groundwater monitoring installations were placed along the northern part of the site due to running/blowing sands it was not possible to confirm the direction of flow. However, previous investigations in the area have indicated a groundwater divide running approximately north-east to south-west through the centre of the Gower Chemical Works site to the west of the site. Groundwater to the south of the divide was inferred to flow southerly to south westerly towards Swansea Bay with groundwater to the north flowing northerly to north-westerly towards the Tenant Canal. In addition, an investigation within the Visteon Industrial Park to the south of the site indicated a groundwater flow to the south and south west.

A summary of groundwater strikes and installation details is provided in Table 4-B below.

Test Location	Strata	Depth (m bgl)		Installation depth m bgl	Response Zone m bgl
		Groundwater Strike	Rising to (after 20 minutes)		
BH1	Made Ground	1.9	1.9	n/a	n/a
BH2	Sand	2.1	2.1	n/a	n/a
BH3	n/a	None Observed		n/a	n/a
BH4	Made Ground/Sand	None Observed		2	1 – 2
BH5	Sand	None Observed		2.4	1.1 – 2.4
BH6	Sand	None Observed		2.5	1 – 2.5
BH7	Made Ground/Sand	1.45	1.35	2	0.8 - 2
BH8	Sand	1.3	1.3	1.8	0.8 – 1.8
BH9	Sand	1.3	1.1	2	1 – 2

Table 4-B Groundwater Conditions

The ground investigation undertaken has confirmed the presence of hydrocarbon contamination along the southern boundary of the site close to route of the former pipeline which ran in an approximate east to west direction close to property boundary. The precise location and depths of these pipelines is not known. In addition, it is not known what range of chemicals may have passed through these pipelines during their operational life.

At this stage it is not possible to confirm the full lateral and vertical extent of the hydrocarbon contamination at the site. However, evidence from the logs appears to suggest that hydrocarbon contamination is restricted to sands where it interfaces with the groundwater along the southern boundary of the site.

Due to difficulties encountered on site with running/blown sands it was not possible to place groundwater monitoring installations in BH1, BH2 and BH3 on the northern boundary of the site. Whilst a slight odour of contamination was noted in BH2 there were no significant concentrations recorded in the laboratory analysis for TPH or PAH at this location.

Hydrocarbon odours were noted in the boreholes (BH4 to BH9) undertaken along the access road. These odours tended to be associated with dark grey Sand identified between 1m and 2m depth below ground level.

However, there were a number of VOCs noted above the limit of detection along the access road which are likely to be associated with the presence of hydrocarbon contamination.

The groundwater chemical data clearly shows that groundwater on the southern boundary of the site in the vicinity of the access road is impacted by the presence of hydrocarbons. The results from the second round of monitoring show a marked decrease in recorded TPH and PAH concentrations. This may be the result of dilution effects caused by increased rainfall, fluctuating groundwater levels and/or groundwater flow.

References

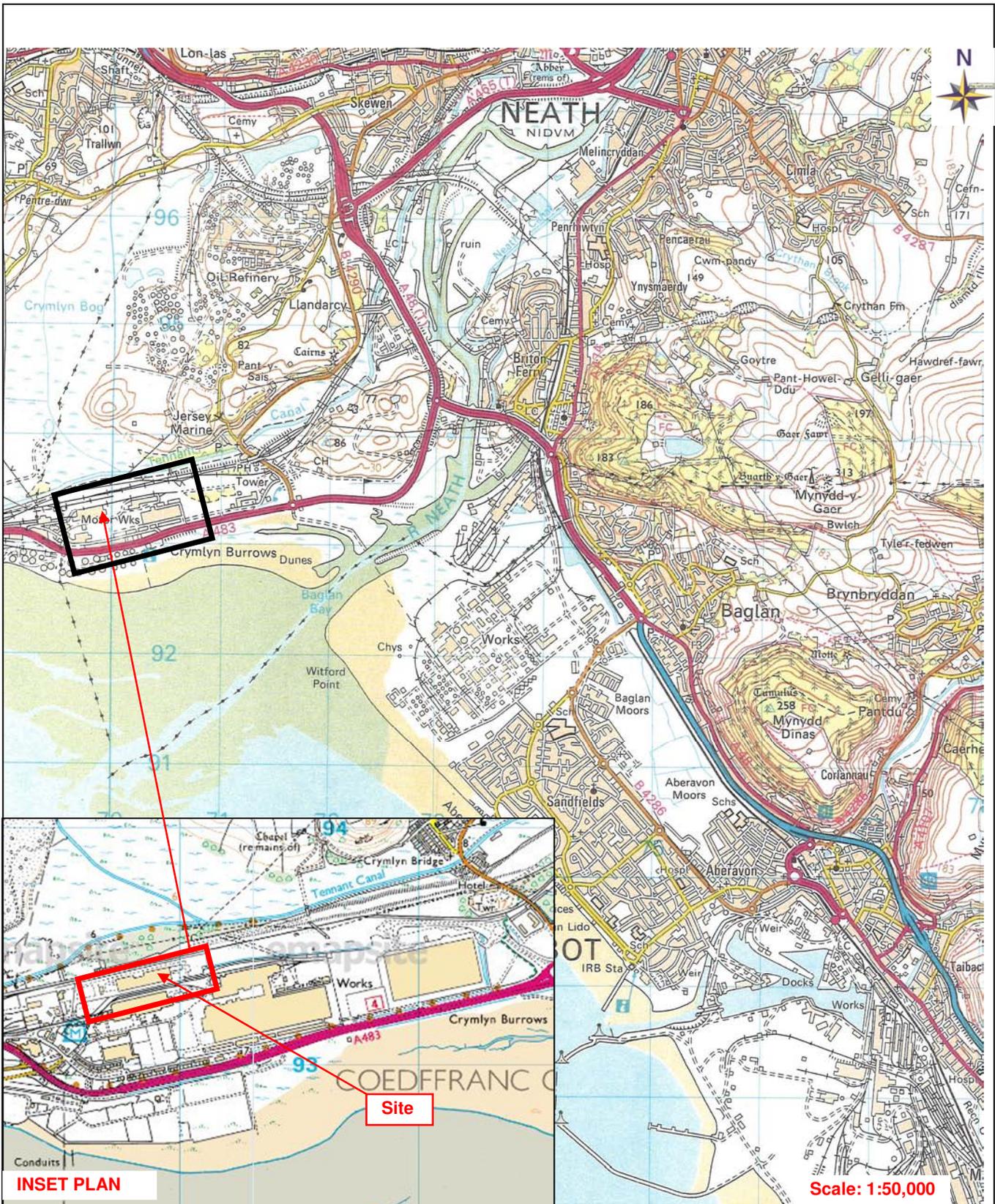
Information has been gained from a number of sources as outlined below.

- Ordnance Survey, 1:50,000 Landranger, Sheet 170 Vale of Glamorgan and Rhondda.
- Jacobs UK Limited Ground Investigation Factual Report entitled “Materials Recovery and Energy Centre (MREC), Crymlyn Burrows, Phase 1 Environmental Site Assessment”, June 2012, Document Ref: B15974EX/12528/R4922.
- British Standard BS5930, Code of Practice for Site Investigations.
- British Standard BS10175, Investigation of Potentially Contaminated Sites.
- British Standard BS1377, Methods of Testing for Soils for Civil Engineering Purposes: Code of Practice.

Appendix A Figures

Figure 1 – Site Location Plan

Figure 2 – Exploratory Hole and Sampling Locations



This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on Behalf of Her Majesty's Stationary Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. 100022303

JACOBS
 Sheldon Court, Wagon Lane, Coventry
 Road, Sheldon, Birmingham B26 3DU
 Tel: 0121 700 1250 Fax: 0121 700 1251



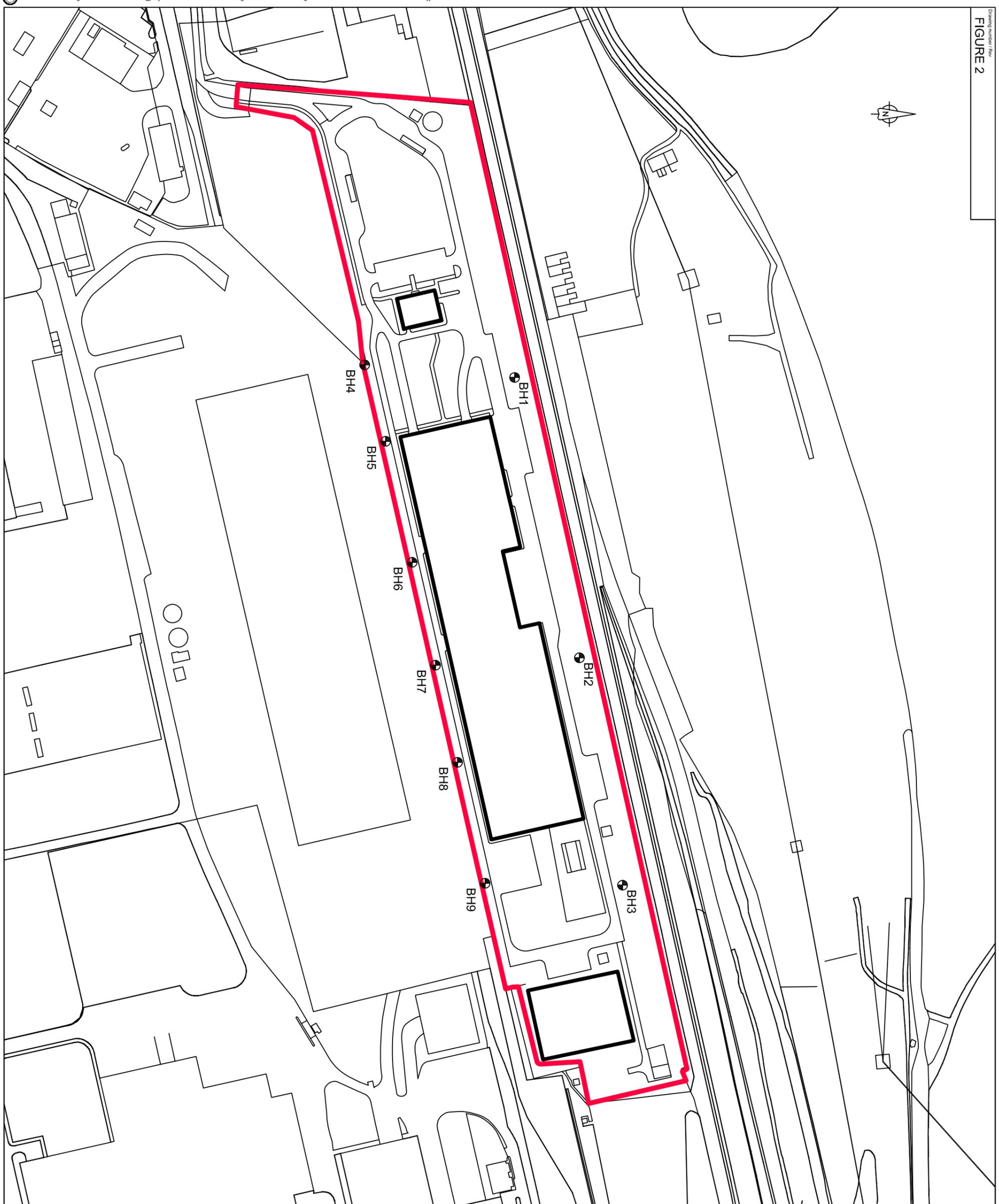
Materials Recovery and Energy Centre (MREC), Asset Survey

Figure 1 – Site Location Plan

Scale: 1:50,000

Date: April 2012

Project No.: B15974EX



KEY:

BH1 BOREHOLE POSITION

SCALE:
0 50m

Rev	Rev. Date	Rev. Description	Drawn	Checked	Rev'd	Approved
0	18/03/12	ORIGINAL	JMH	BM		

JACOBS
 Station Court, Wapley Lane, Sheldon, Birmingham, B26 3DU
 Tel: +44(0)121 700 1250 Fax: +44(0)121 700 1251
 www.jacobs.com

Client: NEATH PORT TALBOT BOROUGH COUNCIL

Project: MATERIALS RECOVERY AND ENERGY CENTRE (MREC) CRYMLYN BURROWS

Drawing title: GROUND INVESTIGATION LOCATION PLAN

Drawing status: FINAL

Scale: 1:2000 @ A3 DO NOT SCALE
 Jacobs No: B15974EX
 Client No:

Drawing number: 0
 Rev: 0

FIGURE 2
 This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Appendix B Ground Investigation Data

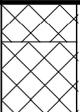
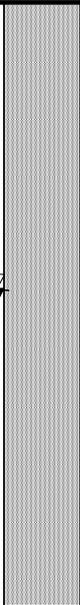
Ground Investigation hole logs

Photographs of recovered samples

Contamination Testing Results for Soil Samples

Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 14/05/2012 End 17/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.20m. Windowless sampling 1.20 - 4.00m. Unable to proceed below 4.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +8.15 mOD Coordinates E 269708.98 National Grid N 193376.79 Chainage
--	------------------------------------	---	-------------------------------------	--

Samples and Tests				Strata		Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description			
0.40 0.50	ES 4 B 1				TOPSOIL: Grass over very soft brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular to subangular fine to coarse of limestone.	0.25 +7.90		
1.00	B 2		14/05/2012	1100 dry	MADE GROUND: Dark grey and brown slightly silty very gravelly fine to medium SAND with medium cobble content. Gravel is angular to subangular fine to coarse of limestone, concrete, slag, brick ash coal fragments and sandstone. Cobbles are angular of concrete and slag.	(1.45)		
1.20-1.70 1.20-1.70 1.40	LB 5 ES 6 ES 3		17/05/2012	0900 dry				
1.70-2.00	B 7					1.70 +6.45 (0.30)		
2.00-2.70 2.00-2.70	ES 8 B 9				MADE GROUND: Light brown slightly silty fine to medium SAND.	2.00 +6.15		
2.70-3.00	B 10				MADE GROUND: Dark grey and black silty slightly gravelly fine to medium SAND. Gravel is subrounded to rounded fine to coarse of sandstone.	(0.70)		
3.00-4.00 3.00-4.00	B 11 ES 12				Light brown fine to medium SAND.	2.70 +5.45 (0.30)		
					Brown and black slightly silty slightly gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse of possibly flint.	3.00 +5.15		
			17/05/2012	1100 1.90		(1.00)		
					EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +4.15		

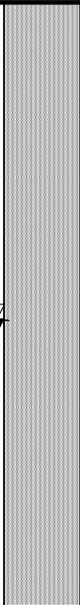
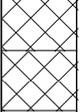
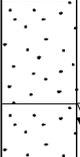
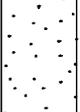
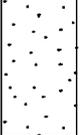
Groundwater Entries No. Struck (m) Post strike behaviour 1 1.90 Remained at 1.90 m after 20 minutes.	Depth sealed (m) -	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
---	-----------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 1 Sheet 1 of 1
--	---	---



Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 14/05/2012 End 17/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.20. Windowless sampling 1.20 - 4.00m. Unable to proceed below 4.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.79 mOD Coordinates E 269843.29 National Grid N 193406.94 Chainage
--	------------------------------------	---	-------------------------------------	--

Samples and Tests				Strata		Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description			
0.50 0.50	ES 1 B 2				MADE GROUND: Grass over black slightly silty gravelly fine to medium SAND. Gravel is angular fine to coarse of limestone.	(0.30) 0.30 +7.49		
1.20-1.30 1.30-2.00	ES 3 B 4		14/05/2012	1100 dry	MADE GROUND: Grey slightly silty slightly sandy angular fine to coarse GRAVEL of limestone with high cobble content. Cobbles are angular of limestone (Railway ballast).	(0.60) 0.90 +6.89		
2.00-3.00 2.00-3.00	B 5 ES 6		17/05/2012	0900 dry	MADE GROUND: Multicoloured ashy gravelly fine to medium SAND with low cobble content. Gravel is angular fine to coarse of ash and coal fragments brick, slag, and limestone. Cobbles are angular of brick and slag (Burnt furnace material).	(0.70) 1.30 +6.49		
3.00-4.00 3.00-4.00	ES 7 B 8				Light brown and orange slightly clayey fine to medium SAND.	2.00 +5.79		
					Light grey and brown slightly silty fine to medium SAND. Odour of hydrocarbons.	(2.00)		
			17/05/2012	1100 2.10	EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +3.79		

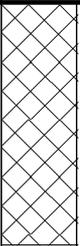
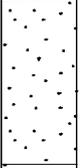
Groundwater Entries No. Struck (m) Post strike behaviour 1 2.10 Remained at 2.10 m after 20 minutes.	Depth sealed (m) -	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
---	-----------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 2 Sheet 1 of 1
--	---	---



Window Sampler Hole Log

Drilled SB Logged PL/Jacob Checked MB	Start 14/05/2012 End 17/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.20m. Windowless sampling 1.20 - 2.70m. Unable to proceed below 2.70m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.53 mOD Coordinates E 269983.67 National Grid N 193447.50 Chainage
---	------------------------------------	---	-------------------------------------	--

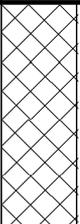
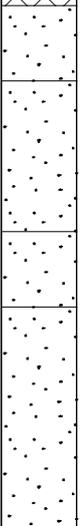
Samples and Tests				Strata			Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description				
0.80	B 1		14/05/2012	dry	MADE GROUND: Black silty very gravelly fine to medium SAND with low to medium cobble content. Gravel is angular fine to coarse of limestone, black ash, coal fragments and slag. Cobbles are angular of limestone and slag. (RAILWAY BALLAST)	(1.60)			
1.20-1.60 1.20-1.60	B 2 ES 3					1.60	+5.93		
1.60-2.00 1.70-2.70	B 4 ES 6				Light grey and brown slightly silty fine to medium SAND.	(1.10)			
2.00-2.70	B 5		17/05/2012	0.95		2.70	+4.83		
EXPLORATORY HOLE ENDS AT 2.70 m									

Groundwater Entries No. Struck Post strike behaviour (m) None observed (see Key Sheet)	Depth sealed (m)	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
--	------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 3 Sheet 1 of 1
--	---	---

Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 16/05/2012 End 18/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 2.00. Windowless sampling 2.00 - 5.00m. Unable to proceed below 5.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +8.00 mOD Coordinates E 269695.19 National Grid N 193293.28 Chainage
--	------------------------------------	--	-------------------------------------	--

Samples and Tests				Strata			Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description				
0.50-1.00	B 1				MADE GROUND: Dark brown and black slightly silty gravelly fine to medium SAND with low cobble content. Gravel is angular fine to coarse of limestone, coal, slag, concrete and brick. Cobbles are angular of concrete and slag.	(1.50)			
0.70	ES 2					1.50 +6.50			
1.10	ES 3								
2.00-3.00	ES 4		16/05/2012	1700 dry	Brownish orange slightly silty fine to medium SAND (Possible Made Ground).	(0.50)			
			18/05/2012	0800 dry	Light grey and brown slightly silty slightly gravelly fine to medium SAND. Gravel is rounded fine to medium of sandstone. Slight hydrocarbon odour.	2.00 +6.00			
3.00-3.50	ES 5				Grey slightly silty fine to medium SAND. Slight hydrocarbon odour.	3.00 +5.00			
3.50-4.00	ES 6				Light grey and brown fine to medium SAND. Slight hydrocarbon odour.	(0.50)			
4.00-5.00	ES 7					3.50 +4.50			
						(1.50)			
			18/05/2012	1700 dry	EXPLORATORY HOLE ENDS AT 5.00 m	5.00 +3.00			

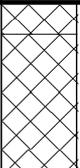
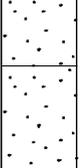
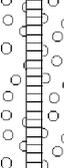
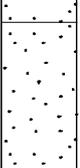
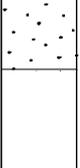
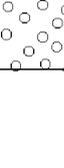
Groundwater Entries No. Struck Post strike behaviour None observed (see Key Sheet)	Depth sealed (m)	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
---	------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 4 Sheet 1 of 1
--	---	---



Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 15/05/2012 End 18/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.80m. Windowless sampling 1.80 - 4.00m. Unable to proceed below 4.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.62 mOD Coordinates E 269752.80 National Grid N 193305.67 Chainage
--	------------------------------------	---	-------------------------------------	--

Samples and Tests				Strata			Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description				
0.50-0.80	B 1				MADE GROUND: Brown slightly silty slightly gravelly fine to medium SAND with low cobble content. Gravel is angular to subangular fine to coarse of slag, brick and limestone. Cobbles are subangular of slag.	0.20 +7.42			
0.80	ES 2					(0.90)			
1.70	ES 3		15/05/2012	1700	MADE GROUND: Brown and orange slightly silty slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of slag.	1.10 +6.52			
1.80-2.00	ES 4			1.80		(0.50)			
2.00-2.50	ES 5		18/05/2012	0800	Brownish orange fine to medium SAND (Possible Made Ground).	1.60 +6.02			
2.50-3.00	ES 6			1.80		(0.90)			
3.00-4.00	ES 7		18/05/2012	1.80	Light grey fine to medium SAND. Slight hydrocarbon odour.	2.50 +5.12			
					EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +3.62			

Groundwater Entries No. Struck Post strike behaviour (m) None observed (see Key Sheet)	Depth sealed (m)	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
--	------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 5 Sheet 1 of 1
--	---	---

Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 15/05/2012 End 18/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.80m. Windowless sampling 1.80 - 4.00m. Unable to proceed below 4.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.62 mOD Coordinates E 269807.81 National Grid N 193318.01 Chainage
--	------------------------------------	--	-------------------------------------	--

Samples and Tests				Strata		Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description			
0.90-1.00 1.00	B 1 ES 2				MADE GROUND: Dark brown clayey slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of limestone and brick.	0.20 +7.42 (0.60)		
1.70 1.80-2.00	ES 3 ES 4		15/05/2012	1700 1.75	MADE GROUND: Brown and orange slightly clayey slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of brick and slag.	0.80 +6.82 (0.80)		
2.00-3.00	ES 5		18/05/2012	0800 1.75	Brownish orange slightly silty fine to medium SAND.	1.60 +6.02		
3.00-4.00	ES 6		18/05/2012	1700 1.75	Dark grey slightly silty fine to medium SAND. Very strong odour of hydrocarbons.	(1.40)		
					Light grey slightly silty fine to medium SAND. Slight odour of hydrocarbons.	3.00 +4.62 (1.00)		
					EXPLORATORY HOLE ENDS AT 4.00 m	4.00 +3.62		

Groundwater Entries No. Struck Post strike behaviour (m) None observed (see Key Sheet)	Depth sealed (m)	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
--	------------------	--	--

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 6 Sheet 1 of 1
--	---	---



Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 15/05/2012 End 18/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.80m. Windowless sampling 1.80 - 3.00m. Unable to proceed below 3.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.57 mOD Coordinates E 269866.75 National Grid N 193331.87 Chainage
--	------------------------------------	--	-------------------------------------	--

Samples and Tests				Strata		Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description			
0.80	B 1				MADE GROUND: Brown and black slightly clayey slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of slag, brick and limestone.	0.20 +7.37		
1.00	ES 2				MADE GROUND: Brownish orange slightly silty slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of limestone and slag.	(1.30)		
1.60	ES 3		15/05/2012	1700	Dark grey silty fine to medium SAND. Very strong hydrocarbon odour with oil sheen on surface of water.	1.50 +6.07		
1.80-2.00	ES 4			1.45		(0.30)		
2.00-2.50	ES 5		18/05/2012	0800	Light grey and brown slightly silty fine to medium SAND. Slight hydrocarbon odour.	1.80 +5.77		
				1.45		(0.70)		
2.50-3.00	ES 6		18/05/2012	1700	Dark grey slightly silty fine to medium SAND. Slight hydrocarbon odour.	2.50 +5.07		
				1.35		(0.50)		
EXPLORATORY HOLE ENDS AT 3.00 m						3.00 +4.57		

Groundwater Entries No. Struck (m) Post strike behaviour 1 1.45 Rose to 1.35 m after 20 minutes.	Depth sealed (m) -	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
---	-----------------------	--	---------------------------------------

Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 15/05/2012 End 18/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.70m. Windowless sampling 1.70 - 3.00m Unable to proceed below 3.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.37 mOD Coordinates E 269919.07 National Grid N 193343.94 Chainage
--	------------------------------------	---	-------------------------------------	--

Samples and Tests				Strata		Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description			
0.50	ES 1				TOPSOIL: Brown clayey slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of limestone.	0.10 +7.27 (0.50)		
0.80	B 2				MADE GROUND: Brown orange and black slightly silty slightly gravelly fine to medium SAND with low cobble content. Gravel is angular to subangular fine to coarse of slag and limestone. Cobbles are angular to subangular of slag and limestone.	0.60 +6.77 (0.50)		
1.10	B 3					1.10 +6.27 (0.90)		
1.60 1.70-2.00	ES 3 ES 4		15/05/2012	1700 1.30	Brownish orange slightly silty fine to medium SAND (Possible Made Ground).			
2.00-3.00	ES 5		18/05/2012	0800 1.30	Grey and black slightly silty fine to medium SAND. Strong odour of hydrocarbons.	2.00 +5.37 (1.00)		SR
			18/05/2012	1700 1.30	Dark grey slightly silty fine to medium SAND. Hydrocarbon odour.			
EXPLORATORY HOLE ENDS AT 3.00 m						3.00 +4.37		

Groundwater Entries No. Struck (m) Post strike behaviour 1 1.30 Remained at 1.30 m after 20 minutes.	Depth sealed (m) -	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
---	-----------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 8 Sheet 1 of 1
--	---	---



Window Sampler Hole Log

Drilled SB Logged PL / Jacobs Checked MB	Start 15/05/2012 End 17/05/2012	Equipment, Methods and Remarks Dando terrier 2002 Hand dug inspection pit GL - 1.60m. Windowless sampling 1.60 - 3.00m. Unable to proceed below 3.00m due to blowing sand into casings.	Depth from to Diameter Casing Depth	Ground Level +7.41 mOD Coordinates E 269999.83 National Grid N 193362.08 Chainage
--	------------------------------------	--	-------------------------------------	--

Samples and Tests				Strata			Depth, Level/ (Thickness)	Legend	Backfill/ Instruments
Depth	Type & No	Records	Date Casing	Time Water	Description				
0.50 0.50	B 1 ES 2				MADE GROUND: Black slightly silty slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of limestone and slag.	0.20 +7.21 (0.90)			
1.60-2.00 1.60-2.00	ES 3 B 4		15/05/2012	1700 1.30	MADE GROUND: Brown orange and black slightly silty slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to coarse of sandstone, limestone and slag.	1.10 +6.31 (0.50)			
2.00-3.00 2.00-3.00	ES 5 B 6		18/05/2012	0800 1.30	Grey and black slightly silty fine to medium SAND. Hydrocarbon odour.	1.60 +5.81			
			18/05/2012	1700 1.10	Light grey and brown slightly silty fine to medium SAND. Hydrocarbon odour.	(1.40)		SP	
EXPLORATORY HOLE ENDS AT 3.00 m						3.00 +4.41			

Groundwater Entries No. Struck Post strike behaviour 1 1.30 Rose to 1.10 m after 20 minutes.	Depth sealed (m) -	Depth Related Remarks * From to (m)	Chiselling Depths (m) Time Tools used
---	-----------------------	--	---------------------------------------

Notes: For explanation of symbols and abbreviations see key sheet. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column. Scale 1:50	Project MREC Swansea Project No. 12635 Carried out for NPTCBC	Borehole BH 9 Sheet 1 of 1
--	---	---

Windowless Sample Photographs.

BH1
1.00 – 2.00



2.00 – 3.00m



3.00 – 4.00m



BH2
1.00 – 2.00m



2.00 – 3.00m



3.00 – 4.00m



BH3

1.00 – 2.00m



2.70 – 3.70m



BH4

2.00 – 3.00m



3.00 – 4.00m



4.00 – 5.00m



BH5

1.00 – 2.00m



2.00 – 3.00m



BH6

1.00 – 2.00m



2.00 – 3.00m



BH7
1.00 – 3.00m



BH8
1.00 – 2.00m



2.00 – 3.00m



BH9

1.00 – 2.00m



2.00 – 3.00m



Jacobs Engineering UK Limited
Newby House
Neath Abbey Business Park
Neath Abbey
West Glamorgan
SA10 7DR

Attention: Cerith Owens

CERTIFICATE OF ANALYSIS

Date: 30 May 2012
Customer: H_JACOBS_NEA
Sample Delivery Group (SDG): 120520-7
Your Reference: 12635
Location: MREC
Report No: 182823

We received 25 samples on Saturday May 19, 2012 and 11 of these samples were scheduled for analysis which was completed on Wednesday May 30, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan

Operations Manager



SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5612186	BH1	ES2	1.20 - 1.70	17/05/2012
5612187	BH1	ES3	2.00 - 2.70	17/05/2012
5612188	BH1	ES4	3.00 - 4.00	17/05/2012
5612190	BH2	ES2	1.20 - 1.30	17/05/2012
5612191	BH2	ES3	2.00 - 3.00	17/05/2012
5612192	BH2	ES4	3.00 - 4.00	17/05/2012
5612193	BH3	ES2	1.20 - 1.60	17/05/2012
5612194	BH3	ES3	1.70 - 2.70	17/05/2012
5612195	BH4	ES3	2.00 - 3.00	18/05/2012
5612196	BH4	ES4	3.00 - 3.50	18/05/2012
5612197	BH4	ES5	4.00 - 4.50	18/05/2012
5612198	BH5	ES3	1.80 - 2.00	18/05/2012
5612199	BH5	ES4	2.00 - 2.50	18/05/2012
5612200	BH5	ES5	3.00 - 4.00	18/05/2012
5612202	BH6	ES3	1.80 - 2.00	18/05/2012
5612203	BH6	ES4	2.00 - 3.00	18/05/2012
5612204	BH6	ES5	3.00 - 4.00	18/05/2012
5612205	BH7	ES3	1.80 - 2.00	18/05/2012
5612207	BH7	ES4	2.50 - 3.00	18/05/2012
5612208	BH8	ES3	1.70 - 2.00	18/05/2012
5612209	BH8	ES4	2.00 - 3.00	18/05/2012
5612210	BH9	ES2	1.60 - 2.00	17/05/2012
5612211	BH9	ES3	2.00 - 3.00	17/05/2012
5612212	TP4	ES1	0.70	16/05/2012
5612213	TP4	ES2	1.10	16/05/2012

Only received samples which have had analysis scheduled will be shown on the following pages.

SDG: 120520-7
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 182823
 Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
	5612186	BH1	ES2	1.20 - 1.70	250g Amber Jar (AL)
	5612191	BH2	ES3	2.00 - 3.00	400g Tub (ALEE214)
	5612195	BH4	ES3	2.00 - 3.00	250g Amber Jar (AL)
	5612197	BH4	ES5	4.00 - 4.50	60g VOC (ALEE215)
5612198	BH5	ES3	1.80 - 2.00	400g Tub (ALEE214)	
5612200	BH5	ES5	3.00 - 4.00	250g Amber Jar (AL)	
5612202	BH6	ES3	1.80 - 2.00	400g Tub (ALEE214)	
5612204	BH6	ES5	3.00 - 4.00	60g VOC (ALEE215)	
5612205	BH7	ES3	1.80 - 2.00	250g Amber Jar (AL)	
5612208	BH8	ES3	1.70 - 2.00	400g Tub (ALEE214)	
5612210	BH9	ES2	1.80 - 2.00	60g VOC (ALEE215)	

Parameter	All	NDPs: 0	Tests: 11	5612186	5612191	5612195	5612197	5612198	5612200	5612202	5612204	5612205	5612208	5612210
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (S)	All	NDPs: 0	Tests: 11		X	X	X	X	X	X	X	X	X	X
pH	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X
Semi Volatile Organic Compounds	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X
TPH CWG GC (S)	All	NDPs: 0	Tests: 11	X	X	X	X	X	X	X	X	X	X	X

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
------------------	--------------------	-------------	------------------------	---------------	--------------------	---------------	-------------------	--------------------	-----------------

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
5612186	BH1	1.20 - 1.70	Dark Brown	Sand	0.1 - 2 mm	Stones	None
5612191	BH2	2.00 - 3.00	Beige	Sand	0.063 - 0.1 mm	N/A	N/A
5612195	BH4	2.00 - 3.00	Dark Brown	Sand	0.063 - 0.1 mm	Oil/Petroleum	N/A
5612197	BH4	4.00 - 4.50	Beige	Sand	0.063 - 0.1 mm	N/A	N/A
5612198	BH5	1.80 - 2.00	Light Brown	Sand	0.063 - 0.1 mm	Oil/Petroleum	N/A
5612200	BH5	3.00 - 4.00	Beige	Sand	0.063 - 0.1 mm	N/A	N/A
5612202	BH6	1.80 - 2.00	Light Brown	Sand	0.063 - 0.1 mm	Oil/Petroleum	N/A
5612204	BH6	3.00 - 4.00	Beige	Sand	0.063 - 0.1 mm	N/A	N/A
5612205	BH7	1.80 - 2.00	Light Brown	Sand	0.063 - 0.1 mm	N/A	N/A
5612208	BH8	1.70 - 2.00	Light Brown	Sand	0.063 - 0.1 mm	Oil/Petroleum	N/A
5612210	BH9	1.60 - 2.00	Light Brown	Sand	0.063 - 0.1 mm	N/A	N/A

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Table with columns for Results Legend, Customer Sample R, and various sample identifiers (BH1, BH2, BH4, BH5). Rows include component analysis for Organic Carbon, Total and pH, with LOD/Units and Method columns.



CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Table with columns for Results Legend, Customer Sample R, and various sample identifiers (BH6, BH7, BH8, BH9). It includes rows for Organic Carbon, Total and pH, with LOD/Units and Method columns.



SDG: 120520-7
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 182823
 Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample R	BH1	BH2	BH4	BH4	BH5	BH5
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.20 - 1.70 Soil/Solid 17/05/2012	2.00 - 3.00 Soil/Solid 17/05/2012	2.00 - 3.00 Soil/Solid 18/05/2012	4.00 - 4.50 Soil/Solid 18/05/2012	1.80 - 2.00 Soil/Solid 18/05/2012	3.00 - 4.00 Soil/Solid 18/05/2012
M	mCERTS accredited.							
S	Deviating sample.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
Component	LOD/Units							
Phenol	<100 µg/kg	TM157	<200	<100	<100	<100	1240	<100
Pentachlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Nitrobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	2440	<100
Isophorone	<100 µg/kg	TM157	<200	<100	<100	<100	3960	<100
Hexachloroethane	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Hexachlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Dimethyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Diethyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Dibenzofuran	<100 µg/kg	TM157	1550	<100	<100	<100	2140	<100
Carbazole	<100 µg/kg	TM157	707	<100	<100	<100	<1000	<100
Butylbenzyl phthalate	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	334	<100	<100	<100	<1000	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200	<100	<100	<100	3020	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
Azobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
4-Nitrophenol	<100 µg/kg	TM157	<200	<100	<100	<100	4870	<100
4-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
4-Methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
4-Chloroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
3-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
2-Nitrophenol	<100 µg/kg	TM157	<200	<100	<100	<100	5970	<100
2-Nitroaniline	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
2-Methylphenol	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
2-Chlorophenol	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<200	<100	<100	<100	<1000	<100



CERTIFICATE OF ANALYSIS

SDG: 120520-7
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 182823
 Superseded Report:

Semi Volatile Organic Compounds

Results Legend		Customer Sample R	BH6	BH6	BH7	BH8	BH9	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.		1.80 - 2.00	3.00 - 4.00	1.80 - 2.00	1.70 - 2.00	1.60 - 2.00	
S	Deviating sample.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
aq	Aqueous / settled sample.		18/05/2012	18/05/2012	18/05/2012	18/05/2012	17/05/2012	
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012	
(F)	Trigger breach confirmed		120520-7	120520-7	120520-7	120520-7	120520-7	
			5612202	5612204	5612205	5612208	5612210	
		ES3	ES5	ES3	ES3	ES2		
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	205	<100	<100	<100	<100	
Pentachlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Nitrobenzene	<100 µg/kg	TM157	1690	<100	<100	2230	<100	
Isophorone	<100 µg/kg	TM157	2140	<100	<100	2520	<100	
Hexachloroethane	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Diethyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Dibenzofuran	<100 µg/kg	TM157	1430	<100	<100	1070	<100	
Carbazole	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	2000	<100	<100	2890	<100	
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
Azobenzene	<100 µg/kg	TM157	177	<100	<100	127	<100	
4-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Nitroaniline	<100 µg/kg	TM157	196	<100	<100	<100	<100	
4-Methylphenol	<100 µg/kg	TM157	336	<100	<100	280	<100	
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chloroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
3-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	639	<100	
2-Nitrophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Nitroaniline	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Methylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2-Chlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	
2,6-Dinitrotoluene	<100 µg/kg	TM157	1940	<100	<100	1530	<100	
2,4-Dinitrotoluene	<100 µg/kg	TM157	2190	<100	<100	<100	<100	

SDG: 120520-7
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 182823
 Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample R		BH6	BH6	BH7	BH8	BH9
#	ISO17025 accredited.		Depth (m)		1.80 - 2.00	3.00 - 4.00	1.80 - 2.00	1.70 - 2.00	1.60 - 2.00
M	mCERTS accredited.		Sample Type		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
S	Deviating sample.		Date Sampled		18/05/2012	18/05/2012	18/05/2012	18/05/2012	17/05/2012
aq	Aqueous / settled sample.		Date Received		19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012
diss.filt	Dissolved / filtered sample.		SDG Ref		120520-7	120520-7	120520-7	120520-7	120520-7
tot.unfilt	Total / unfiltered sample.		Lab Sample No.(s)		5612202	5612204	5612205	5612208	5612210
tot.unfilt	Subcontracted test.		AGS Reference		ES3	ES5	ES3	ES3	ES2
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
Component	LOD/Units	Method							
2,4-Dimethylphenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	311	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157	<100	<100	<100	<100	55300	<100	<100
Acenaphthylene	<100 µg/kg	TM157	927	<100	<100	<100	987	<100	<100
Acenaphthene	<100 µg/kg	TM157	1770	<100	<100	<100	1280	<100	<100
Anthracene	<100 µg/kg	TM157	507	<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157	364	<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157	181	<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157	176	<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157	241	<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157	123	<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157	500	<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157	1080	<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157	2570	<100	<100	<100	1740	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157	3180	<100	<100	<100	417	<100	<100
Pyrene	<100 µg/kg	TM157	829	<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157	2310	<100	<100	<100	2740	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100	<100	<100	<100	<100	<100	<100

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R	BH1	BH2	BH4	BH4	BH5	BH5
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	BH1	BH2	BH4	BH4	BH5	BH5
M	mCERTS accredited.		1.20 - 1.70	2.00 - 3.00	2.00 - 3.00	4.00 - 4.50	1.80 - 2.00	3.00 - 4.00
S	Deviating sample.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		17/05/2012	17/05/2012	18/05/2012	18/05/2012	18/05/2012	18/05/2012
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012	19/05/2012
(F)	Trigger breach confirmed		120520-7	120520-7	120520-7	120520-7	120520-7	120520-7
			5612186	5612191	5612195	5612197	5612198	5612200
		ES2	ES3	ES3	ES5	ES3	ES5	
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	14	127	124	125	103	119
GRO >C5-C12	<44 µg/kg	TM089	120	<44	121	<44	2570000	471
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5	196	<5
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10	369	<10
Toluene	<2 µg/kg	TM089	6	<2	<2	<2	<40	<2
Ethylbenzene	<3 µg/kg	TM089	<3	<3	6	<3	<60	<3
m,p-Xylene	<6 µg/kg	TM089	<6	<6	21.6	<6	<120	<6
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3	<60	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	21.6	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	27.6	<24	369	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	10.8	<10	<10	<10	1190	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	27.6	<10	<10	<10	294000	11
Aliphatics >C8-C10	<10 µg/kg	TM089	22.8	<10	19.2	<10	911000	57.3
Aliphatics >C10-C12	<10 µg/kg	TM089	15.6	<10	27.6	<10	453000	215
Aliphatics >C12-C16	<100 µg/kg	TM173	4880	<100	18600	<100	4240000	3740
Aliphatics >C16-C21	<100 µg/kg	TM173	11100	<100	51800	<100	2260000	5150
Aliphatics >C21-C35	<100 µg/kg	TM173	42200	<100	112000	<100	3490000	6490
Aliphatics >C35-C44	<100 µg/kg	TM173	11300	<100	31300	<100	1040000	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	69400	<100	214000	<100	11000000	15400
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	369	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<200	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	20.4	<10	42	<10	607000	39
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	18	<10	302000	143
Aromatics >EC12-EC16	<100 µg/kg	TM173	5380	3190	22100	7480	1180000	2630
Aromatics >EC16-EC21	<100 µg/kg	TM173	10800	<100	34700	<100	1140000	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	38100	<100	141000	<100	2900000	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173	23300	<100	83100	<100	1390000	1230
Aromatics >EC40-EC44	<100 µg/kg	TM173	13200	<100	40600	<100	609000	1230
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	77600	3190	281000	7480	6610000	3860
Total Aliphatics >C5-35	<100 µg/kg	TM173	58200	<100	182000	<100	11600000	15700
Total Aromatics >C5-35	<100 µg/kg	TM173	54300	3190	198000	7480	6130000	2810
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	113000	3190	380000	7480	17800000	18500
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	147000	3190	495000	7480	20200000	19700

SDG: 120520-7
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 182823
 Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample R	BH6	BH6	BH7	BH8	BH9
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.80 - 2.00 Soil/Solid 18/05/2012	3.00 - 4.00 Soil/Solid 18/05/2012	1.80 - 2.00 Soil/Solid 18/05/2012	1.70 - 2.00 Soil/Solid 18/05/2012	1.60 - 2.00 Soil/Solid 17/05/2012
M	mCERTS accredited.						
S	Deviating sample.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
Component	LOD/Units						
GRO Surrogate % recovery**	%	TM089	96	129	127	98	156
GRO >C5-C12	<44 µg/kg	TM089	3300000	1070	217	4880000	462
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	607	<5	<5	<100	<5
Benzene	<10 µg/kg	TM089	<200	<10	<10	<200	<10
Toluene	<2 µg/kg	TM089	<40	<2	<2	<40	<2
Ethylbenzene	<3 µg/kg	TM089	<60	<3	<3	<60	<3
m,p-Xylene	<6 µg/kg	TM089	<120	<6	<6	<120	<6
o-Xylene	<3 µg/kg	TM089	<60	<3	<3	<60	<3
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	2080	<10	<10	2420	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	166000	83	<10	423000	13.5
Aliphatics >C8-C10	<10 µg/kg	TM089	1170000	110	22.8	1860000	81.2
Aliphatics >C10-C12	<10 µg/kg	TM089	704000	478	101	808000	185
Aliphatics >C12-C16	<100 µg/kg	TM173	977000	<100	<100	765000	23700
Aliphatics >C16-C21	<100 µg/kg	TM173	787000	<100	<100	176000	7340
Aliphatics >C21-C35	<100 µg/kg	TM173	955000	<100	<100	42400	7190
Aliphatics >C35-C44	<100 µg/kg	TM173	242000	<100	<100	<100	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	2960000	<100	<100	983000	38200
Aromatics >EC5-EC7	<10 µg/kg	TM089	223	<10	<10	<200	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<200	<10	<10	<200	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	782000	73.2	15.6	1240000	54.1
Aromatics >EC10-EC12	<10 µg/kg	TM089	469000	318	67.2	538000	123
Aromatics >EC12-EC16	<100 µg/kg	TM173	431000	7390	11100	407000	11000
Aromatics >EC16-EC21	<100 µg/kg	TM173	351000	2960	3340	76500	1330
Aromatics >EC21-EC35	<100 µg/kg	TM173	613000	3800	<100	20200	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173	217000	1520	<100	<100	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173	80400	<100	<100	<100	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1610000	15700	14400	504000	12300
Total Aliphatics >C5-35	<100 µg/kg	TM173	4760000	673	134	4080000	38500
Total Aromatics >C5-35	<100 µg/kg	TM173	2650000	14500	14500	2290000	12500
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	7410000	15200	14600	6370000	51000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	7870000	16700	14600	6370000	51000

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C10-C12	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C5-C6	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C6-C8	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C8-C10	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC10-EC12	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC5-EC7	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC7-EC8	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC8-EC10	Target Compounds out of calibration range following maximum dilutions applied
5654411	BH8 ES3	1.70 - 2.00	SOLID	GRO by GC-FID (S)	GRO >C5-C12	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C10-C12	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C5-C6	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C6-C8	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C8-C10	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC10-EC12	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC5-EC7	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC7-EC8	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC8-EC10	Target Compounds out of calibration range following maximum dilutions applied
5654417	BH5 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	GRO >C5-C12	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C10-C12	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C5-C6	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C6-C8	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aliphatics >C8-C10	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC10-EC12	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC5-EC7	Target Compounds out of calibration range following maximum dilutions applied

CERTIFICATE OF ANALYSIS

SDG: 120520-7 **Location:** MREC **Order Number:**
Job: H_JACOBS_NEA-82 **Customer:** Jacobs Engineering UK Limited **Report Number:** 182823
Client Reference: 12635 **Attention:** Cerith Owens **Superseded Report:**

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC7-EC8	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	Aromatics >EC8-EC10	Target Compounds out of calibration range following maximum dilutions applied
5654428	BH6 ES3	1.80 - 2.00	SOLID	GRO by GC-FID (S)	GRO >C5-C12	Target Compounds out of calibration range following maximum dilutions applied

Note : Test results may be compromised

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 120520-7
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 182823
 Superseded Report:

Test Completion Dates

Lab Sample No(s)	5612186	5612191	5612195	5612197	5612198	5612200	5612202	5612204	5612205	5612208
Customer Sample Ref.	BH1	BH2	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH8
AGS Ref.	ES2	ES3	ES3	ES5	ES3	ES5	ES3	ES5	ES3	ES3
Depth	1.20 - 1.70	2.00 - 3.00	2.00 - 3.00	4.00 - 4.50	1.80 - 2.00	3.00 - 4.00	1.80 - 2.00	3.00 - 4.00	1.80 - 2.00	1.70 - 2.00
Type	SOLID									
EPH CWG (Aliphatic) GC (S)	28-May-2012	29-May-2012	29-May-2012	29-May-2012	30-May-2012	30-May-2012	30-May-2012	29-May-2012	29-May-2012	29-May-2012
EPH CWG (Aromatic) GC (S)	28-May-2012	29-May-2012	29-May-2012	29-May-2012	30-May-2012	30-May-2012	30-May-2012	29-May-2012	29-May-2012	29-May-2012
GRO by GC-FID (S)	29-May-2012	29-May-2012	28-May-2012	29-May-2012	29-May-2012	28-May-2012	29-May-2012	28-May-2012	30-May-2012	29-May-2012
pH	28-May-2012	29-May-2012	28-May-2012	29-May-2012						
Sample description	23-May-2012	24-May-2012								
Semi Volatile Organic Compounds	27-May-2012	30-May-2012								
Total Organic Carbon	25-May-2012	30-May-2012								
TPH CWG GC (S)	29-May-2012	29-May-2012	29-May-2012	29-May-2012	30-May-2012	30-May-2012	30-May-2012	29-May-2012	30-May-2012	29-May-2012

Lab Sample No(s)	5612210
Customer Sample Ref.	BH9
AGS Ref.	ES2
Depth	1.60 - 2.00
Type	SOLID
EPH CWG (Aliphatic) GC (S)	29-May-2012
EPH CWG (Aromatic) GC (S)	29-May-2012
GRO by GC-FID (S)	29-May-2012
pH	28-May-2012
Sample description	24-May-2012
Semi Volatile Organic Compounds	30-May-2012
Total Organic Carbon	30-May-2012
TPH CWG GC (S)	29-May-2012



SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

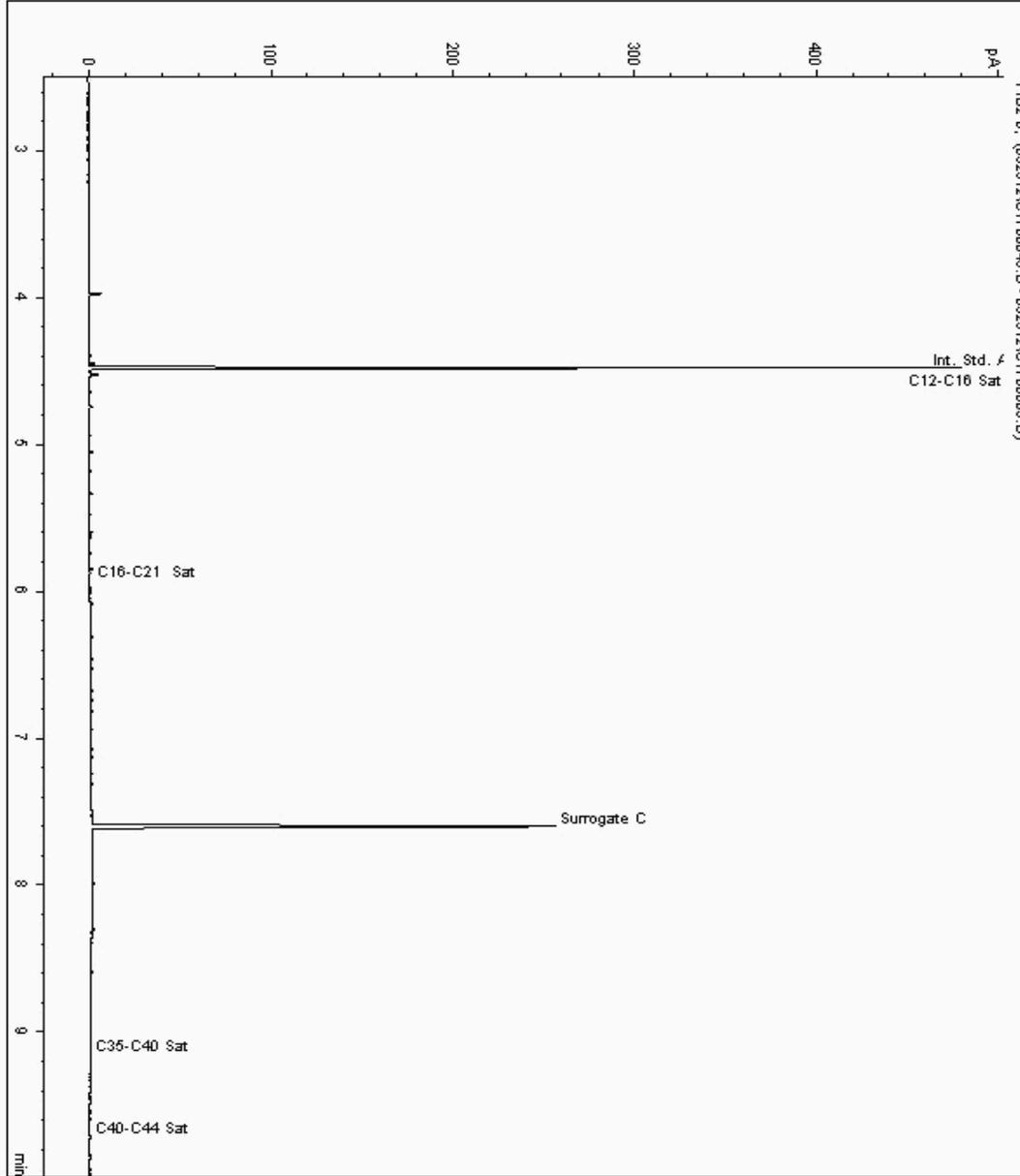
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5637176
Sample ID : BH1

Depth : 1.20 - 1.70

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492690-5637176
Date Acquired : 26/05/2012 03:21:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

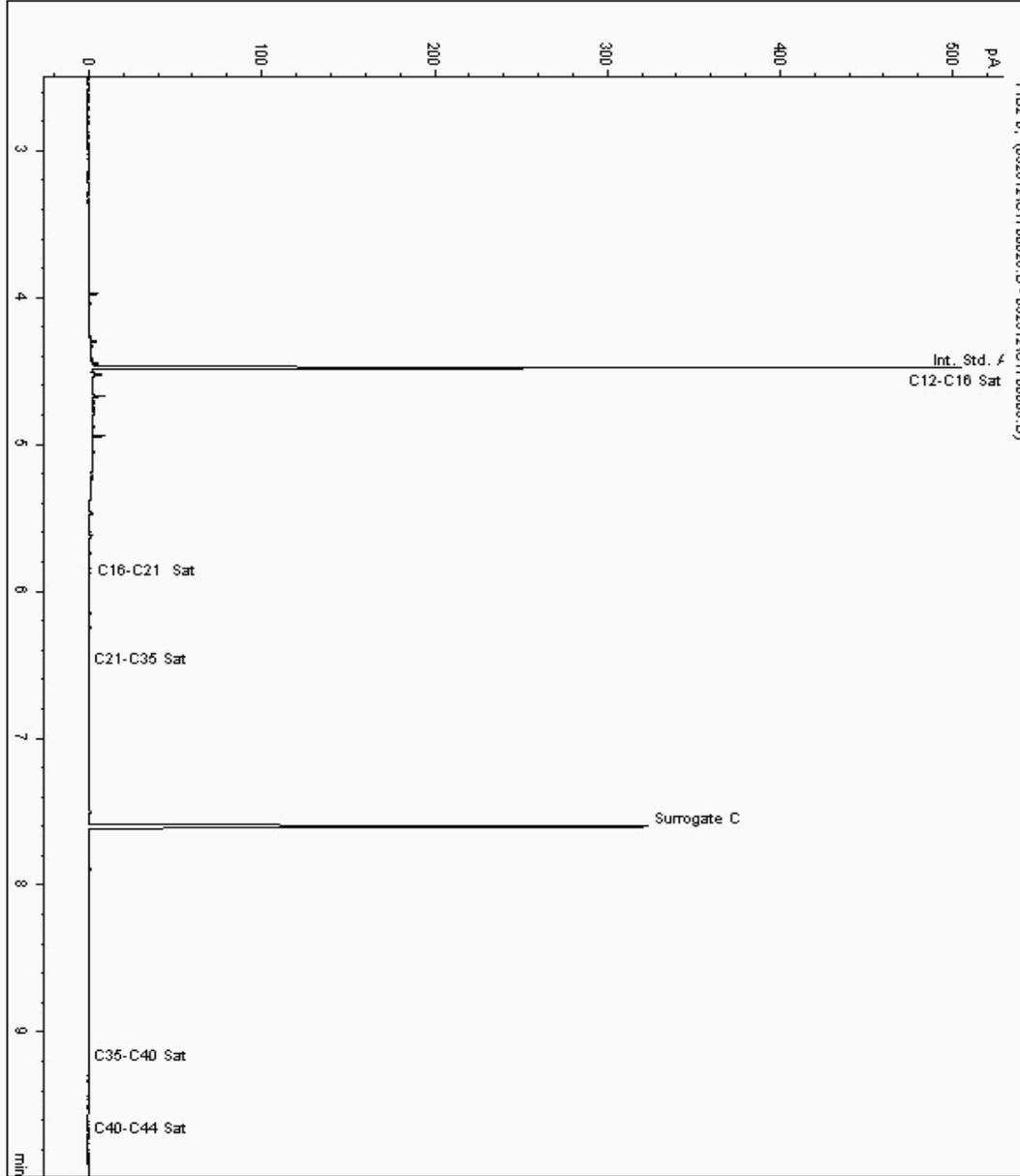
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5645534
Sample ID : BH9

Depth : 1.60 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492803-5645534
Date Acquired : 28/05/2012 23:12:24 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.030





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

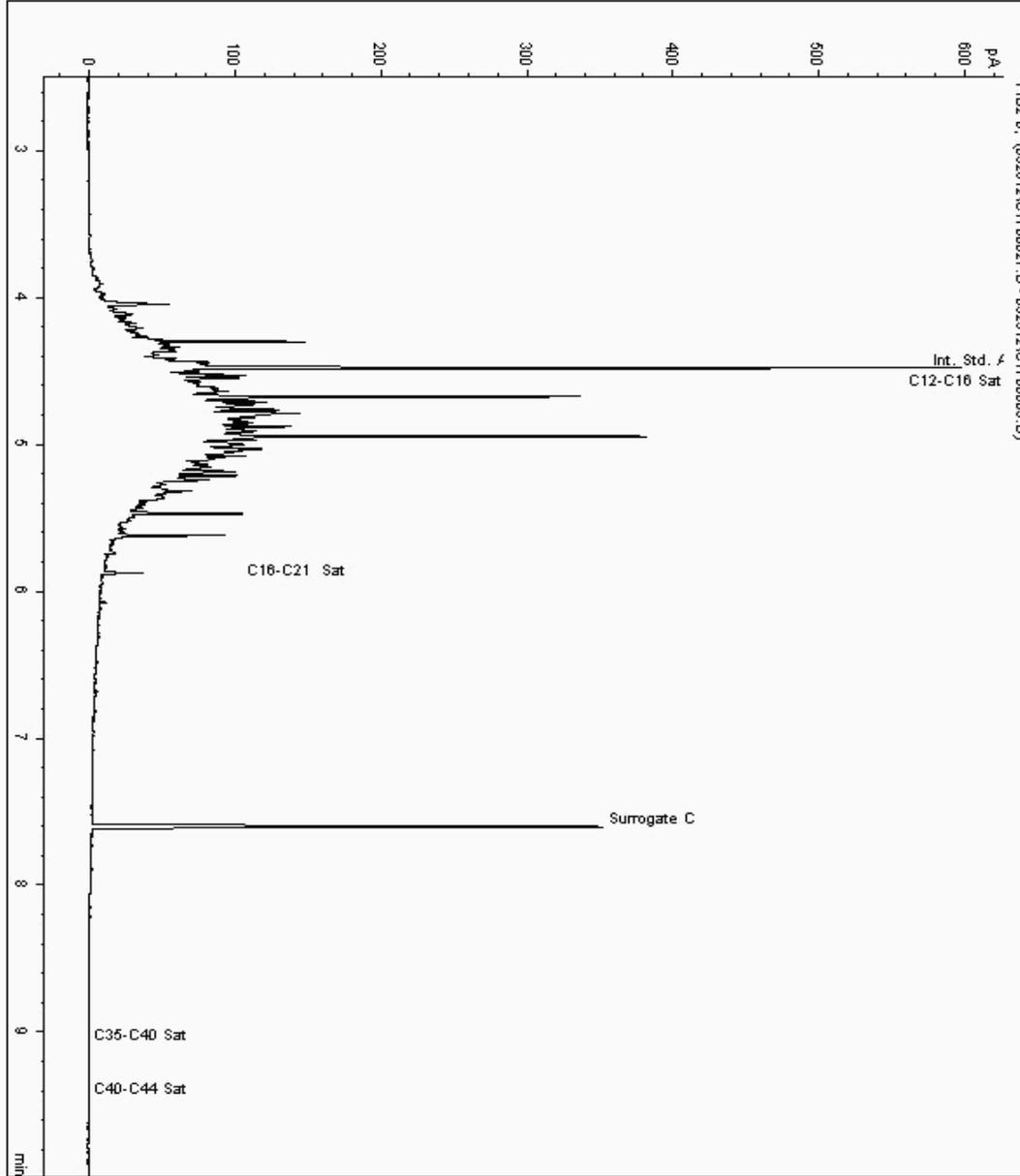
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5645546
Sample ID : BH8

Depth : 1.70 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492793-5645546
Date Acquired : 28/05/2012 23:33:27 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

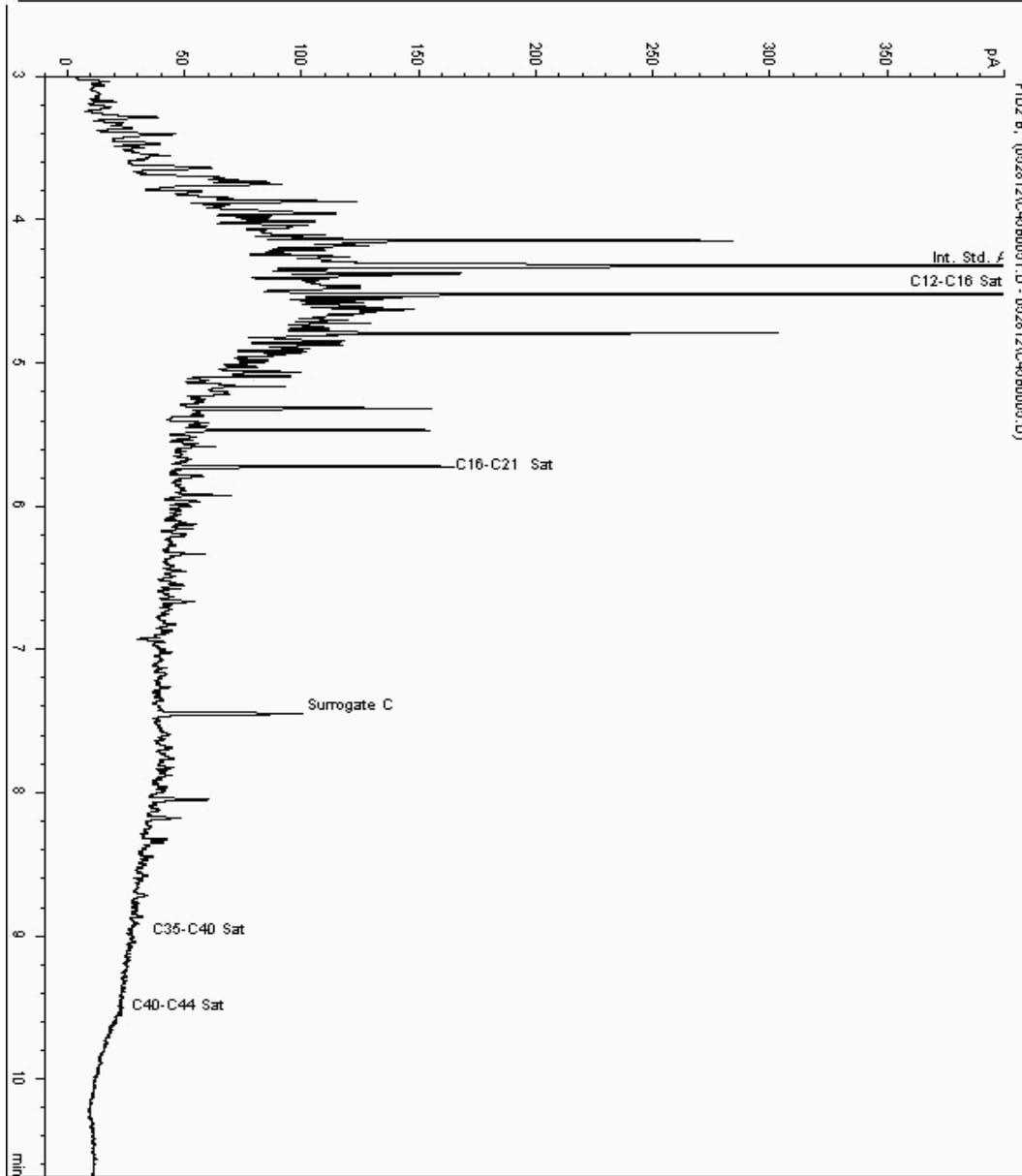
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647480
Sample ID : BH5

Depth : 1.80 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492741-5647480
Date Acquired : 29/05/12 17:09:15 PM
Units : ppb
Dilution:





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

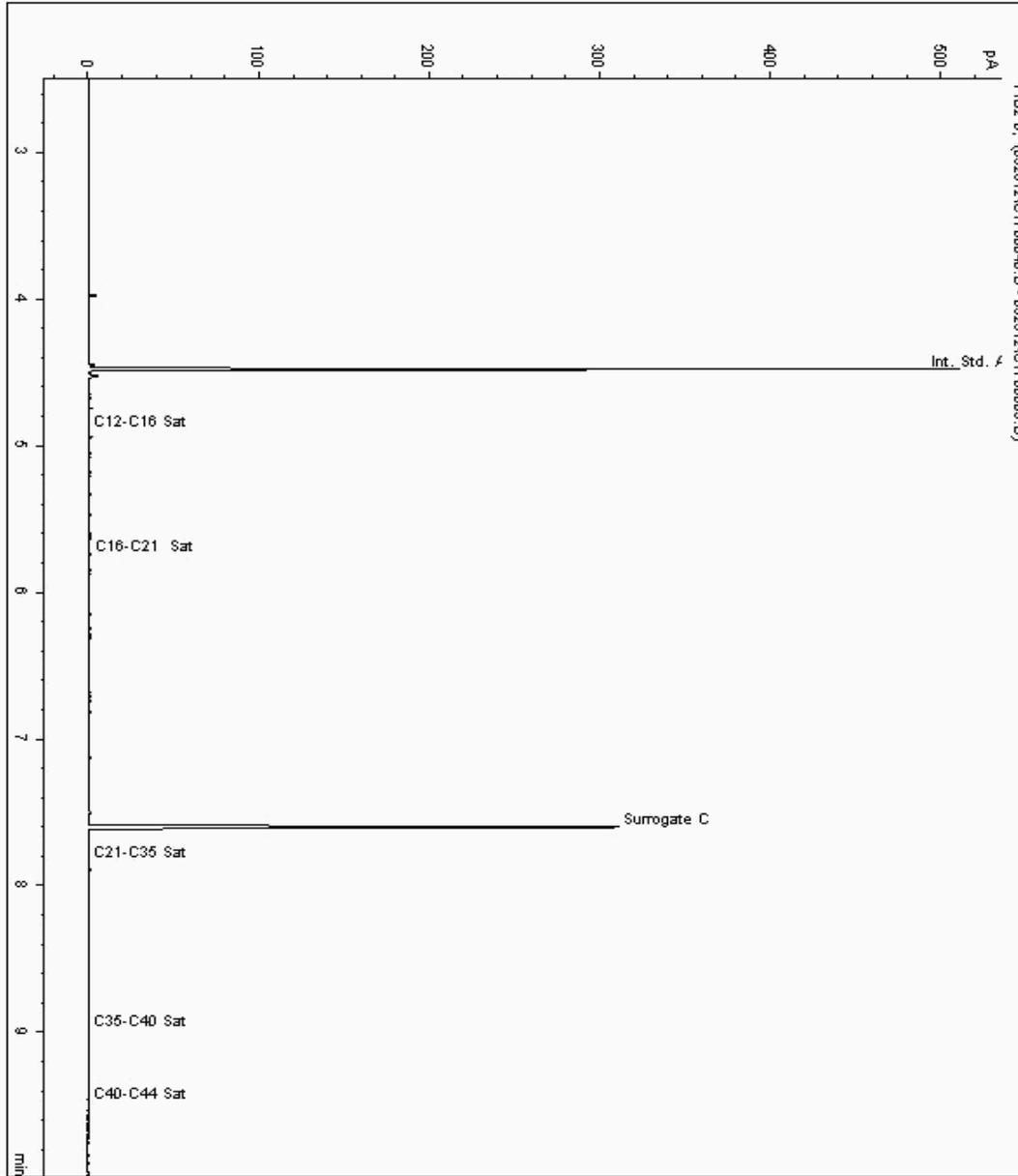
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647515
Sample ID : BH7

Depth : 1.80 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492783-5647515
Date Acquired : 29/05/2012 03:33:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

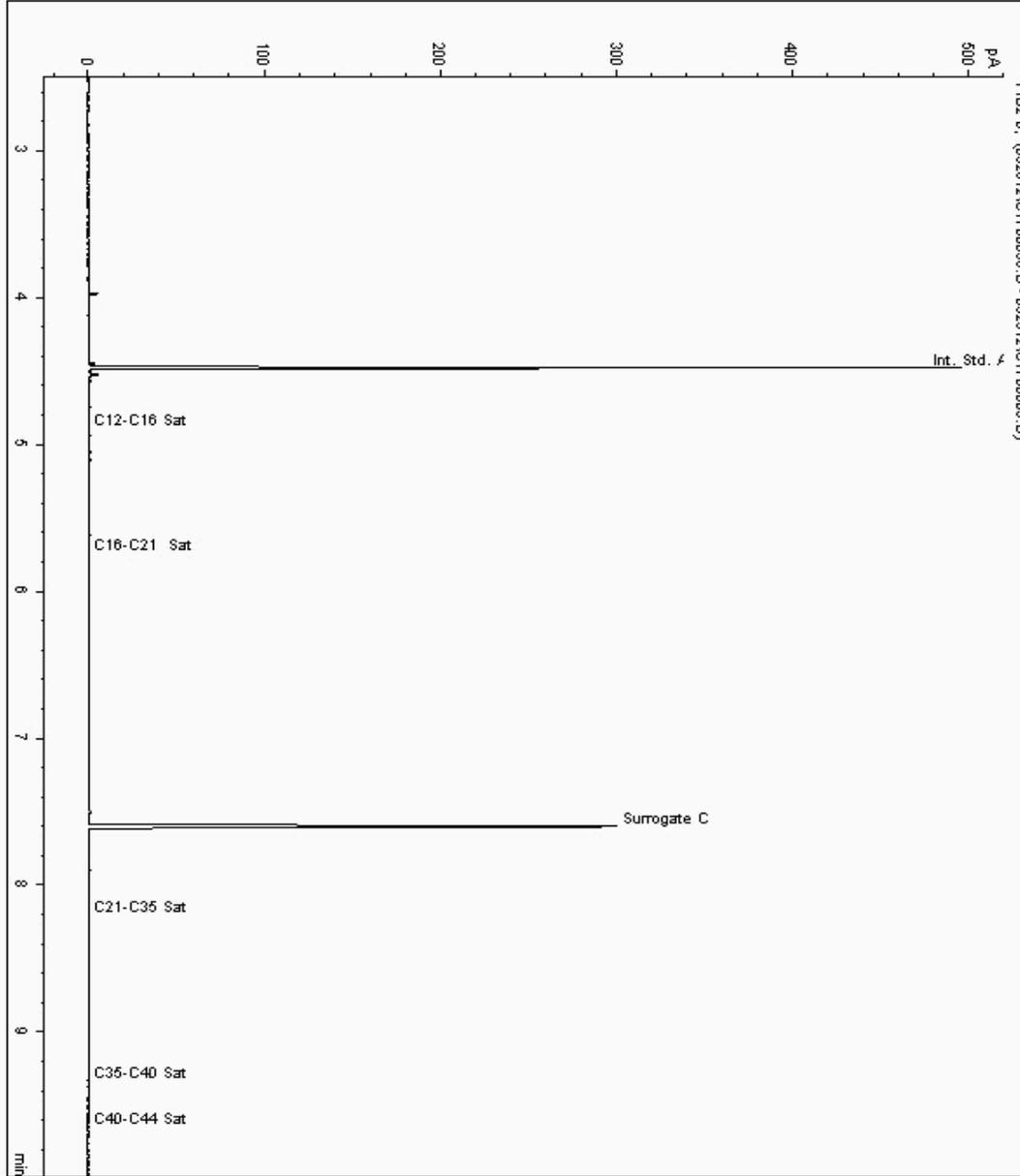
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647553
Sample ID : BH4

Depth : 4.00 - 4.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492729-5647553
Date Acquired : 29/05/2012 03:02:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

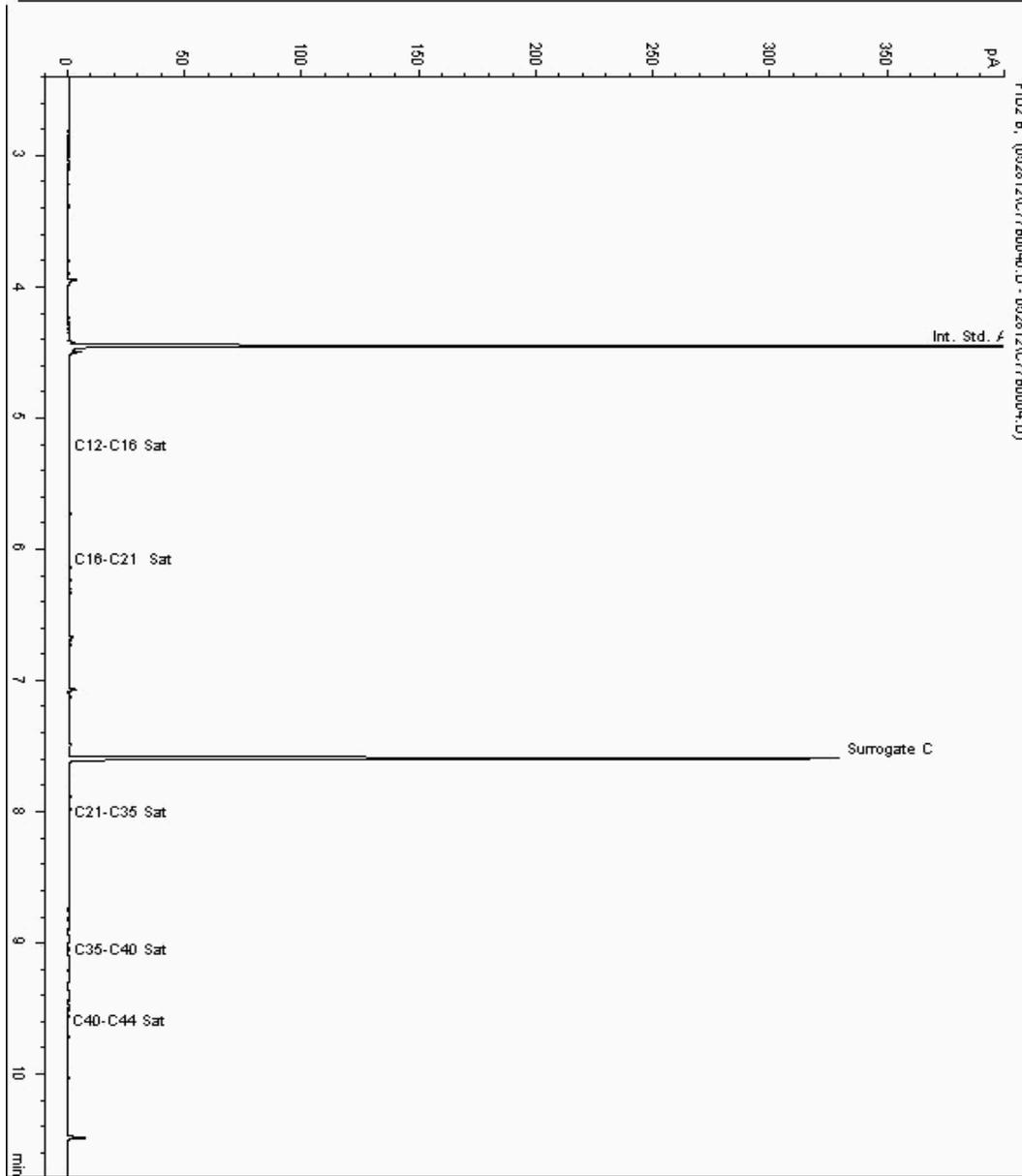
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647564
Sample ID : BH6

Depth : 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492773-5647564
Date Acquired : 29/05/12 07:58:31 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

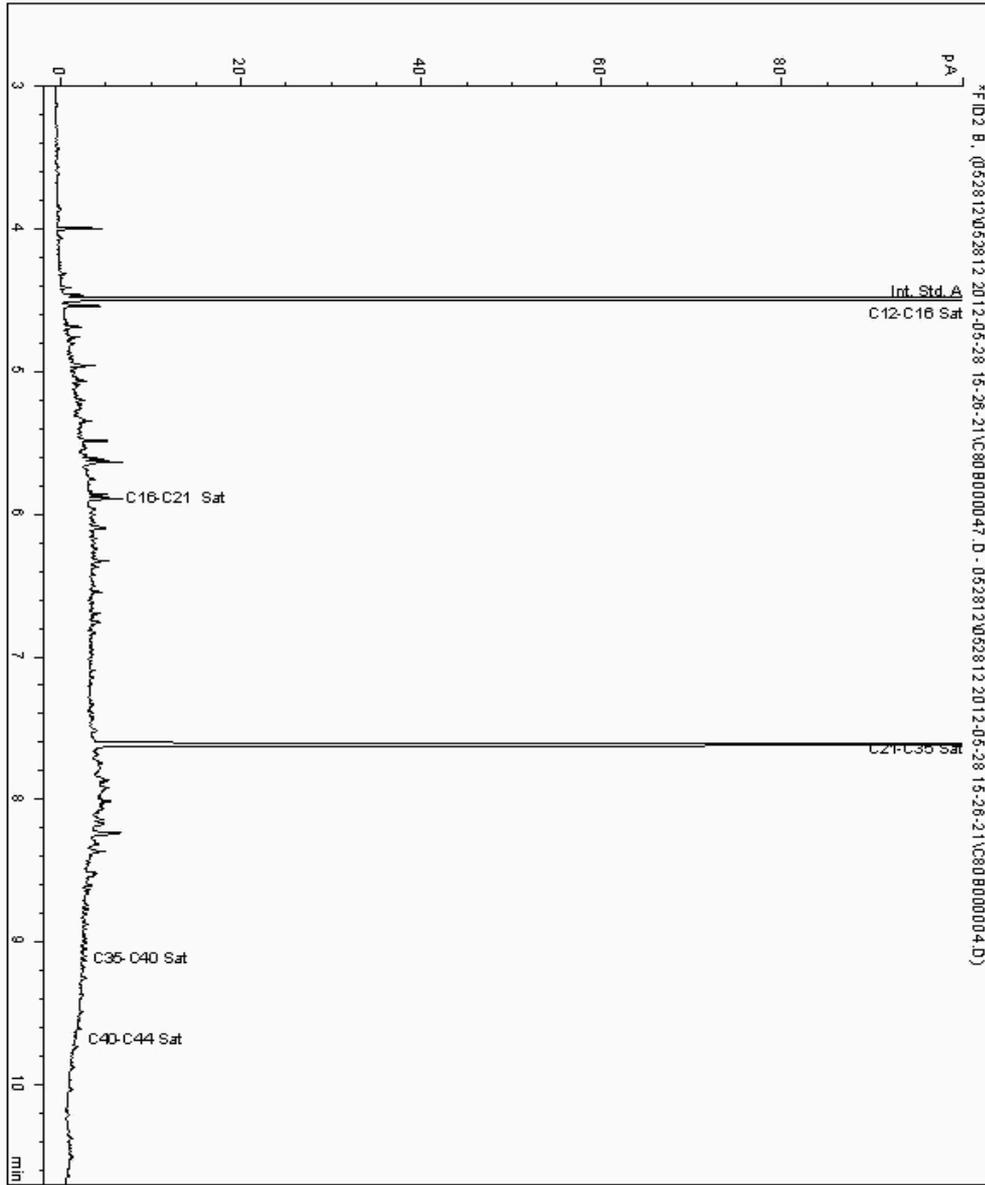
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647579
Sample ID : BH4

Depth : 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492710-5647579
Date Acquired : 29/05/12 05:20:19
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

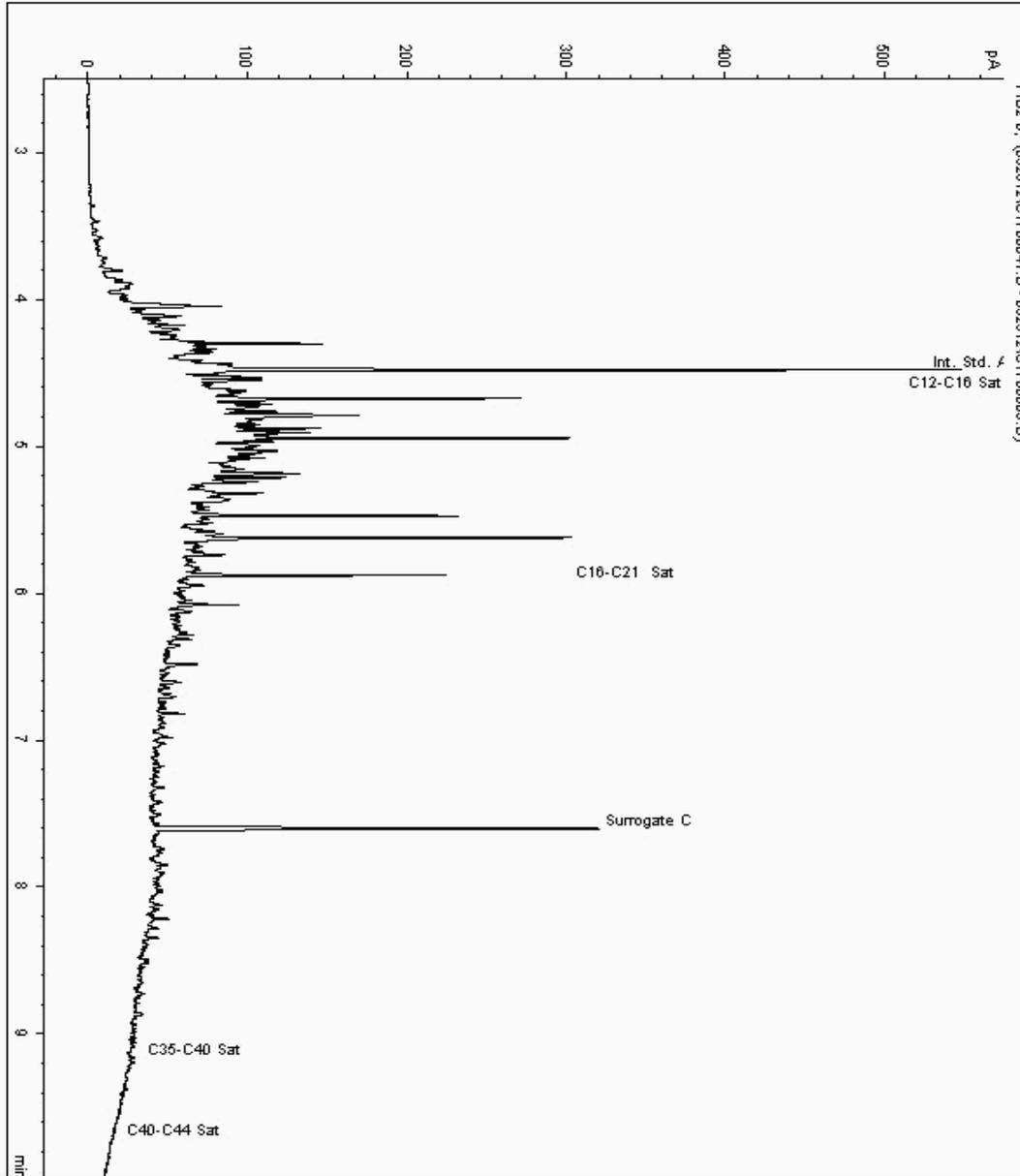
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647594
Sample ID : BH6

Depth : 1.80 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492762-5647594
Date Acquired : 29/05/2012 03:54:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.020





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

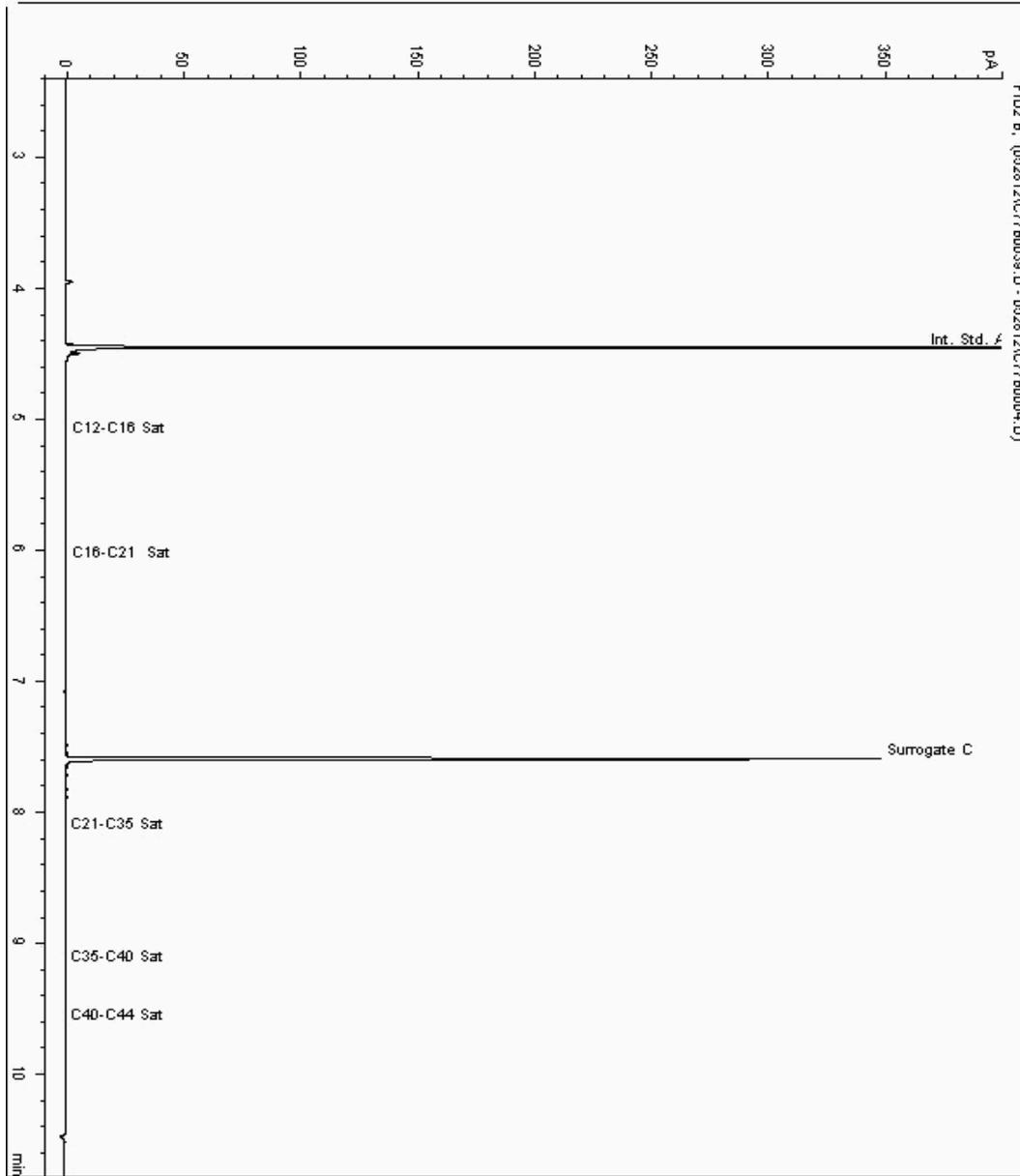
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647614
Sample ID : BH2

Depth : 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492700-5647614
Date Acquired : 29/05/12 04:55:47 PM
Units : ppb
Dilution:





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

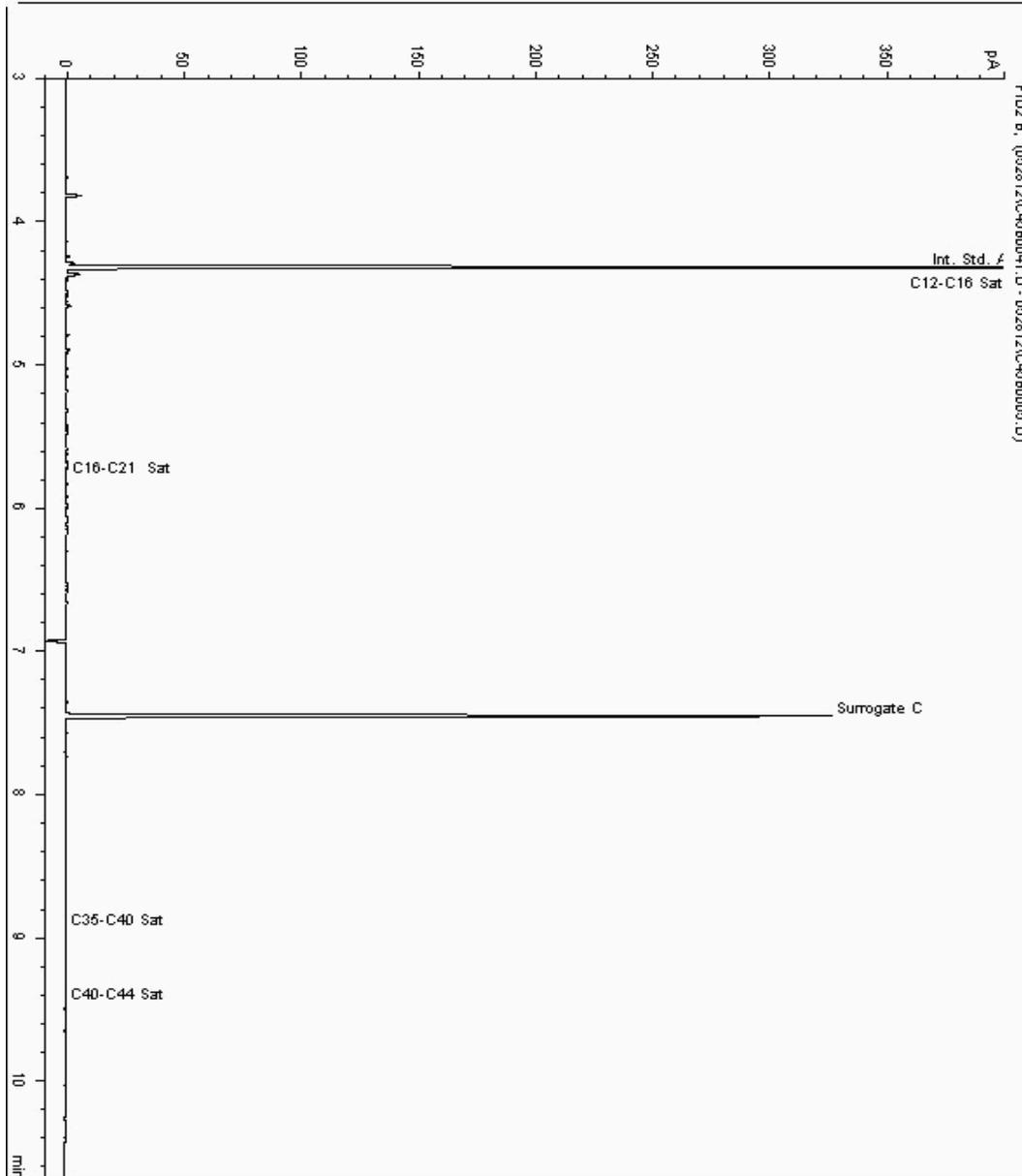
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 5647620
Sample ID : BH5

Depth : 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5492752-5647620
Date Acquired : 29/05/12 10:59:23 PM
Units : ppb
Dilution:





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

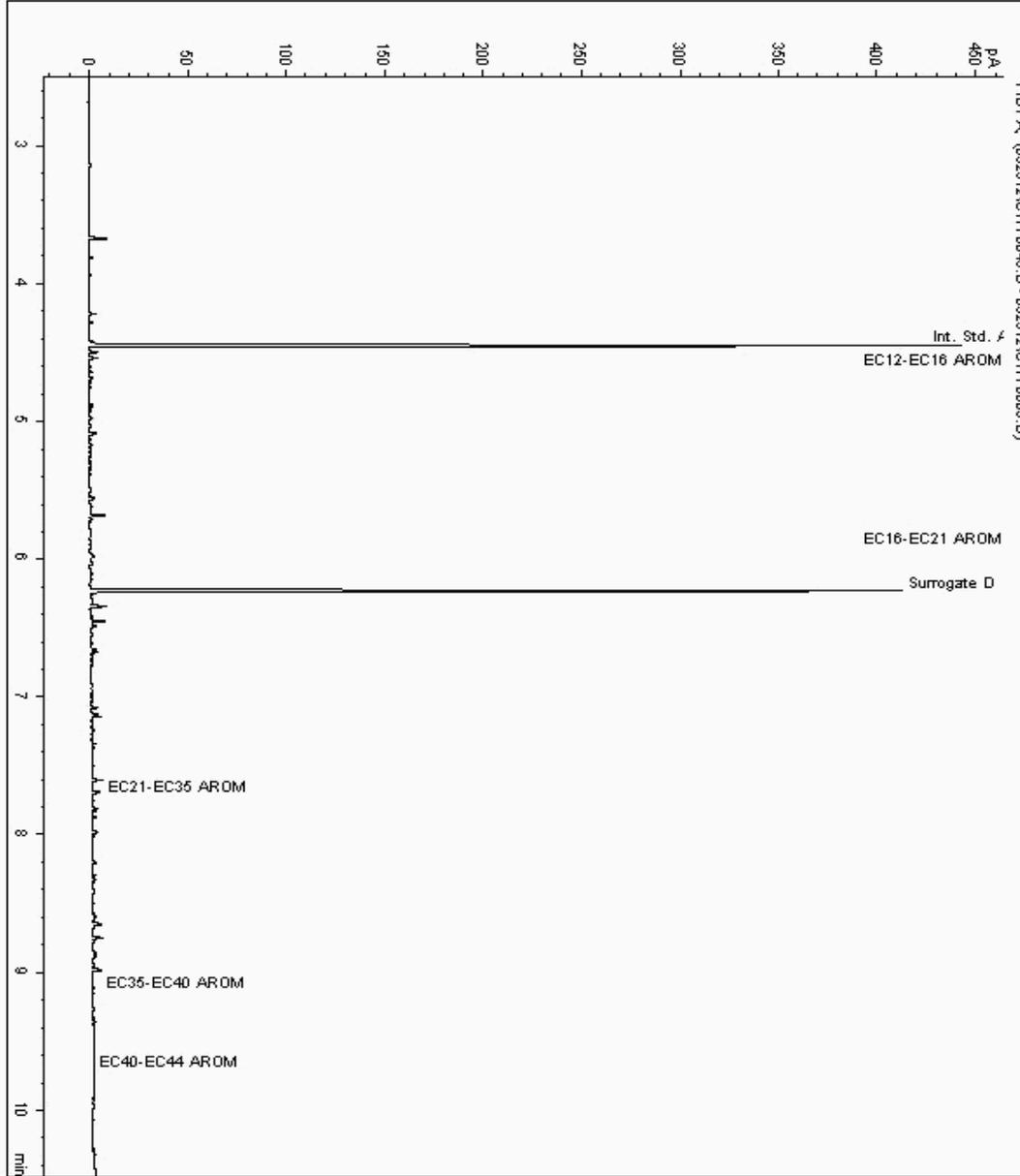
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5637176
Sample ID : BH1

Depth : 1.20 - 1.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492691-5637176
Date Acquired : 26/05/2012 03:21:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.010





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

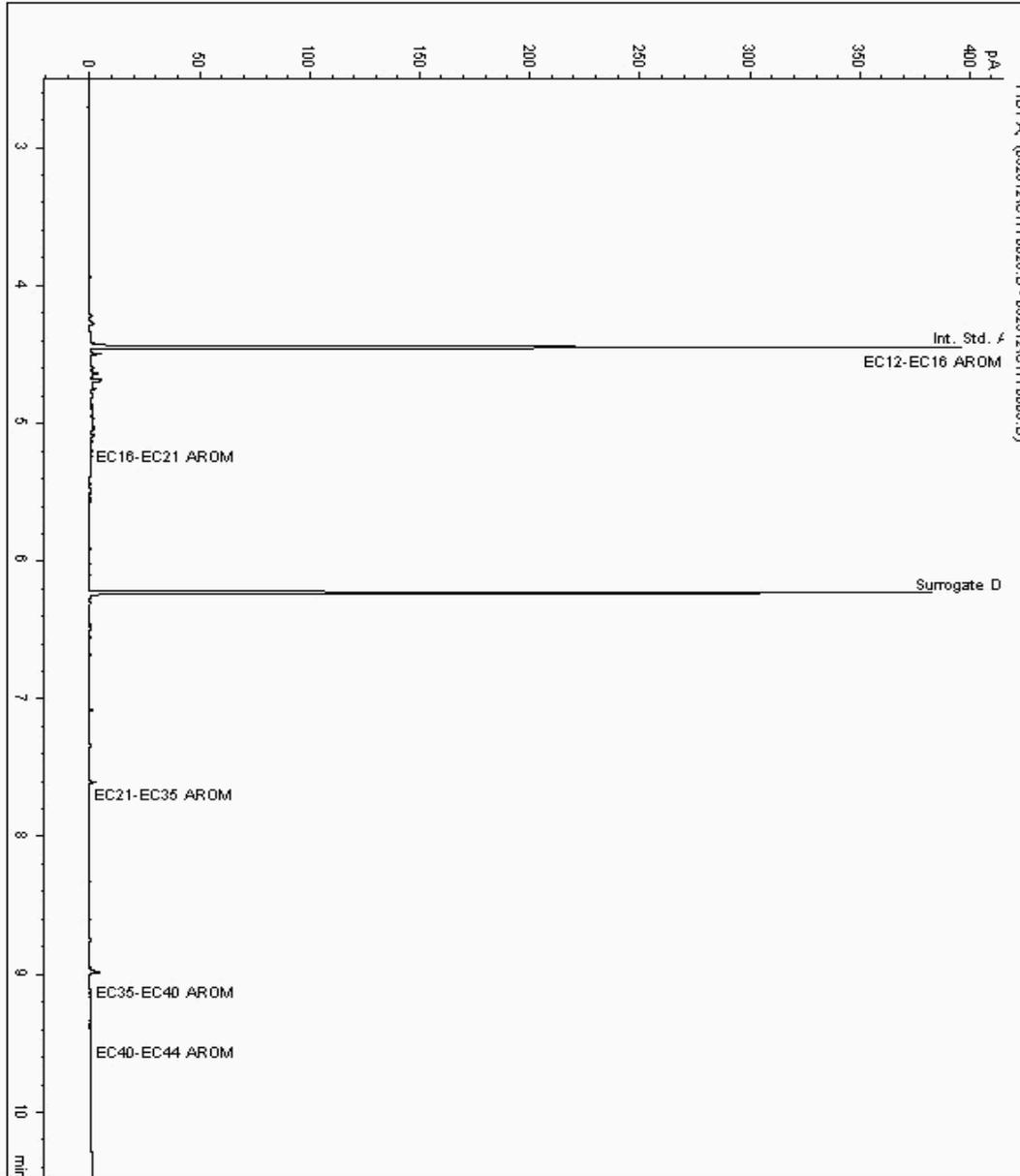
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5645534
Sample ID : BH9

Depth : 1.60 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492804-5645534
Date Acquired : 28/05/2012 23:12:24 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.030





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

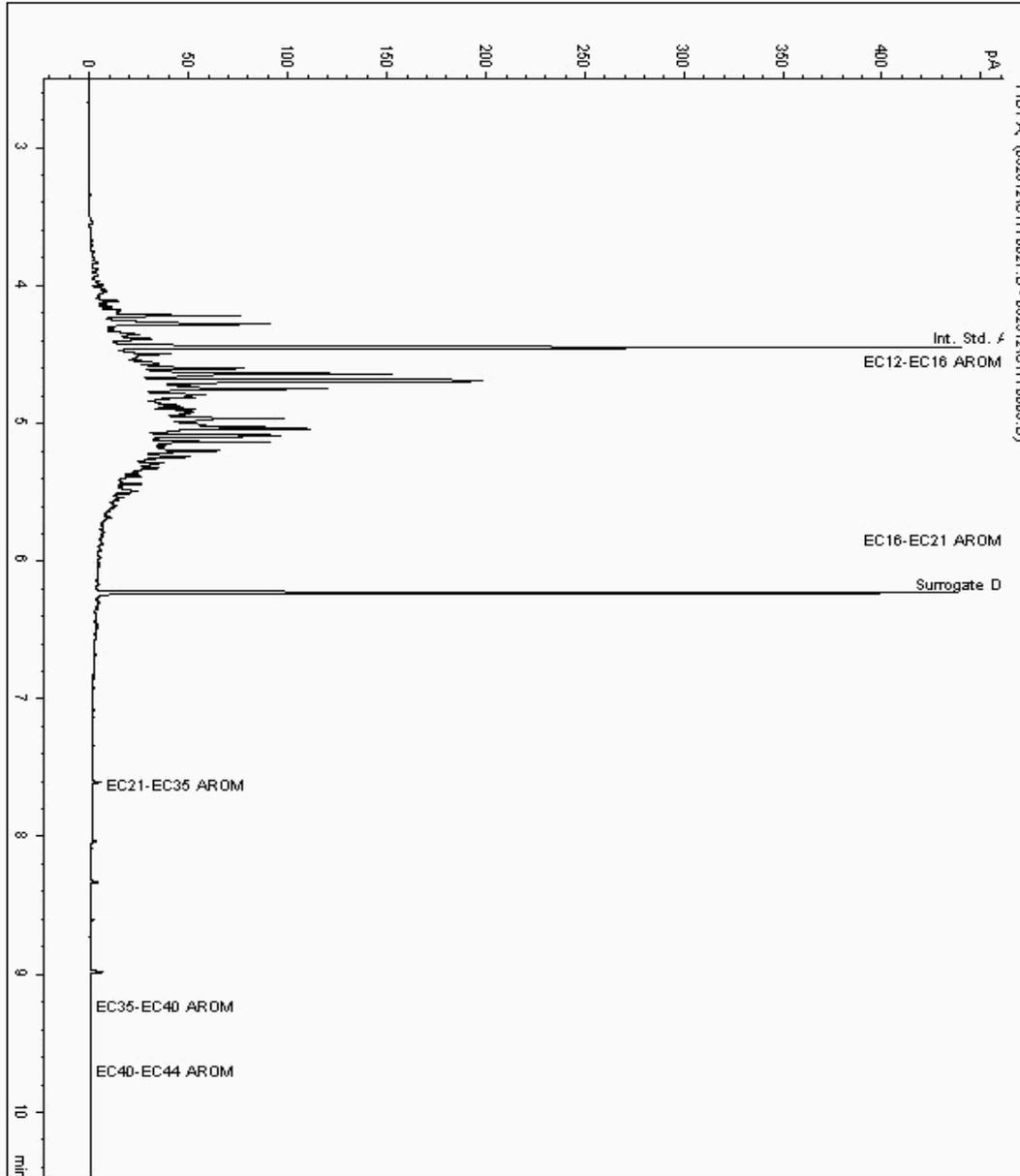
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5645546
Sample ID : BH8

Depth : 1.70 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492794-5645546
Date Acquired : 28/05/2012 23:33:27 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

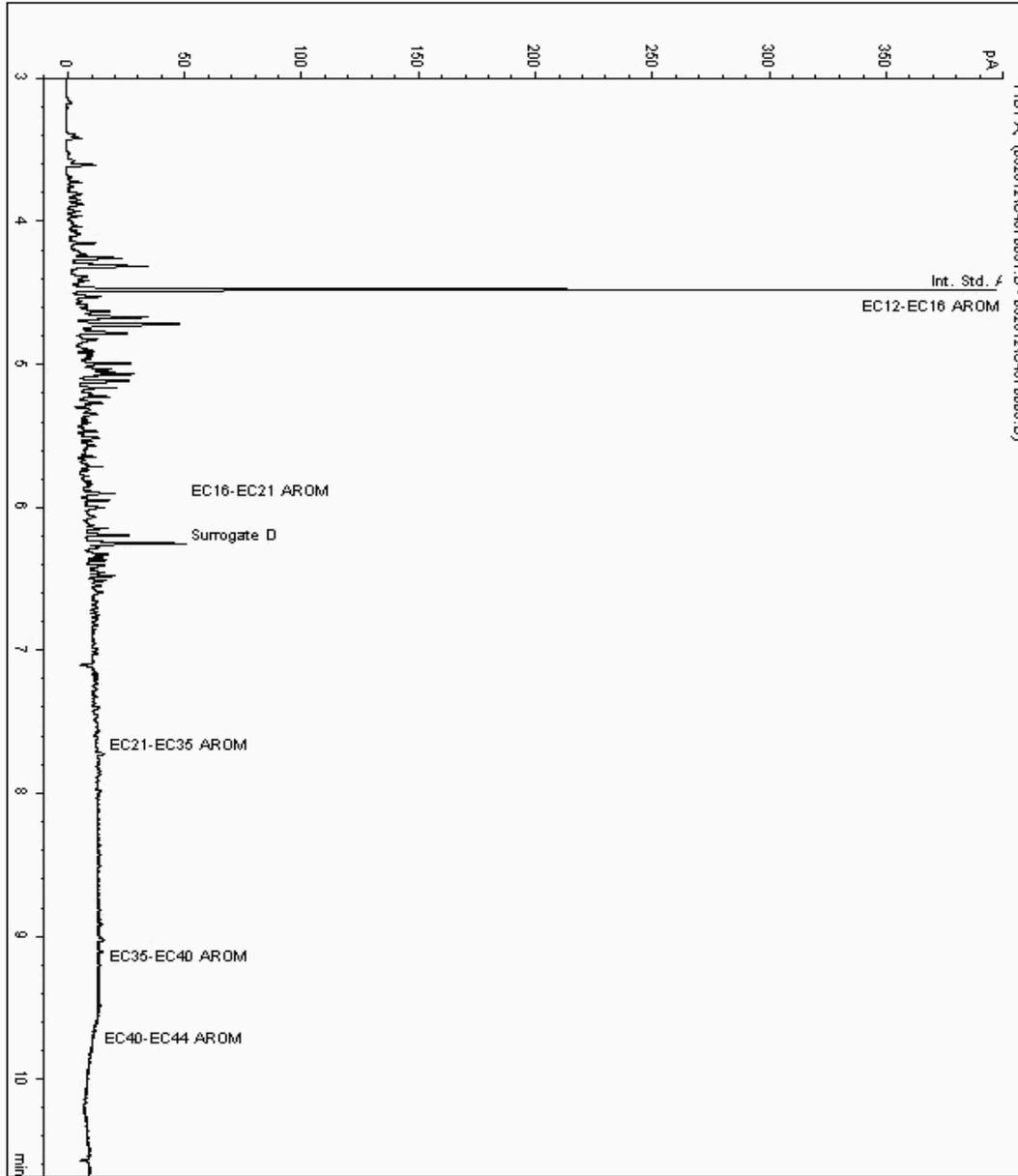
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647480
Sample ID : BH5

Depth : 1.80 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492742-5647480
Date Acquired : 29/05/12 17:09:15 PM
Units : ppb
Dilution:





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

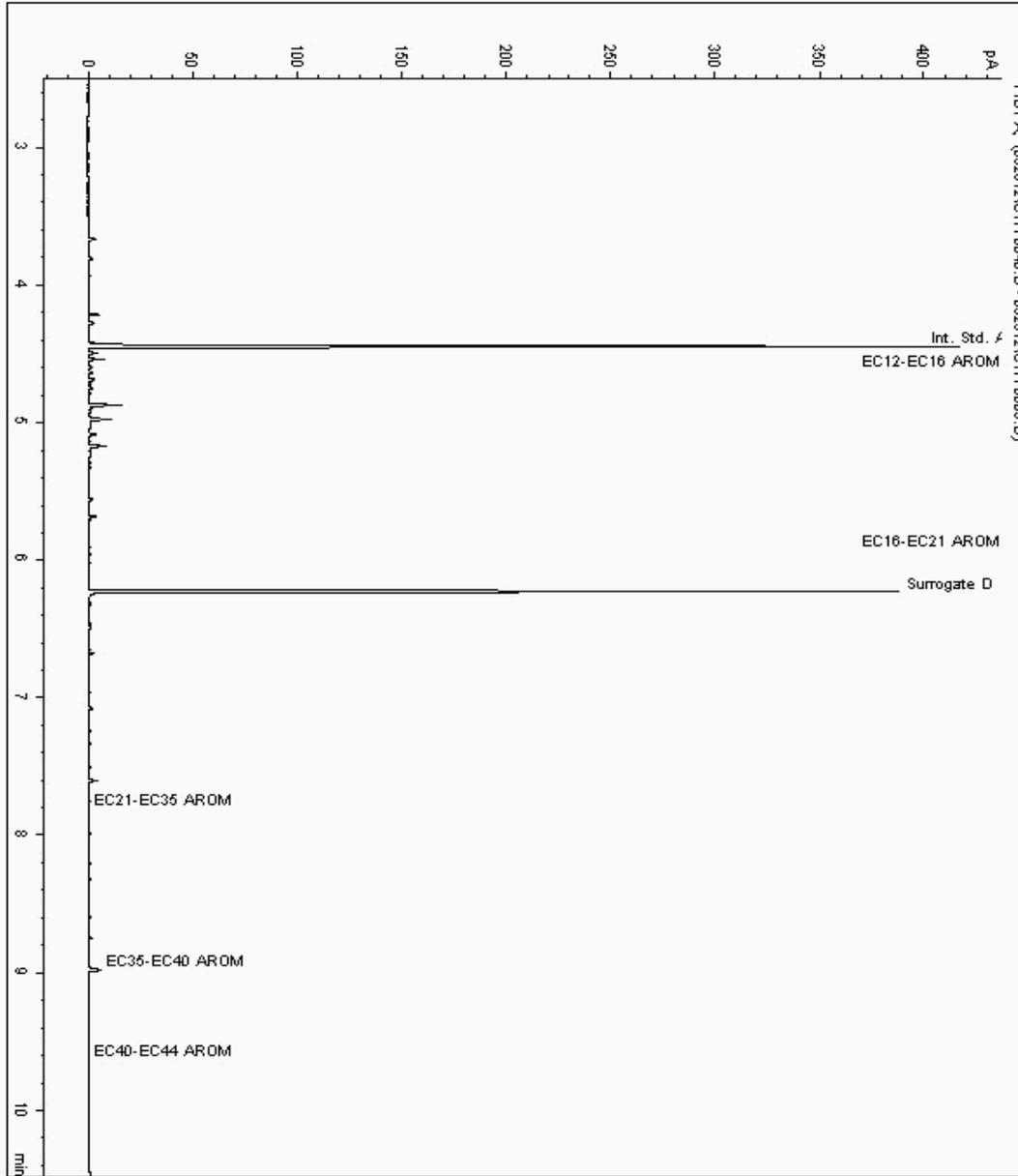
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647515
Sample ID : BH7

Depth : 1.80 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492784-5647515
Date Acquired : 29/05/2012 03:33:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

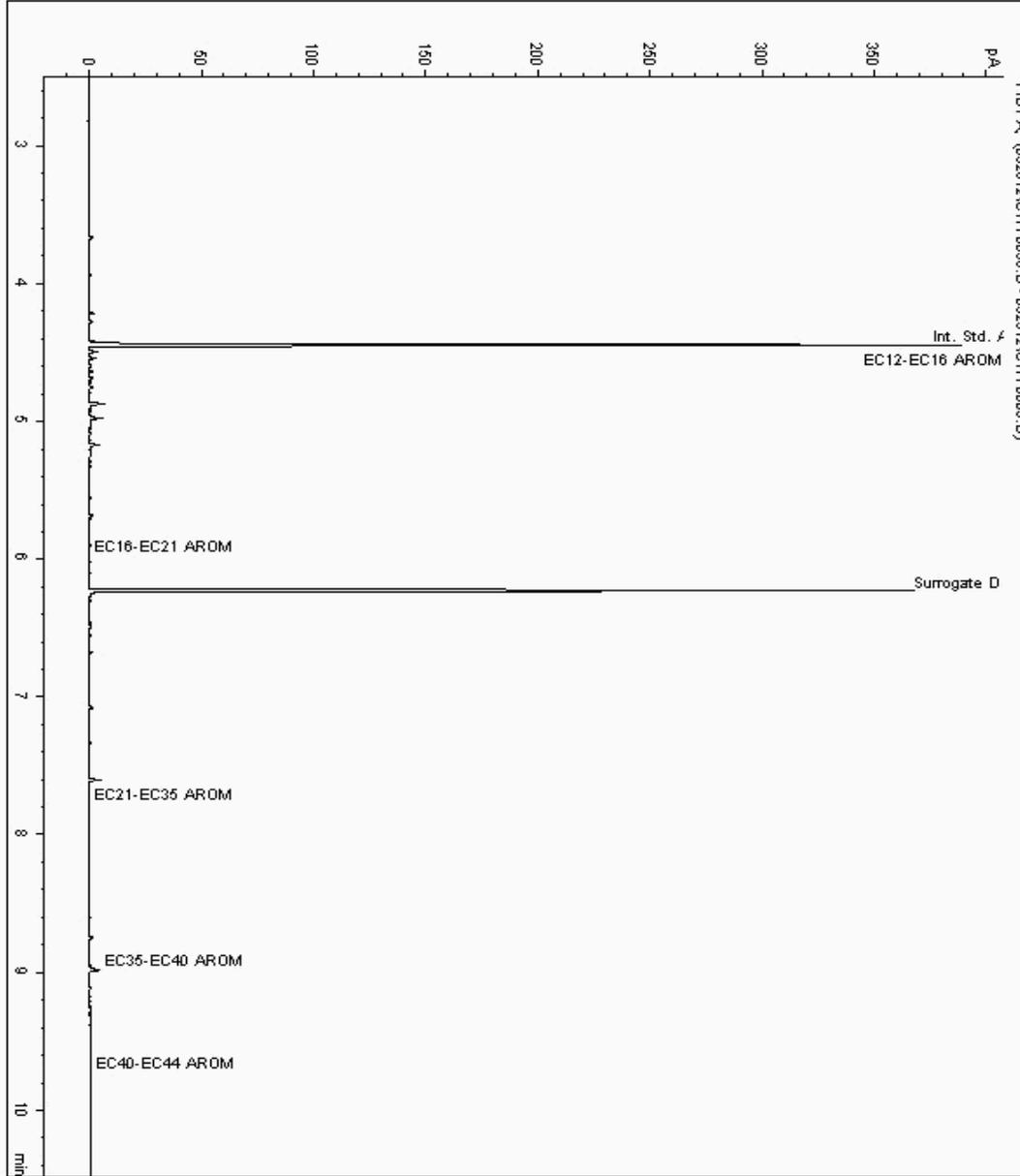
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647553
Sample ID : BH4

Depth : 4.00 - 4.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492730-5647553
Date Acquired : 29/05/2012 03:02:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.050





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

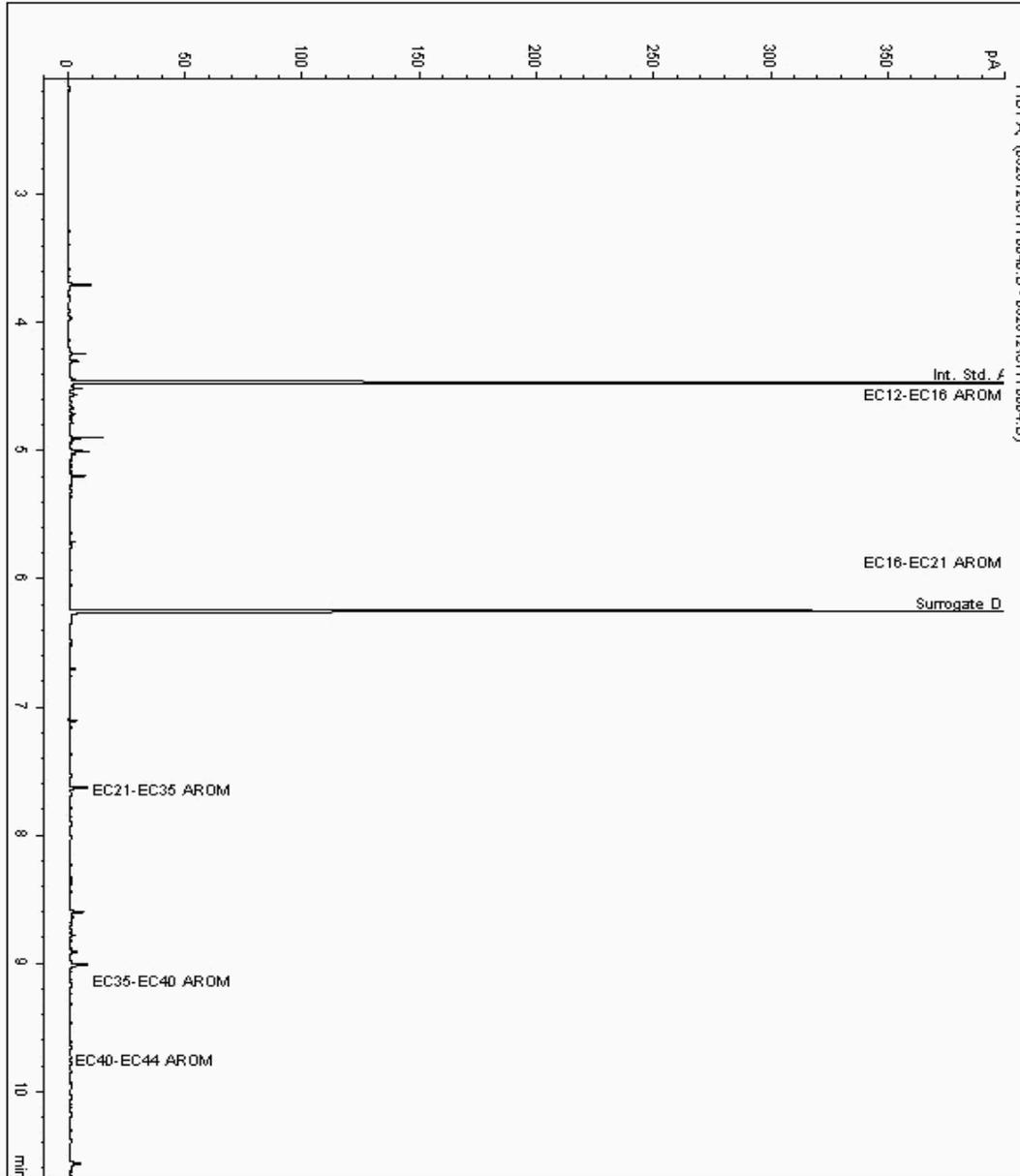
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647564
Sample ID : BH6

Depth : 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492774-5647564
Date Acquired : 29/05/12 07:58:31 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

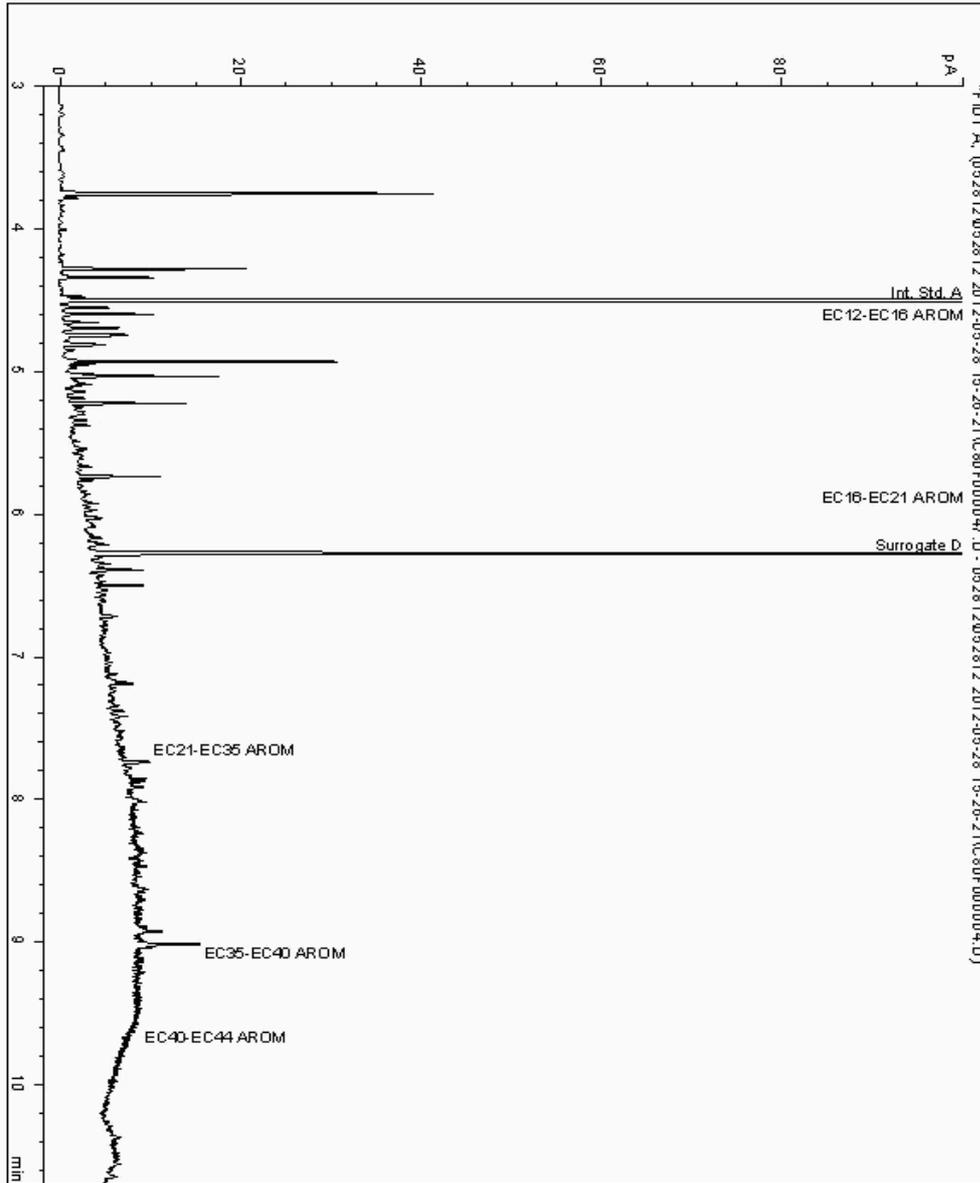
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647579
Sample ID : BH4

Depth : 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492711-5647579
Date Acquired : 29/05/12 05:20:19
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

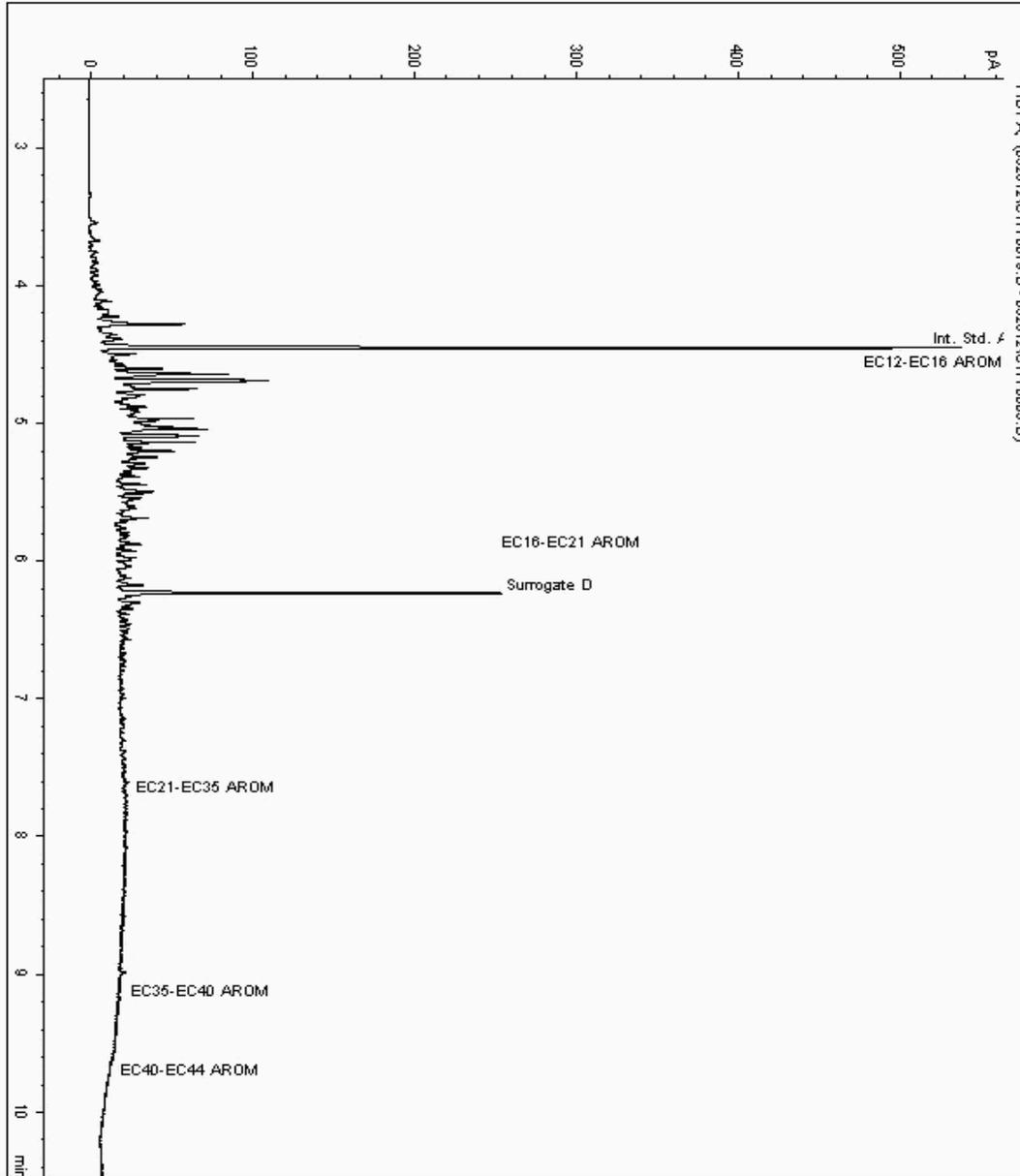
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647594
Sample ID : BH6

Depth : 1.80 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492763-5647594
Date Acquired : 30/05/2012 13:04:30 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 2.030





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

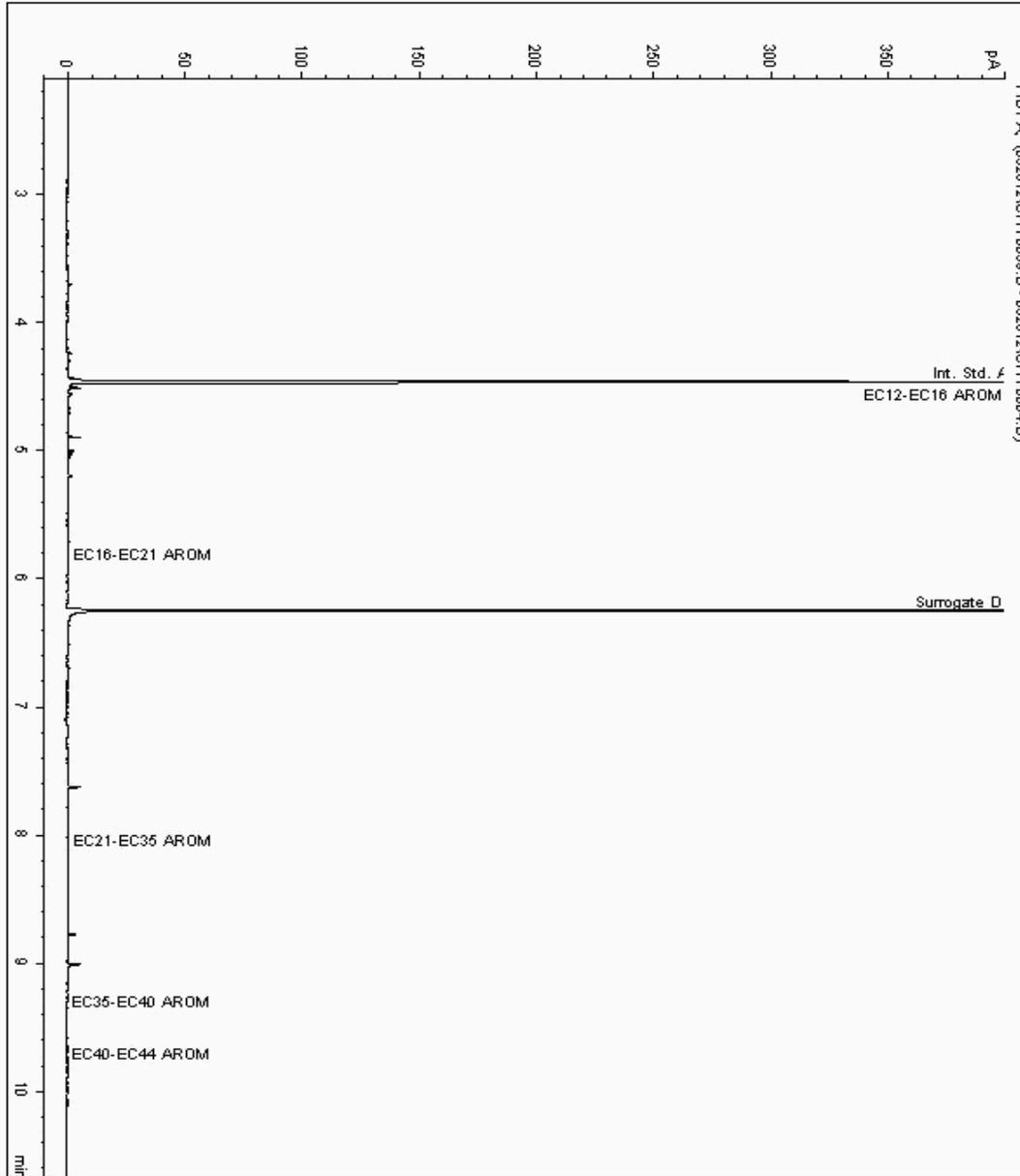
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647614
Sample ID : BH2

Depth : 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5492701-5647614
Date Acquired : 29/05/12 04:55:47 PM
Units : ppb
Dilution:





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

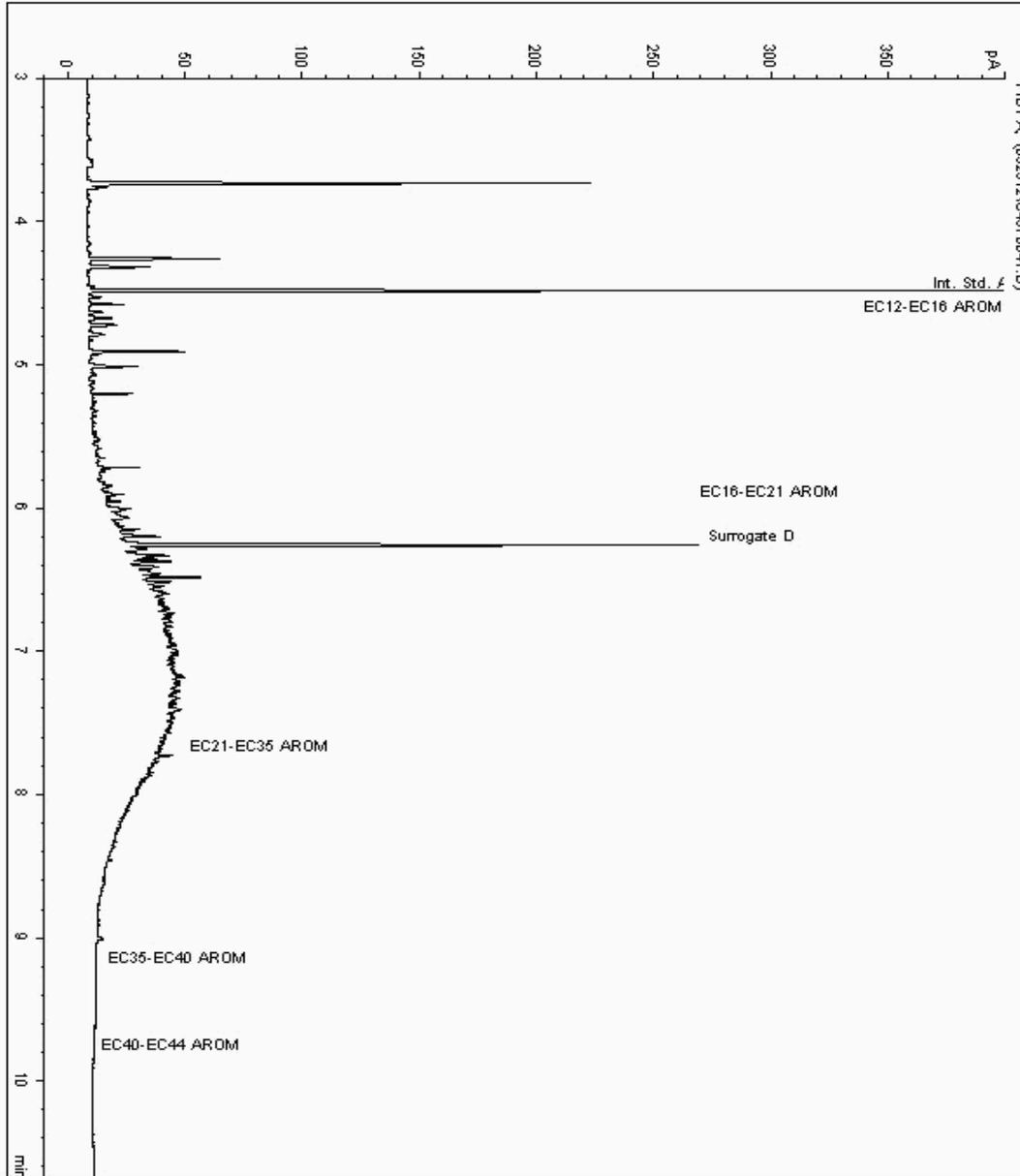
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 5647620
Sample ID : BH5

Depth : 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5503261-5639012
Date Acquired : 28/05/12 15:00:23 PM
Units : ppb
Dilution:





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

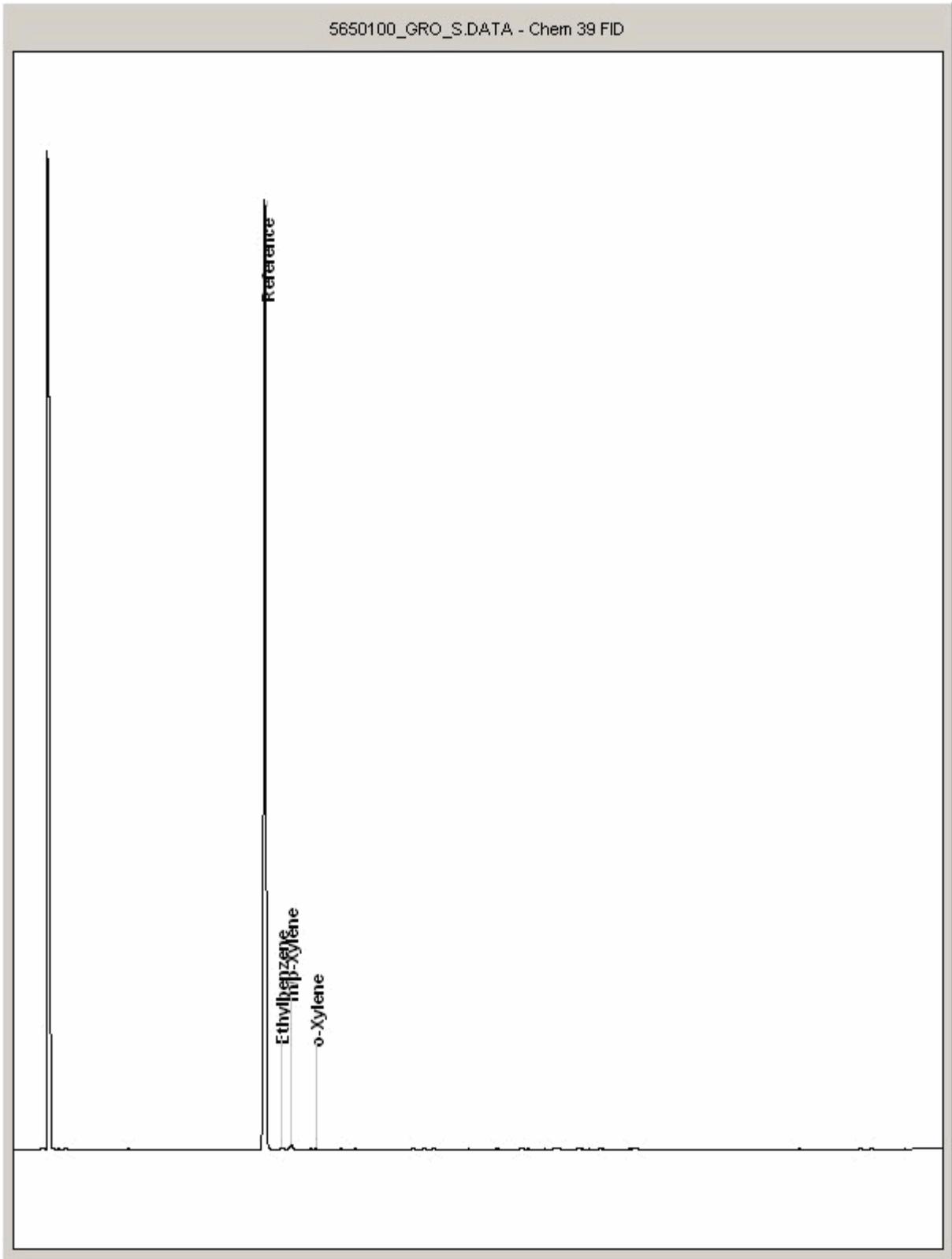
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5650100
Sample ID : BH4

Depth : 2.00 - 3.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

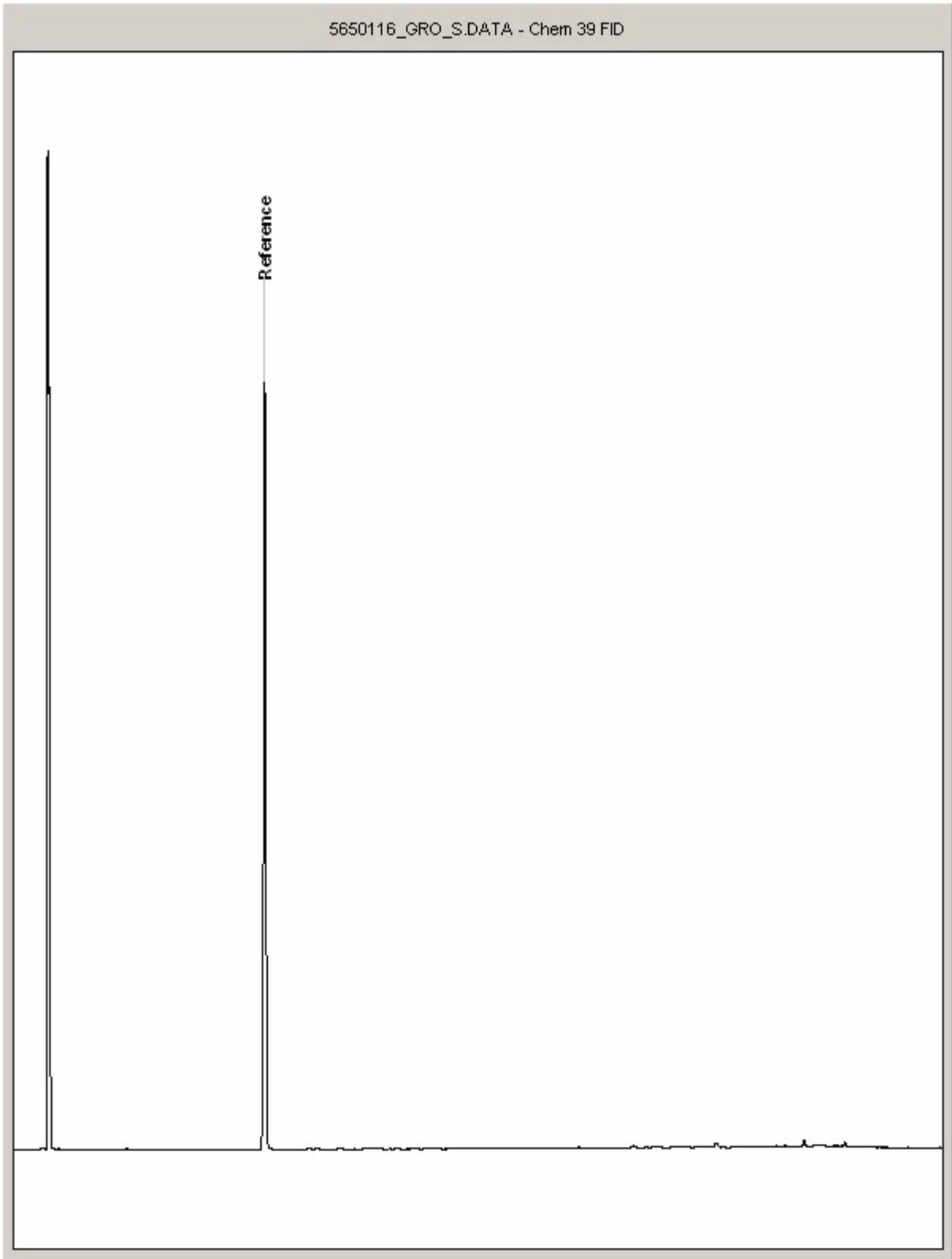
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5650116
Sample ID : BH5

Depth : 3.00 - 4.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

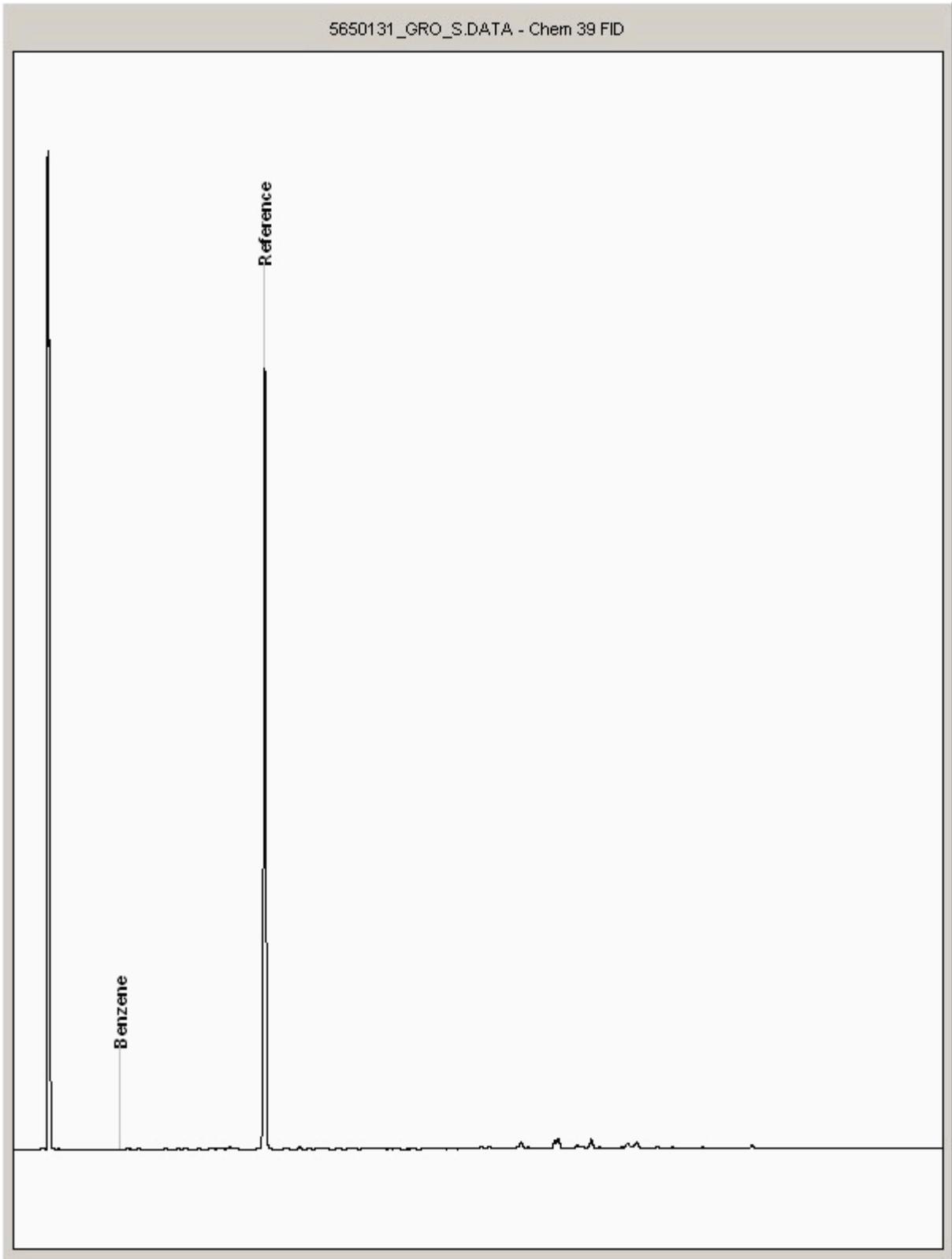
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5650131
Sample ID : BH6

Depth : 3.00 - 4.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

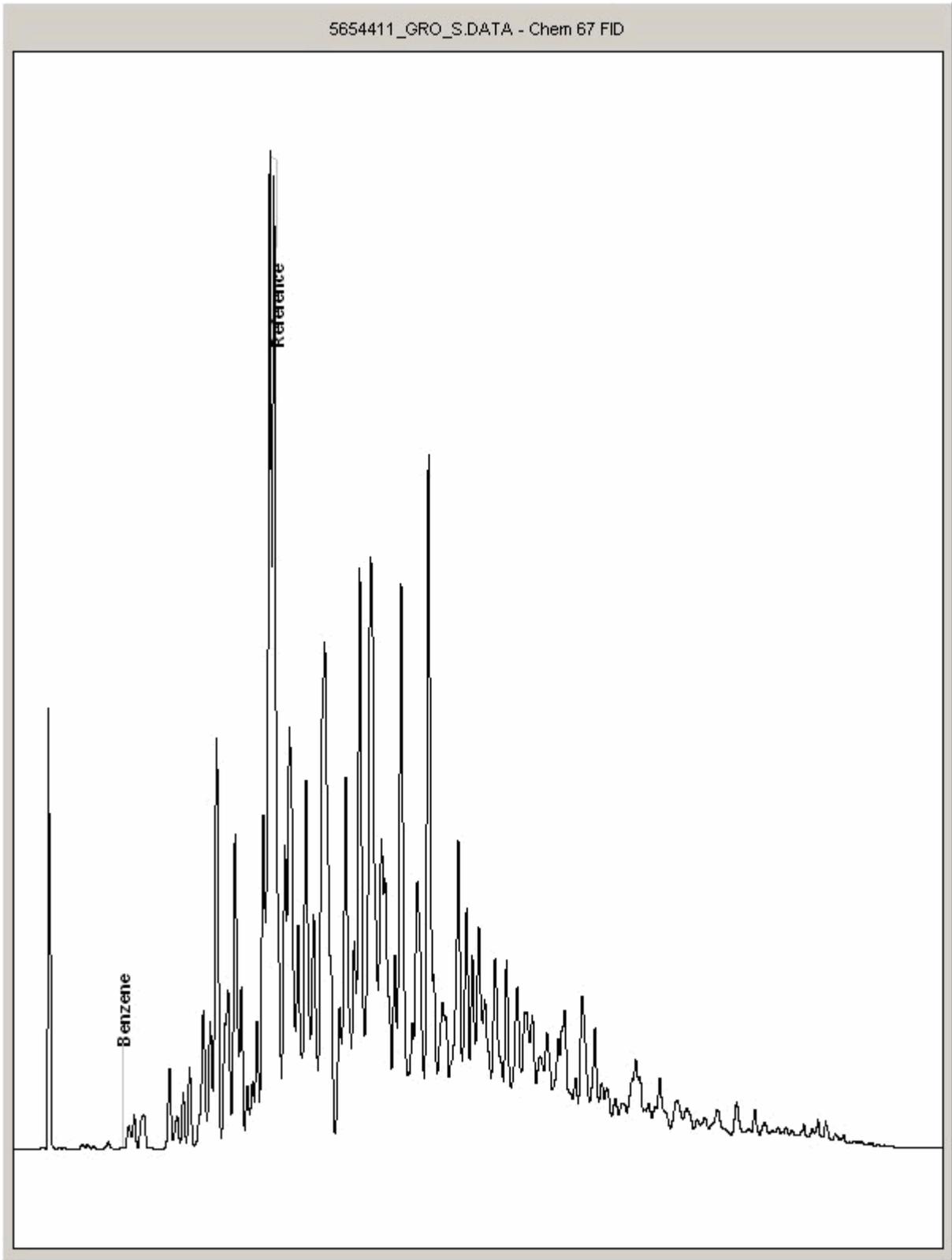
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654411
Sample ID : BH8

Depth : 1.70 - 2.00





CERTIFICATE OF ANALYSIS

SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

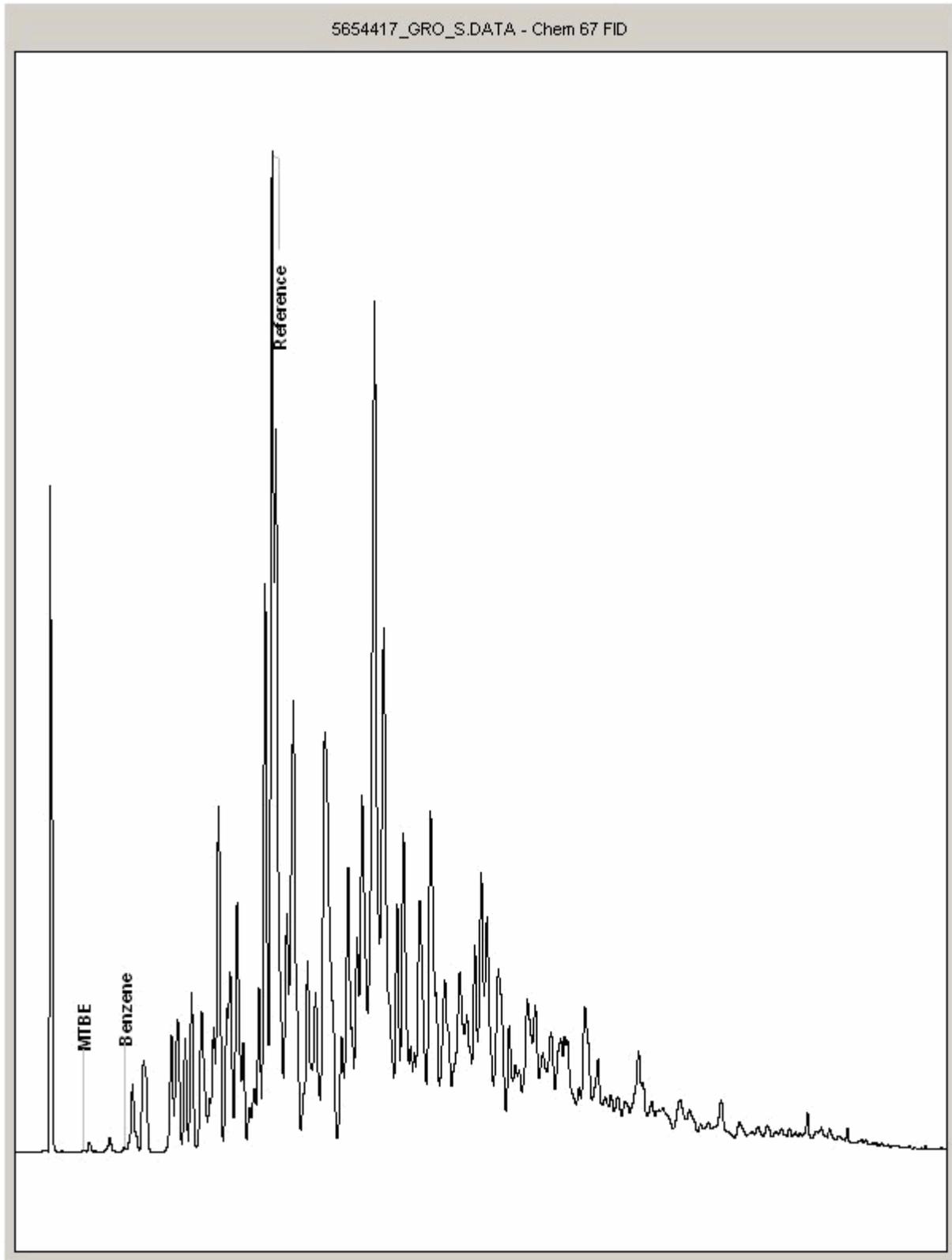
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654417
Sample ID : BH5

Depth : 1.80 - 2.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

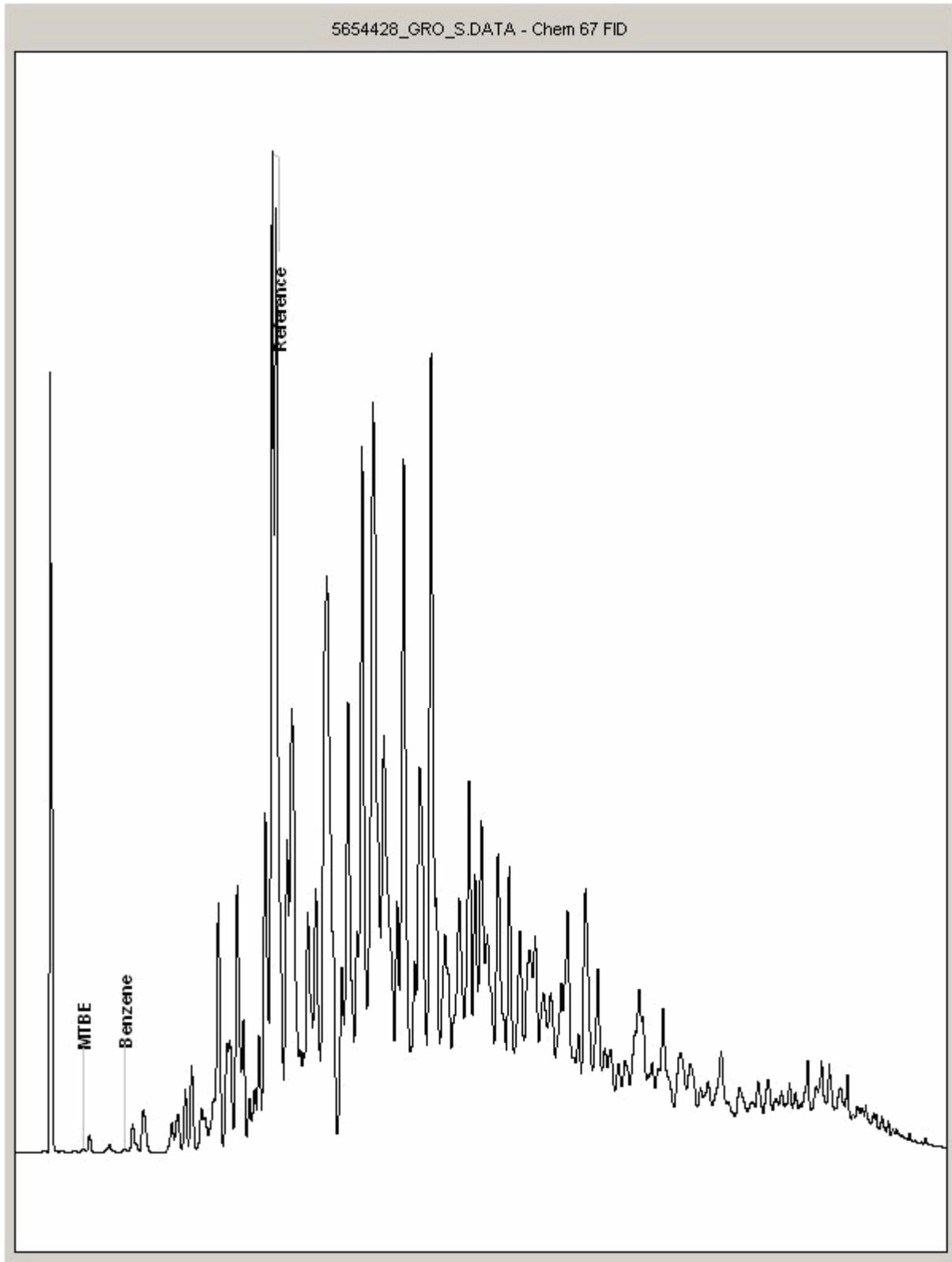
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654428
Sample ID : BH6

Depth : 1.80 - 2.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

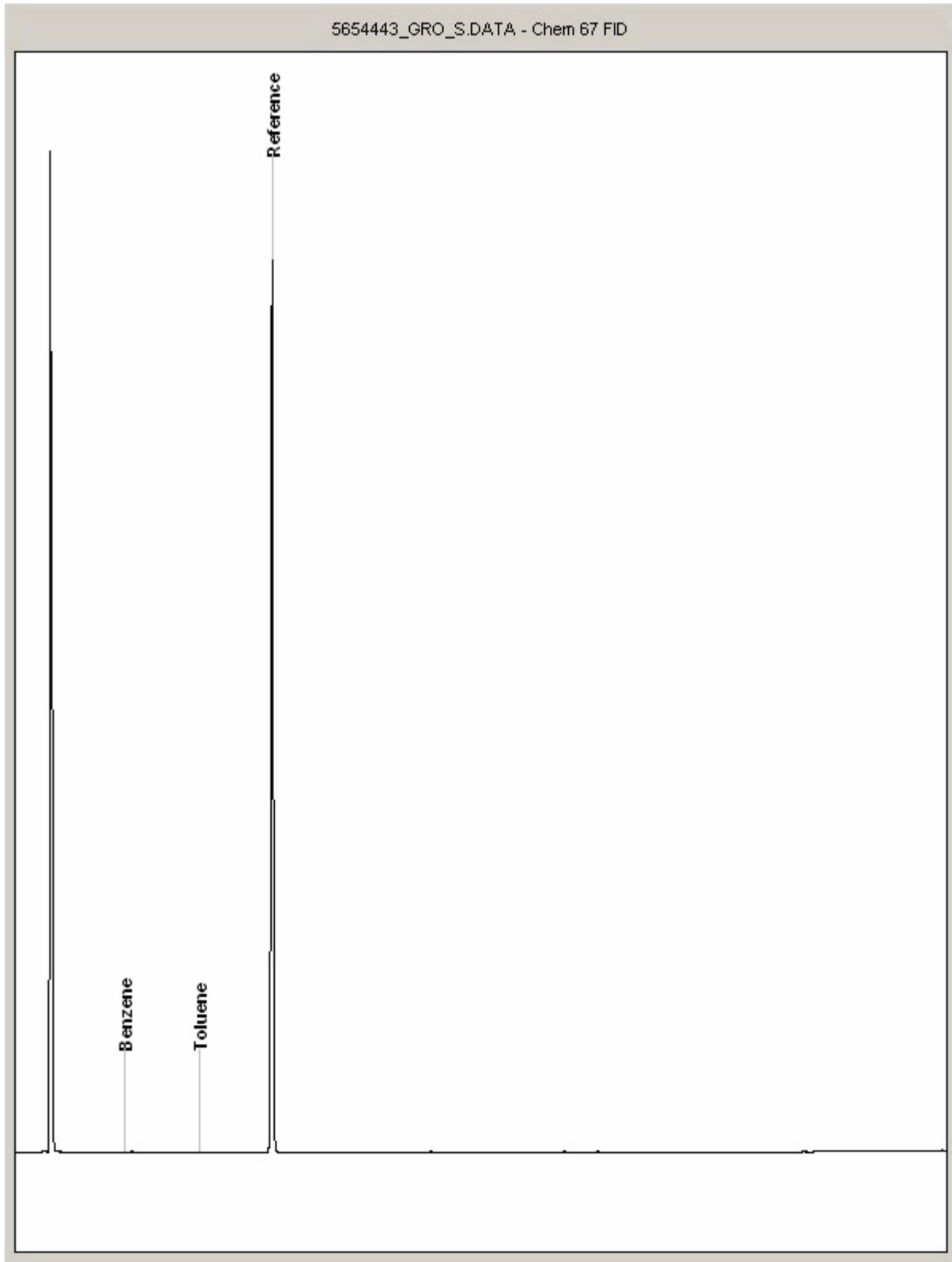
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654443
Sample ID : BH2

Depth : 2.00 - 3.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

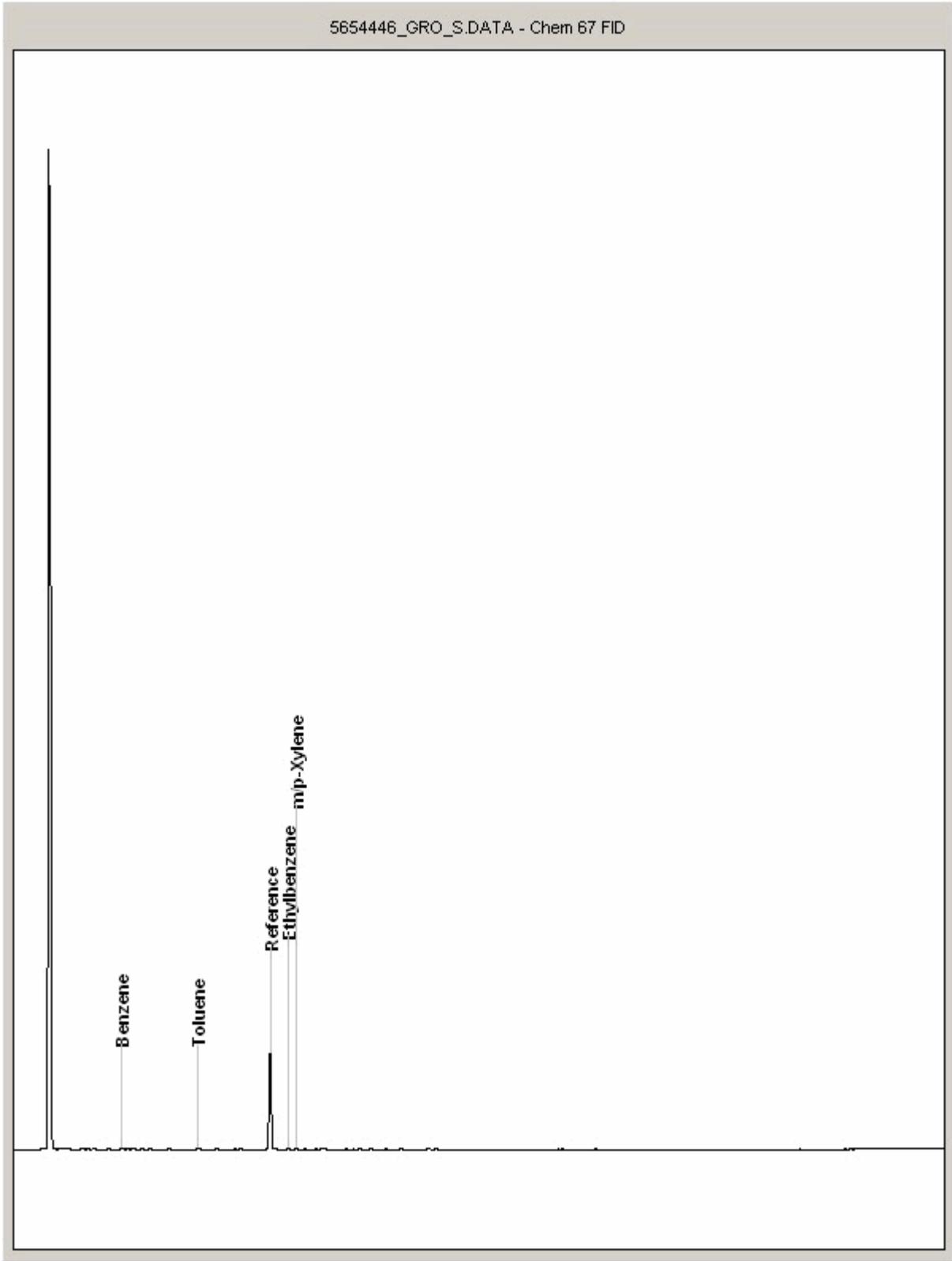
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654446
Sample ID : BH1

Depth : 1.20 - 1.70





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

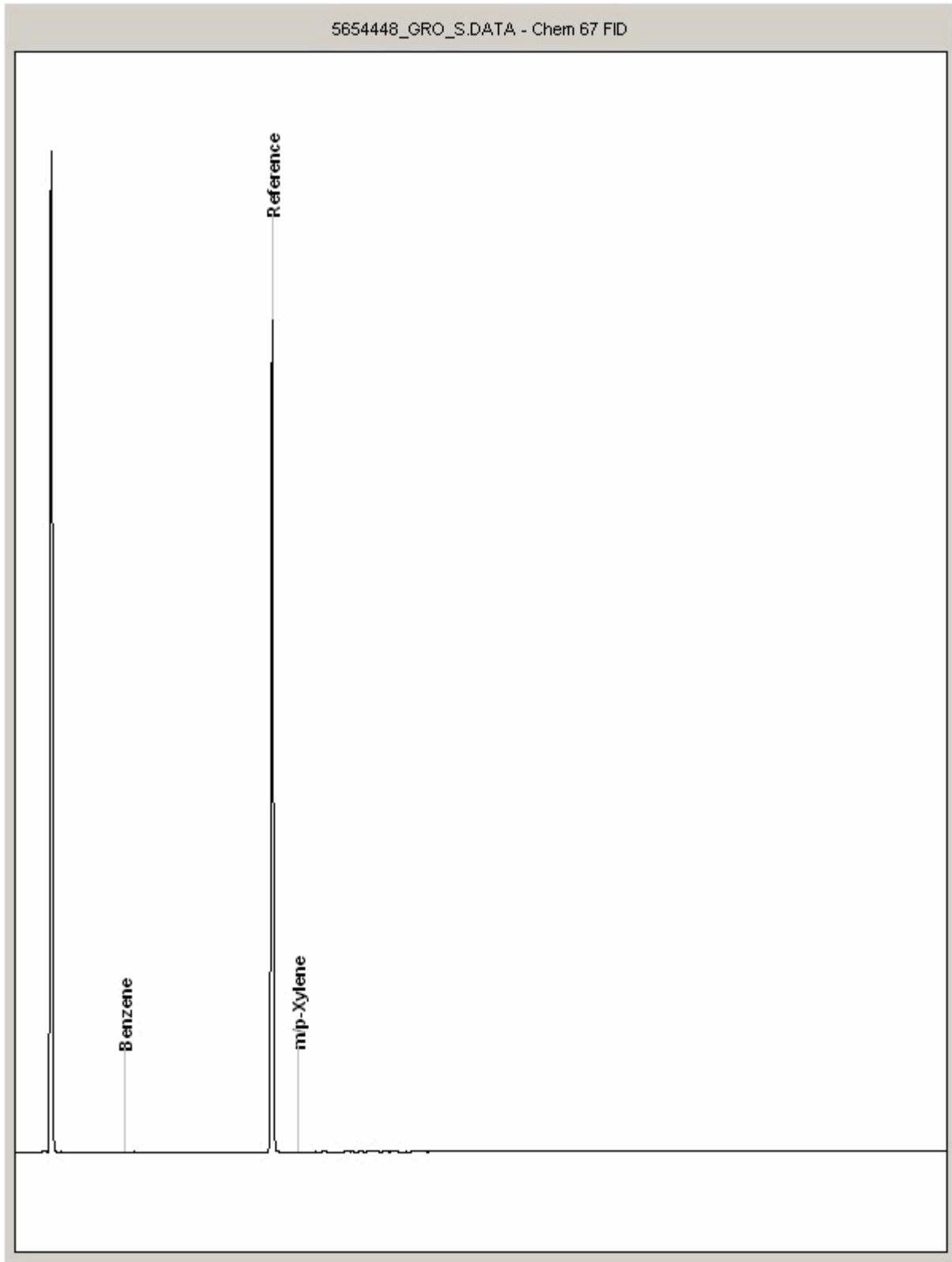
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654448
Sample ID : BH9

Depth : 1.60 - 2.00





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

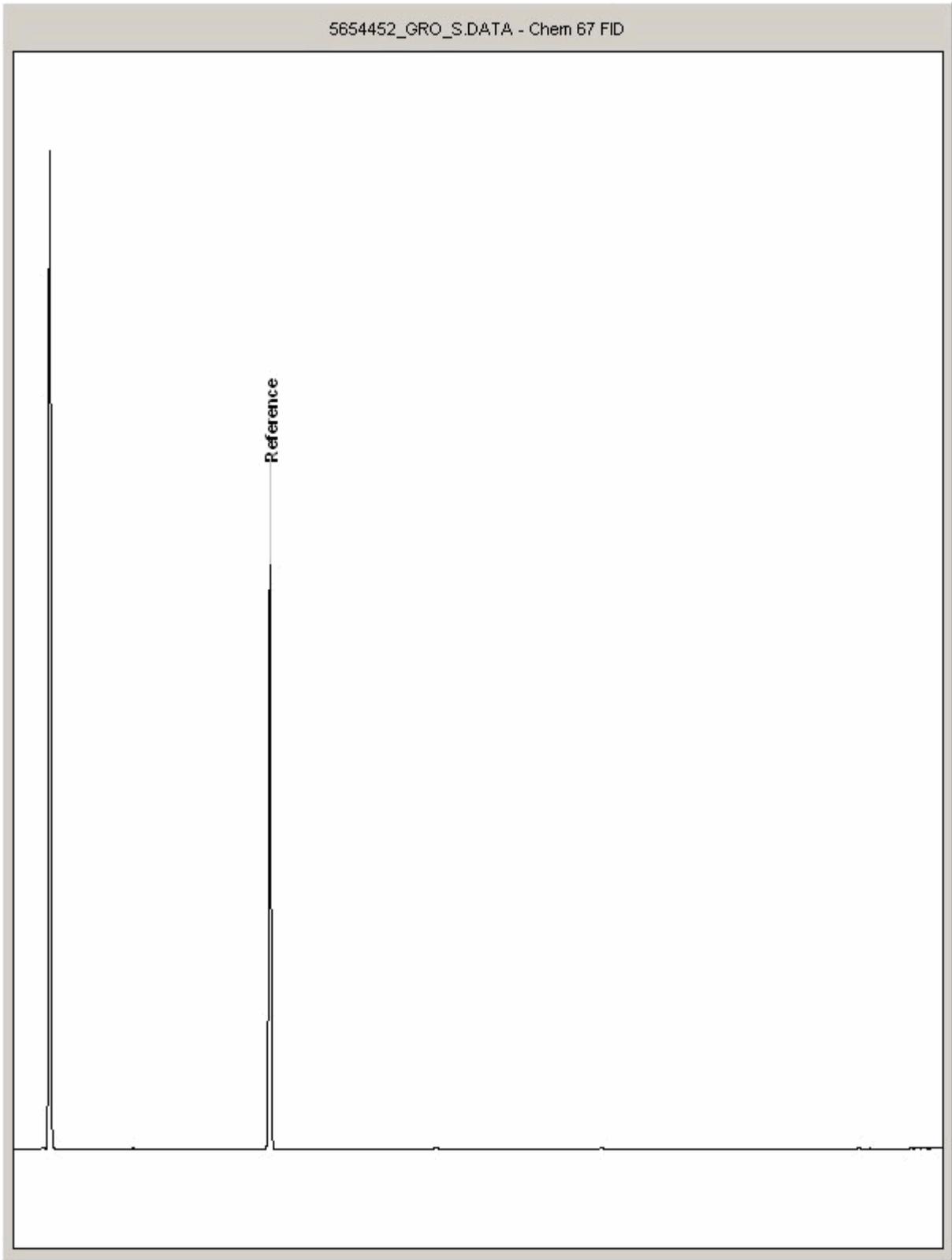
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5654452
Sample ID : BH4

Depth : 4.00 - 4.50





SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

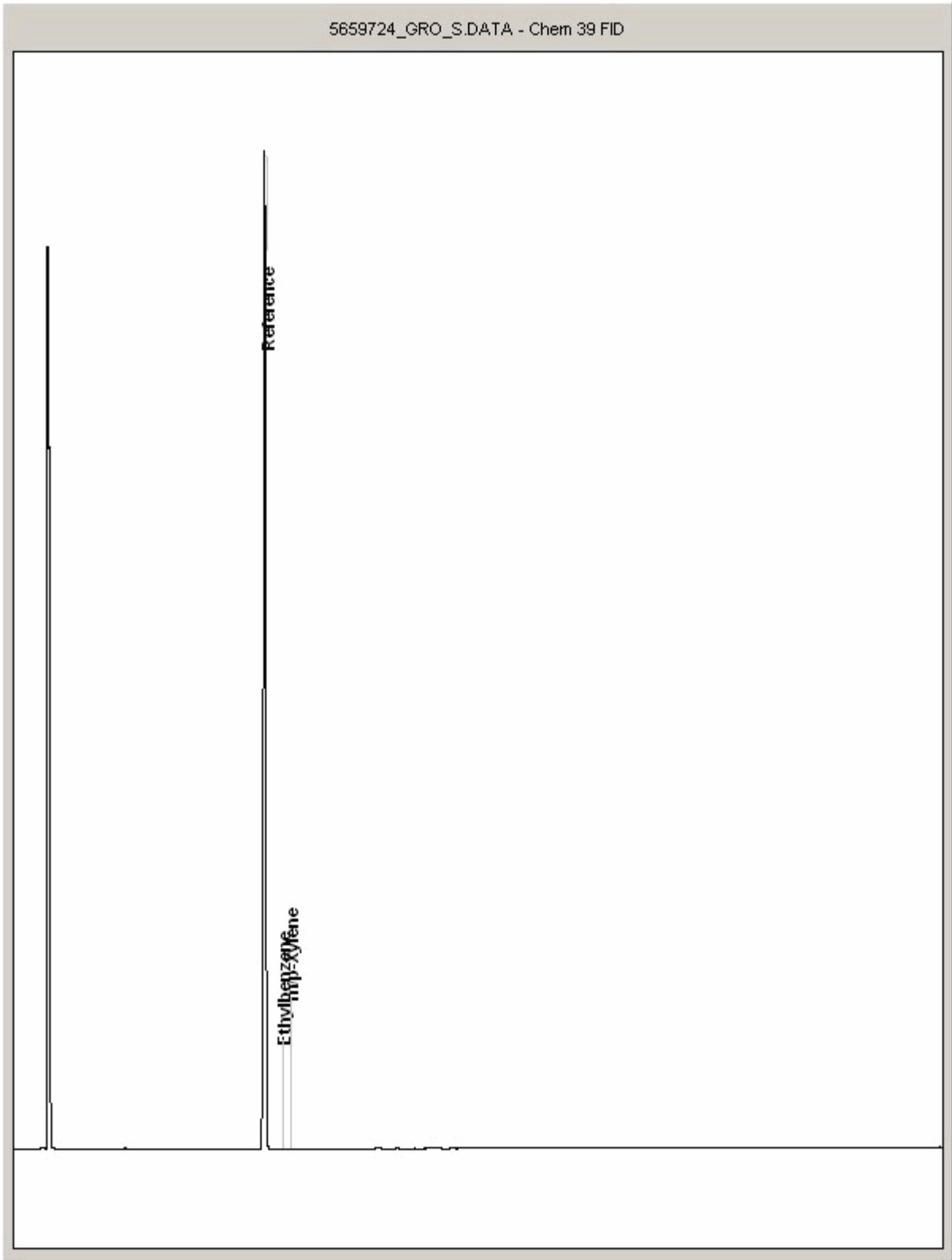
Order Number:
Report Number: 182823
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 5659724
Sample ID : BH7

Depth : 1.80 - 2.00



SDG: 120520-7
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 182823
Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5 -C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DOM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DOM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DOM	SOX THERM	GC-MS
HERBICIDES	D&C	HEXANE ACETONE	SOX THERM	GC-MS
PESTICIDES	D&C	HEXANE ACETONE	SOX THERM	GC-MS
EPH (DRO)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE ACETONE	END OVER END	GC-FID
PCBAROCLOR 1254/PCB CON	D&C	HEXANE ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE ACETONE	MICROWAVE TM218.	GC-MS
>C6C40	WET	HEXANE ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
PCB7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCBAROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVCC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOPOPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	R
MINERAL OIL BY R	TCE	STIRRED EXTRACTION (STIR-BAR)	R
GLYCOLS	NONE	DIRECT INJECTION	GC-FID

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix C Groundwater Monitoring Data

Laboratory test analysis data from groundwater samples taken on:

1st Round: 22 May 2012

2nd Round: 7 June 2012

Jacobs Engineering UK Limited
Newby House
Neath Abbey Business Park
Neath Abbey
West Glamorgan
SA10 7DR**Attention:** Cerith Owens

CERTIFICATE OF ANALYSIS

Date: 06 June 2012
Customer: H_JACOBS_NEA
Sample Delivery Group (SDG): 120523-86
Your Reference: 12635
Location: MREC
Report No: 183341

We received 6 samples on Wednesday May 23, 2012 and 6 of these samples were scheduled for analysis which was completed on Wednesday June 06, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan
Operations Manager





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5627350	BH4/W1		2.70 - 3.48	22/05/2012
5627352	BH5/W1		1.90 - 2.40	22/05/2012
5627354	BH6/W1		1.77 - 2.47	22/05/2012
5627355	BH7/W1		1.40 - 1.96	22/05/2012
5627356	BH8/W1		1.28 - 1.91	22/05/2012
5627358	BH9/W1		1.19 - 1.83	22/05/2012

Only received samples which have had analysis scheduled will be shown on the following pages.



SDG: 120523-86
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 183341
 Superseded Report:

LIQUID Results Legend	Lab Sample No(s)	5627350	5627352	5627354	5627355	5627356	5627358			
	Customer Sample Reference	BH4/W1	BH5/W1	BH6/W1	BH7/W1	BH8/W1	BH9/W1			
	AGS Reference									
	Depth (m)	2.70 - 3.48	1.90 - 2.40	1.77 - 2.47	1.40 - 1.96	1.28 - 1.91	1.19 - 1.83			
	Container	1l green glass bottle Vial (ALE297) 1l plastic (ALE221)	Vial (ALE297) 1l plastic (ALE221) 1l green glass bottle Vial (ALE297)							
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6		X	X	X	X	X	X	X
pH Value	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Table with columns for Results Legend, Customer Sample R, and various sample identifiers (BH4/W1 to BH9/W1). It includes data for Organic Carbon, Total and pH, with LOD/Units and Method specified for each component.

SDG: 120523-86
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 183341
 Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample R	BH4/W1	BH5/W1	BH6/W1	BH7/W1	BH8/W1	BH9/W1
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.70 - 3.48 Water(GW/SW) 22/05/2012	1.90 - 2.40 Water(GW/SW) 22/05/2012	1.77 - 2.47 Water(GW/SW) 22/05/2012	1.40 - 1.96 Water(GW/SW) 22/05/2012	1.28 - 1.91 Water(GW/SW) 22/05/2012	1.19 - 1.83 Water(GW/SW) 22/05/2012
M	mCERTS accredited.							
S	Deviating sample.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
Component	LOD/Units							
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Chlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Methylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Nitroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Nitrophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
3-Nitroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Chloroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Methylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Nitrophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Nitroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Azobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Acenaphthylene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Acenaphthene (aq)	<1 µg/l	TM176	<1	14.3	<1	<1	<1	<1
Anthracene (aq)	<1 µg/l	TM176	<1	12.6	1.23	<1	<1	<1
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<20	145	133	<20	<20	<6
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1	24.3	2.24	<1	<1	<1
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1	<2	<1	<1	<1	<1
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<1	21.1	1.45	<1	<1	<1
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1	13.3	<1	<1	<1	<1



SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Test Completion Dates

Lab Sample No(s)	5627350	5627352	5627354	5627355	5627356	5627358
Customer Sample Ref.	BH4/W1	BH5/W1	BH6/W1	BH7/W1	BH8/W1	BH9/W1
AGS Ref.						
Depth	2.70 - 3.48	1.90 - 2.40	1.77 - 2.47	1.40 - 1.96	1.28 - 1.91	1.19 - 1.83
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012
EPH CWG (Aromatic) Aqueous GC (W)	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012
GRO by GC-FID (W)	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012	30-May-2012
pH Value	29-May-2012	29-May-2012	29-May-2012	29-May-2012	29-May-2012	29-May-2012
SVOC MS (W) - Aqueous	03-Jun-2012	03-Jun-2012	03-Jun-2012	03-Jun-2012	03-Jun-2012	03-Jun-2012
Total Organic and Inorganic Carbon	29-May-2012	29-May-2012	29-May-2012	29-May-2012	29-May-2012	29-May-2012
TPH CWG (W)	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012	06-Jun-2012



SDG: 120523-86
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number:
 Report Number: 183341
 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 54	QC 58
Total Aliphatics >C12-C35	TM174	90.0 77.43 : 102.04	92.29 77.43 : 102.04

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 53	QC 55
Total Aromatics >EC12-EC35	TM174	90.0 72.80 : 116.48	96.0 72.80 : 116.48

GRO by GC-FID (W)

Component	Method Code	QC 57
Benzene by GC	TM245	90.5 76.26 : 125.49
Ethylbenzene by GC	TM245	89.0 72.39 : 127.91
m & p Xylene by GC	TM245	88.25 67.84 : 129.90
MTBE GC-FID	TM245	90.0 76.60 : 125.28
o Xylene by GC	TM245	88.5 69.76 : 129.58
QC	TM245	109.56 66.64 : 117.29
Toluene by GC	TM245	90.0 73.66 : 128.28

pH Value

Component	Method Code	QC 58	QC 52
pH	TM256	101.08 99.39 : 102.36	101.62 99.39 : 102.36

SVOC MS (W) - Aqueous

Component	Method Code	QC 57
4-Bromophenylphenylether	TM176	97.1 74.07 : 108.33
Benzo(a)anthracene	TM176	92.0 64.51 : 105.49
Benzo(a)pyrene	TM176	82.7 59.75 : 104.52



SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

SVOC MS (W) - Aqueous

		QC 57
Butylbenzyl phthalate	TM176	105.0 63.86 : 115.28
Hexachlorobutadiene	TM176	81.6 35.13 : 92.60
Naphthalene	TM176	91.1 69.26 : 97.62
Nitrobenzene	TM176	92.4 65.44 : 100.37
Phenol	TM176	47.2 39.80 : 60.16

Total Organic and Inorganic Carbon

Component	Method Code	QC 55	QC 55
Total Inorganic Carbon	TM090	99.33 94.99 : 116.95	101.5 94.99 : 116.95
Total Organic Carbon	TM090	95.33 94.72 : 111.89	102.17 94.72 : 111.89

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

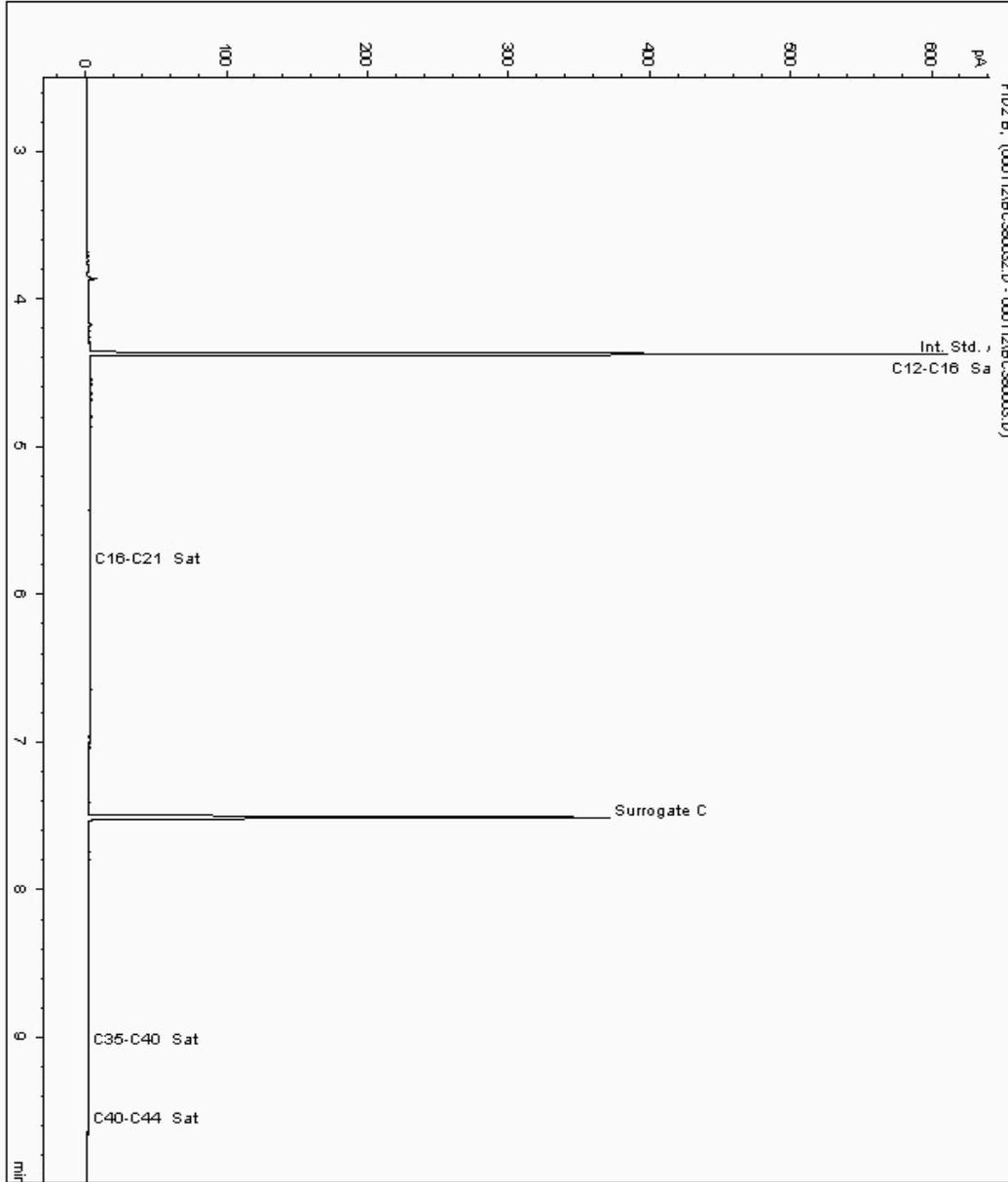
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5640969
Sample ID : BH9/W1

Depth : 1.19 - 1.83

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5504179-5640969
Date Acquired : 02/06/12 01:29:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

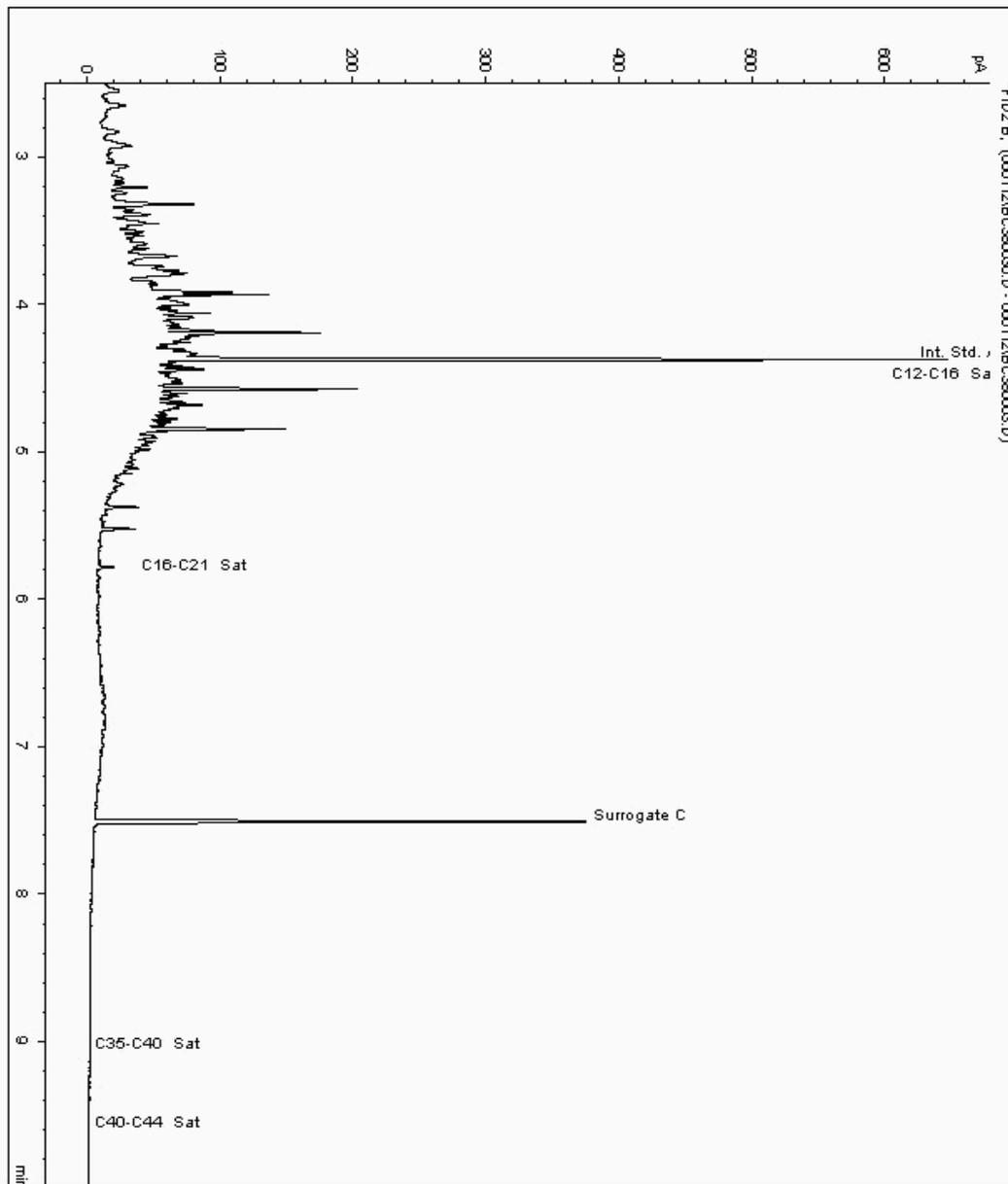
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5640986
Sample ID : BH8/W1

Depth : 1.28 - 1.91

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5504171-5640986
Date Acquired : 02/06/12 01:00:58 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

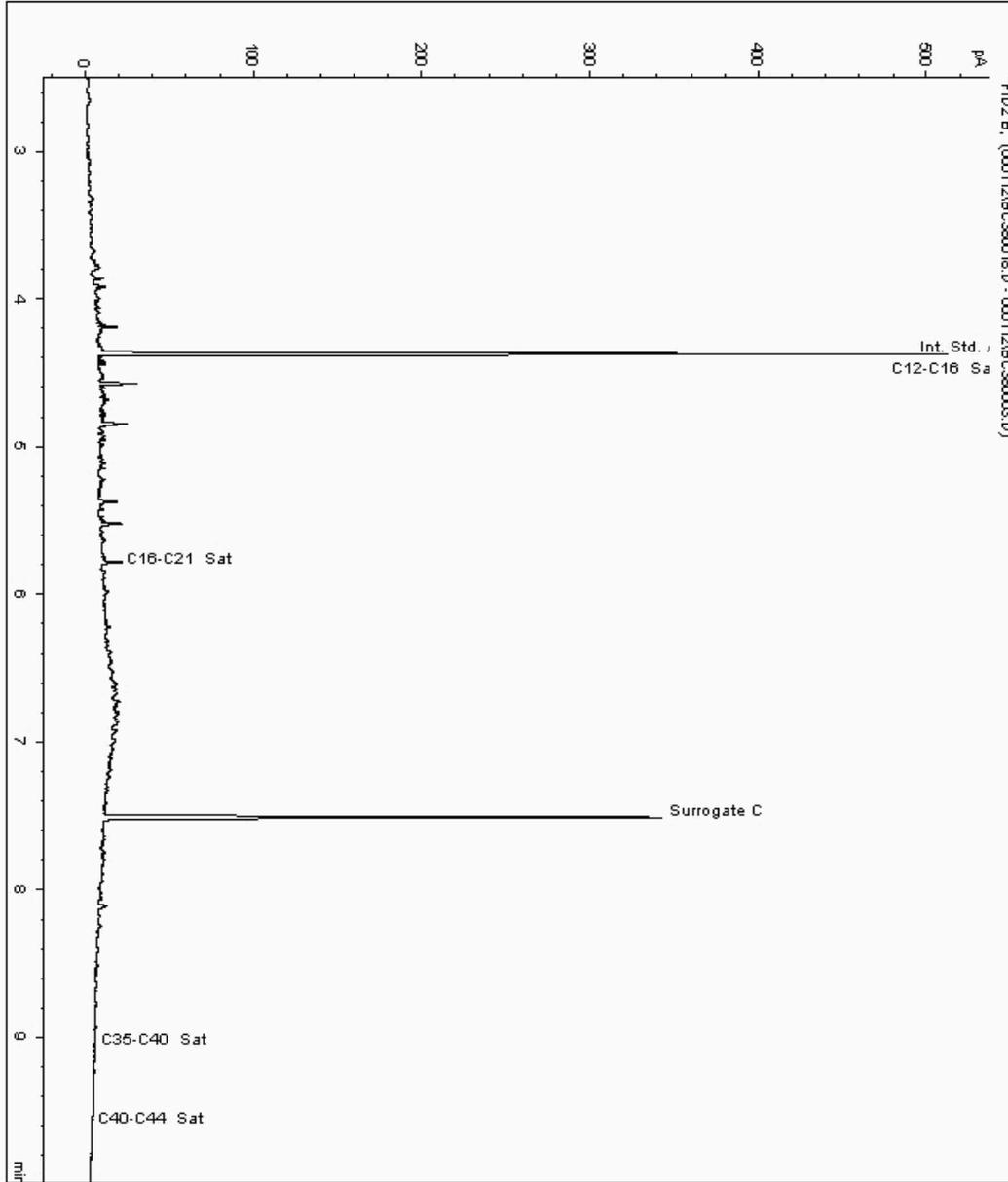
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5641004
Sample ID : BH4/W1

Depth : 2.70 - 3.48

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5504136-5641004
Date Acquired : 01/06/12 21:31:24 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

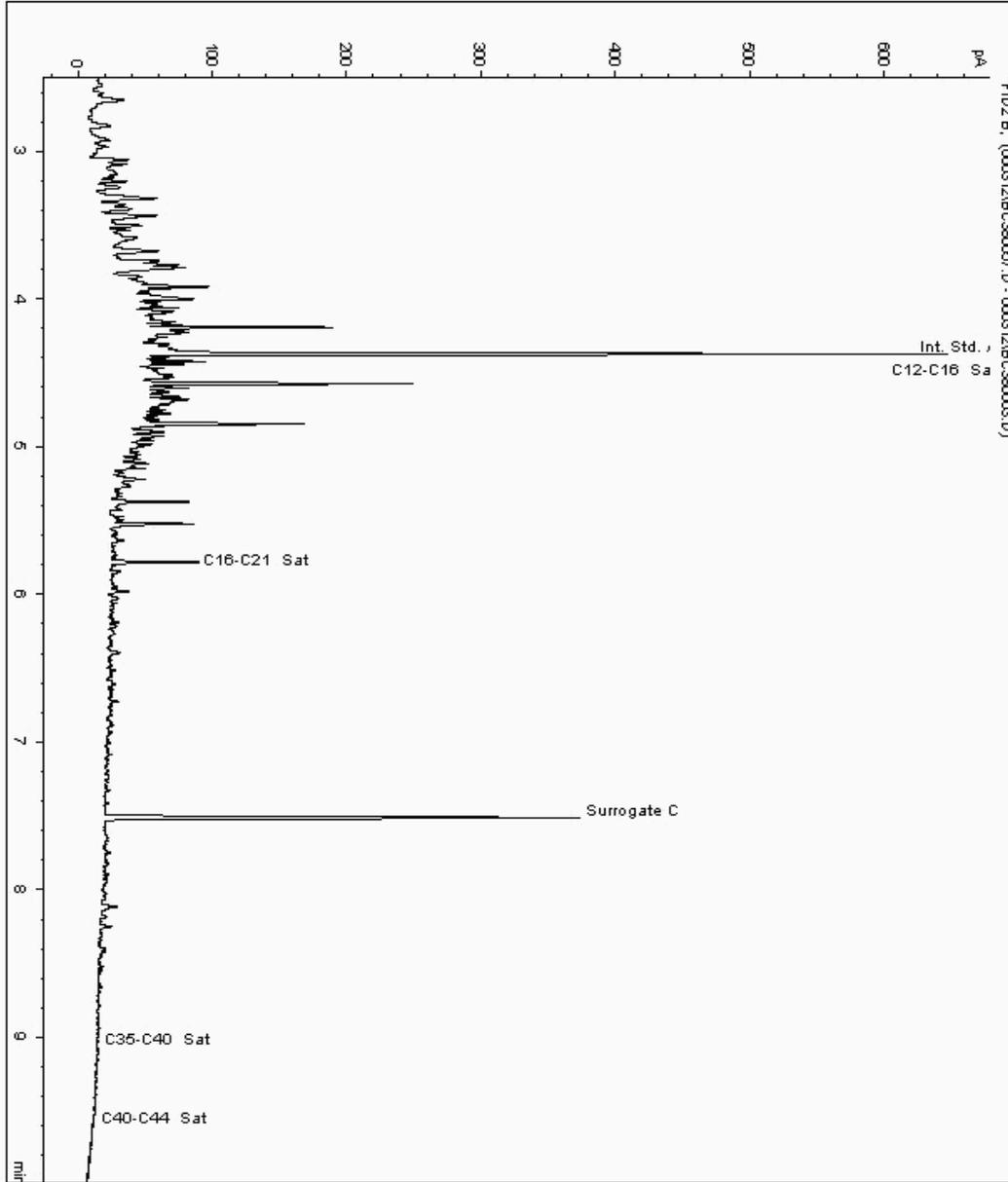
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5641028
Sample ID : BH5/W1

Depth : 1.90 - 2.40

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5504147-5641028
Date Acquired : 06/06/12 14:38:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.083





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

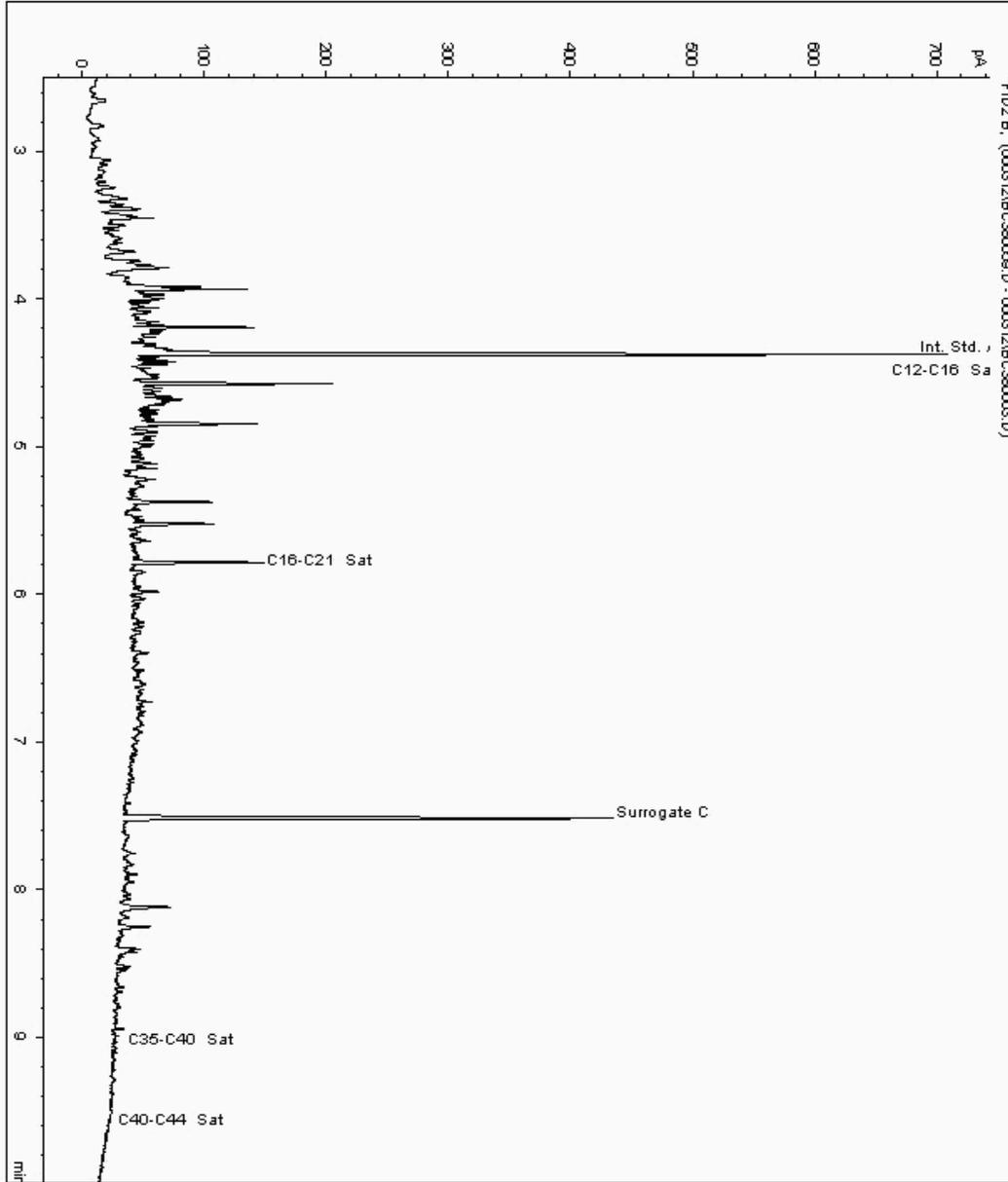
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5641062
Sample ID : BH7/W1

Depth : 1.40 - 1.96

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5504163-5641062
Date Acquired : 06/06/12 15:06:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

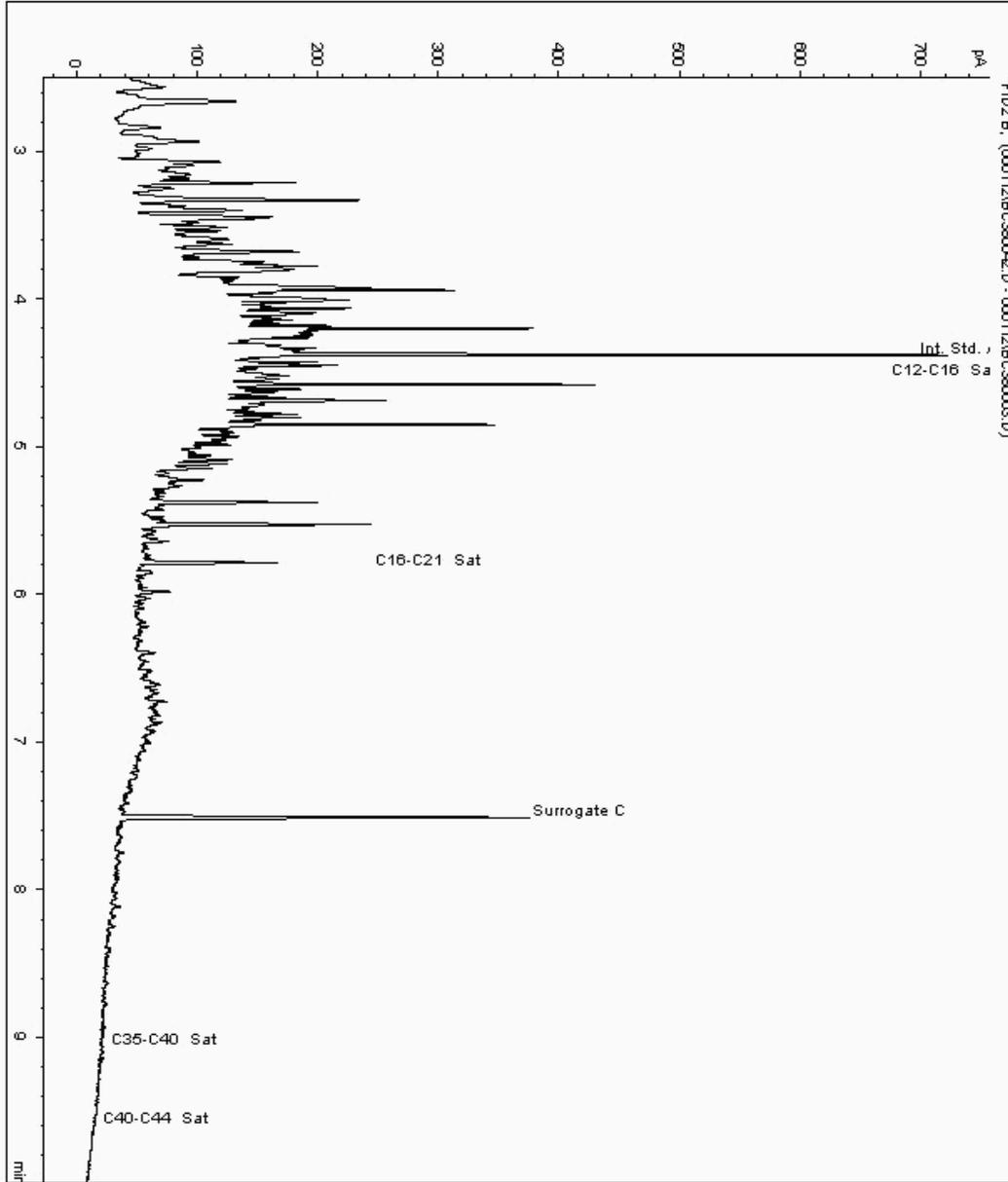
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5641078
Sample ID : BH6/W1

Depth : 1.77 - 2.47

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5504155-5641078
Date Acquired : 02/06/12 03:37:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

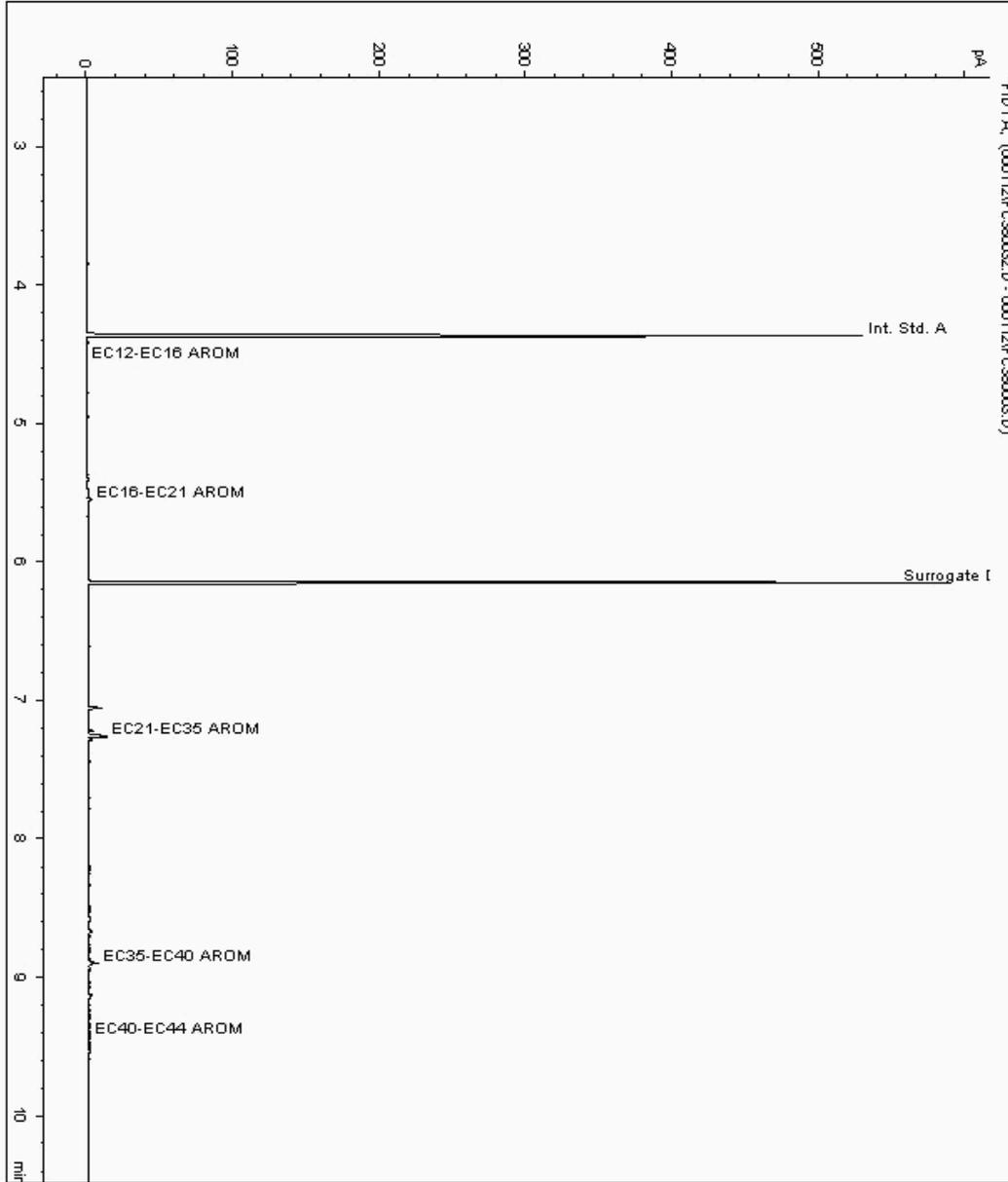
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5640969
Sample ID : BH9/W1

Depth : 1.19 - 1.83

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5504180-5640969
Date Acquired : 02/06/12 01:29:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

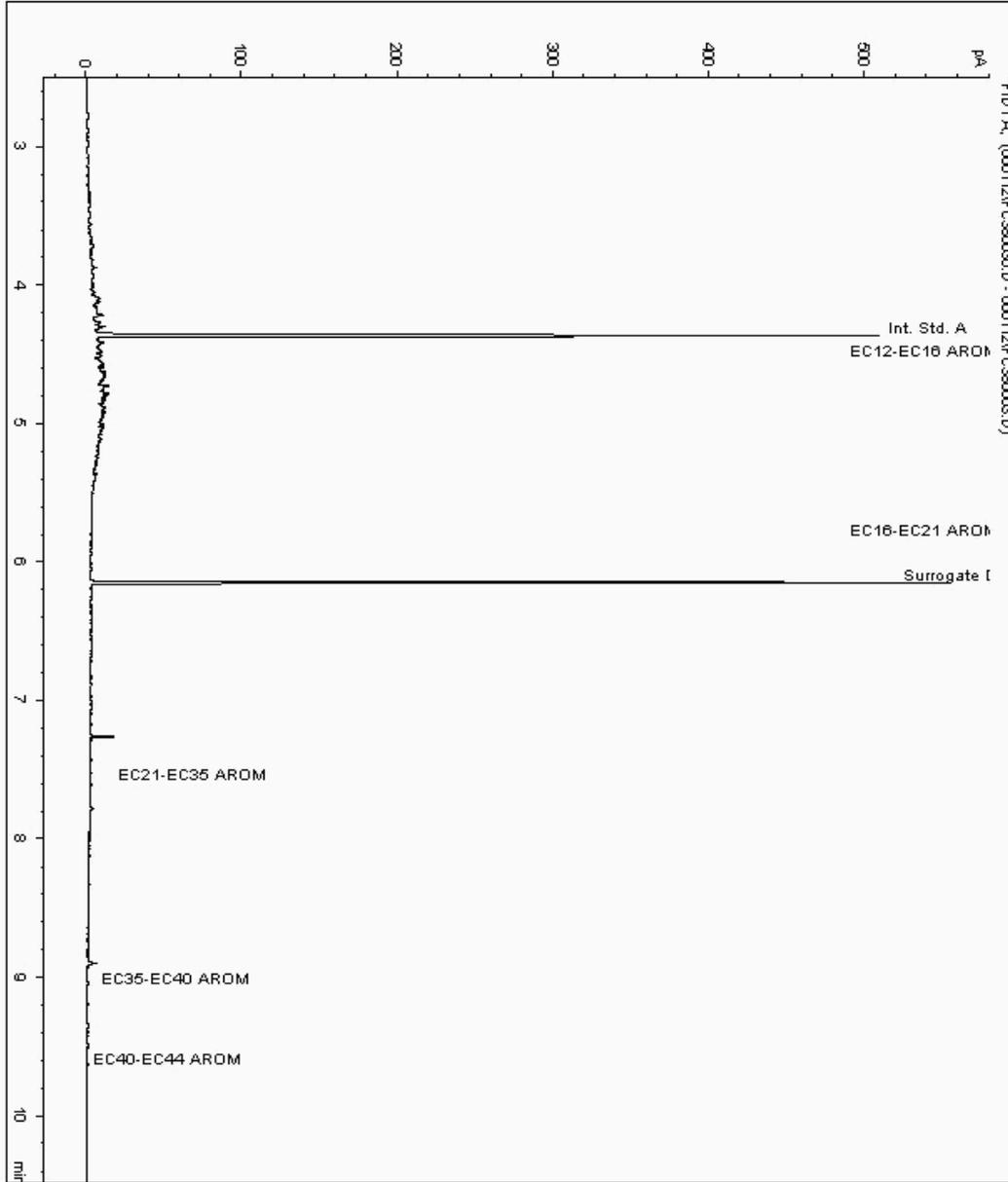
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5640986
Sample ID : BH8/W1

Depth : 1.28 - 1.91

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5504172-5640986
Date Acquired : 02/06/12 01:00:58 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

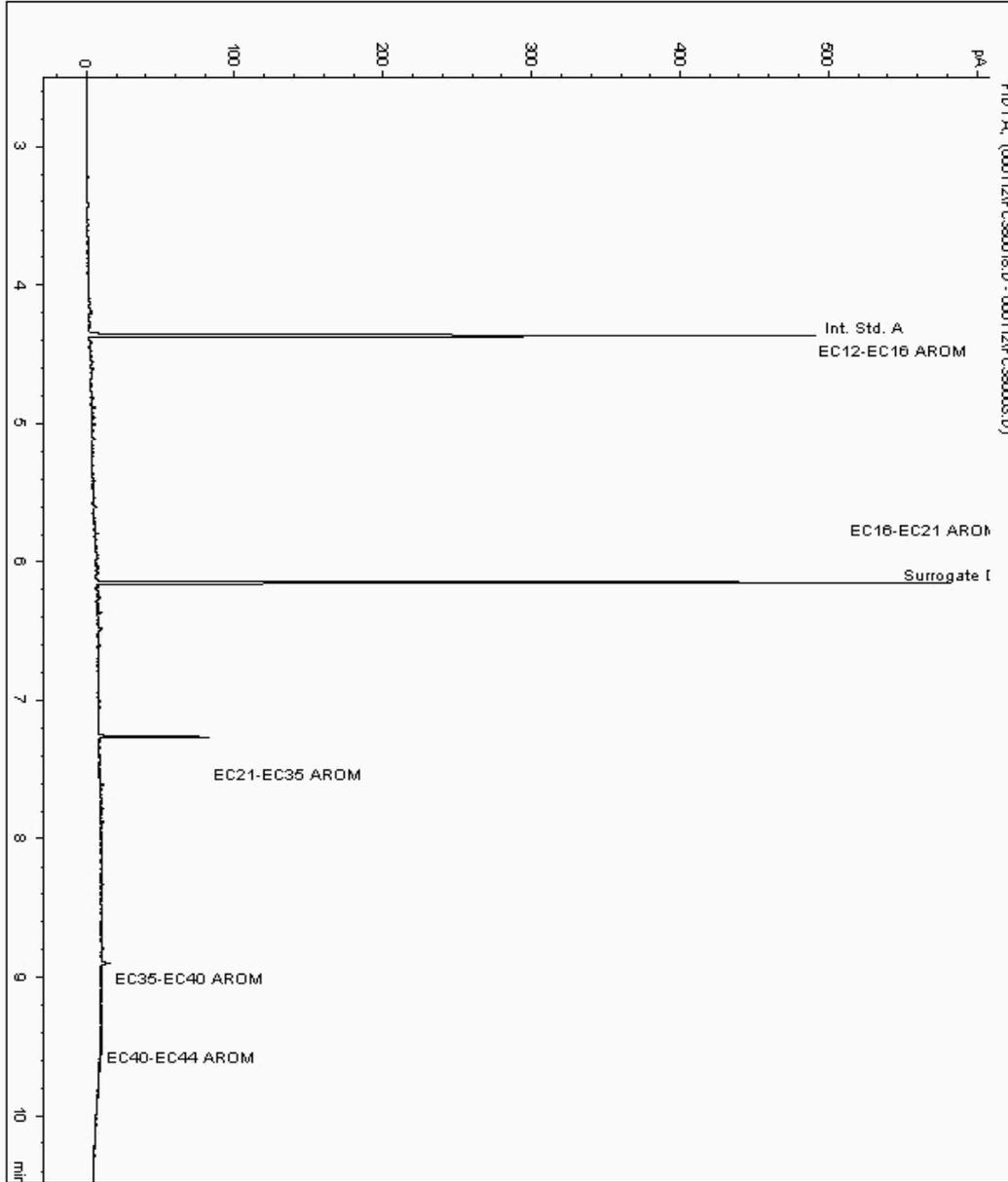
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5641004
Sample ID : BH4/W1

Depth : 2.70 - 3.48

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5504137-5641004
Date Acquired : 01/06/12 21:31:24 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

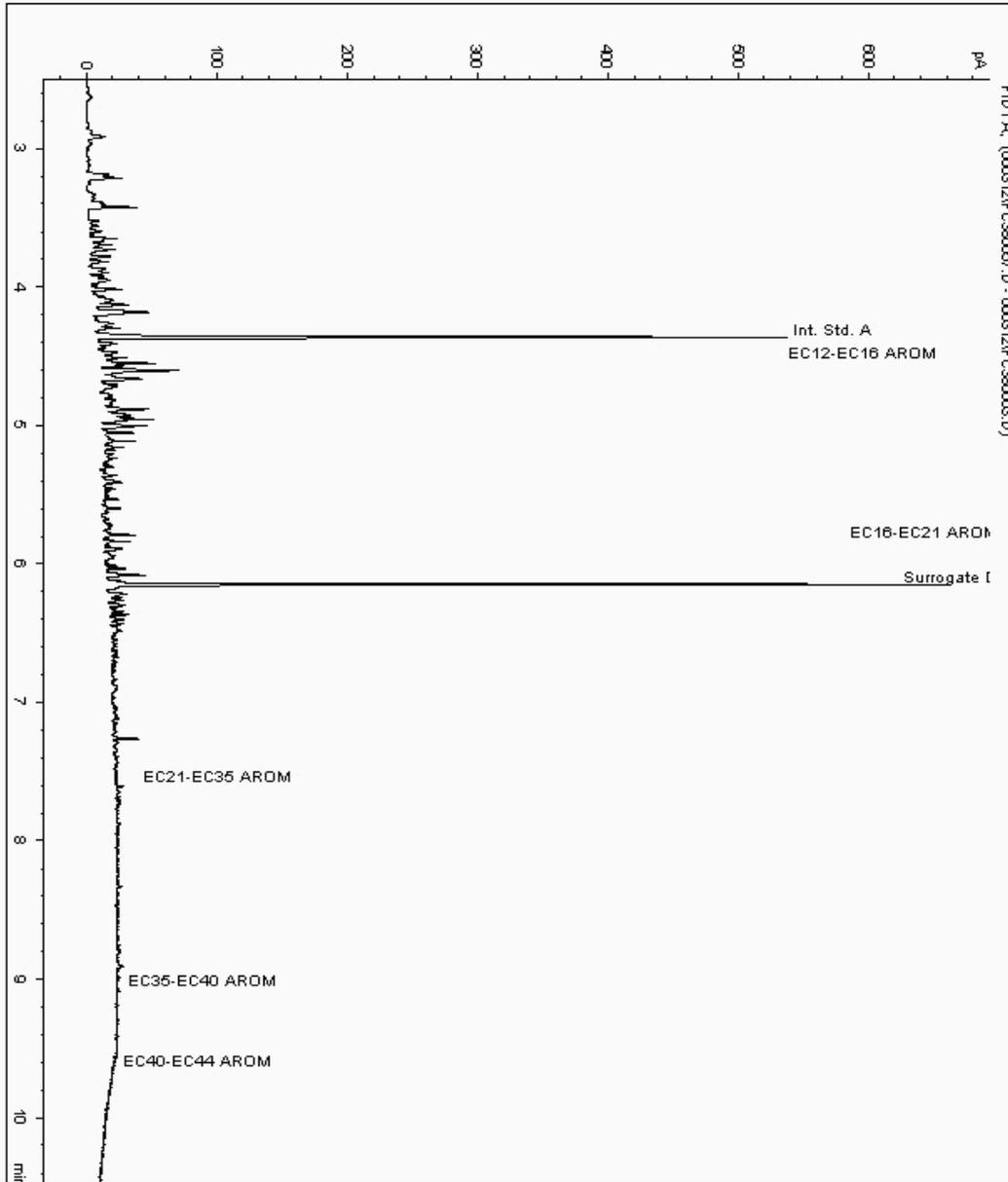
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5641028
Sample ID : BH5/W1

Depth : 1.90 - 2.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5504148-5641028
Date Acquired : 06/06/12 14:38:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.083





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

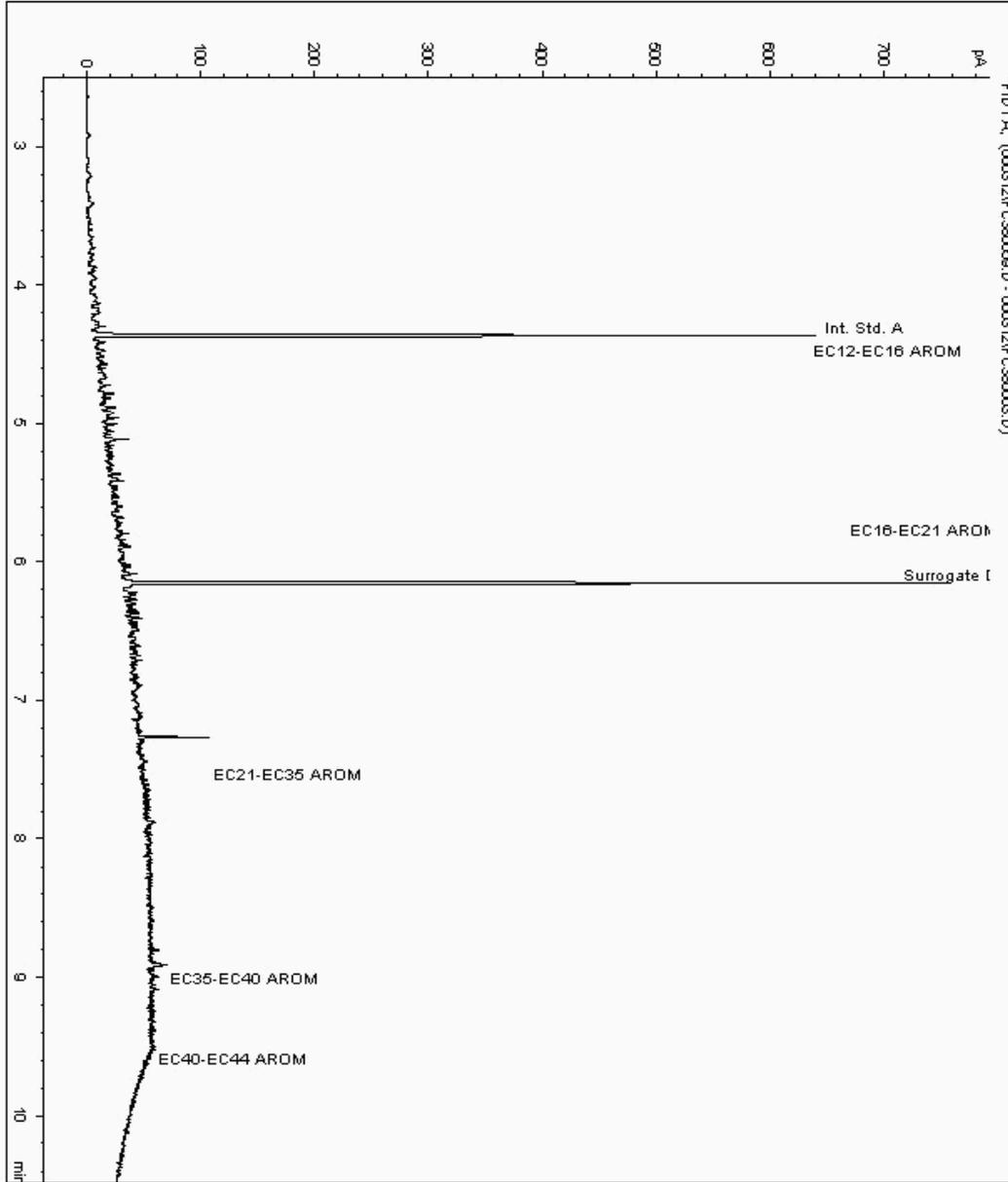
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5641062
Sample ID : BH7/W1

Depth : 1.40 - 1.96

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5504164-5641062
Date Acquired : 06/06/12 15:06:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

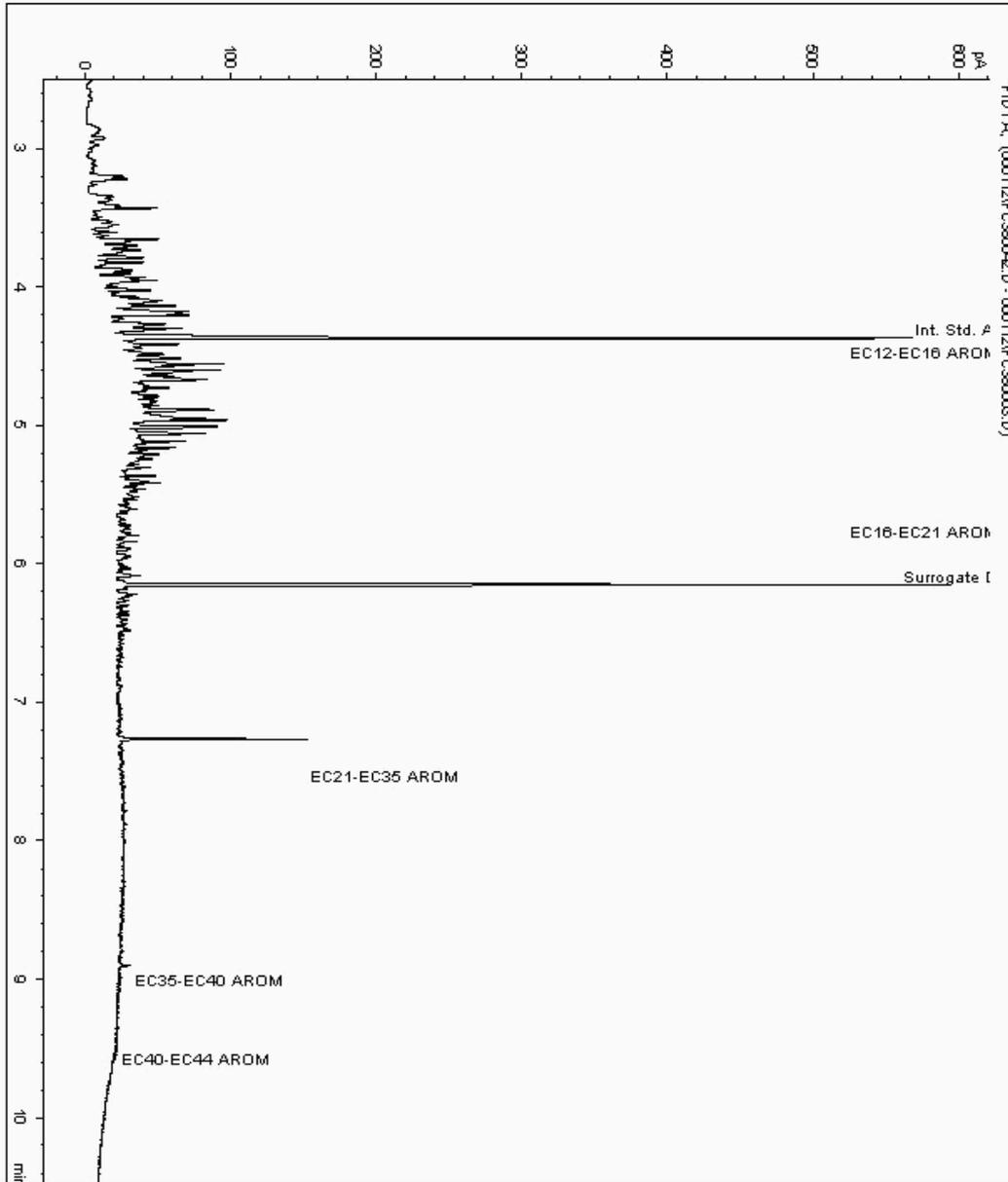
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5641078
Sample ID : BH6/W1

Depth : 1.77 - 2.47

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5504156-5641078
Date Acquired : 02/06/12 03:37:13 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

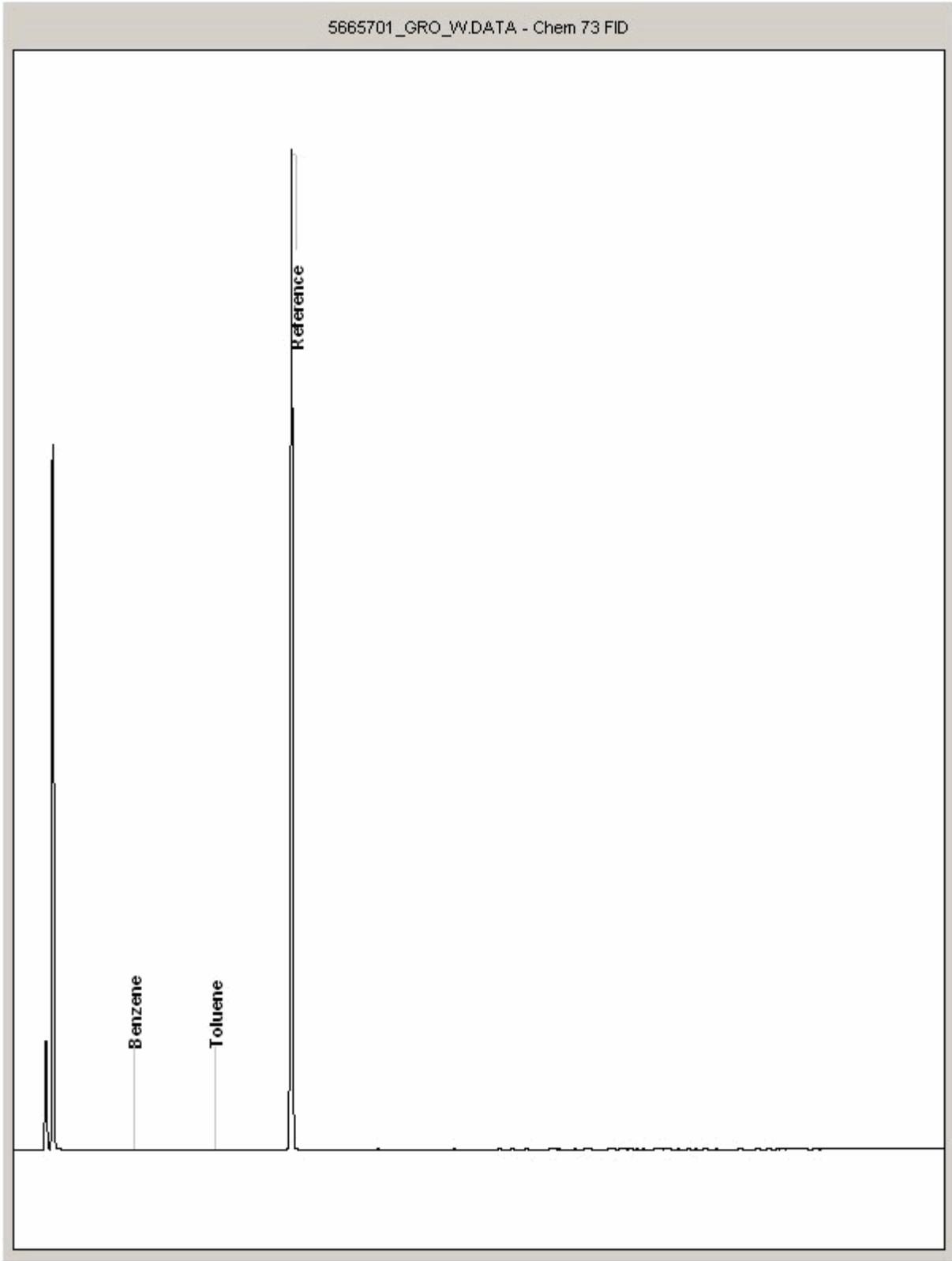
Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5665701
Sample ID : BH4/W1

Depth : 2.70 - 3.48





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

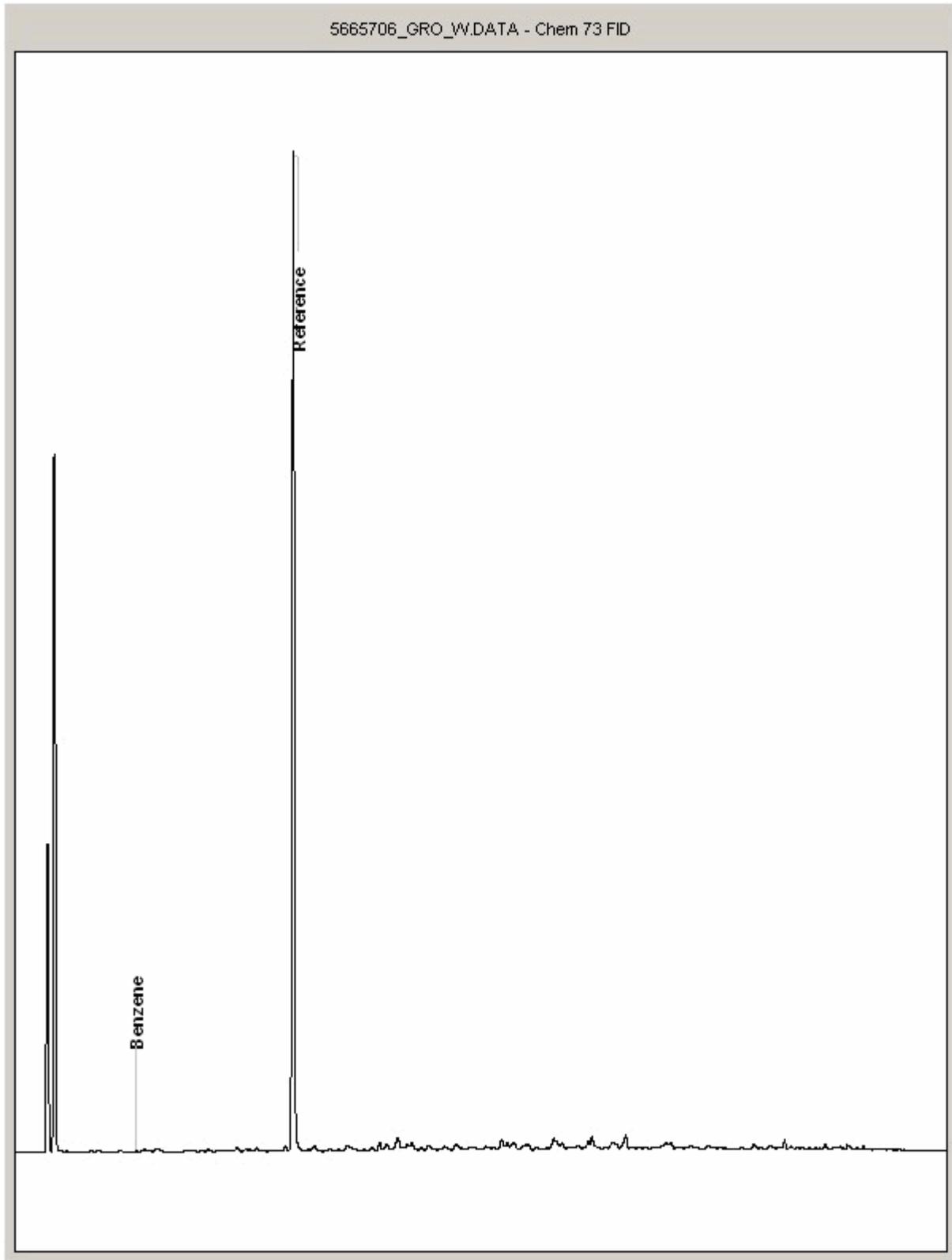
Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5665706
Sample ID : BH5/W1

Depth : 1.90 - 2.40



SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

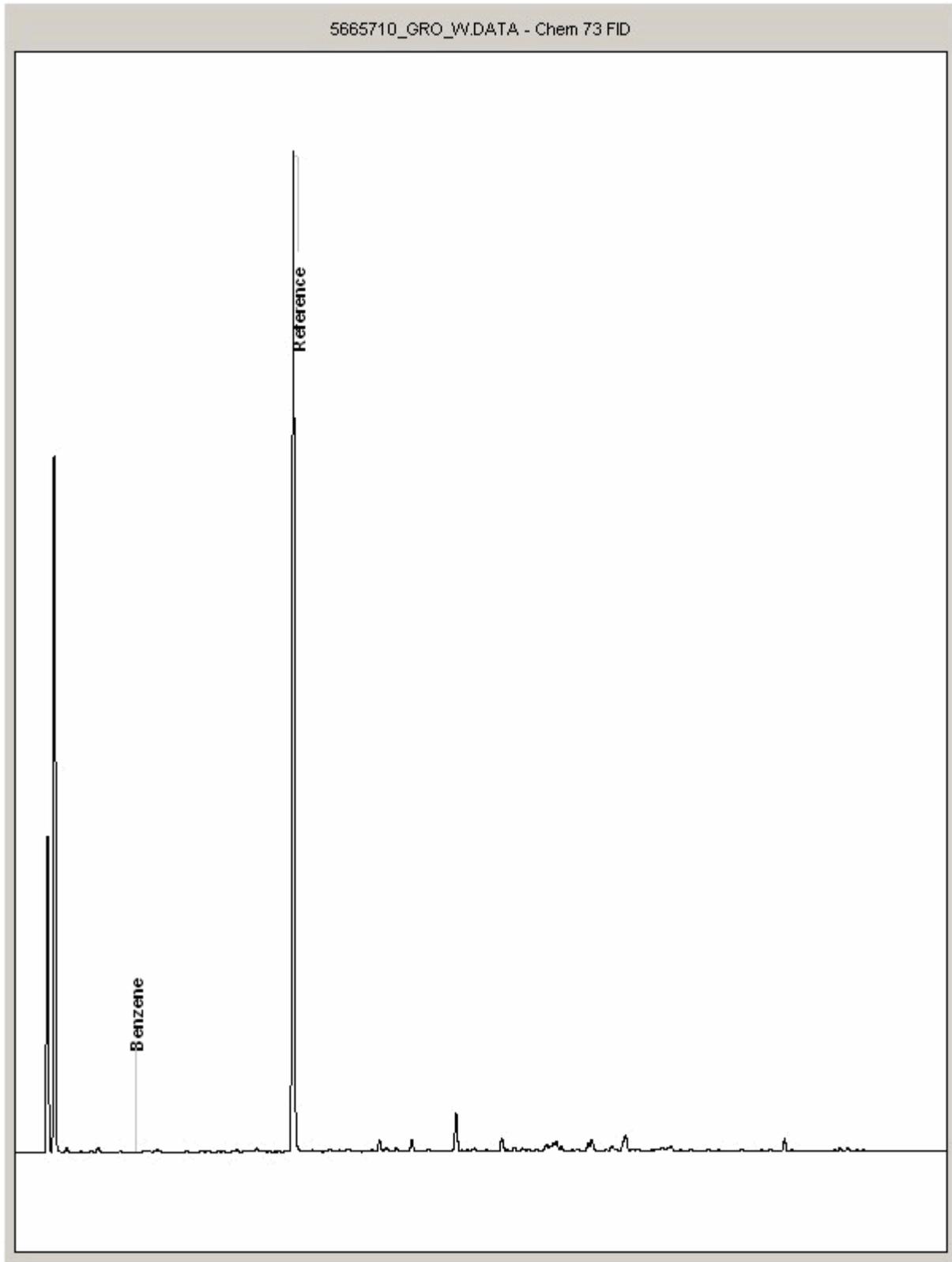
Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5665710
Sample ID : BH6/W1

Depth : 1.77 - 2.47





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

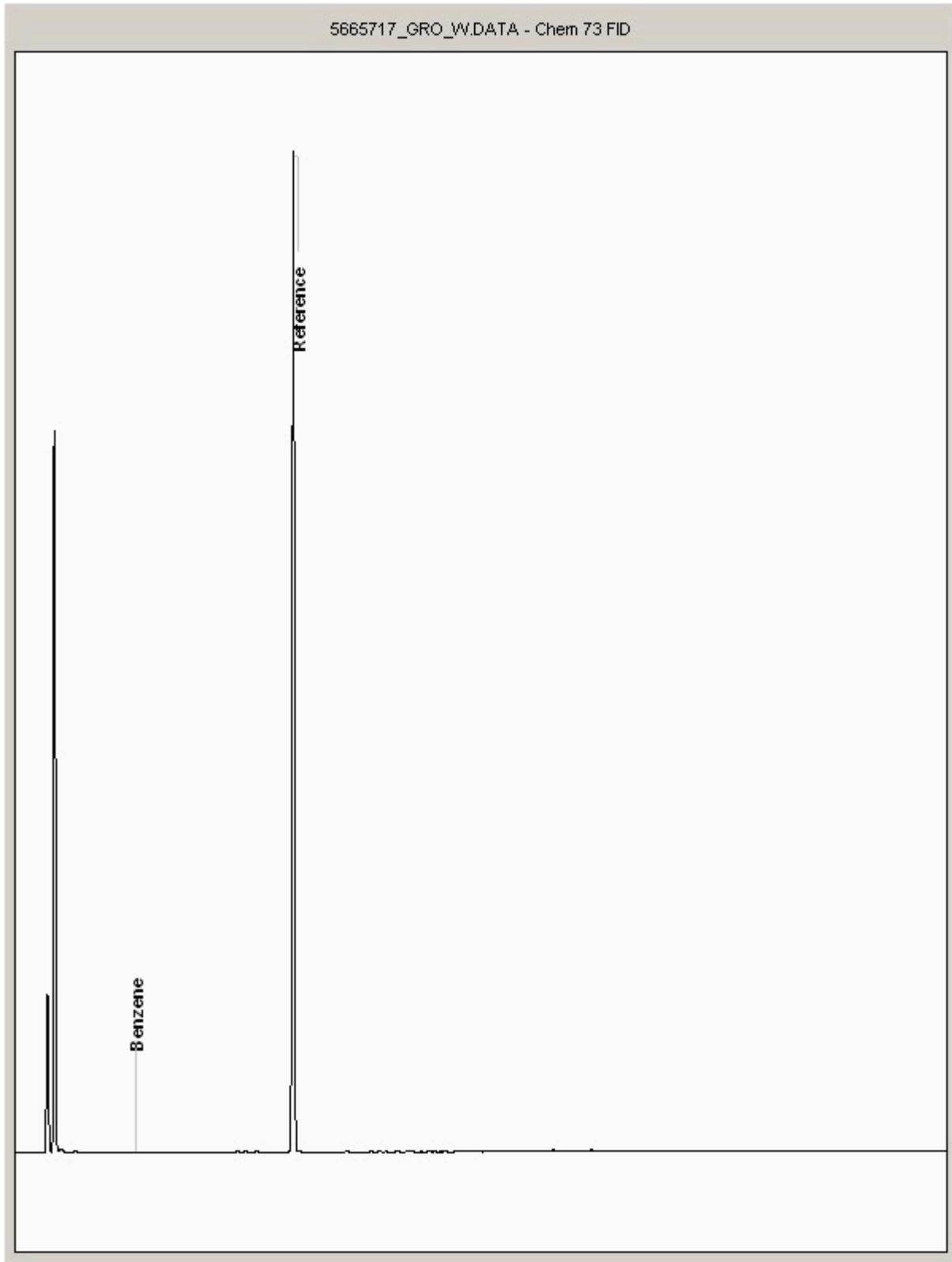
Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5665717
Sample ID : BH7/W1

Depth : 1.40 - 1.96





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

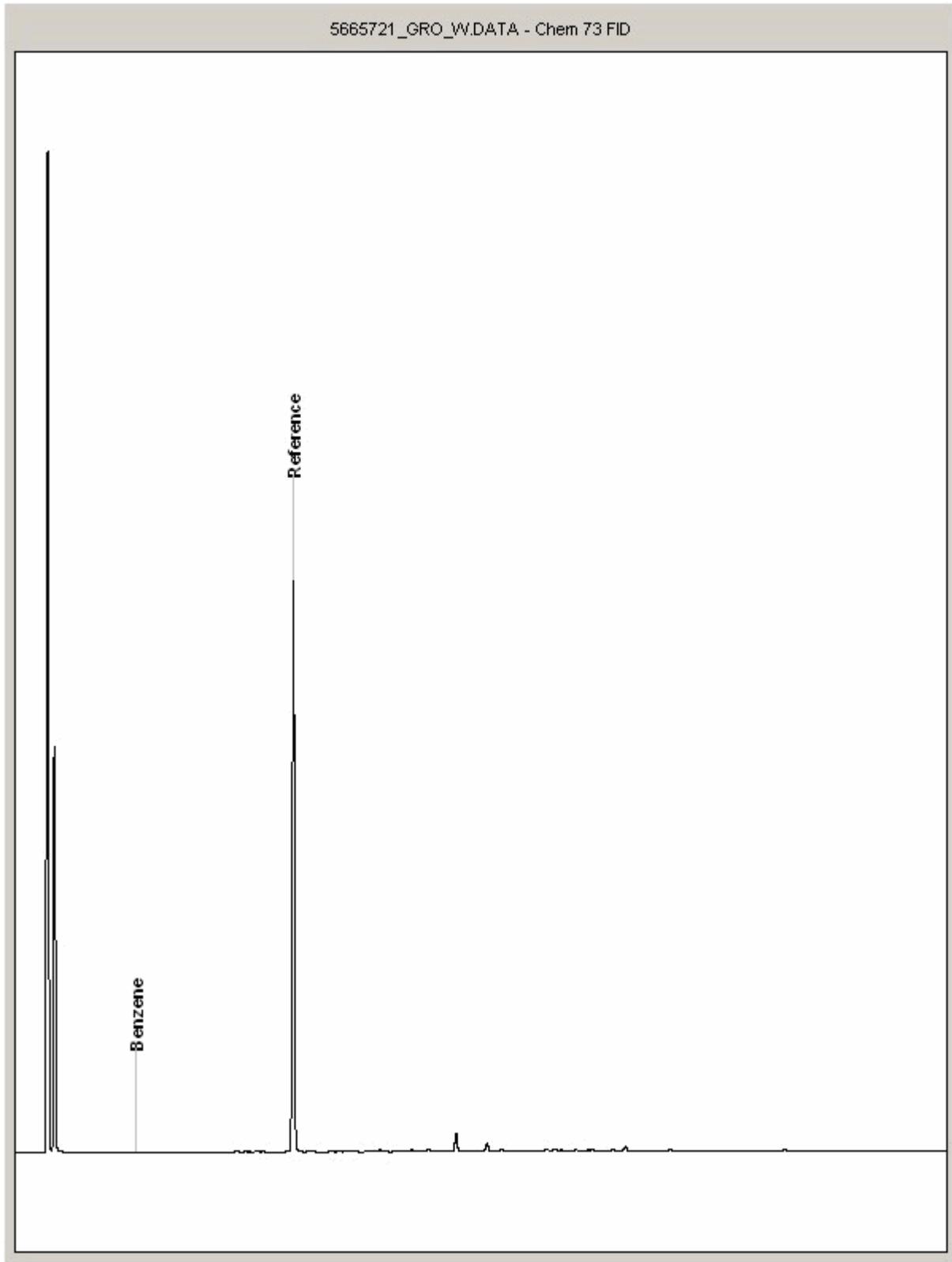
Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5665721
Sample ID : BH8/W1

Depth : 1.28 - 1.91





SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

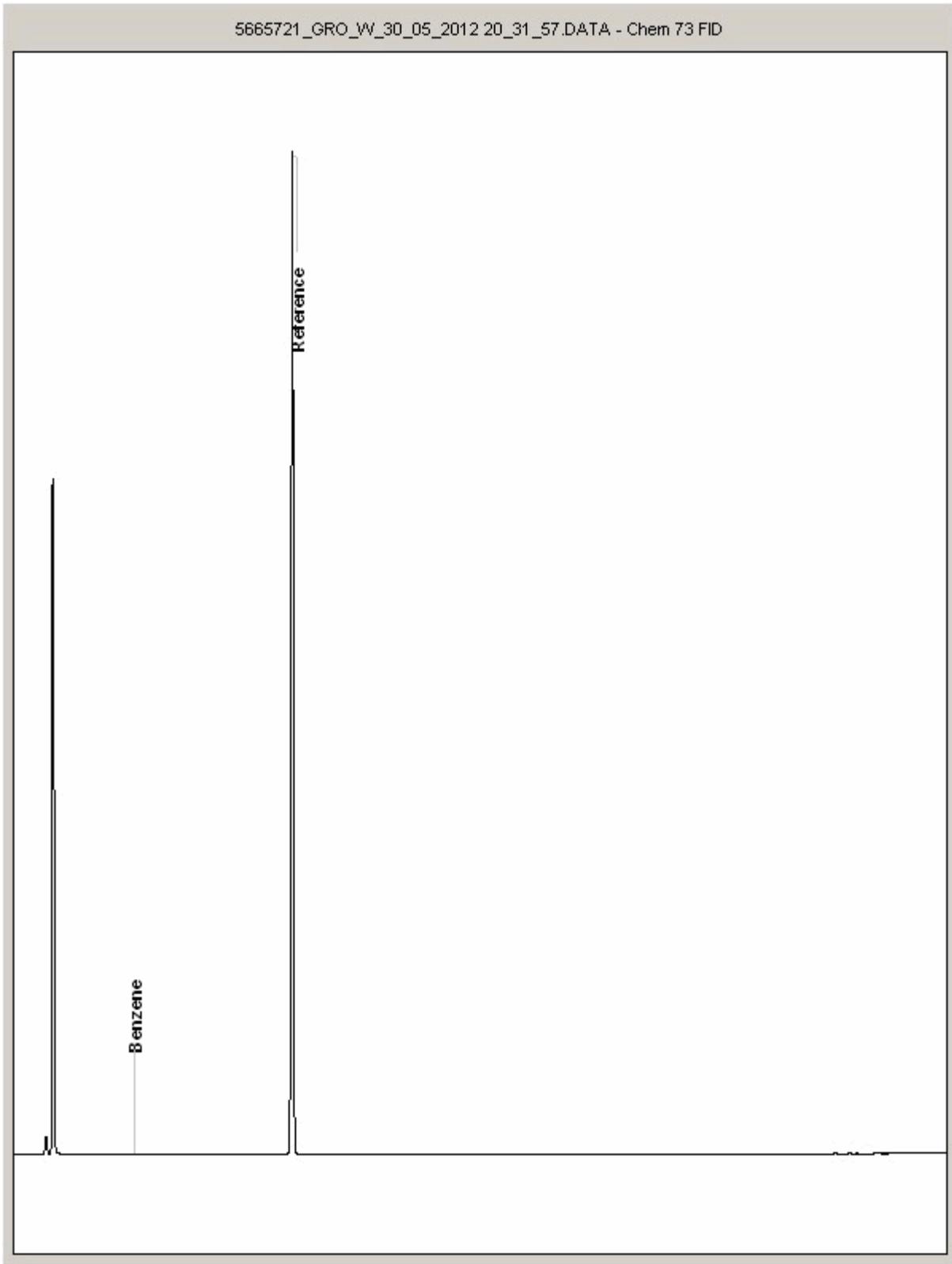
Order Number:
Report Number: 183341
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5665727
Sample ID : BH9/W1

Depth : 1.19 - 1.83



SDG: 120523-86
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number:
Report Number: 183341
Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5 -C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DOM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DOM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DOM	SOX THERM	GC-MS
HERBICIDES	D&C	HEXANE ACETONE	SOX THERM	GC-MS
PESTICIDES	D&C	HEXANE ACETONE	SOX THERM	GC-MS
EPH (DRO)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE ACETONE	END OVER END	GC-FID
PCBAROCLOR 1254/PCB CON	D&C	HEXANE ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE ACETONE	MICROWAVE TM218.	GC-MS
>C6C40	WET	HEXANE ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
PCB7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCBAROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTICID POPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (IR)	TCE	STIRRED EXTRACTION (STIR-BAR)	R
MINERAL OIL BY R	TCE	STIRRED EXTRACTION (STIR-BAR)	R
GLYCOLS	NONE	DIRECT INJECTION	GC-FID

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Jacobs Engineering UK Limited
Newby House
Neath Abbey Business Park
Neath Abbey
West Glamorgan
SA10 7DR**Attention:** Cerith Owens

CERTIFICATE OF ANALYSIS

Date: 18 June 2012
Customer: H_JACOBS_NEA
Sample Delivery Group (SDG): 120609-63
Your Reference: 12635
Location: MREC
Report No: 184511

We received 6 samples on Saturday June 09, 2012 and 6 of these samples were scheduled for analysis which was completed on Monday June 18, 2012. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:



Sonia McWhan
Operations Manager





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
5707572	BH4/W2		2.53 - 3.46	07/06/2012
5707573	BH5/W2		1.80 - 2.34	07/06/2012
5707574	BH6/W2		1.70 - 2.40	07/06/2012
5707575	BH7/W2		1.40 - 1.91	07/06/2012
5707576	BH8/W2		1.27 - 1.89	07/06/2012
5707577	BH9/W2		1.18 - 1.89	07/06/2012

Only received samples which have had analysis scheduled will be shown on the following pages.



SDG: 120609-63
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number: JL000637
 Report Number: 184511
 Superseded Report:

LIQUID Results Legend  Test  No Determination Possible	Lab Sample No(s)	5707572	5707573	5707574	5707575	5707576	5707577	
	Customer Sample Reference	BH4/W2	BH5/W2	BH6/W2	BH7/W2	BH8/W2	BH9/W2	
	AGS Reference							
	Depth (m)	2.53 - 3.46	1.80 - 2.34	1.70 - 2.40	1.40 - 1.91	1.27 - 1.89	1.18 - 1.89	
	Container	1l green glass bottle 1l plastic (ALE221)	Vial (ALE297)					
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6		X	X	X	X	X
pH Value	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6	X	X	X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 6	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Table with columns for Results Legend, Customer Sample R, and various sample identifiers (BH4/W2 to BH9/W2). It includes data for Organic Carbon, Total and pH, with LOD/Units and Method specified for each component.

SDG: 120609-63
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number: JL000637
 Report Number: 184511
 Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample R	BH4/W2	BH5/W2	BH6/W2	BH7/W2	BH8/W2	BH9/W2
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.		2.53 - 3.46	1.80 - 2.34	1.70 - 2.40	1.40 - 1.91	1.27 - 1.89	1.18 - 1.89
S	Deviating sample.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		07/06/2012	07/06/2012	07/06/2012	07/06/2012	07/06/2012	07/06/2012
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		09/06/2012	09/06/2012	09/06/2012	09/06/2012	09/06/2012	09/06/2012
	Trigger breach confirmed		120609-63	120609-63	120609-63	120609-63	120609-63	120609-63
(F)			5707572	5707573	5707574	5707575	5707576	5707577
Component	LOD/Units	Method						
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Chlorophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	1.06	<1
2-Methylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Nitroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
2-Nitrophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
3-Nitroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Chloroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Methylphenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Nitrophenol (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
4-Nitroaniline (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Azobenzene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Acenaphthylene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Acenaphthene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Anthracene (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	15.4	15.9	32.3	15.4	13.6	8.5
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1	2	<1	<1	<1	<1
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	1.21	2.16	1.14	2.59	<1	<1
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	1.07	1.67	1.14	2.61	<1	<1

SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

TPH CWG (W)

Results Legend		Customer Sample R	BH4/W2	BH5/W2	BH6/W2	BH7/W2	BH8/W2	BH9/W2
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	BH4/W2	BH5/W2	BH6/W2	BH7/W2	BH8/W2	BH9/W2
M	mCERTS accredited.		2.53 - 3.46	1.80 - 2.34	1.70 - 2.40	1.40 - 1.91	1.27 - 1.89	1.18 - 1.89
S	Deviating sample.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
aq	Aqueous / settled sample.		07/06/2012	07/06/2012	07/06/2012	07/06/2012	07/06/2012	07/06/2012
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		09/06/2012	09/06/2012	09/06/2012	09/06/2012	09/06/2012	09/06/2012
	Trigger breach confirmed		120609-63	120609-63	120609-63	120609-63	120609-63	120609-63
(F)			5707572	5707573	5707574	5707575	5707576	5707577
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM245	88	70	85	87	89	93
GRO >C5-C12	<50 µg/l	TM245	<50	1940	962	313	1070	<50
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3	<3	<3	<3	<3	<3
Benzene	<7 µg/l	TM245	<7	<7	<7	<7	<7	<7
Toluene	<4 µg/l	TM245	<4	<4	<4	<4	<4	<4
Ethylbenzene	<5 µg/l	TM245	<5	<5	<5	<5	<5	<5
m,p-Xylene	<8 µg/l	TM245	<8	<8	<8	<8	<8	<8
o-Xylene	<3 µg/l	TM245	<3	<3	<3	<3	<3	<3
Sum of detected Xylenes	<11 µg/l	TM245	<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245	<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245	<10	18	16	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245	<10	161	58	22	37	<10
Aliphatics >C8-C10	<10 µg/l	TM245	<10	408	223	49	270	<10
Aliphatics >C10-C12	<10 µg/l	TM245	11	646	309	124	348	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	174	2260	541	686	3340	447
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	241	966	228	432	490	213
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	594	1220	238	648	335	292
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	1010	4440	1010	1770	4170	952
Aromatics >EC5-EC7	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	272	149	32	180	<10
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	431	206	83	232	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	113	933	216	349	777	15
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	161	634	96	435	133	61
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	544	1400	123	1210	71	272
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	818	2960	435	2000	981	348
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	1870	9340	2410	4080	6220	1300

SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		

¹ Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Test Completion Dates

Lab Sample No(s)	5707572	5707573	5707574	5707575	5707576	5707577
Customer Sample Ref.	BH4/W2	BH5/W2	BH6/W2	BH7/W2	BH8/W2	BH9/W2
AGS Ref.						
Depth	2.53 - 3.46	1.80 - 2.34	1.70 - 2.40	1.40 - 1.91	1.27 - 1.89	1.18 - 1.89
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	14-Jun-2012	14-Jun-2012	14-Jun-2012	14-Jun-2012	14-Jun-2012	14-Jun-2012
EPH CWG (Aromatic) Aqueous GC (W)	14-Jun-2012	14-Jun-2012	14-Jun-2012	14-Jun-2012	14-Jun-2012	14-Jun-2012
GRO by GC-FID (W)	14-Jun-2012	15-Jun-2012	15-Jun-2012	15-Jun-2012	15-Jun-2012	15-Jun-2012
pH Value	13-Jun-2012	13-Jun-2012	13-Jun-2012	13-Jun-2012	13-Jun-2012	13-Jun-2012
SVOC MS (W) - Aqueous	18-Jun-2012	18-Jun-2012	18-Jun-2012	18-Jun-2012	18-Jun-2012	18-Jun-2012
Total Organic and Inorganic Carbon	12-Jun-2012	12-Jun-2012	12-Jun-2012	12-Jun-2012	12-Jun-2012	12-Jun-2012
TPH CWG (W)	14-Jun-2012	15-Jun-2012	15-Jun-2012	15-Jun-2012	15-Jun-2012	15-Jun-2012

SDG: 120609-63
 Job: H_JACOBS_NEA-82
 Client Reference: 12635

Location: MREC
 Customer: Jacobs Engineering UK Limited
 Attention: Cerith Owens

Order Number: JL000637
 Report Number: 184511
 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 58
Total Aliphatics >C12-C35	TM174	97.29 77.43 : 102.04

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 56
Total Aromatics >EC12-EC35	TM174	102.67 72.80 : 116.48

GRO by GC-FID (W)

Component	Method Code	QC 59	QC 50
Benzene by GC	TM245	106.0 76.26 : 125.49	89.0 67.00 : 133.00
Ethylbenzene by GC	TM245	104.0 72.39 : 127.91	89.0 67.00 : 133.00
m & p Xylene by GC	TM245	103.5 67.84 : 129.90	88.75 67.00 : 133.00
MTBE GC-FID	TM245	104.5 76.60 : 125.28	88.0 67.00 : 133.00
o Xylene by GC	TM245	103.5 69.76 : 129.58	89.0 67.00 : 133.00
QC	TM245	103.39 66.64 : 117.29	88.13 67.00 : 133.00
Toluene by GC	TM245	105.0 73.66 : 128.28	89.0 67.00 : 133.00

pH Value

Component	Method Code	QC 52	QC 52
pH	TM256	100.67 99.12 : 102.63	101.21 99.12 : 102.63

SVOC MS (W) - Aqueous

Component	Method Code	QC 56
4-Bromophenylphenyleth er	TM176	104.0 74.07 : 108.33
Benzo(a)anthracene	TM176	92.2 56.29 : 110.44
Benzo(a)pyrene	TM176	81.4 59.75 : 104.52

SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

SVOC MS (W) - Aqueous

		QC 56
Butylbenzyl phthalate	TM176	90.5 63.86 : 115.28
Hexachlorobutadiene	TM176	94.3 37.13 : 97.88
Naphthalene	TM176	100.0 66.94 : 106.17
Nitrobenzene	TM176	89.1 65.44 : 100.37
Phenol	TM176	52.4 39.80 : 60.16

Total Organic and Inorganic Carbon

Component	Method Code	QC 57
Total Inorganic Carbon	TM090	97.5 86.41 : 109.79
Total Organic Carbon	TM090	105.33 90.92 : 115.14

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.



SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

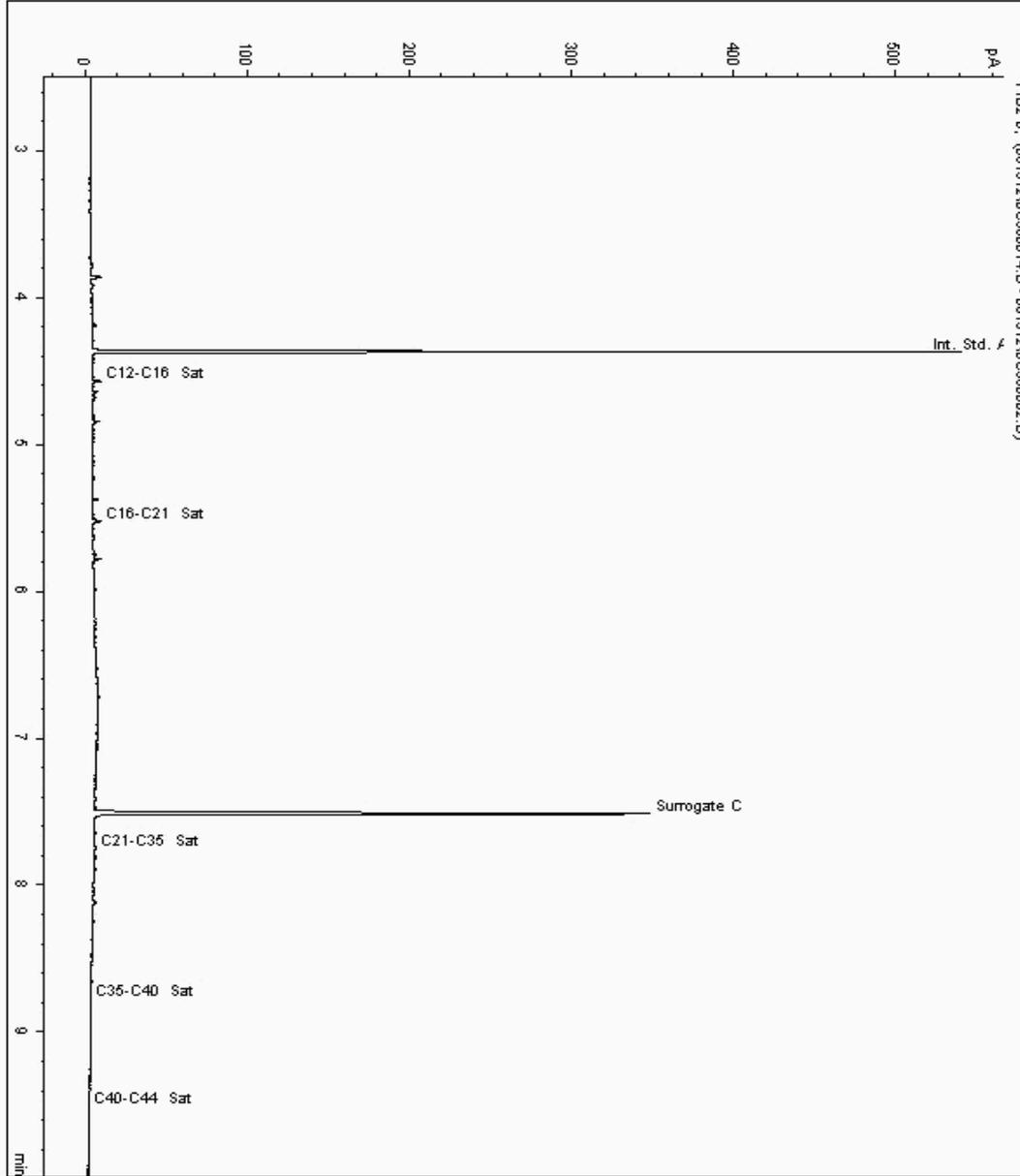
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5712007
Sample ID : BH4/W2

Depth : 2.53 - 3.46

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5571682-5712007
Date Acquired : 13/06/12 20:38:44 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

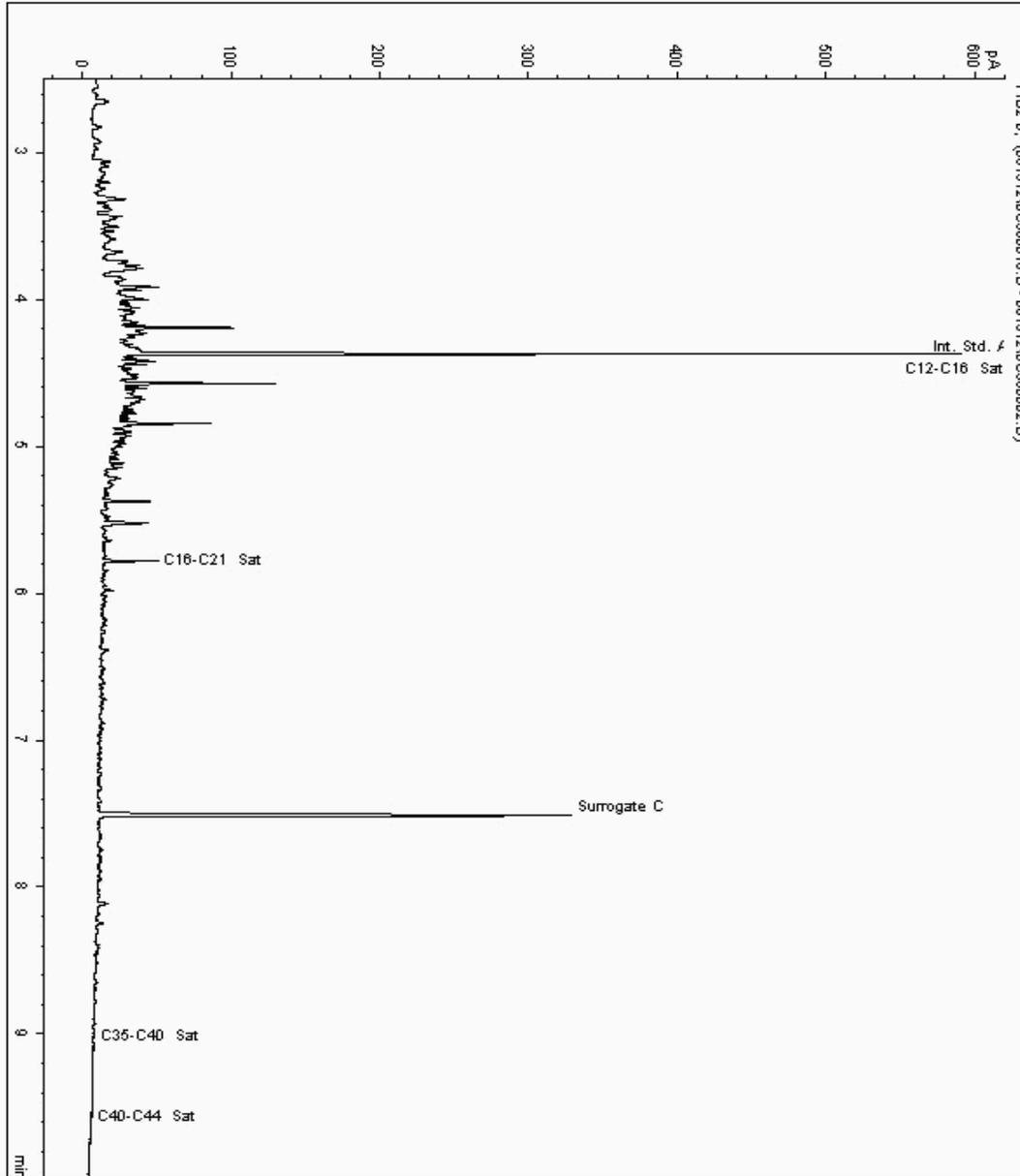
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5712030
Sample ID : BH5/W2

Depth : 1.80 - 2.34

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5571697-5712030
Date Acquired : 13/06/12 21:07:10 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

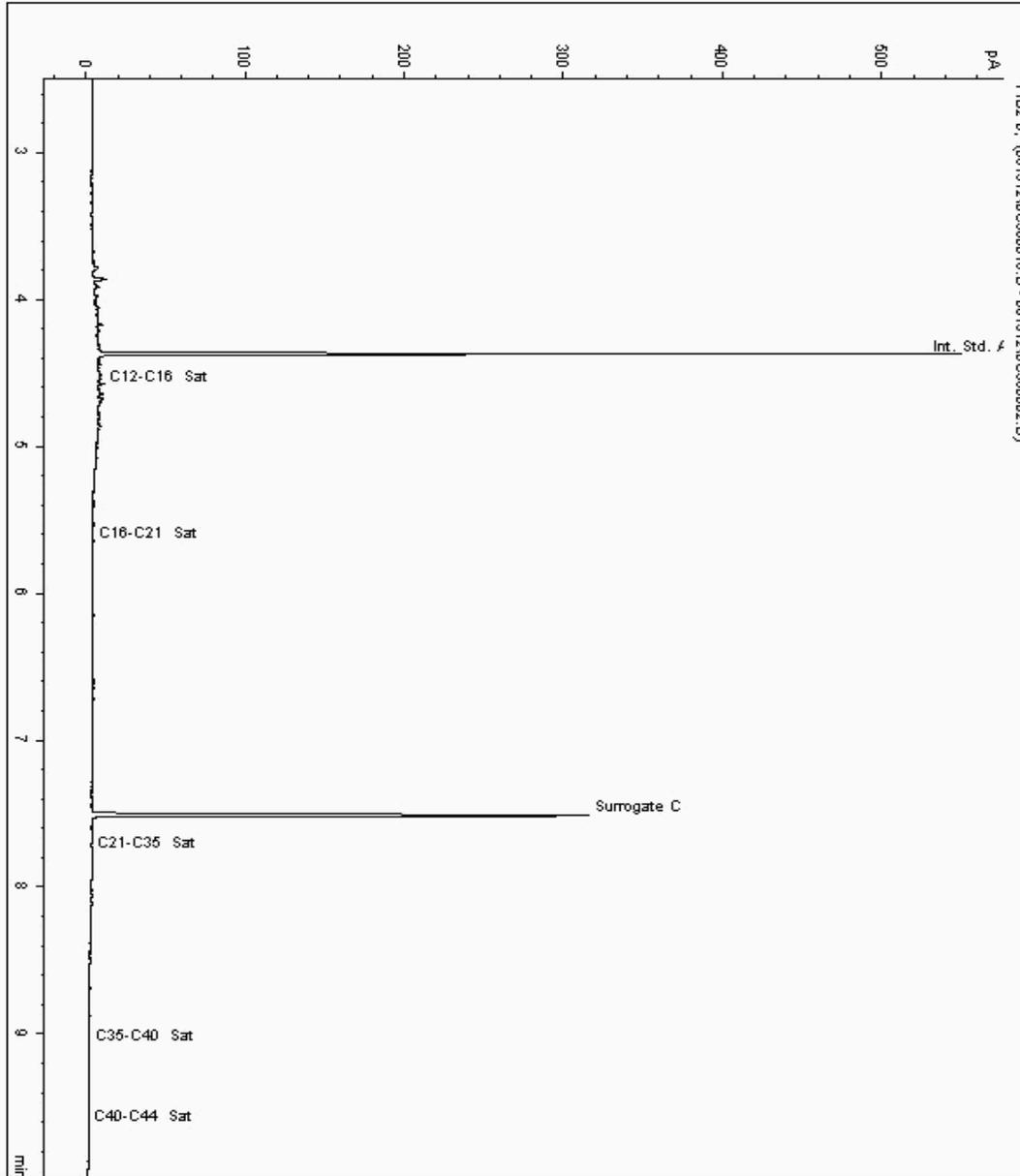
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5712050
Sample ID : BH9/W2

Depth : 1.18 - 1.89

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5571731-5712050
Date Acquired : 13/06/12 21:35:55 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

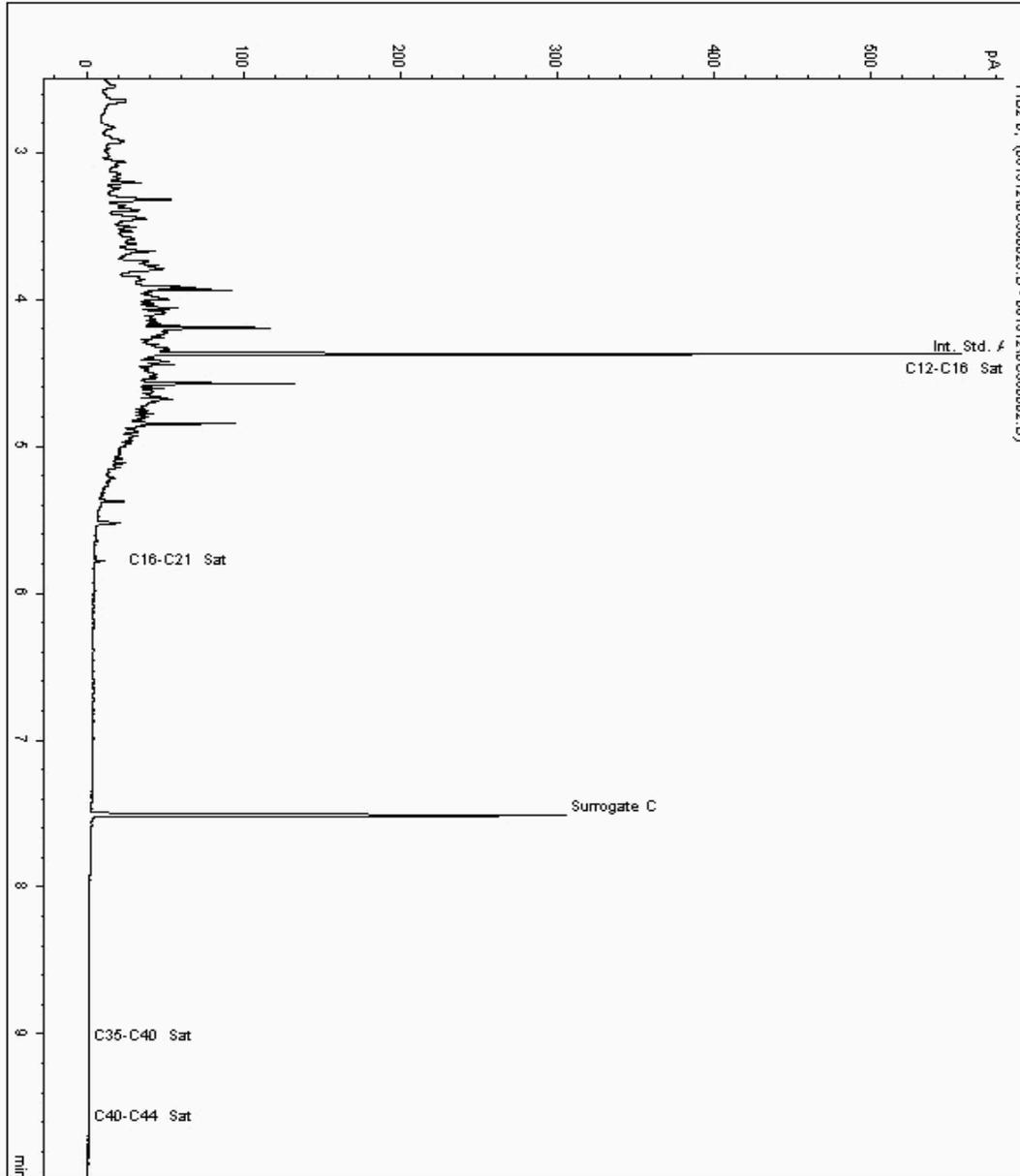
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5712067
Sample ID : BH8/W2

Depth : 1.27 - 1.89

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5571723-5712067
Date Acquired : 13/06/12 22:52:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

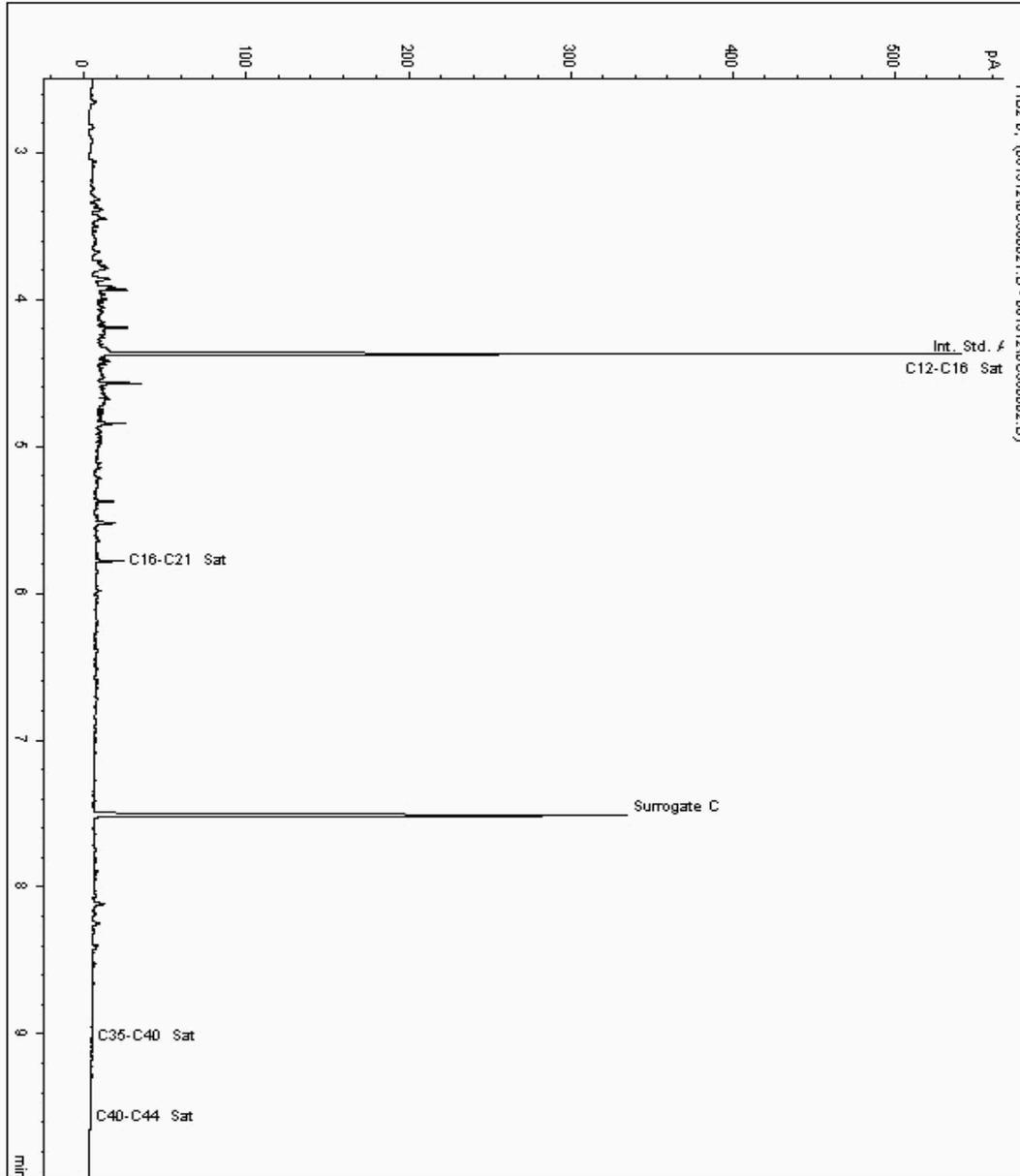
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5712076
Sample ID : BH7/W2

Depth : 1.40 - 1.91

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5571713-5712076
Date Acquired : 13/06/12 22:23:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

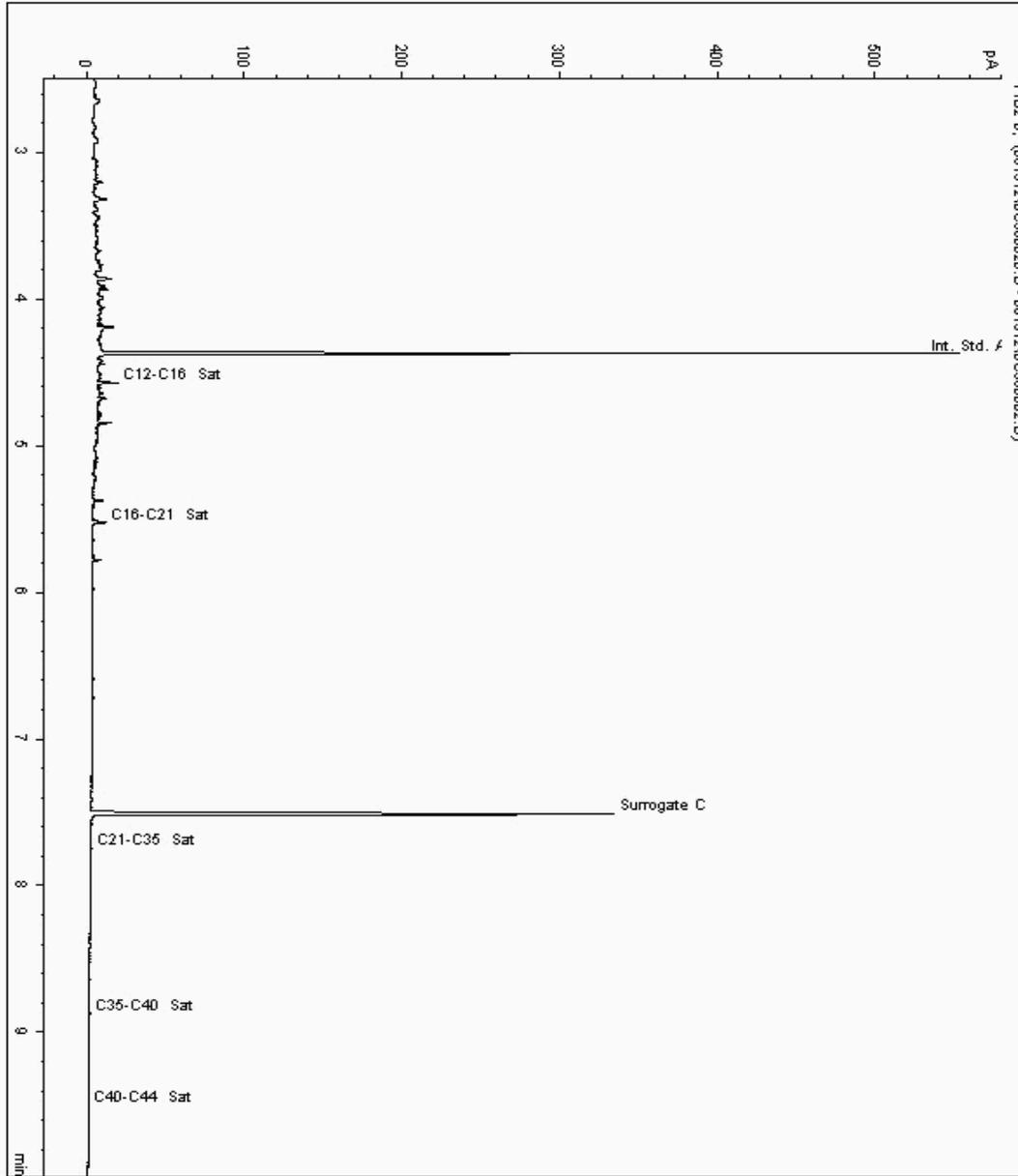
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 5712086
Sample ID : BH6/W2

Depth : 1.70 - 2.40

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 5571705-5712086
Date Acquired : 13/06/12 22:04:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

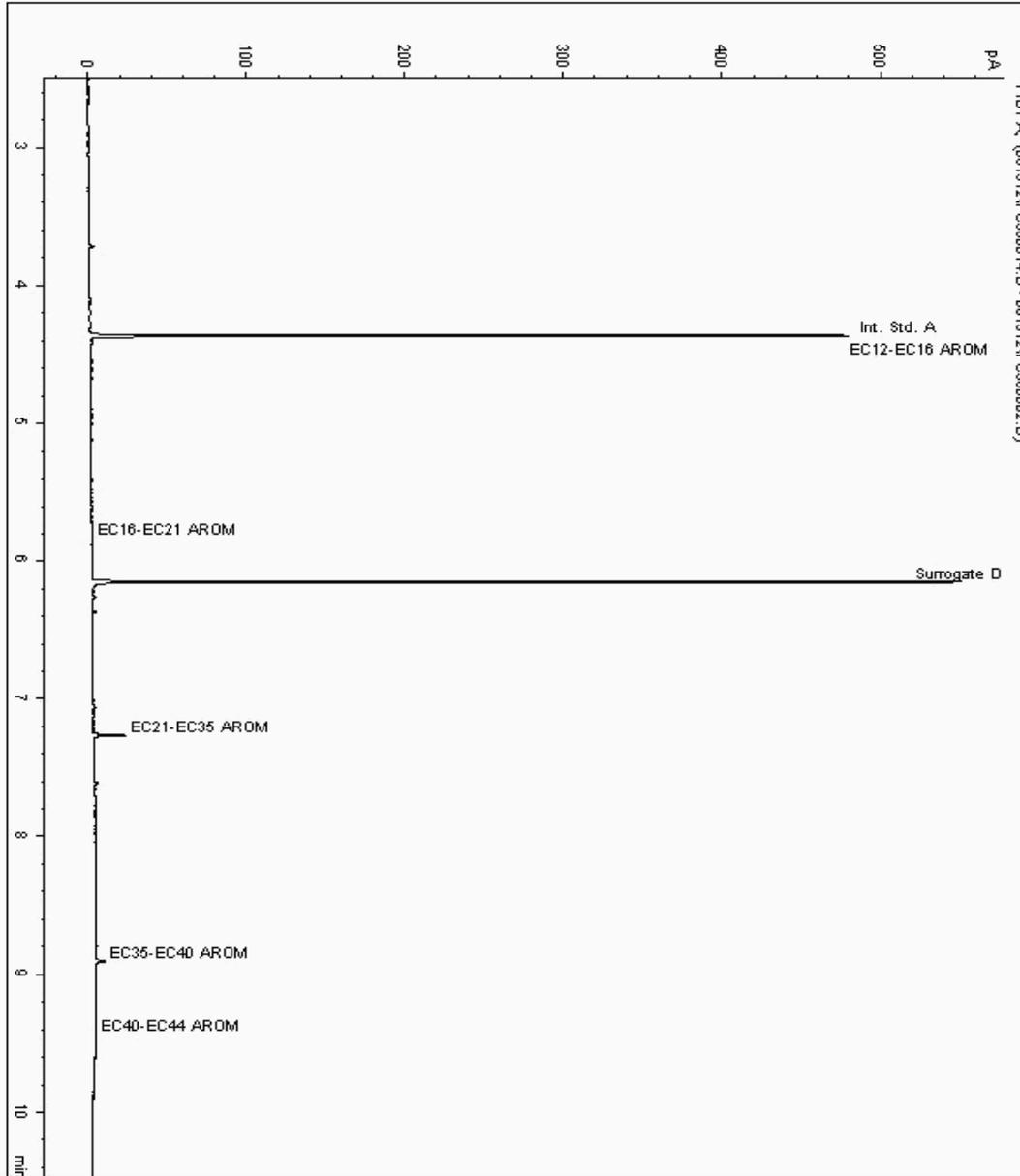
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5712007
Sample ID : BH4/W2

Depth : 2.53 - 3.46

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5571683-5712007
Date Acquired : 13/06/12 20:38:44 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

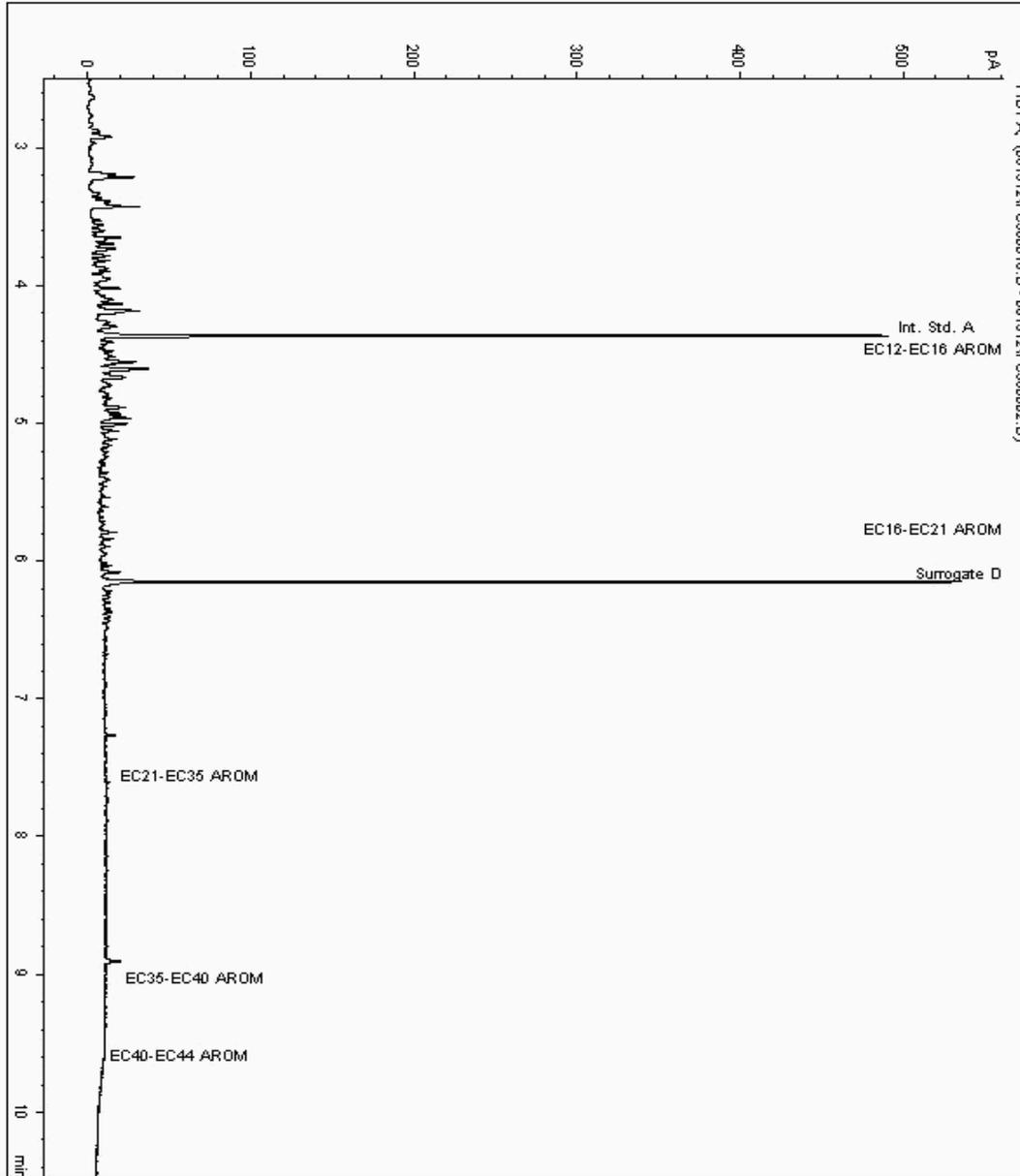
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5712030
Sample ID : BH5/W2

Depth : 1.80 - 2.34

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5571698-5712030
Date Acquired : 13/06/12 21:07:10 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

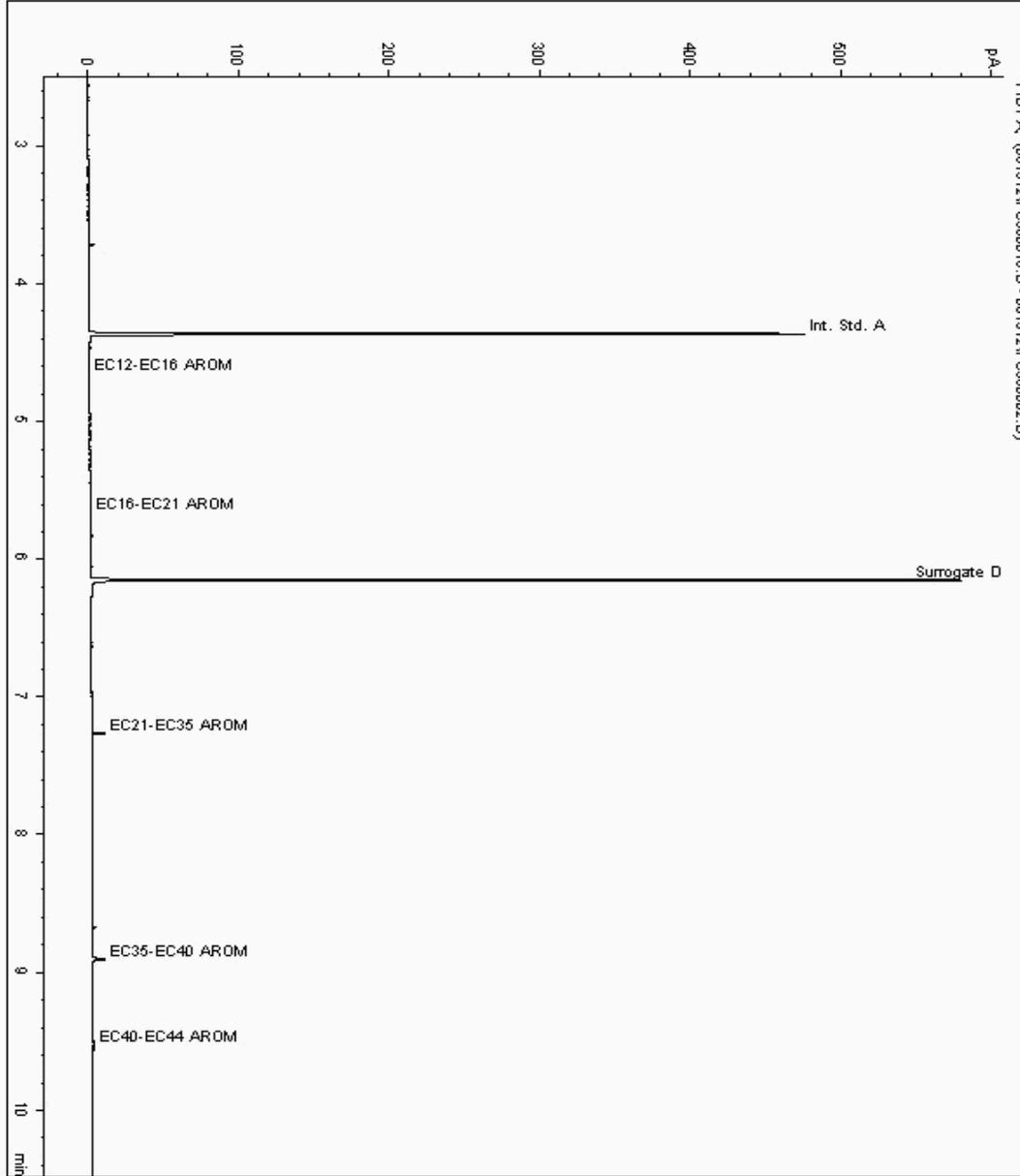
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5712050
Sample ID : BH9/W2

Depth : 1.18 - 1.89

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5571732-5712050
Date Acquired : 13/06/12 21:35:55 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

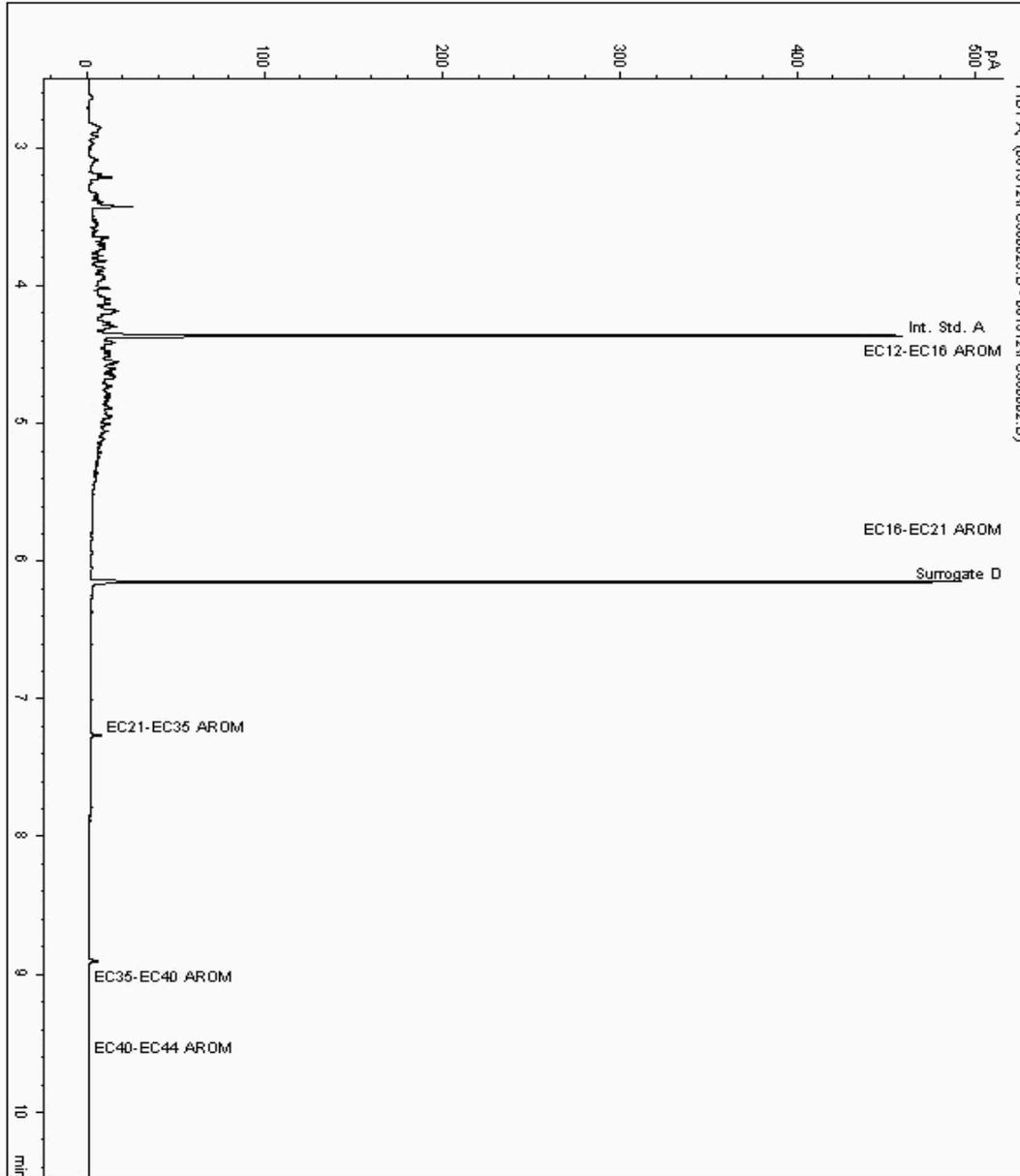
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5712067
Sample ID : BH8/W2

Depth : 1.27 - 1.89

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5571724-5712067
Date Acquired : 13/06/12 22:52:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

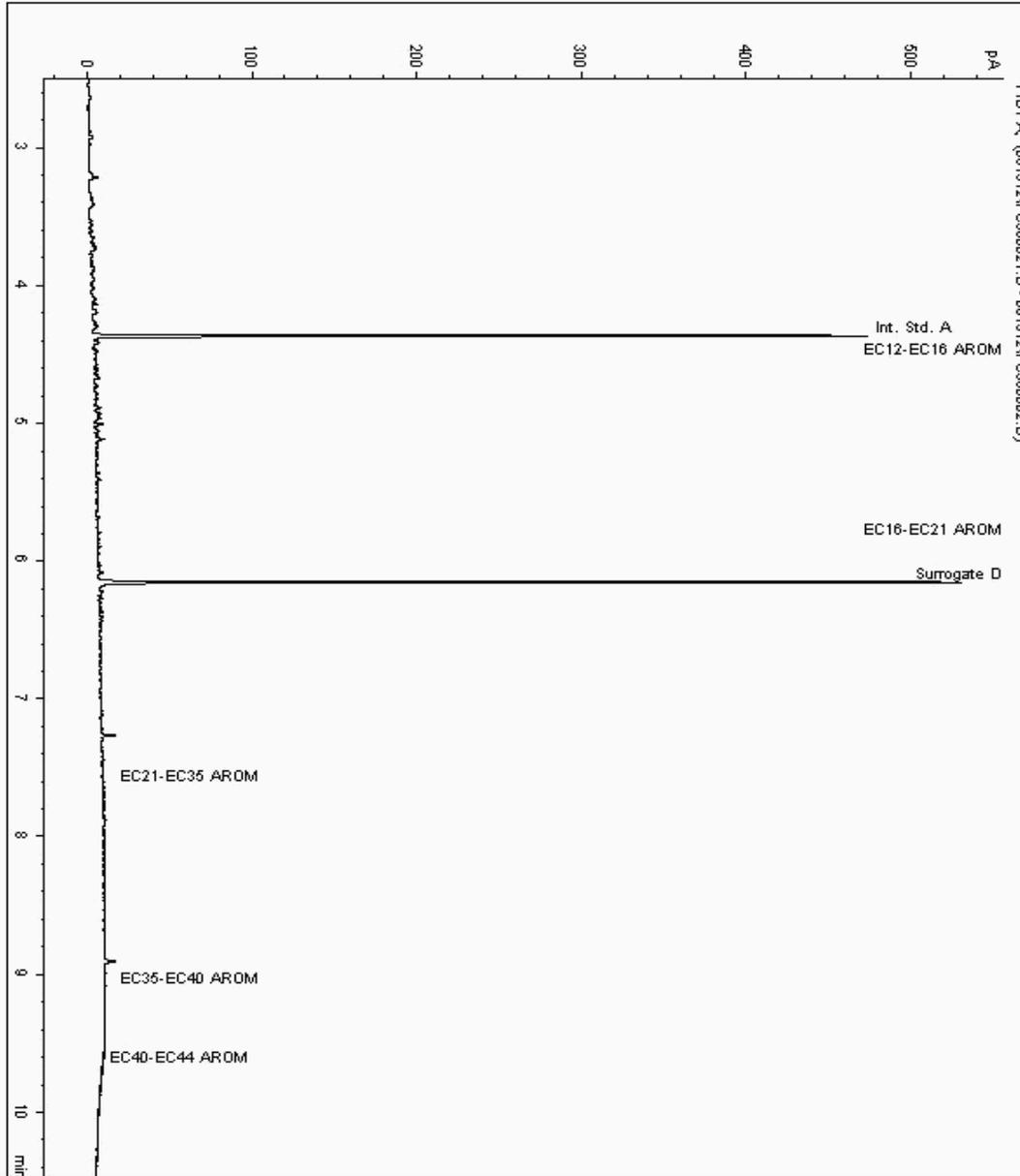
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5712076
Sample ID : BH7/W2

Depth : 1.40 - 1.91

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5571714-5712076
Date Acquired : 13/06/12 22:23:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

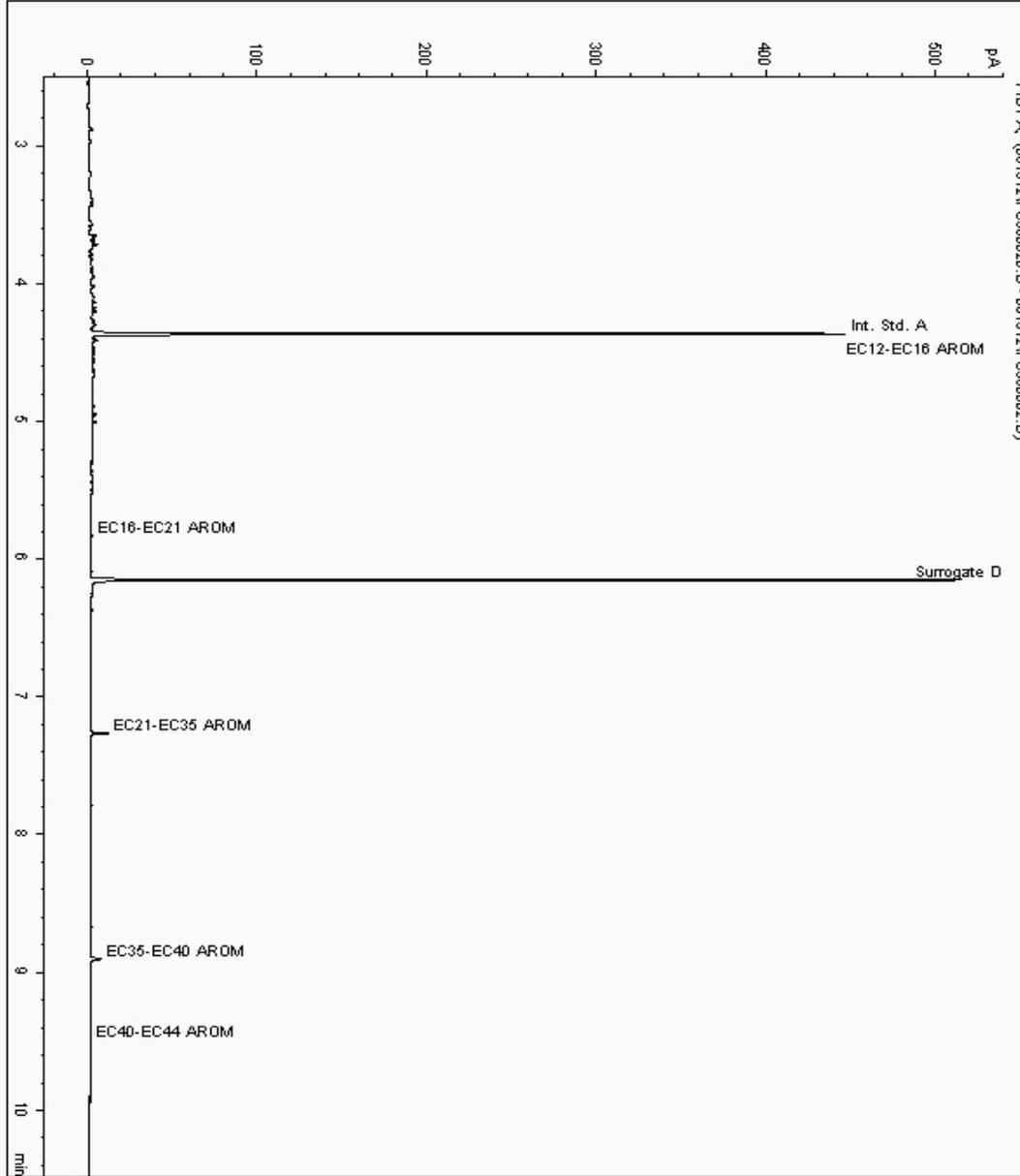
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 5712086
Sample ID : BH6/W2

Depth : 1.70 - 2.40

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 5571706-5712086
Date Acquired : 13/06/12 22:04:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

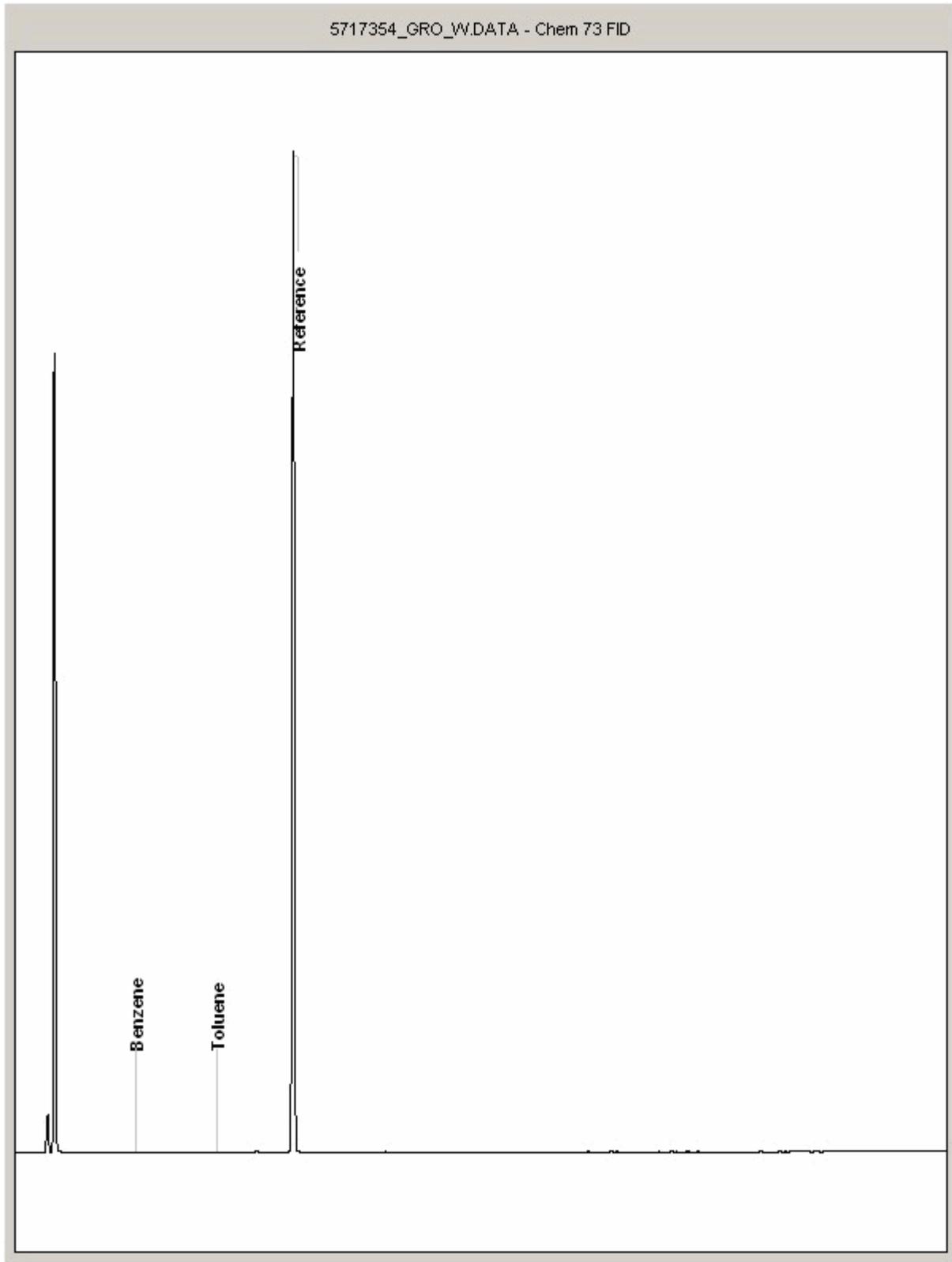
Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5717354
Sample ID : BH4/W2

Depth : 2.53 - 3.46





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

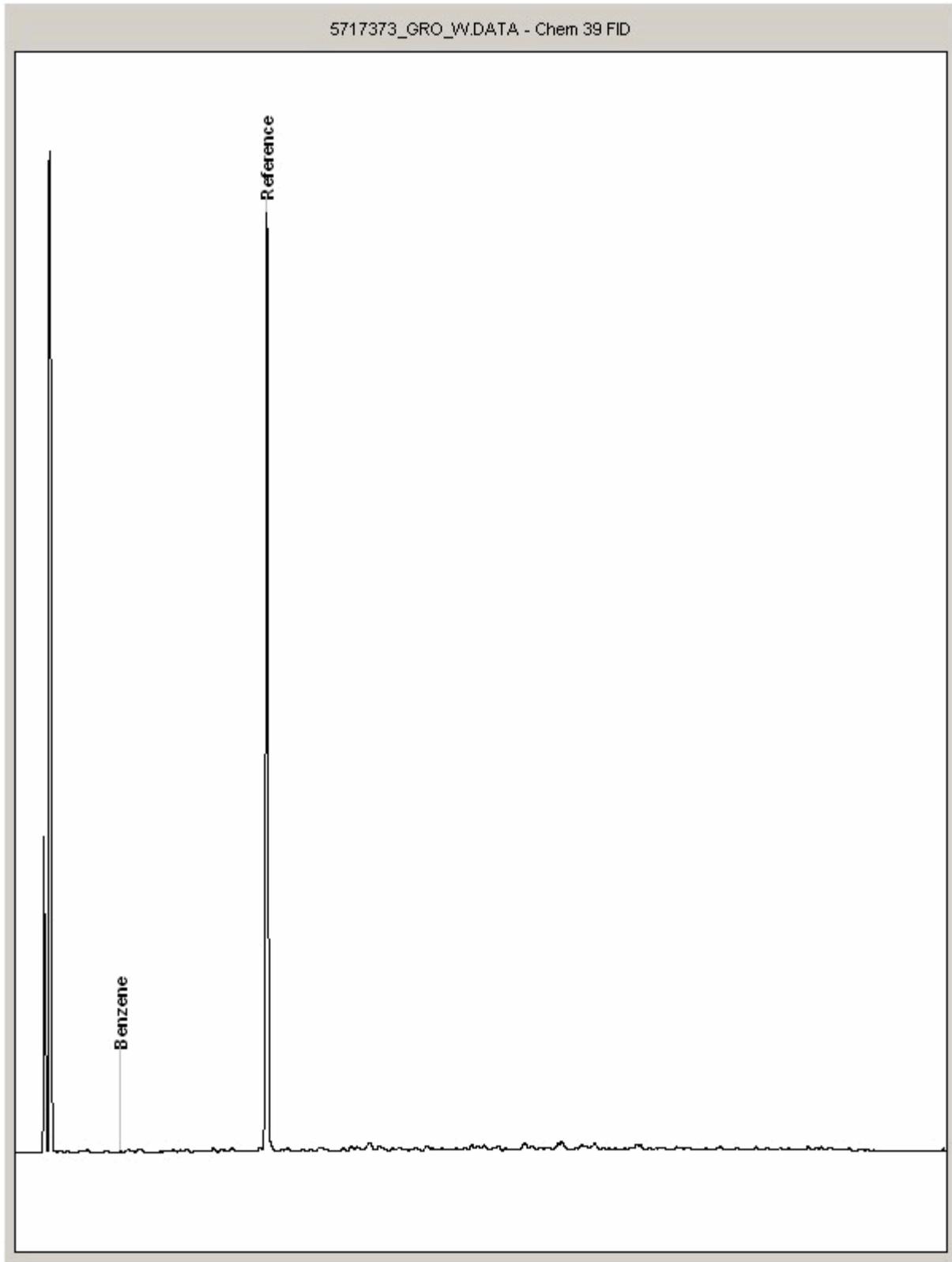
Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5717373
Sample ID : BH5/W2

Depth : 1.80 - 2.34





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

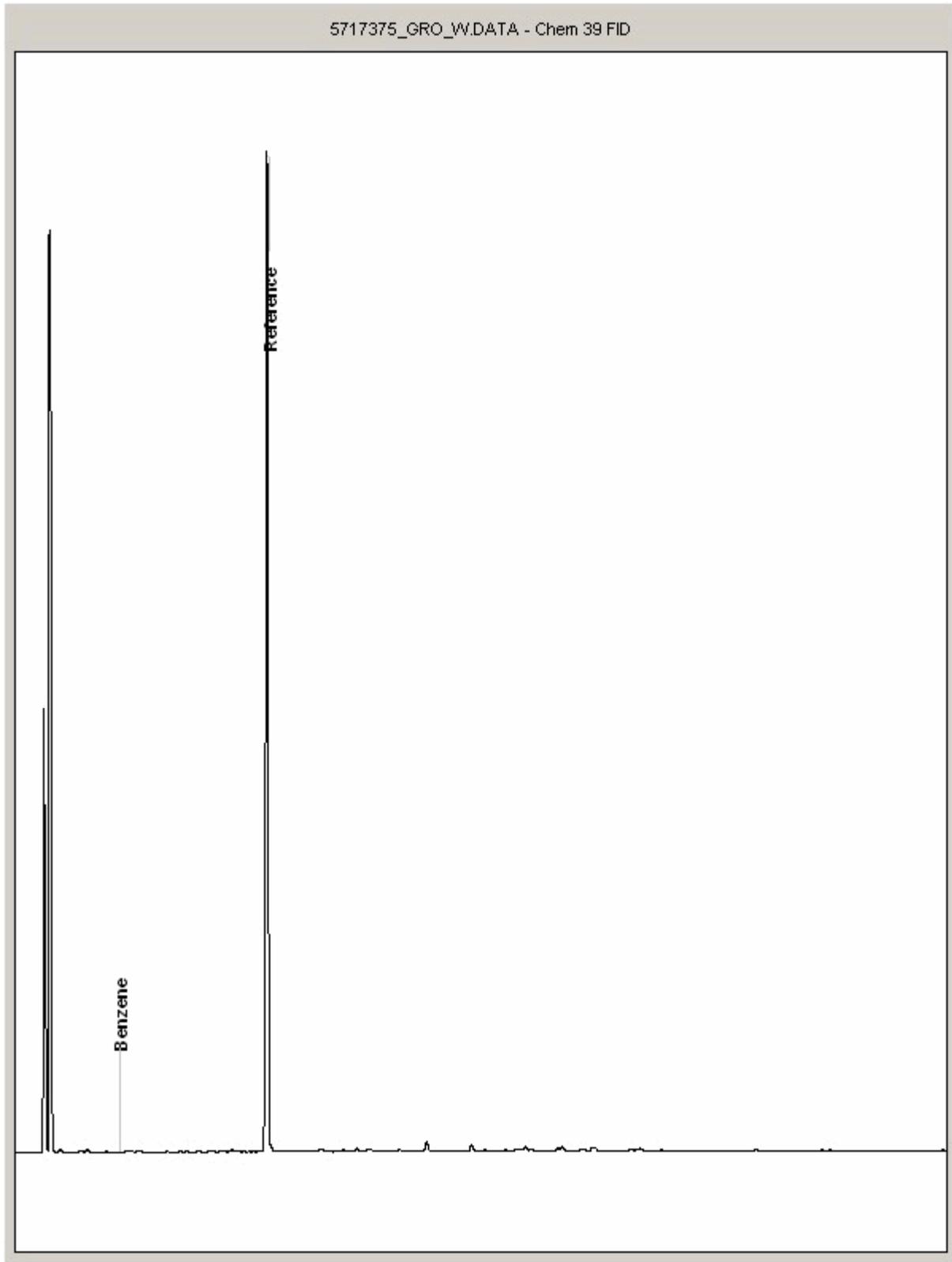
Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5717375
Sample ID : BH6/W2

Depth : 1.70 - 2.40





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

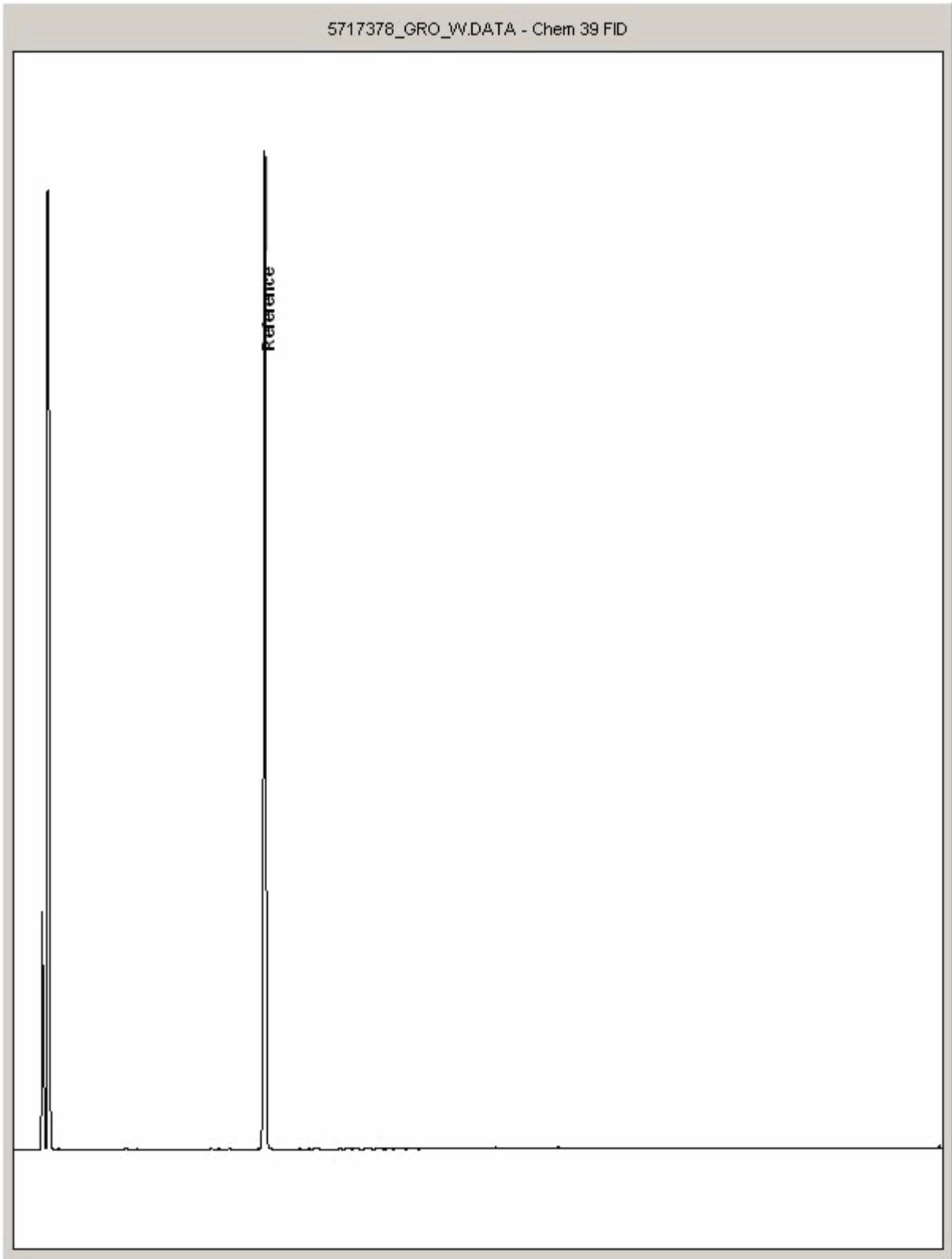
Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5717378
Sample ID : BH7/W2

Depth : 1.40 - 1.91



SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

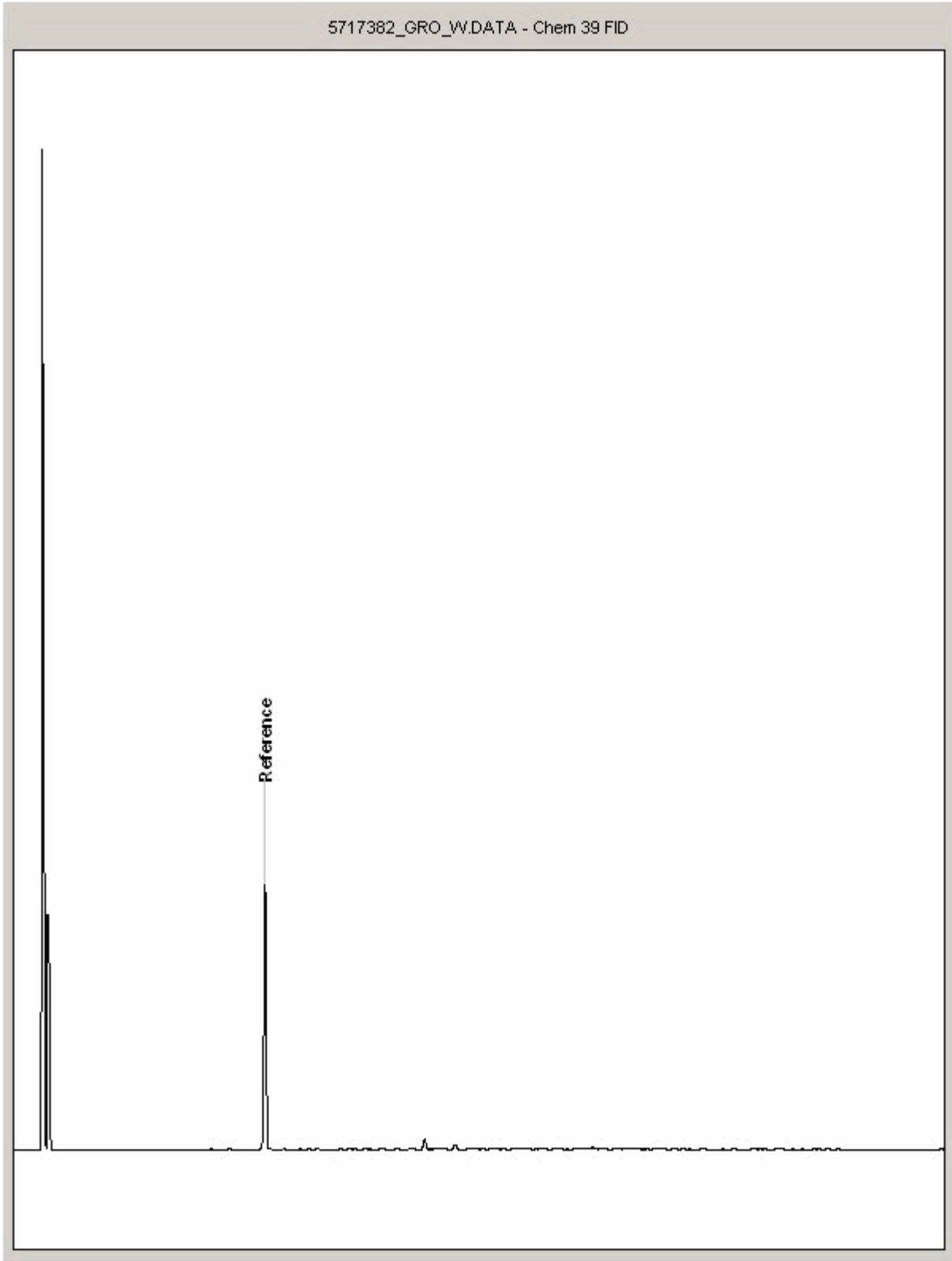
Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5717382
Sample ID : BH8/W2

Depth : 1.27 - 1.89





SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

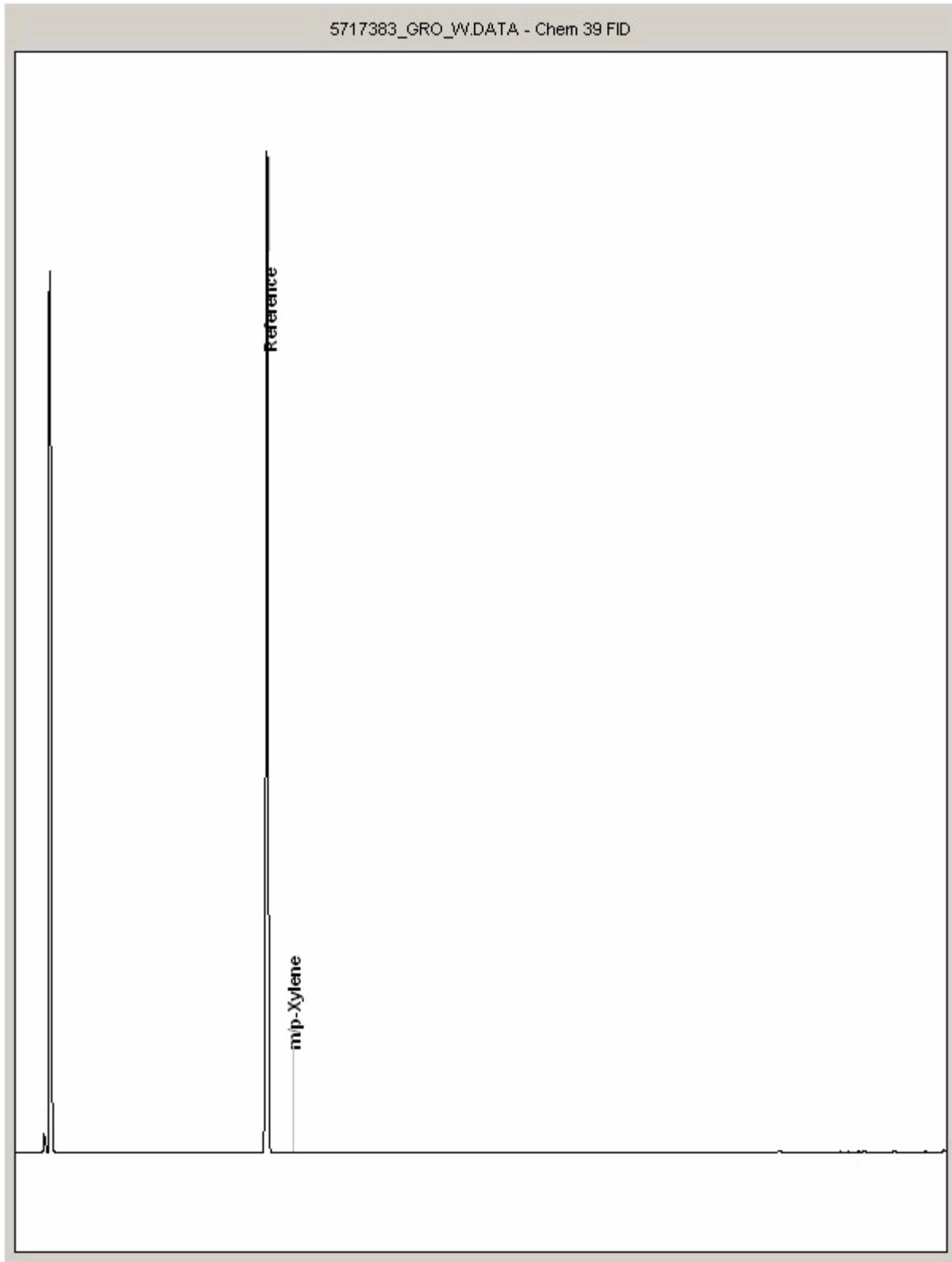
Order Number: JL000637
Report Number: 184511
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 5717383
Sample ID : BH9/W2

Depth : 1.18 - 1.89



SDG: 120609-63
Job: H_JACOBS_NEA-82
Client Reference: 12635

Location: MREC
Customer: Jacobs Engineering UK Limited
Attention: Cerith Owens

Order Number: JL000637
Report Number: 184511
Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5 -C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D&C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENTEXTRACTABLE MATTER	D&C	DOM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DOM	SOX THERM	HPLC
PHENOLS BY GCMS	WET	DOM	SOX THERM	GC-MS
HERBICIDES	D&C	HEXANE ACETONE	SOX THERM	GC-MS
PESTICIDES	D&C	HEXANE ACETONE	SOX THERM	GC-MS
EPH (DFO)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE ACETONE	END OVER END	GC-FID
EPH CWGBY GC	D&C	HEXANE ACETONE	END OVER END	GC-FID
PCBAROCLOR 1254/PCB CON	D&C	HEXANE ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE ACETONE	MICROWAVE TM218.	GC-MS
>C6C40	WET	HEXANE ACETONE	SHAKER	GC-FID
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE ACETONE	SHAKER	GC-FID
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DOM ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-FID
PCB7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCBAROCLOR 1254	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVCC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOPOPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS MS	ACETONE	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (R)	TCE	STIRRED EXTRACTION (STIR-BAR)	R
MINERAL OIL BY R	TCE	STIRRED EXTRACTION (STIR-BAR)	R
GLYCOLS	NONE	DIRECT INJECTION	GC-FID

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anorthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.