

SDG: 151203-38
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342759
Superseded Report: 341318

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOX THERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLSBYGCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOX THERM	GCMS
EPH (DR O)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH (MINO L)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GC-FD
PCB TOT/PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM218	GCMS
C8-C40(C6-C40)EZ FLASH	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DCMACEONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
EPH	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
EPH CWG	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
MINERAL OIL	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
PCB 7CONGENERS	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
PCB TOTAL	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRAZNE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOL SMS	DCM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL byR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECTINJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anophyllite	-
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 MDHS 100.

The identification of asbestos containing materials 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.

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Attention: Phil Allen

Order Number: 60479811
Report Number: 342759
Superseded Report: 341318

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 18 December 2015
Customer: H_URS_WIM
Sample Delivery Group (SDG): 151204-91
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 342756

This report has been revised and directly supersedes 341472 in its entirety.

We received 2 samples on Friday December 04, 2015 and 2 of these samples were scheduled for analysis which was completed on Thursday December 10, 2015. 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: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12575736	MW201_7.0		7.00 - 7.00	02/12/2015
12575735	SB201_2.5		2.50 - 2.50	02/12/2015



















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



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SOLID Results Legend  Test  No Determination Possible	Lab Sample No(s)	12575735	12575736
	Customer Sample Reference	SB201_2.5	MW201_7.0
	AGS Reference		
	Depth (m)	2.50 - 2.50	7.00 - 7.00
	Container	60g VOC (ALE215)	250g Amber Jar 60g VOC (ALE215)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2	 
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2	 
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2	 
Oxygenates (S)	All	NDPs: 0 Tests: 2	 
PAH by GCMS	All	NDPs: 0 Tests: 2	 
Sample description	All	NDPs: 0 Tests: 2	 
Total Organic Carbon	All	NDPs: 0 Tests: 2	 
VOC MS (S)	All	NDPs: 0 Tests: 2	 

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Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
12575736	MW201_7.0	7.00 - 7.00	Light Brown	Sand	0.1 - 2 mm	N/A	N/A
12575735	SB201_2.5	2.50 - 2.50	Light Brown	Sand	0.1 - 2 mm	Stones	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.



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PAH by GCMS

Results Legend		Customer Sample Ref.	MW201_7.0	SB201_2.5			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.		7.00 - 7.00	2.50 - 2.50			
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid			
diss.filt	Dissolved / filtered sample.		02/12/2015	02/12/2015			
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		04/12/2015	04/12/2015			
(F)	Trigger breach confirmed		151204-91	151204-91			
1-5&*\$@	Sample deviation (see appendix)		12575736	12575735			
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	90.3	90			
Acenaphthene-d10 % recovery**	%	TM218	86.2	86.9			
Phenanthrene-d10 % recovery**	%	TM218	84.5	86.1			
Chrysene-d12 % recovery**	%	TM218	83.5	85.9			
Perylene-d12 % recovery**	%	TM218	87.5	89.9			
Naphthalene	<9 µg/kg	TM218	<9	<9			
			M	M			
Acenaphthylene	<12 µg/kg	TM218	<12	<12			
			M	M			
Acenaphthene	<8 µg/kg	TM218	<8	<8			
			M	M			
Fluorene	<10 µg/kg	TM218	<10	<10			
			M	M			
Phenanthrene	<15 µg/kg	TM218	<15	<15			
			M	M			
Anthracene	<16 µg/kg	TM218	<16	<16			
			M	M			
Fluoranthene	<17 µg/kg	TM218	<17	<17			
			M	M			
Pyrene	<15 µg/kg	TM218	<15	<15			
			M	M			
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14			
			M	M			
Chrysene	<10 µg/kg	TM218	<10	<10			
			M	M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15			
			M	M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14			
			M	M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15			
			M	M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18			
			M	M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23			
			M	M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24			
			M	M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

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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)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



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Test Completion Dates

Lab Sample No(s)	12575736	12575735
Customer Sample Ref.	MW201_7.0	SB201_2.5
AGS Ref.		
Depth	7.00 - 7.00	2.50 - 2.50
Type	SOLID	SOLID

EPH CWG (Aliphatic) GC (S)	09-Dec-2015	09-Dec-2015
EPH CWG (Aromatic) GC (S)	09-Dec-2015	09-Dec-2015
GRO by GC-FID (S)	08-Dec-2015	08-Dec-2015
Oxygenates (S)	08-Dec-2015	08-Dec-2015
PAH by GCMS	10-Dec-2015	10-Dec-2015
Sample description	07-Dec-2015	07-Dec-2015
Total Organic Carbon	09-Dec-2015	09-Dec-2015
VOC MS (S)	08-Dec-2015	08-Dec-2015



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ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1290
Total Aliphatics >C12-C35	TM173	88.54 68.25 : 114.73

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1290
Total Aromatics >EC12-EC35	TM173	87.33 60.67 : 124.27

GRO by GC-FID (S)

Component	Method Code	QC 1240
Benzene by GC (Moisture Corrected)	TM089	97.0 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	96.0 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	95.5 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	95.0 74.48 : 125.29
o Xylene by GC (Moisture Corrected)	TM089	95.5 79.00 : 121.00
QC	TM089	80.71 73.70 : 123.60
Toluene by GC (Moisture Corrected)	TM089	96.5 79.00 : 121.00

Oxygenates (S)

Component	Method Code	QC 1276
Benzene raw	TM288	95.25 77.75 : 124.62
Diisopropyl ether raw	TM288	114.25 81.07 : 125.84
Ethanol raw	TM288	61.7 12.71 : 182.13
Ethylbenzene raw	TM288	117.0 86.91 : 124.43
o-Xylene raw	TM288	108.5 82.52 : 115.85
p/m-Xylene raw	TM288	116.38 82.74 : 124.08
tert Butanol raw	TM288	82.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	107.25 82.15 : 125.05



SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Oxygenates (S)

		QC 1276
tert-butyl ethyl ether raw	TM288	111.0 81.24 : 125.04
tert-butyl methyl ether raw	TM288	110.75 80.97 : 130.09
Toluene raw	TM288	92.5 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1258
Acenaphthene	TM218	81.0 78.41 : 114.87
Acenaphthylene	TM218	77.0 72.38 : 111.60
Anthracene	TM218	78.0 72.78 : 117.53
Benz(a)anthracene	TM218	87.5 79.50 : 130.50
Benzo(a)pyrene	TM218	92.0 79.50 : 130.50
Benzo(b)fluoranthene	TM218	94.5 78.10 : 127.57
Benzo(ghi)perylene	TM218	86.5 81.67 : 122.61
Benzo(k)fluoranthene	TM218	90.0 81.20 : 118.10
Chrysene	TM218	86.0 80.60 : 117.80
Dibenzo(ah)anthracene	TM218	90.5 77.93 : 124.42
Fluoranthene	TM218	81.5 80.39 : 114.39
Fluorene	TM218	81.0 79.50 : 118.50
Indeno(123cd)pyrene	TM218	86.0 80.30 : 128.30
Naphthalene	TM218	85.0 82.25 : 118.25
Phenanthrene	TM218	82.0 71.53 : 114.48
Pyrene	TM218	81.0 79.12 : 114.39

Total Organic Carbon

Component	Method Code	QC 1276
Total Organic Carbon	TM132	100.91 88.82 : 111.18

VOC MS (S)



SDG: 151204-91
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 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
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 Superseded Report: 341472

VOC MS (S)

Component	Method Code	QC 1233
1,1,1,2-tetrachloroethane	TM116	108.6 76.60 : 121.00
1,1,1-Trichloroethane	TM116	99.2 77.80 : 123.40
1,1,2-Trichloroethane	TM116	95.6 75.40 : 119.80
1,1-Dichloroethane	TM116	97.8 80.84 : 124.49
1,2-Dichloroethane	TM116	113.4 88.45 : 118.84
1,4-Dichlorobenzene	TM116	91.8 80.88 : 114.60
2-Chlorotoluene	TM116	84.4 74.00 : 117.20
4-Chlorotoluene	TM116	77.4 71.20 : 113.20
Benzene	TM116	101.0 79.60 : 125.20
Carbon Disulphide	TM116	75.2 74.91 : 122.14
Carbontetrachloride	TM116	109.8 87.07 : 120.37
Chlorobenzene	TM116	102.8 83.47 : 116.82
Chloroform	TM116	105.2 82.00 : 128.80
Chloromethane	TM116	108.2 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	109.0 81.20 : 128.00
Dibromomethane	TM116	102.6 73.40 : 116.60
Dichloromethane	TM116	119.6 86.60 : 137.00
Ethylbenzene	TM116	91.0 73.60 : 115.60
Hexachlorobutadiene	TM116	50.6 42.69 : 142.65
Isopropylbenzene	TM116	75.8 72.52 : 117.52
Naphthalene	TM116	93.8 83.23 : 126.48
o-Xylene	TM116	81.2 69.60 : 110.40
p/m-Xylene	TM116	85.6 71.30 : 112.70
Sec-Butylbenzene	TM116	66.8 59.20 : 125.20
Tetrachloroethene	TM116	107.6 85.92 : 127.92
Toluene	TM116	89.2 76.08 : 110.17

SDG: 151204-91
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Location: Shell Blackhorse
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Order Number: 60479811
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VOC MS (S)

		QC 1233
Trichloroethene	TM116	95.4 78.17 : 121.37
Trichlorofluoromethane	TM116	122.4 83.78 : 132.82
Vinyl Chloride	TM116	92.6 66.81 : 138.46

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: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Chromatogram

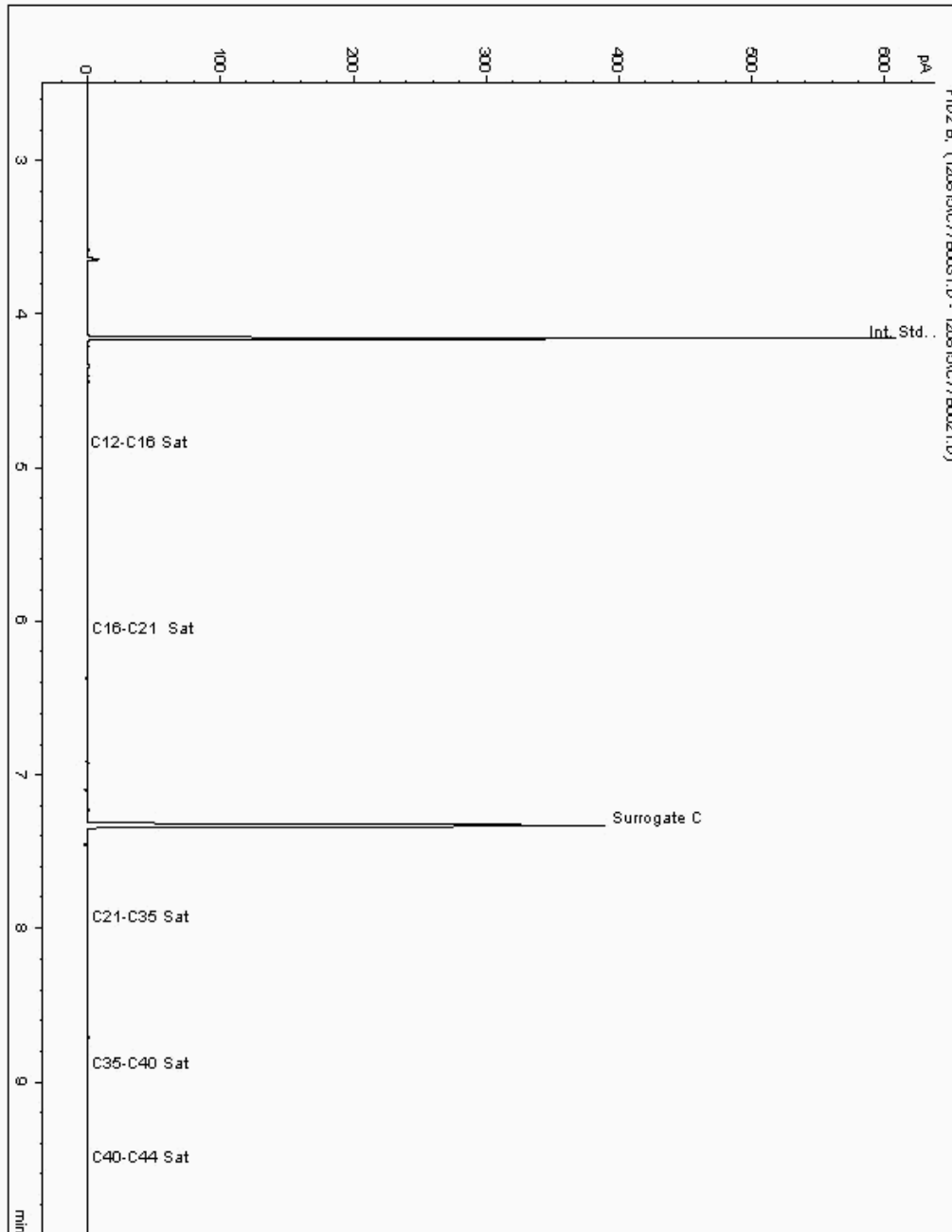
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12587839
Sample ID : MW201_7.0

Depth : 7.00 - 7.00

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

Sample Identity: 11888846-
Date Acquired : 08/12/2015 19:57:15 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.992





SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Chromatogram

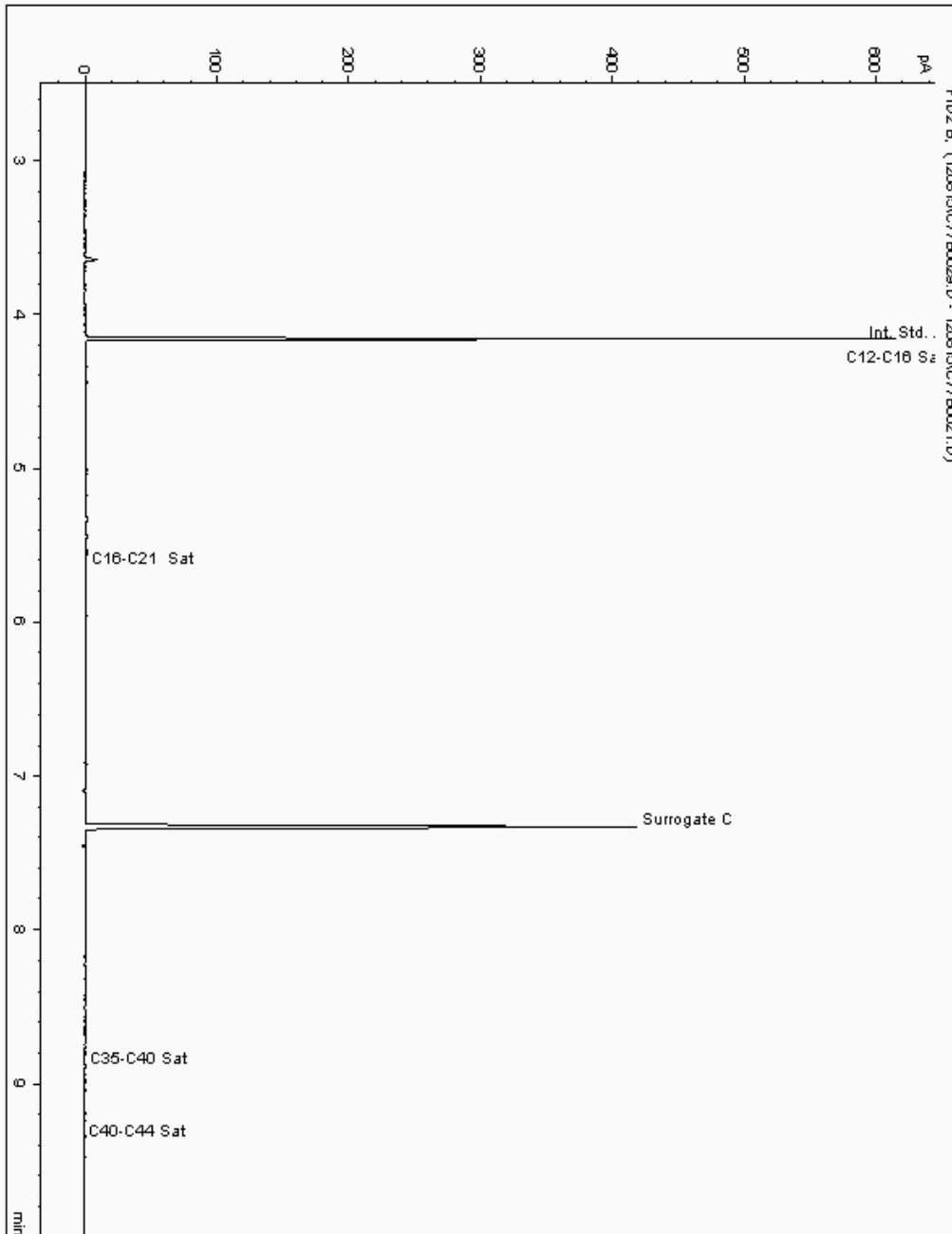
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12587994
Sample ID : SB201_2.5

Depth : 2.50 - 2.50

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

Sample Identity: 11888832-
Date Acquired : 08/12/2015 19:17:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.968





SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Chromatogram

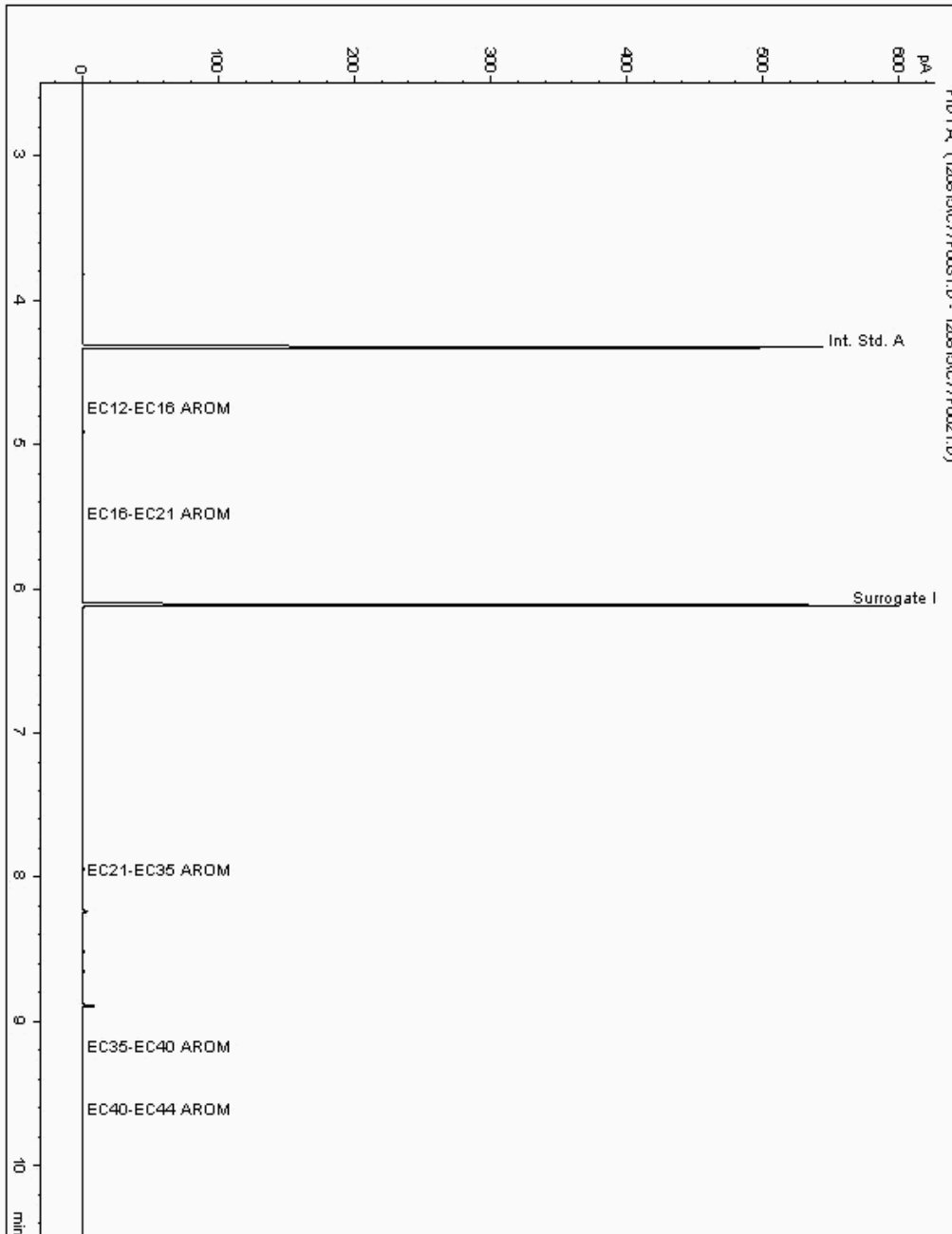
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12587839
Sample ID : MW201_7.0

Depth : 7.00 - 7.00

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

Sample Identity: 11888847-
Date Acquired : 08/12/2015 19:57:16 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.992





SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Chromatogram

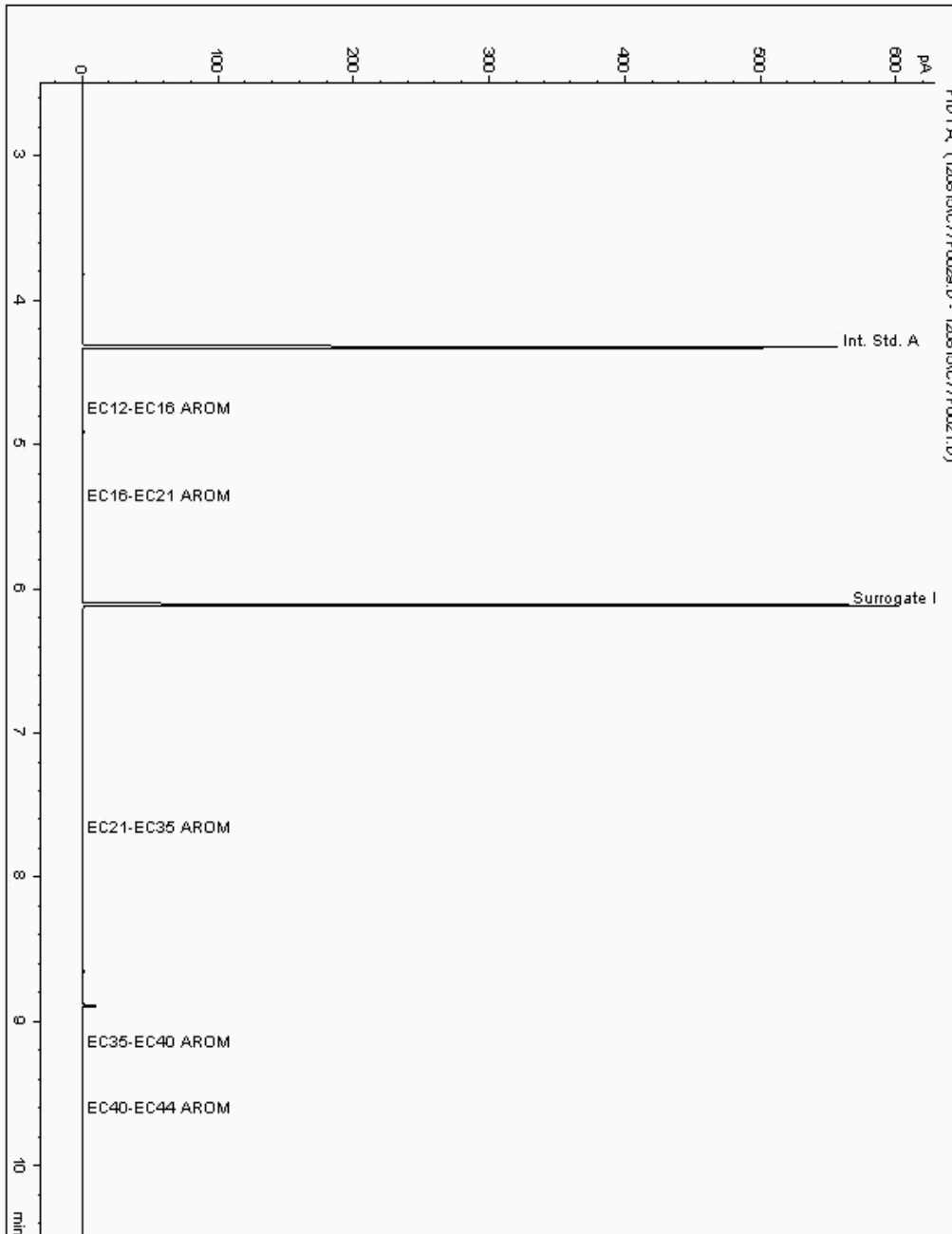
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12587994
Sample ID : SB201_2.5

Depth : 2.50 - 2.50

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

Sample Identity: 11888833-
Date Acquired : 08/12/2015 19:17:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.968



SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

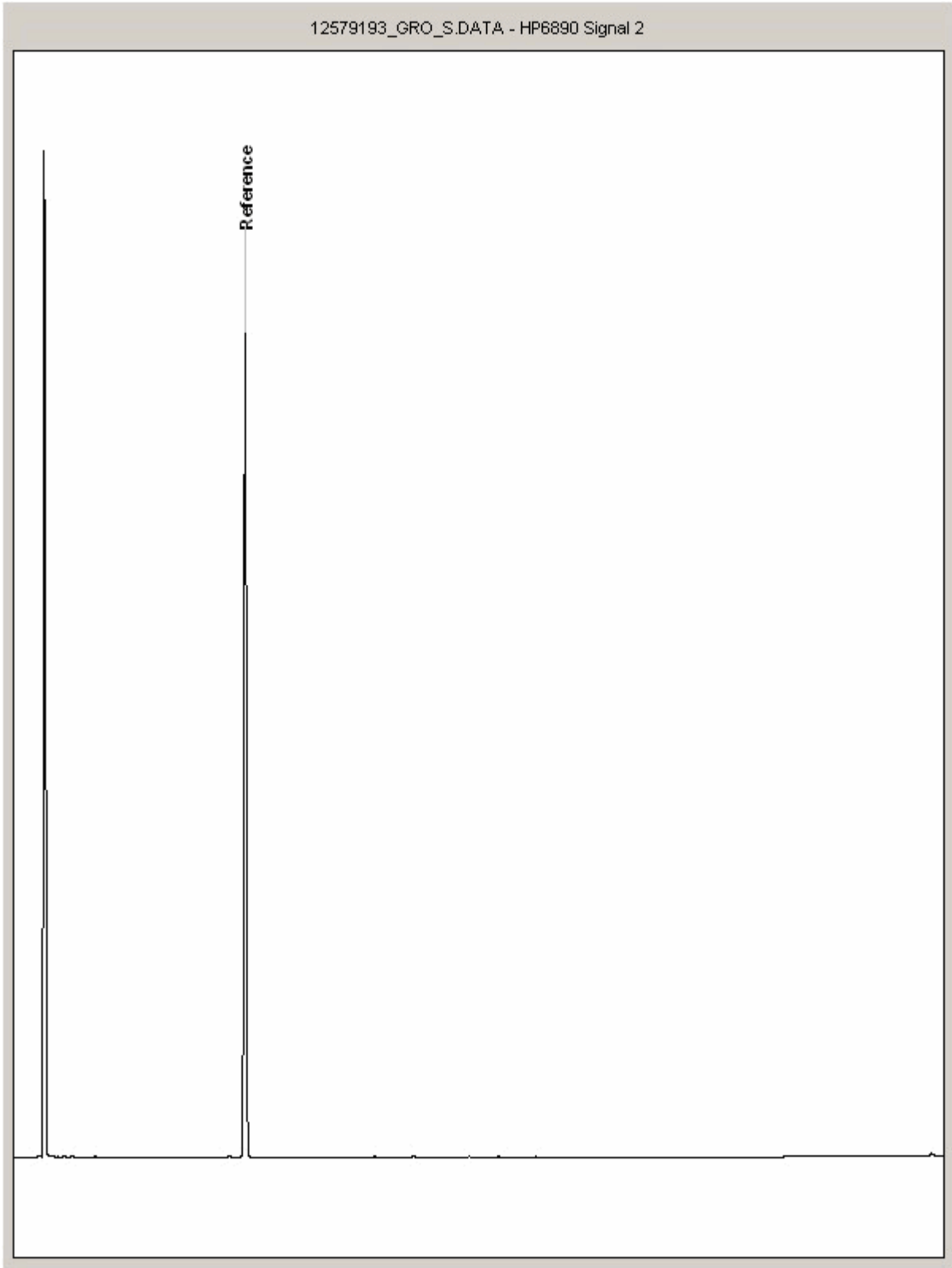
Order Number: 60479811
Report Number: 342756
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Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12579193
Sample ID : SB201_2.5

Depth : 2.50 - 2.50





SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

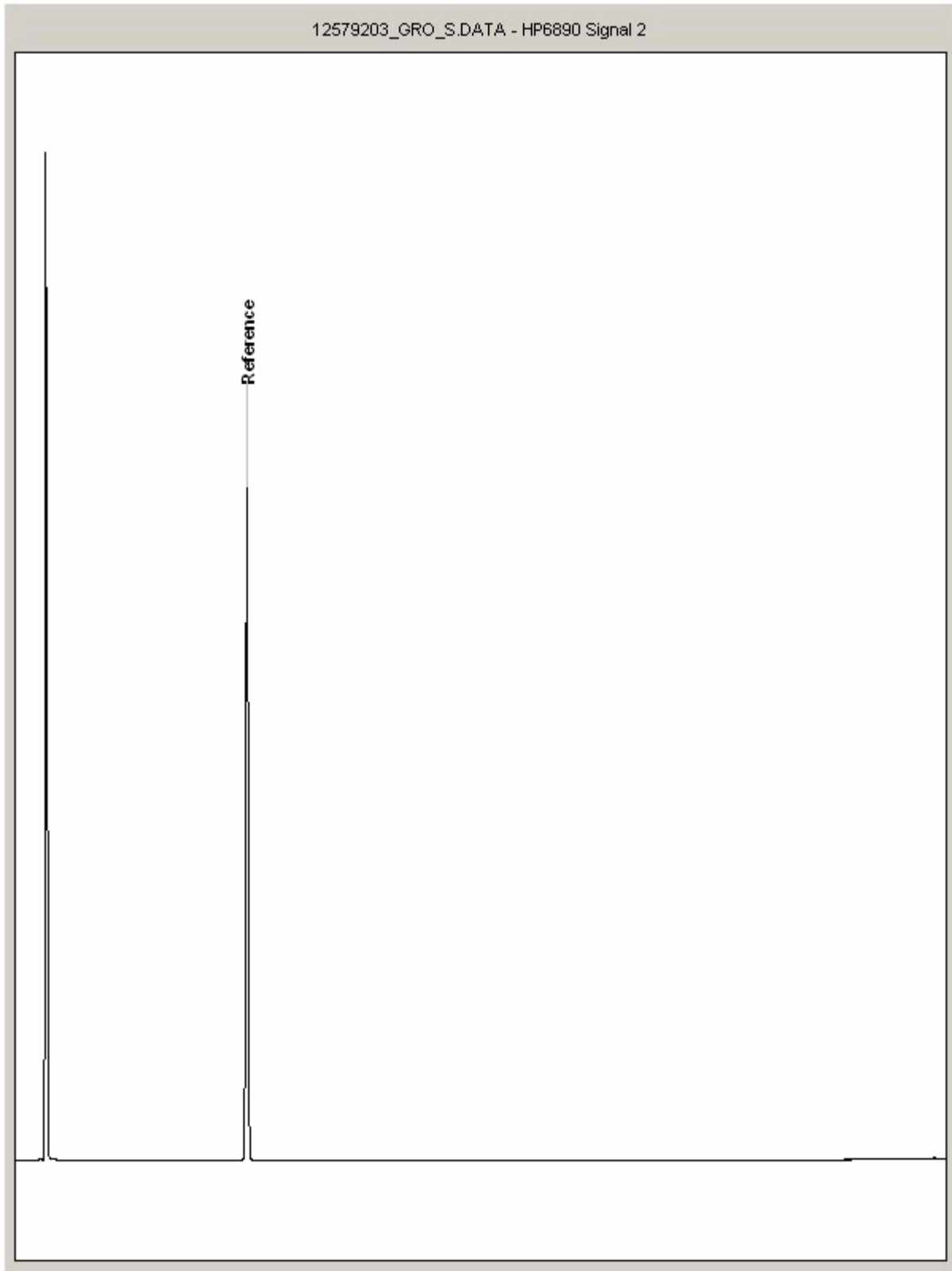
Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12579203
Sample ID : MW201_7.0

Depth : 7.00 - 7.00



SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOX THERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLSBYGCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOX THERM	GCMS
EPH (DR O)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH (MINO L)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH (CL EANED UP)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GC-FD
PCB TOT/PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM218	GCMS
C8-C40(C6-C40)EZ FLASH	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DCMACEONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
EPH	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
EPH CWG	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
MINERAL OIL	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
PCB 7CONGENERS	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
PCB TOTAL	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRAZNE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOL SMS	DCM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL byR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECTINJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anophyllite	-
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 MDHS 100.

The identification of asbestos containing materials 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.

SDG: 151204-91
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342756
Superseded Report: 341472

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 16 December 2015
Customer: H_URS_WIM
Sample Delivery Group (SDG): 151205-45
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 342319

This report has been revised and directly supersedes 341487 in its entirety.

We received 2 samples on Saturday December 05, 2015 and 2 of these samples were scheduled for analysis which was completed on Thursday December 10, 2015. 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: 151205-45
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342319
Superseded Report: 341487

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12582791	SB203_5.0		5.00	03/12/2015
12582793	SB205_6.0		6.00	04/12/2015

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



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SOLID Results Legend <input checked="" type="checkbox"/> Test <input checked="" type="checkbox"/> No Determination Possible	Lab Sample No(s)		12582791	12582793
	Customer Sample Reference		SR203_5.0	SR205_6.0
	AGS Reference			
	Depth (m)		5.00	6.00
	Container		250g Amber Jar 60g VOC (ALE215)	60g VOC (ALE215) 250g Amber Jar
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Oxygenates (S)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PAH by GCMS	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sample description	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total Organic Carbon	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
VOC MS (S)	All	NDPs: 0 Tests: 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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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
12582791	SB203_5.0	5.00	Light Brown	Sand	0.1 - 2 mm	N/A	N/A
12582793	SB205_6.0	6.00	Light Brown	Sandy Clay	0.1 - 2 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.



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PAH by GCMS

Results Legend		Customer Sample Ref.	SB203_5.0	SB205_6.0			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.		5.00	6.00			
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid			
diss.filt	Dissolved / filtered sample.		03/12/2015	04/12/2015			
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		05/12/2015	05/12/2015			
(F)	Trigger breach confirmed		151205-45	151205-45			
1-5&*\$@	Sample deviation (see appendix)		12582791	12582793			
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	84.9	82.2			
Acenaphthene-d10 % recovery**	%	TM218	84.5	81			
Phenanthrene-d10 % recovery**	%	TM218	83.7	79.8			
Chrysene-d12 % recovery**	%	TM218	80.7	75.8			
Perylene-d12 % recovery**	%	TM218	85.3	77.1			
Naphthalene	<9 µg/kg	TM218	<9	<9			
			M	M			
Acenaphthylene	<12 µg/kg	TM218	<12	<12			
			M	M			
Acenaphthene	<8 µg/kg	TM218	<8	<8			
			M	M			
Fluorene	<10 µg/kg	TM218	<10	<10			
			M	M			
Phenanthrene	<15 µg/kg	TM218	<15	<15			
			M	M			
Anthracene	<16 µg/kg	TM218	<16	<16			
			M	M			
Fluoranthene	<17 µg/kg	TM218	<17	<17			
			M	M			
Pyrene	<15 µg/kg	TM218	<15	<15			
			M	M			
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14			
			M	M			
Chrysene	<10 µg/kg	TM218	<10	<10			
			M	M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15			
			M	M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14			
			M	M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15			
			M	M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18			
			M	M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23			
			M	M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24			
			M	M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



CERTIFICATE OF ANALYSIS

Validated

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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)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



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Test Completion Dates

Lab Sample No(s)	12582791	12582793
Customer Sample Ref.	SB203_5.0	SB205_6.0
AGS Ref.		
Depth	5.00	6.00
Type	SOLID	SOLID

EPH CWG (Aliphatic) GC (S)	09-Dec-2015	09-Dec-2015
EPH CWG (Aromatic) GC (S)	09-Dec-2015	09-Dec-2015
GRO by GC-FID (S)	08-Dec-2015	08-Dec-2015
Oxygenates (S)	08-Dec-2015	08-Dec-2015
PAH by GCMS	10-Dec-2015	09-Dec-2015
Sample description	07-Dec-2015	07-Dec-2015
Total Organic Carbon	09-Dec-2015	09-Dec-2015
VOC MS (S)	08-Dec-2015	08-Dec-2015



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ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1290
Total Aliphatics >C12-C35	TM173	88.54 68.25 : 114.73

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1290
Total Aromatics >EC12-EC35	TM173	87.33 60.67 : 124.27

GRO by GC-FID (S)

Component	Method Code	QC 1277
Benzene by GC (Moisture Corrected)	TM089	102.0 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	105.0 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	104.75 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	101.0 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	105.5 80.03 : 117.19
QC	TM089	89.82 75.74 : 124.65
Toluene by GC (Moisture Corrected)	TM089	103.0 82.06 : 117.54

Oxygenates (S)

Component	Method Code	QC 1234
Benzene raw	TM288	92.0 77.75 : 124.62
Diisopropyl ether raw	TM288	109.0 81.07 : 125.84
Ethanol raw	TM288	56.7 12.71 : 182.13
Ethylbenzene raw	TM288	109.5 86.91 : 124.43
o-Xylene raw	TM288	102.75 82.52 : 115.85
p/m-Xylene raw	TM288	108.62 82.74 : 124.08
tert Butanol raw	TM288	81.0 27.29 : 165.57
tert-amyl methyl ether raw	TM288	104.0 82.15 : 125.05



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Oxygenates (S)

		QC 1234
tert-butyl ethyl ether raw	TM288	106.5 81.24 : 125.04
tert-butyl methyl ether raw	TM288	105.5 80.97 : 130.09
Toluene raw	TM288	91.0 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1216	QC 1219
Acenaphthene	TM218	89.0 76.50 : 121.50	88.0 76.50 : 121.50
Acenaphthylene	TM218	86.5 73.50 : 118.50	85.5 73.50 : 118.50
Anthracene	TM218	87.5 74.25 : 117.75	87.5 74.25 : 117.75
Benz(a)anthracene	TM218	92.0 82.07 : 118.33	93.0 82.07 : 118.33
Benzo(a)pyrene	TM218	96.0 79.75 : 116.97	99.0 79.75 : 116.97
Benzo(b)fluoranthene	TM218	90.0 82.41 : 117.15	102.0 82.41 : 117.15
Benzo(ghi)perylene	TM218	94.5 77.09 : 114.38	83.5 77.09 : 114.38
Benzo(k)fluoranthene	TM218	97.5 81.43 : 115.17	97.0 81.43 : 115.17
Chrysene	TM218	90.0 82.50 : 113.51	84.0 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	93.5 81.00 : 120.00	87.0 81.00 : 120.00
Fluoranthene	TM218	92.5 78.67 : 117.61	89.5 78.67 : 117.61
Fluorene	TM218	92.0 76.50 : 121.50	89.5 76.50 : 121.50
Indeno(123cd)pyrene	TM218	90.5 79.19 : 117.60	85.0 79.19 : 117.60
Naphthalene	TM218	88.0 77.00 : 117.50	84.5 77.00 : 117.50
Phenanthrene	TM218	88.5 75.00 : 123.00	87.5 75.00 : 123.00
Pyrene	TM218	90.5 77.82 : 116.98	90.0 77.82 : 116.98

Total Organic Carbon

Component	Method Code	QC 1276
Total Organic Carbon	TM132	100.91 88.82 : 111.18

VOC MS (S)



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VOC MS (S)

Component	Method Code	QC 1275
1,1,1,2-tetrachloroethane	TM116	103.2 76.60 : 121.00
1,1,1-Trichloroethane	TM116	97.6 77.80 : 123.40
1,1,2-Trichloroethane	TM116	98.2 75.40 : 119.80
1,1-Dichloroethane	TM116	100.8 80.84 : 124.49
1,2-Dichloroethane	TM116	116.0 88.45 : 118.84
1,4-Dichlorobenzene	TM116	95.2 80.88 : 114.60
2-Chlorotoluene	TM116	87.6 74.00 : 117.20
4-Chlorotoluene	TM116	84.6 71.20 : 113.20
Benzene	TM116	100.0 79.60 : 125.20
Carbon Disulphide	TM116	100.0 74.91 : 122.14
Carbontetrachloride	TM116	110.8 87.07 : 120.37
Chlorobenzene	TM116	102.0 83.47 : 116.82
Chloroform	TM116	108.2 82.00 : 128.80
Chloromethane	TM116	110.2 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	112.0 81.20 : 128.00
Dibromomethane	TM116	105.2 73.40 : 116.60
Dichloromethane	TM116	116.8 86.60 : 137.00
Ethylbenzene	TM116	94.2 73.60 : 115.60
Hexachlorobutadiene	TM116	76.8 42.69 : 142.65
Isopropylbenzene	TM116	87.2 72.52 : 117.52
Naphthalene	TM116	106.2 83.23 : 126.48
o-Xylene	TM116	86.6 69.60 : 110.40
p/m-Xylene	TM116	90.5 71.30 : 112.70
Sec-Butylbenzene	TM116	86.4 59.20 : 125.20
Tetrachloroethene	TM116	111.8 85.92 : 127.92
Toluene	TM116	91.4 76.08 : 110.17



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VOC MS (S)

		QC 1275
Trichloroethene	TM116	101.0 78.17 : 121.37
Trichlorofluoromethane	TM116	121.4 83.78 : 132.82
Vinyl Chloride	TM116	91.0 66.81 : 138.46

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.



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Chromatogram

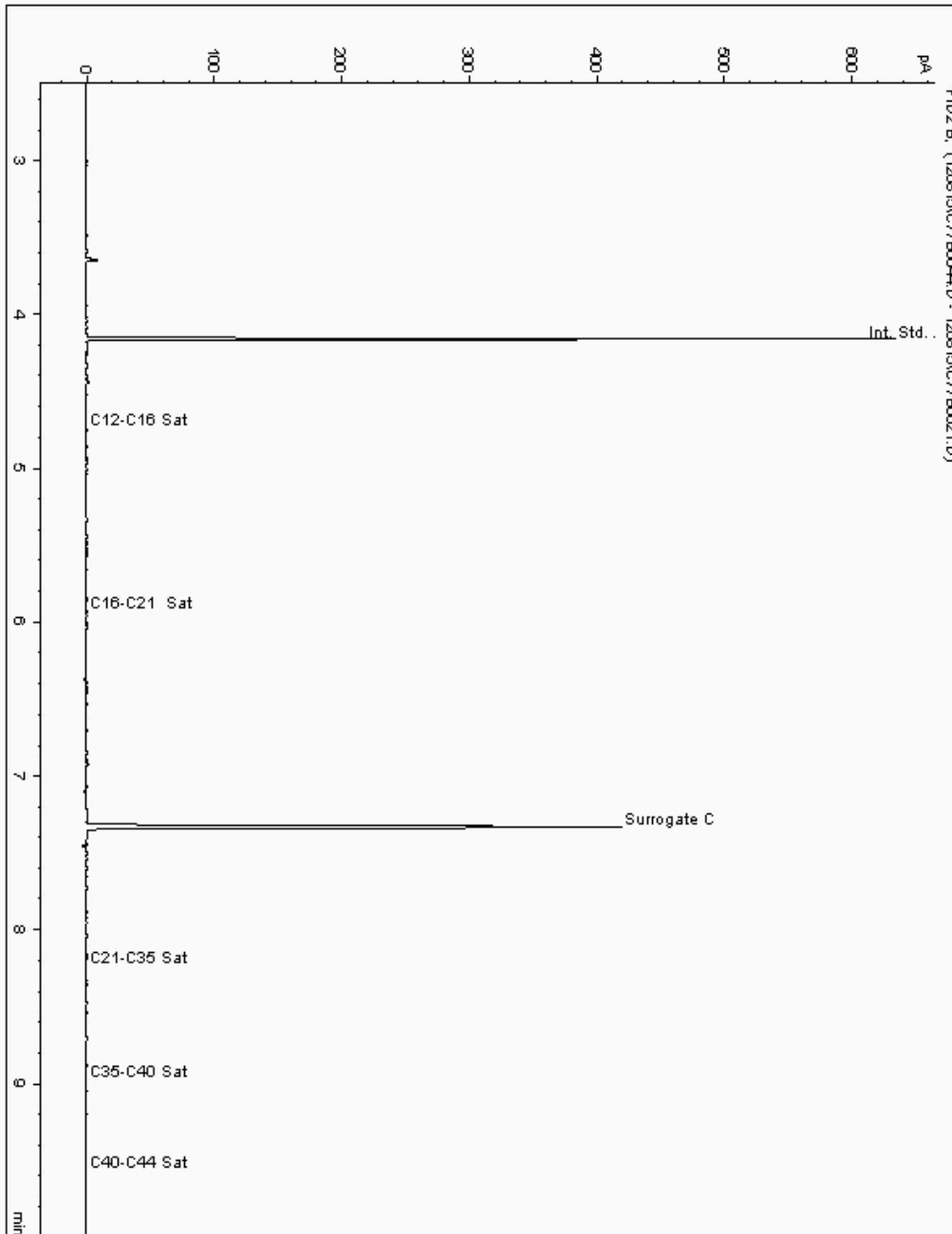
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12589593
Sample ID : SB205_6.0

Depth : 6.00

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

Sample Identity: 11894652-
Date Acquired : 08/12/2015 23:41:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.983





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Chromatogram

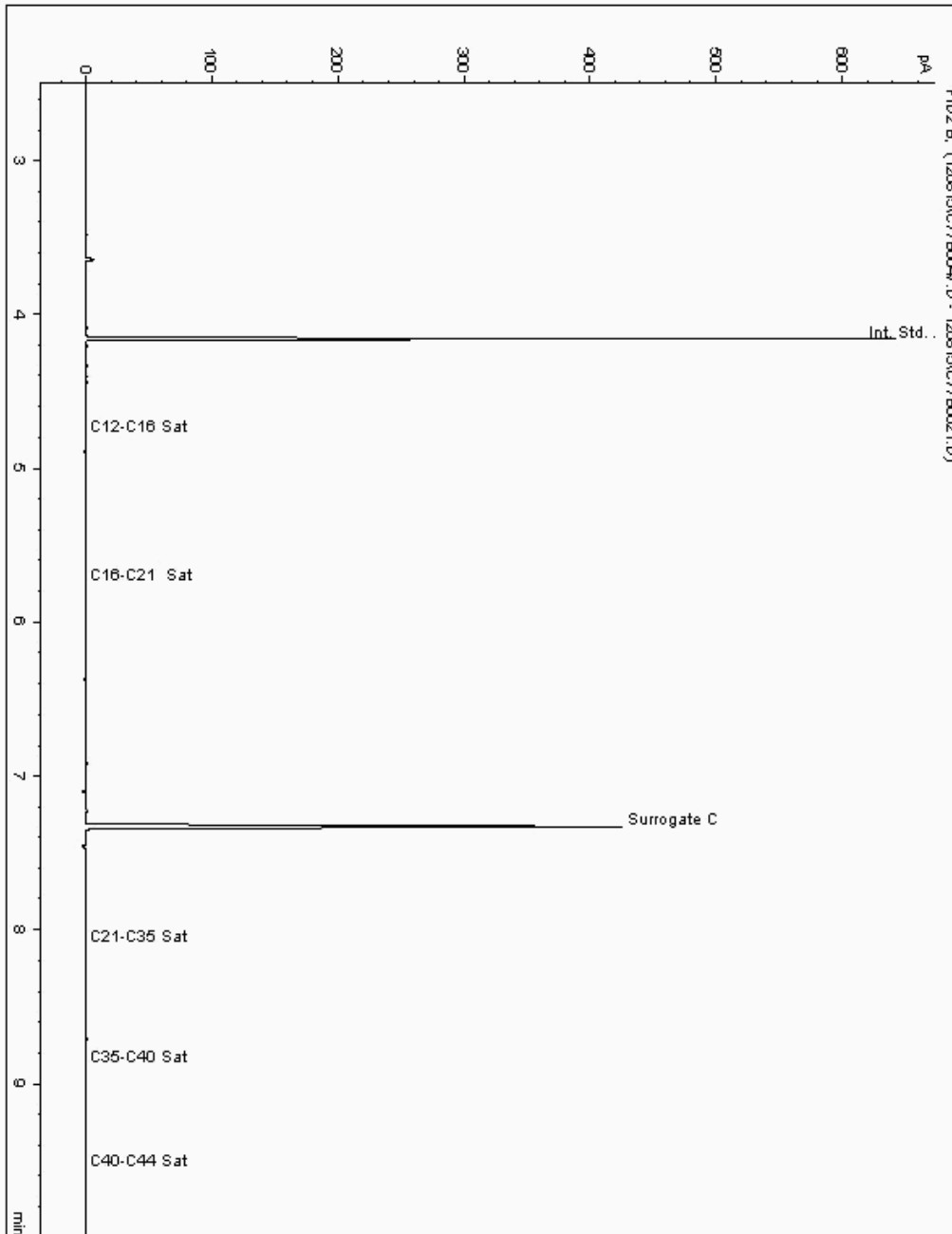
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12589629
Sample ID : SB203_5.0

Depth : 5.00

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

Sample Identity: 11894640-
Date Acquired : 09/12/2015 00:33:50 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.042





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Chromatogram

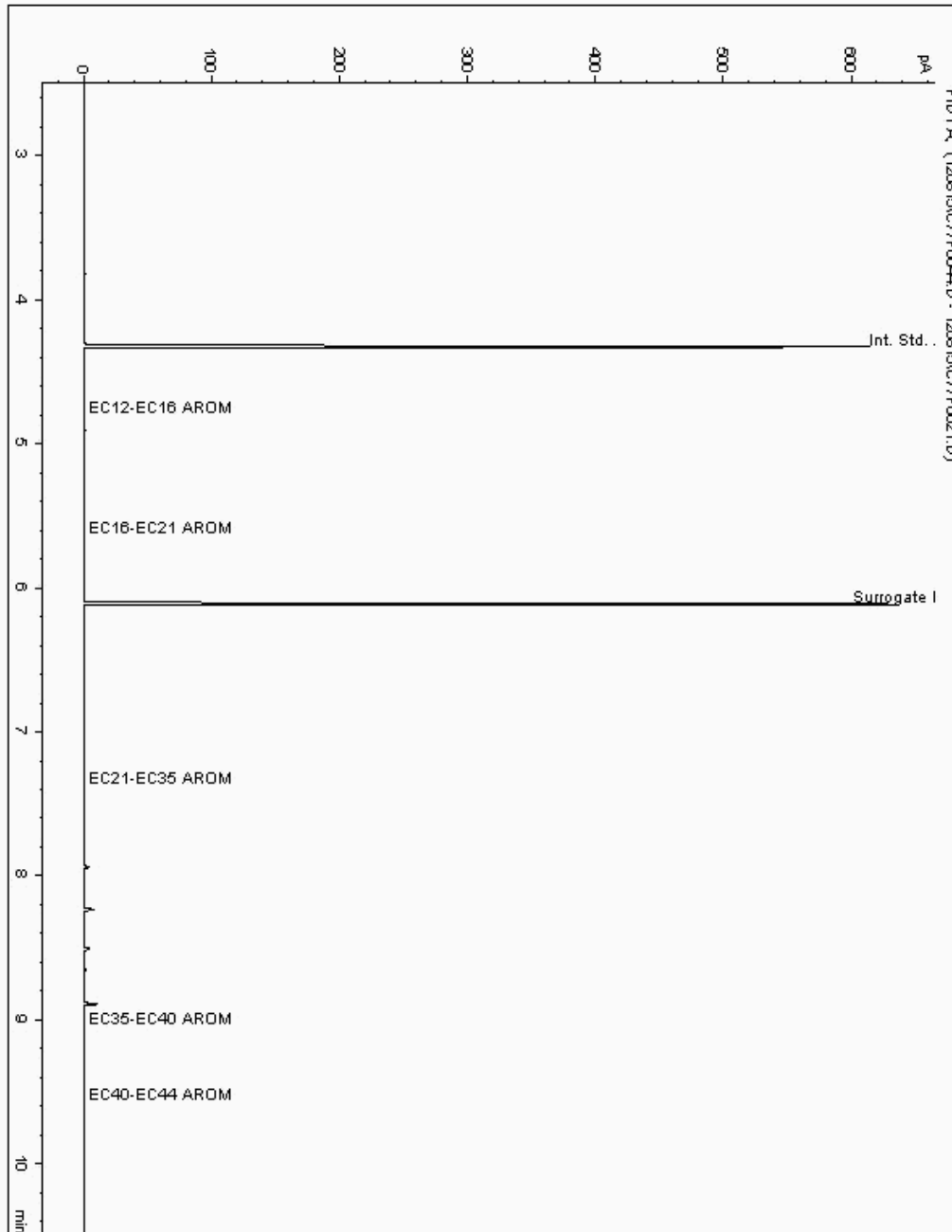
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12589593
Sample ID : SB205_6.0

Depth : 6.00

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

Sample Identity: 11894653-
Date Acquired : 08/12/2015 23:41:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.983





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Chromatogram

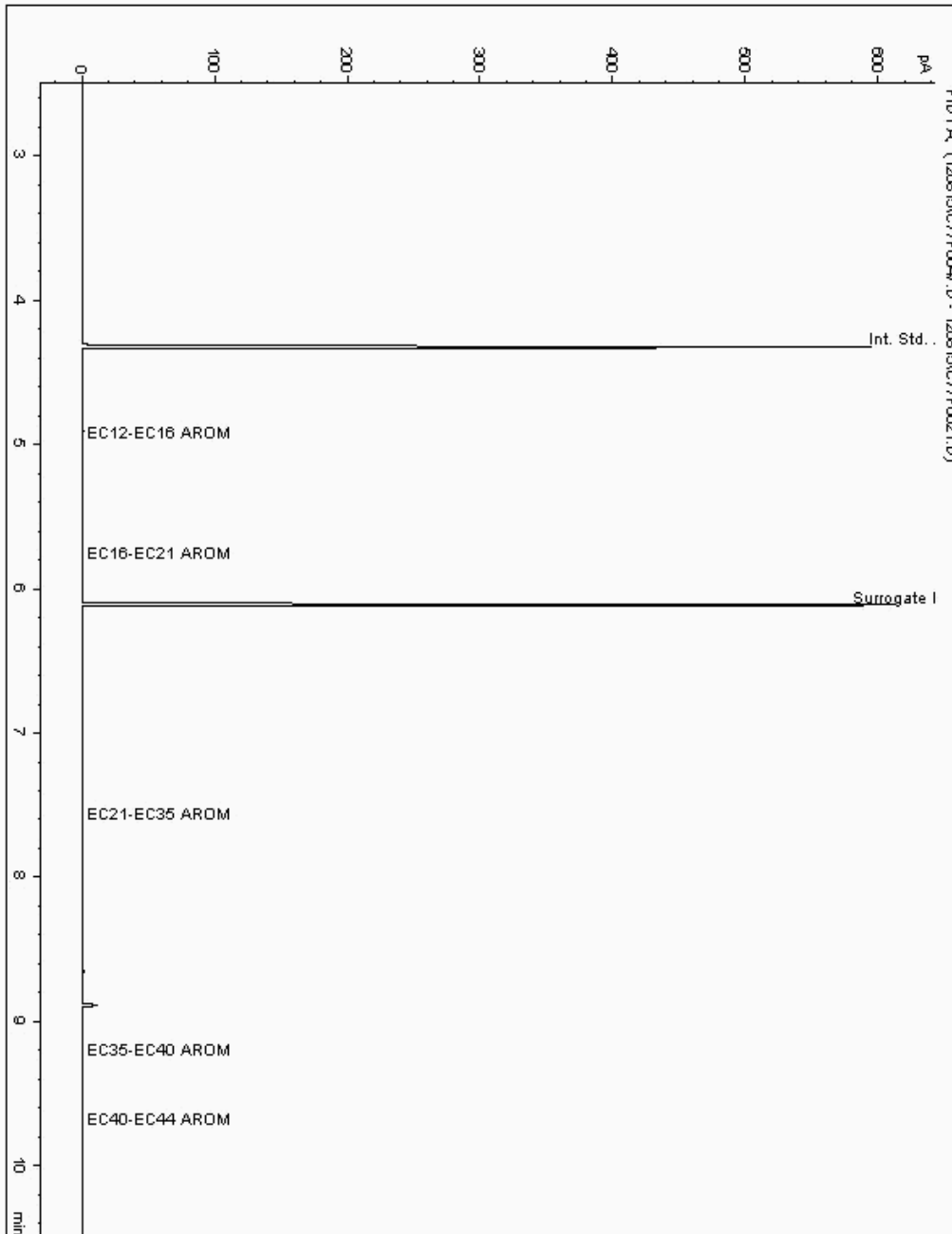
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12589629
Sample ID : SB203_5.0

Depth : 5.00

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

Sample Identity: 11894641-
Date Acquired : 09/12/2015 00:33:50 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.042





SDG: 151205-45
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Client Reference: 46370438

Location: Shell Blackhorse
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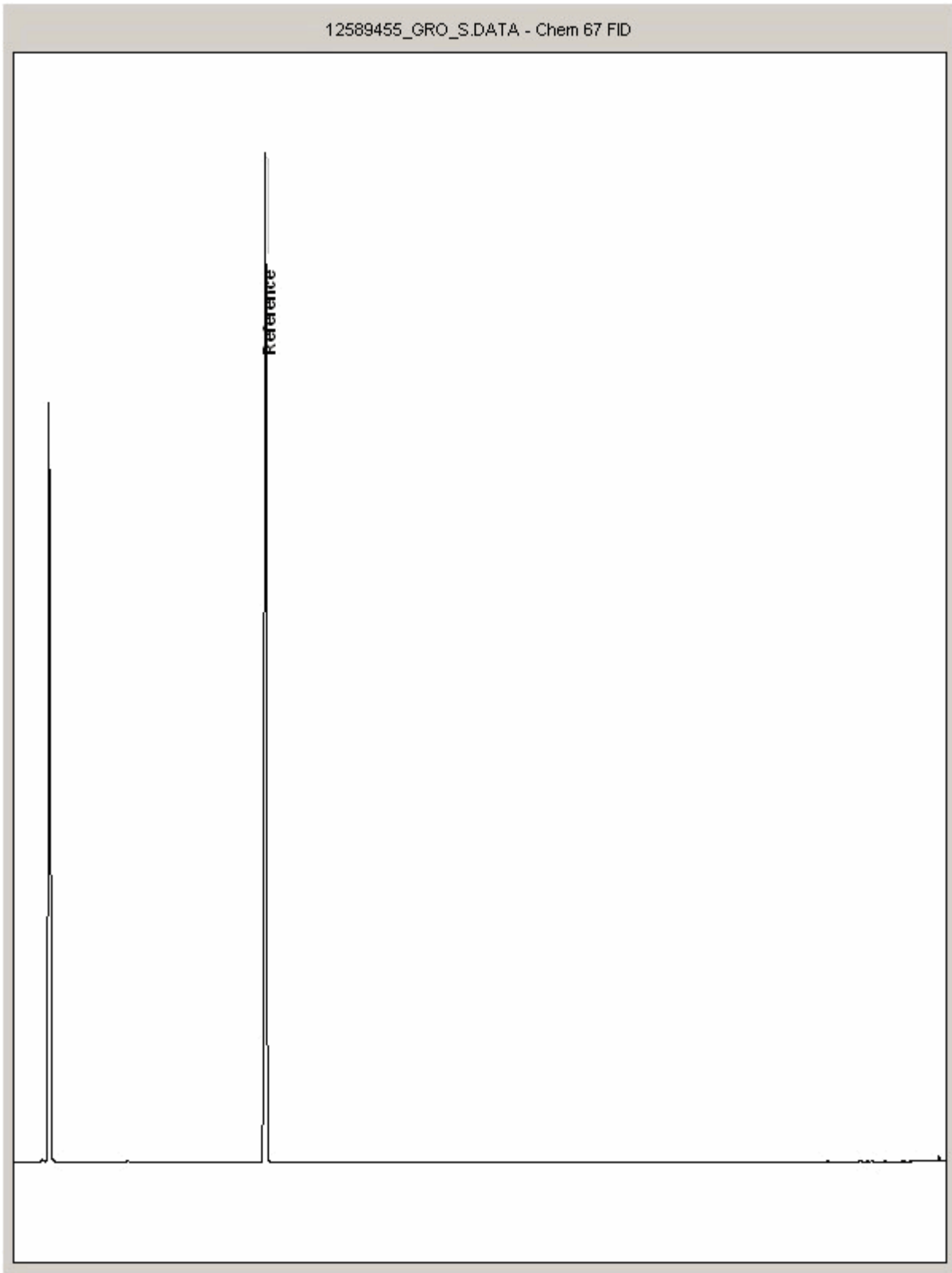
Order Number: 60479811
Report Number: 342319
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Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12589455
Sample ID : SB203_5.0

Depth : 5.00





SDG: 151205-45
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Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
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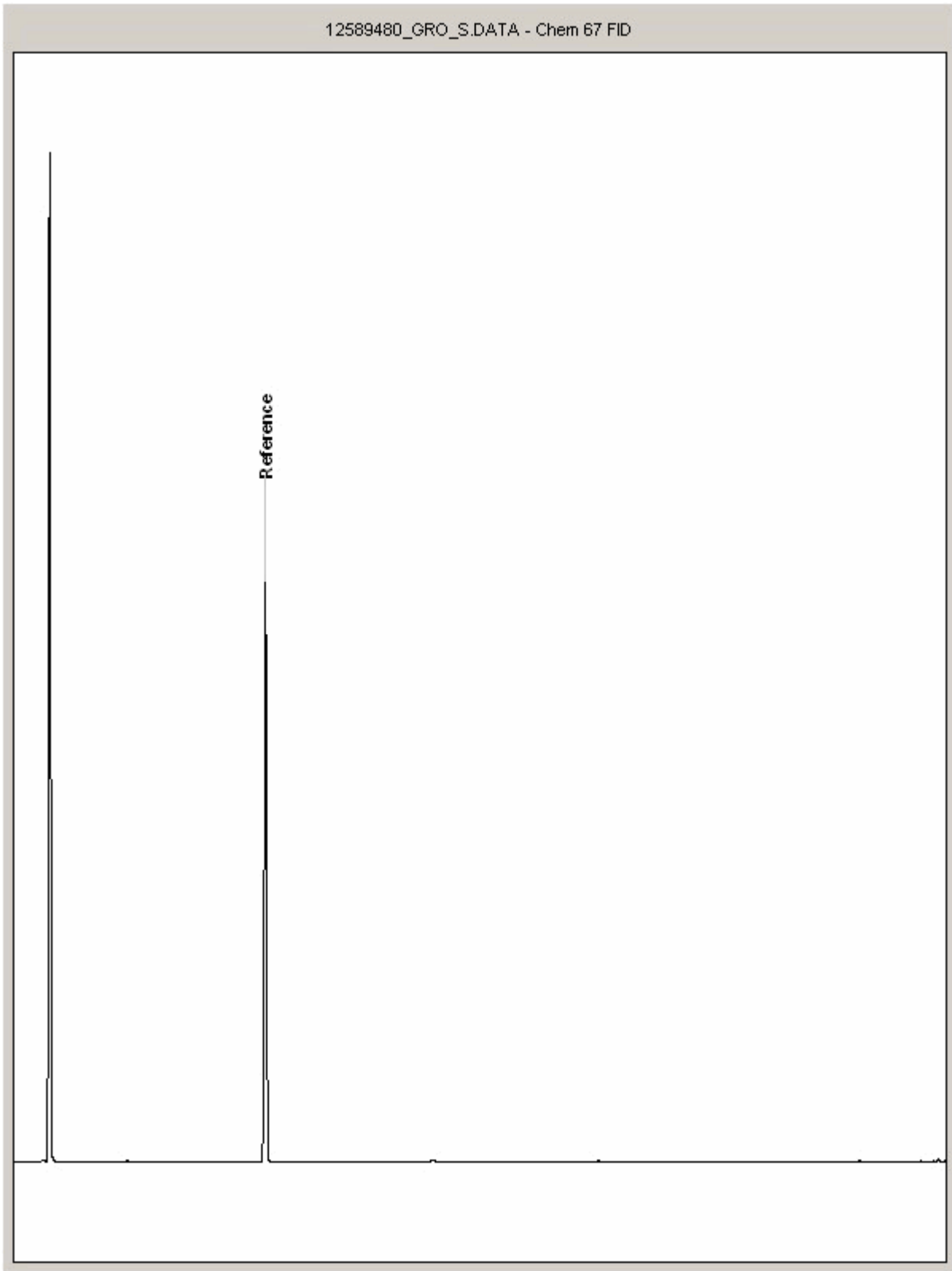
Order Number: 60479811
Report Number: 342319
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Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12589480
Sample ID : SB205_6.0

Depth : 6.00



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Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOX THERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOX THERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOX THERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOX THERM	HPLC
PHENOLSBYGCMS	WET	DCM	SOX THERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOX THERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOX THERM	GCMS
EPH (DR O)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH (MINO L)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH (CL EANED UP)	D&C	HEXANEACETONE	END OVEREND	GC-FD
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GC-FD
PCB TOT/PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM218	GCMS
C8-C40(C6-C40)EZ FLASH	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DCMACEONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
EPH	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
EPH CWG	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
MINERAL OIL	HEXANE	STIRREXTRACTION(STIR -BAR)	GC FD
PCB 7CONGENERS	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
PCB TOTAL	HEXANE	STIRREXTRACTION(STIR -BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PESTOC/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRAZNE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOL SMS	DCM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL byR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECTINJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anophyllite	-
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 MDHS 100.

The identification of asbestos containing materials 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.

SDG: 151205-45
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342319
Superseded Report: 341487

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 14 December 2015
Customer: H_URS_WIM
Sample Delivery Group (SDG): 151208-43
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 342025

This report has been revised and directly supersedes 341659 in its entirety.

We received 7 samples on Tuesday December 08, 2015 and 7 of these samples were scheduled for analysis which was completed on Thursday December 10, 2015. 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





CERTIFICATE OF ANALYSIS

Validated

SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12595735	TP201		0.50	07/12/2015
12595736	TP202		0.50	07/12/2015
12595739	TP203		0.60	07/12/2015
12595742	TP204		0.60	07/12/2015
12595743	TP205		0.50	07/12/2015
12595744	TP206		0.50	07/12/2015
12595745	TP207		0.80	07/12/2015

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

SOLID	
Results Legend <input checked="" type="checkbox"/> Test <input type="checkbox"/> No Determination Possible	Lab Sample No(s)
	Customer Sample Reference
	AGS Reference
	Depth (m)
	Container
Asbestos ID in Solid Samples	All NDPs: 0 Tests: 7 X X X X X X X



SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

Asbestos Identification - Solid Samples

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP201 0.50 SOLID 07/12/2015 00:00:00 08/12/2015 15:29:44 151208-43 12595735 TM048	09/12/2015	Rebecca Rawlings	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP202 0.50 SOLID 07/12/2015 00:00:00 08/12/2015 15:27:40 151208-43 12595736 TM048	10/12/2015	Rebecca Rawlings	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP203 0.60 SOLID 07/12/2015 00:00:00 09/12/2015 19:35:12 151208-43 12595739 TM048	10/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP204 0.60 SOLID 07/12/2015 00:00:00 09/12/2015 19:26:54 151208-43 12595742 TM048	10/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP205 0.50 SOLID 07/12/2015 00:00:00 09/12/2015 19:39:14 151208-43 12595743 TM048	10/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP206 0.50 SOLID 07/12/2015 00:00:00 09/12/2015 19:32:39 151208-43 12595744 TM048	10/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP207 0.80 SOLID 07/12/2015 00:00:00 09/12/2015 19:29:40 151208-43 12595745 TM048	10/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

Test Completion Dates

Lab Sample No(s)	12595735	12595736	12595739	12595742	12595743	12595744	12595745
Customer Sample Ref.	TP201	TP202	TP203	TP204	TP205	TP206	TP207
AGS Ref.							
Depth	0.50	0.50	0.60	0.60	0.50	0.50	0.80
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	09-Dec-2015	10-Dec-2015	10-Dec-2015	10-Dec-2015	10-Dec-2015	10-Dec-2015	10-Dec-2015



CERTIFICATE OF ANALYSIS

Validated

SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

SDG: 151208-43
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342025
Superseded Report: 341659

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 16 December 2015
Customer: H_URS_WIM
Sample Delivery Group (SDG): 151210-90
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 342339

We received 14 samples on Thursday December 10, 2015 and 14 of these samples were scheduled for analysis which was completed on Wednesday December 16, 2015. 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: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12613834	DUP01			09/12/2015
12613838	EQT BLANK			09/12/2015
12613817	EX01		2.00	09/12/2015
12613818	EX02		2.00	09/12/2015
12613819	EX03		3.50	09/12/2015
12613820	EX04		2.50	09/12/2015
12613824	EX05		2.20	09/12/2015
12613830	EX06		2.30	09/12/2015
12613831	EX07		3.20	09/12/2015
12613832	MW3			09/12/2015
12613833	MW4			09/12/2015
12613839	TRIP BLANK BCBQ5527V			09/12/2015
12613837	VP201 142			09/12/2015
12613836	VP201(DUP) 210			09/12/2015

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

GAS

Results Legend



Test



No Determination Possible

Lab Sample No(s)

12613836
12613837

Customer Sample Reference

VP201(DUP) 210
VP201 142

AGS Reference

Depth (m)

Container

TD tube
TD tube

UST Gases

All

NDPs: 0
Tests: 2

X X



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 342339
 Superseded Report:

LIQUID Results Legend	Lab Sample No(s)			
	Customer Sample Reference	AGS Reference	Depth (m)	Container
<p>X Test</p> <p>N No Determination Possible</p>	12613839 12613833 12613832 12613838 12613834	TRIP BLANK MW4 MW3 EQT BLANK DUP01		Vial (ALE297) Vial (ALE297) 1000ml glass bottle Vial (ALE297) 1000ml glass bottle Vial (ALE297) Vial (ALE297) 1000ml glass bottle
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3	X	X X X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 3	X	X X X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 3	X	X X X
Oxygenates (W)	All	NDPs: 0 Tests: 3	X	X X X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 3	X	X X X
VOC MS (W)	All	NDPs: 0 Tests: 5	X	X X X X X



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 342339
 Superseded Report:

SOLID Results Legend	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container		
	12613817	12613818	12613819	12613820	12613824	12613830	12613831
X Test N No Determination Possible		EX01		2.00	250g Amber Jar (AL)		
		EX02		2.00	250g Amber Jar (AL)		
		EX03		3.50	250g Amber Jar (AL)		
		EX04		2.50	60g VOC (ALEZ15)		
		EX05		2.20	250g Amber Jar (AL)		
		EX06		2.30	250g Amber Jar (AL)		
		EX07		3.20	60g VOC (ALEZ15)		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 7				X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 7				X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 7				X	X
Oxygenates (S)	All	NDPs: 0 Tests: 7				X	X
PAH by GCMS	All	NDPs: 0 Tests: 7				X	X
Sample description	All	NDPs: 0 Tests: 7				X	X
Total Organic Carbon	All	NDPs: 0 Tests: 1					X
VOC MS (S)	All	NDPs: 0 Tests: 7				X	X

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

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Attention: Phil Allen

Order Number: 60479811
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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
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
12613817	EX01	2.00	Light Brown	Sand	0.1 - 2 mm	Stones	None
12613818	EX02	2.00	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	None
12613819	EX03	3.50	Light Brown	Sand	0.1 - 2 mm	Stones	None
12613820	EX04	2.50	Light Brown	Sand	0.1 - 2 mm	Stones	None
12613824	EX05	2.20	Dark Brown	Sand	0.1 - 2 mm	Stones	None
12613830	EX06	2.30	Light Brown	Sand	0.1 - 2 mm	Stones	None
12613831	EX07	3.20	Light Brown	Sand	0.1 - 2 mm	Stones	None

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

Validated

SDG: 151210-90
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Order Number: 60479811
Report Number: 342339
Superseded Report:

Table with columns: Results Legend, Customer Sample R, DUP01, EX01, EX02, EX03, EX04, EX05. Rows include component analysis for Ethanol, tert Butanol, Diisopropyl ether, tert-butyl ethyl ether, and Moisture Content Ratio.



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

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Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Results Legend		Customer Sample R	EX06	EX07	MW3	MW4	VP201 142	VP201(DUP) 210	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference							
M	mCERTS accredited.		2.30	3.20					
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid	Water(GW/SW)	Water(GW/SW)	Gas	Gas	
diss.filt	Dissolved / filtered sample.		09/12/2015	09/12/2015	09/12/2015	09/12/2015	09/12/2015	09/12/2015	
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		10/12/2015	10/12/2015	10/12/2015	10/12/2015	10/12/2015	10/12/2015	
(F)	Trigger breach confirmed		151210-90	151210-90	151210-90	151210-90	151210-90	151210-90	
1-5&*\$@	Sample deviation (see appendix)		12613830	12613831	12613832	12613833	12613837	12613836	
Component	LOD/Units	Method							
MTBE	ug/m ³	TM278					<5	<5	
Hexane	ug/m ³	TM278					22.1	21.2	
DIPE	ug/m ³	TM278					<5	<5	
ETBE	ug/m ³	TM278					<5	<5	
Benzene	ug/m ³	TM278					6.67	5.73	
TAME	ug/m ³	TM278					<5	<5	
Toluene	ug/m ³	TM278					41.2	34.2	
Octane	ug/m ³	TM278					2.94	<2.5	
Ethylbenzene	ug/m ³	TM278					8.38	6.75	
p/m-Xylene	ug/m ³	TM278					19.1	21.8	
o-Xylene	ug/m ³	TM278					6.19	7.57	
Decane	ug/m ³	TM278					<0.8	<0.8	
1,2,3-Trimethylbenzene	ug/m ³	TM278					<3	<3	
Dodecane	ug/m ³	TM278					4.39	4.55	
Naphthalene	ug/m ³	TM278					<2	<2	
1-Methylnaphthalene	ug/m ³	TM278					<4	<4	
GRO C6-C12	ug/m ³	TM278					924	927	
Ethanol	<50 ug/l	TM289			<50	<50			
tert Butanol	<10 ug/l	TM289			<10	<10			
Diisopropyl ether	<1 ug/l	TM289			<1	<1			
tert-butyl ethyl ether	<1 ug/l	TM289			<1	<1			
Moisture Content Ratio (% of as received sample)	%	PM024	0.78	2.6					
Fraction Organic Carbon Low	<0.0002	TM132		0.000765	#				
Ethanol	<50 ug/kg	TM288	<50	<50					
tert Butanol	<10 ug/kg	TM288	<10	<10					
Diisopropyl ether	<1 ug/kg	TM288	<1	<1					
tert-butyl ethyl ether	<1 ug/kg	TM288	<1	<1					



SDG: 151210-90
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Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

EPH CWG (Aliphatic) Aqueous GC (W)

Table with columns: Results Legend, Customer Sample R, DUP01, MW3, MW4, Component, LOD/Units, Method. Includes data for Aliphatics >C12-C16 (aq), Aliphatics >C16-C21 (aq), and Aliphatics >C21-C35 (aq).



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

EPH CWG (Aliphatic) GC (S)

Table with columns for Component, LOD/Units, Method, and sample results for EX01 through EX06. Includes a Results Legend and Customer Sample R details.



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

EPH CWG (Aromatic) Aqueous GC (W)

Table with columns: Results Legend, Customer Sample R, DUP01, MW3, MW4, Component, LOD/Units, Method. Includes data for Aromatics >EC12-EC16, >EC16-EC21, >EC21-EC35.



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EX01, EX02, EX03, EX04, EX05, EX06. Rows include component names like 'Aromatics >EC12-EC16' and their corresponding LOD/Units, Method, and concentrations across different sample depths and times.



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Component, LOD/Units, Method, and results. Includes a Results Legend and Customer Sample R information.



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

GRO by GC-FID (S)

Table with columns: Component, LOD/Units, Method, and data rows for GRO Surrogate % recovery and various Aliphatics and Aromatics.



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

GRO by GC-FID (W)

Table with columns: Results Legend, Customer Sample R, DUP01, MW3, MW4, Component, LOD/Units, Method. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 342339
 Superseded Report:

PAH by GCMS

Results Legend		Customer Sample R	EX01	EX02	EX03	EX04	EX05	EX06
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	EX01	EX02	EX03	EX04	EX05	EX06
M	mCERTS accredited.		2.00	2.00	3.50	2.50	2.20	2.30
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
diss.filt	Dissolved / filtered sample.		09/12/2015	09/12/2015	09/12/2015	09/12/2015	09/12/2015	09/12/2015
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		10/12/2015	10/12/2015	10/12/2015	10/12/2015	10/12/2015	10/12/2015
1-5&*\$@	Sample deviation (see appendix)		151210-90	151210-90	151210-90	151210-90	151210-90	151210-90
			12613817	12613818	12613819	12613820	12613824	12613830
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	91	89.5	85.8	90.5	83.6	86.2
Acenaphthene-d10 % recovery**	%	TM218	86.3	85.2	81.3	85.3	80.5	82.1
Phenanthrene-d10 % recovery**	%	TM218	85.6	85.5	81.9	84.3	78.8	82
Chrysene-d12 % recovery**	%	TM218	85.2	83.3	80	83.5	78.9	79.7
Perylene-d12 % recovery**	%	TM218	82.8	81	77.8	80.6	78.5	75.2
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	<9	<9	<9
			M	M	M	M	M	M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	<12	<12	<12
			M	M	M	M	M	M
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8	<8	<8
			M	M	M	M	M	M
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10	<10	<10
			M	M	M	M	M	M
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	<15	37	<15
			M	M	M	M	M	M
Anthracene	<16 µg/kg	TM218	<16	<16	<16	<16	<16	<16
			M	M	M	M	M	M
Fluoranthene	<17 µg/kg	TM218	<17	<17	<17	<17	125	<17
			M	M	M	M	M	M
Pyrene	<15 µg/kg	TM218	<15	<15	<15	<15	197	<15
			M	M	M	M	M	M
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	<14	122	<14
			M	M	M	M	M	M
Chrysene	<10 µg/kg	TM218	<10	<10	<10	<10	157	<10
			M	M	M	M	M	M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	<15	<15	174	<15
			M	M	M	M	M	M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	<14	64.1	<14
			M	M	M	M	M	M
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	<15	170	<15
			M	M	M	M	M	M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	<18	113	<18
			M	M	M	M	M	M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	<23	37.2	<23
			M	M	M	M	M	M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	<24	210	<24
			M	M	M	M	M	M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	<118	<118	1410	<118



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 342339
 Superseded Report:

PAH by GCMS

Results Legend		Customer Sample R	EX07				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20				
M	mCERTS accredited.		Soil/Solid				
aq	Aqueous / settled sample.		09/12/2015				
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		10/12/2015				
*	Subcontracted test.		151210-90				
**	% 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		12613831				
(F)	Trigger breach confirmed						
1-5&*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	89.4				
Acenaphthene-d10 % recovery**	%	TM218	83.6				
Phenanthrene-d10 % recovery**	%	TM218	83.4				
Chrysene-d12 % recovery**	%	TM218	82.7				
Perylene-d12 % recovery**	%	TM218	80.8				
Naphthalene	<9 µg/kg	TM218	<9	M			
Acenaphthylene	<12 µg/kg	TM218	<12	M			
Acenaphthene	<8 µg/kg	TM218	<8	M			
Fluorene	<10 µg/kg	TM218	<10	M			
Phenanthrene	<15 µg/kg	TM218	<15	M			
Anthracene	<16 µg/kg	TM218	<16	M			
Fluoranthene	<17 µg/kg	TM218	<17	M			
Pyrene	<15 µg/kg	TM218	<15	M			
Benzo(a)anthracene	<14 µg/kg	TM218	<14	M			
Chrysene	<10 µg/kg	TM218	<10	M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	M			
Benzo(a)pyrene	<15 µg/kg	TM218	<15	M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118				



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 342339
 Superseded Report:

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample R	DUP01	MW3	MW4			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.		Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
aq	Aqueous / settled sample.		09/12/2015	09/12/2015	09/12/2015			
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.		10/12/2015	10/12/2015	10/12/2015			
*	Subcontracted test.		151210-90	151210-90	151210-90			
**	% 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		12613834	12613832	12613833			
(F)	Trigger breach confirmed							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units		Method					
Naphthalene (aq)	<0.1 µg/l	TM178	<0.1 #	<0.1 #	<0.1 #			
Acenaphthene (aq)	<0.015 µg/l	TM178	<0.015 #	<0.015 #	<0.015 #			
Acenaphthylene (aq)	<0.011 µg/l	TM178	<0.011 #	<0.011 #	<0.011 #			
Fluoranthene (aq)	<0.017 µg/l	TM178	<0.017 #	<0.017 #	<0.017 #			
Anthracene (aq)	<0.015 µg/l	TM178	<0.015 #	<0.015 #	<0.015 #			
Phenanthrene (aq)	<0.022 µg/l	TM178	<0.022 #	<0.022 #	<0.022 #			
Fluorene (aq)	<0.014 µg/l	TM178	<0.014 #	<0.014 #	<0.014 #			
Chrysene (aq)	<0.013 µg/l	TM178	<0.013 #	<0.013 #	<0.013 #			
Pyrene (aq)	<0.015 µg/l	TM178	<0.015 #	<0.015 #	<0.015 #			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	<0.017 #	<0.017 #	<0.017 #			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	<0.023 #	<0.023 #	<0.023 #			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	<0.027 #	<0.027 #	<0.027 #			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	<0.009 #	<0.009 #	<0.009 #			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	<0.016 #	<0.016 #	<0.016 #			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	<0.016 #	<0.016 #	<0.016 #			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	<0.014 #	<0.014 #	<0.014 #			
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178	<0.344	<0.344	<0.344			



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

VOC MS (S)

Table with columns for Component, LOD/Units, Method, and sample locations EX01 through EX06. Includes a Results Legend and various chemical components like Toluene, Benzene, and Ethylbenzene.



SDG: 151210-90
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Report Number: 342339
Superseded Report:

VOC MS (S)

Table with columns: Component, LOD/Units, Method, and results for various VOCs like Toluene-d8, Methyl Tertiary Butyl Ether, Benzene, etc.



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

VOC MS (W)

Table with columns: Results Legend, Customer Sample R, DUP01, EQT BLANK, MW3, MW4, TRIP BLANK BCBQ 5527V. Rows include components like Toluene-d8**, Methyl tertiary butyl ether (MTBE), Benzene, Toluene, Ethylbenzene, m,p-Xylene, o-Xylene, tert-Amyl methyl ether (TAME), and Sum of detected Xylenes.



CERTIFICATE OF ANALYSIS

Validated

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
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		
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM278		Determination of Selective VOCs by TD-GC-MS		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



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Superseded Report:

Test Completion Dates

Lab Sample No(s)	12613834	12613838	12613817	12613818	12613819	12613820	12613824	12613830	12613831	12613832
Customer Sample Ref.	DUP01	EQT BLANK	EX01	EX02	EX03	EX04	EX05	EX06	EX07	MW3
AGS Ref.										
Depth			2.00	2.00	3.50	2.50	2.20	2.30	3.20	
Type	LIQUID	LIQUID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	16-Dec-2015									16-Dec-2015
EPH CWG (Aliphatic) GC (S)			15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	
EPH CWG (Aromatic) Aqueous GC (W)	16-Dec-2015									16-Dec-2015
EPH CWG (Aromatic) GC (S)			15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	
GRO by GC-FID (S)			14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	
GRO by GC-FID (W)	11-Dec-2015									11-Dec-2015
Oxygenates (S)			15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	
Oxygenates (W)	15-Dec-2015									15-Dec-2015
PAH by GCMS			16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	
PAH Spec MS - Aqueous (W)	16-Dec-2015									16-Dec-2015
Sample description			12-Dec-2015	12-Dec-2015	12-Dec-2015	12-Dec-2015	12-Dec-2015	12-Dec-2015	12-Dec-2015	
Total Organic Carbon									14-Dec-2015	
TPH CWG (W)	16-Dec-2015									16-Dec-2015
VOC MS (S)			14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	14-Dec-2015	
VOC MS (W)	11-Dec-2015	11-Dec-2015								11-Dec-2015

Lab Sample No(s)	12613833	12613839	12613837	12613836
Customer Sample Ref.	MW4	TRIP BLANK BCBQ 5527V	VP201 142	VP201(DUP) 210
AGS Ref.				
Depth				
Type	LIQUID	LIQUID	GAS	GAS
EPH CWG (Aliphatic) Aqueous GC (W)	16-Dec-2015			
EPH CWG (Aromatic) Aqueous GC (W)	16-Dec-2015			
GRO by GC-FID (W)	11-Dec-2015			
Oxygenates (W)	15-Dec-2015			
PAH Spec MS - Aqueous (W)	16-Dec-2015			
TPH CWG (W)	16-Dec-2015			
UST Gases			16-Dec-2015	16-Dec-2015
VOC MS (W)	11-Dec-2015	11-Dec-2015		



SDG: 151210-90
 Job: H_URS_WIM-282
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 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 1222
Total Aliphatics >C12-C35	TM174	91.04 66.67 : 110.42

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1265
Total Aliphatics >C12-C35	TM173	95.83 62.50 : 112.50

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 1223
Total Aromatics >EC12-EC35	TM174	106.67 63.00 : 121.00

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1265
Total Aromatics >EC12-EC35	TM173	89.33 60.62 : 126.95

GRO by GC-FID (S)

Component	Method Code	QC 1233
Benzene by GC (Moisture Corrected)	TM089	99.0 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	99.0 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	98.75 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	96.5 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	98.5 80.03 : 117.19
QC	TM089	87.54 75.74 : 124.65
Toluene by GC (Moisture Corrected)	TM089	99.0 82.06 : 117.54



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
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Order Number: 60479811
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 Superseded Report:

GRO by GC-FID (W)

Component	Method Code	QC 1258
Benzene by GC	TM245	99.0 77.50 : 122.50
Ethylbenzene by GC	TM245	97.0 77.50 : 122.50
m & p Xylene by GC	TM245	97.0 77.50 : 122.50
MTBE GC-FID	TM245	98.5 77.50 : 122.50
o Xylene by GC	TM245	99.0 77.50 : 122.50
QC	TM245	83.48 74.88 : 125.54
Toluene by GC	TM245	99.5 77.50 : 122.50

Oxygenates (S)

Component	Method Code	QC 1263
Benzene raw	TM288	87.75 77.75 : 124.62
Diisopropyl ether raw	TM288	96.5 81.07 : 125.84
Ethanol raw	TM288	107.0 12.71 : 182.13
Ethylbenzene raw	TM288	109.5 86.91 : 124.43
o-Xylene raw	TM288	105.75 82.52 : 115.85
p/m-Xylene raw	TM288	110.25 82.74 : 124.08
tert Butanol raw	TM288	118.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	98.0 82.15 : 125.05
tert-butyl ethyl ether raw	TM288	95.5 81.24 : 125.04
tert-butyl methyl ether raw	TM288	100.75 80.97 : 130.09
Toluene raw	TM288	99.25 78.97 : 116.51

Oxygenates (W)

Component	Method Code	QC 1208
Benzene	TM289	105.0 87.69 : 119.72
Diisopropyl ether	TM289	109.5 86.70 : 122.79
Ethanol	TM289	121.0 74.12 : 156.61
Ethylbenzene	TM289	98.0 84.52 : 113.38
o-Xylene	TM289	98.0 84.40 : 112.41



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Oxygenates (W)

		QC 1208
p/m-Xylene	TM289	100.25 83.20 : 115.01
tert Butanol	TM289	119.0 70.51 : 143.48
tert-amyl methyl ether	TM289	111.5 78.92 : 124.29
tert-butyl ethyl ether	TM289	109.0 78.17 : 124.34
tert-butyl methyl ether	TM289	111.0 87.75 : 127.35
Toluene	TM289	97.0 79.08 : 122.51

PAH by GCMS

Component	Method Code	QC 1252
Acenaphthene	TM218	88.0 78.41 : 114.87
Acenaphthylene	TM218	79.0 72.38 : 111.60
Anthracene	TM218	83.5 72.78 : 117.53
Benz(a)anthracene	TM218	95.0 79.50 : 130.50
Benzo(a)pyrene	TM218	95.5 79.50 : 130.50
Benzo(b)fluoranthene	TM218	96.5 78.10 : 127.57
Benzo(ghi)perylene	TM218	96.5 81.67 : 122.61
Benzo(k)fluoranthene	TM218	99.0 81.20 : 118.10
Chrysene	TM218	95.5 80.60 : 117.80
Dibenzo(ah)anthracene	TM218	98.5 77.93 : 124.42
Fluoranthene	TM218	88.0 80.39 : 114.39
Fluorene	TM218	87.5 79.50 : 118.50
Indeno(123cd)pyrene	TM218	95.0 80.30 : 128.30
Naphthalene	TM218	90.0 82.25 : 118.25
Phenanthrene	TM218	88.5 71.53 : 114.48
Pyrene	TM218	88.0 79.12 : 114.39

PAH Spec MS - Aqueous (W)



SDG: 151210-90
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
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 Superseded Report:

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 1249
Acenaphthene by GCMS	TM178	96.0 88.78 : 115.50
Acenaphthylene by GCMS	TM178	94.0 85.27 : 110.71
Anthracene by GCMS	TM178	94.0 86.06 : 112.26
Benz(a)anthracene by GCMS	TM178	91.5 79.25 : 124.25
Benzo(a)pyrene by GCMS	TM178	109.0 83.10 : 128.10
Benzo(b)fluoranthene by GCMS	TM178	118.5 86.00 : 131.00
Benzo(ghi)perylene by GCMS	TM178	88.0 79.96 : 107.30
Benzo(k)fluoranthene by GCMS	TM178	114.5 87.50 : 132.50
Chrysene by GCMS	TM178	99.0 86.00 : 114.60
Dibenzo(ah)anthracene by GCMS	TM178	87.0 80.00 : 119.98
Fluoranthene by GCMS	TM178	94.5 81.15 : 116.55
Fluorene by GCMS	TM178	96.0 90.88 : 112.23
Indeno(123cd)pyrene by GCMS	TM178	104.0 82.25 : 114.75
Naphthalene by GCMS	TM178	96.0 92.00 : 113.00
Phenanthrene by GCMS	TM178	97.0 93.18 : 113.92
Pyrene by GCMS	TM178	94.0 82.25 : 116.15

Total Organic Carbon

Component	Method Code	QC 1281
Total Organic Carbon	TM132	101.83 88.82 : 111.18

UST Gases

Component	Method Code	QC 1288
1,2,3-Trimethylbenzene raw	TM278	97.6 85.00 : 115.00
1-Methylnaphthalene raw	TM278	97.6 85.00 : 115.00
Benzene raw	TM278	99.4 85.00 : 115.00
Decane raw	TM278	94.8 85.00 : 115.00



SDG: 151210-90
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 Superseded Report:

UST Gases

		QC 1288
DIPE raw	TM278	100.2 85.00 : 115.00
Dodecane raw	TM278	105.0 85.00 : 115.00
ETBE raw	TM278	98.0 85.00 : 115.00
Ethylbenzene raw	TM278	100.4 85.00 : 115.00
GRO C6 - C12 raw	TM278	110.0 83.79 : 121.12
Hexane raw	TM278	106.0 85.00 : 115.00
MTBE raw	TM278	96.2 85.00 : 115.00
Naphthalene raw	TM278	97.6 85.00 : 115.00
Octane raw	TM278	101.8 85.00 : 115.00
o-Xylene raw	TM278	96.8 85.00 : 115.00
p/m-Xylene raw	TM278	99.9 85.00 : 115.00
TAME raw	TM278	95.8 85.00 : 115.00
Toluene raw	TM278	101.4 85.00 : 115.00

VOC MS (S)

Component	Method Code	QC 1297
1,1,1,2-tetrachloroethane	TM116	99.2 76.60 : 121.00
1,1,1-Trichloroethane	TM116	101.2 77.80 : 123.40
1,1,2-Trichloroethane	TM116	97.4 75.40 : 119.80
1,1-Dichloroethane	TM116	112.8 80.84 : 124.49
1,2-Dichloroethane	TM116	109.2 86.62 : 136.90
1,4-Dichlorobenzene	TM116	95.6 80.88 : 114.60
2-Chlorotoluene	TM116	96.4 74.00 : 117.20
4-Chlorotoluene	TM116	91.0 71.20 : 113.20
Benzene	TM116	101.8 79.60 : 125.20
Carbon Disulphide	TM116	106.8 74.91 : 122.14
Carbontetrachloride	TM116	97.2 87.07 : 120.37
Chlorobenzene	TM116	101.0 83.47 : 116.82



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VOC MS (S)

		QC 1297
Chloroform	TM116	108.8 82.00 : 128.80
Chloromethane	TM116	122.6 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	120.2 81.20 : 128.00
Dibromomethane	TM116	97.6 73.40 : 116.60
Dichloromethane	TM116	128.0 86.60 : 137.00
Ethylbenzene	TM116	93.0 73.60 : 115.60
Hexachlorobutadiene	TM116	101.8 42.69 : 142.65
Isopropylbenzene	TM116	94.4 72.52 : 117.52
Naphthalene	TM116	97.4 83.23 : 126.48
o-Xylene	TM116	87.6 69.60 : 110.40
p/m-Xylene	TM116	92.0 71.30 : 112.70
Sec-Butylbenzene	TM116	108.6 59.20 : 125.20
Tetrachloroethene	TM116	106.0 85.92 : 127.92
Toluene	TM116	92.0 76.08 : 110.17
Trichloroethene	TM116	98.4 78.17 : 121.37
Trichlorofluoromethane	TM116	118.2 83.78 : 132.82
Vinyl Chloride	TM116	105.8 66.81 : 138.46

VOC MS (W)

Component	Method Code	QC 1206
1,1,1,2-Tetrachloroethane	TM208	94.0 84.25 : 114.84
1,1,1-Trichloroethane	TM208	97.0 84.67 : 111.97
1,1-Dichloroethane	TM208	102.0 80.19 : 121.45
1,2-Dichloroethane	TM208	99.5 77.68 : 127.05
2-Chlorotoluene	TM208	93.5 85.81 : 116.77
4-Chlorotoluene	TM208	95.5 83.92 : 115.84
Benzene	TM208	99.5 82.30 : 120.49
Bromomethane	TM208	94.0 76.16 : 123.35



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VOC MS (W)

		QC 1206
Carbontetrachloride	TM208	98.5 83.96 : 117.98
Chlorobenzene	TM208	96.5 85.75 : 114.88
Chloroform	TM208	100.0 84.84 : 119.97
Chloromethane	TM208	112.5 75.44 : 153.92
Cis-1,2-Dichloroethene	TM208	110.0 82.79 : 125.45
Dichloromethane	TM208	104.0 79.31 : 122.56
Ethylbenzene	TM208	91.5 80.74 : 110.74
Hexachlorobutadiene	TM208	97.5 66.89 : 118.01
o-Xylene	TM208	92.0 82.64 : 110.48
p/m-Xylene	TM208	91.5 80.94 : 113.51
Tert-butyl methyl ether	TM208	101.0 59.77 : 129.51
Tetrachloroethene	TM208	94.5 83.21 : 115.40
Toluene	TM208	96.0 86.02 : 114.04
Trichloroethene	TM208	94.0 83.50 : 113.50
Vinyl Chloride	TM208	93.0 63.71 : 124.88

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: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

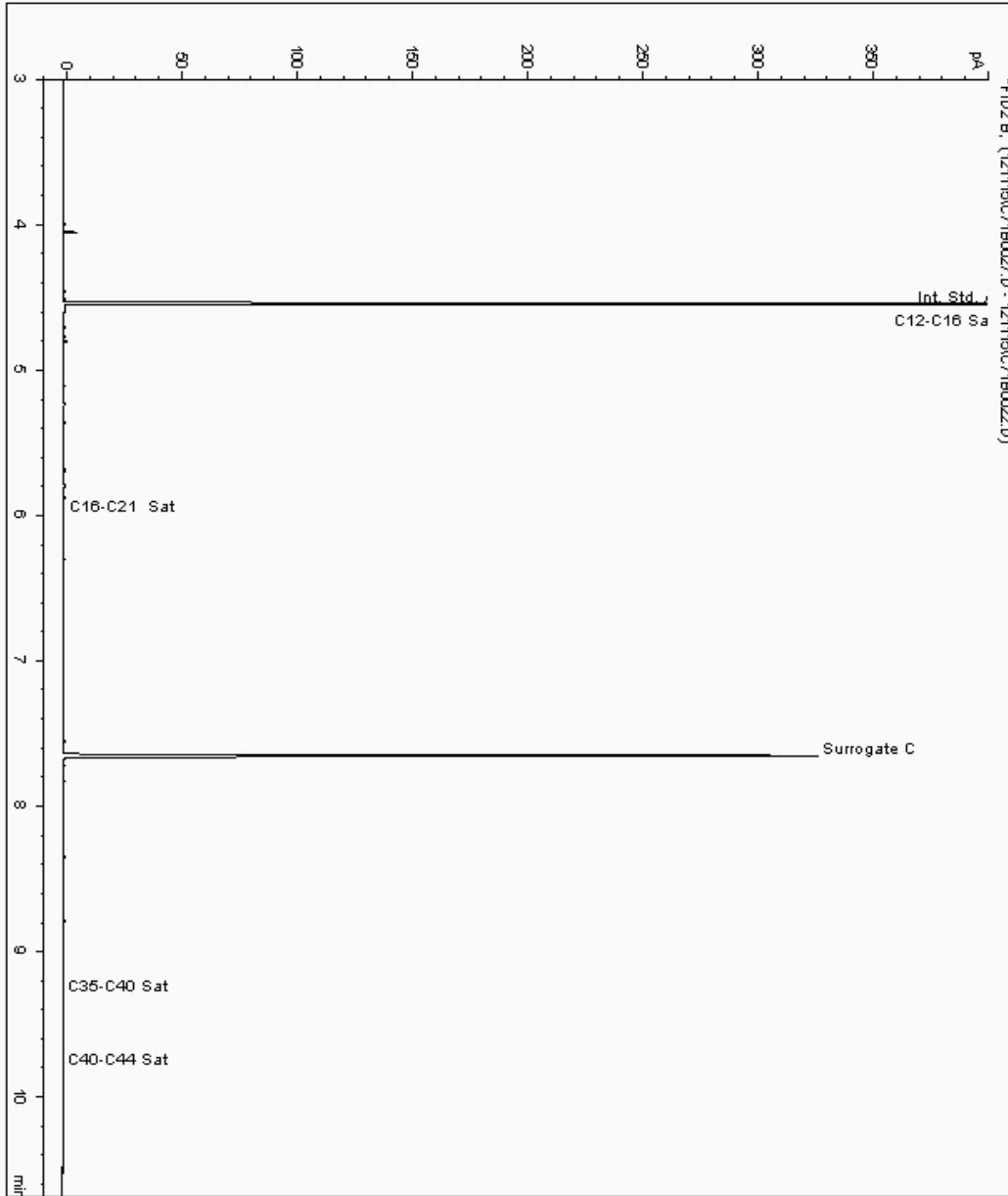
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12629999
Sample ID : EX04

Depth : 2.50

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

Sample Identity: 11920071-
Date Acquired : 14/12/2015 11:55:10 PM
Units : ppb
Dilution: EX04[2.50] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

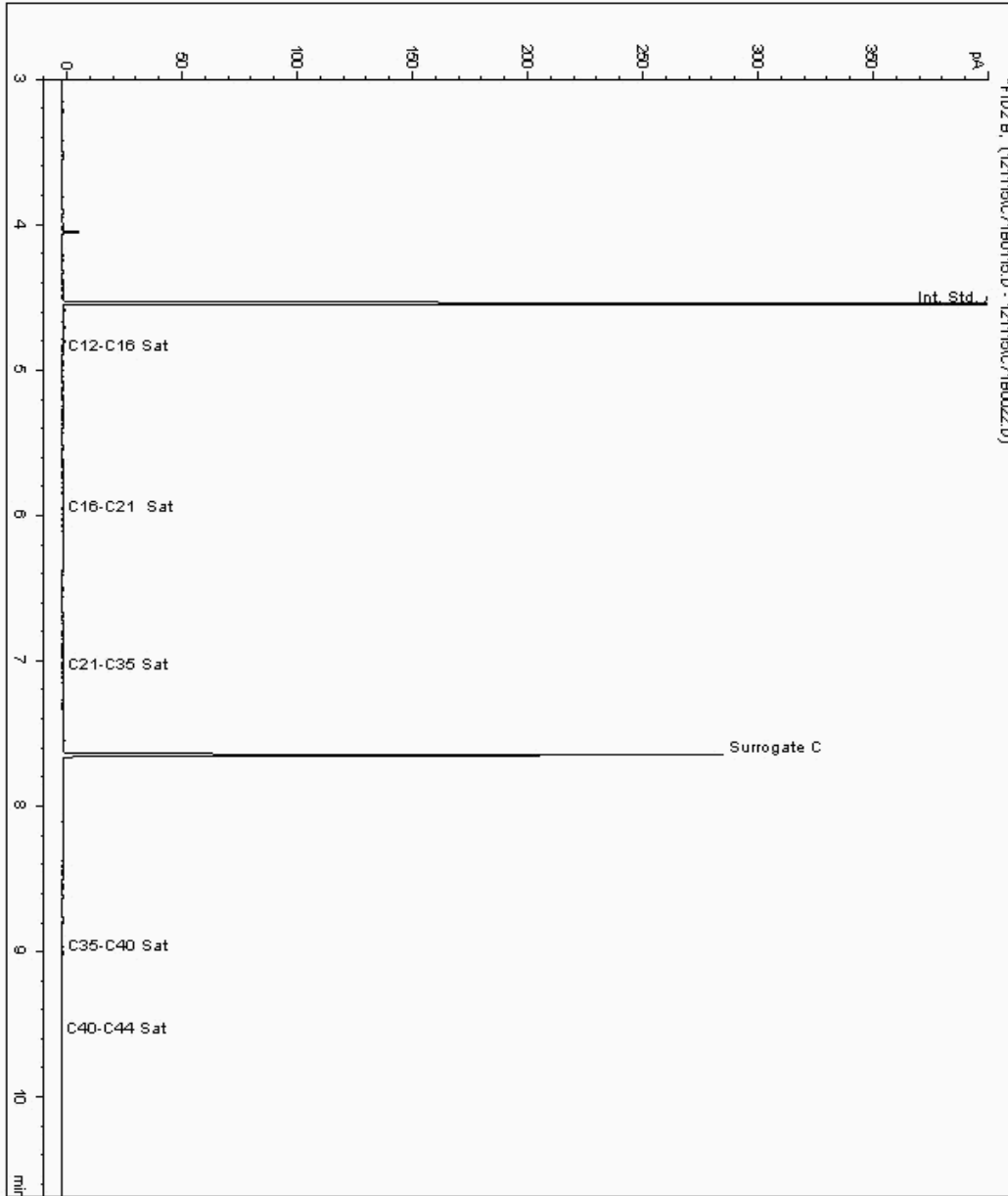
Sample No : 12630038
Sample ID : EX02

Depth : 2.00

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

Sample Identity: 11920042-
Date Acquired : 15/12/2015 15:34:57 PM
Units : ppb
Dilution: EX02[2.00]

->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

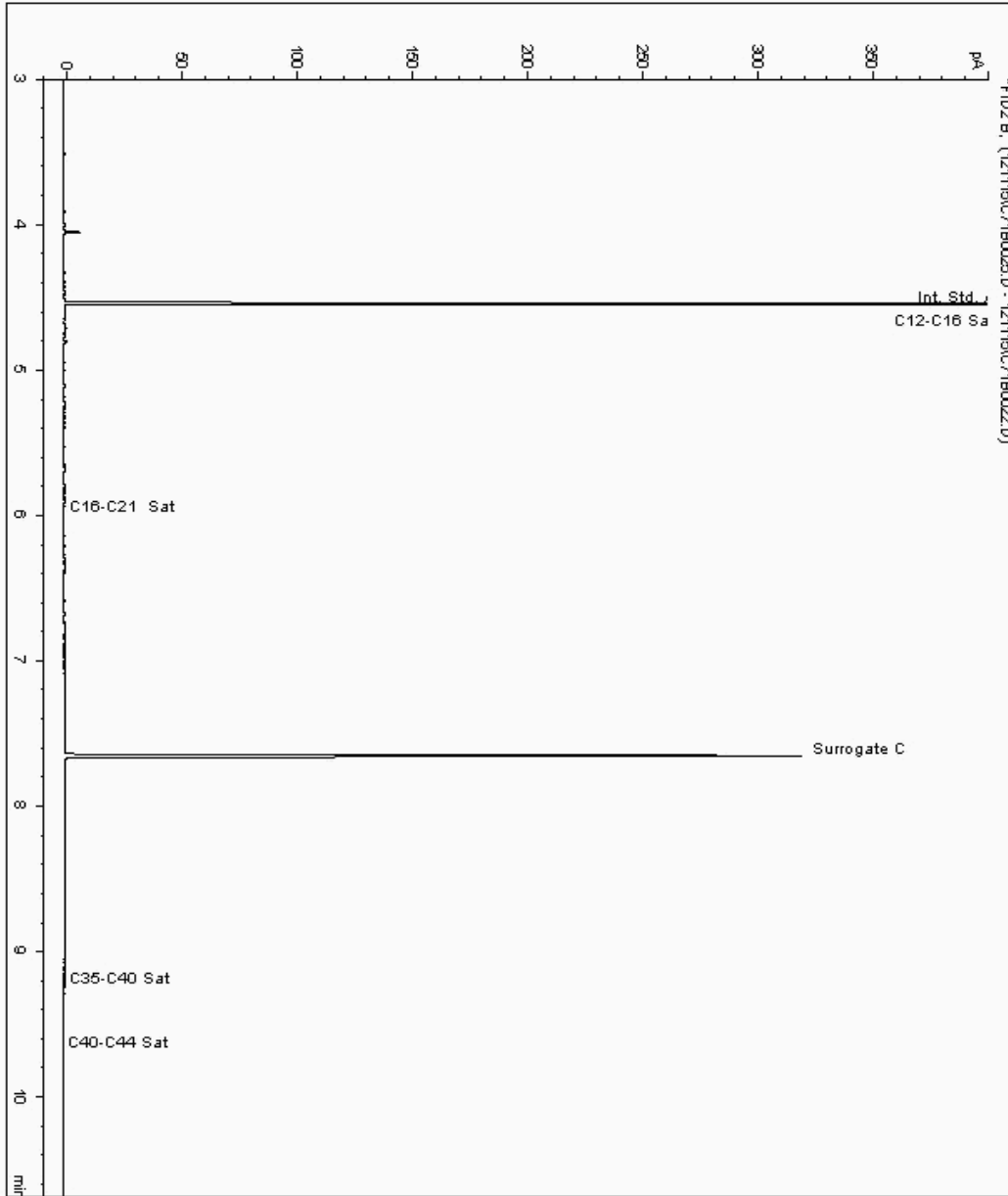
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12630096
Sample ID : EX01

Depth : 2.00

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

Sample Identity: 11920033-
Date Acquired : 14/12/2015 11:14:50 PM
Units : ppb
Dilution: EX01[2.00] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
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Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

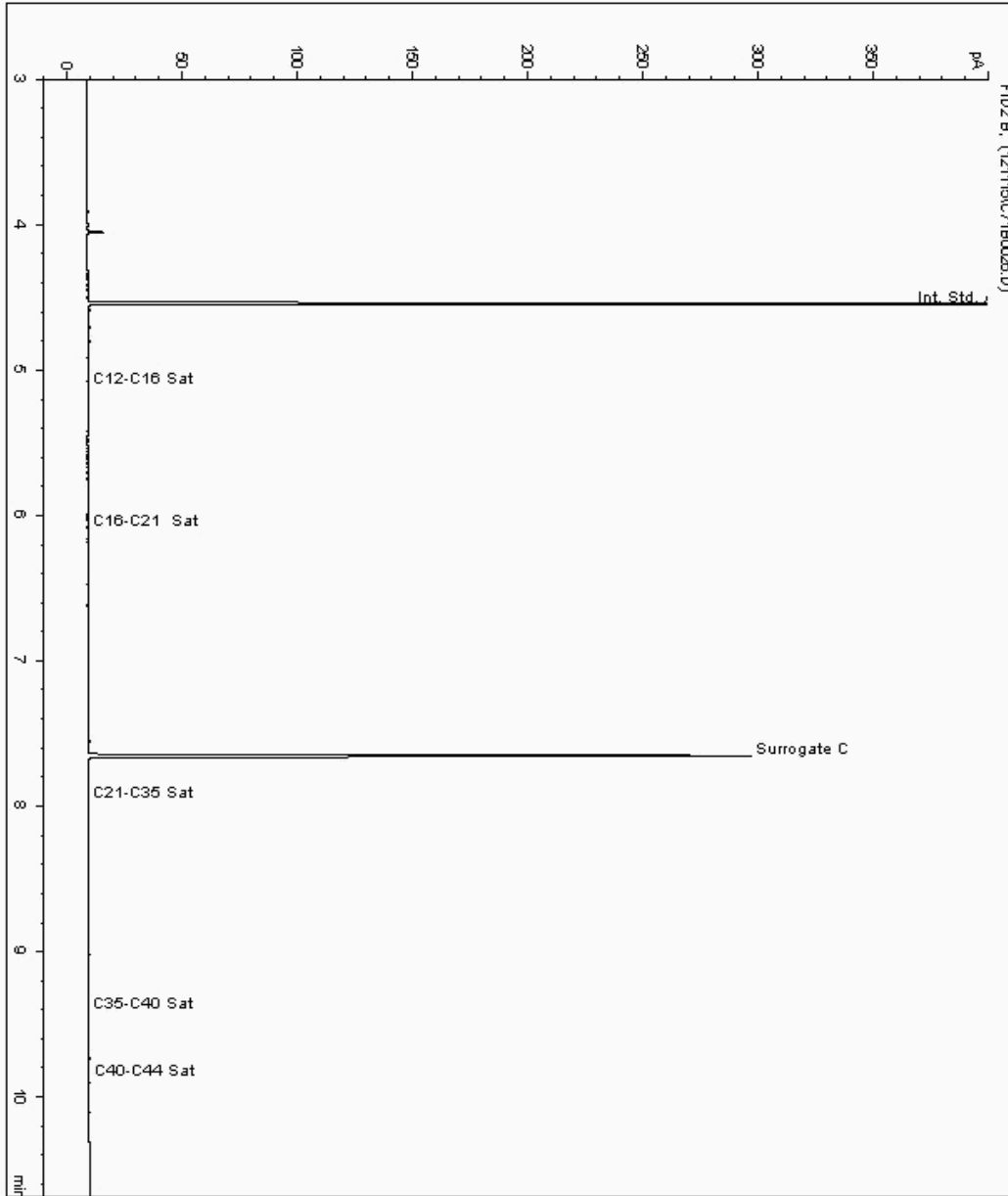
Sample No : 12630310
Sample ID : EX03

Depth : 3.50

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

Sample Identity: 11920054-
Date Acquired : 14/12/2015 11:35:07 PM
Units : ppb
Dilution: EX03[3.50]

->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
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Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

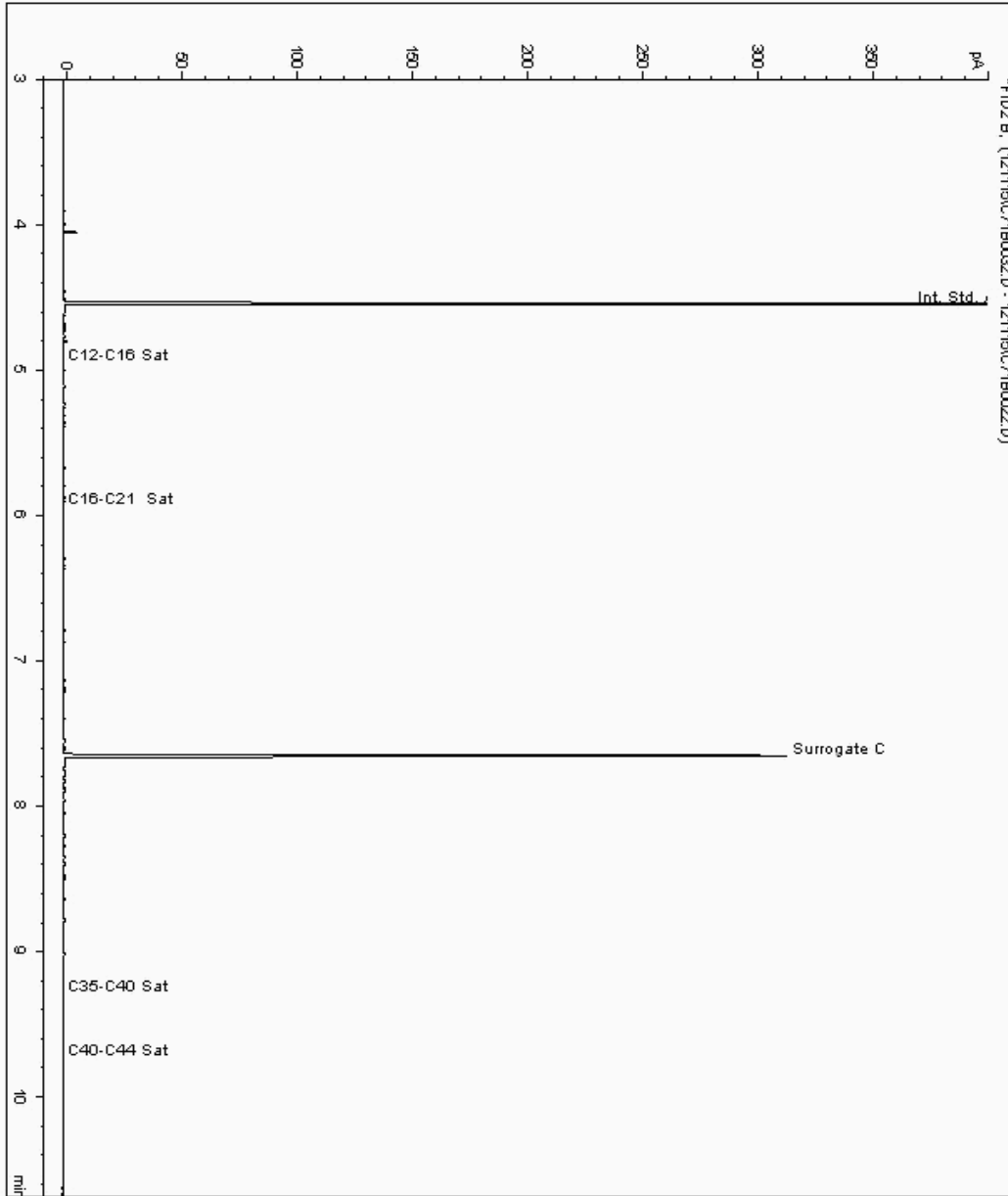
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12630387
Sample ID : EX07

Depth : 3.20

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

Sample Identity: 11920110-
Date Acquired : 14/12/2015 13:27:51 PM
Units : ppb
Dilution: EX07[3.20] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

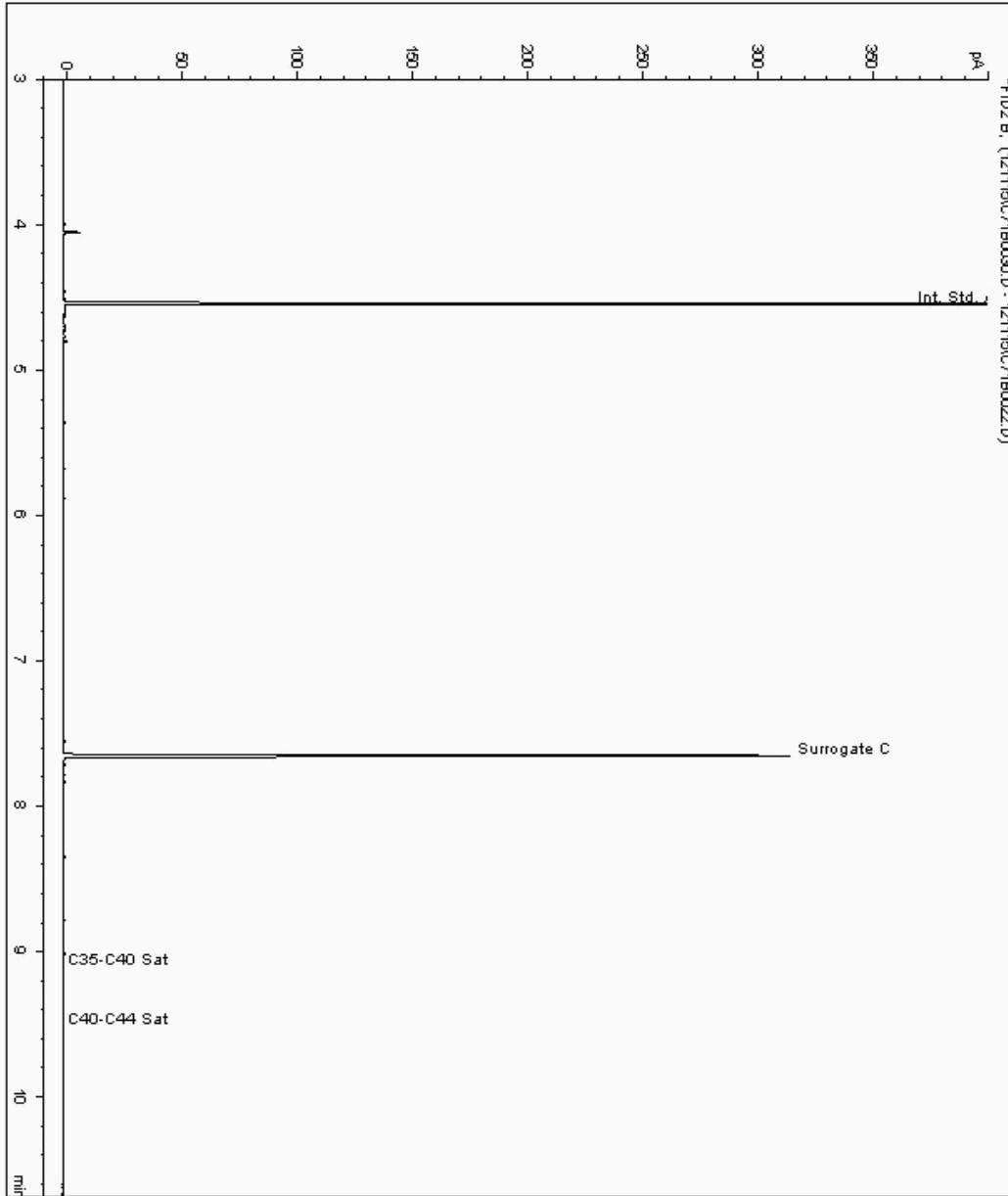
Sample No : 12630435
Sample ID : EX06

Depth : 2.30

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

Sample Identity: 11920101-
Date Acquired : 14/12/2015 12:47:36 PM
Units : ppb
Dilution: EX06[2.30]

->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

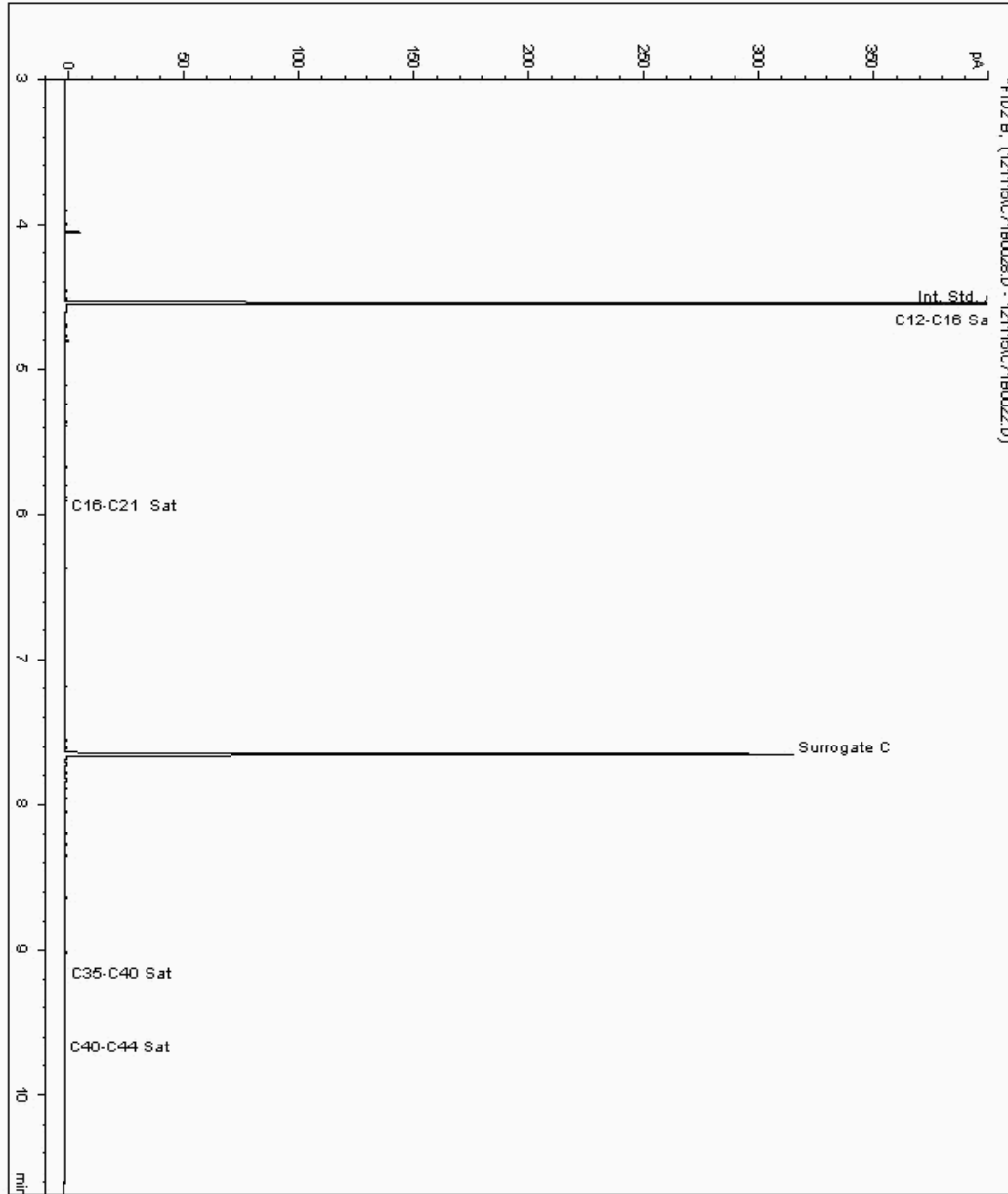
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12630512
Sample ID : EX05

Depth : 2.20

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

Sample Identity: 11920092-
Date Acquired : 14/12/2015 12:15:17 PM
Units : ppb
Dilution: EX05[2.20] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

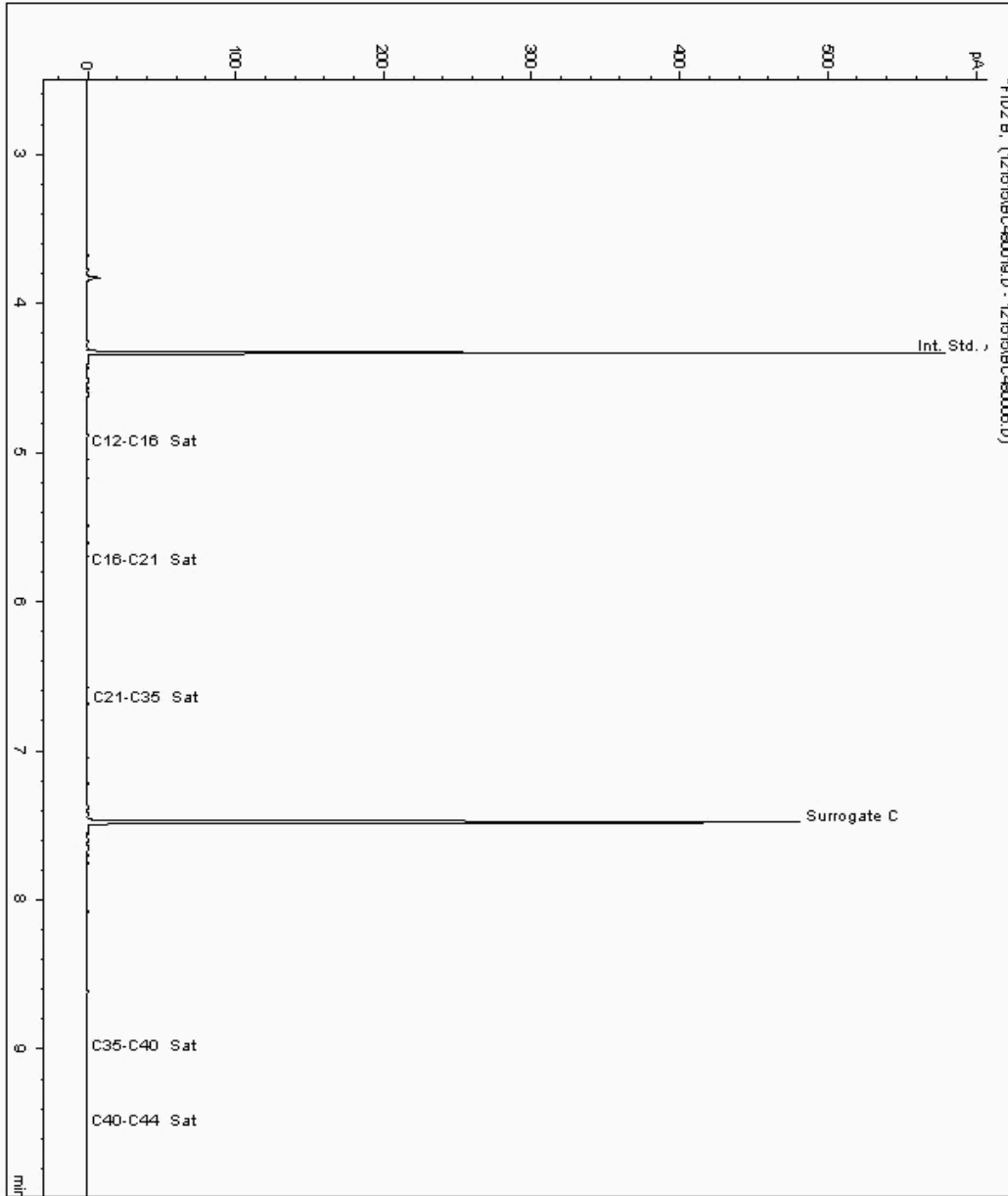
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 12620276
Sample ID : MW3

Depth :

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

Sample Identity: 11920122-
Date Acquired : 15/12/2015 19:14:19 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

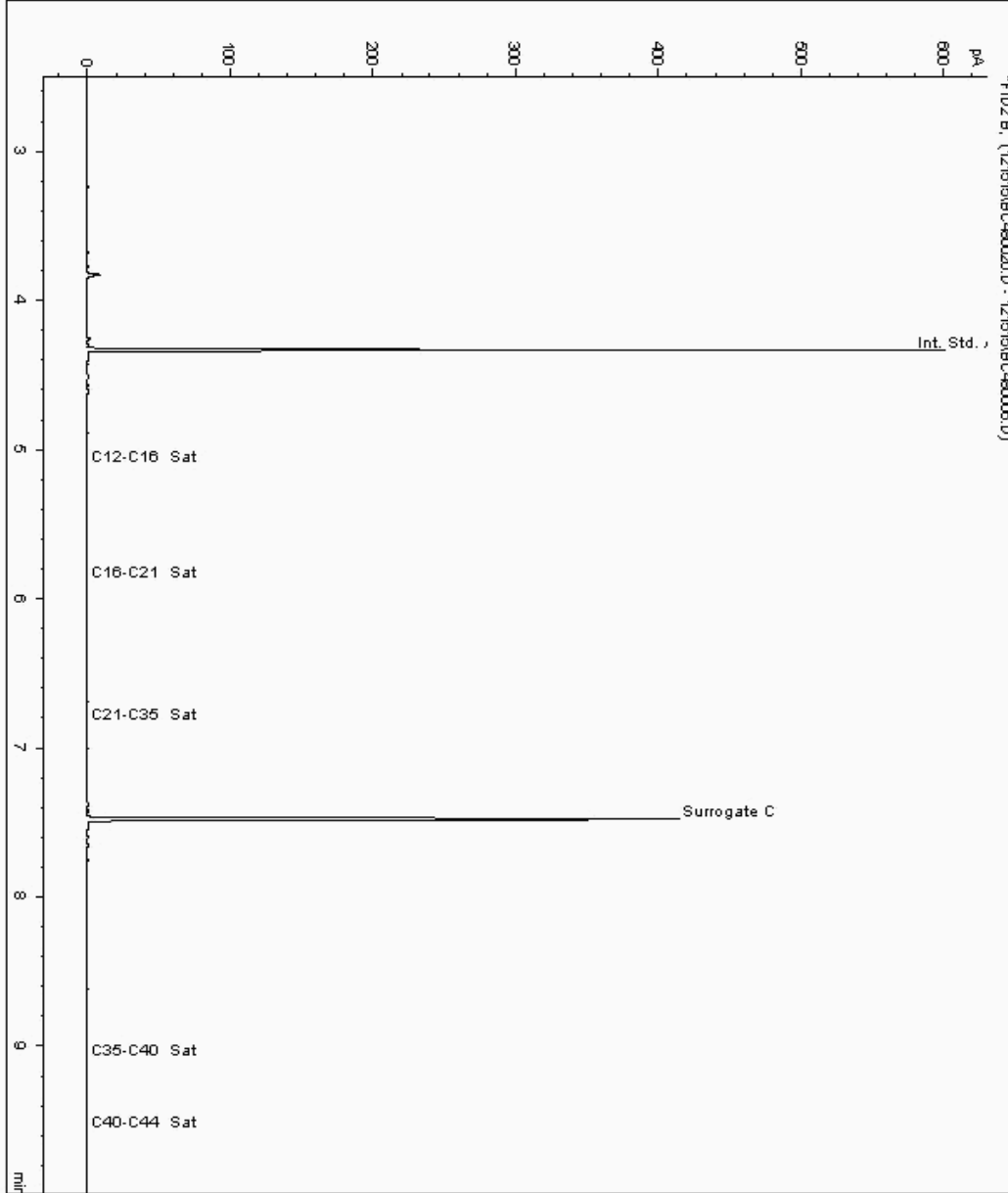
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 12620340
Sample ID : MW4

Depth :

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

Sample Identity: 11920154-
Date Acquired : 15/12/2015 19:32:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

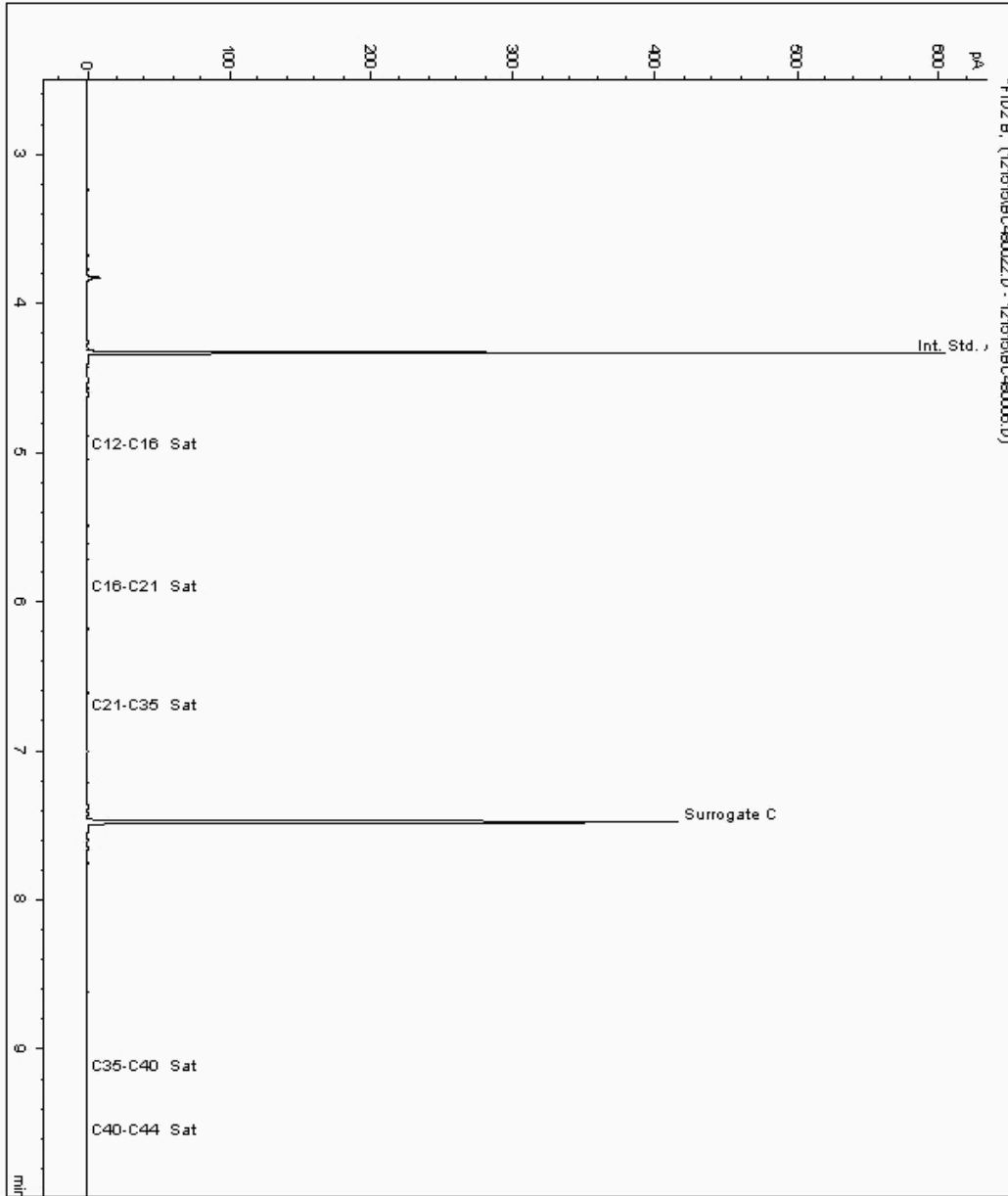
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 12620381
Sample ID : DUP01

Depth :

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

Sample Identity: 11920162-
Date Acquired : 15/12/2015 20:10:27 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

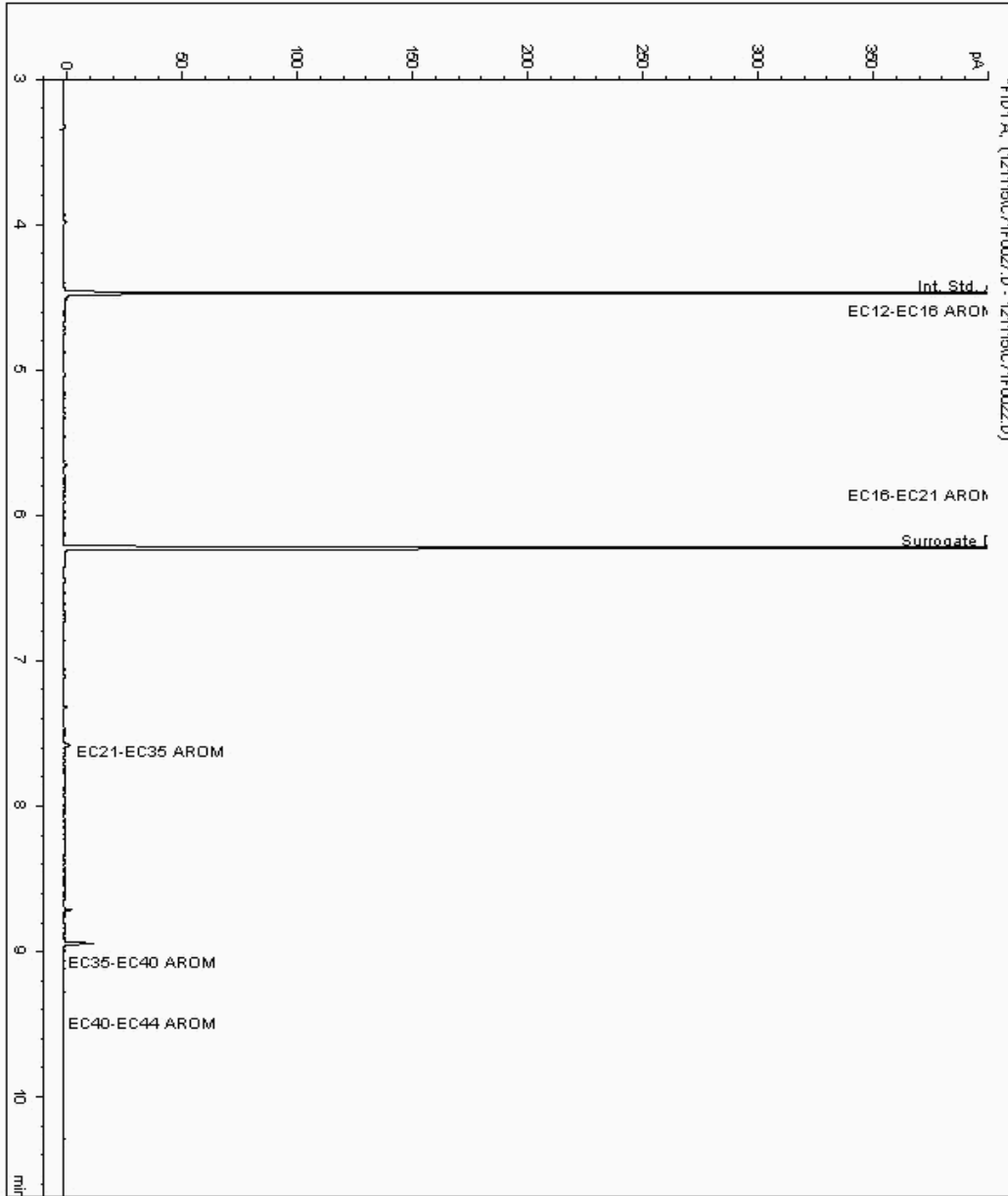
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12629999
Sample ID : EX04

Depth : 2.50

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

Sample Identity: 11920072-
Date Acquired : 14/12/2015 11:55:10 PM
Units : ppb
Dilution: EX04[2.50] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

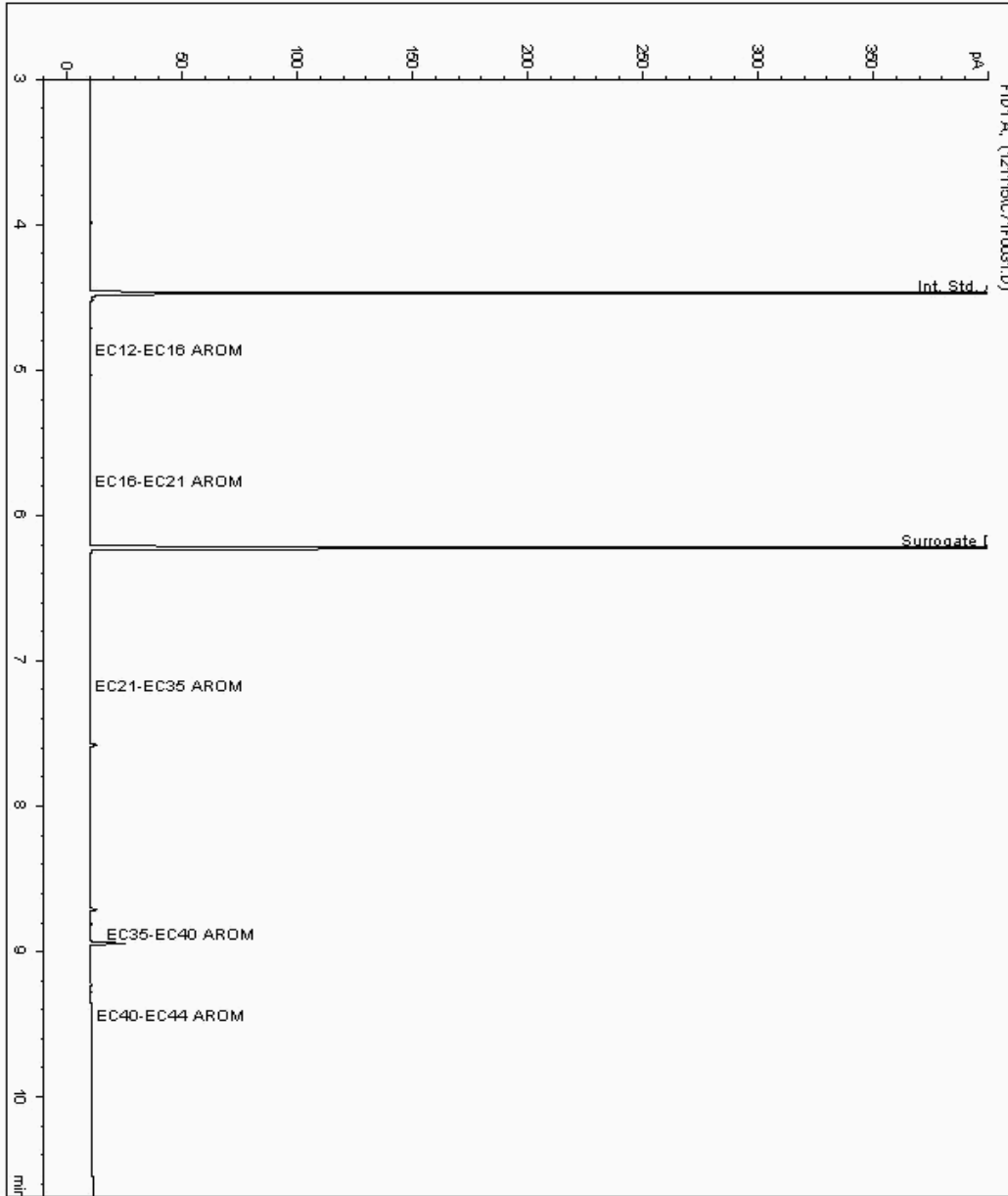
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12630038
Sample ID : EX02

Depth : 2.00

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

Sample Identity: 11920043-
Date Acquired : 14/12/2015 13:07:46 PM
Units : ppb
Dilution: EX02[2.00] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

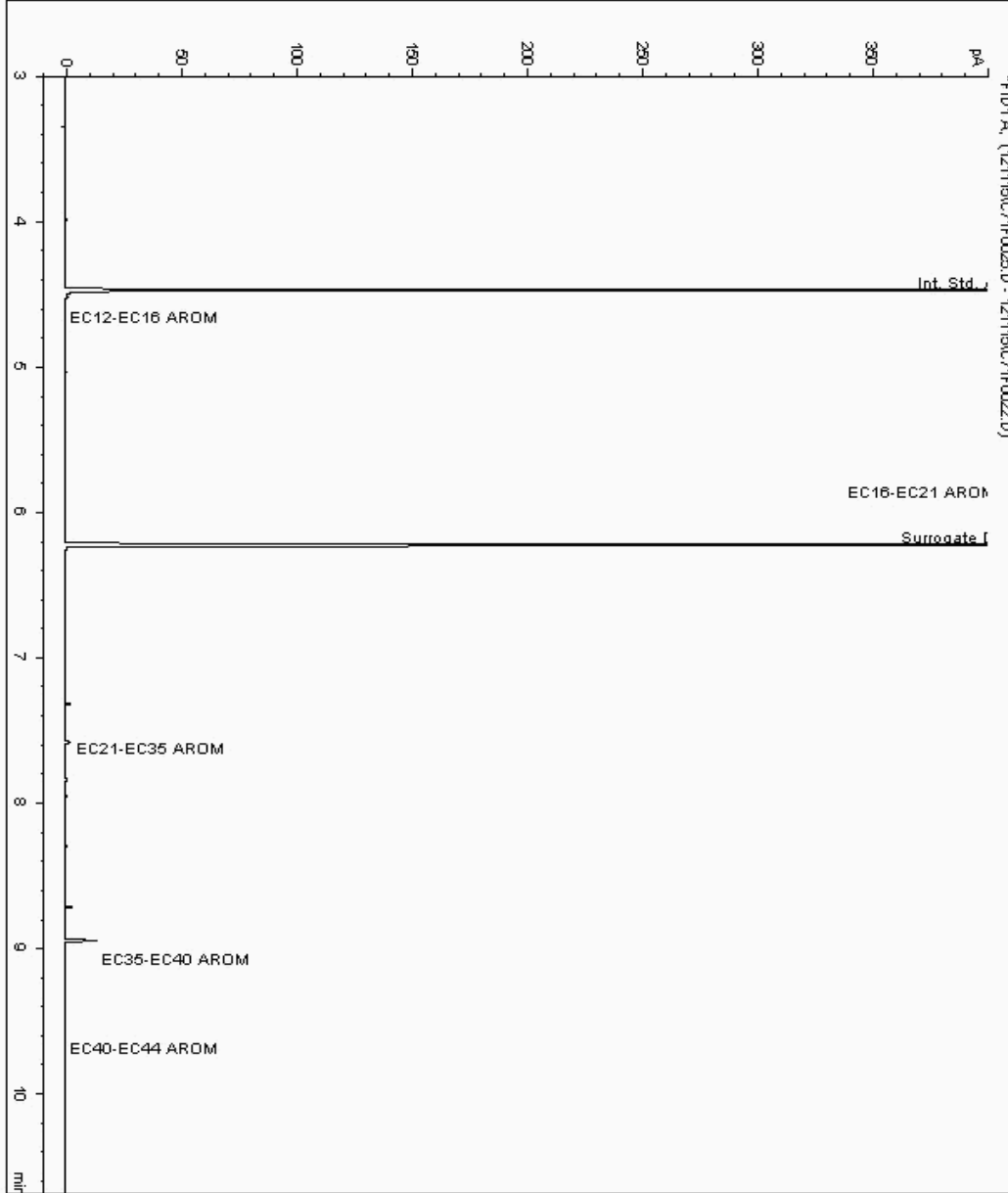
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12630096
Sample ID : EX01

Depth : 2.00

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

Sample Identity: 11920034-
Date Acquired : 14/12/2015 11:14:50 PM
Units : ppb
Dilution: EX01[2.00] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

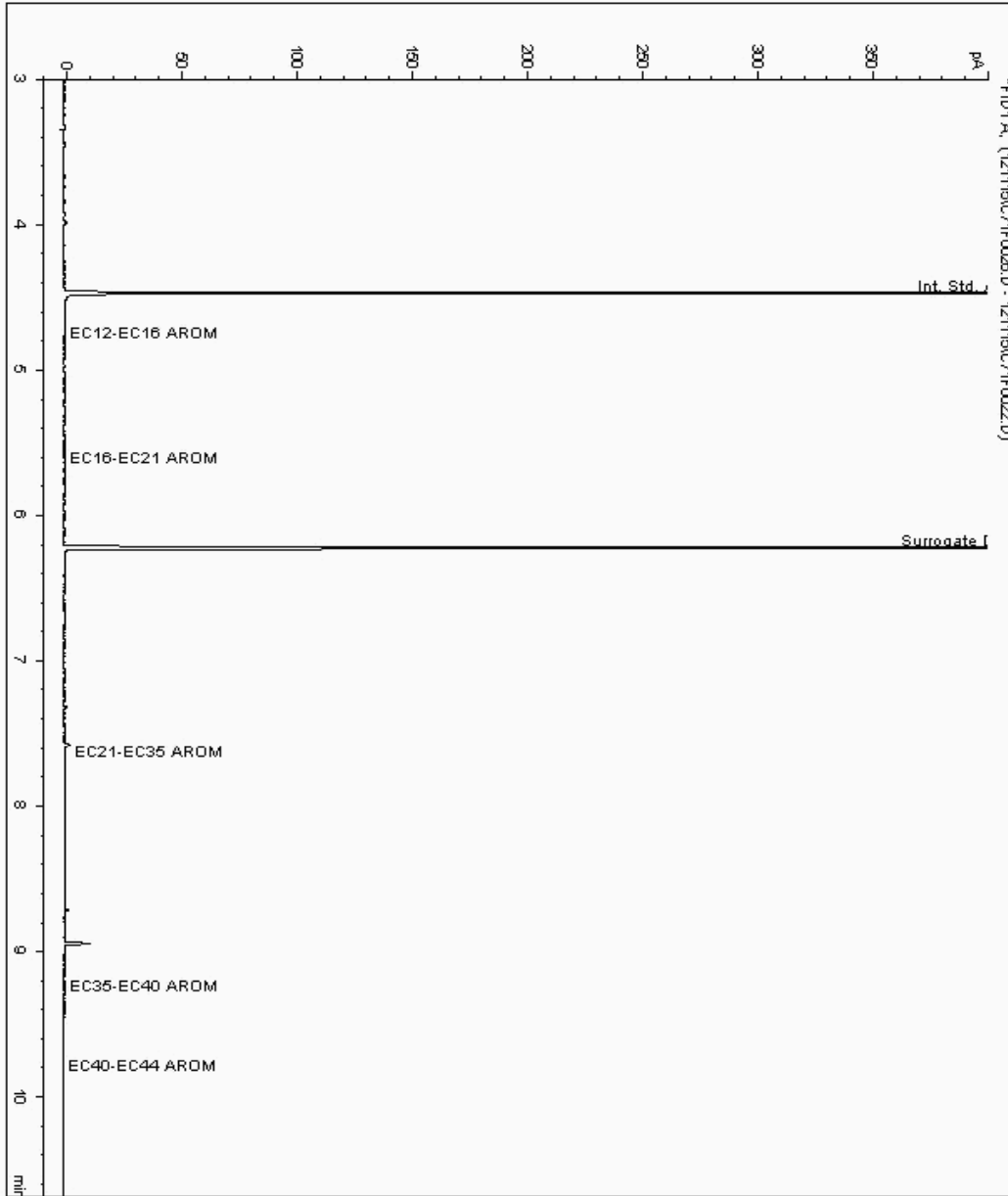
Sample No : 12630310
Sample ID : EX03

Depth : 3.50

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

Sample Identity: 11920055-
Date Acquired : 14/12/2015 11:35:07 PM
Units : ppb
Dilution: EX03[3.50]

->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

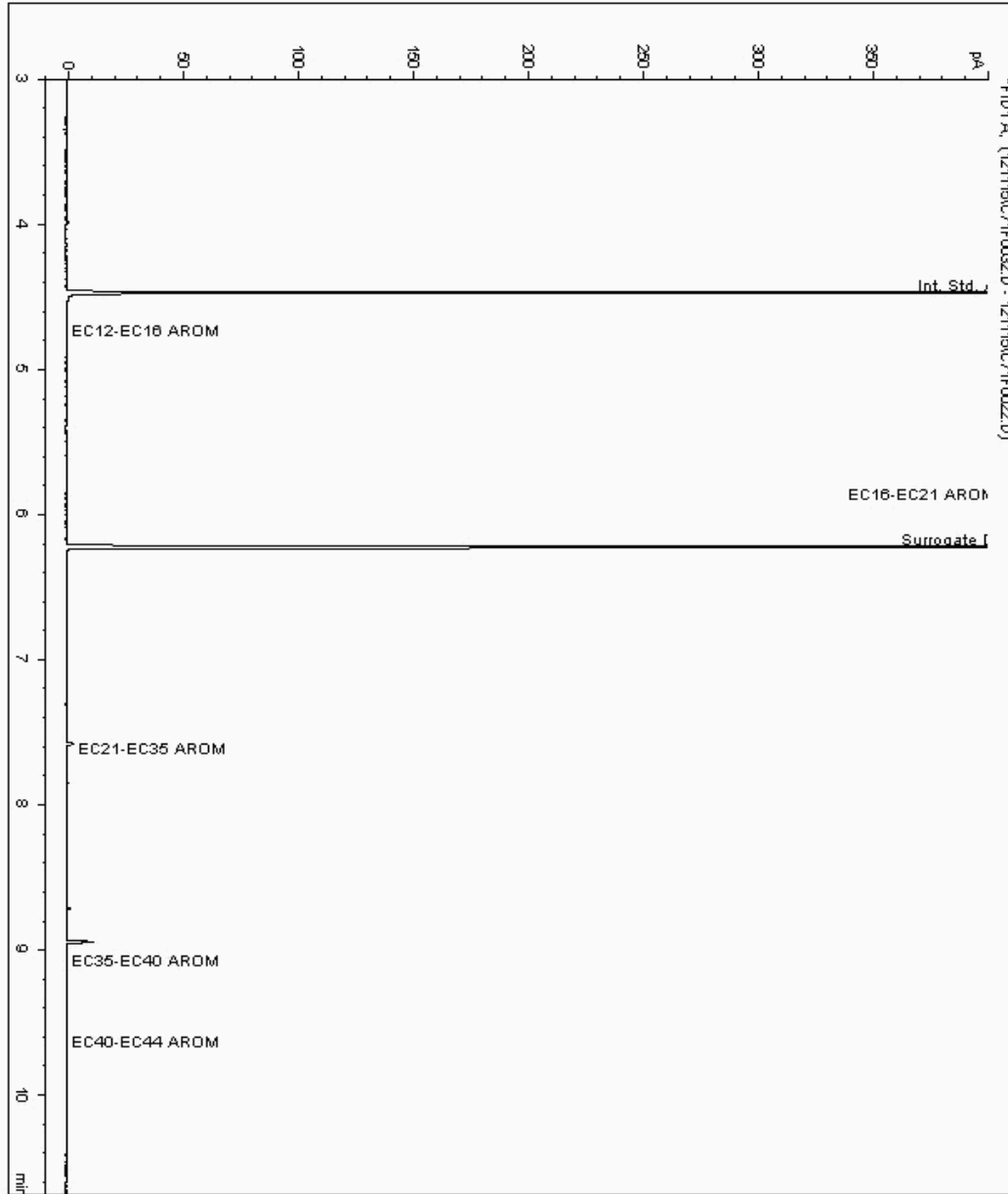
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12630387
Sample ID : EX07

Depth : 3.20

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

Sample Identity: 11920111-
Date Acquired : 14/12/2015 13:27:51 PM
Units : ppb
Dilution: EX07[3.20] ->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

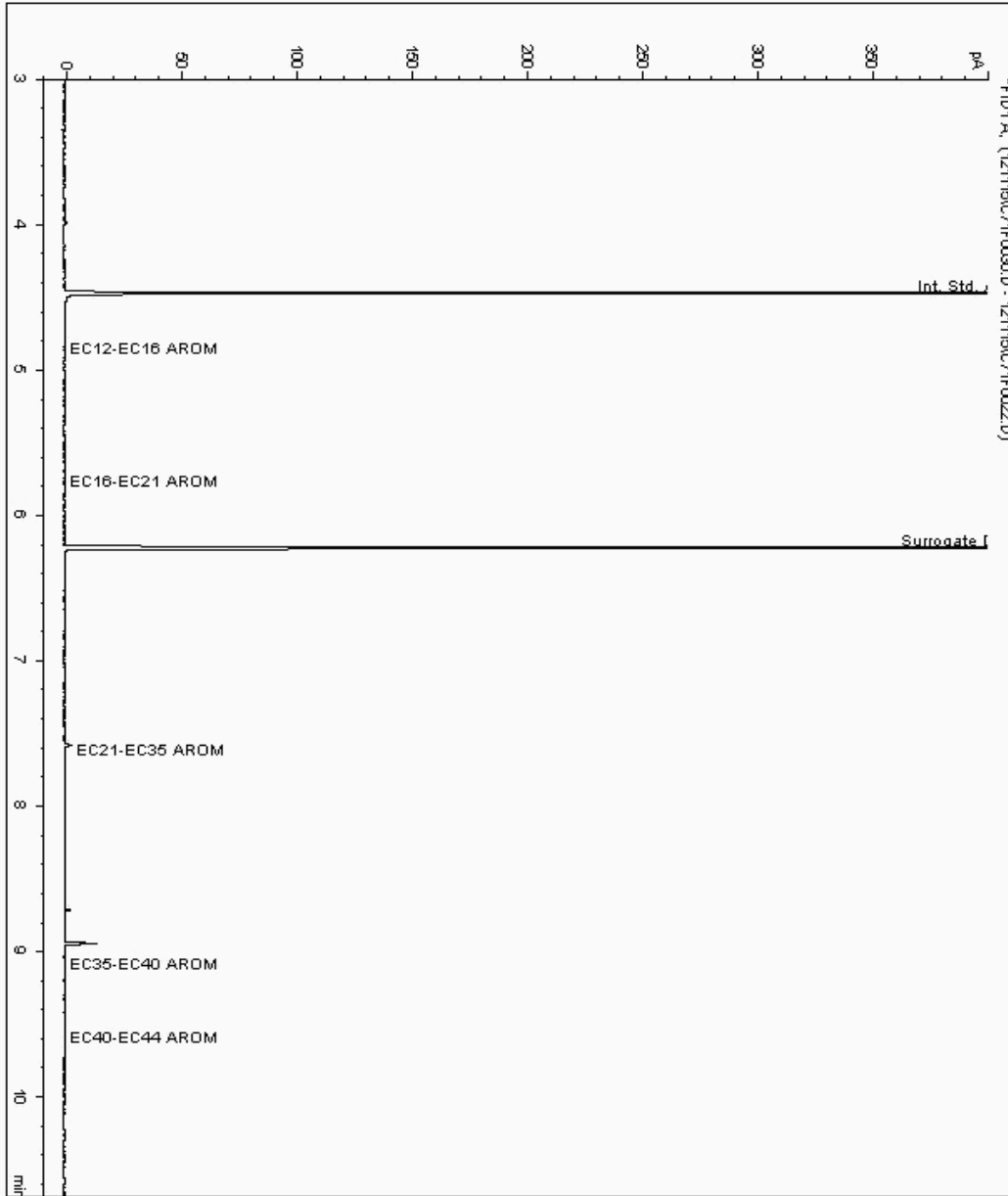
Sample No : 12630435
Sample ID : EX06

Depth : 2.30

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

Sample Identity: 11920102-
Date Acquired : 14/12/2015 12:47:36 PM
Units : ppb
Dilution: EX06[2.30]

->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

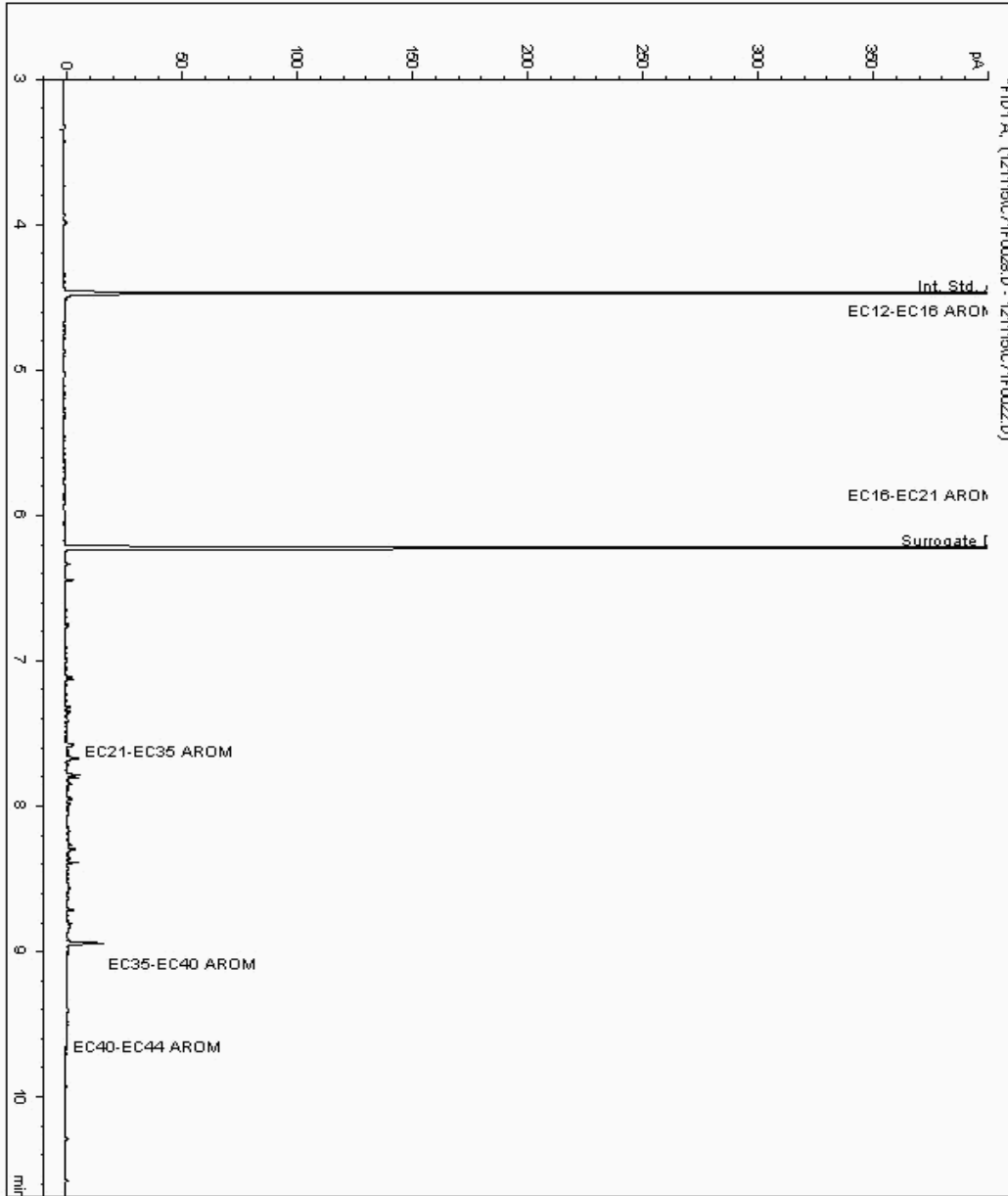
Sample No : 12630512
Sample ID : EX05

Depth : 2.20

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

Sample Identity: 11920093-
Date Acquired : 14/12/2015 12:15:17 PM
Units : ppb
Dilution: EX05[2.20]

->





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

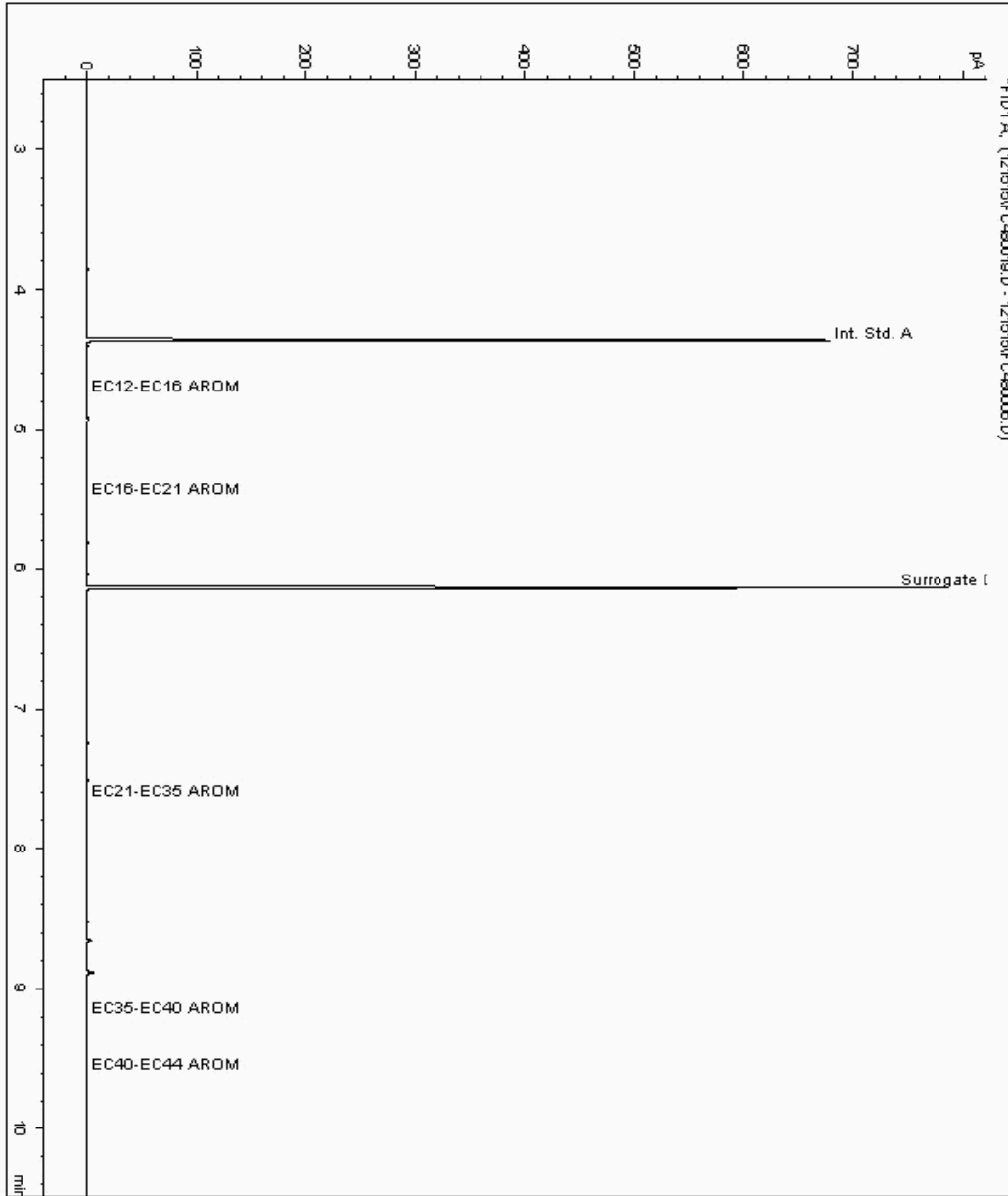
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 12620276
Sample ID : MW3

Depth :

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

Sample Identity: 11920123-
Date Acquired : 15/12/2015 19:14:19 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

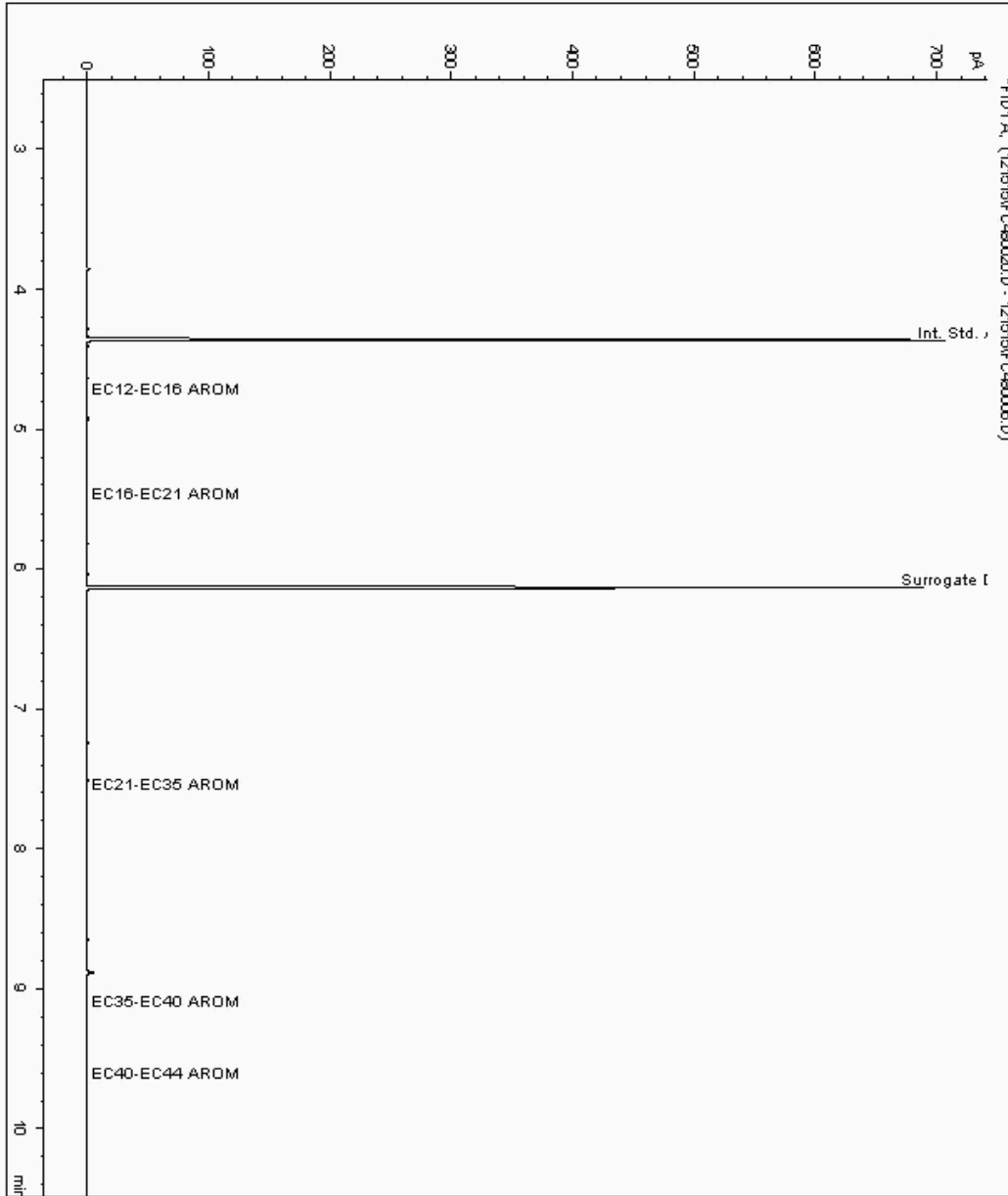
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 12620340
Sample ID : MW4

Depth :

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

Sample Identity: 11920155-
Date Acquired : 15/12/2015 19:32:57 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

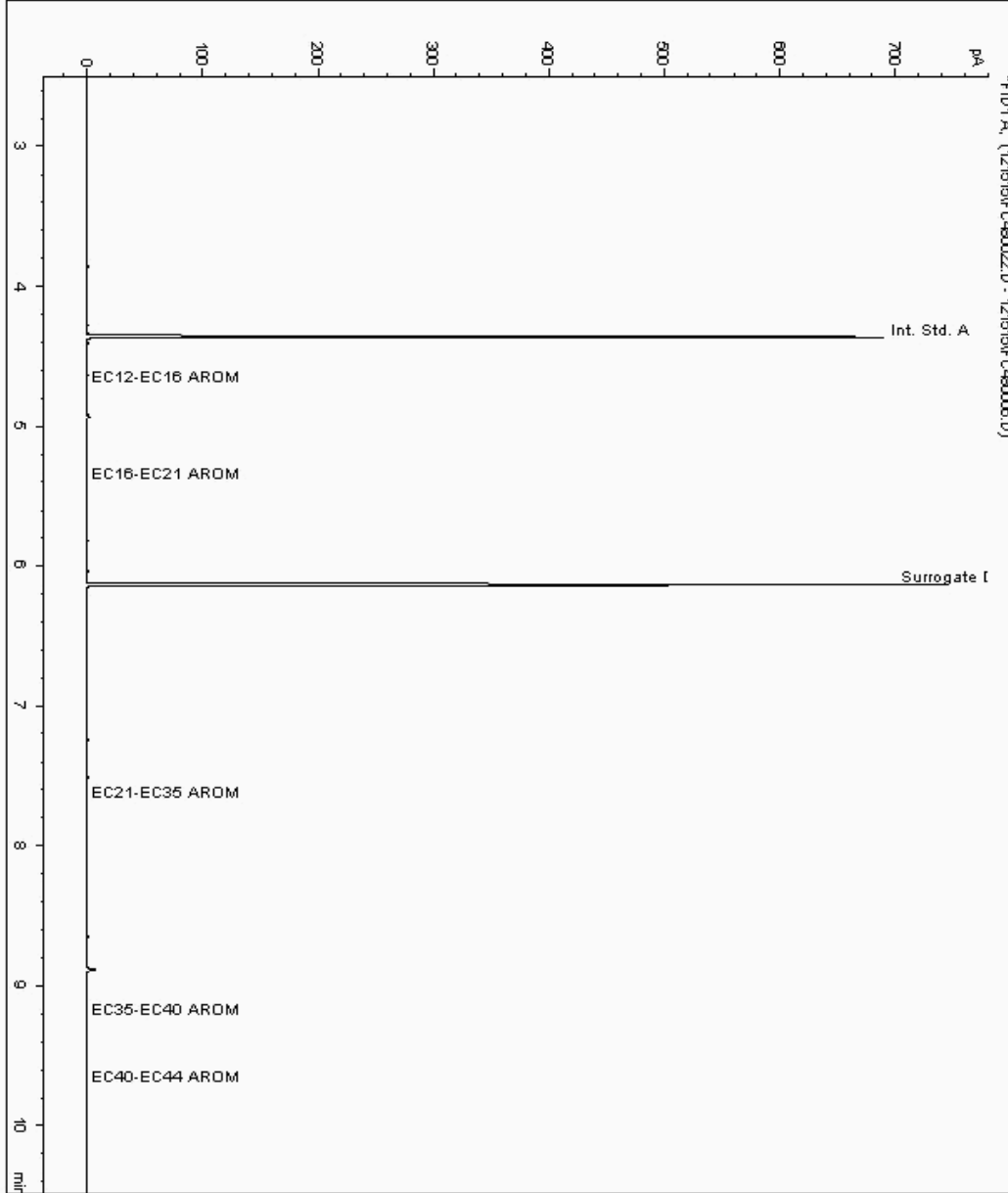
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 12620381
Sample ID : DUP01

Depth :

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

Sample Identity: 11920163-
Date Acquired : 15/12/2015 20:10:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

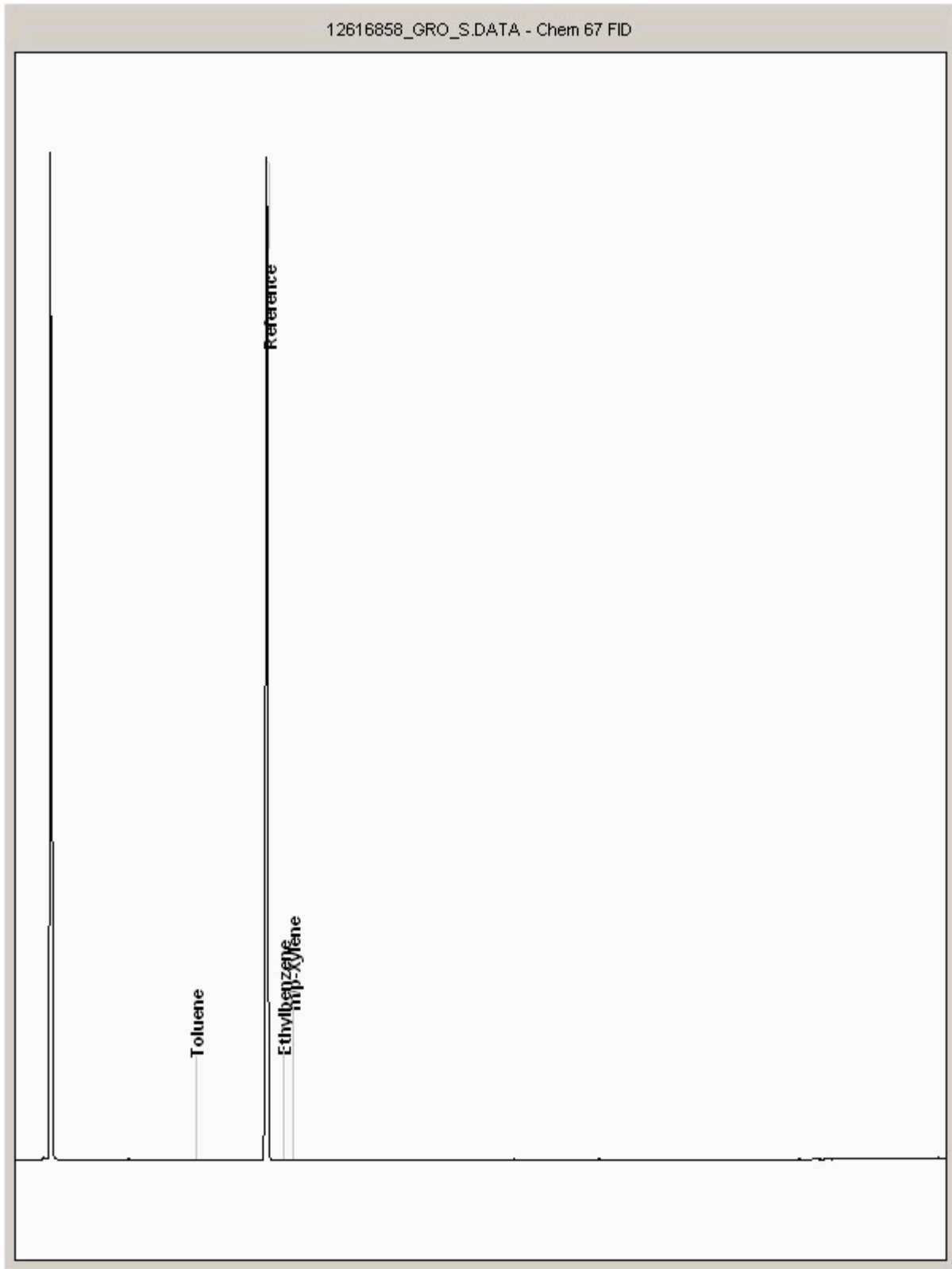
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12616858
Sample ID : EX03

Depth : 3.50





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

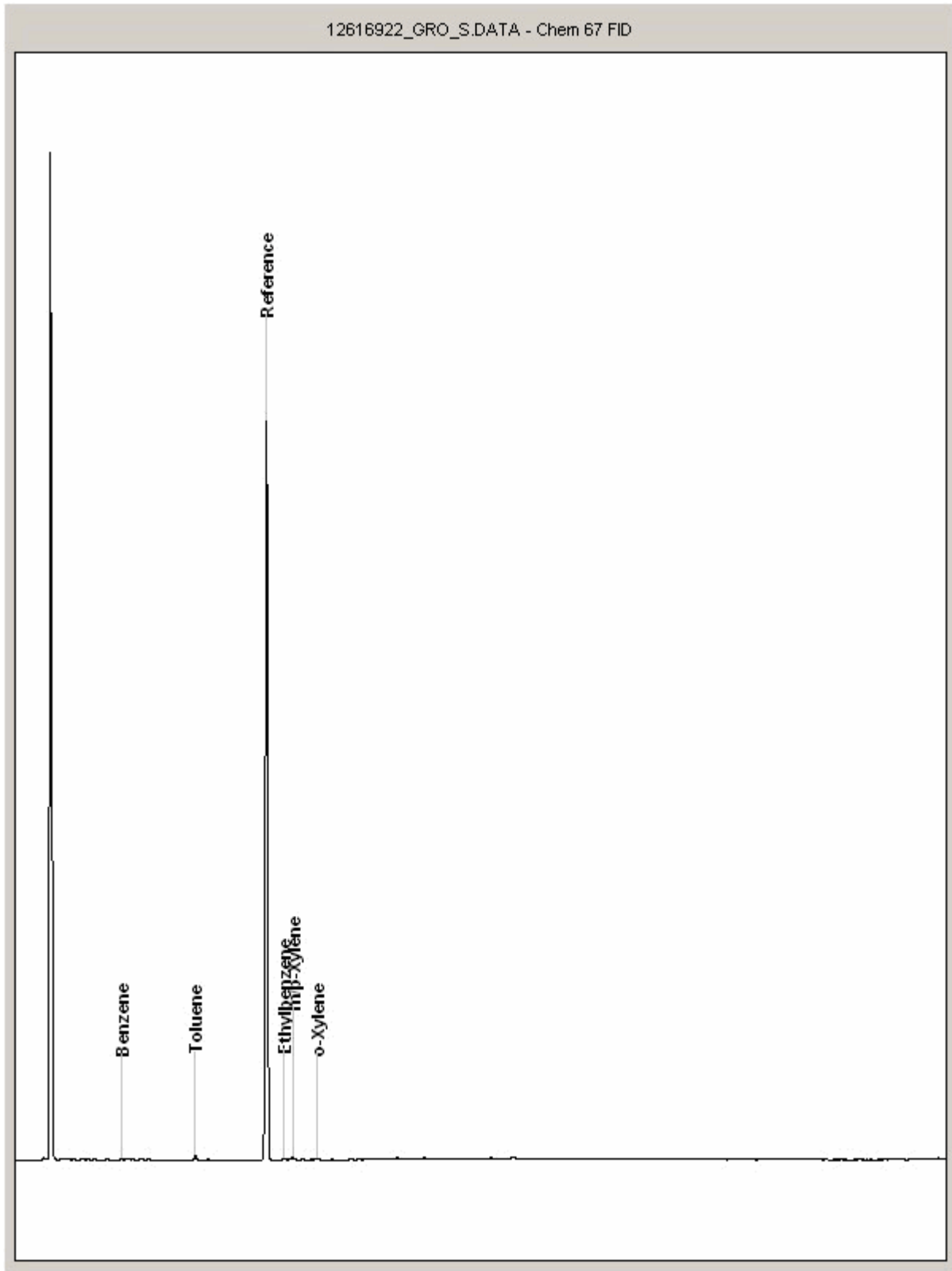
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12616922
Sample ID : EX05

Depth : 2.20





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

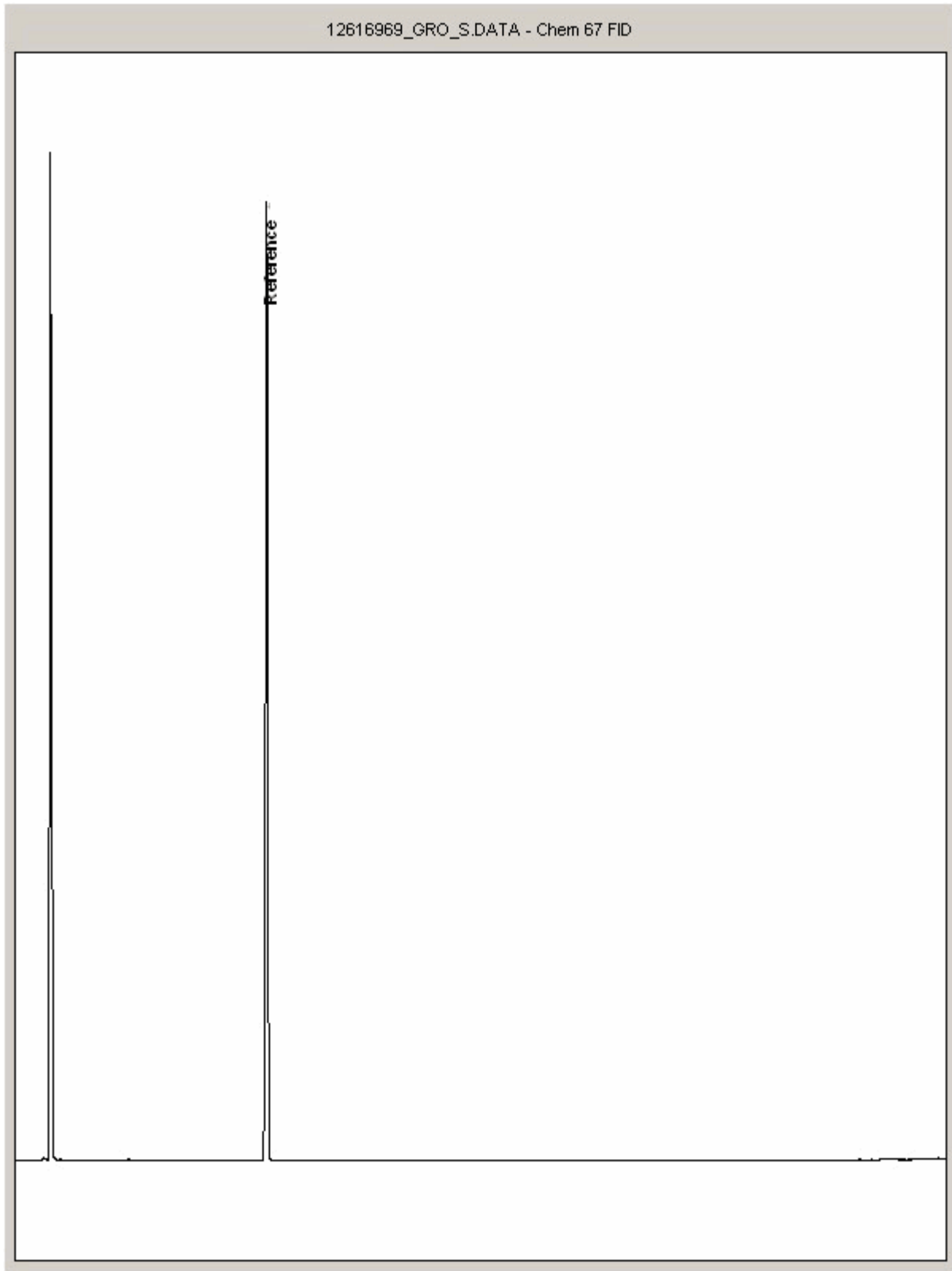
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12616969
Sample ID : EX06

Depth : 2.30





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

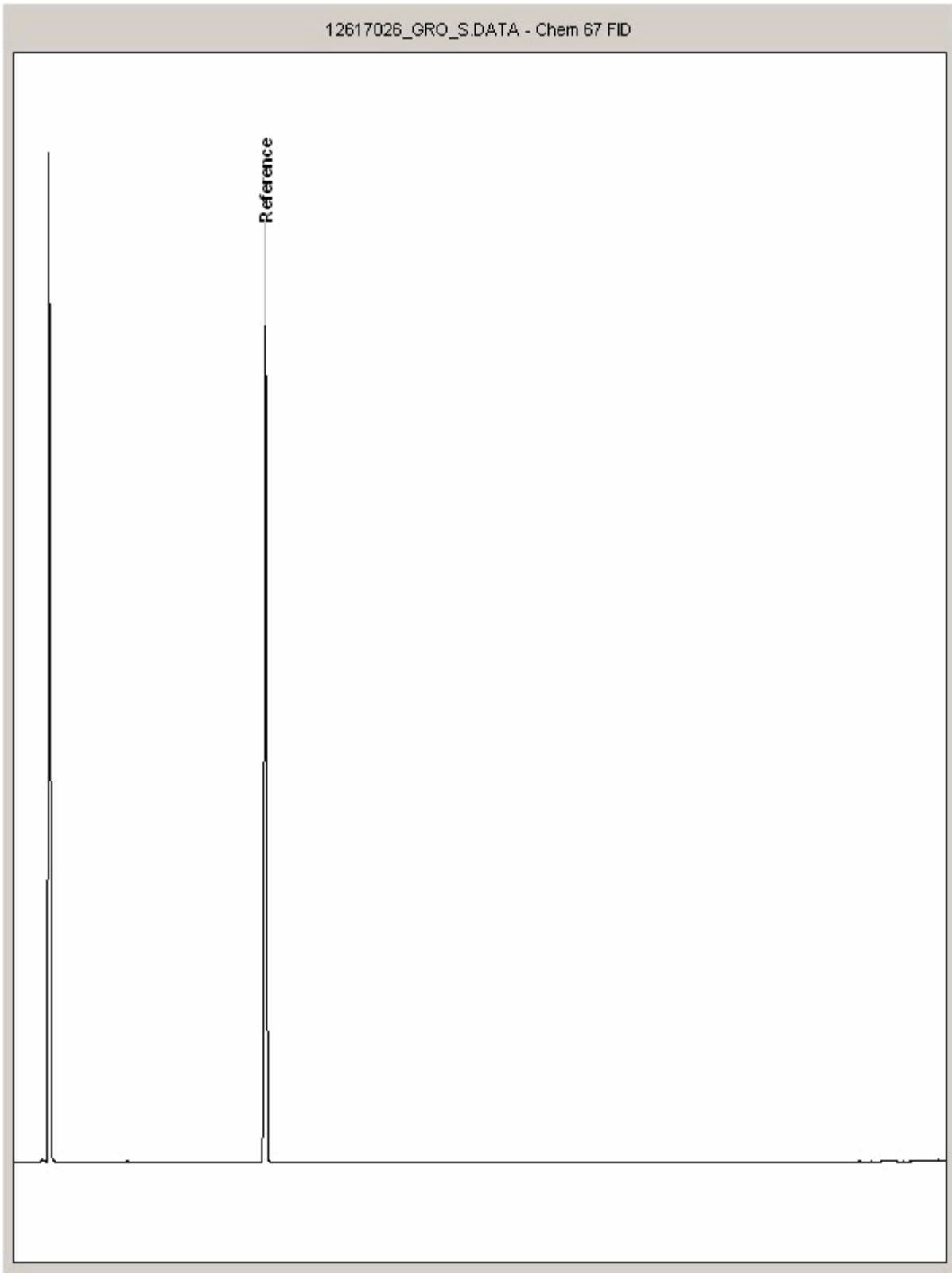
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12617026
Sample ID : EX04

Depth : 2.50





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

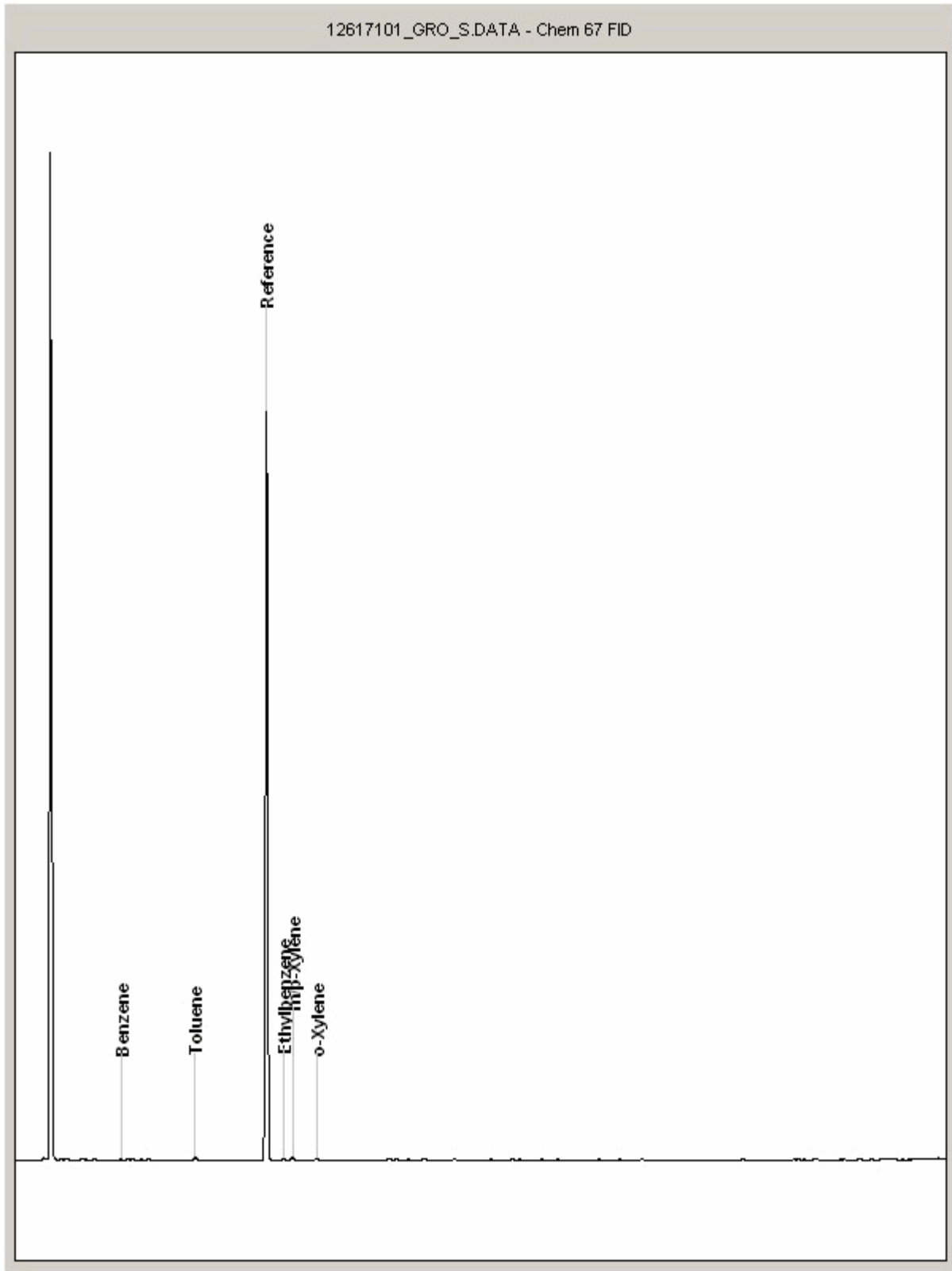
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12617101
Sample ID : EX07

Depth : 3.20





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

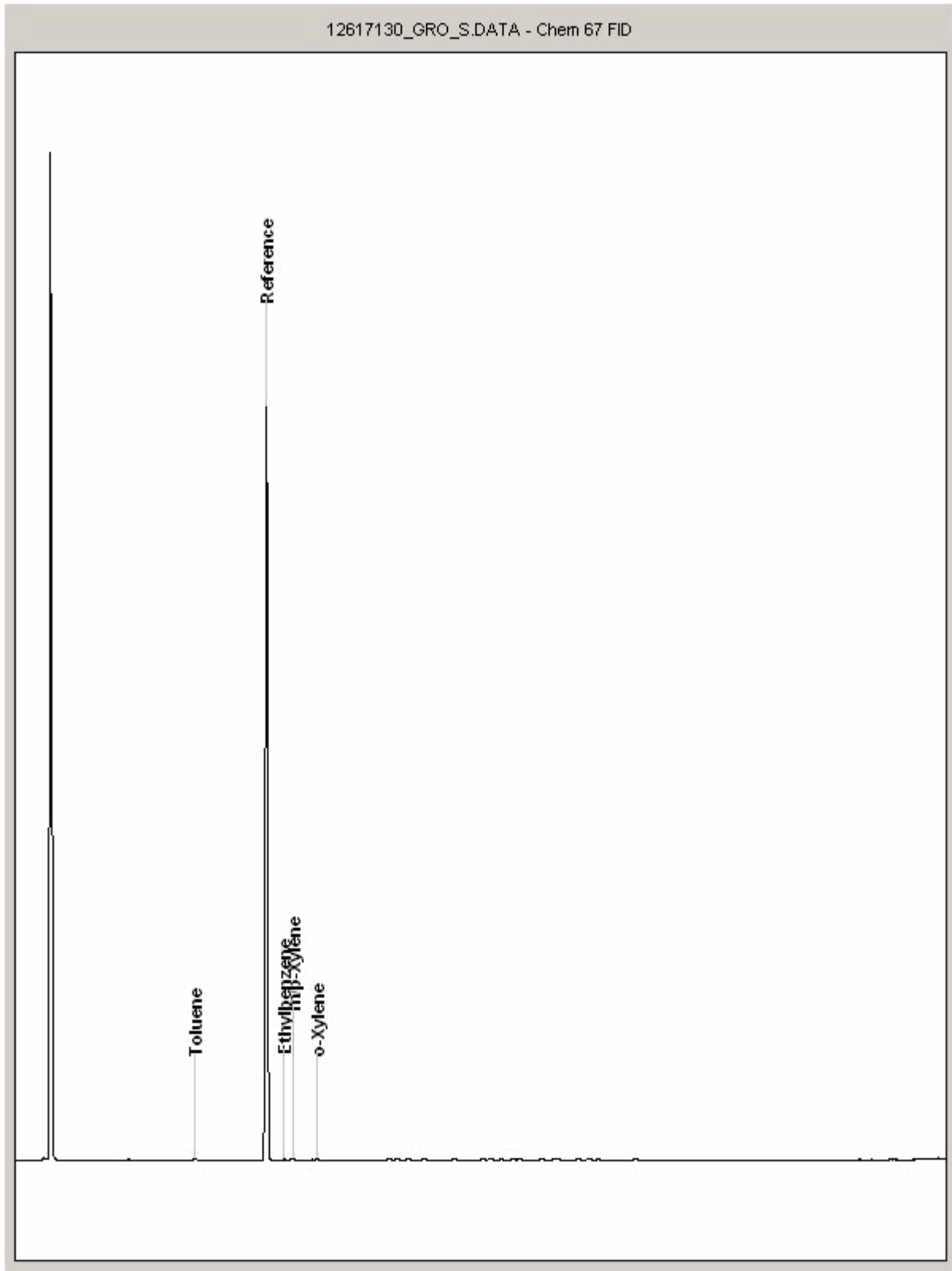
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12617130
Sample ID : EX01

Depth : 2.00





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

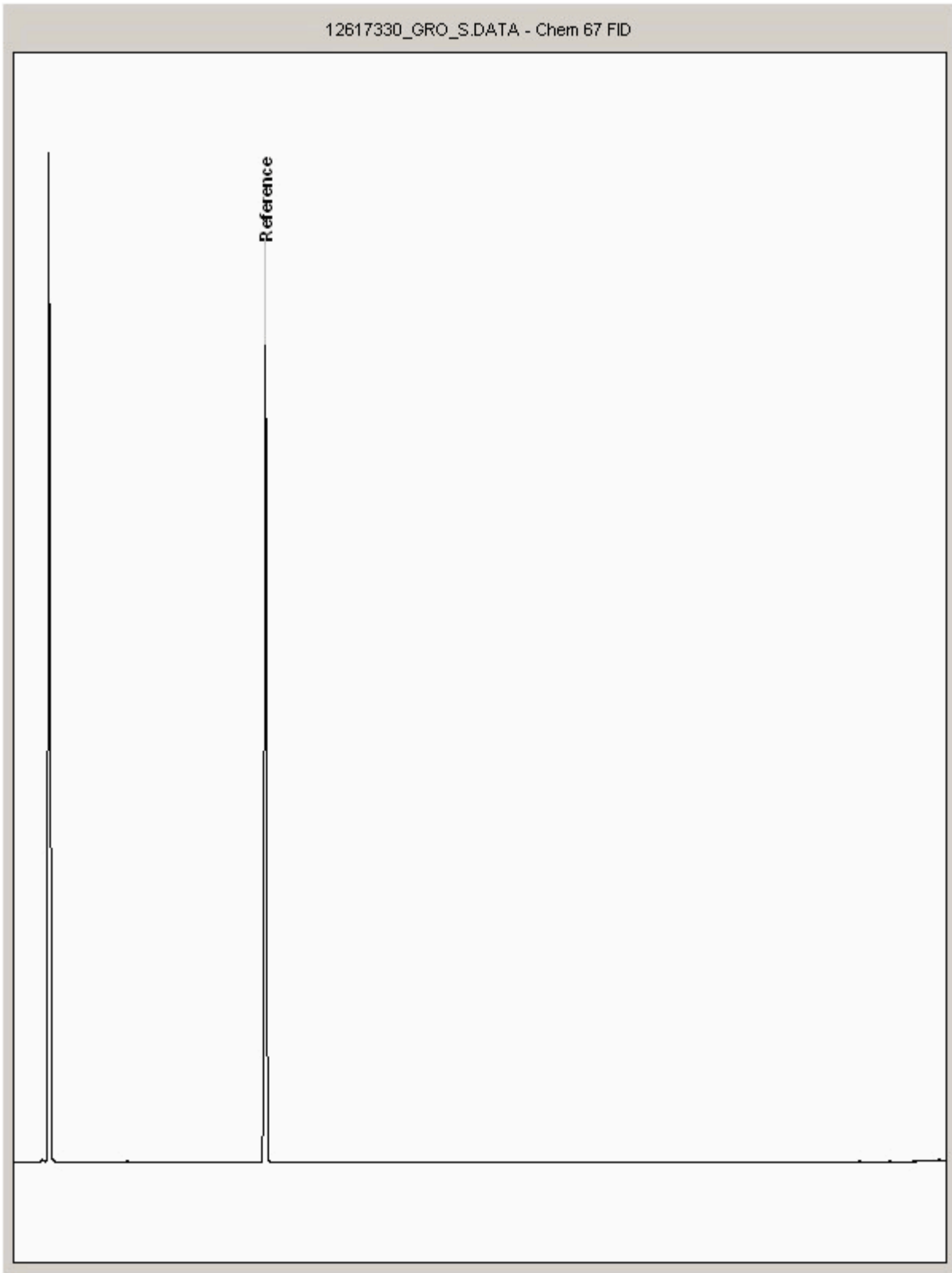
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12617330
Sample ID : EX02

Depth : 2.00





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

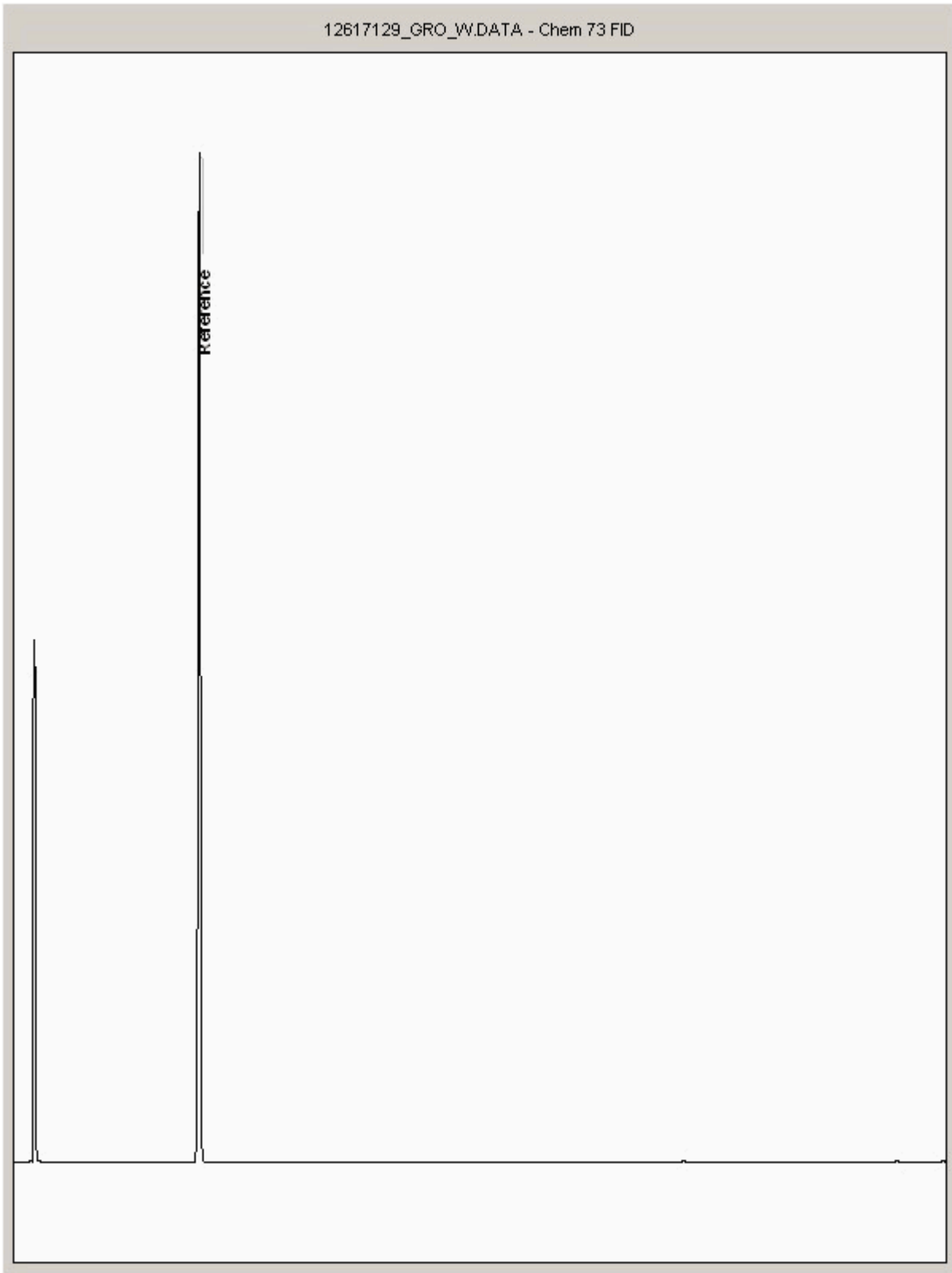
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 12617129
Sample ID : MW3

Depth :





CERTIFICATE OF ANALYSIS

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

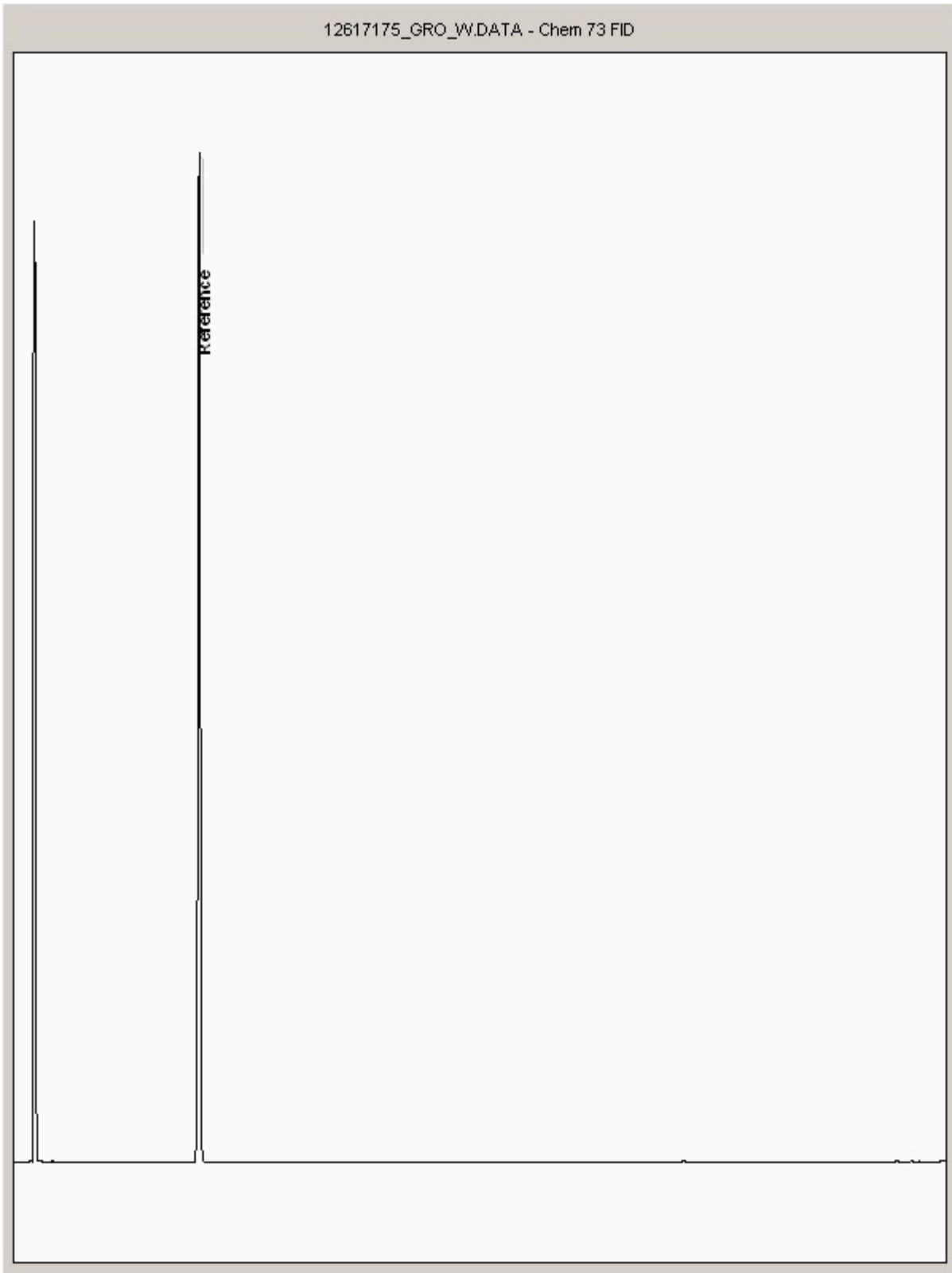
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 12617175
Sample ID : MW4

Depth :





SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

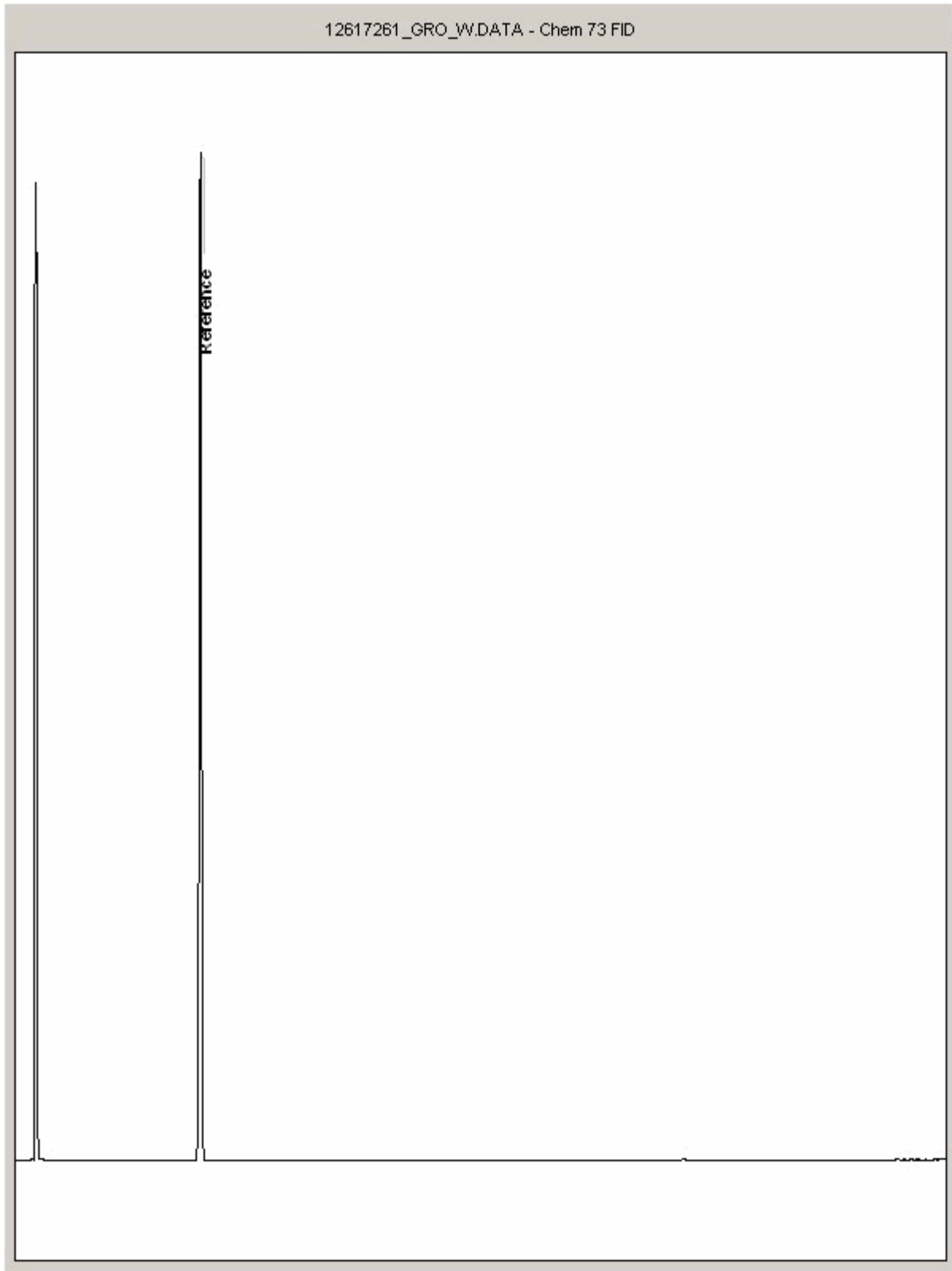
Order Number: 60479811
Report Number: 342339
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 12617261
Sample ID : DUP01

Depth :



SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXHERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXHERM	HFLC
PHENOLSBY GOMS	WET	DOM	SOXHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CAG BY GC	D&C	HEXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CAG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HFLC
PEST COP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HFLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HFLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

SDG: 151210-90
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 342339
Superseded Report:

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 23 December 2015
Customer: H_URS_WIM
Sample Delivery Group (SDG): 151215-6
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 343316

This report has been revised and directly supersedes 342813 in its entirety.

We received 8 samples on Tuesday December 15, 2015 and 8 of these samples were scheduled for analysis which was completed on Wednesday December 23, 2015. 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: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12642126	EXC1_1.8		1.80	14/12/2015
12642127	EXC2_1.8		1.80	14/12/2015
12642128	EXC3_2.0		2.00	14/12/2015
12642129	EXC4_1.7		1.70	14/12/2015
12642130	EXC5_1.7		1.70	14/12/2015
12642131	EXC6_1.8		1.80	14/12/2015
12642132	EXC7_3.0		3.00	14/12/2015
12642133	EXC8_3.0		3.00	14/12/2015



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



SDG: 151215-6
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 343316
 Superseded Report: 342813

SOLID Results Legend  Test  No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	
		12642126	EXC1_1.8		1.80	250g Amber Jar (AL)
		12642127	EXC2_1.8		1.80	250g Amber Jar (AL)
		12642128	EXC3_2.0		2.00	250g Amber Jar (AL)
		12642129	EXC4_1.7		1.70	250g Amber Jar (AL)
	12642130	EXC5_1.7		1.70	250g Amber Jar (AL)	
	12642131	EXC6_1.8		1.80	250g Amber Jar (AL)	
	12642132	EXC7_3.0		3.00	250g Amber Jar (AL)	
	12642133	EXC8_3.0		3.00	250g Amber Jar (AL)	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6				
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 8				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 8				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8				
Oxygenates (S)	All	NDPs: 0 Tests: 8				
PAH by GCMS	All	NDPs: 0 Tests: 8				
Sample description	All	NDPs: 0 Tests: 8				
VOC MS (S)	All	NDPs: 0 Tests: 8				



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

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Superseded Report: 342813

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
12642126	EXC1_1.8	1.80	Dark Brown	Loamy Sand	0.1 - 2 mm	Stones	Brick
12642127	EXC2_1.8	1.80	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Brick
12642128	EXC3_2.0	2.00	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Brick
12642129	EXC4_1.7	1.70	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Brick
12642130	EXC5_1.7	1.70	Light Brown	Loamy Sand	0.1 - 2 mm	Brick	Concrete/Aggregate
12642131	EXC6_1.8	1.80	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Brick
12642132	EXC7_3.0	3.00	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	None
12642133	EXC8_3.0	3.00	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	None

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

Validated

SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Table with columns for Results Legend, Customer Sample R, and various sample identifiers (EXC1_1.8 to EXC6_1.8). It includes a detailed legend for sample types and depths, and a main data table with columns for Component, LOD/Units, Method, and numerical results for each sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Table with columns: Results Legend, Customer Sample R, EXC7_3.0, EXC8_3.0, Component, LOD/Units, Method. Rows include Moisture Content Ratio, Ethanol, tert Butanol, Diisopropyl ether, tert-butyl ethyl ether.



CERTIFICATE OF ANALYSIS

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Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

EPH CWG (Aliphatic) GC (S)

Table with columns for Component, LOD/Units, Method, and sample locations (EXC1_1.8 to EXC6_1.8). Includes a Results Legend and a table with 4 rows of component data.



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

EPH CWG (Aliphatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXC7_3.0, EXC8_3.0, Component, LOD/Units, Method. Includes data for Aliphatics >C12-C16, >C16-C21, >C21-C35, >C35-C44.



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

EPH CWG (Aromatic) GC (S)

Table with columns for Results Legend, Customer Sample R, EXC1_1.8, EXC2_1.8, EXC3_2.0, EXC4_1.7, EXC5_1.7, EXC6_1.8. Rows include Component, LOD/Units, Method, and various aromatic compounds like Aromatics >EC12-EC16.



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

EPH CWG (Aromatic) GC (S)

Table with columns: Component, LOD/Units, Method, EXC7_3.0, EXC8_3.0. Includes a Results Legend and data rows for Aromatics >EC12-EC16, >EC16-EC21, and >EC21-EC35.



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample R, EXC7_3.0, EXC8_3.0, Component, LOD/Units, Method. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



SDG: 151215-6
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 343316
 Superseded Report: 342813

PAH by GCMS

Results Legend			Customer Sample R		EXC1_1.8	EXC2_1.8	EXC3_2.0	EXC4_1.7	EXC5_1.7	EXC6_1.8
#	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	1.80	2.00	1.70	1.70	1.80	
aq	Aqueous / settled sample.			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
diss.filt	Dissolved / filtered sample.			14/12/2015	14/12/2015	14/12/2015	14/12/2015	14/12/2015	14/12/2015	
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			15/12/2015	15/12/2015	15/12/2015	15/12/2015	15/12/2015	15/12/2015	
(F)	Trigger breach confirmed			151215-6	151215-6	151215-6	151215-6	151215-6	151215-6	
1-5&*\$@	Sample deviation (see appendix)			12642126	12642127	12642128	12642129	12642130	12642131	
Component	LOD/Units	Method								
Naphthalene-d8 % recovery**	%	TM218	99.4	102	109	100	116	111		
Acenaphthene-d10 % recovery**	%	TM218	91.4	94.1	104	93.1	111	108		
Phenanthrene-d10 % recovery**	%	TM218	88.7	91.5	99.1	92.3	109	106		
Chrysene-d12 % recovery**	%	TM218	89.6	92.6	102	91	108	106		
Perylene-d12 % recovery**	%	TM218	90.7	97.4	104	95.6	111	106		
Naphthalene	<9 µg/kg	TM218	20.2	16.9	13.7	<9	28.8	15		
			M	M	M	M	M	M		
Acenaphthylene	<12 µg/kg	TM218	15.6	13.8	<12	<12	16.6	<12		
			M	M	M	M	M	M		
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8	<8	<8		
			M	M	M	M	M	M		
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10	<10	<10		
			M	M	M	M	M	M		
Phenanthrene	<15 µg/kg	TM218	46.8	98.4	31.2	46.4	119	106		
			M	M	M	M	M	M		
Anthracene	<16 µg/kg	TM218	<16	25	<16	31.1	54.2	42.7		
			M	M	M	M	M	M		
Fluoranthene	<17 µg/kg	TM218	106	264	43	86.7	272	291		
			M	M	M	M	M	M		
Pyrene	<15 µg/kg	TM218	98.4	233	40	79.1	221	247		
			M	M	M	M	M	M		
Benz(a)anthracene	<14 µg/kg	TM218	107	187	19.4	91.1	209	204		
			M	M	M	M	M	M		
Chrysene	<10 µg/kg	TM218	78.7	152	19.2	55.2	153	184		
			M	M	M	M	M	M		
Benzo(b)fluoranthene	<15 µg/kg	TM218	195	260	44.5	113	238	271		
			M	M	M	M	M	M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	64	115	<14	54.5	104	86.5		
			M	M	M	M	M	M		
Benzo(a)pyrene	<15 µg/kg	TM218	127	220	38.1	97.7	183	193		
			M	M	M	M	M	M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	102	132	30.9	71.2	121	118		
			M	M	M	M	M	M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	34	44.7	<23	<23	38.3	32.9		
			M	M	M	M	M	M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	128	167	54.6	100	166	162		
			M	M	M	M	M	M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1120	1930	335	826	1920	1950		



SDG: 151215-6
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 343316
 Superseded Report: 342813

PAH by GCMS

Results Legend		Customer Sample R	EXC7_3.0	EXC8_3.0				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.		3.00	3.00				
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid				
diss.filt	Dissolved / filtered sample.		14/12/2015	14/12/2015				
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		15/12/2015	15/12/2015				
(F)	Trigger breach confirmed		151215-6	151215-6				
1-5&*\$@	Sample deviation (see appendix)		12642132	12642133				
Component	LOD/Units		Method					
Naphthalene-d8 % recovery**	%	TM218	99.8	98.1				
Acenaphthene-d10 % recovery**	%	TM218	96.1	94.4				
Phenanthrene-d10 % recovery**	%	TM218	94.1	92				
Chrysene-d12 % recovery**	%	TM218	92.3	88.9				
Perylene-d12 % recovery**	%	TM218	88.9	85.6				
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M				
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M				
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M				
Fluorene	<10 µg/kg	TM218	<10 M	<10 M				
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M				
Anthracene	<16 µg/kg	TM218	<16 M	<16 M				
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M				
Pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M				
Chrysene	<10 µg/kg	TM218	<10 M	<10 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M				
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118				



CERTIFICATE OF ANALYSIS

Validated

SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

VOC MS (S)

Table with columns for Component, LOD/Units, Method, and VOC concentrations (EXC1_1.8 to EXC6_1.8). Includes a Results Legend and Customer Sample R details.



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

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Superseded Report: 342813

VOC MS (S)

Table with columns: Results Legend, Customer Sample R, EXC7_3.0, EXC8_3.0, Component, LOD/Units, Method. Rows include Toluene-d8**, Methyl Tertiary Butyl Ether, Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, Tert-amyl methyl ether.



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
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Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXC1_1.8 1.80 SOLID 14/12/2015 00:00:00 22/12/2015 04:40:47 151215-6 12642126 TM048	23/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXC2_1.8 1.80 SOLID 14/12/2015 00:00:00 22/12/2015 04:42:20 151215-6 12642127 TM048	23/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXC3_2.0 2.00 SOLID 14/12/2015 00:00:00 22/12/2015 04:44:50 151215-6 12642128 TM048	23/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXC4_1.7 1.70 SOLID 14/12/2015 00:00:00 22/12/2015 04:46:38 151215-6 12642129 TM048	23/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXC5_1.7 1.70 SOLID 14/12/2015 00:00:00 22/12/2015 04:39:20 151215-6 12642130 TM048	23/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	EXC6_1.8	23/12/15	Simon Postlewhite	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.80										
Sample Type	SOLID										
Date Sampled	14/12/2015										
Date Received	00:00:00										
SDG	22/12/2015										
Original Sample	04:47:52										
Method Number	151215-6										
	12642131										
	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
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SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

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Superseded Report: 342813

Test Completion Dates

Lab Sample No(s)	12642126	12642127	12642128	12642129	12642130	12642131	12642132	12642133
Customer Sample Ref.	EXC1_1.8	EXC2_1.8	EXC3_2.0	EXC4_1.7	EXC5_1.7	EXC6_1.8	EXC7_3.0	EXC8_3.0
AGS Ref.								
Depth	1.80	1.80	2.00	1.70	1.70	1.80	3.00	3.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015		
EPH CWG (Aliphatic) GC (S)	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015
EPH CWG (Aromatic) GC (S)	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015	17-Dec-2015
GRO by GC-FID (S)	16-Dec-2015	17-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	17-Dec-2015	17-Dec-2015
Oxygenates (S)	16-Dec-2015	16-Dec-2015	17-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	17-Dec-2015
PAH by GCMS	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015	18-Dec-2015
Sample description	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015	15-Dec-2015
VOC MS (S)	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015	16-Dec-2015



SDG: 151215-6
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 343316
 Superseded Report: 342813

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1268
Total Aliphatics >C12-C35	TM173	70.63 62.50 : 112.50

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1268
Total Aromatics >EC12-EC35	TM173	82.0 60.62 : 126.95

GRO by GC-FID (S)

Component	Method Code	QC 1282	QC 1253
Benzene by GC (Moisture Corrected)	TM089	95.5 79.00 : 121.00	95.5 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	94.0 79.00 : 121.00	94.0 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	94.0 79.00 : 121.00	94.0 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	94.5 74.48 : 125.29	92.0 74.48 : 125.29
o Xylene by GC (Moisture Corrected)	TM089	94.5 79.00 : 121.00	94.0 79.00 : 121.00
QC	TM089	97.98 73.70 : 123.60	84.64 73.70 : 123.60
Toluene by GC (Moisture Corrected)	TM089	94.5 79.00 : 121.00	95.0 79.00 : 121.00

Oxygenates (S)

Component	Method Code	QC 1204	QC 1293
Benzene raw	TM288	88.0 77.75 : 124.62	83.75 77.75 : 124.62
Diisopropyl ether raw	TM288	103.0 81.07 : 125.84	94.75 81.07 : 125.84
Ethanol raw	TM288	69.3 12.71 : 182.13	64.9 12.71 : 182.13
Ethylbenzene raw	TM288	105.0 86.91 : 124.43	100.0 86.91 : 124.43
o-Xylene raw	TM288	98.5 82.52 : 115.85	93.25 82.52 : 115.85
p/m-Xylene raw	TM288	104.88 82.74 : 124.08	100.13 82.74 : 124.08
tert Butanol raw	TM288	79.0 27.29 : 165.57	67.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	98.25 82.15 : 125.05	89.75 82.15 : 125.05



SDG: 151215-6
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 343316
 Superseded Report: 342813

Oxygenates (S)

		QC 1204	QC 1293
tert-butyl ethyl ether raw	TM288	100.25 81.24 : 125.04	91.75 81.24 : 125.04
tert-butyl methyl ether raw	TM288	100.0 80.97 : 130.09	91.5 80.97 : 130.09
Toluene raw	TM288	89.0 78.97 : 116.51	86.5 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1218	QC 1248	QC 1266
Acenaphthene	TM218	98.0 78.75 : 116.25	92.5 78.75 : 116.25	98.0 76.50 : 121.50
Acenaphthylene	TM218	93.5 76.45 : 110.05	89.5 76.45 : 110.05	92.0 73.50 : 118.50
Anthracene	TM218	94.5 67.15 : 124.45	89.0 67.15 : 124.45	93.0 74.25 : 117.75
Benz(a)anthracene	TM218	106.5 82.00 : 127.00	103.5 82.00 : 127.00	103.5 82.07 : 118.33
Benzo(a)pyrene	TM218	106.0 75.60 : 124.20	102.0 75.60 : 124.20	107.5 79.75 : 116.97
Benzo(b)fluoranthene	TM218	107.0 81.20 : 121.77	102.0 81.20 : 121.77	104.5 82.41 : 117.15
Benzo(ghi)perylene	TM218	103.0 77.49 : 119.12	97.0 77.49 : 119.12	106.0 77.09 : 114.38
Benzo(k)fluoranthene	TM218	104.5 83.50 : 116.50	98.5 83.50 : 116.50	104.0 81.43 : 115.17
Chrysene	TM218	103.0 78.35 : 114.42	96.5 78.35 : 114.42	97.5 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	103.5 77.15 : 122.45	98.5 77.15 : 122.45	107.0 81.00 : 120.00
Fluoranthene	TM218	96.5 79.08 : 114.40	91.5 79.08 : 114.40	94.0 78.67 : 117.61
Fluorene	TM218	99.0 79.03 : 113.38	93.0 79.03 : 113.38	97.0 76.50 : 121.50
Indeno(123cd)pyrene	TM218	101.0 75.65 : 125.15	96.5 75.65 : 125.15	104.0 79.19 : 117.60
Naphthalene	TM218	98.5 77.25 : 112.60	94.0 77.25 : 112.60	97.0 77.00 : 117.50
Phenanthrene	TM218	98.0 78.25 : 115.44	92.0 78.25 : 115.44	96.0 75.00 : 123.00
Pyrene	TM218	96.5 78.07 : 114.06	91.5 78.07 : 114.06	94.5 77.82 : 116.98

VOC MS (S)

Component	Method Code	QC 1241	QC 1285
1,1,1,2-tetrachloroethane	TM116	95.6 83.24 : 124.28	98.2 83.24 : 124.28
1,1,1-Trichloroethane	TM116	96.6 81.77 : 121.07	94.2 81.77 : 121.07
1,1,2-Trichloroethane	TM116	88.6 78.55 : 105.28	87.6 78.55 : 105.28
1,1-Dichloroethane	TM116	96.2 74.63 : 123.32	93.4 74.63 : 123.32



SDG: 151215-6
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60479811
 Report Number: 343316
 Superseded Report: 342813

VOC MS (S)

		QC 1241	QC 1285
1,2-Dichloroethane	TM116	103.6 86.58 : 129.62	104.4 86.58 : 129.62
1,4-Dichlorobenzene	TM116	90.2 73.23 : 116.39	90.8 73.23 : 116.39
2-Chlorotoluene	TM116	90.2 69.22 : 110.64	86.6 69.22 : 110.64
4-Chlorotoluene	TM116	83.8 68.57 : 106.26	84.0 68.57 : 106.26
Benzene	TM116	94.2 84.33 : 124.27	92.2 84.33 : 124.27
Carbon Disulphide	TM116	86.2 77.20 : 122.80	85.2 77.20 : 122.80
Carbontetrachloride	TM116	105.0 84.20 : 119.90	104.4 84.20 : 119.90
Chlorobenzene	TM116	97.2 85.28 : 129.96	99.0 85.28 : 129.96
Chloroform	TM116	97.8 82.73 : 119.72	95.4 82.73 : 119.72
Chloromethane	TM116	105.0 55.16 : 145.46	109.6 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	98.4 80.55 : 123.13	96.2 80.55 : 123.13
Dibromomethane	TM116	102.8 73.40 : 116.60	100.4 73.40 : 116.60
Dichloromethane	TM116	101.0 81.68 : 125.21	101.4 81.68 : 125.21
Ethylbenzene	TM116	90.6 80.07 : 125.98	89.6 80.07 : 125.98
Hexachlorobutadiene	TM116	88.8 30.92 : 132.28	74.6 30.92 : 132.28
Isopropylbenzene	TM116	82.4 69.27 : 125.32	78.0 69.27 : 125.32
Naphthalene	TM116	98.8 79.15 : 121.98	99.2 79.15 : 121.98
o-Xylene	TM116	78.8 72.94 : 106.80	78.2 72.94 : 106.80
p/m-Xylene	TM116	87.3 76.97 : 121.75	87.8 76.97 : 121.75
Sec-Butylbenzene	TM116	88.8 49.27 : 129.90	74.0 49.27 : 129.90
Tetrachloroethene	TM116	99.0 87.96 : 133.65	104.2 87.96 : 133.65
Toluene	TM116	91.2 79.23 : 114.58	89.4 79.23 : 114.58
Trichloroethene	TM116	87.2 81.65 : 115.27	87.2 81.65 : 115.27
Trichlorofluoromethane	TM116	97.6 76.22 : 114.82	102.8 76.22 : 114.82
Vinyl Chloride	TM116	76.6 59.68 : 118.68	82.4 59.68 : 118.68

SDG:	151215-6	Location:	Shell Blackhorse	Order Number:	60479811
Job:	H_URS_WIM-282	Customer:	AECOM	Report Number:	343316
Client Reference:	46370438	Attention:	Phil Allen	Superseded Report:	342813

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: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

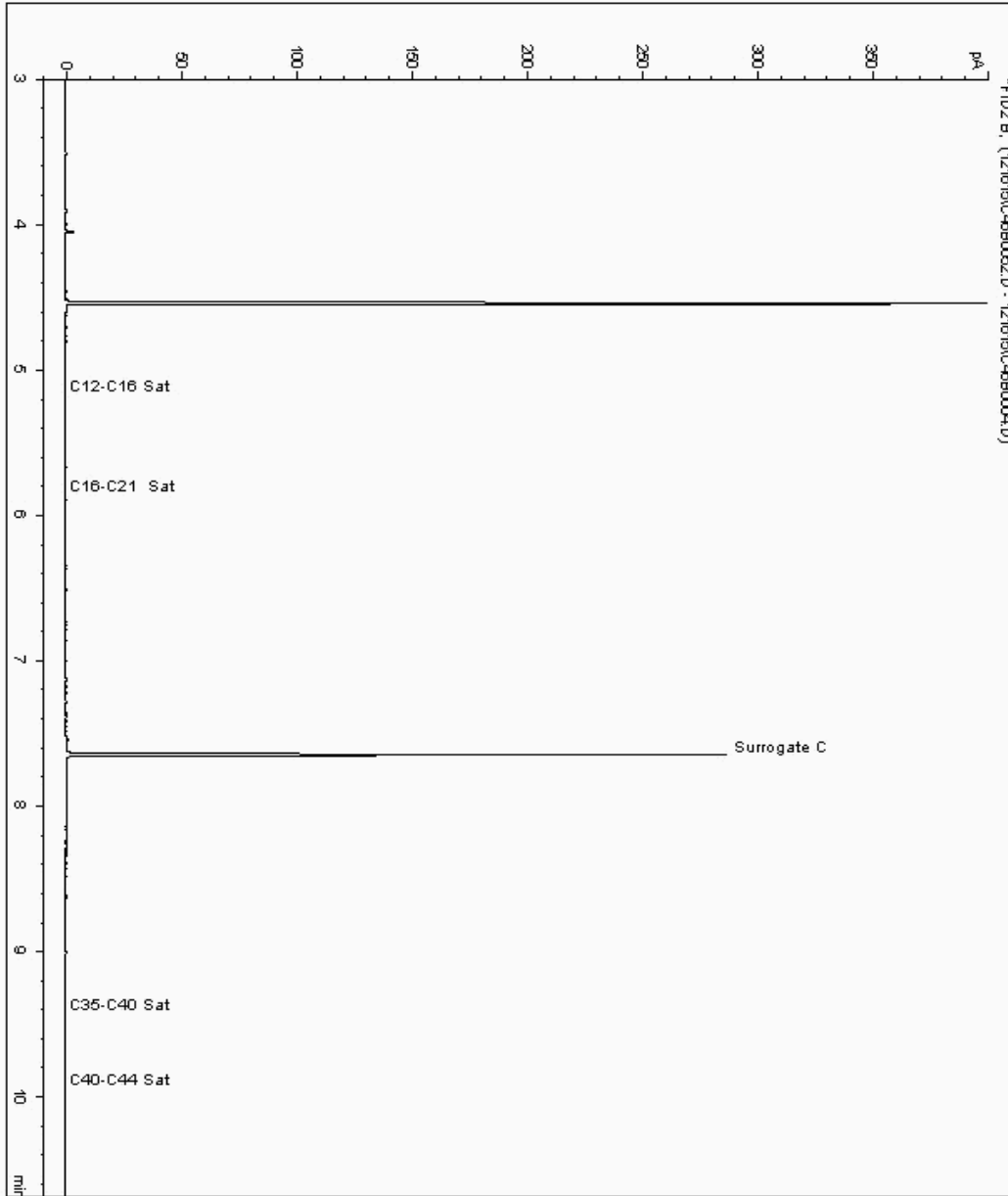
Sample No : 12646292
Sample ID : EXC7_3.0

Depth : 3.00

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

Sample Identity: 11943386-
Date Acquired : 16/12/2015 23:33:35 PM
Units : ppb
Dilution: EXC7_3.0[3.00]

->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

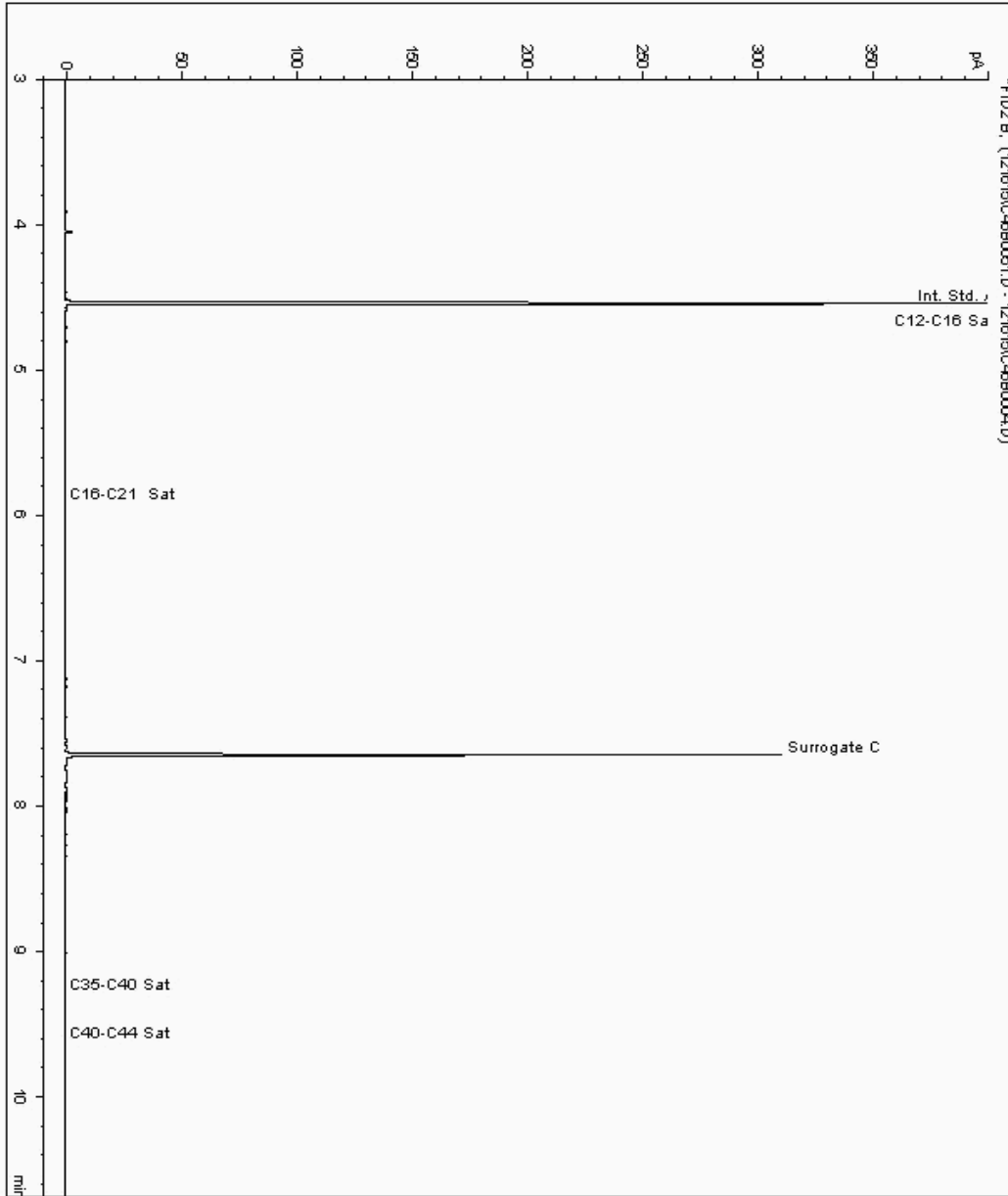
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12646585
Sample ID : EXC8_3.0

Depth : 3.00

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

Sample Identity: 11943395-
Date Acquired : 16/12/2015 23:13:39 PM
Units : ppb
Dilution: EXC8_3.0[3.00] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

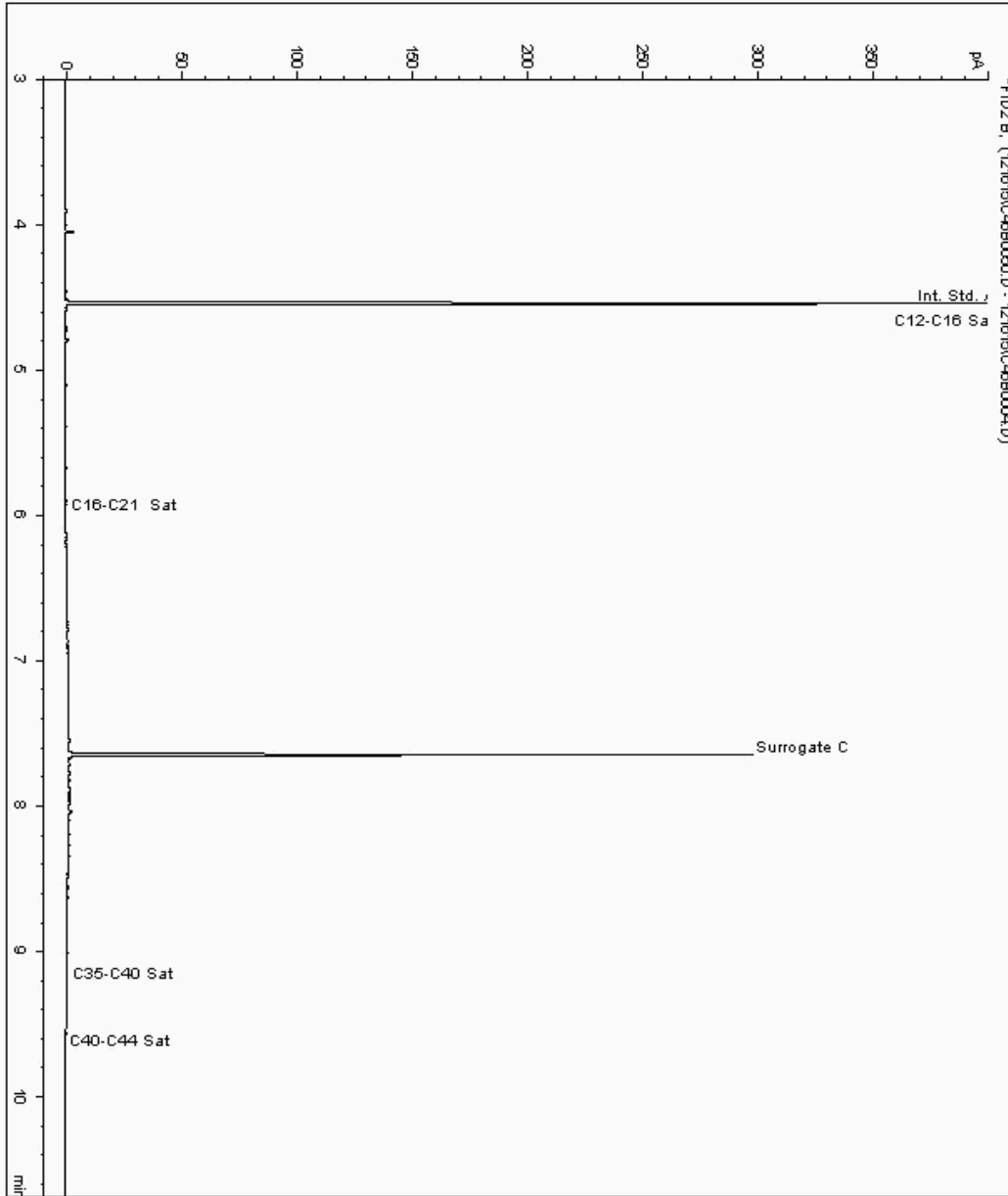
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12647872
Sample ID : EXC1_1.8

Depth : 1.80

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

Sample Identity: 11943329-
Date Acquired : 16/12/2015 22:53:35 PM
Units : ppb
Dilution: EXC1_1.8[1.80] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

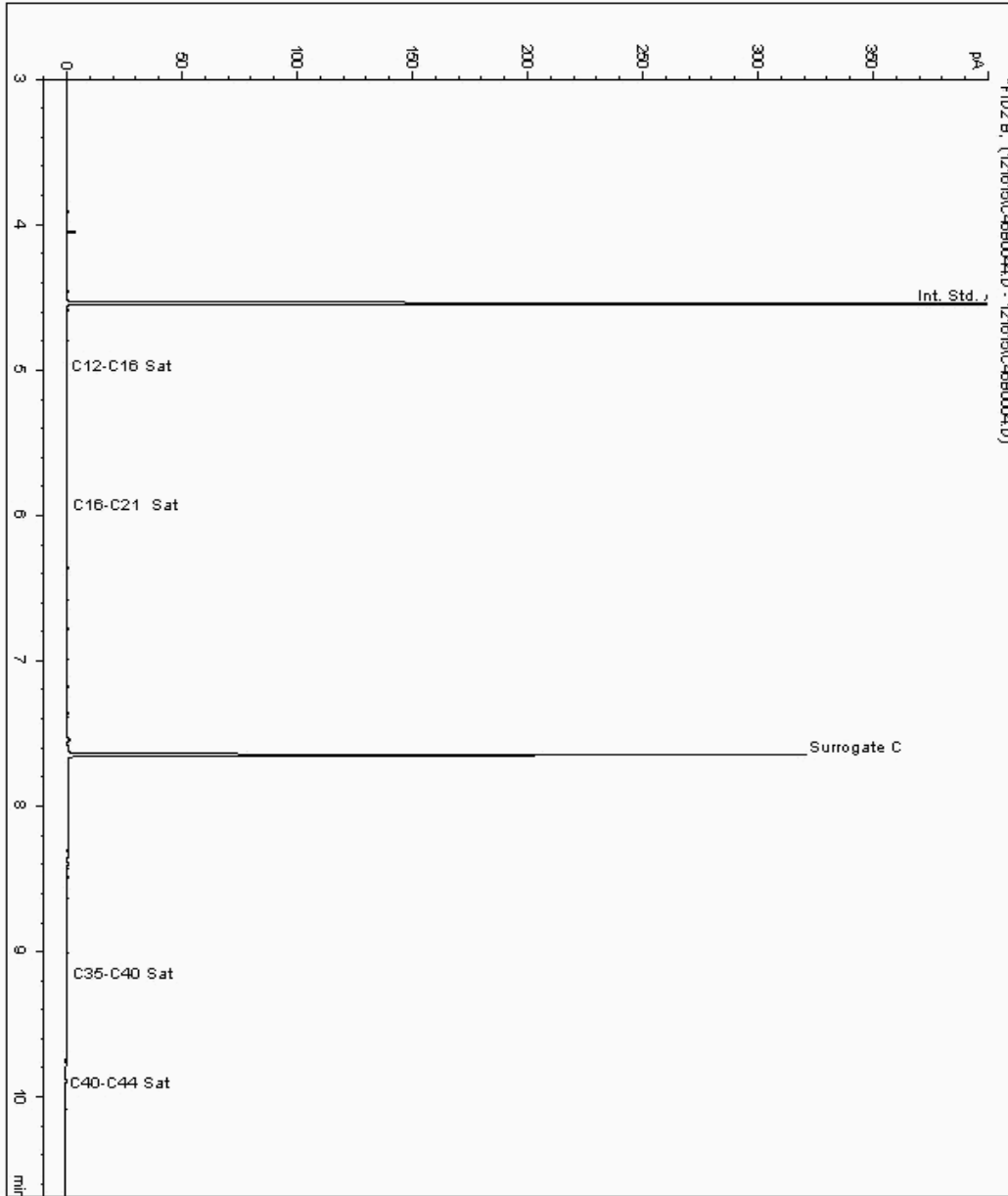
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12647875
Sample ID : EXC6_1.8

Depth : 1.80

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

Sample Identity: 11943377-
Date Acquired : 16/12/2015 21:01:15 PM
Units : ppb
Dilution: EXC6_1.8[1.80] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

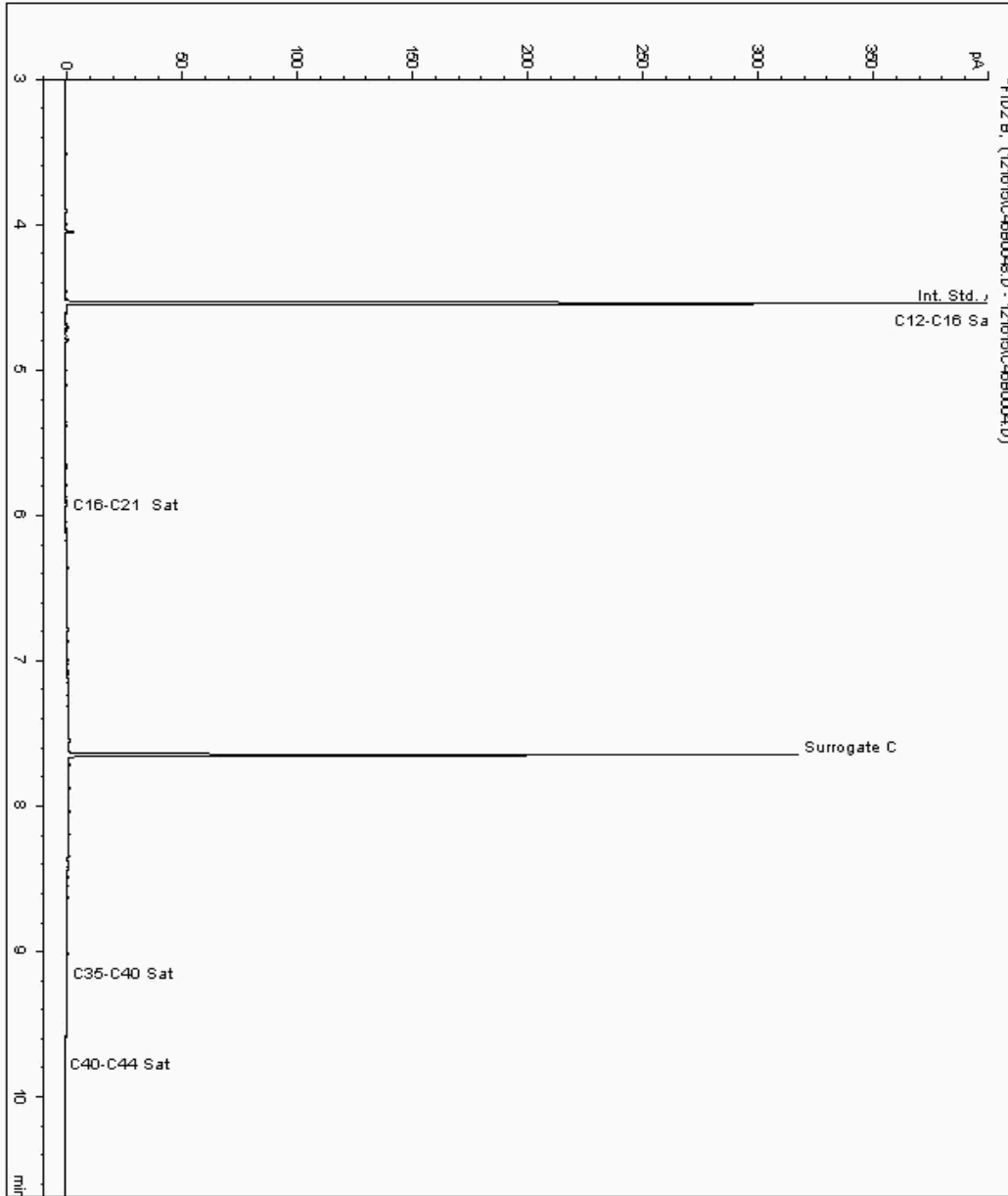
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12647879
Sample ID : EXC2_1.8

Depth : 1.80

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

Sample Identity: 11943338-
Date Acquired : 16/12/2015 22:13:42 PM
Units : ppb
Dilution: EXC2_1.8[1.80] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

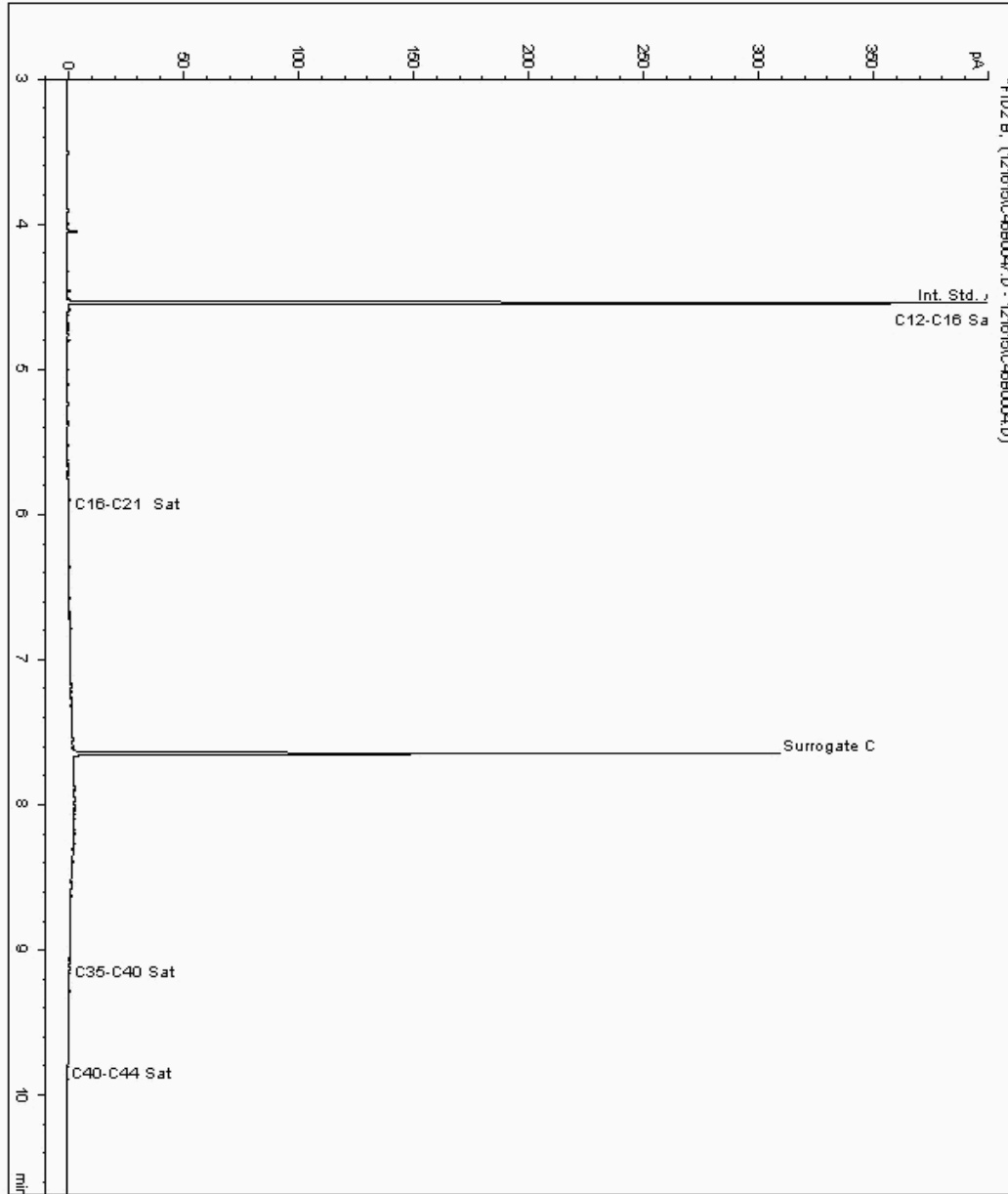
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12647886
Sample ID : EXC3_2.0

Depth : 2.00

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

Sample Identity: 11943347-
Date Acquired : 16/12/2015 21:53:30 PM
Units : ppb
Dilution: EXC3_2.0[2.00] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

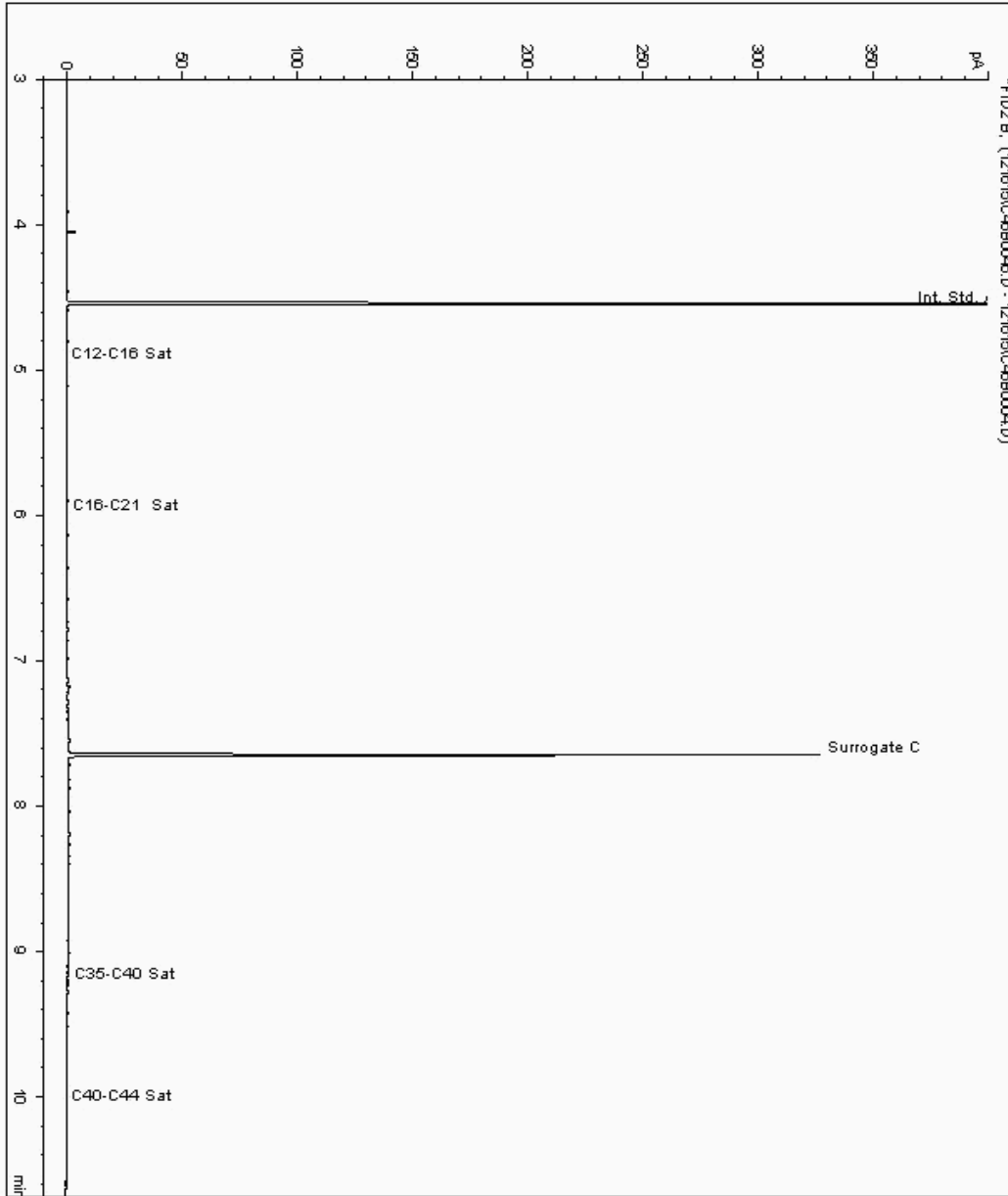
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12647903
Sample ID : EXC4_1.7

Depth : 1.70

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

Sample Identity: 11943359-
Date Acquired : 16/12/2015 21:33:27 PM
Units : ppb
Dilution: EXC4_1.7[1.70] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

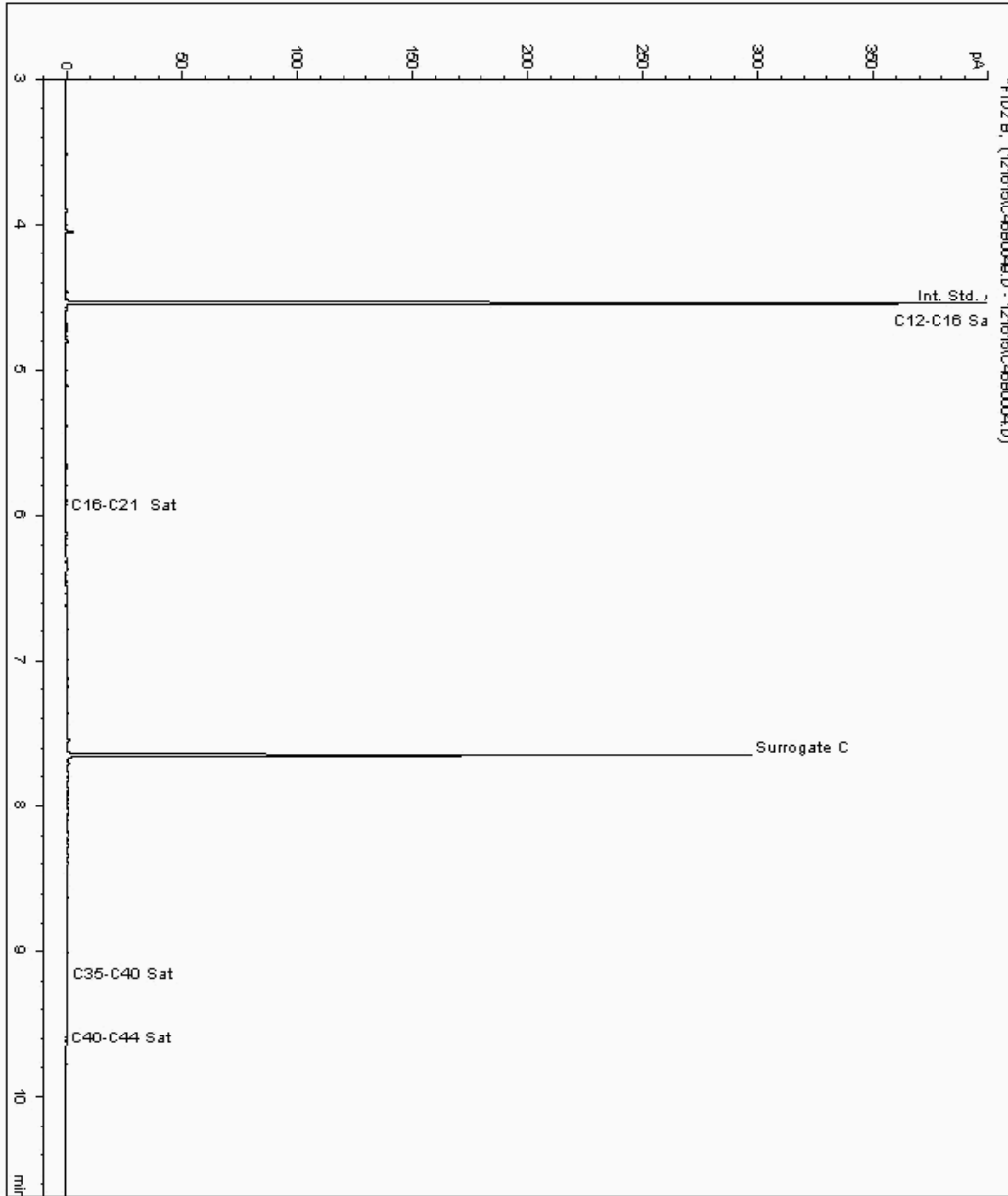
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12647907
Sample ID : EXC5_1.7

Depth : 1.70

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

Sample Identity: 11943368-
Date Acquired : 16/12/2015 22:33:37 PM
Units : ppb
Dilution: EXC5_1.7[1.70] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

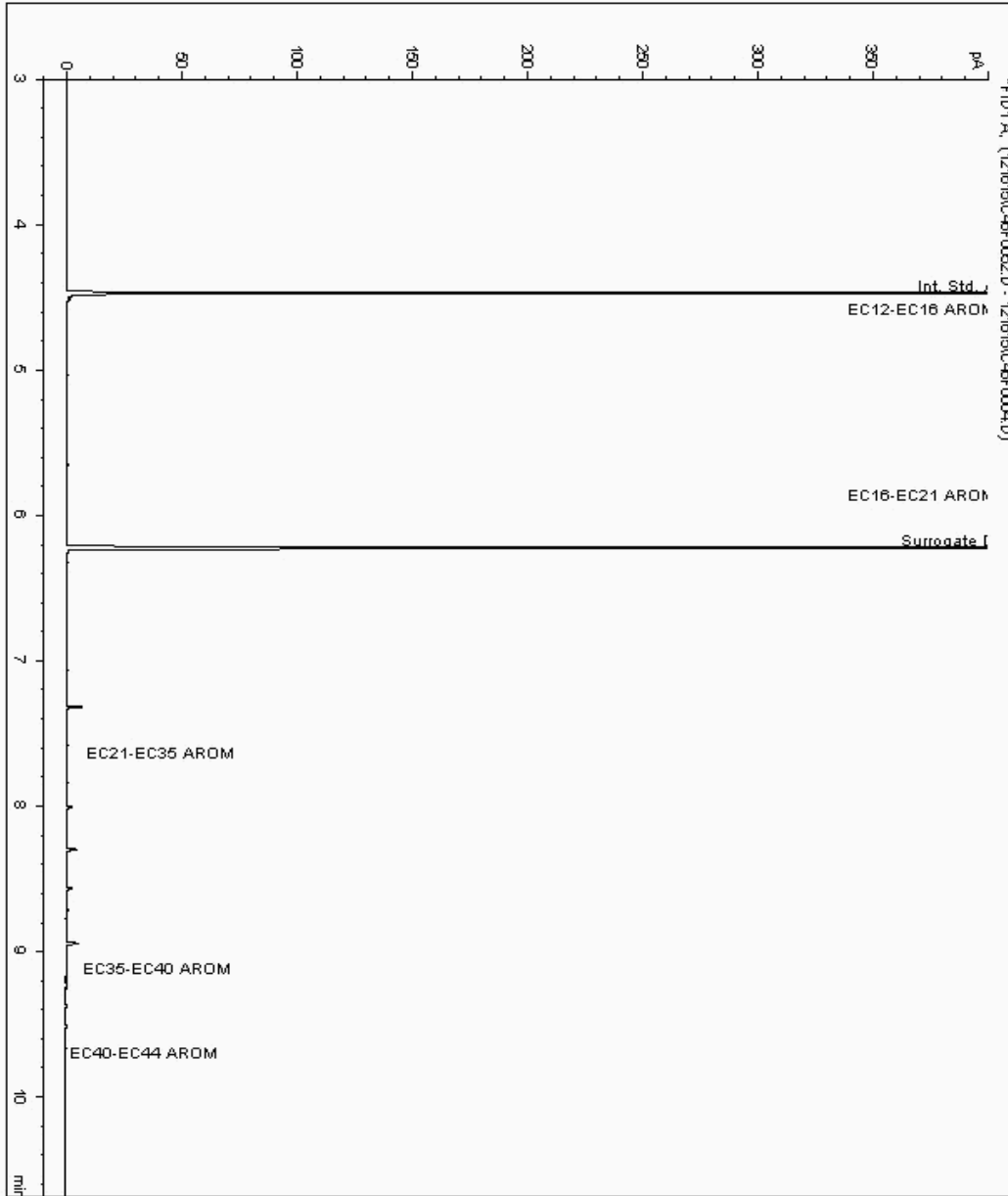
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12646292
Sample ID : EXC7_3.0

Depth : 3.00

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

Sample Identity: 11943387-
Date Acquired : 16/12/2015 23:33:35 PM
Units : ppb
Dilution: EXC7_3.0[3.00] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

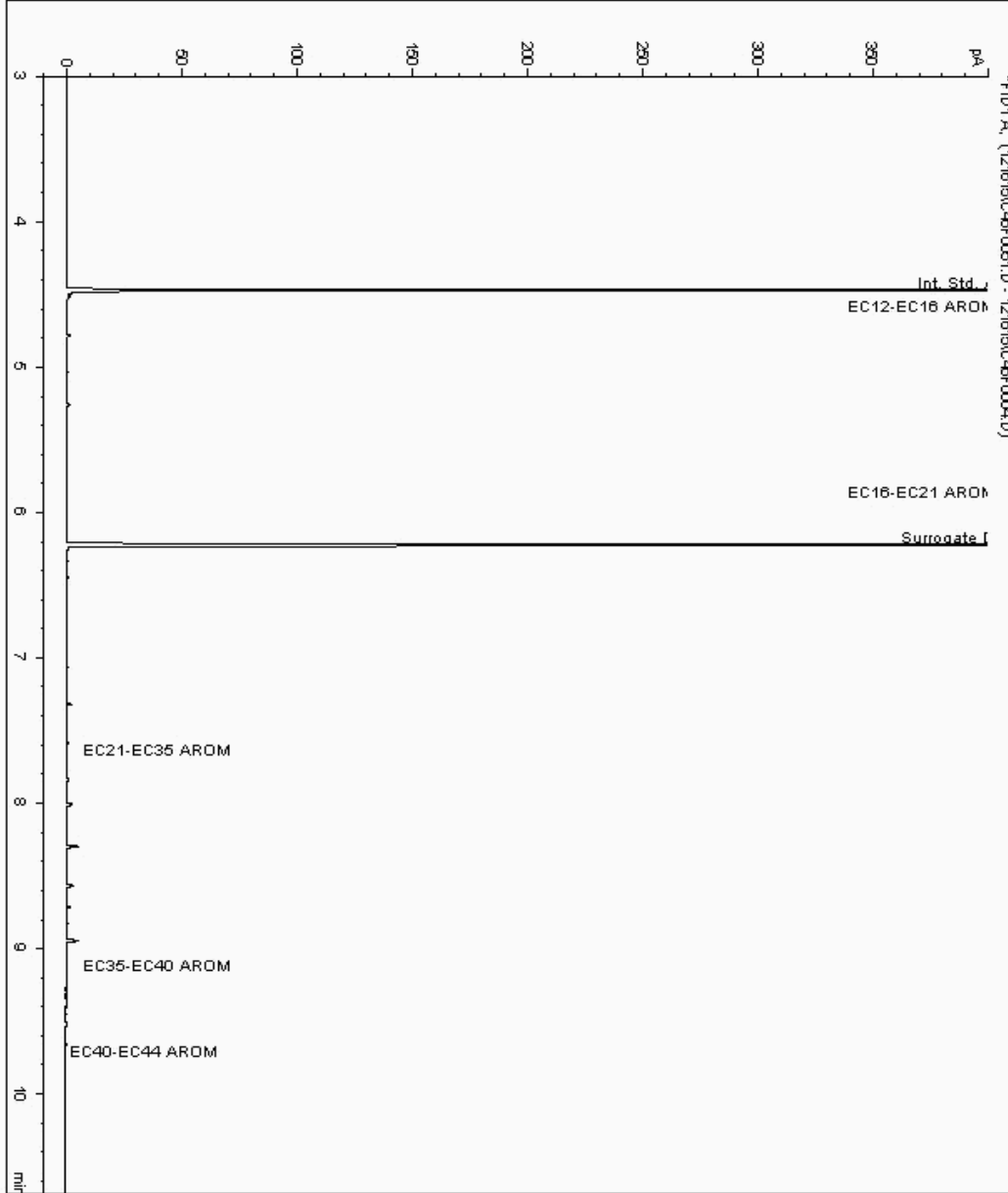
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12646585
Sample ID : EXC8_3.0

Depth : 3.00

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

Sample Identity: 11943396-
Date Acquired : 16/12/2015 23:13:39 PM
Units : ppb
Dilution: EXC8_3.0[3.00] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

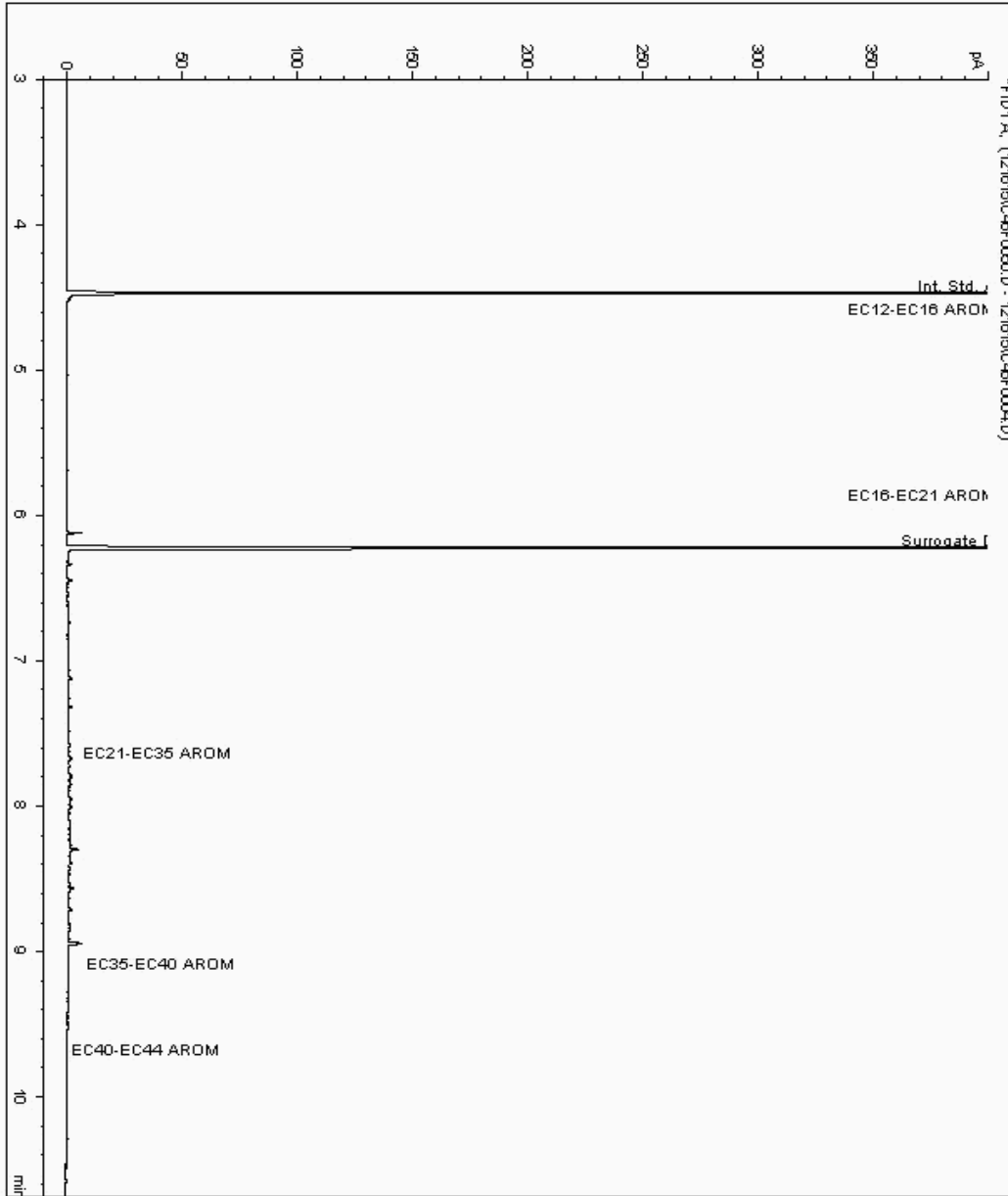
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12647872
Sample ID : EXC1_1.8

Depth : 1.80

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

Sample Identity: 11943330-
Date Acquired : 16/12/2015 22:53:35 PM
Units : ppb
Dilution: EXC1_1.8[1.80] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

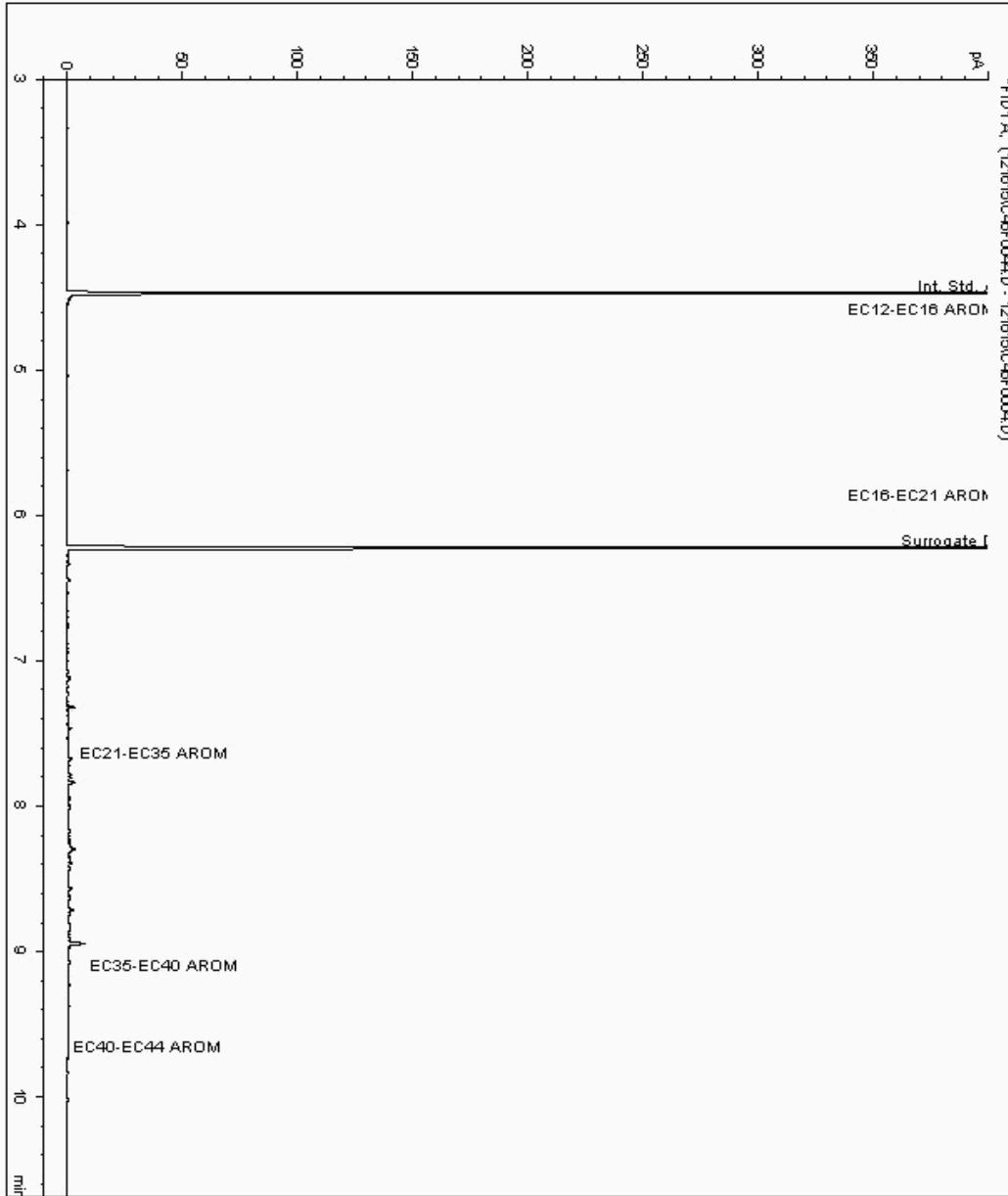
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12647875
Sample ID : EXC6_1.8

Depth : 1.80

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

Sample Identity: 11943378-
Date Acquired : 16/12/2015 21:01:15 PM
Units : ppb
Dilution: EXC6_1.8[1.80] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

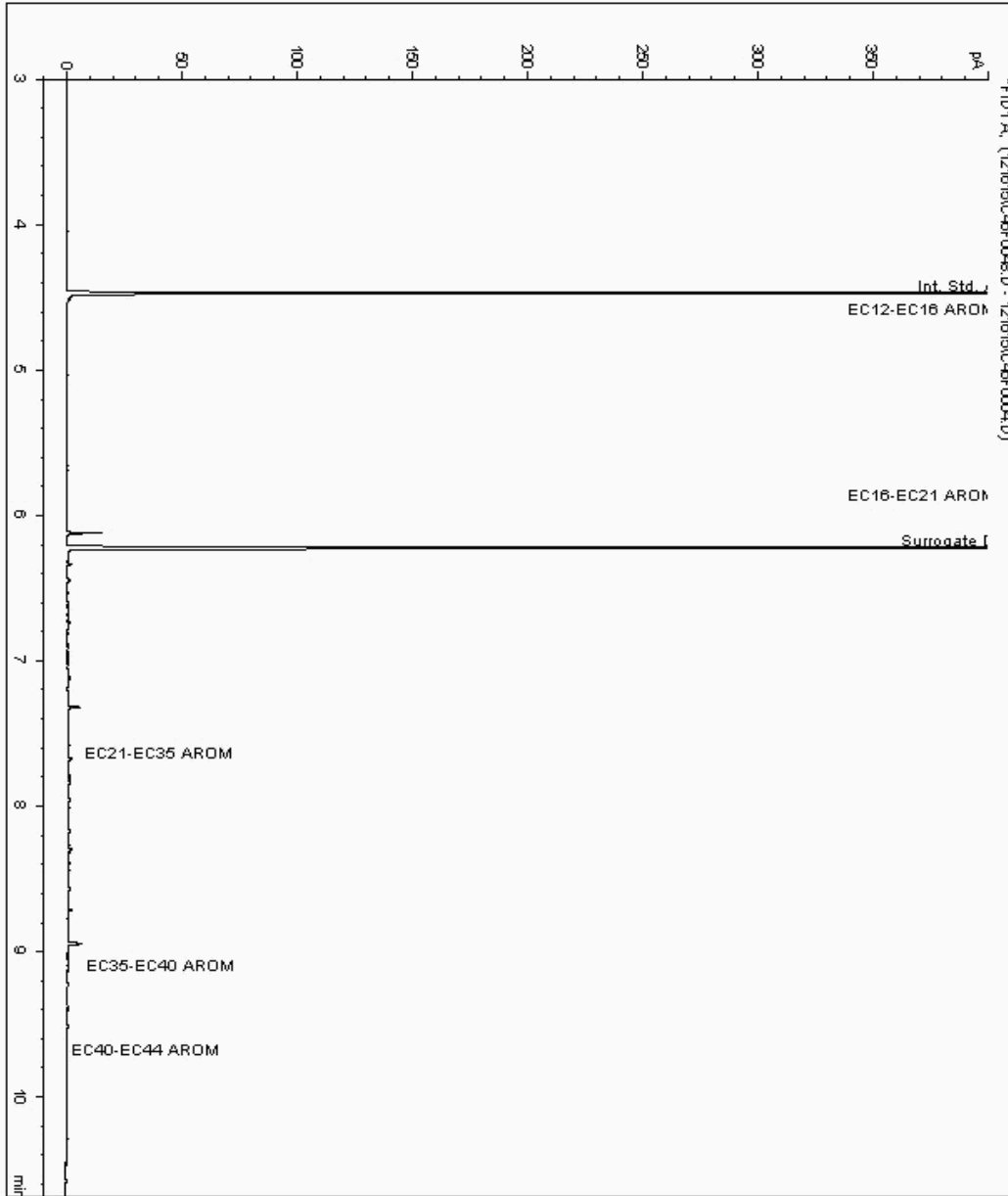
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12647879
Sample ID : EXC2_1.8

Depth : 1.80

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

Sample Identity: 11943339-
Date Acquired : 16/12/2015 22:13:42 PM
Units : ppb
Dilution: EXC2_1.8[1.80] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

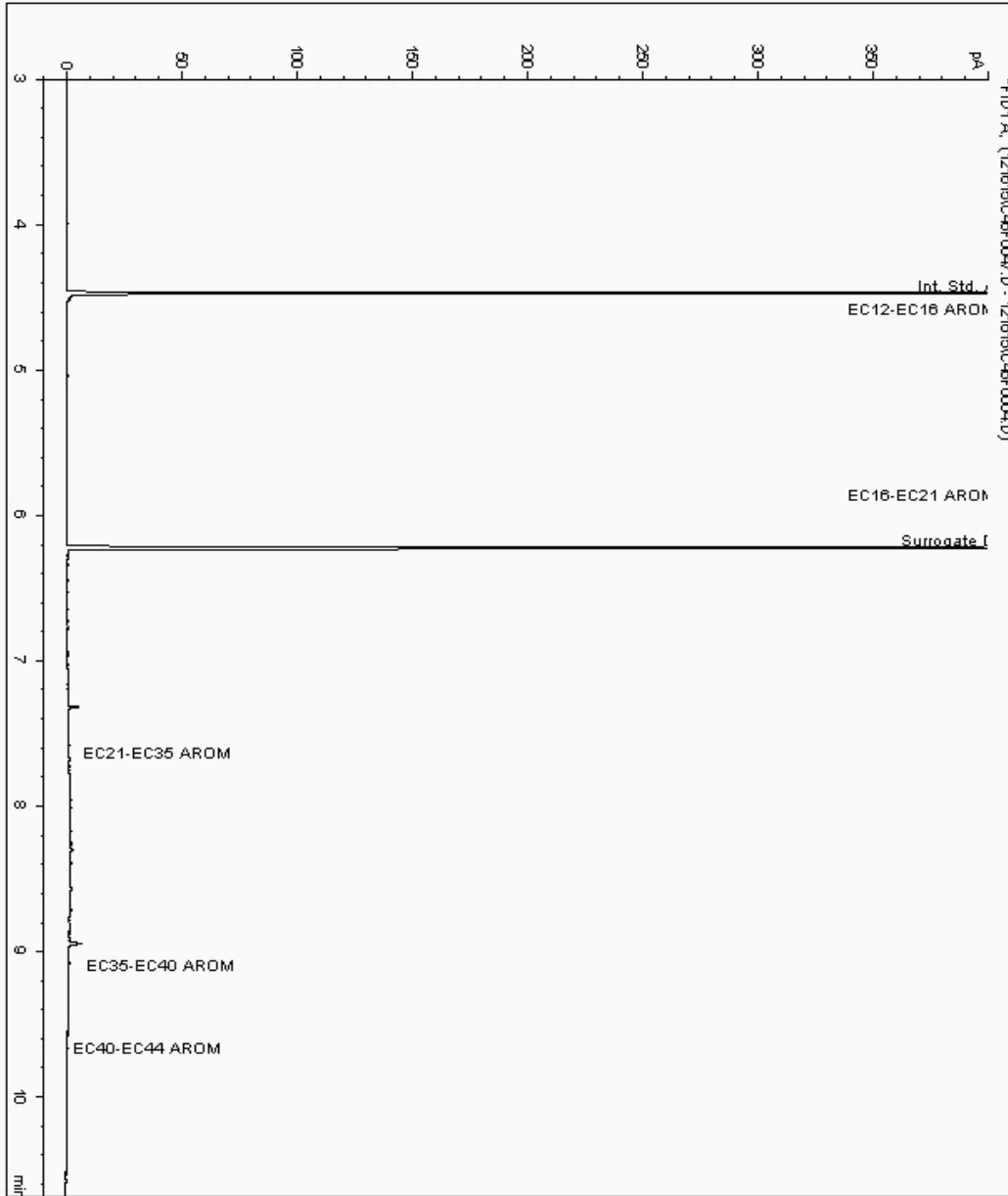
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12647886
Sample ID : EXC3_2.0

Depth : 2.00

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

Sample Identity: 11943348-
Date Acquired : 16/12/2015 21:53:30 PM
Units : ppb
Dilution: EXC3_2.0[2.00] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

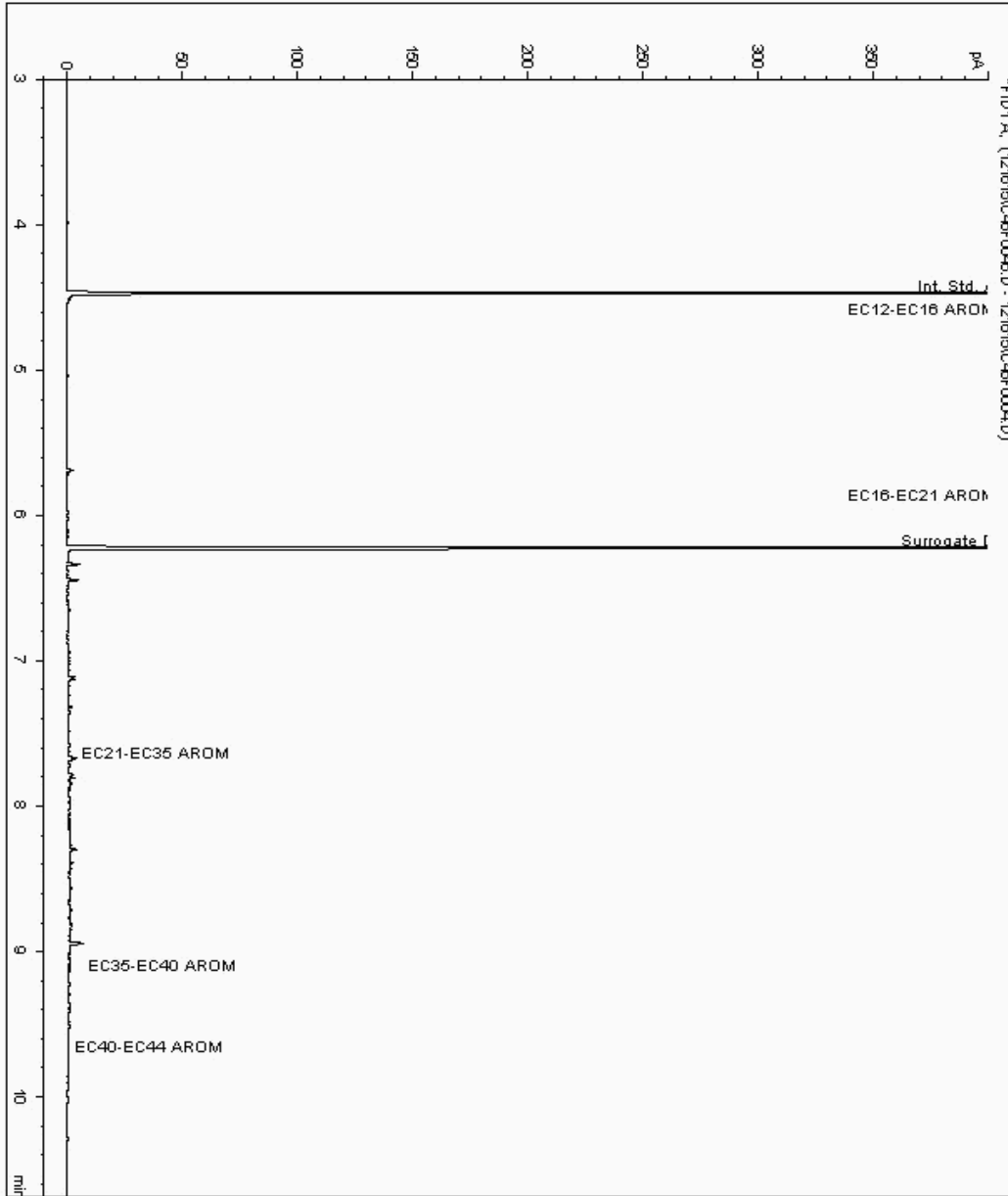
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12647903
Sample ID : EXC4_1.7

Depth : 1.70

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

Sample Identity: 11943360-
Date Acquired : 16/12/2015 21:33:27 PM
Units : ppb
Dilution: EXC4_1.7[1.70] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

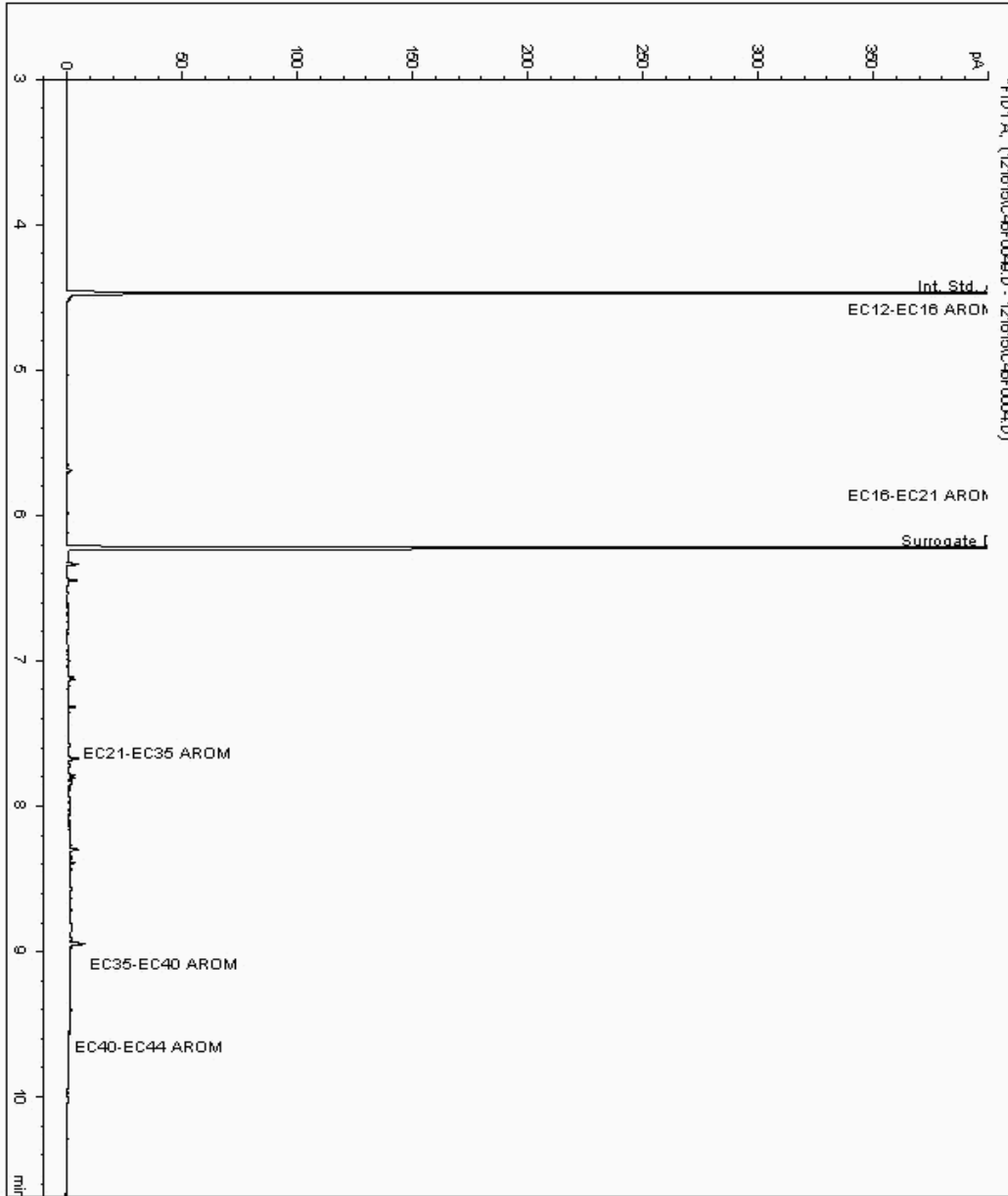
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12647907
Sample ID : EXC5_1.7

Depth : 1.70

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

Sample Identity: 11943369-
Date Acquired : 16/12/2015 22:33:37 PM
Units : ppb
Dilution: EXC5_1.7[1.70] ->





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

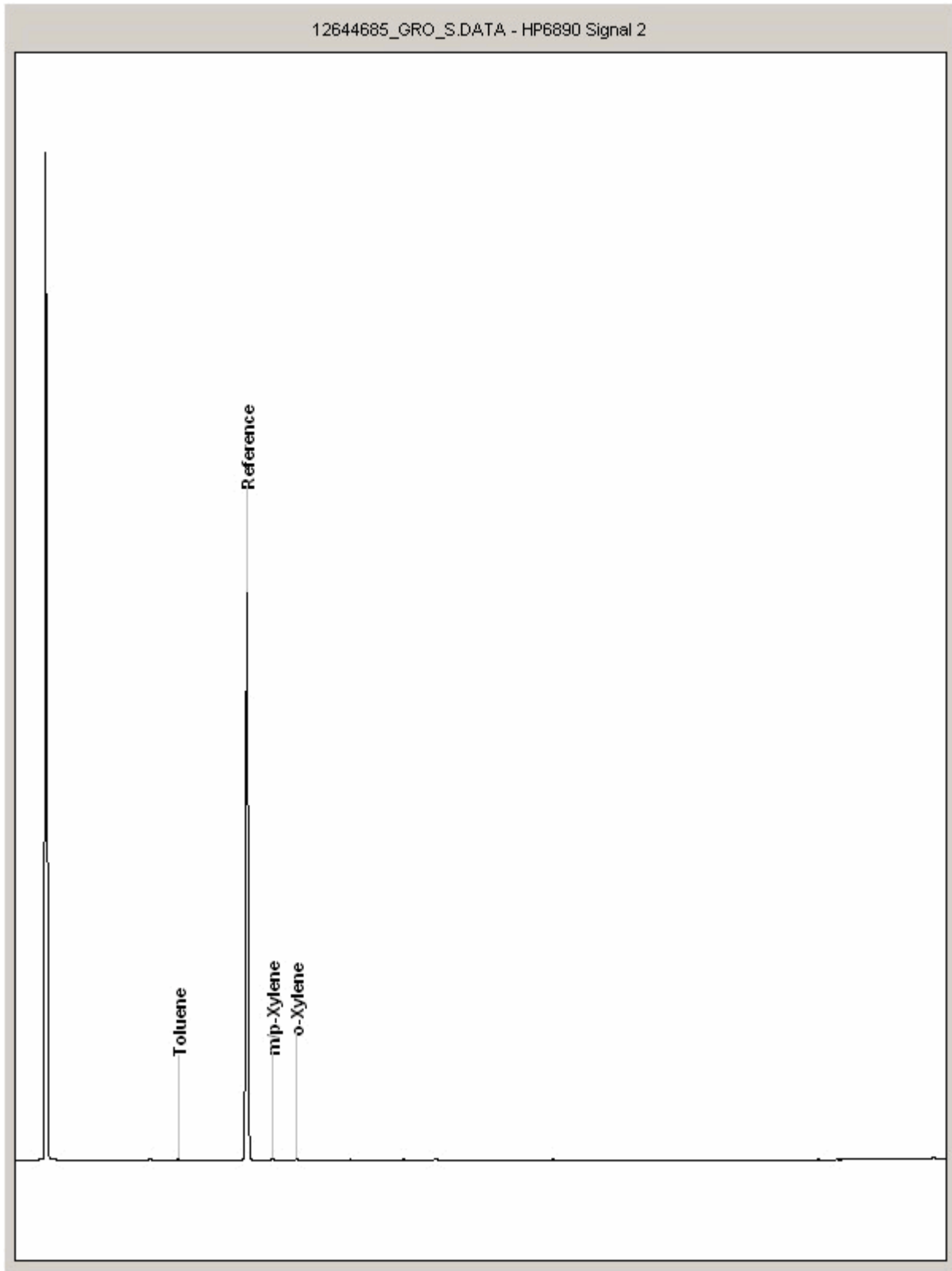
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12644685
Sample ID : EXC1_1.8

Depth : 1.80





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

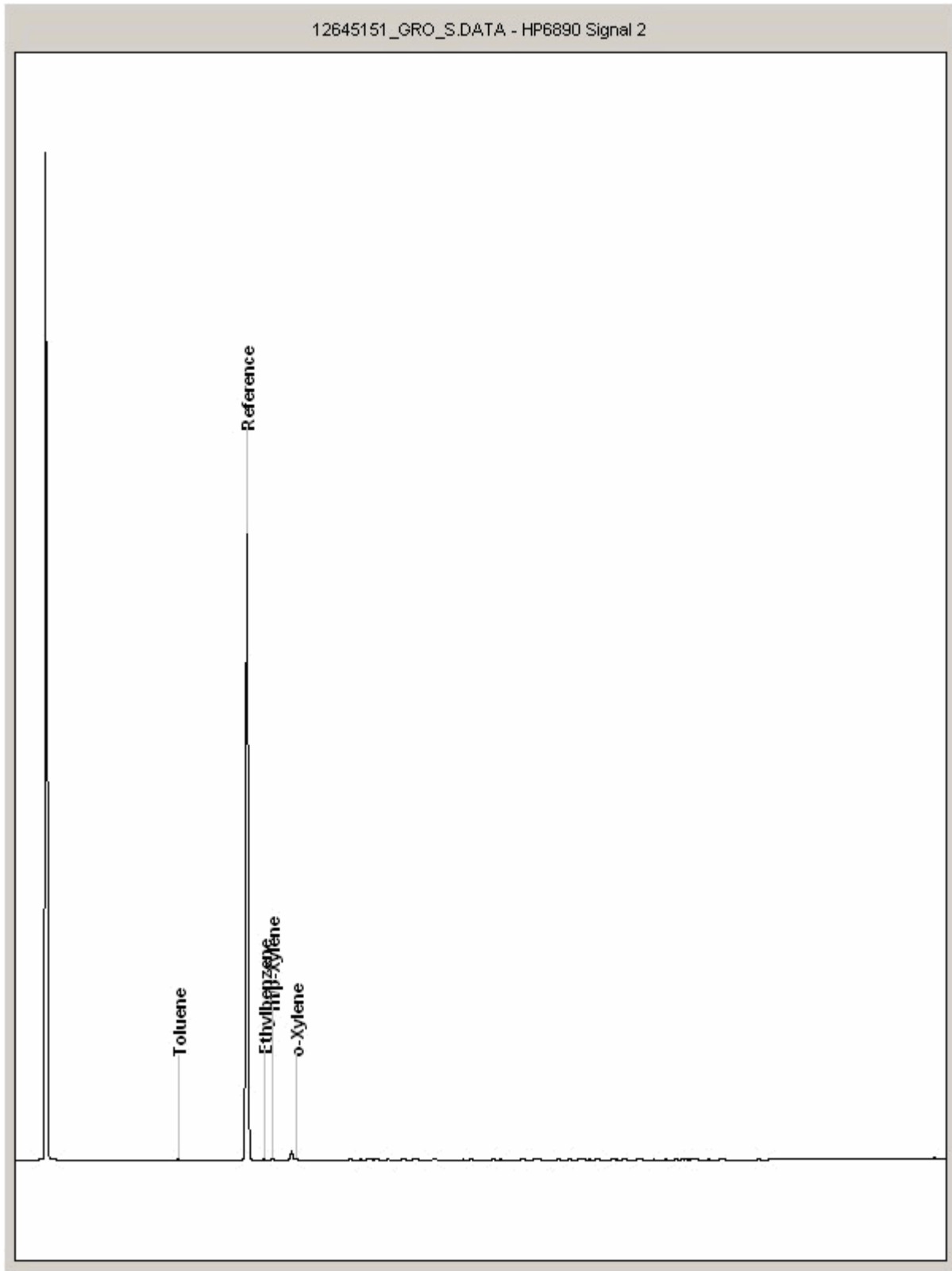
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12645151
Sample ID : EXC5_1.7

Depth : 1.70





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

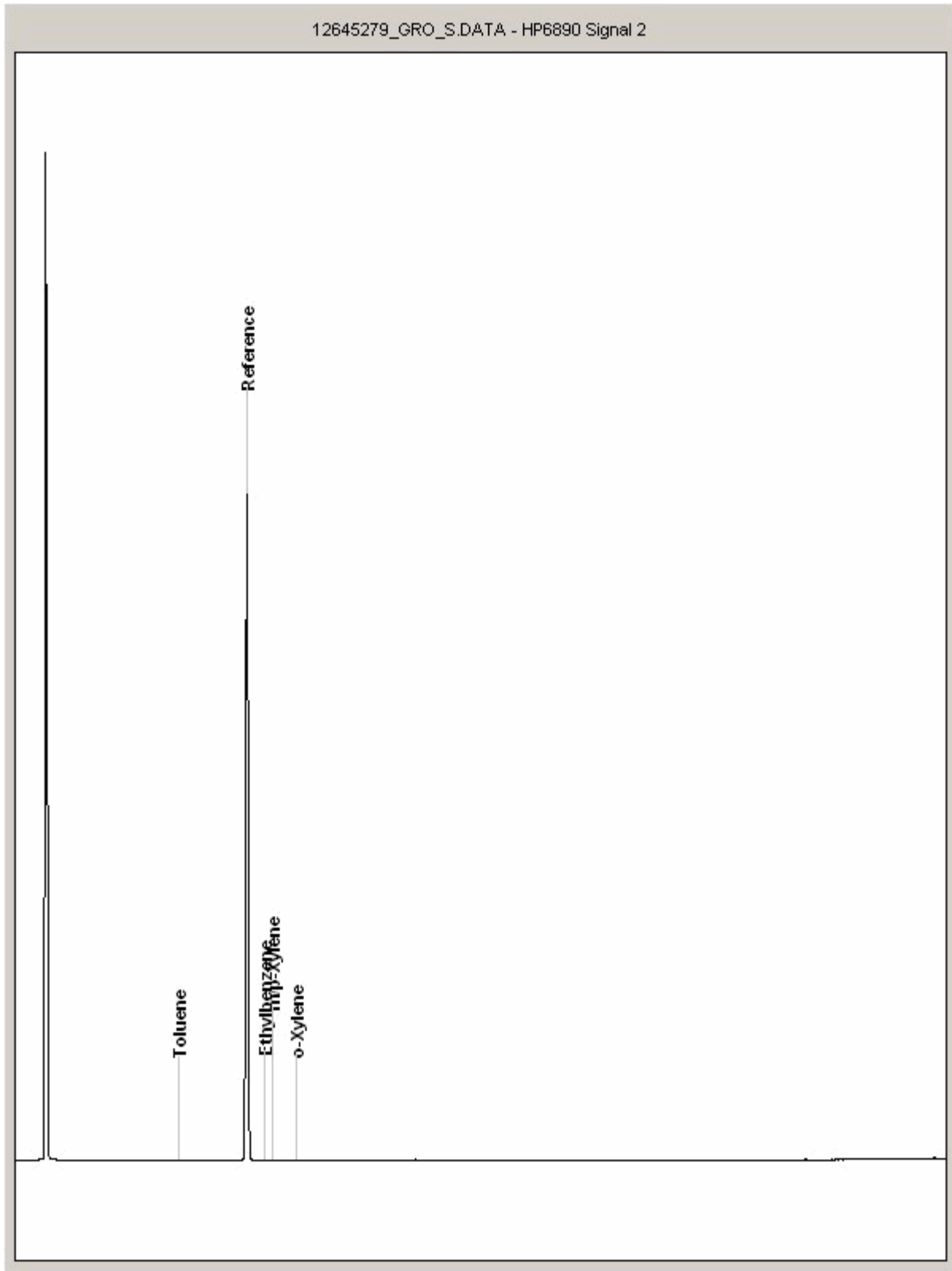
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12645279
Sample ID : EXC3_2.0

Depth : 2.00





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

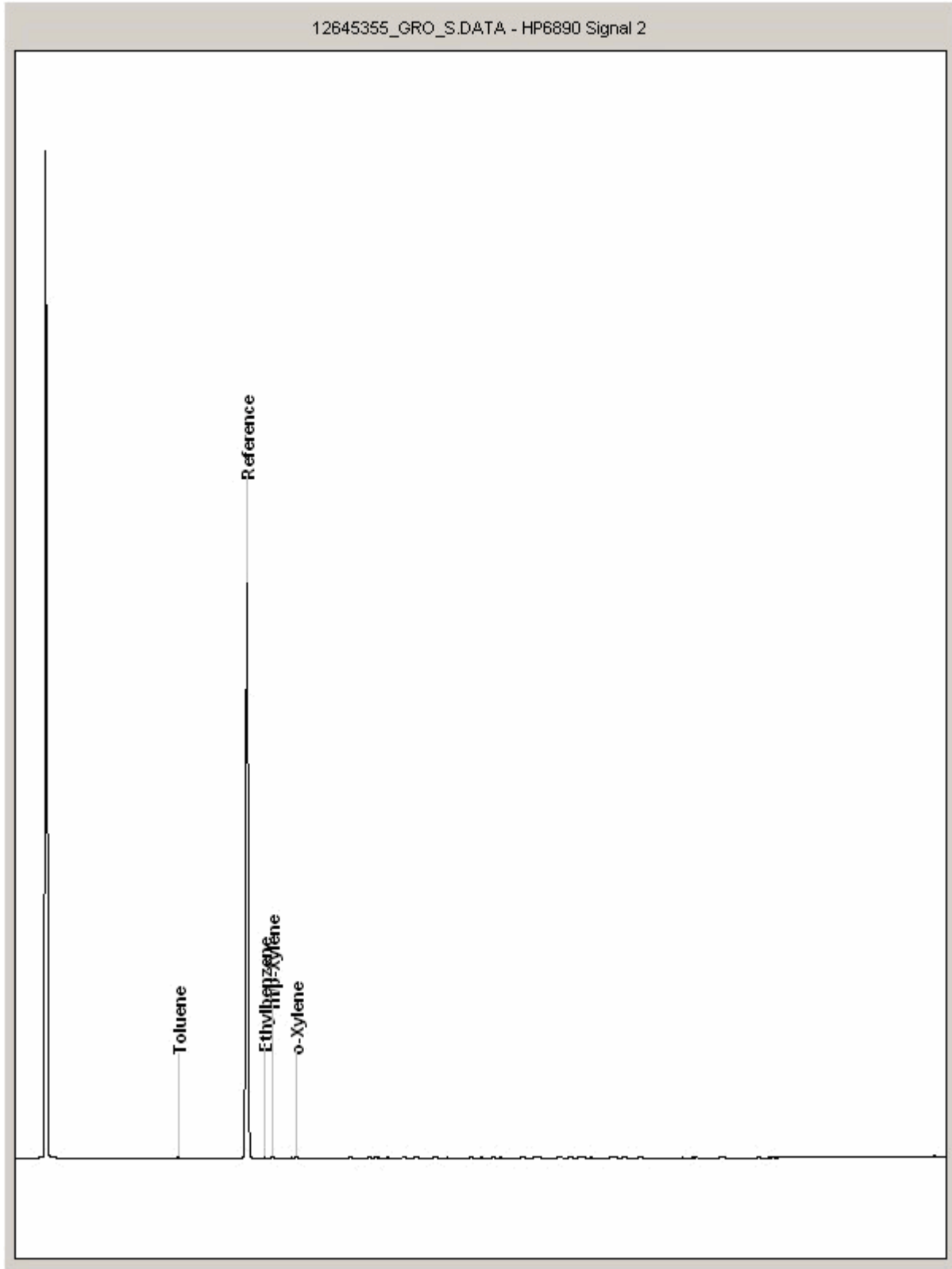
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12645355
Sample ID : EXC4_1.7

Depth : 1.70





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

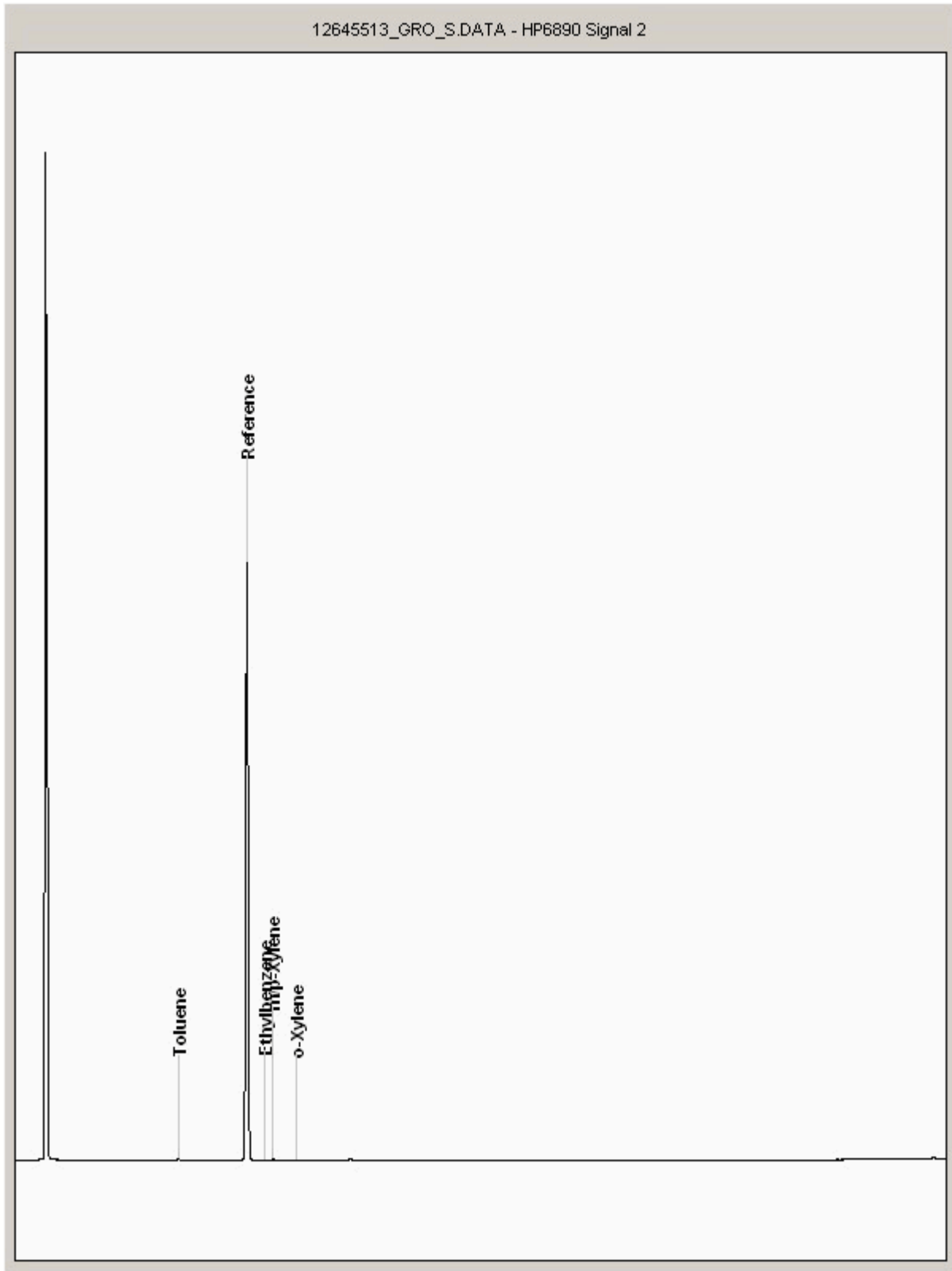
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12645513
Sample ID : EXC6_1.8

Depth : 1.80





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

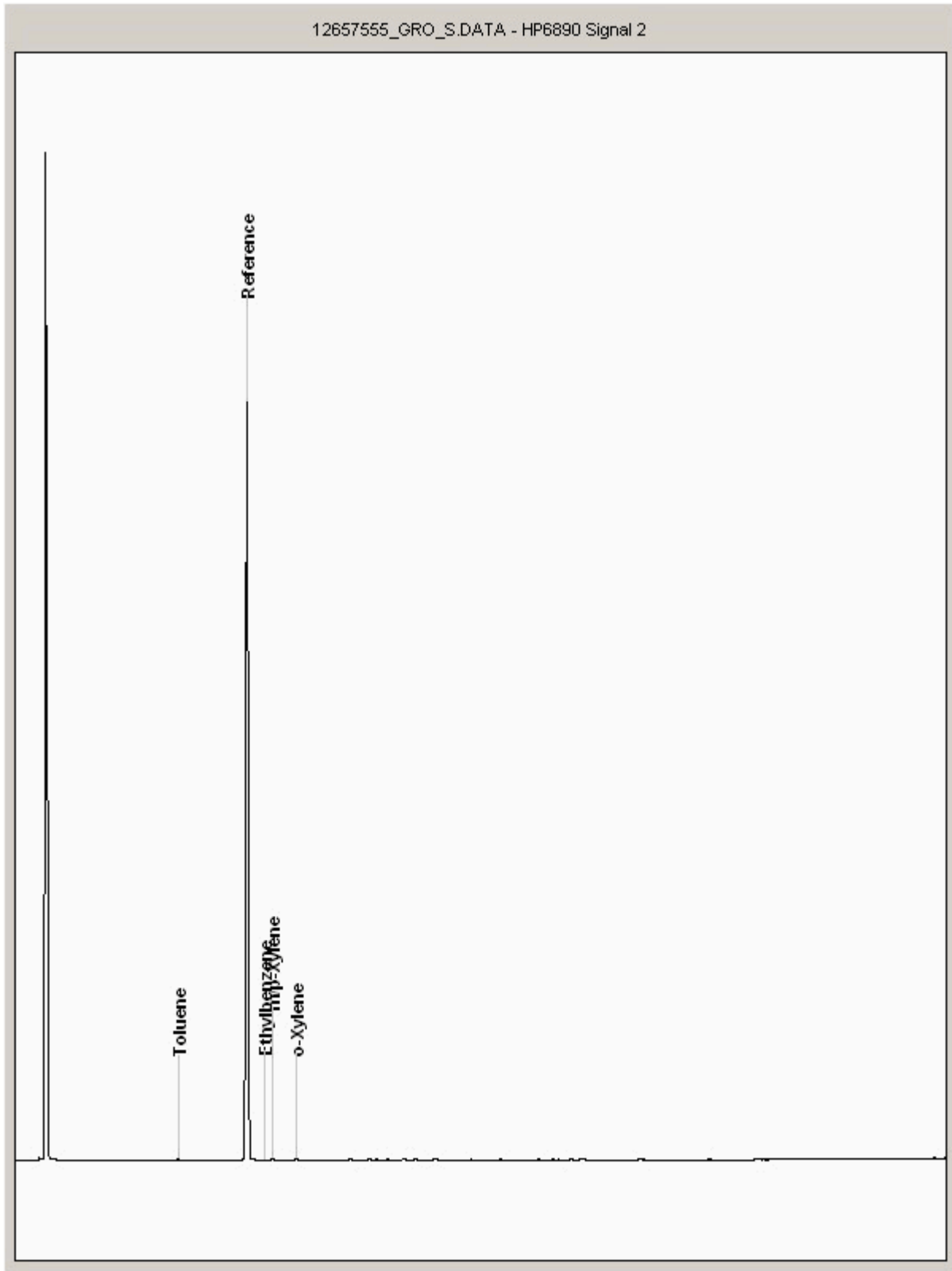
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12657555
Sample ID : EXC2_1.8

Depth : 1.80





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

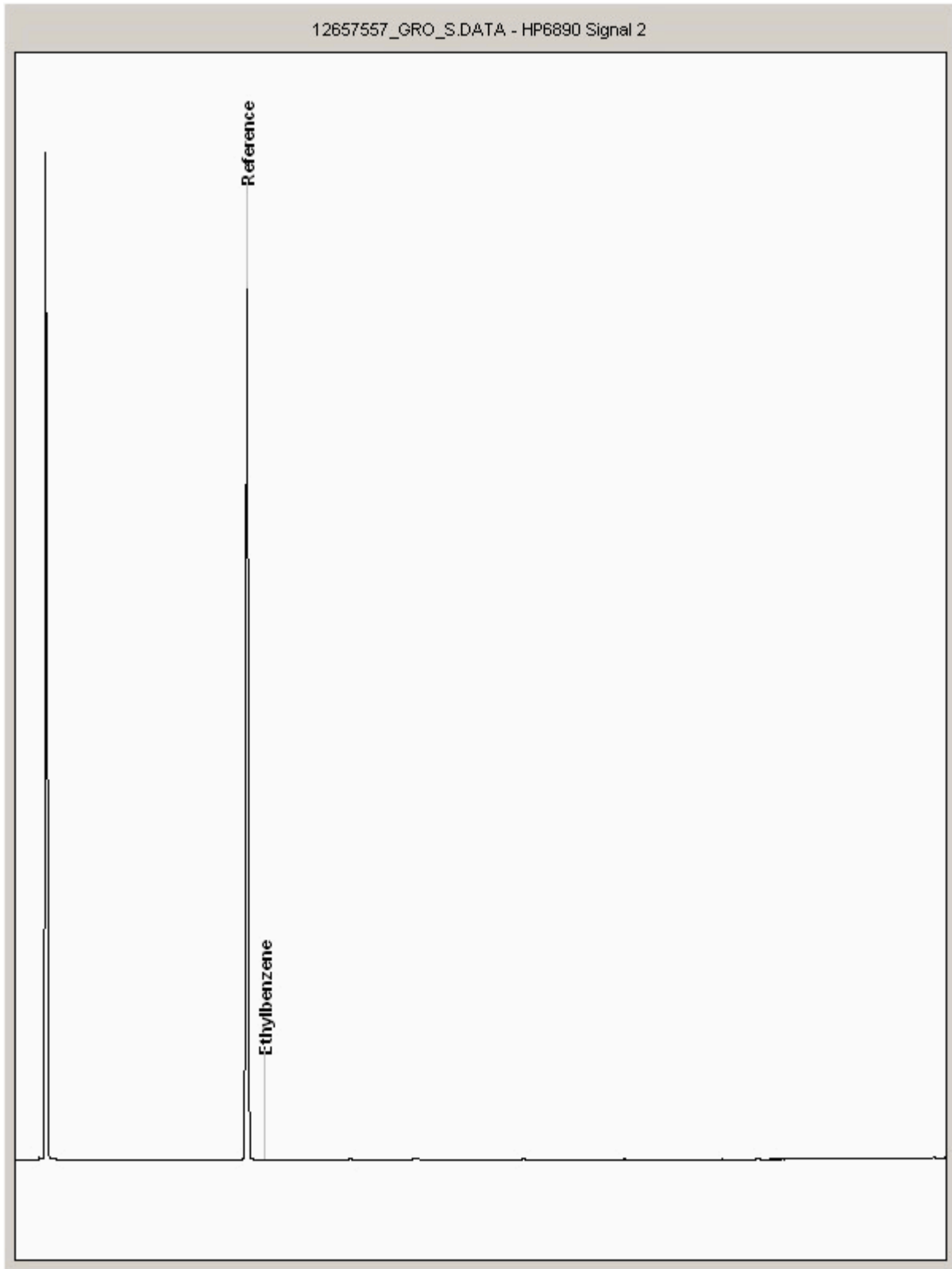
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12657557
Sample ID : EXC8_3.0

Depth : 3.00





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

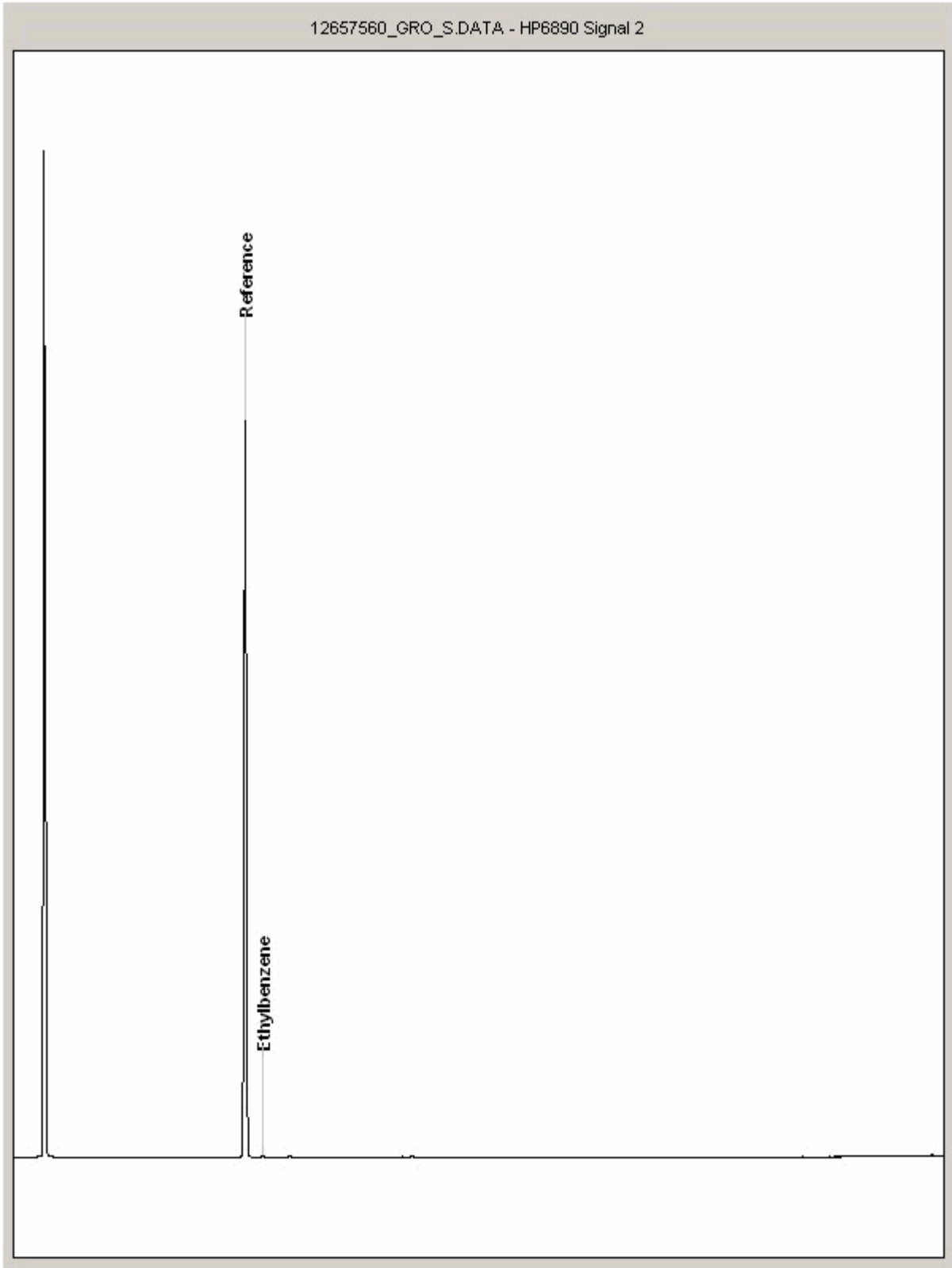
Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12657560
Sample ID : EXC7_3.0

Depth : 3.00





SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXHERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXHERM	HPLC
PHENOLSBY GOMS	WET	DOM	SOXHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CAG BY GC	D&C	HEXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFID
EPH CAG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFID
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFID
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

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

SDG: 151215-6
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60479811
Report Number: 343316
Superseded Report: 342813

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 23 December 2015
Customer: H_URS_WIM
Sample Delivery Group (SDG): 151218-79
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 343375

We received 7 samples on Friday December 18, 2015 and 7 of these samples were scheduled for analysis which was completed on Wednesday December 23, 2015. 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: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12672959	EXB_1.7			17/12/2015
12672962	EXB1_1.6			17/12/2015
12672965	EXB2_2.0			17/12/2015
12672966	EXB4_1.5			17/12/2015
12672967	EXB5_3.5			17/12/2015
12672969	FL101_0.6			17/12/2015
12672970	FL102_0.6			17/12/2015

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



SDG: 151218-79
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 343375
 Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	
		12672970	FL102_0.6			60g VOC (ALE215)
		12672969	FL101_0.6			250g Amber Jar (AL 60g VOC (ALE215))
		12672967	EXB5_3.5			250g Amber Jar (AL 60g VOC (ALE215))
		12672966	EXB4_1.5			250g Amber Jar (AL 60g VOC (ALE215))
	12672965	EXB2_2.0			250g Amber Jar (AL 60g VOC (ALE215))	
	12672962	EXB1_1.6			250g Amber Jar (AL 60g VOC (ALE215))	
	12672959	EXB_1.7			250g Amber Jar (AL 60g VOC (ALE215))	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 7				X X X X X X X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 7				X X X X X X X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 7				X X X X X X X
Oxygenates (S)	All	NDPs: 0 Tests: 7				X X X X X X X
PAH by GCMS	All	NDPs: 0 Tests: 7				X X X X X X X
Sample description	All	NDPs: 0 Tests: 7				X X X X X X X
Total Organic Carbon	All	NDPs: 0 Tests: 1				X
VOC MS (S)	All	NDPs: 0 Tests: 7				X X X X X X X



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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
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
12672959	EXB_1.7		Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
12672962	EXB1_1.6		Dark Brown	Stone/Soil	0.1 - 2 mm	Stones	Vegetation
12672965	EXB2_2.0		Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
12672966	EXB4_1.5		Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
12672967	EXB5_3.5		Dark Brown	Sand	0.1 - 2 mm	None	None
12672969	FL101_0.6		Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
12672970	FL102_0.6		Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None

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

Validated

SDG: 151218-79
Job: H_URS_WIM-282
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Order Number:
Report Number: 343375
Superseded Report:

Table with columns: Results Legend, Customer Sample R, EXB_1.7, EXB1_1.6, EXB2_2.0, EXB4_1.5, EXB5_3.5, FL101_0.6. Rows include component analysis for Moisture Content Ratio, Fraction Organic Carbon, Ethanol, tert Butanol, Diisopropyl ether, and tert-butyl ethyl ether.



CERTIFICATE OF ANALYSIS

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SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Table with columns: Results Legend, Customer Sample R, Component, LOD/Units, Method, and data rows for Moisture Content Ratio, Ethanol, tert Butanol, Diisopropyl ether, tert-butyl ethyl ether.



CERTIFICATE OF ANALYSIS

Validated

SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

EPH CWG (Aliphatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXB_1.7, EXB1_1.6, EXB2_2.0, EXB4_1.5, EXB5_3.5, FL101_0.6. Rows include component names like Aliphatics >C12-C16 and their corresponding LOD/Units and Method values.



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Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXB_1.7, EXB1_1.6, EXB2_2.0, EXB4_1.5, EXB5_3.5, FL101_0.6. Rows include component names like Aromatics >EC12-EC16 and their corresponding LOD/Units and Method values.



SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Component, LOD/Units, Method, and numerical results. Includes a Results Legend and sample information at the top.



SDG: 151218-79
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Client Reference: 46370438

Location: Shell Blackhorse
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Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample R, EXB_1.7, EXB1_1.6, EXB2_2.0, EXB4_1.5, EXB5_3.5, FL101_0.6. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



SDG: 151218-79
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Client Reference: 46370438

Location: Shell Blackhorse
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Order Number:
Report Number: 343375
Superseded Report:

GRO by GC-FID (S)

Table with columns: Component, LOD/Units, Method, and numerical results. Includes a Results Legend and Customer Sample R information.



SDG: 151218-79
 Job: H_URS_WIM-282
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Order Number:
 Report Number: 343375
 Superseded Report:

PAH by GCMS

Results Legend			Customer Sample R	EXB_1.7	EXB1_1.6	EXB2_2.0	EXB4_1.5	EXB5_3.5	FL101_0.6
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.			17/12/2015	17/12/2015	17/12/2015	17/12/2015	17/12/2015	17/12/2015
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			18/12/2015	18/12/2015	18/12/2015	18/12/2015	18/12/2015	18/12/2015
(F)	Trigger breach confirmed			151218-79	151218-79	151218-79	151218-79	151218-79	151218-79
1-5&*\$@	Sample deviation (see appendix)			12672959	12672962	12672965	12672966	12672967	12672969
Component	LOD/Units	Method							
Naphthalene-d8 % recovery**	%	TM218	97.4	106	106	104	95.8	98.4	
Acenaphthene-d10 % recovery**	%	TM218	95.6	103	105	101	95.4	95.6	
Phenanthrene-d10 % recovery**	%	TM218	95.9	104	105	98.3	94.3	96.6	
Chrysene-d12 % recovery**	%	TM218	87.5	101	97.3	95.7	89.4	83.8	
Perylene-d12 % recovery**	%	TM218	85	102	100	96	87.6	88.4	
Naphthalene	<9 µg/kg	TM218	<9	50.7	<9	18.7	<9	<9	
			M	#	M	M	M	M	
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	16.2	<12	<12	
			M	#	M	M	M	M	
Acenaphthene	<8 µg/kg	TM218	11.2	230	24.5	60.2	<8	21.1	
			M	#	M	M	M	M	
Fluorene	<10 µg/kg	TM218	<10	181	<10	54.6	<10	<10	
			M	#	M	M	M	M	
Phenanthrene	<15 µg/kg	TM218	40.7	3100	<15	539	<15	22.7	
			M	#	M	M	M	M	
Anthracene	<16 µg/kg	TM218	39.4	782	<16	148	<16	21.5	
			M	#	M	M	M	M	
Fluoranthene	<17 µg/kg	TM218	<17	7680	<17	896	<17	<17	
			M	#	M	M	M	M	
Pyrene	<15 µg/kg	TM218	32.9	6490	<15	751	<15	<15	
			M	#	M	M	M	M	
Benz(a)anthracene	<14 µg/kg	TM218	22.5	4350	18.8	478	<14	15.8	
			M	#	M	M	M	M	
Chrysene	<10 µg/kg	TM218	18.4	3570	15.3	491	<10	12.7	
			M	#	M	M	M	M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	4590	<15	539	<15	24.6	
			M	#	M	M	M	M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	1880	<14	215	<14	20.5	
			M	#	M	M	M	M	
Benzo(a)pyrene	<15 µg/kg	TM218	27.7	3710	26.9	376	<15	17	
			M	#	M	M	M	M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	1660	<18	196	<18	<18	
			M	#	M	M	M	M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	546	<23	57.9	<23	<23	
			M	#	M	M	M	M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	1840	<24	233	<24	<24	
			M	#	M	M	M	M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	193	40700	<118	5070	<118	156	



SDG: 151218-79
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 343375
 Superseded Report:

PAH by GCMS

Results Legend		Customer Sample R	FL102_06				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Soil/Solid 17/12/2015 18/12/2015 151218-79 12672970				
M	mCERTS accredited.						
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						
1-5&*\$@	Sample deviation (see appendix)						
Component	LOD/Units			Method			
Naphthalene-d8 % recovery**	%	TM218	104				
Acenaphthene-d10 % recovery**	%	TM218	103				
Phenanthrene-d10 % recovery**	%	TM218	103				
Chrysene-d12 % recovery**	%	TM218	98				
Perylene-d12 % recovery**	%	TM218	111				
Naphthalene	<9 µg/kg	TM218	<9				
Acenaphthylene	<12 µg/kg	TM218	17.5				
Acenaphthene	<8 µg/kg	TM218	38.8				
Fluorene	<10 µg/kg	TM218	29.6				
Phenanthrene	<15 µg/kg	TM218	239				
Anthracene	<16 µg/kg	TM218	73				
Fluoranthene	<17 µg/kg	TM218	354				
Pyrene	<15 µg/kg	TM218	309				
Benz(a)anthracene	<14 µg/kg	TM218	177				
Chrysene	<10 µg/kg	TM218	159				
Benzo(b)fluoranthene	<15 µg/kg	TM218	173				
Benzo(k)fluoranthene	<14 µg/kg	TM218	65.7				
Benzo(a)pyrene	<15 µg/kg	TM218	132				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	57.1				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	75.5				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1900				



CERTIFICATE OF ANALYSIS

Validated

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Order Number:
Report Number: 343375
Superseded Report:

VOC MS (S)

Table with columns for Component, LOD/Units, Method, and sample locations (EXB_1.7, EXB1_1.6, EXB2_2.0, EXB4_1.5, EXB5_3.5, FL101_0.6). Includes a Results Legend and various chemical components like Toluene-d8, Methyl Tertiary Butyl Ether, Benzene, etc.



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Superseded Report:

VOC MS (S)

Table with columns: Component, LOD/Units, Method, and results for various VOCs like Toluene-d8, Methyl Tertiary Butyl Ether, Benzene, etc.



CERTIFICATE OF ANALYSIS

Validated

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SDG: 151218-79
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Report Number: 343375
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)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



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Test Completion Dates

Lab Sample No(s)	12672959	12672962	12672965	12672966	12672967	12672969	12672970
Customer Sample Ref.	EXB_1.7	EXB1_1.6	EXB2_2.0	EXB4_1.5	EXB5_3.5	FL101_0.6	FL102_0.6
AGS Ref.							
Depth							
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
EPH CWG (Aliphatic) GC (S)	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015	23-Dec-2015
EPH CWG (Aromatic) GC (S)	22-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015
GRO by GC-FID (S)	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015
Oxygenates (S)	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015
PAH by GCMS	22-Dec-2015	23-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015	22-Dec-2015
Sample description	19-Dec-2015	19-Dec-2015	19-Dec-2015	19-Dec-2015	19-Dec-2015	19-Dec-2015	19-Dec-2015
Total Organic Carbon					23-Dec-2015		
VOC MS (S)	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015	21-Dec-2015



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 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1247
Total Aliphatics >C12-C35	TM173	95.0 68.25 : 114.73

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1247
Total Aromatics >EC12-EC35	TM173	83.33 60.67 : 124.27

GRO by GC-FID (S)

Component	Method Code	QC 1227
Benzene by GC (Moisture Corrected)	TM089	102.5 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	101.5 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	101.5 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	99.5 74.48 : 125.29
o Xylene by GC (Moisture Corrected)	TM089	101.5 79.00 : 121.00
QC	TM089	91.04 73.70 : 123.60
Toluene by GC (Moisture Corrected)	TM089	102.0 79.00 : 121.00

Oxygenates (S)

Component	Method Code	QC 1238
Benzene raw	TM288	89.75 77.75 : 124.62
Diisopropyl ether raw	TM288	101.5 81.07 : 125.84
Ethanol raw	TM288	75.7 12.71 : 182.13
Ethylbenzene raw	TM288	106.0 86.91 : 124.43
o-Xylene raw	TM288	99.0 82.52 : 115.85
p/m-Xylene raw	TM288	106.13 82.74 : 124.08
tert Butanol raw	TM288	77.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	97.25 82.15 : 125.05



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Oxygenates (S)

		QC 1238
tert-butyl ethyl ether raw	TM288	98.5 81.24 : 125.04
tert-butyl methyl ether raw	TM288	97.75 80.97 : 130.09
Toluene raw	TM288	92.25 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1252	QC 1257	QC 1224
Acenaphthene	TM218	85.0 78.75 : 116.25	92.0 68.50 : 116.50	98.5 76.50 : 121.50
Acenaphthylene	TM218	81.5 76.45 : 110.05	87.0 65.00 : 110.00	92.0 73.50 : 118.50
Anthracene	TM218	85.5 67.15 : 124.45	89.0 75.14 : 109.30	94.0 74.25 : 117.75
Benz(a)anthracene	TM218	94.5 82.00 : 127.00	95.5 70.00 : 115.00	93.5 82.07 : 118.33
Benzo(a)pyrene	TM218	99.5 75.60 : 124.20	97.5 82.80 : 121.21	95.0 79.75 : 116.97
Benzo(b)fluoranthene	TM218	101.5 81.20 : 121.77	96.0 81.11 : 119.79	99.5 82.41 : 117.15
Benzo(ghi)perylene	TM218	95.5 77.49 : 119.12	94.5 81.23 : 116.67	96.0 77.09 : 114.38
Benzo(k)fluoranthene	TM218	97.5 83.50 : 116.50	95.5 79.07 : 114.76	97.0 81.43 : 115.17
Chrysene	TM218	90.5 78.35 : 114.42	94.0 77.94 : 118.46	97.0 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	95.5 77.15 : 122.45	94.0 79.94 : 120.03	98.5 81.00 : 120.00
Fluoranthene	TM218	89.0 79.08 : 114.40	91.5 77.89 : 110.15	97.0 78.67 : 117.61
Fluorene	TM218	87.5 79.03 : 113.38	93.0 80.93 : 113.54	98.0 76.50 : 121.50
Indeno(123cd)pyrene	TM218	93.5 75.65 : 125.15	93.5 80.37 : 120.17	93.0 79.19 : 117.60
Naphthalene	TM218	83.0 77.25 : 112.60	92.5 79.70 : 112.37	92.0 77.00 : 117.50
Phenanthrene	TM218	88.0 78.25 : 115.44	92.0 78.44 : 113.95	99.5 75.00 : 123.00
Pyrene	TM218	88.0 78.07 : 114.06	90.0 66.00 : 114.00	95.5 77.82 : 116.98

Total Organic Carbon

Component	Method Code	QC 1268
Total Organic Carbon	TM132	100.46 88.82 : 111.18

VOC MS (S)



SDG: 151218-79
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 Superseded Report:

VOC MS (S)

Component	Method Code	QC 1287	QC 1248
1,1,1,2-tetrachloroethane	TM116	103.6 76.60 : 121.00	95.8 76.60 : 121.00
1,1,1-Trichloroethane	TM116	102.8 77.80 : 123.40	91.2 77.80 : 123.40
1,1,2-Trichloroethane	TM116	100.6 75.40 : 119.80	89.2 75.40 : 119.80
1,1-Dichloroethane	TM116	106.0 80.84 : 124.49	97.2 80.84 : 124.49
1,2-Dichloroethane	TM116	112.4 86.62 : 136.90	102.2 86.62 : 136.90
1,4-Dichlorobenzene	TM116	96.8 80.88 : 114.60	89.2 80.88 : 114.60
2-Chlorotoluene	TM116	96.4 74.00 : 117.20	86.2 74.00 : 117.20
4-Chlorotoluene	TM116	93.4 71.20 : 113.20	83.6 71.20 : 113.20
Benzene	TM116	105.6 79.60 : 125.20	97.0 79.60 : 125.20
Carbon Disulphide	TM116	105.6 74.91 : 122.14	93.2 74.91 : 122.14
Carbontetrachloride	TM116	104.6 87.07 : 120.37	94.2 87.07 : 120.37
Chlorobenzene	TM116	106.6 83.47 : 116.82	98.4 83.47 : 116.82
Chloroform	TM116	109.0 82.00 : 128.80	99.6 82.00 : 128.80
Chloromethane	TM116	119.8 68.36 : 154.01	103.0 68.36 : 154.01
Cis-1,2-Dichloroethene	TM116	115.4 81.20 : 128.00	103.8 81.20 : 128.00
Dibromomethane	TM116	102.8 73.40 : 116.60	93.6 73.40 : 116.60
Dichloromethane	TM116	124.8 86.60 : 137.00	109.6 86.60 : 137.00
Ethylbenzene	TM116	98.4 73.60 : 115.60	88.8 73.60 : 115.60
Hexachlorobutadiene	TM116	108.6 42.69 : 142.65	57.8 42.69 : 142.65
Isopropylbenzene	TM116	91.6 72.52 : 117.52	75.6 72.52 : 117.52
Naphthalene	TM116	97.8 83.23 : 126.48	91.4 83.23 : 126.48
o-Xylene	TM116	87.4 69.60 : 110.40	80.0 69.60 : 110.40
p/m-Xylene	TM116	95.9 71.30 : 112.70	86.4 71.30 : 112.70
Sec-Butylbenzene	TM116	101.0 59.20 : 125.20	69.0 59.20 : 125.20
Tetrachloroethene	TM116	115.8 85.92 : 127.92	100.6 85.92 : 127.92
Toluene	TM116	96.4 76.08 : 110.17	88.8 76.08 : 110.17



SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

VOC MS (S)

		QC 1287	QC 1248
Trichloroethene	TM116	100.2 78.17 : 121.37	94.0 78.17 : 121.37
Trichlorofluoromethane	TM116	121.8 83.78 : 132.82	107.0 83.78 : 132.82
Vinyl Chloride	TM116	105.8 66.81 : 138.46	92.6 66.81 : 138.46

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: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

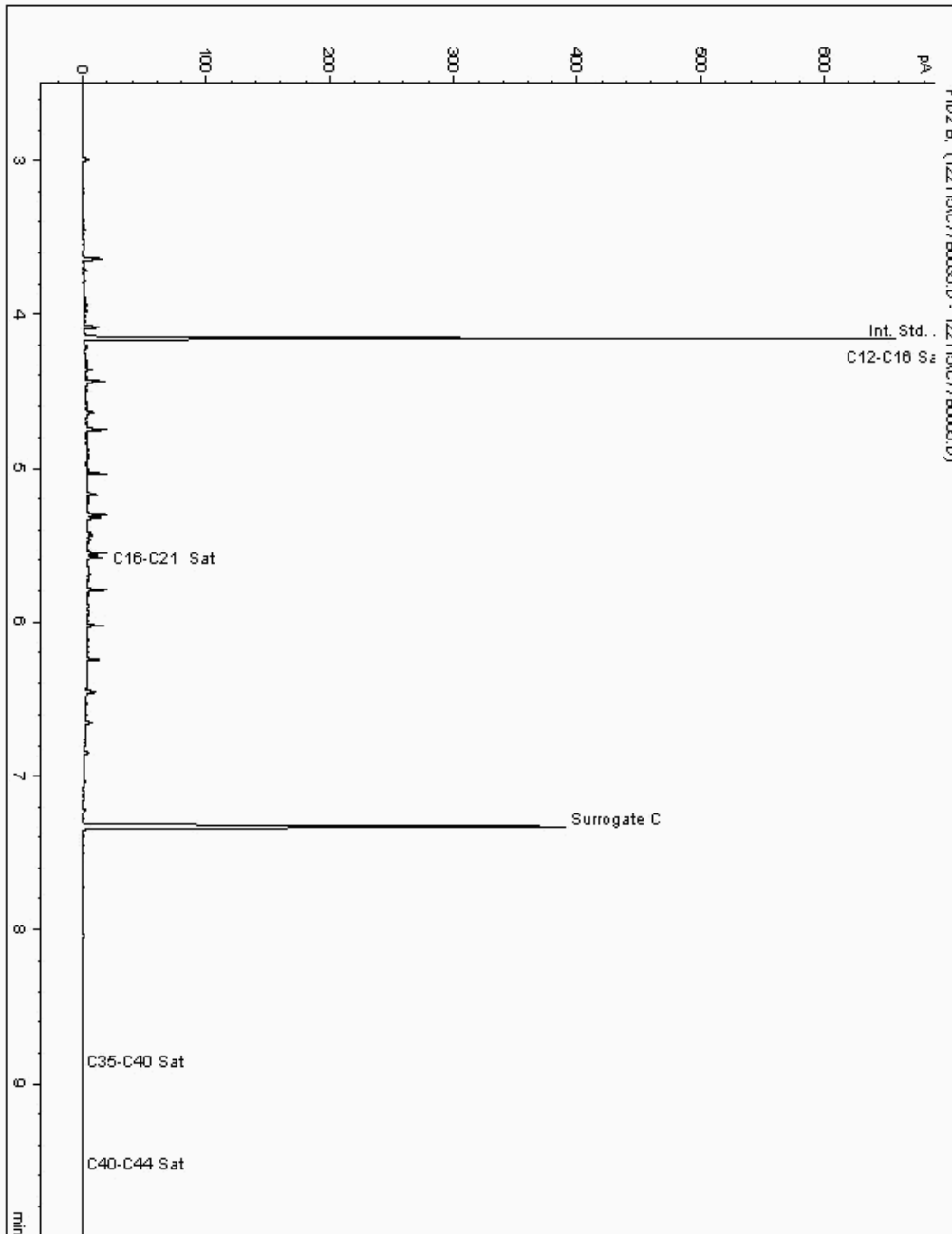
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678851
Sample ID : FL102_0.6

Depth :

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

Sample Identity: 11970279-
Date Acquired : 22/12/2015 02:55:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.041





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

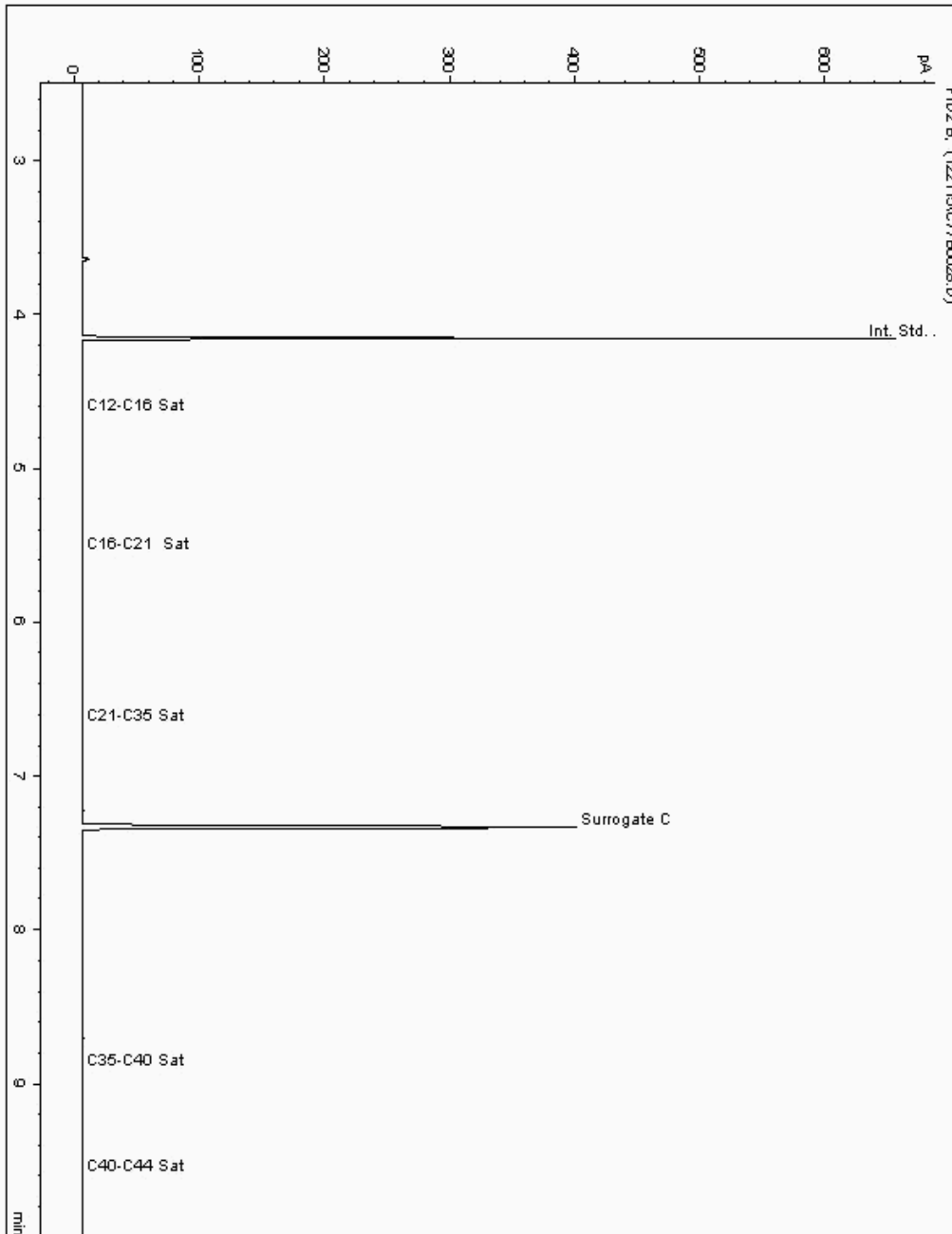
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678854
Sample ID : EXB5_3.5

Depth :

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

Sample Identity: 11970160-
Date Acquired : 22/12/2015 00:50:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.993





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

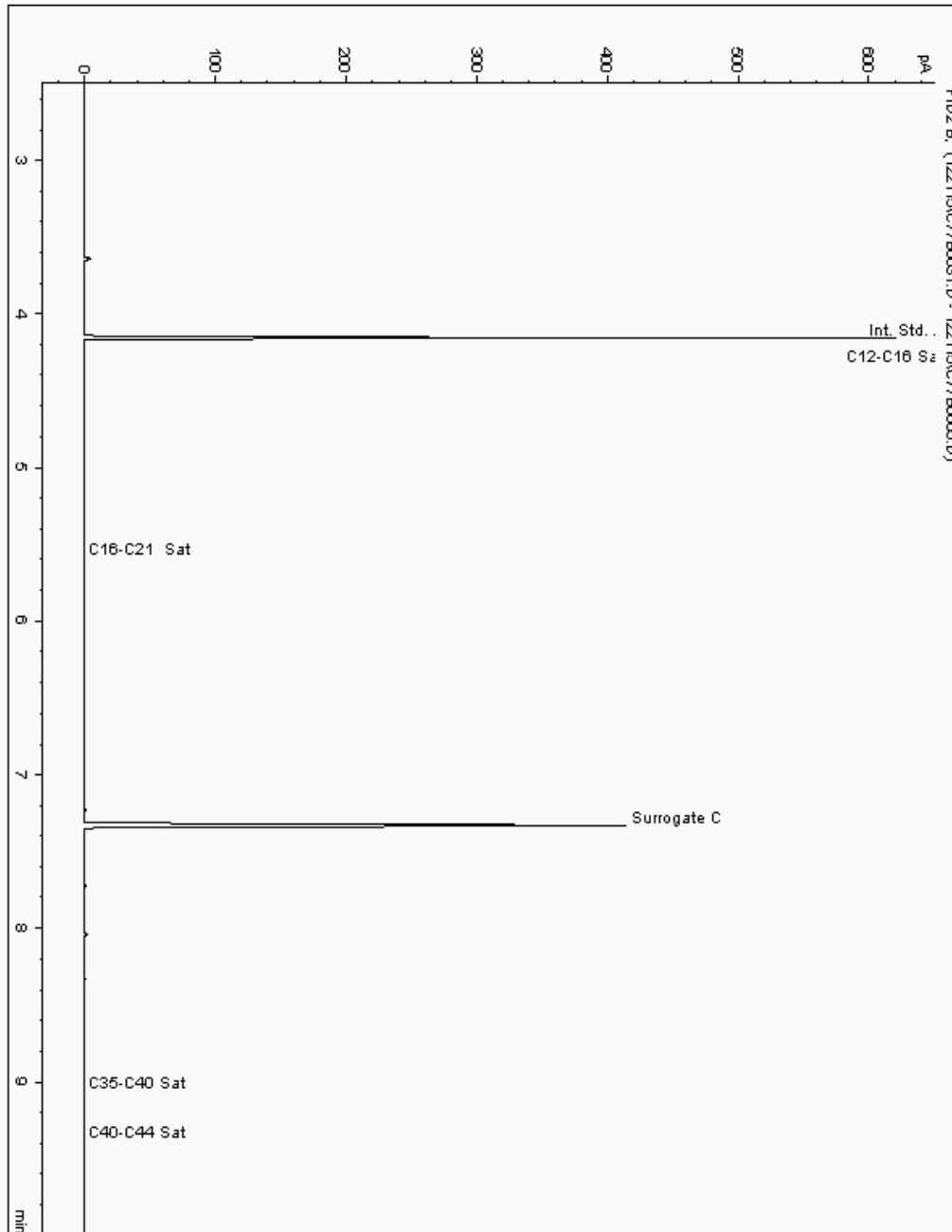
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678865
Sample ID : FL101_0.6

Depth :

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

Sample Identity: 11970207-
Date Acquired : 22/12/2015 01:42:42 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.048





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

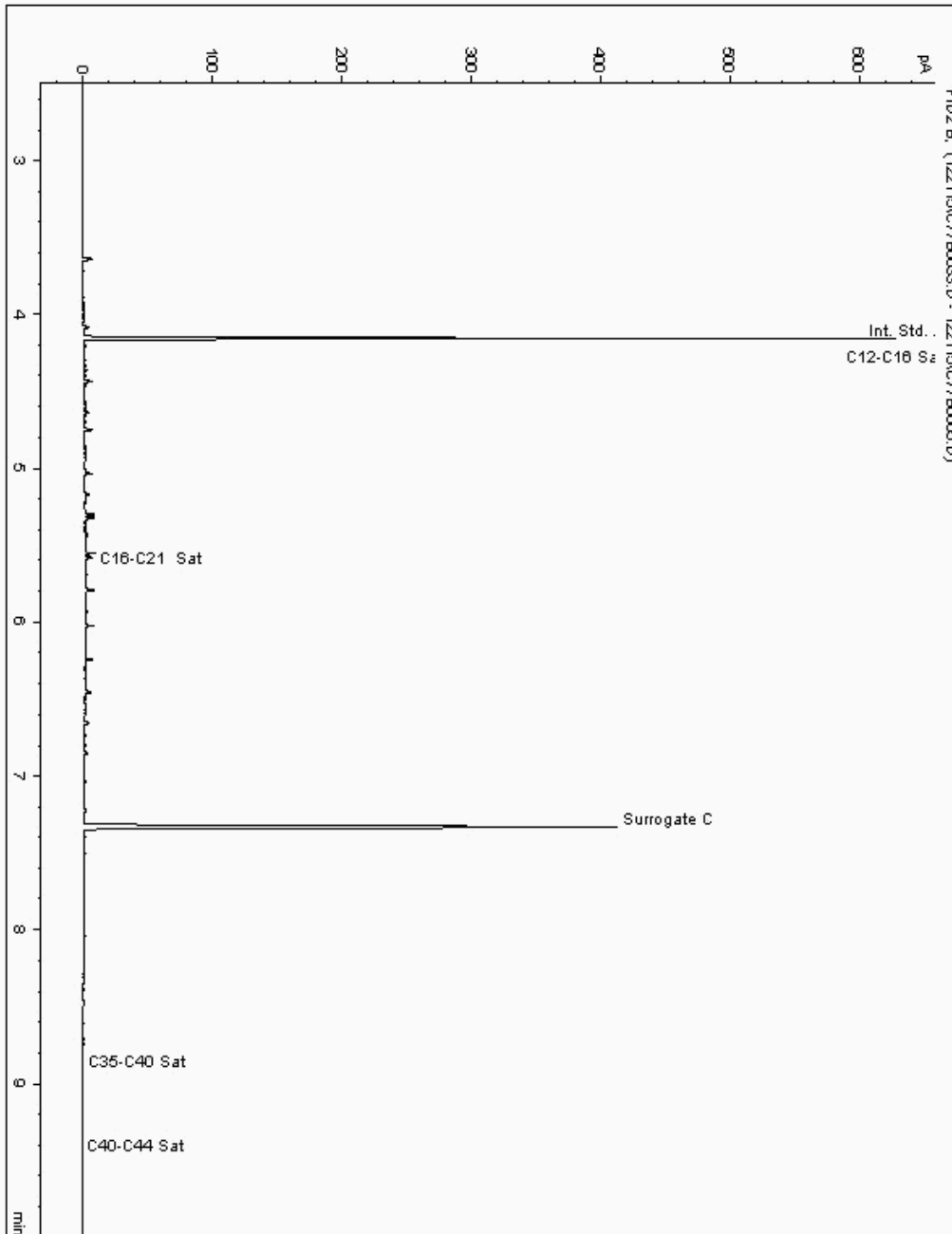
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678886
Sample ID : EXB4_1.5

Depth :

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

Sample Identity: 11970105-
Date Acquired : 22/12/2015 02:23:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.042





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

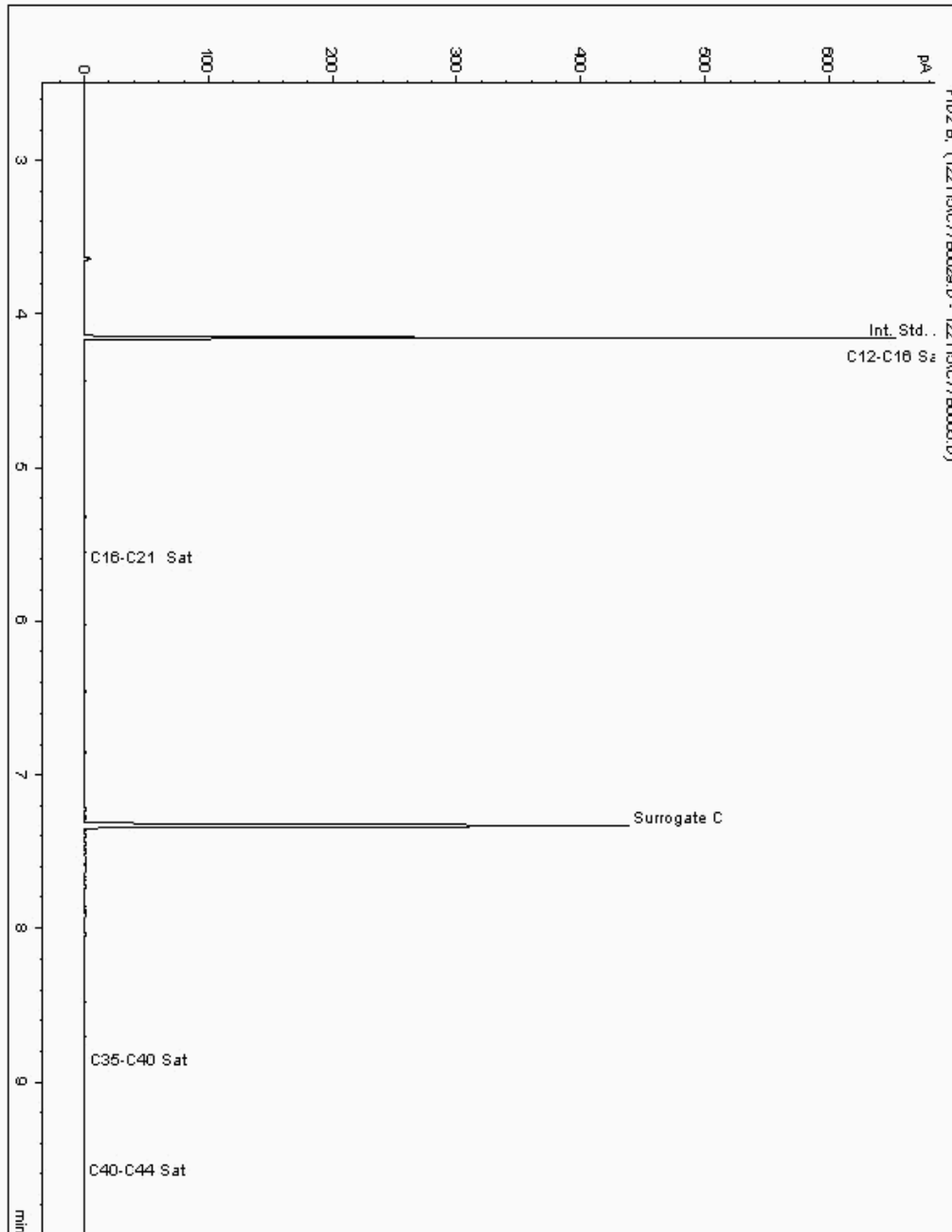
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678889
Sample ID : EXB1_1.6

Depth :

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

Sample Identity: 11970017-
Date Acquired : 22/12/2015 01:10:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.995





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

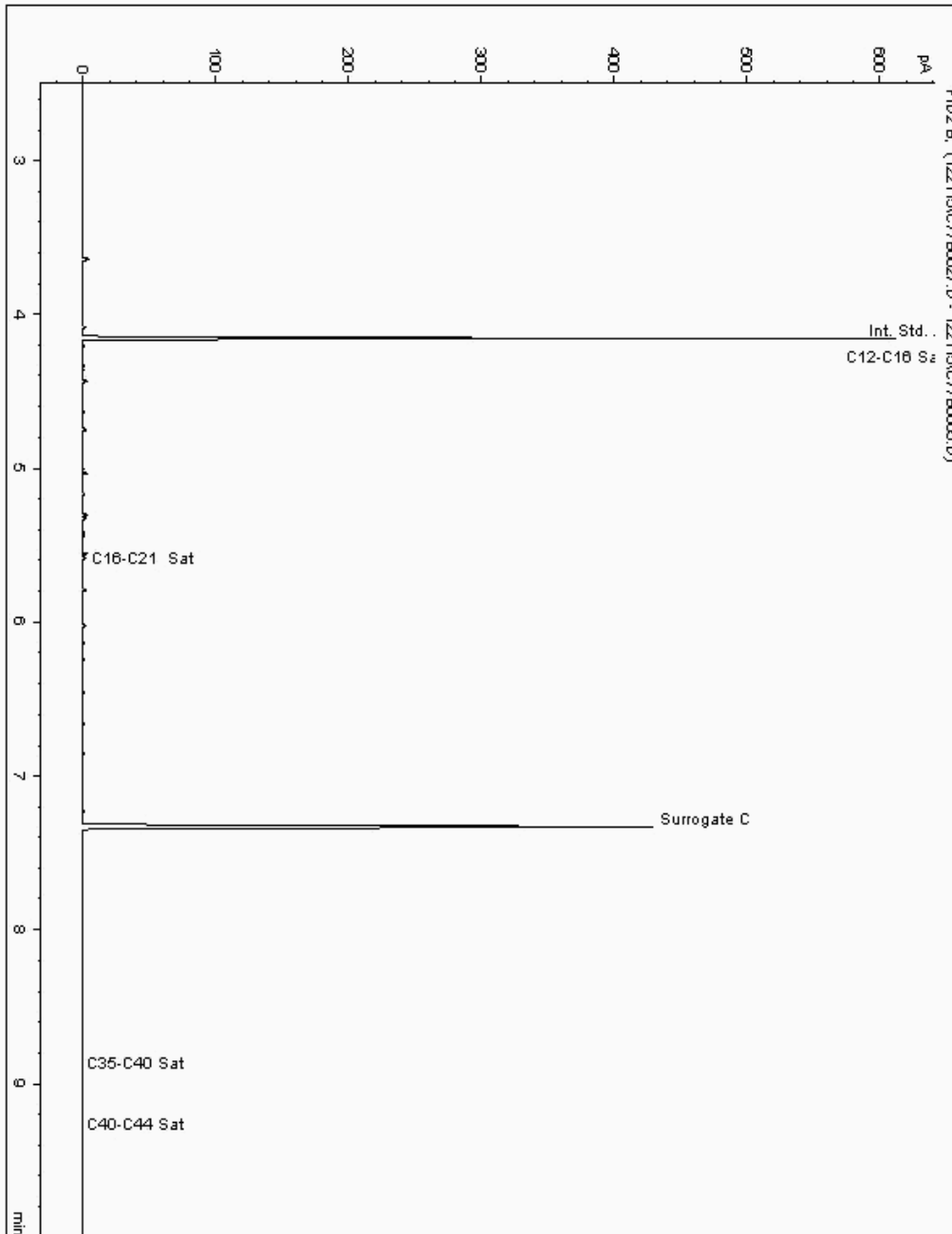
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678927
Sample ID : EXB2_2.0

Depth :

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

Sample Identity: 11970070-
Date Acquired : 22/12/2015 00:30:11 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.992





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

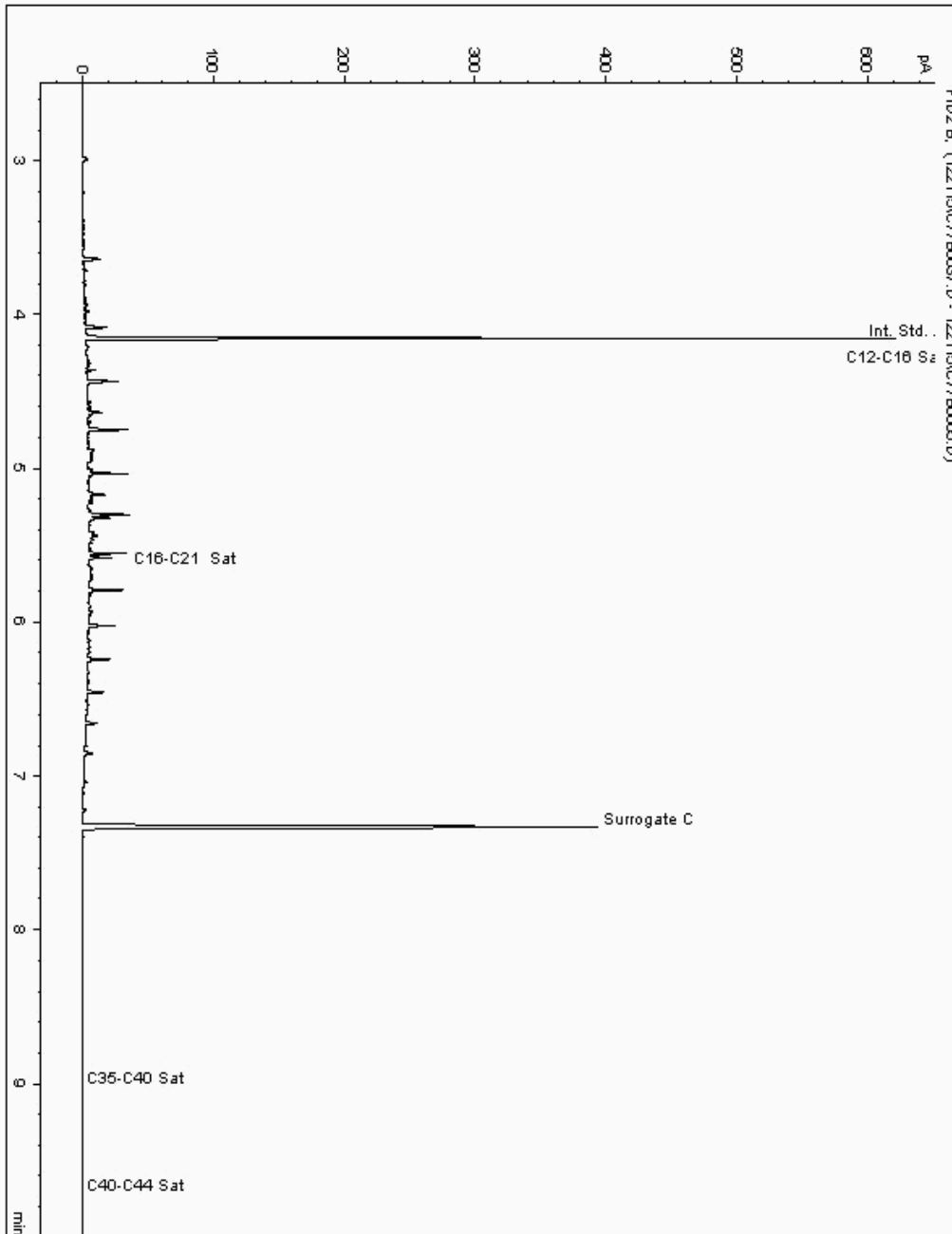
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12678948
Sample ID : EXB_1.7

Depth :

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

Sample Identity: 11969931-
Date Acquired : 22/12/2015 03:35:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.011





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

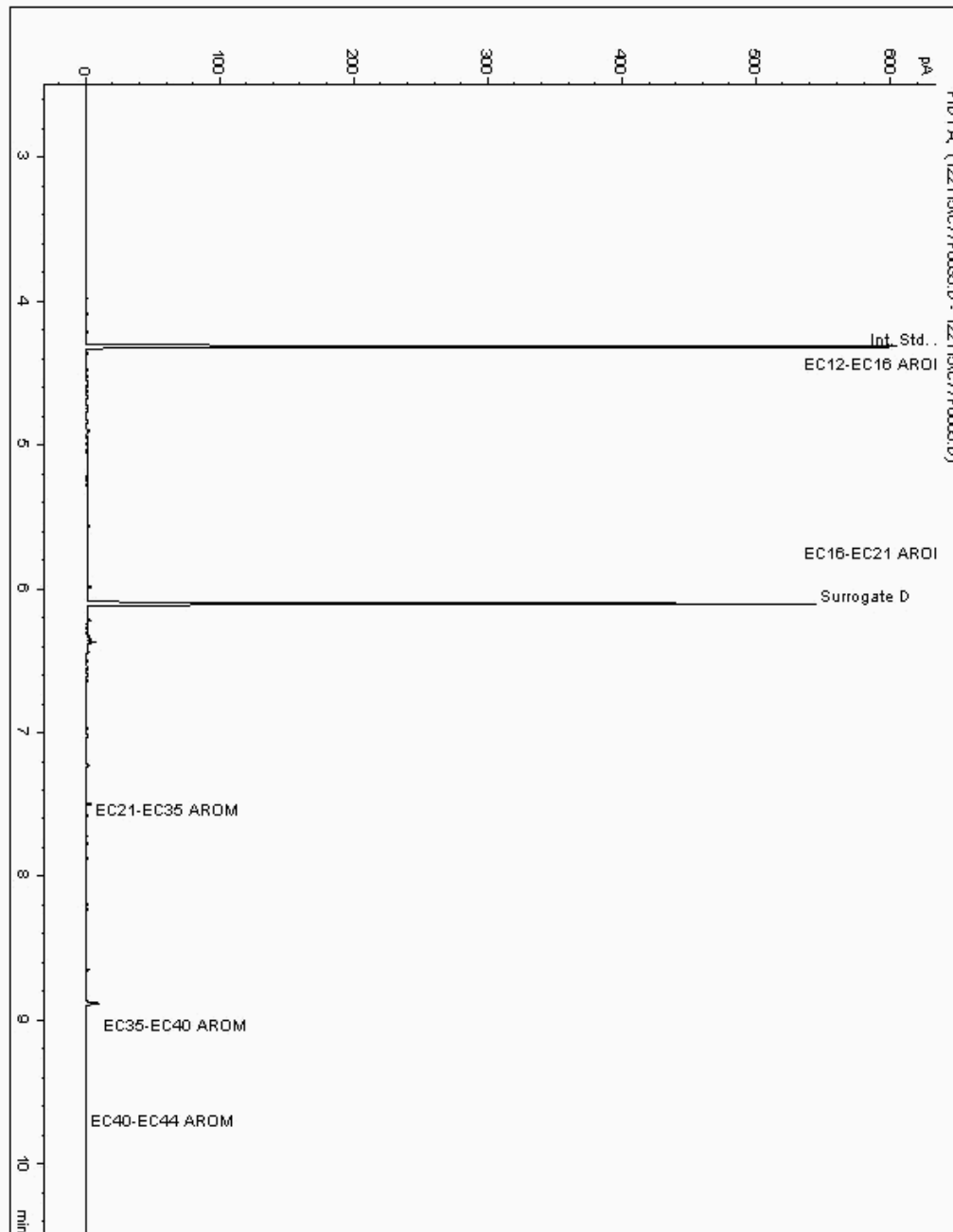
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678851
Sample ID : FL102_0.6

Depth :

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

Sample Identity: 11970280-
Date Acquired : 22/12/2015 02:55:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.041





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

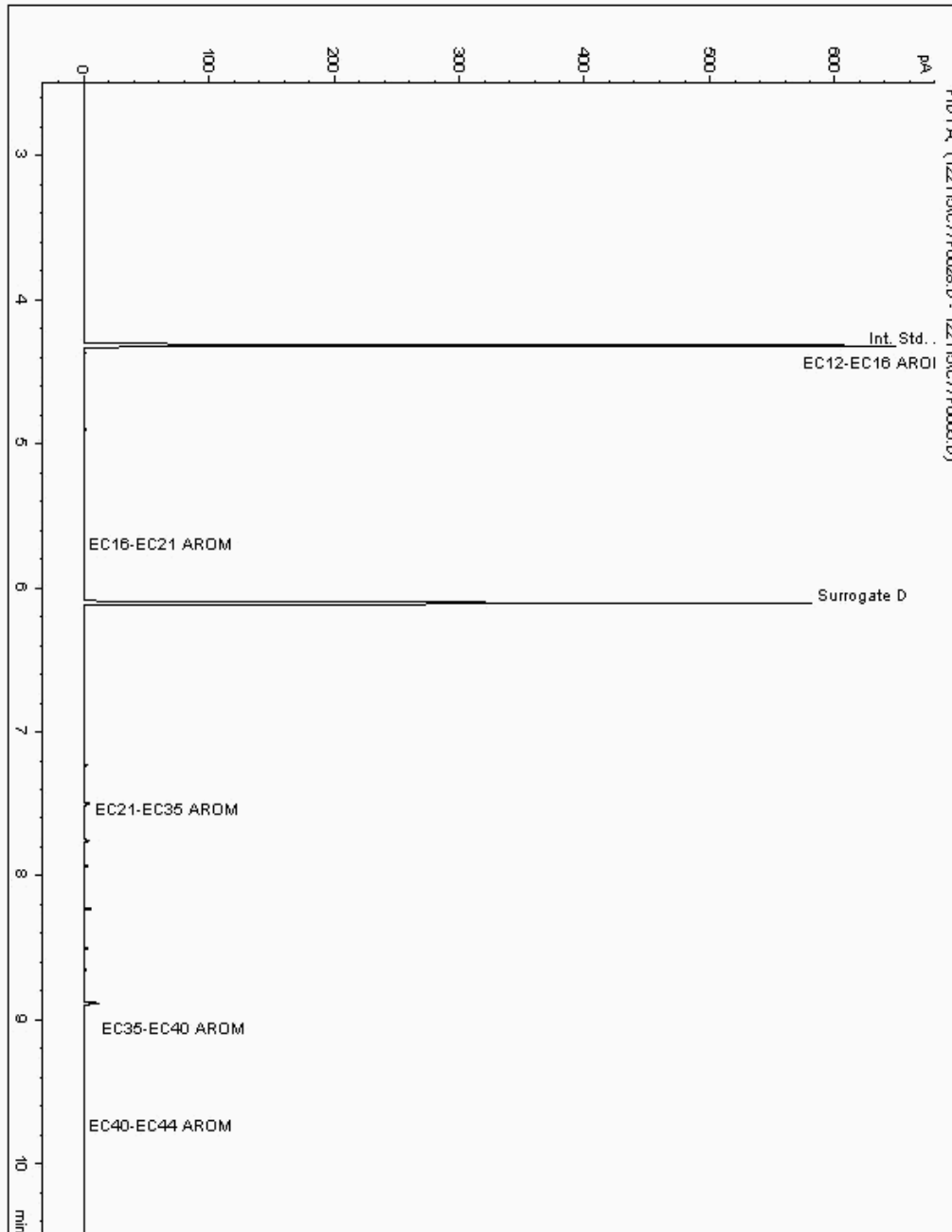
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678854
Sample ID : EXB5_3.5

Depth :

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

Sample Identity: 11970161-
Date Acquired : 22/12/2015 00:50:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.993





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

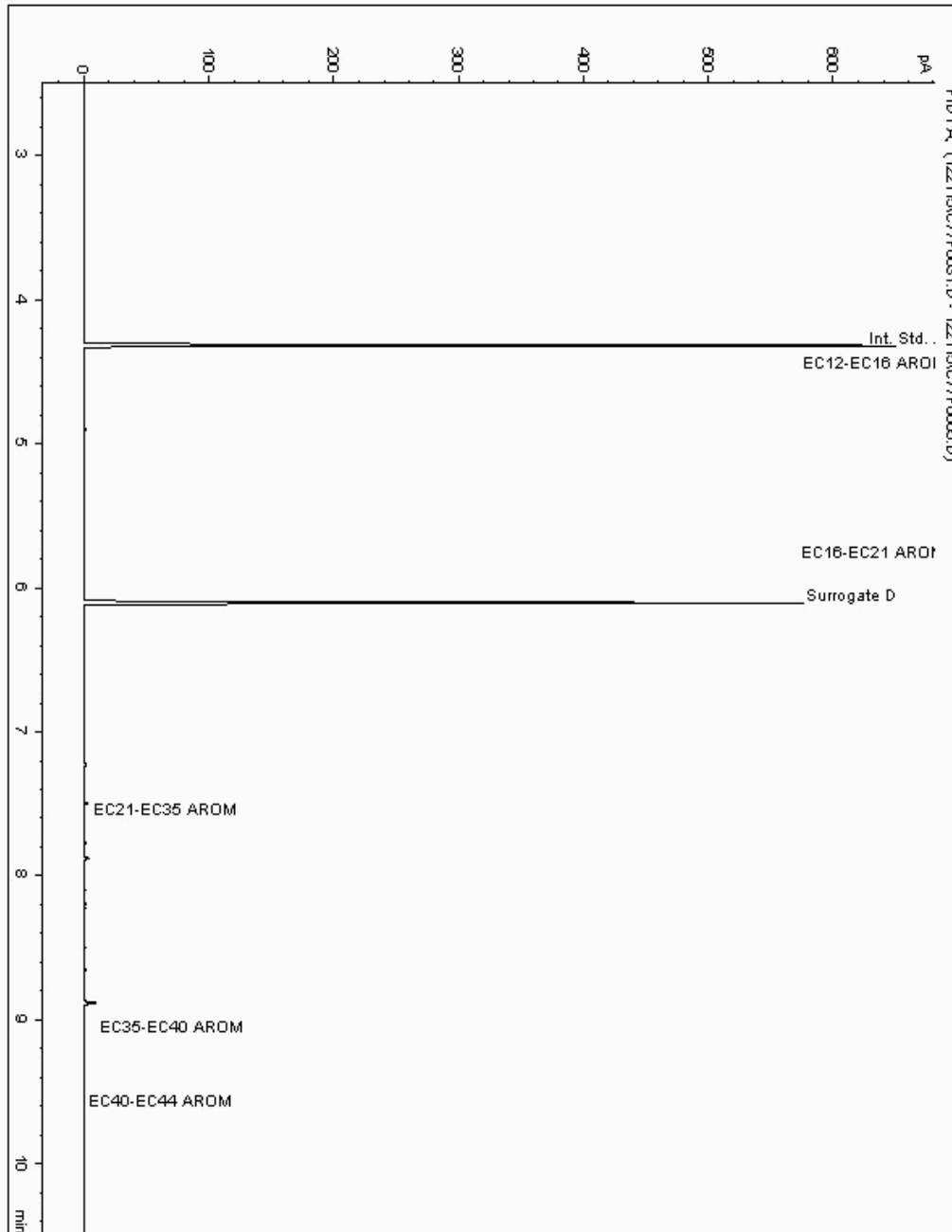
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678865
Sample ID : FL101_0.6

Depth :

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

Sample Identity: 11970208-
Date Acquired : 22/12/2015 01:42:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.048





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

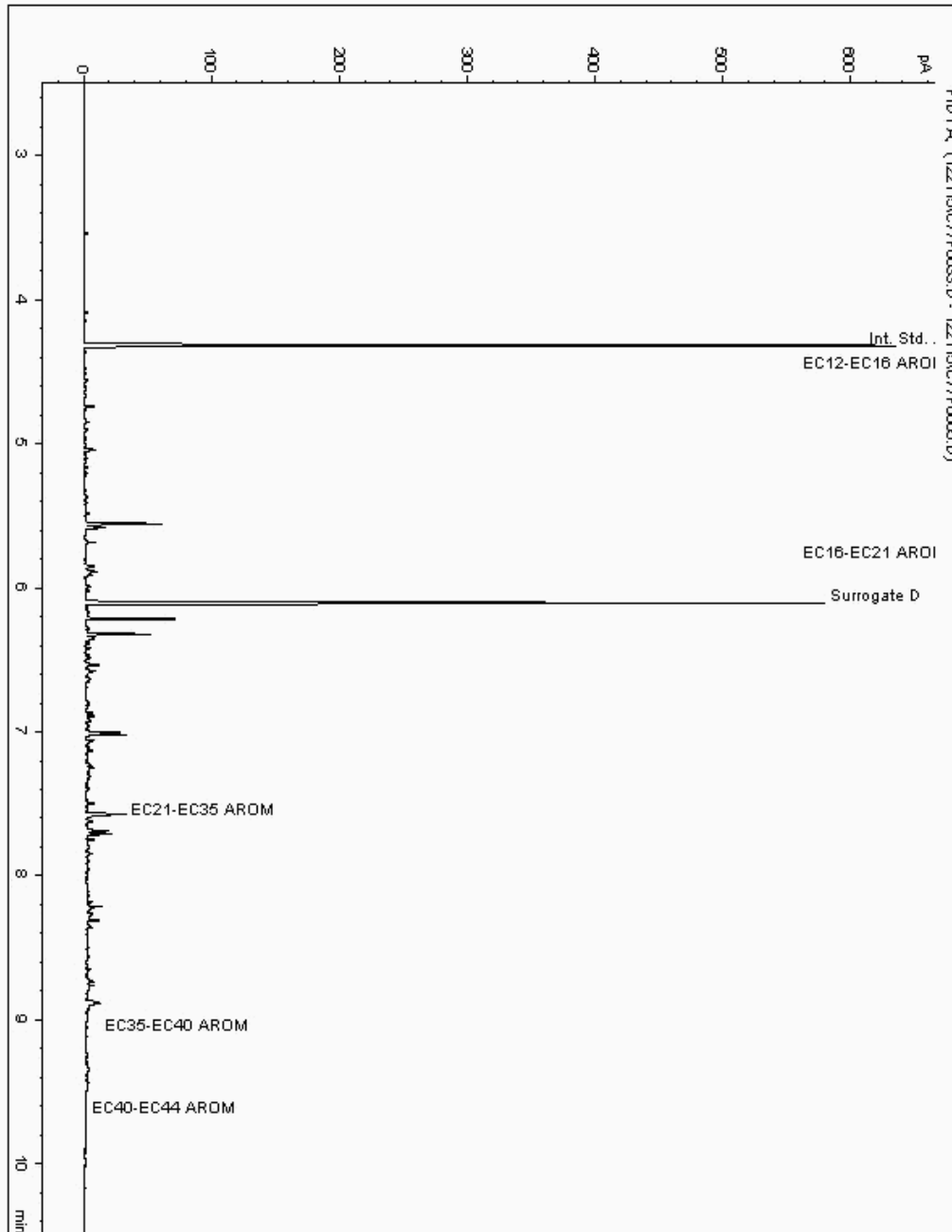
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678886
Sample ID : EXB4_1.5

Depth :

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

Sample Identity: 11970106-
Date Acquired : 22/12/2015 02:23:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.042





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

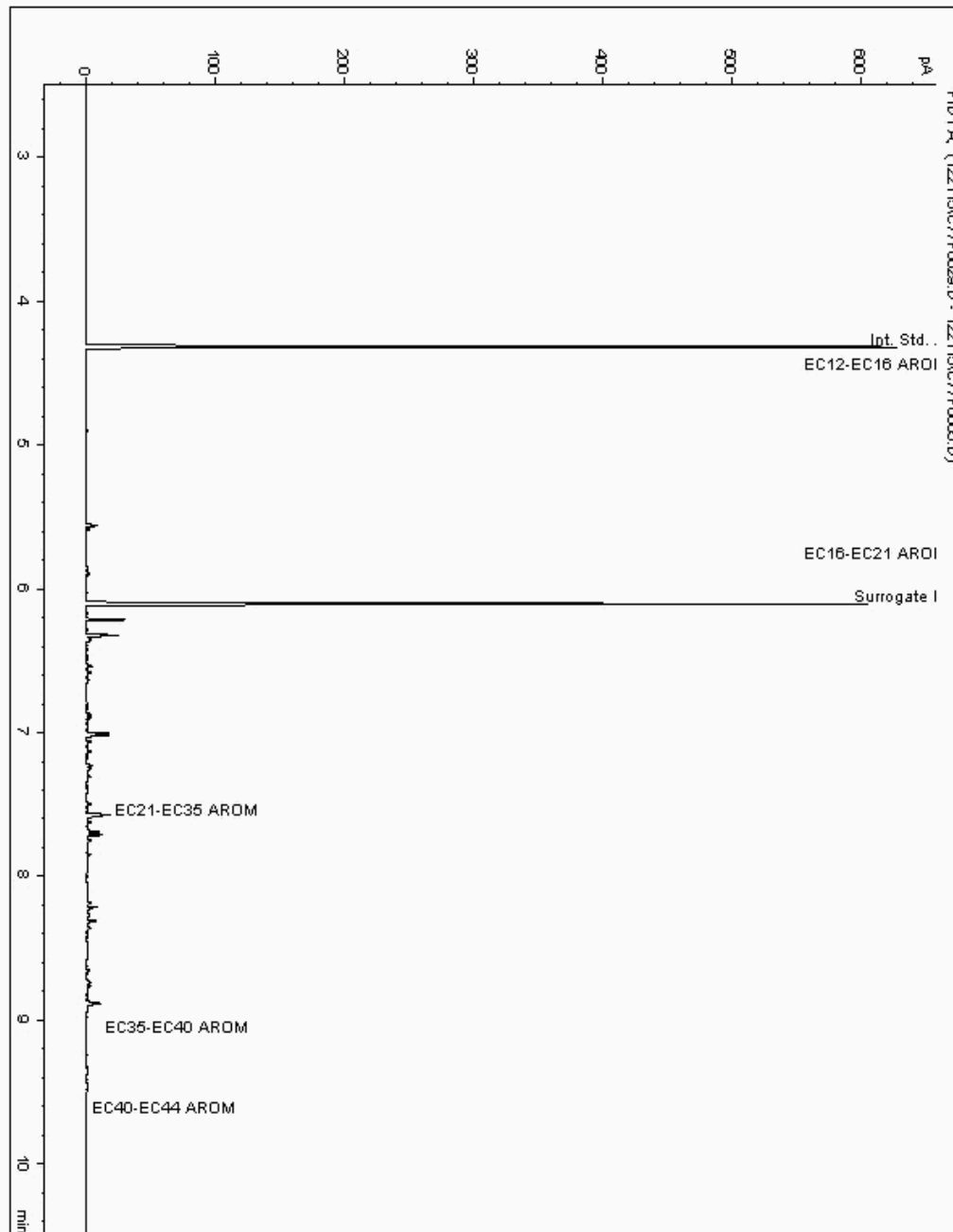
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678889
Sample ID : EXB1_1.6

Depth :

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

Sample Identity: 11970018-
Date Acquired : 22/12/2015 01:10:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.995





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

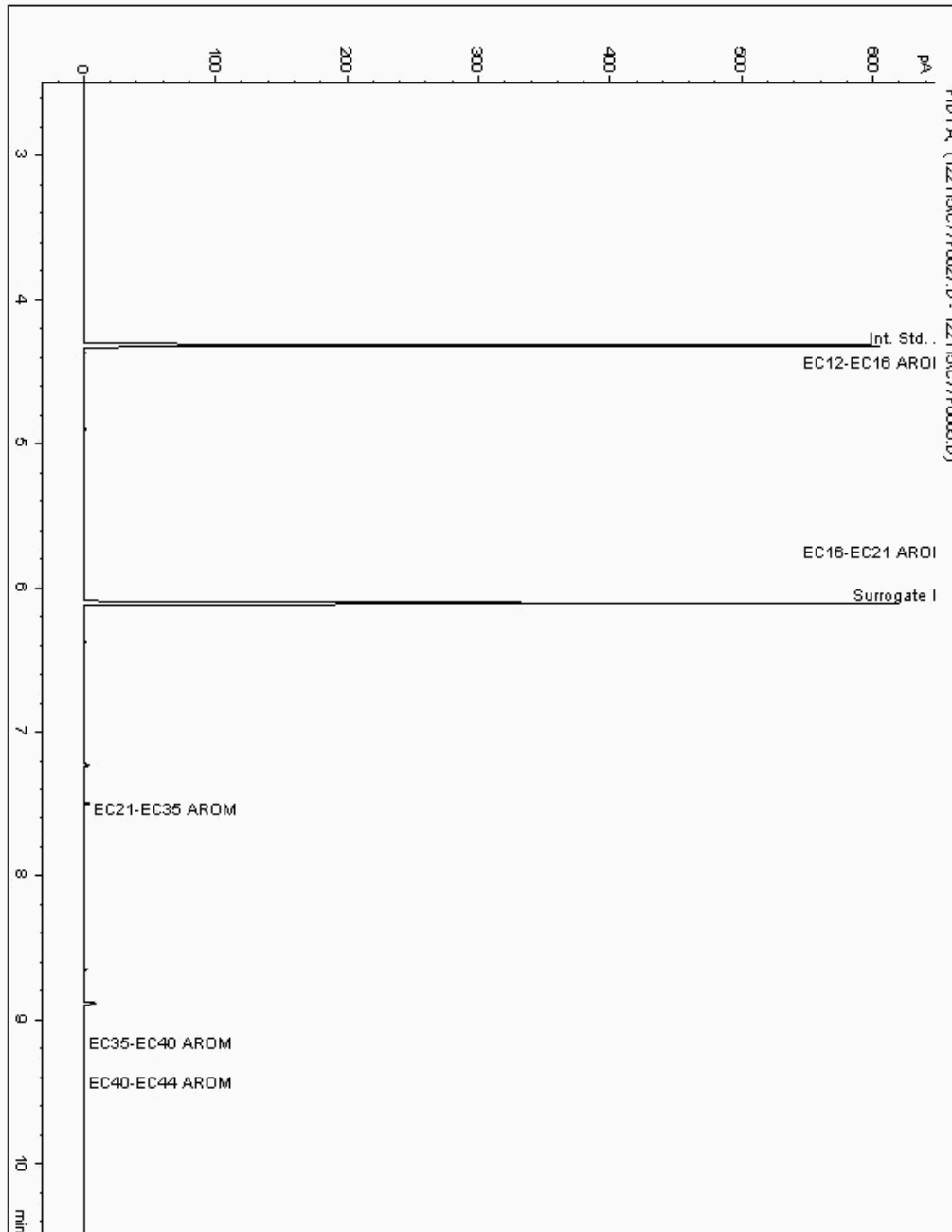
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678927
Sample ID : EXB2_2.0

Depth :

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

Sample Identity: 11970071-
Date Acquired : 22/12/2015 00:30:11 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.992





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

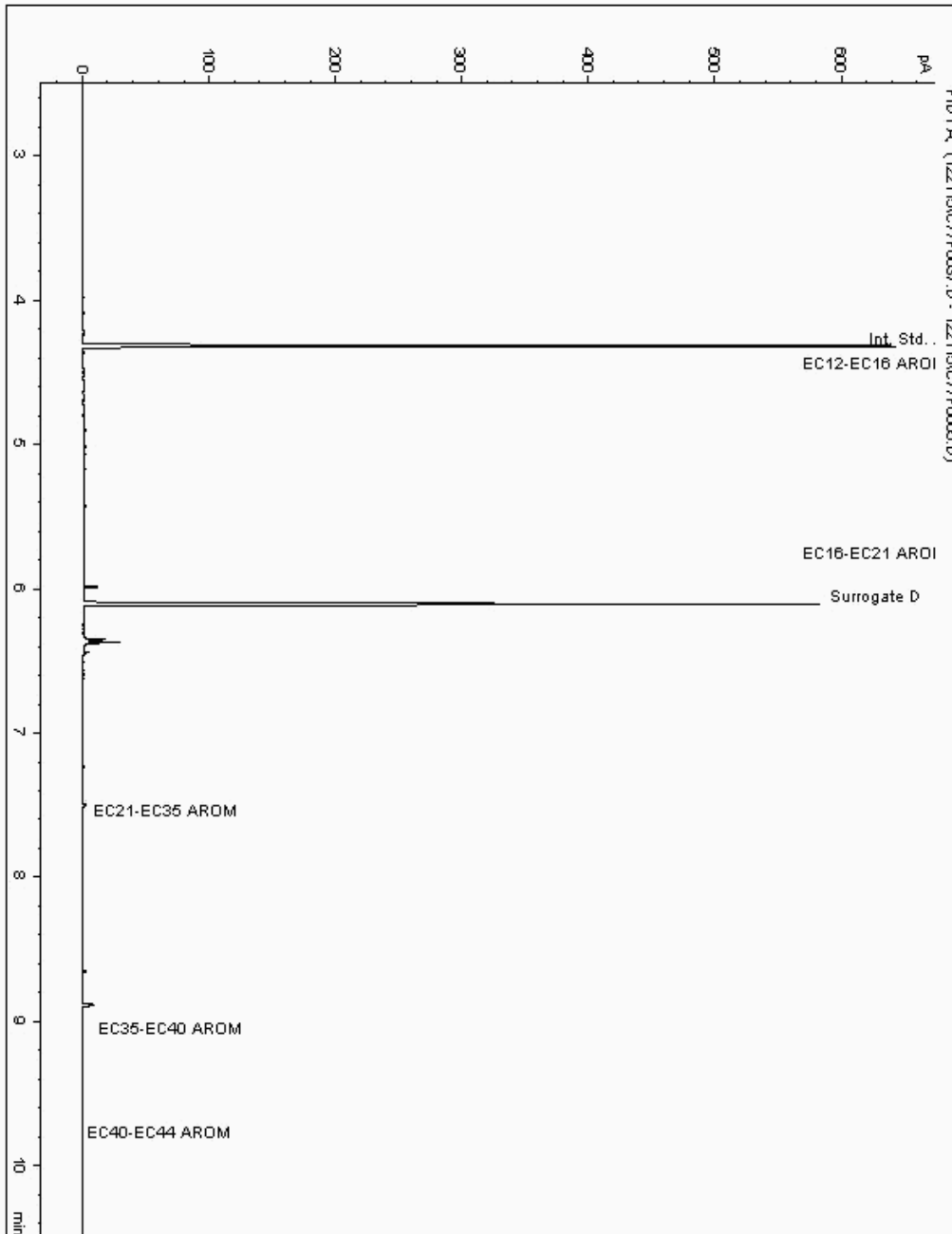
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12678948
Sample ID : EXB_1.7

Depth :

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

Sample Identity: 11969932-
Date Acquired : 22/12/2015 03:35:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.011





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

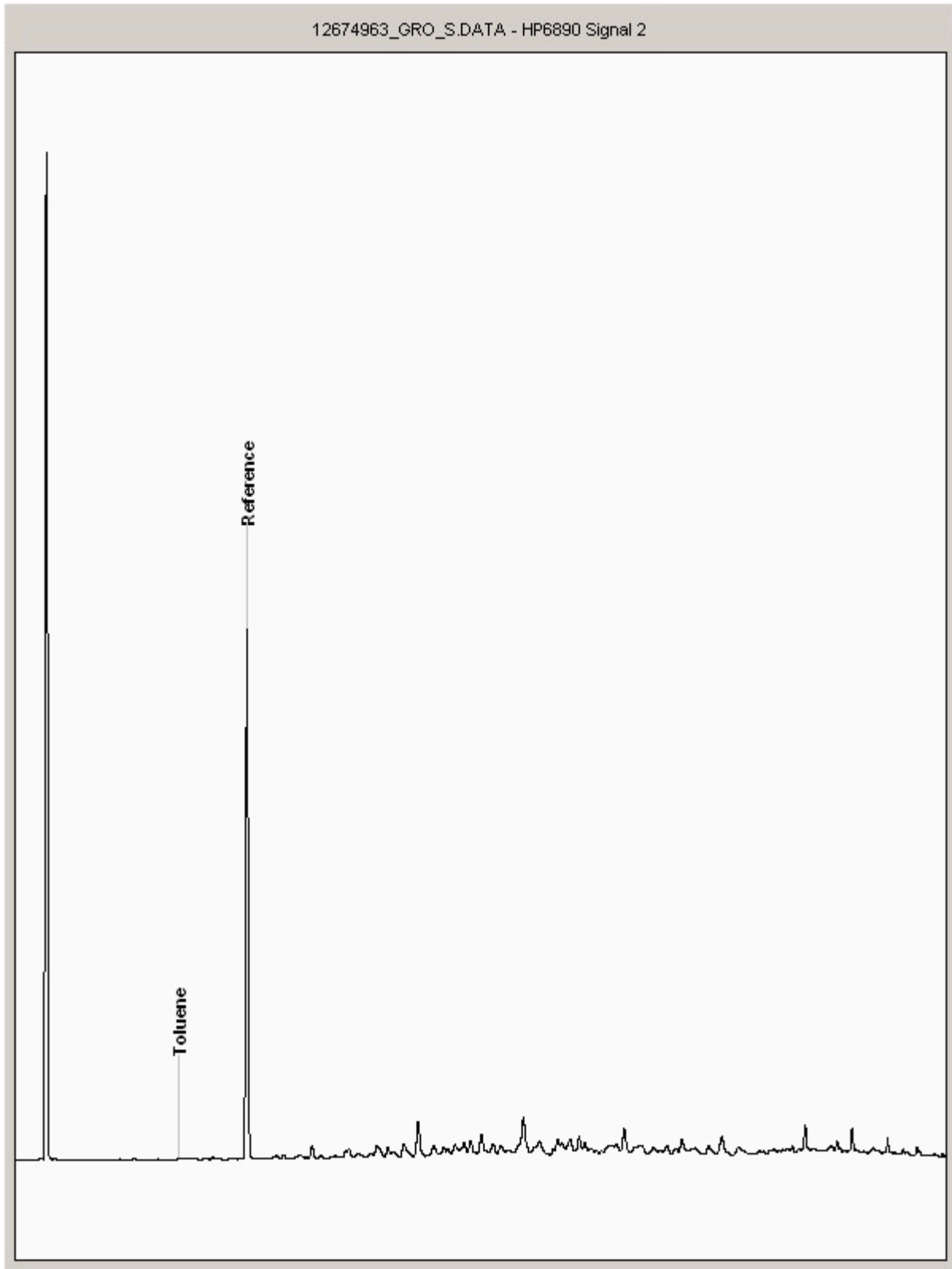
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12674963
Sample ID : FL102_0.6

Depth :





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

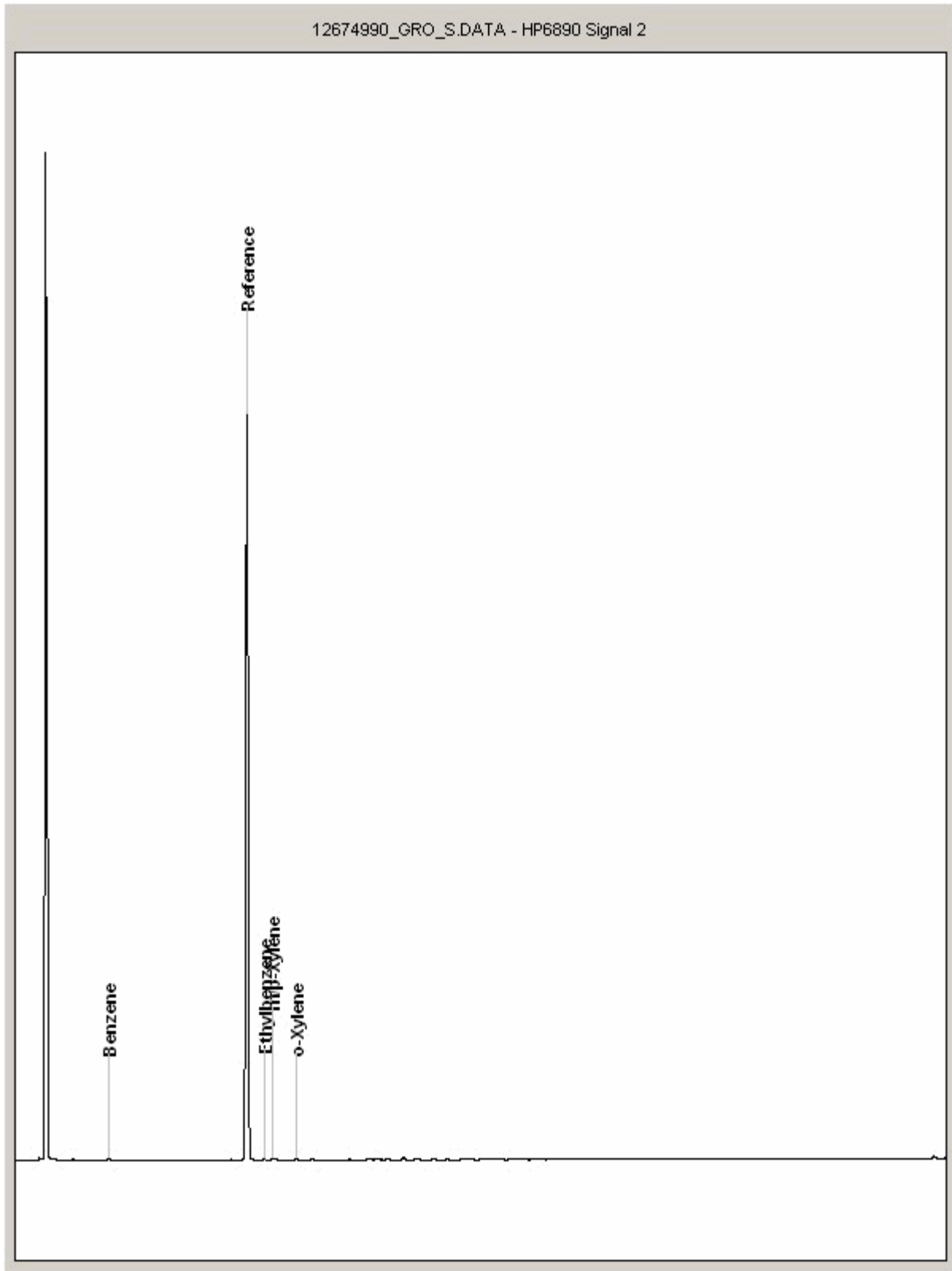
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12674990
Sample ID : EXB5_3.5

Depth :





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

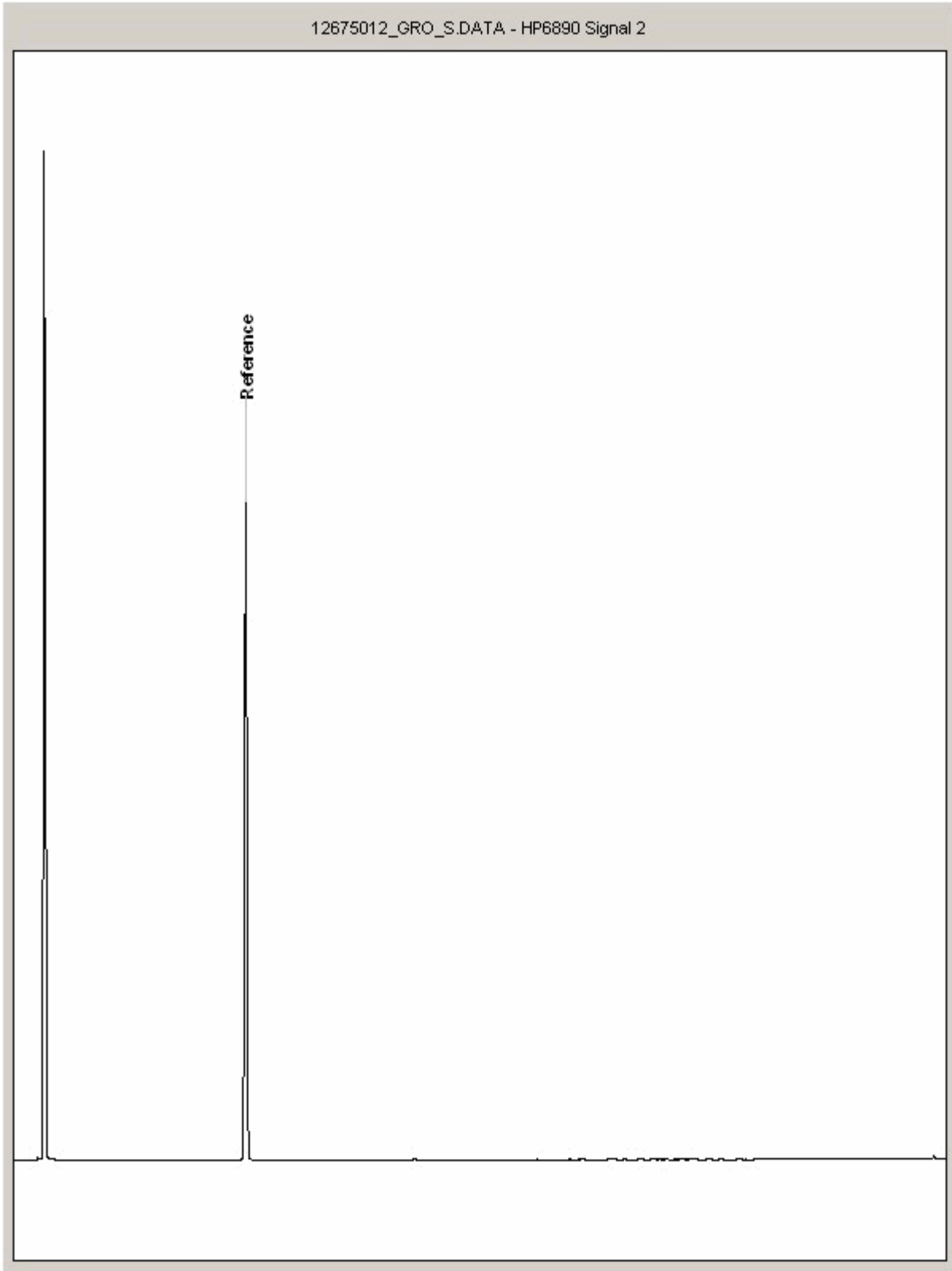
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12675012
Sample ID : FL101_0.6

Depth :





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

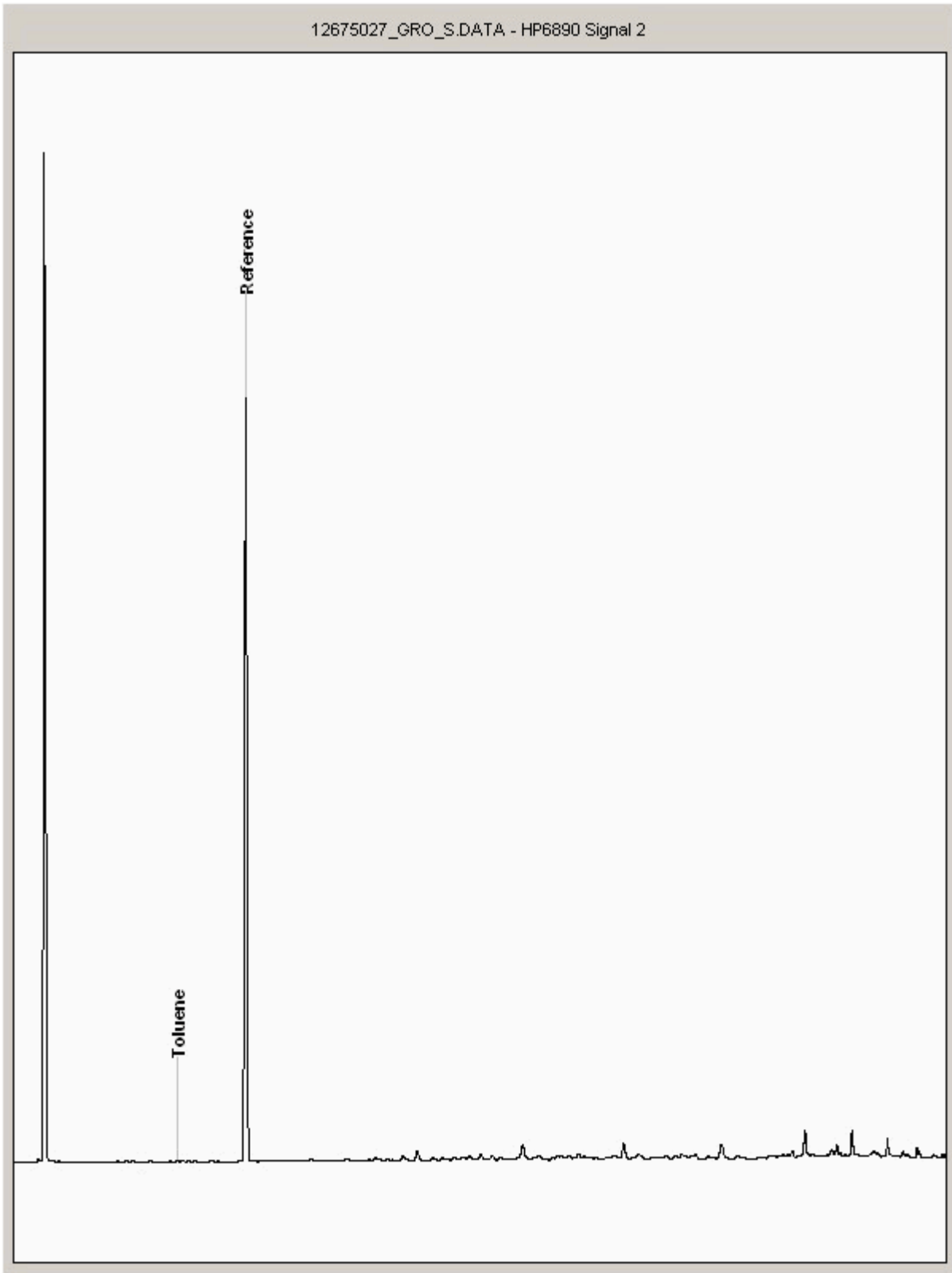
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12675027
Sample ID : EXB1_1.6

Depth :





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

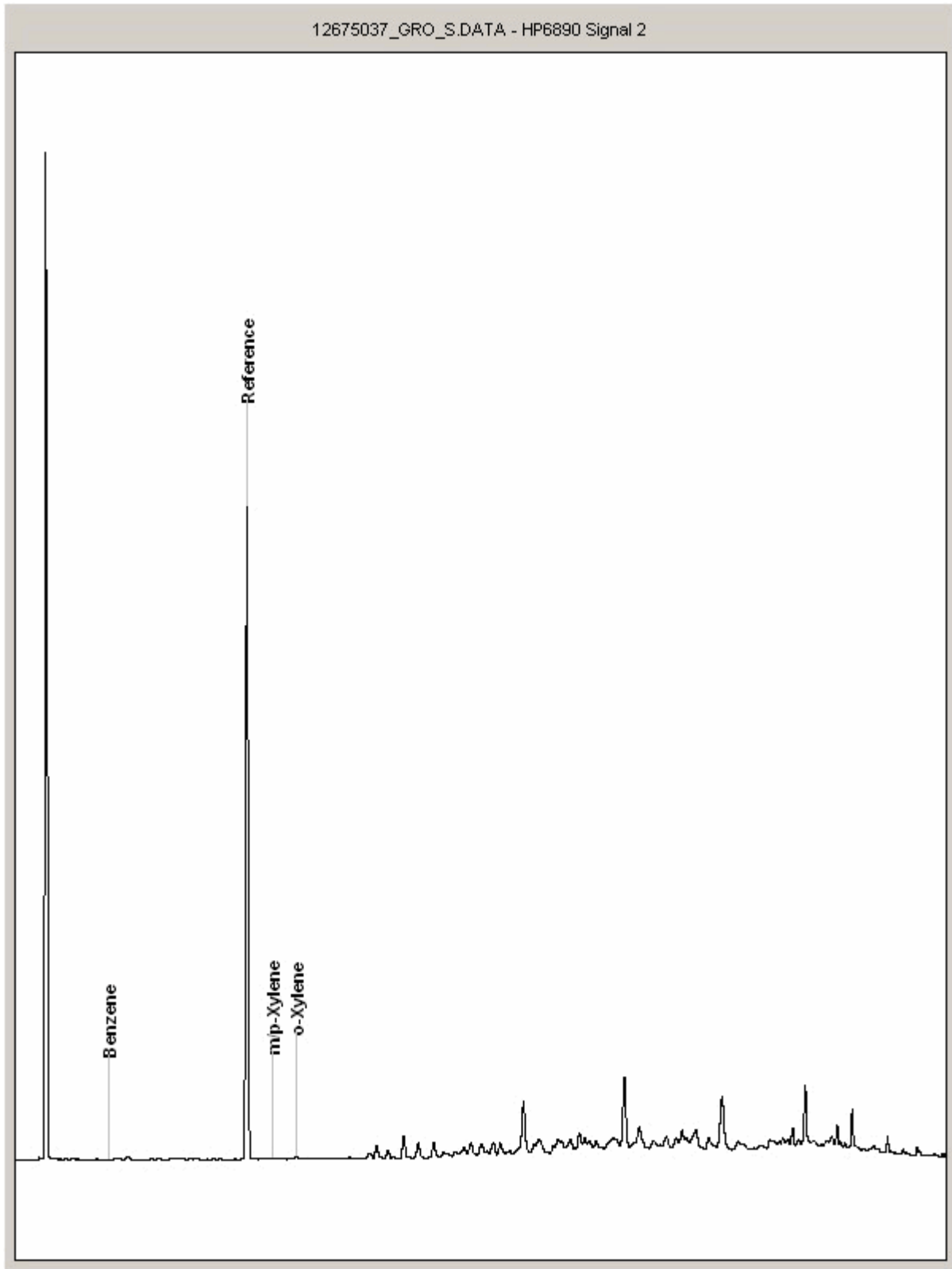
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12675037
Sample ID : EXB4_1.5

Depth :





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

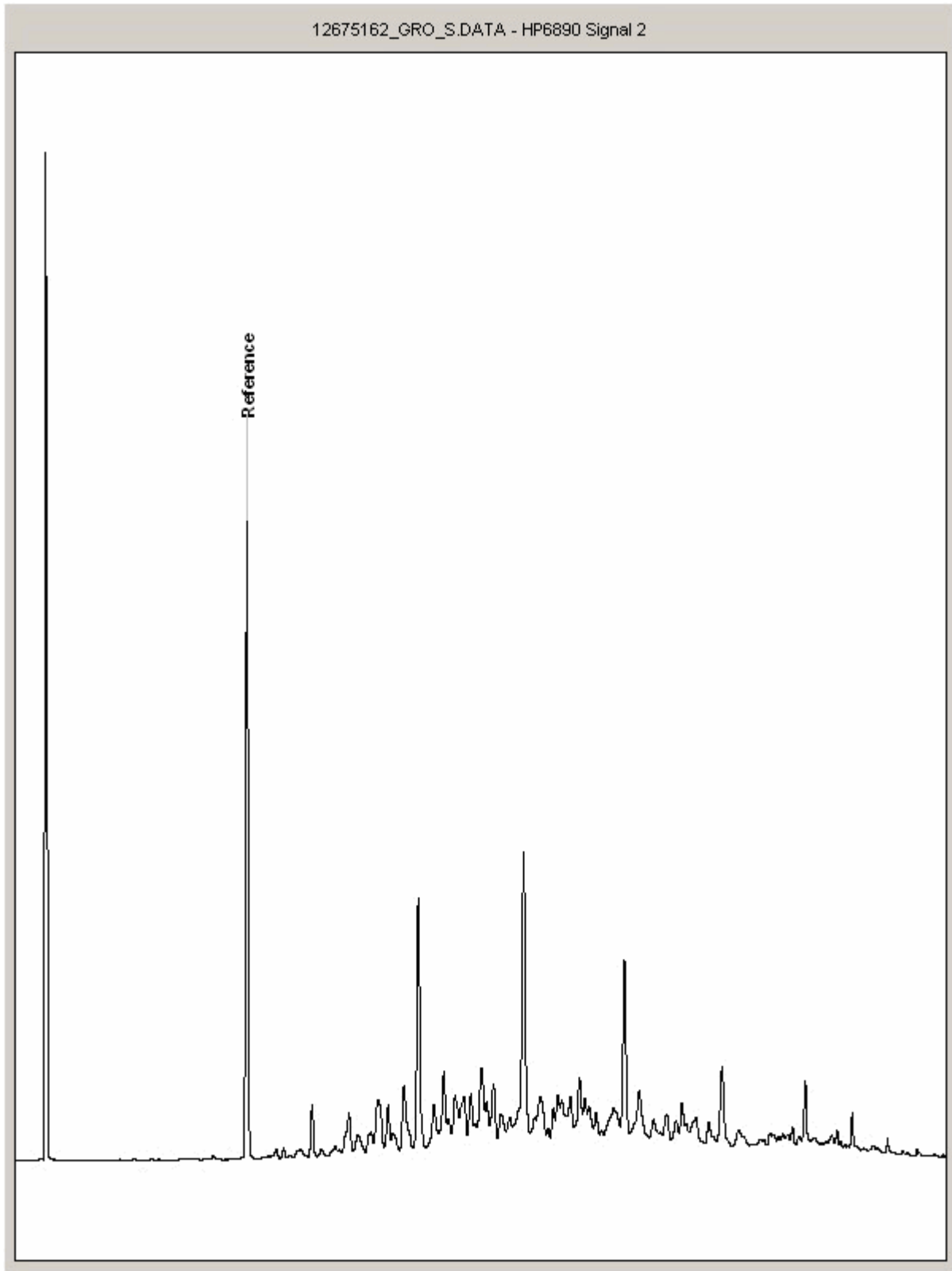
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12675162
Sample ID : EXB2_2.0

Depth :





CERTIFICATE OF ANALYSIS

SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

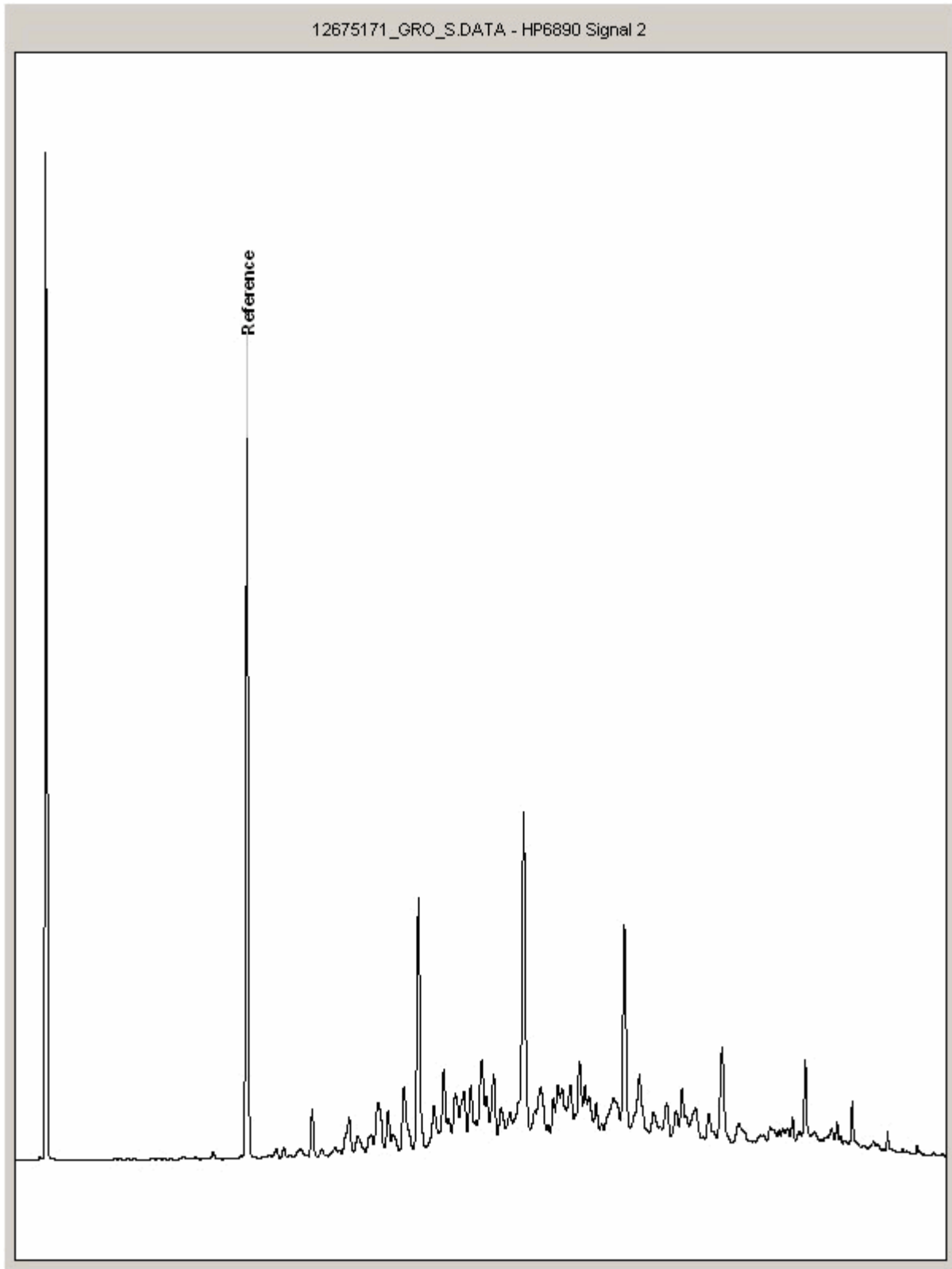
Order Number:
Report Number: 343375
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12675171
Sample ID : EXB_1.7

Depth :





SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
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 Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXHERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXHERM	HFLC
PHENOLSBY GOMS	WET	DOM	SOXHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CAVG BY GC	D&C	HEXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CAVG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DOM	SOLID PHASE EXTRACTION	HFLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HFLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HFLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

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

SDG: 151218-79
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 343375
Superseded Report:

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 11 January 2016
Customer: H_URS_WIM
Sample Delivery Group (SDG): 160106-72
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 344846

We received 1 sample on Wednesday January 06, 2016 and 1 of these samples were scheduled for analysis which was completed on Monday January 11, 2016. 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





CERTIFICATE OF ANALYSIS

Validated

SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12712603	MW201			05/01/2016

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



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

Results Legend		Customer Sample R		MW201				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Water(GW/SW) 05/01/2016 06/01/2016 160106-72 12712603					
M	mCERTS accredited.							
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							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units			Method				
Iron, Ferrous	<0.1 mg/l	TM125	<0.1	#				
Arsenic (diss.filt)	<0.12 µg/l	TM152	0.711	#				
Boron (diss.filt)	<9.4 µg/l	TM152	51.3	#				
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1	#				
Chromium (diss.filt)	<0.22 µg/l	TM152	1.83	#				
Cobalt (diss.filt)	<0.06 µg/l	TM152	0.789	#				
Copper (diss.filt)	<0.85 µg/l	TM152	1.42	#				
Lead (diss.filt)	<0.02 µg/l	TM152	0.27	#				
Molybdenum (diss.filt)	<0.24 µg/l	TM152	0.938	#				
Nickel (diss.filt)	<0.15 µg/l	TM152	3.47	#				
Selenium (diss.filt)	<0.39 µg/l	TM152	0.607	#				
Tin (diss.filt)	<0.36 µg/l	TM152	0.799	#				
Zinc (diss.filt)	<0.41 µg/l	TM152	9.54	#				
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	#				
Sulphate	<2 mg/l	TM184	62.8	#				
Nitrate as NO3	<0.3 mg/l	TM184	23.5	#				
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	#				
Ethanol	<50 µg/l	TM289	<50					
tert Butanol	<10 µg/l	TM289	<10					
Diisopropyl ether	<1 µg/l	TM289	<1					
tert-butyl ethyl ether	<1 µg/l	TM289	<1					



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

EPH CWG (Aromatic) Aqueous GC (W)

Table with columns: Component, LOD/Units, Method, and data rows for Aromatics >EC12-EC16, >EC16-EC21, >EC21-EC35. Includes a Results Legend and Customer Sample R information.



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

GRO by GC-FID (W)

Table with columns: Component, LOD/Units, Method, and data rows for GRO Surrogate % recovery and various Aliphatics/Aromatics (>C5-C6, >C6-C8, >C8-C10, >C10-C12, >EC5-EC7, >EC7-EC8, >EC8-EC10, >EC10-EC12).



SDG: 160106-72
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 344846
 Superseded Report:

PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample R	MW201					
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Water(GW/SW) 05/01/2016 06/01/2016 160106-72 12712603					
M	mCERTS accredited.							
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							
1-5&*\$@	Sample deviation (see appendix)							
Component	LOD/Units			Method				
Naphthalene (aq)	<0.1 µg/l	TM178	<0.1	#				
Acenaphthene (aq)	<0.015 µg/l	TM178	<0.015	#				
Acenaphthylene (aq)	<0.011 µg/l	TM178	<0.011	#				
Fluoranthene (aq)	<0.017 µg/l	TM178	<0.017	#				
Anthracene (aq)	<0.015 µg/l	TM178	<0.015	#				
Phenanthrene (aq)	<0.022 µg/l	TM178	<0.022	#				
Fluorene (aq)	<0.014 µg/l	TM178	<0.014	#				
Chrysene (aq)	<0.013 µg/l	TM178	<0.013	#				
Pyrene (aq)	<0.015 µg/l	TM178	<0.015	#				
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	<0.017	#				
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	<0.023	#				
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	<0.027	#				
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	<0.009	#				
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	<0.016	#				
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	<0.016	#				
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	<0.014	#				
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178	<0.344					



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

VOC MS (W)

Table with columns: Component, LOD/Units, Method, and results for various VOCs like Toluene-d8, MTBE, Benzene, etc. Includes a Results Legend and Customer Sample R information.



CERTIFICATE OF ANALYSIS

Validated

SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
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)		
TM125	DIN 38405 D17	Determination of Ferrous Iron		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM289		Determination of Oxygenates in Waters by Headspace/GC-MS		

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



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

Test Completion Dates

Lab Sample No(s)	12712603
Customer Sample Ref.	MW201
AGS Ref.	
Depth	
Type	LIQUID

Anions by Kone (w)	07-Jan-2016
Dissolved Metals by ICP-MS	07-Jan-2016
EPH CWG (Aliphatic) Aqueous GC (W)	08-Jan-2016
EPH CWG (Aromatic) Aqueous GC (W)	08-Jan-2016
Ferrous Iron	11-Jan-2016
GRO by GC-FID (W)	07-Jan-2016
Hexavalent Chromium (w)	08-Jan-2016
Mercury Dissolved	08-Jan-2016
Nitrite by Kone (w)	07-Jan-2016
Oxygenates (W)	11-Jan-2016
PAH Spec MS - Aqueous (W)	08-Jan-2016
TPH CWG (W)	08-Jan-2016
VOC MS (W)	07-Jan-2016



SDG: 160106-72
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 344846
 Superseded Report:

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 1222
Chloride	TM184	108.0 85.00 : 115.00
Phosphate (Ortho as PO4)	TM184	96.40 : 108.40
Sulphate (soluble)	TM184	103.6 85.00 : 115.00
TON as NO3	TM184	108.0 85.00 : 115.00

Dissolved Metals by ICP-MS

Component	Method Code	QC 1221
Aluminium	TM152	101.07 86.50 : 124.36
Antimony	TM152	99.33 82.48 : 112.11
Arsenic	TM152	95.6 90.70 : 110.84
Barium	TM152	99.47 88.77 : 110.63
Beryllium	TM152	102.67 92.42 : 117.03
Boron	TM152	102.67 79.53 : 125.65
Cadmium	TM152	102.67 90.67 : 109.35
Chromium	TM152	101.33 92.64 : 112.77
Cobalt	TM152	103.87 91.13 : 113.98
Copper	TM152	99.73 87.36 : 111.40
Lead	TM152	99.07 89.32 : 108.45
Lithium	TM152	101.87 82.03 : 126.72
Manganese	TM152	101.73 93.25 : 113.43
Molybdenum	TM152	104.13 87.91 : 112.38
Nickel	TM152	96.13 87.47 : 113.10
Phosphorus	TM152	104.0 92.73 : 123.63
Selenium	TM152	99.07 92.23 : 114.52
Strontium	TM152	102.67 91.17 : 114.53
Tellurium	TM152	102.0 91.58 : 109.94
Thallium	TM152	97.87 86.89 : 108.60



SDG: 160106-72
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 344846
 Superseded Report:

Dissolved Metals by ICP-MS

		QC 1221
Tin	TM152	107.07 81.64 : 109.35
Titanium	TM152	104.27 93.55 : 112.86
Uranium	TM152	95.73 82.66 : 114.28
Vanadium	TM152	104.93 92.31 : 113.81
Zinc	TM152	97.47 90.93 : 109.87

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 1221
Total Aliphatics >C12-C35	TM174	94.17 66.67 : 110.42

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 1256
Total Aromatics >EC12-EC35	TM174	90.0 63.00 : 121.00

Ferrous Iron

Component	Method Code	QC 1203
Ferrous Iron	TM125	99.0 94.00 : 102.00

GRO by GC-FID (W)

Component	Method Code	QC 1274
Benzene by GC	TM245	88.0 77.50 : 122.50
Ethylbenzene by GC	TM245	85.5 77.50 : 122.50
m & p Xylene by GC	TM245	85.75 77.50 : 122.50
MTBE GC-FID	TM245	87.0 77.50 : 122.50
o Xylene by GC	TM245	86.5 77.50 : 122.50
QC	TM245	84.29 74.88 : 125.54



SDG: 160106-72
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 344846
 Superseded Report:

GRO by GC-FID (W)

		QC 1274
Toluene by GC	TM245	87.0 77.50 : 122.50

Hexavalent Chromium (w)

Component	Method Code	QC 1264
Hexavalent Chromium	TM241	100.8 91.10 : 105.14

Mercury Dissolved

Component	Method Code	QC 1274
Mercury Dissolved (CVAf)	TM183	102.0 73.51 : 120.83

Oxygenates (W)

Component	Method Code	QC 1277
Benzene	TM289	98.5 87.69 : 119.72
Diisopropyl ether	TM289	90.5 86.70 : 122.79
Ethanol	TM289	98.0 74.12 : 156.61
Ethylbenzene	TM289	90.5 84.52 : 113.38
o-Xylene	TM289	90.0 84.40 : 112.41
p/m-Xylene	TM289	91.75 83.20 : 115.01
tert Butanol	TM289	95.2 70.51 : 143.48
tert-amyl methyl ether	TM289	92.5 78.92 : 124.29
tert-butyl ethyl ether	TM289	91.5 78.17 : 124.34
tert-butyl methyl ether	TM289	92.5 87.75 : 127.35
Toluene	TM289	93.0 79.08 : 122.51

PAH Spec MS - Aqueous (W)



SDG: 160106-72
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 344846
 Superseded Report:

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 1289
Acenaphthene by GCMS	TM178	99.0 88.78 : 115.50
Acenaphthylene by GCMS	TM178	96.5 85.27 : 110.71
Anthracene by GCMS	TM178	97.0 86.06 : 112.26
Benz(a)anthracene by GCMS	TM178	99.5 79.25 : 124.25
Benzo(a)pyrene by GCMS	TM178	98.0 83.10 : 128.10
Benzo(b)fluoranthene by GCMS	TM178	101.5 86.00 : 131.00
Benzo(ghi)perylene by GCMS	TM178	90.5 79.96 : 107.30
Benzo(k)fluoranthene by GCMS	TM178	100.0 87.50 : 132.50
Chrysene by GCMS	TM178	99.0 86.00 : 114.60
Dibenzo(ah)anthracene by GCMS	TM178	88.0 80.00 : 119.98
Fluoranthene by GCMS	TM178	99.5 81.15 : 116.55
Fluorene by GCMS	TM178	100.5 90.88 : 112.23
Indeno(123cd)pyrene by GCMS	TM178	100.0 82.25 : 114.75
Naphthalene by GCMS	TM178	99.0 92.00 : 113.00
Phenanthrene by GCMS	TM178	99.5 93.18 : 113.92
Pyrene by GCMS	TM178	99.0 82.25 : 116.15

VOC MS (W)

Component	Method Code	QC 1243
1,1,1,2-Tetrachloroethane	TM208	96.0 77.50 : 122.50
1,1,1-Trichloroethane	TM208	93.0 77.50 : 122.50
1,1-Dichloroethane	TM208	100.5 77.50 : 122.50
1,2-Dichloroethane	TM208	95.5 77.50 : 122.50
2-Chlorotoluene	TM208	93.5 77.50 : 122.50
4-Chlorotoluene	TM208	94.5 77.50 : 122.50
Benzene	TM208	99.0 77.50 : 122.50
Bromomethane	TM208	92.0 73.63 : 123.82
Carbontetrachloride	TM208	99.0 77.50 : 122.50



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

VOC MS (W)

		QC 1243
Chlorobenzene	TM208	97.0 77.50 : 122.50
Chloroform	TM208	98.0 77.50 : 122.50
Chloromethane	TM208	99.0 83.36 : 147.02
Cis-1,2-Dichloroethene	TM208	99.0 89.07 : 125.70
Dichloromethane	TM208	106.5 81.94 : 125.20
Ethylbenzene	TM208	94.0 76.08 : 108.05
Hexachlorobutadiene	TM208	91.5 72.12 : 118.38
o-Xylene	TM208	93.5 79.33 : 110.74
p/m-Xylene	TM208	93.5 74.83 : 118.29
Tert-butyl methyl ether	TM208	102.5 70.43 : 124.31
Tetrachloroethene	TM208	95.0 80.60 : 110.75
Toluene	TM208	94.5 80.95 : 110.35
Trichloroethene	TM208	94.5 77.32 : 109.93
Vinyl Chloride	TM208	102.5 64.36 : 126.94

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: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

Chromatogram

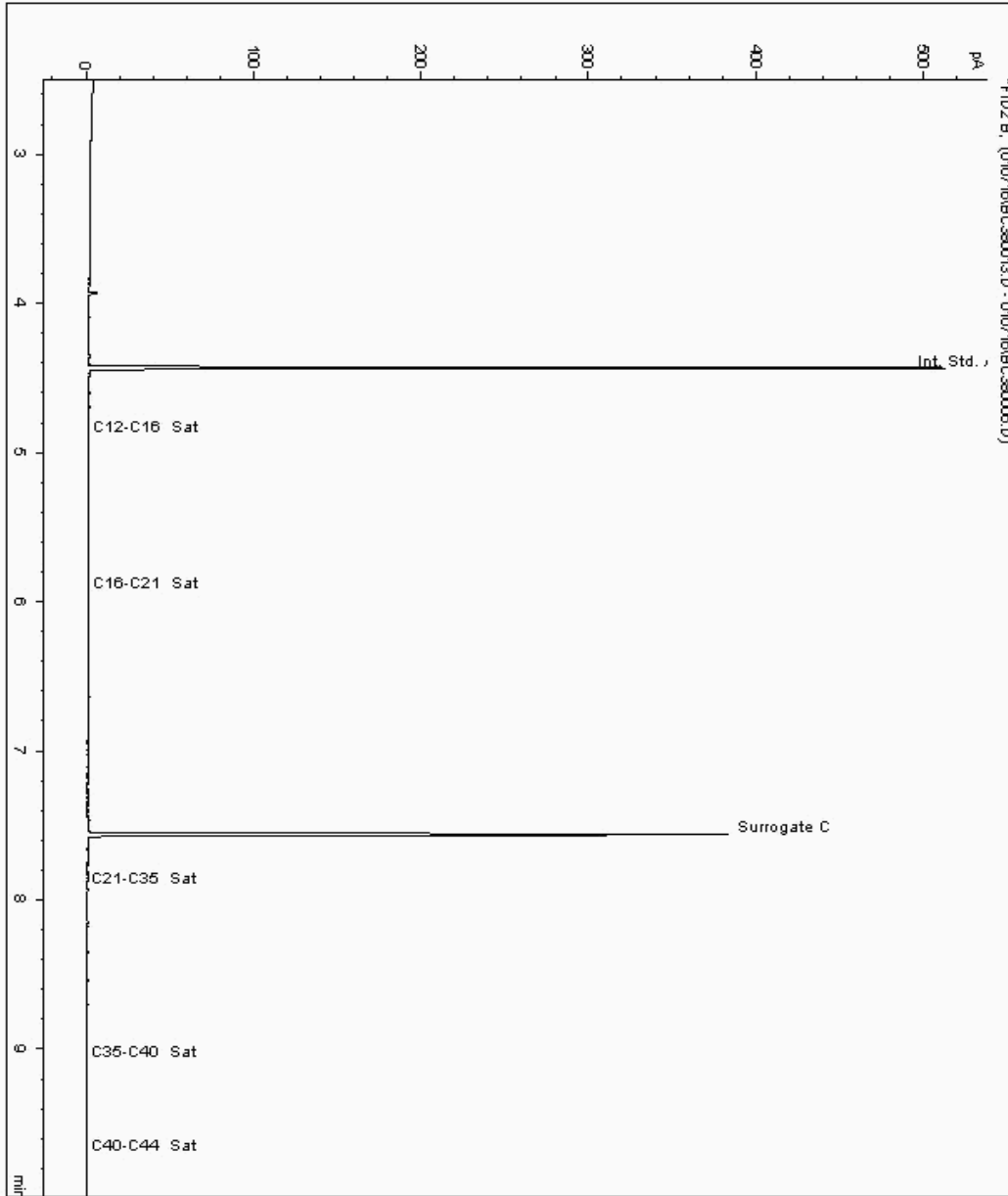
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 12715527
Sample ID : MW201

Depth :

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

Sample Identity: 12003551-
Date Acquired : 07/01/16 19:34:59 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

Chromatogram

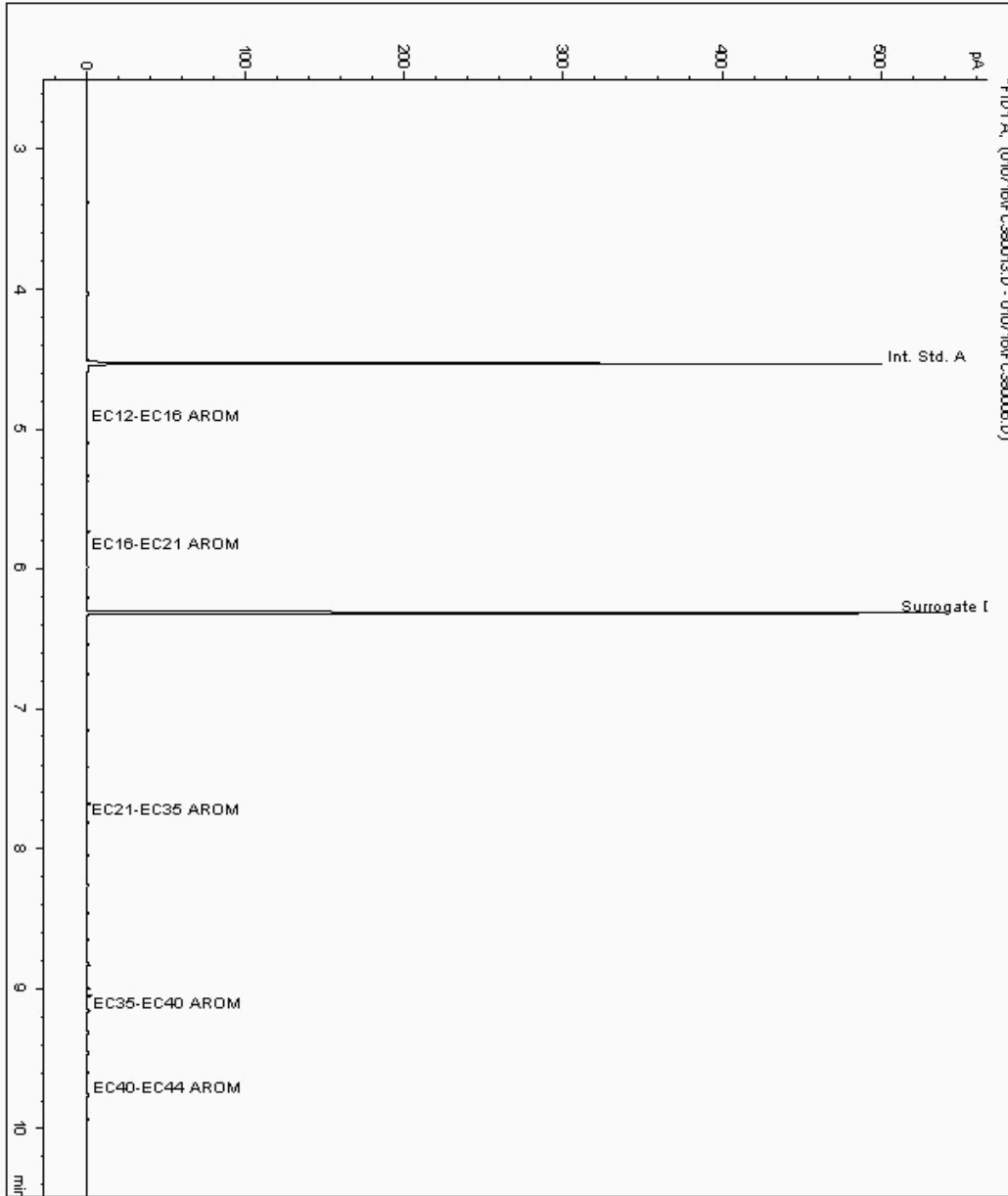
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 12715527
Sample ID : MW201

Depth :

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

Sample Identity: 12003552-
Date Acquired : 07/01/16 19:34:59 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008





CERTIFICATE OF ANALYSIS

SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

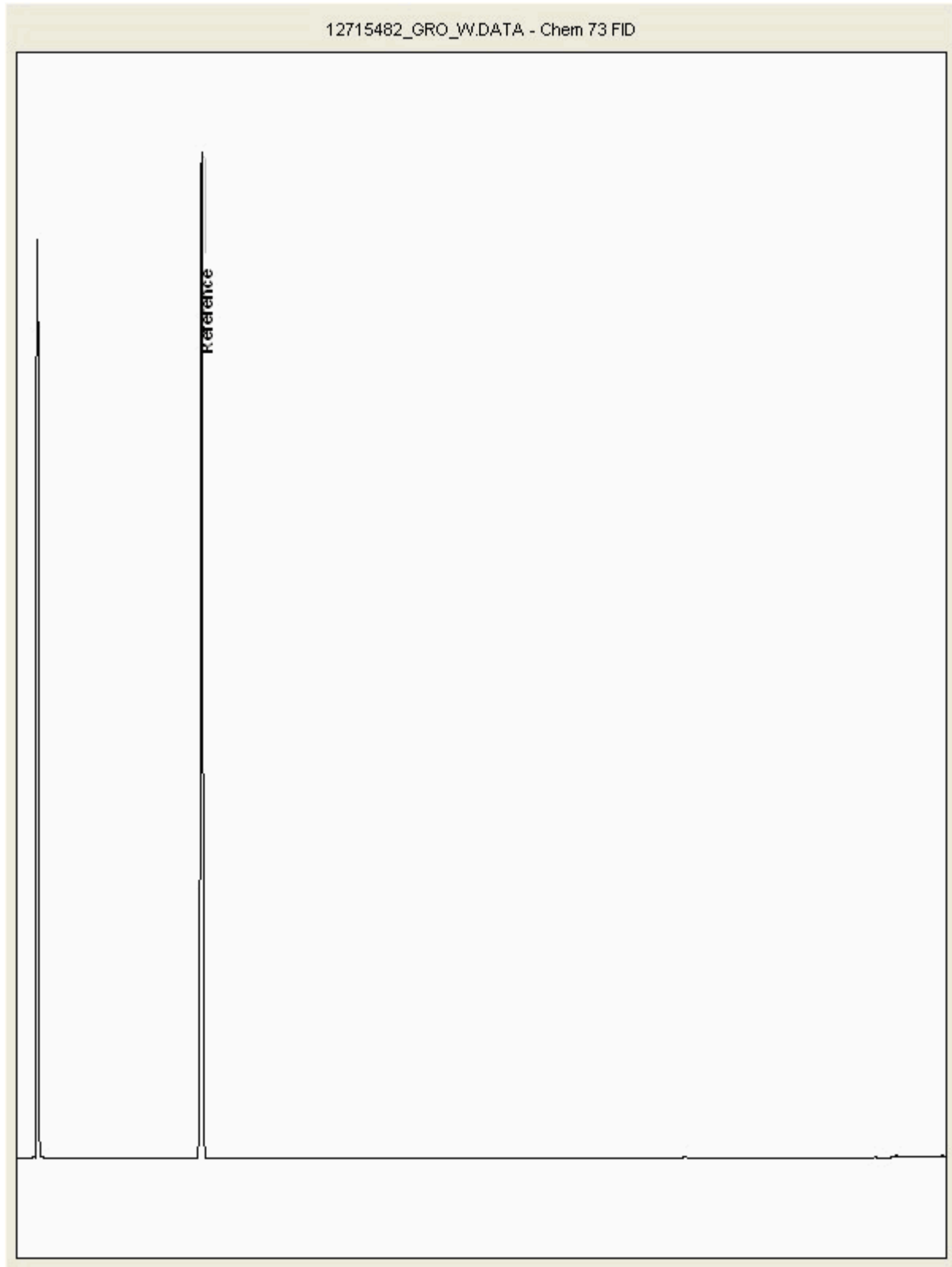
Order Number:
Report Number: 344846
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 12715482
Sample ID : MW201

Depth :



SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
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 Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXITHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXITHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXITHERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXITHERM	HPLC
PHENOLSBY GOMS	WET	DOM	SOXITHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXITHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXITHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CAG BY GC	D&C	HEXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY			
ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CAG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

SDG: 160106-72
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 344846
Superseded Report:

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 23 January 2016
Customer: H_URS_WIM
Sample Delivery Group (SDG): 160115-31
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 346181

We received 9 samples on Friday January 15, 2016 and 8 of these samples were scheduled for analysis which was completed on Saturday January 23, 2016. 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: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12755557	EXA01		2.50	13/01/2016
12755558	EXA02		2.50	13/01/2016
12755559	EXA03		2.50	13/01/2016
12755560	EXA04		2.50	14/01/2016
12755561	EXA07		2.50	14/01/2016
12755562	EXA08		2.50	13/01/2016
12755563	EXA11		4.50	13/01/2016
12755564	EXA12		4.50	13/01/2016
12755565	EXA13		1.50	12/01/2016

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



SDG: 160115-31
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60481674
 Report Number: 346181
 Superseded Report:

SOLID Results Legend Test No Determination Possible	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	
		12755564	EXA12		4.50	60g VOC (ALEE215) 250g Amber Jar (AL)
		12755563	EXA11		4.50	60g VOC (ALEE215) 400g Tub (ALEE214)
		12755562	EXA08		2.50	250g Amber Jar (AL) 60g VOC (ALEE215) 250g Amber Jar (AL)
		12755561	EXA07		2.50	60g VOC (ALEE215) 400g Tub (ALEE214) 250g Amber Jar (AL)
	12755560	EXA04		2.50	60g VOC (ALEE215) 400g Tub (ALEE214)	
	12755559	EXA03		2.50	250g Amber Jar (AL) 60g VOC (ALEE215)	
	12755558	EXA02		2.50	60g VOC (ALEE215) 250g Amber Jar (AL)	
	12755557	EXA01		2.50	60g VOC (ALEE215) 250g Amber Jar (AL) 1kg TUB	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5				
Asbestos Quantification - Full	All	NDPs: 0 Tests: 3				
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 8				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 8				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 8				
Oxygenates (S)	All	NDPs: 0 Tests: 8				
PAH by GCMS	All	NDPs: 0 Tests: 8				
Sample description	All	NDPs: 0 Tests: 8				
Total Organic Carbon	All	NDPs: 0 Tests: 8				
VOC MS (S)	All	NDPs: 0 Tests: 8				



SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
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
12755557	EXA01	2.50	Light Brown	Sand	0.1 - 2 mm	Stones	Crushed Brick
12755558	EXA02	2.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
12755559	EXA03	2.50	Dark Brown	Sand	0.1 - 2 mm	Stones	Vegetation
12755560	EXA04	2.50	Dark Brown	Sand	0.1 - 2 mm	Stones	Crushed Brick
12755561	EXA07	2.50	Dark Brown	Sand	0.1 - 2 mm	Stones	Concrete/Aggre gate
12755562	EXA08	2.50	Light Brown	Sand	0.1 - 2 mm	Concrete/Aggre gate	Crushed Brick
12755563	EXA11	4.50	Dark Brown	Sand	0.1 - 2 mm	Stones	Crushed Brick
12755564	EXA12	4.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None

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

Validated

SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Table with columns: Results Legend, Customer Sample R, EXA01, EXA02, EXA03, EXA04, EXA07, EXA08. Rows include component analysis for Moisture Content Ratio, Fraction Organic Carbon, Ethanol, tert Butanol, Diisopropyl ether, and tert-butyl ethyl ether.



SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Table with columns: Results Legend, Customer Sample R, EXA11, EXA12, Component, LOD/Units, Method. Rows include Moisture Content Ratio, Fraction Organic Carbon, Ethanol, tert Butanol, Diisopropyl ether, tert-butyl ethyl ether.



SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

EPH CWG (Aliphatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXA01, EXA02, EXA03, EXA04, EXA07, EXA08. Rows include component analysis for Aliphatics >C12-C16, >C16-C21, >C21-C35, >C35-C44.



SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

EPH CWG (Aliphatic) GC (S)

Table with columns for Results Legend, Customer Sample R, EXA11, EXA12, Component, LOD/Units, Method, and data rows for Aliphatics >C12-C16, >C16-C21, >C21-C35, >C35-C44.



CERTIFICATE OF ANALYSIS

Validated

SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXA01, EXA02, EXA03, EXA04, EXA07, EXA08. Rows include component names like Aromatics >EC12-EC16 and their corresponding LOD/Units and Method values.



SDG: 160115-31
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Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXA11, EXA12, Component, LOD/Units, Method. Includes data for Aromatics >EC12-EC16, >EC16-EC21, >EC21-EC35.



SDG: 160115-31
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Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample R, EXA11, EXA12, Component, LOD/Units, Method. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



SDG: 160115-31
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 Superseded Report:

PAH by GCMS

Results Legend		Customer Sample R	EXA01	EXA02	EXA03	EXA04	EXA07	EXA08	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	EXA01	EXA02	EXA03	EXA04	EXA07	EXA08	
M	mCERTS accredited.		2.50	2.50	2.50	2.50	2.50	2.50	2.50
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
diss.filt	Dissolved / filtered sample.		13/01/2016	13/01/2016	13/01/2016	14/01/2016	14/01/2016	14/01/2016	13/01/2016
tot.unfilt	Total / unfiltered sample.		15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016	15/01/2016
*	Subcontracted test.		160115-31	160115-31	160115-31	160115-31	160115-31	160115-31	160115-31
**	% 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		12755557	12755558	12755559	12755560	12755561	12755562	12755562
(F)	Trigger breach confirmed								
1-5&*\$@	Sample deviation (see appendix)								
Component	LOD/Units		Method						
Naphthalene-d8 % recovery**	%	TM218	127	95.3	95.9	100	97.8	97.2	
Acenaphthene-d10 % recovery**	%	TM218	124	93	94.1	98.3	95.9	97.6	
Phenanthrene-d10 % recovery**	%	TM218	123	93.7	94.6	99.4	96.9	99.1	
Chrysene-d12 % recovery**	%	TM218	109	84.4	84.7	89.5	84.1	87.2	
Perylene-d12 % recovery**	%	TM218	116	85	83.7	92.1	86.2	90.4	
Naphthalene	<9 µg/kg	TM218	20.8	<9	<9	<9	<9	30.1	
			M	M	M	M	M	M	
Acenaphthylene	<12 µg/kg	TM218	83.6	<12	<12	<12	<12	<12	
			M	M	M	M	M	M	
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	<8	<8	17.8	
			M	M	M	M	M	M	
Fluorene	<10 µg/kg	TM218	<10	<10	<10	<10	<10	19.2	
			M	M	M	M	M	M	
Phenanthrene	<15 µg/kg	TM218	75	<15	<15	<15	<15	132	
			M	M	M	M	M	M	
Anthracene	<16 µg/kg	TM218	43.7	<16	<16	<16	<16	38.8	
			M	M	M	M	M	M	
Fluoranthene	<17 µg/kg	TM218	144	<17	22.1	<17	<17	181	
			M	M	M	M	M	M	
Pyrene	<15 µg/kg	TM218	227	<15	18.8	<15	<15	173	
			M	M	M	M	M	M	
Benz(a)anthracene	<14 µg/kg	TM218	148	<14	<14	<14	<14	88.8	
			M	M	M	M	M	M	
Chrysene	<10 µg/kg	TM218	124	<10	<10	<10	<10	81.7	
			M	M	M	M	M	M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	186	<15	<15	<15	<15	64	
			M	M	M	M	M	M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	74.1	<14	<14	<14	<14	42.5	
			M	M	M	M	M	M	
Benzo(a)pyrene	<15 µg/kg	TM218	151	<15	<15	<15	<15	77.1	
			M	M	M	M	M	M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	106	<18	<18	<18	<18	46.1	
			M	M	M	M	M	M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	38.5	<23	<23	<23	<23	<23	
			M	M	M	M	M	M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	184	<24	<24	<24	<24	69.3	
			M	M	M	M	M	M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	1610	<118	<118	<118	<118	1060	



SDG: 160115-31
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Superseded Report:

VOC MS (S)

Table with columns: Results Legend, Customer Sample R, EXA11, EXA12, Component, LOD/Units, Method. Rows include Toluene-d8**, Methyl Tertiary Butyl Ether, Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, Tert-amyl methyl ether.



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Superseded Report:

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA01 2.50 SOLID 13/01/2016 00:00:00 19/01/2016 20:40:46 160115-31 12755557 TM048	22/01/16	Tomasz Pawlikowski	Soil containing loose fibres and debris of asbestos insulation.	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA04 2.50 SOLID 14/01/2016 00:00:00 19/01/2016 20:36:58 160115-31 12755560 TM048	22/01/16	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA07 2.50 SOLID 14/01/2016 00:00:00 19/01/2016 13:47:54 160115-31 12755561 TM048	22/01/16	Martin Cotterell	Loose fibres in soil.	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA08 2.50 SOLID 13/01/2016 00:00:00 19/01/2016 13:32:29 160115-31 12755562 TM048	22/01/16	Martin Cotterell	Soil containing material typical of asbestos cement.	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA11 4.50 SOLID 13/01/2016 00:00:00 19/01/2016 13:43:22 160115-31 12755563 TM048	22/01/16	Tomasz Pawlikowski	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Full



SDG: 160115-31
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Superseded Report:

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA01 2.50 SOLID 13/01/2016 00:00:00 19/01/2016 20:42:05 160115-31 12755557 TM 304	None (#)	N/C	0.0235 (#)	<0.001 (#)	0.024 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA07 2.50 SOLID 14/01/2016 00:00:00 19/01/2016 13:50:09 160115-31 12755561 TM 304	None (#)	N/C	<0.001 (#)	<0.001 (#)	<0.001 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	EXA08 2.50 SOLID 13/01/2016 00:00:00 19/01/2016 13:34:43 160115-31 12755562 TM 304	None (#)	N/C	0.1698 (#)	<0.001 (#)	0.1701 (#)

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Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
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Order Number: 60481674
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Superseded Report:

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



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Superseded Report:

Test Completion Dates

Lab Sample No(s)	12755557	12755558	12755559	12755560	12755561	12755562	12755563	12755564
Customer Sample Ref.	EXA01	EXA02	EXA03	EXA04	EXA07	EXA08	EXA11	EXA12
AGS Ref.								
Depth	2.50	2.50	2.50	2.50	2.50	2.50	4.50	4.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples	22-Jan-2016			22-Jan-2016	22-Jan-2016	22-Jan-2016	22-Jan-2016	
Asbestos Quantification - Full	23-Jan-2016				23-Jan-2016	23-Jan-2016		
EPH CWG (Aliphatic) GC (S)	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016
EPH CWG (Aromatic) GC (S)	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016
GRO by GC-FID (S)	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	20-Jan-2016	20-Jan-2016	19-Jan-2016
Oxygenates (S)	20-Jan-2016	19-Jan-2016	19-Jan-2016	20-Jan-2016	20-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016
PAH by GCMS	19-Jan-2016	18-Jan-2016	18-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	18-Jan-2016
Sample description	15-Jan-2016	15-Jan-2016	15-Jan-2016	15-Jan-2016	15-Jan-2016	15-Jan-2016	15-Jan-2016	15-Jan-2016
Total Organic Carbon	20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016	20-Jan-2016
VOC MS (S)	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016



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 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1267	QC 1268
Total Aliphatics >C12-C35	TM173	89.38 69.98 : 113.27	92.5 62.50 : 112.50

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1267	QC 1268
Total Aromatics >EC12-EC35	TM173	82.0 58.94 : 130.85	77.33 60.62 : 126.95

GRO by GC-FID (S)

Component	Method Code	QC 1254	QC 1209	QC 1296
Benzene by GC (Moisture Corrected)	TM089	105.5 76.23 : 120.71	108.0 82.67 : 117.96	104.0 76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	106.0 73.32 : 122.02	108.0 80.45 : 118.61	106.0 73.32 : 122.02
m & p Xylene by GC (Moisture Corrected)	TM089	105.5 72.90 : 122.64	107.5 79.25 : 119.43	105.75 72.90 : 122.64
MTBE GC-FID (Moisture Corrected)	TM089	105.5 72.17 : 124.81	107.5 79.10 : 122.51	104.0 72.17 : 124.81
o Xylene by GC (Moisture Corrected)	TM089	106.0 71.65 : 124.40	108.0 80.03 : 117.19	107.0 71.65 : 124.40
QC	TM089	97.66 74.05 : 133.87	91.15 75.74 : 124.65	90.58 74.05 : 133.87
Toluene by GC (Moisture Corrected)	TM089	106.0 74.60 : 120.38	108.0 82.06 : 117.54	105.5 74.60 : 120.38

Oxygenates (S)

Component	Method Code	QC 1224	QC 1260
Benzene raw	TM288	99.25 77.75 : 124.62	101.25 77.75 : 124.62
Diisopropyl ether raw	TM288	103.0 81.07 : 125.84	102.5 81.07 : 125.84
Ethanol raw	TM288	77.2 12.71 : 182.13	91.6 12.71 : 182.13
Ethylbenzene raw	TM288	105.25 86.91 : 124.43	108.0 86.91 : 124.43
o-Xylene raw	TM288	95.25 82.52 : 115.85	96.25 82.52 : 115.85
p/m-Xylene raw	TM288	103.38 82.74 : 124.08	107.0 82.74 : 124.08
tert Butanol raw	TM288	84.0 27.29 : 165.57	88.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	99.0 82.15 : 125.05	98.25 82.15 : 125.05



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Oxygenates (S)

		QC 1224	QC 1260
tert-butyl ethyl ether raw	TM288	104.0 81.24 : 125.04	103.0 81.24 : 125.04
tert-butyl methyl ether raw	TM288	102.25 80.97 : 130.09	101.0 80.97 : 130.09
Toluene raw	TM288	91.0 78.97 : 116.51	94.75 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1226	QC 1243
Acenaphthene	TM218	89.5 68.50 : 116.50	97.0 76.50 : 121.50
Acenaphthylene	TM218	86.0 65.00 : 110.00	89.0 73.50 : 118.50
Anthracene	TM218	90.0 75.14 : 109.30	93.0 74.25 : 117.75
Benz(a)anthracene	TM218	97.5 70.00 : 115.00	93.0 82.07 : 118.33
Benzo(a)pyrene	TM218	97.0 82.80 : 121.21	94.5 79.75 : 116.97
Benzo(b)fluoranthene	TM218	96.5 81.11 : 119.79	100.0 82.41 : 117.15
Benzo(ghi)perylene	TM218	94.0 81.23 : 116.67	90.5 77.09 : 114.38
Benzo(k)fluoranthene	TM218	93.5 79.07 : 114.76	94.0 81.43 : 115.17
Chrysene	TM218	94.0 77.94 : 118.46	93.5 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	94.5 79.94 : 120.03	93.0 81.00 : 120.00
Fluoranthene	TM218	93.0 77.89 : 110.15	95.0 78.67 : 117.61
Fluorene	TM218	91.0 80.93 : 113.54	96.5 76.50 : 121.50
Indeno(123cd)pyrene	TM218	91.5 80.37 : 120.17	92.0 79.19 : 117.60
Naphthalene	TM218	88.0 79.70 : 112.37	92.5 77.00 : 117.50
Phenanthrene	TM218	91.5 78.44 : 113.95	98.0 75.00 : 123.00
Pyrene	TM218	91.5 66.00 : 114.00	94.5 77.82 : 116.98

Total Organic Carbon

Component	Method Code	QC 1257	QC 1219
Total Organic Carbon	TM132	99.09 89.40 : 103.09	98.17 88.82 : 111.18

VOC MS (S)



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VOC MS (S)

Component	Method Code	QC 1298	QC 1253
1,1,1,2-tetrachloroethane	TM116	92.6 83.24 : 124.28	89.0 83.24 : 124.28
1,1,1-Trichloroethane	TM116	101.4 81.77 : 121.07	93.6 81.77 : 121.07
1,1,2-Trichloroethane	TM116	94.4 78.55 : 105.28	88.0 78.55 : 105.28
1,1-Dichloroethane	TM116	108.2 74.63 : 123.32	95.6 74.63 : 123.32
1,2-Dichloroethane	TM116	110.8 86.58 : 129.62	99.0 86.58 : 129.62
1,4-Dichlorobenzene	TM116	94.6 73.23 : 116.39	92.0 73.23 : 116.39
2-Chlorotoluene	TM116	89.4 69.22 : 110.64	87.0 69.22 : 110.64
4-Chlorotoluene	TM116	89.8 68.57 : 106.26	85.6 68.57 : 106.26
Benzene	TM116	105.4 84.33 : 124.27	95.8 84.33 : 124.27
Carbon Disulphide	TM116	105.0 77.20 : 122.80	98.4 77.20 : 122.80
Carbontetrachloride	TM116	104.0 84.20 : 119.90	97.0 84.20 : 119.90
Chlorobenzene	TM116	98.6 85.28 : 129.96	95.2 85.28 : 129.96
Chloroform	TM116	107.0 82.73 : 119.72	96.0 82.73 : 119.72
Chloromethane	TM116	103.6 55.16 : 145.46	77.8 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	101.4 80.55 : 123.13	90.6 80.55 : 123.13
Dibromomethane	TM116	93.8 73.40 : 116.60	87.4 73.40 : 116.60
Dichloromethane	TM116	114.4 81.68 : 125.21	99.6 81.68 : 125.21
Ethylbenzene	TM116	93.6 80.07 : 125.98	93.0 80.07 : 125.98
Hexachlorobutadiene	TM116	78.8 30.92 : 132.28	86.2 30.92 : 132.28
Isopropylbenzene	TM116	83.8 69.27 : 125.32	87.0 69.27 : 125.32
Naphthalene	TM116	103.8 79.15 : 121.98	97.4 79.15 : 121.98
o-Xylene	TM116	80.2 72.94 : 106.80	79.8 72.94 : 106.80
p/m-Xylene	TM116	89.5 76.97 : 121.75	89.7 76.97 : 121.75
Sec-Butylbenzene	TM116	78.2 49.27 : 129.90	88.2 49.27 : 129.90
Tetrachloroethene	TM116	100.4 87.96 : 133.65	100.8 87.96 : 133.65
Toluene	TM116	98.8 79.23 : 114.58	92.8 79.23 : 114.58



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Superseded Report:

VOC MS (S)

		QC 1298	QC 1253
Trichloroethene	TM116	96.0 81.65 : 115.27	91.8 81.65 : 115.27
Trichlorofluoromethane	TM116	110.6 76.22 : 114.82	100.0 76.22 : 114.82
Vinyl Chloride	TM116	107.4 59.68 : 118.68	85.4 59.68 : 118.68

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: 160115-31
Job: H_URS_WIM-282
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Superseded Report:

Chromatogram

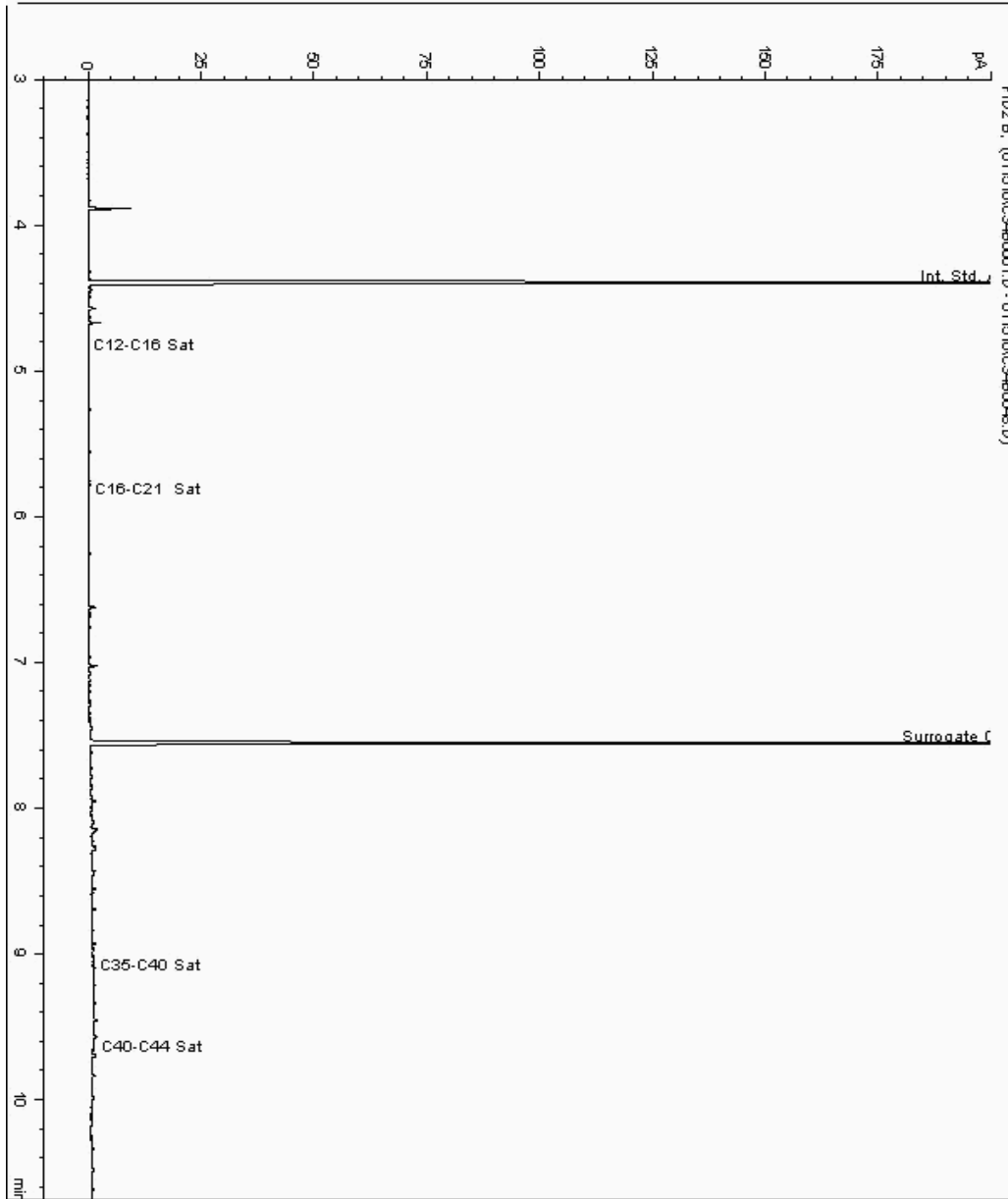
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12756689
Sample ID : EXA03

Depth : 2.50

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

Sample Identity: 12040392-
Date Acquired : 16/01/16 08:46:12 PM
Units : ppb
Dilution:





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

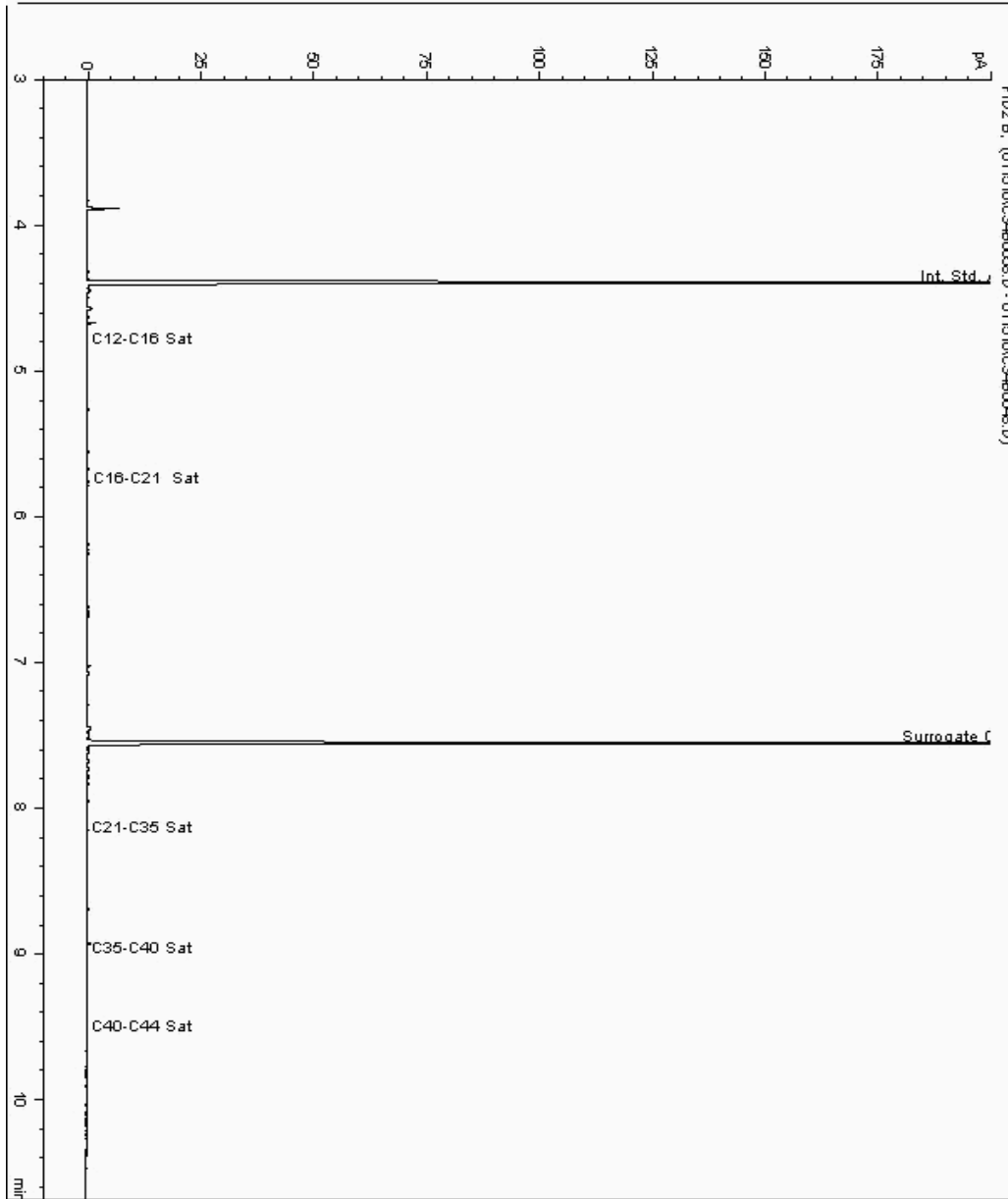
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12756887
Sample ID : EXA02

Depth : 2.50

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

Sample Identity: 12040366-
Date Acquired : 16/01/16 07:46:31 PM
Units : ppb
Dilution:





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

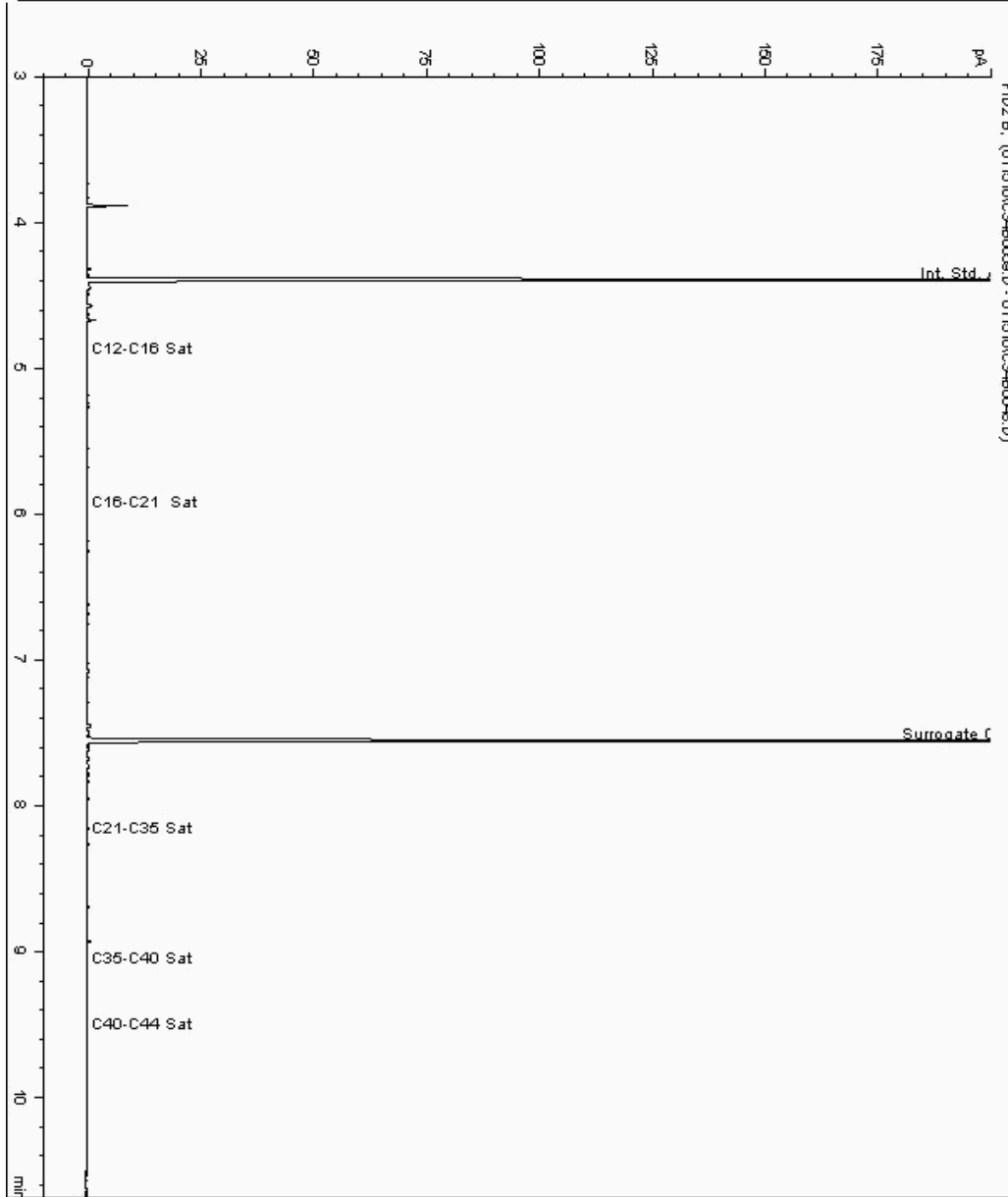
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12756983
Sample ID : EXA12

Depth : 4.50

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

Sample Identity: 12040502-
Date Acquired : 16/01/16 08:06:30 PM
Units : ppb
Dilution:





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

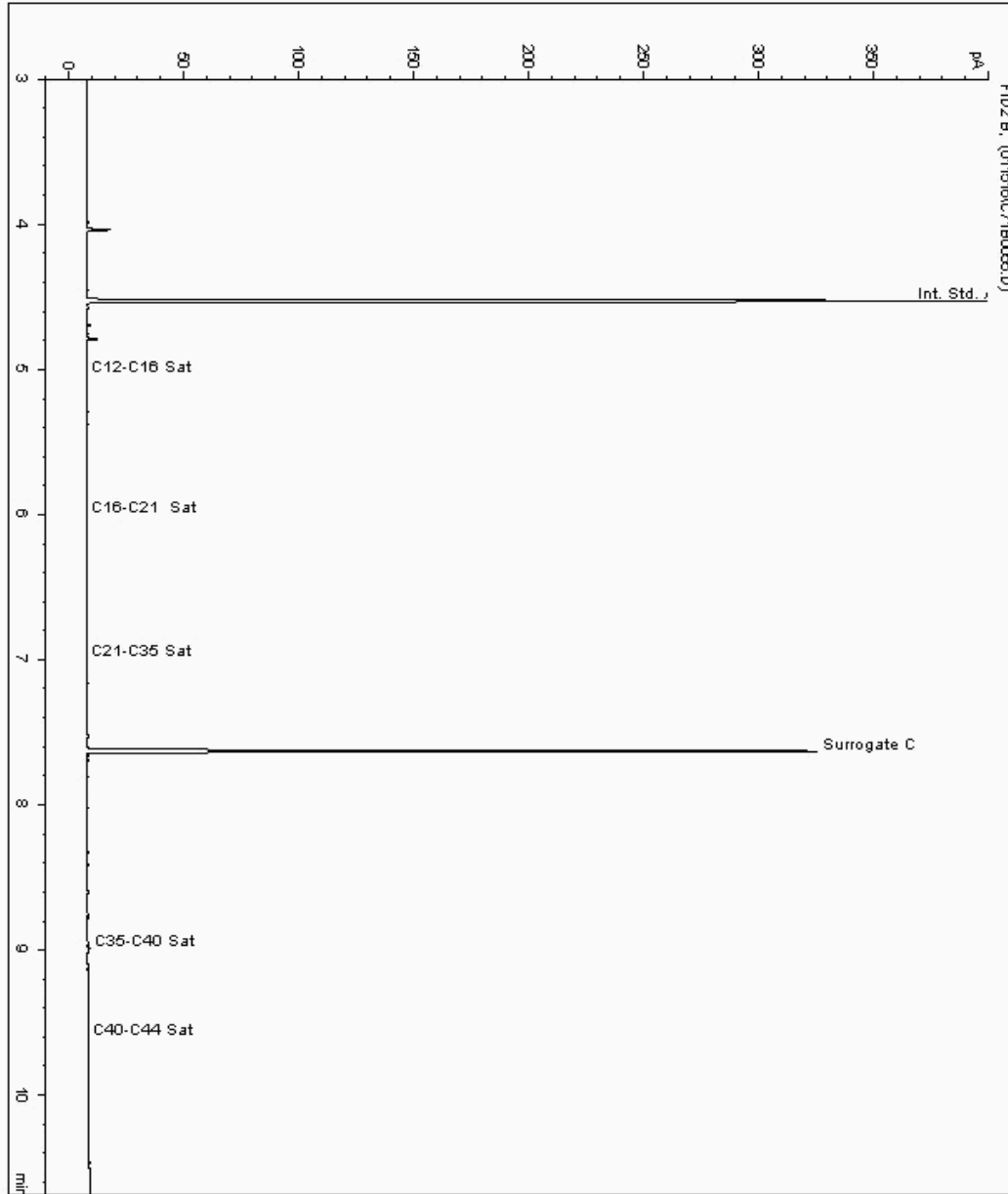
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12757221
Sample ID : EXA11

Depth : 4.50

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

Sample Identity: 12040477-
Date Acquired : 16/01/2016 00:58:08 PM
Units : ppb
Dilution: EXA11[4.50] ->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

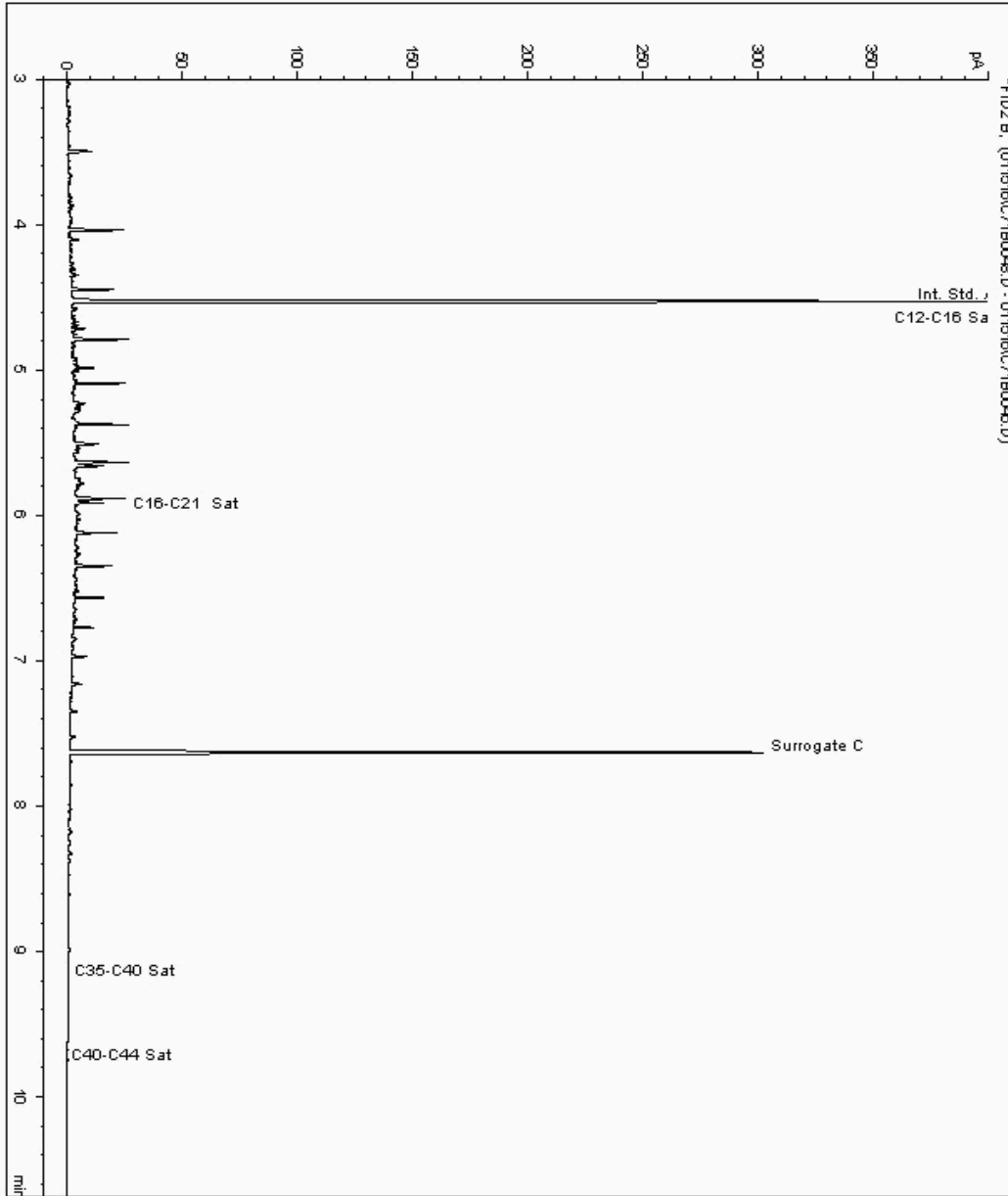
Sample No : 12757242
Sample ID : EXA08

Depth : 2.50

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

Sample Identity: 12040454-
Date Acquired : 15/01/2016 23:02:03 PM
Units : ppb
Dilution: EXA08[2.50]

->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

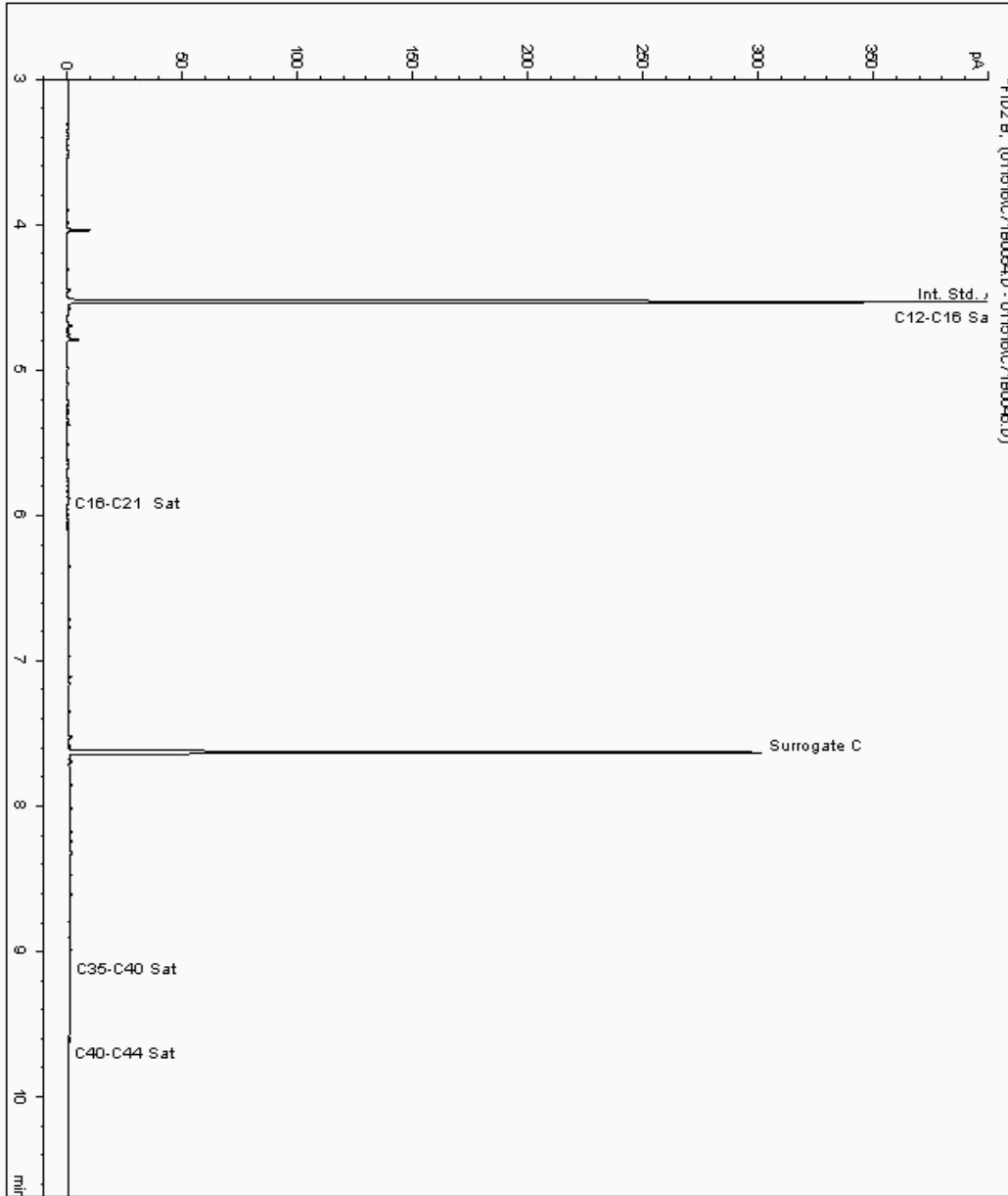
Sample No : 12757344
Sample ID : EXA07

Depth : 2.50

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

Sample Identity: 12040440-
Date Acquired : 16/01/2016 00:38:00 PM
Units : ppb
Dilution: EXA07[2.50]

->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

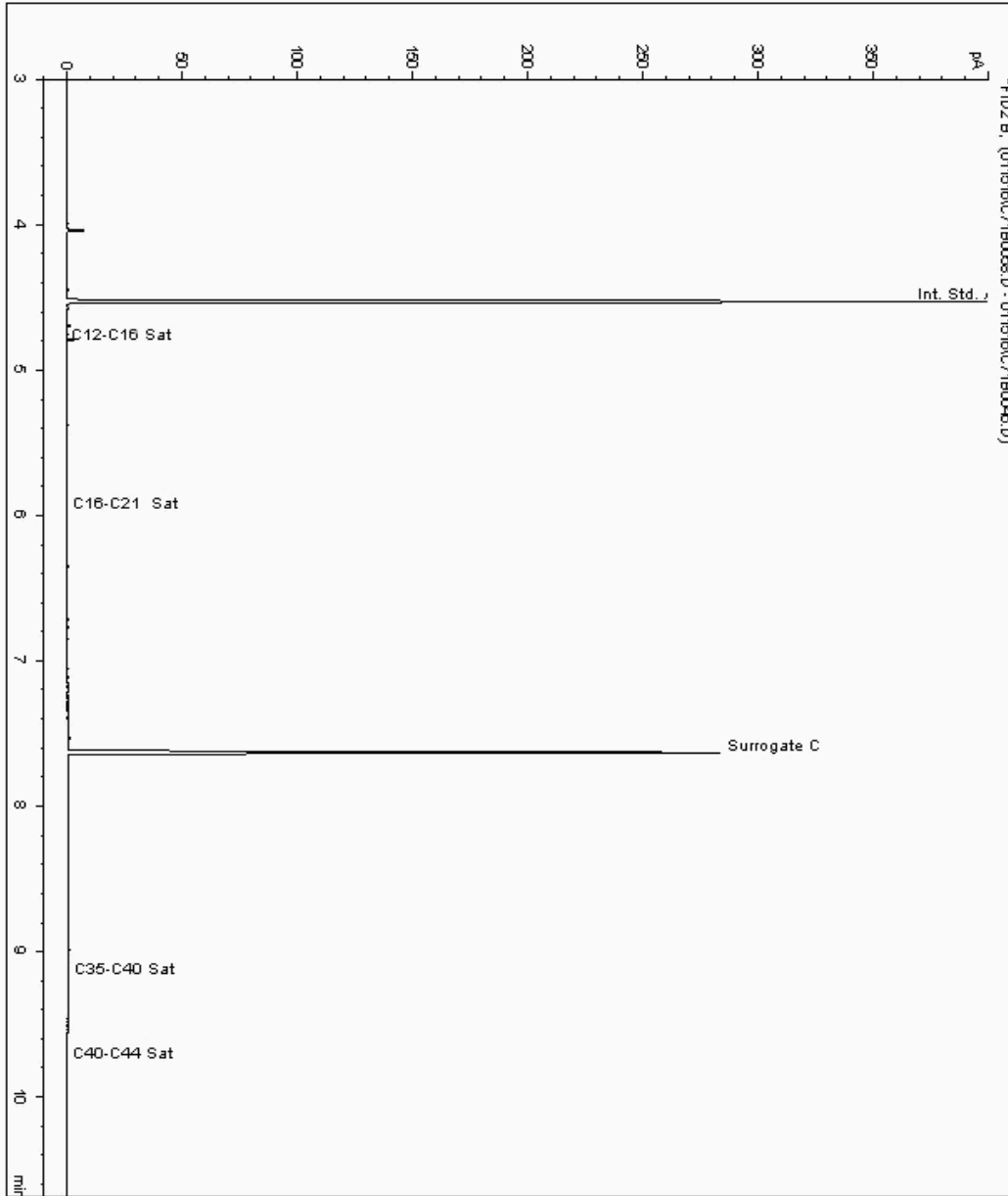
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12757406
Sample ID : EXA04

Depth : 2.50

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

Sample Identity: 12040409-
Date Acquired : 16/01/2016 01:50:15 PM
Units : ppb
Dilution: EXA04[2.50] ->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

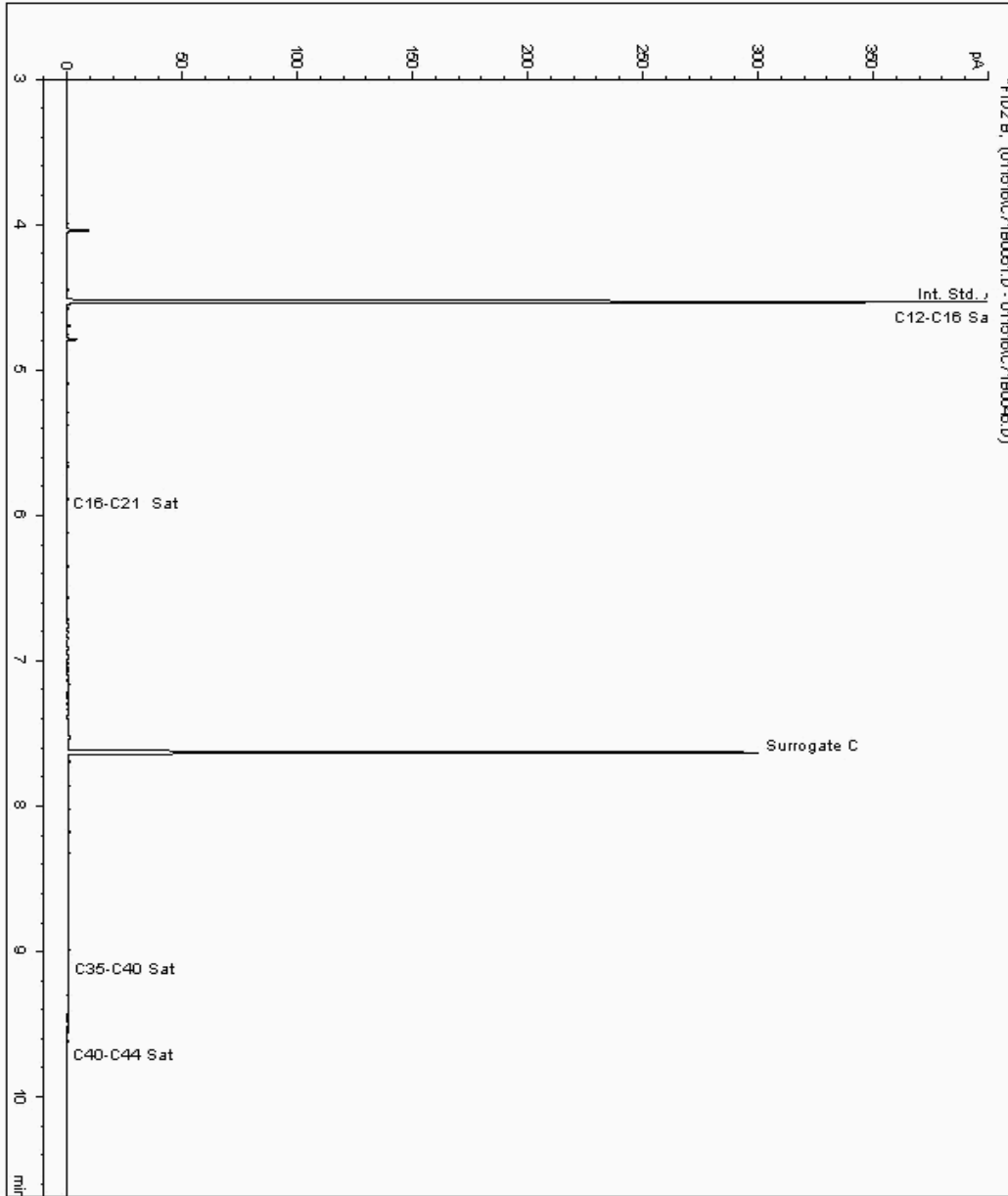
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12757478
Sample ID : EXA01

Depth : 2.50

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

Sample Identity: 12040356-
Date Acquired : 15/01/2016 23:45:52 PM
Units : ppb
Dilution: EXA01[2.50] ->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

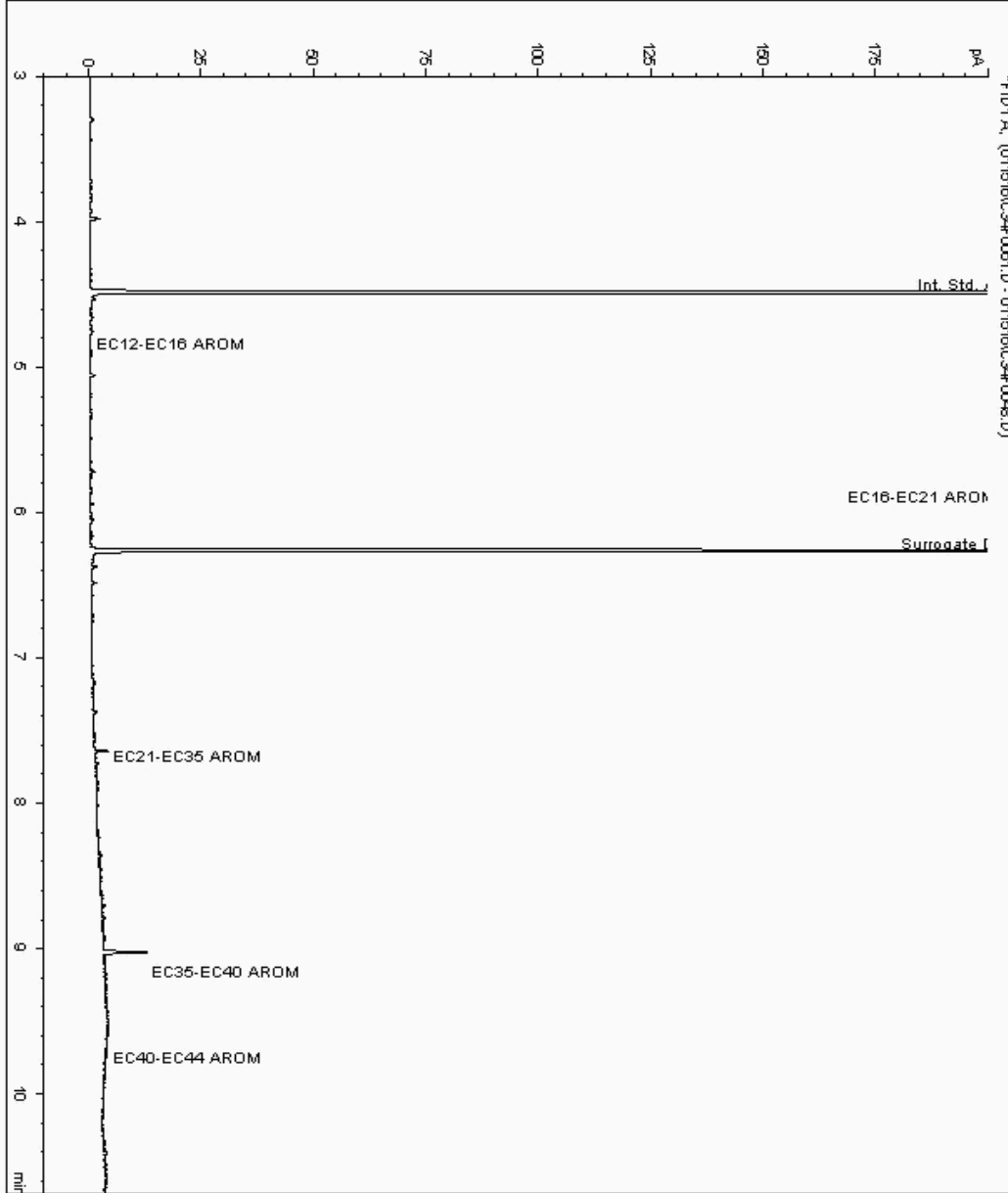
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12756689
Sample ID : EXA03

Depth : 2.50

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

Sample Identity: 12040393-
Date Acquired : 16/01/16 08:46:11 PM
Units : ppb
Dilution:





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

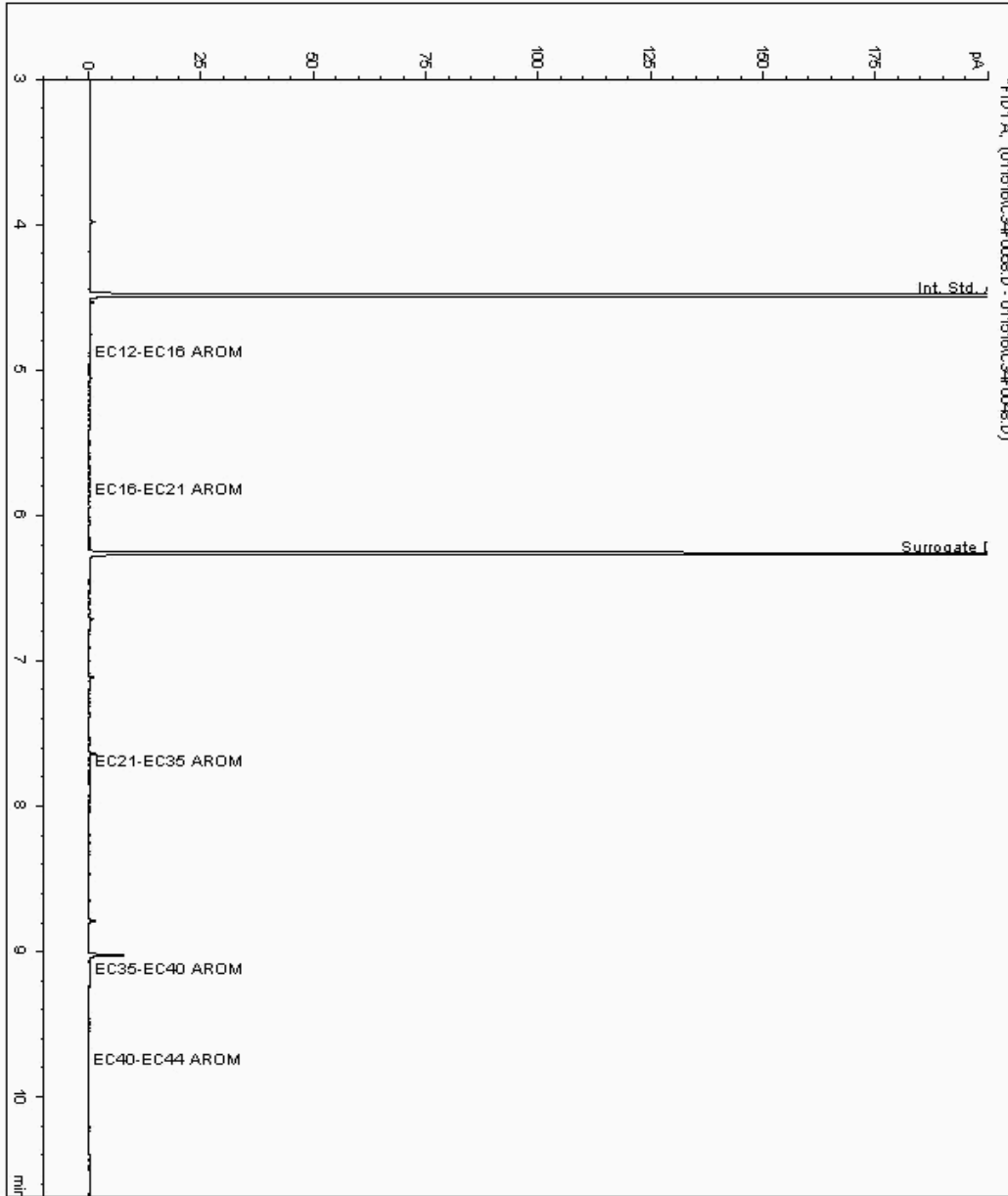
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12756887
Sample ID : EXA02

Depth : 2.50

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

Sample Identity: 12040367-
Date Acquired : 16/01/16 07:46:31 PM
Units : ppb
Dilution:





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

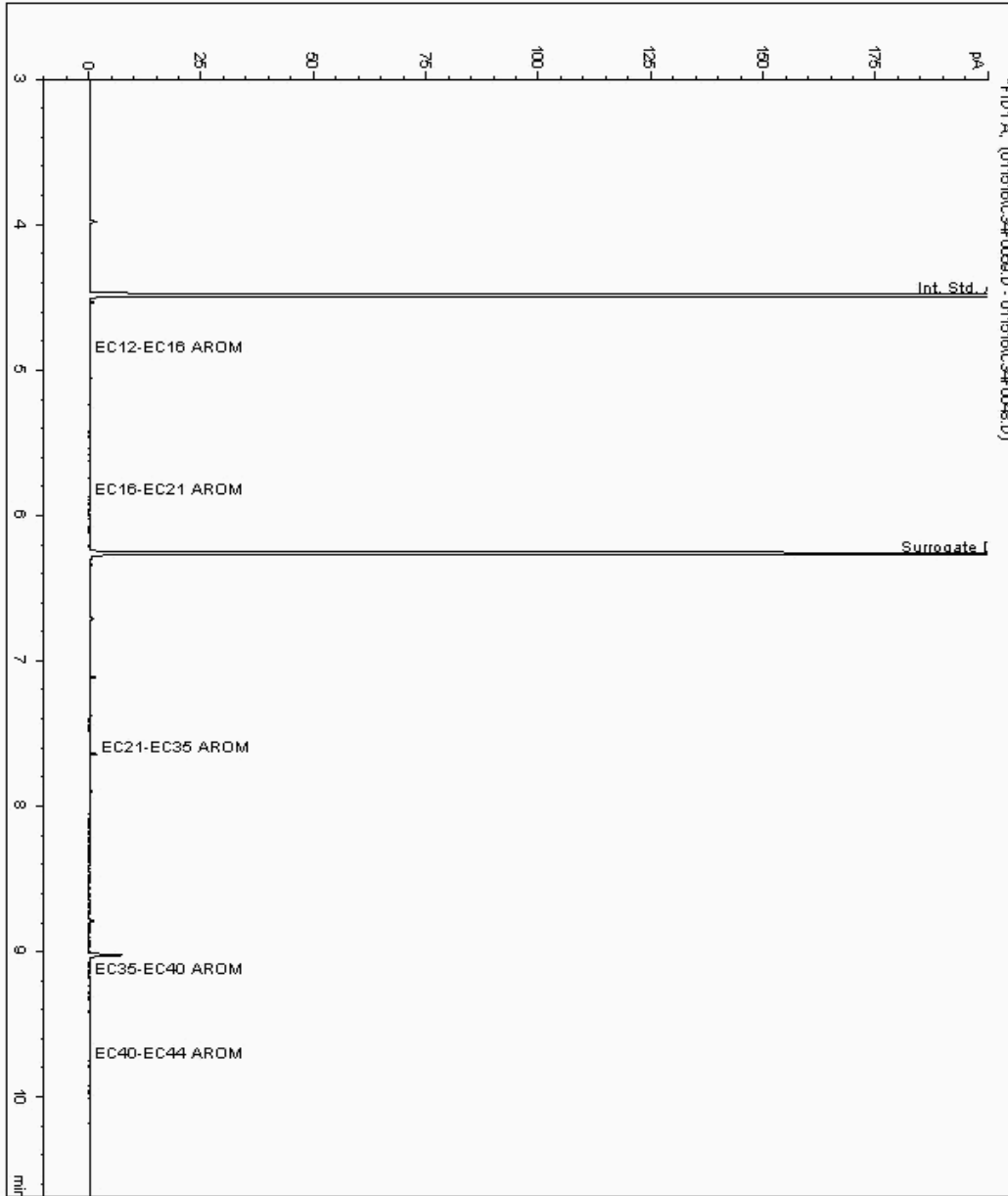
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12756983
Sample ID : EXA12

Depth : 4.50

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

Sample Identity: 12040503-
Date Acquired : 16/01/16 08:06:30 PM
Units : ppb
Dilution:





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

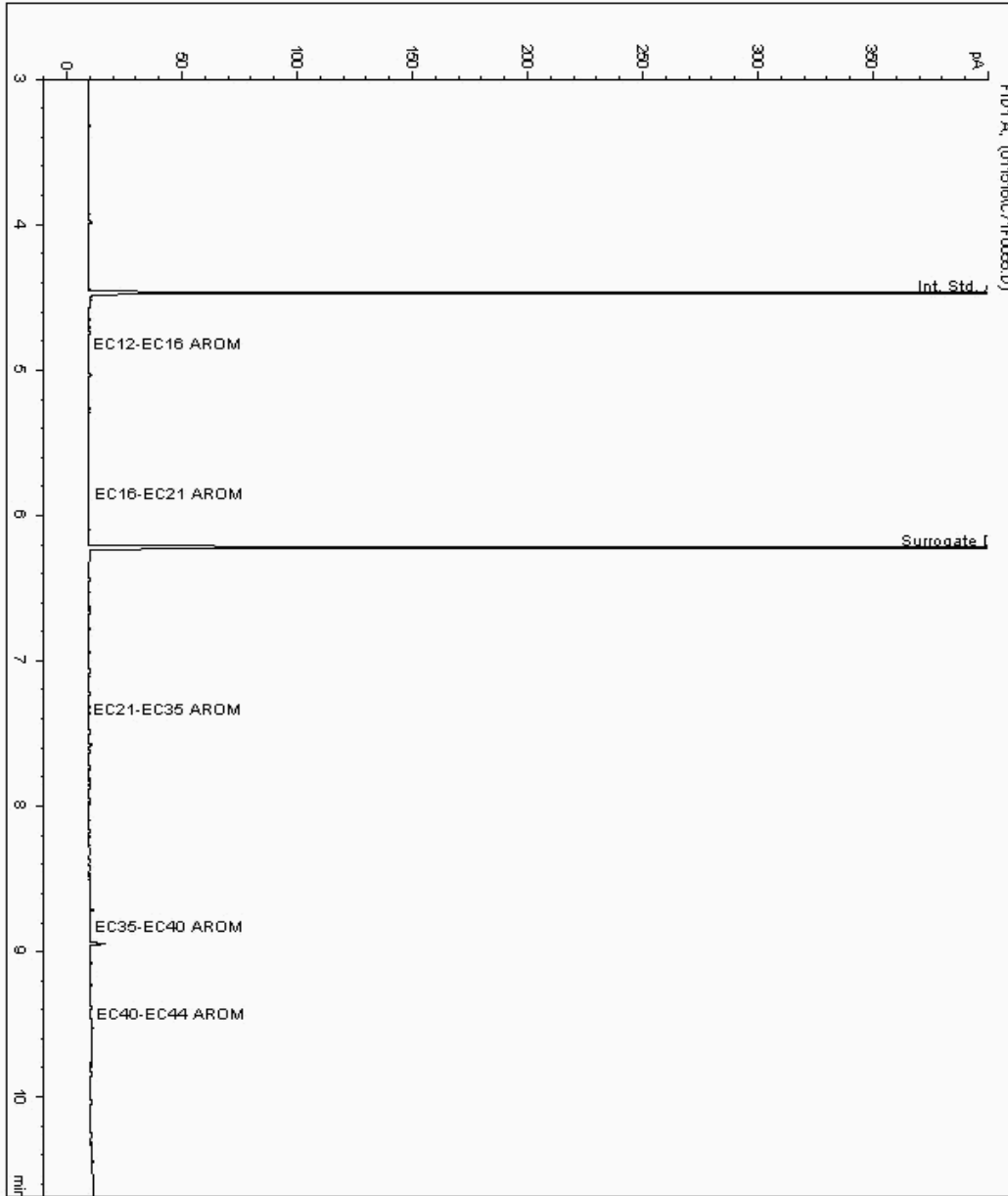
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12757221
Sample ID : EXA11

Depth : 4.50

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

Sample Identity: 12040478-
Date Acquired : 16/01/2016 00:58:07 PM
Units : ppb
Dilution: EXA11[4.50] ->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

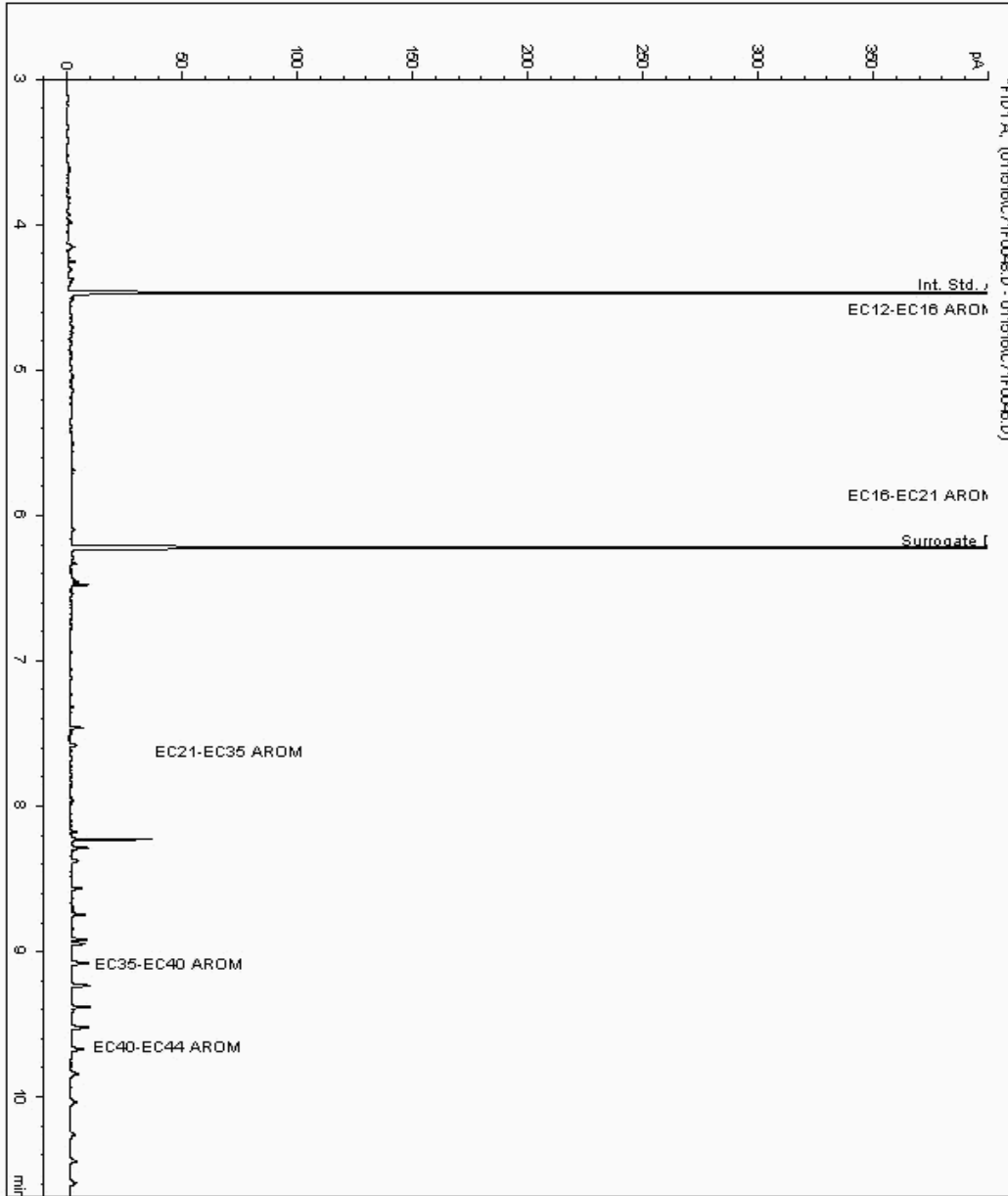
Sample No : 12757242
Sample ID : EXA08

Depth : 2.50

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

Sample Identity: 12040455-
Date Acquired : 15/01/2016 23:02:02 PM
Units : ppb
Dilution: EXA08[2.50]

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SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

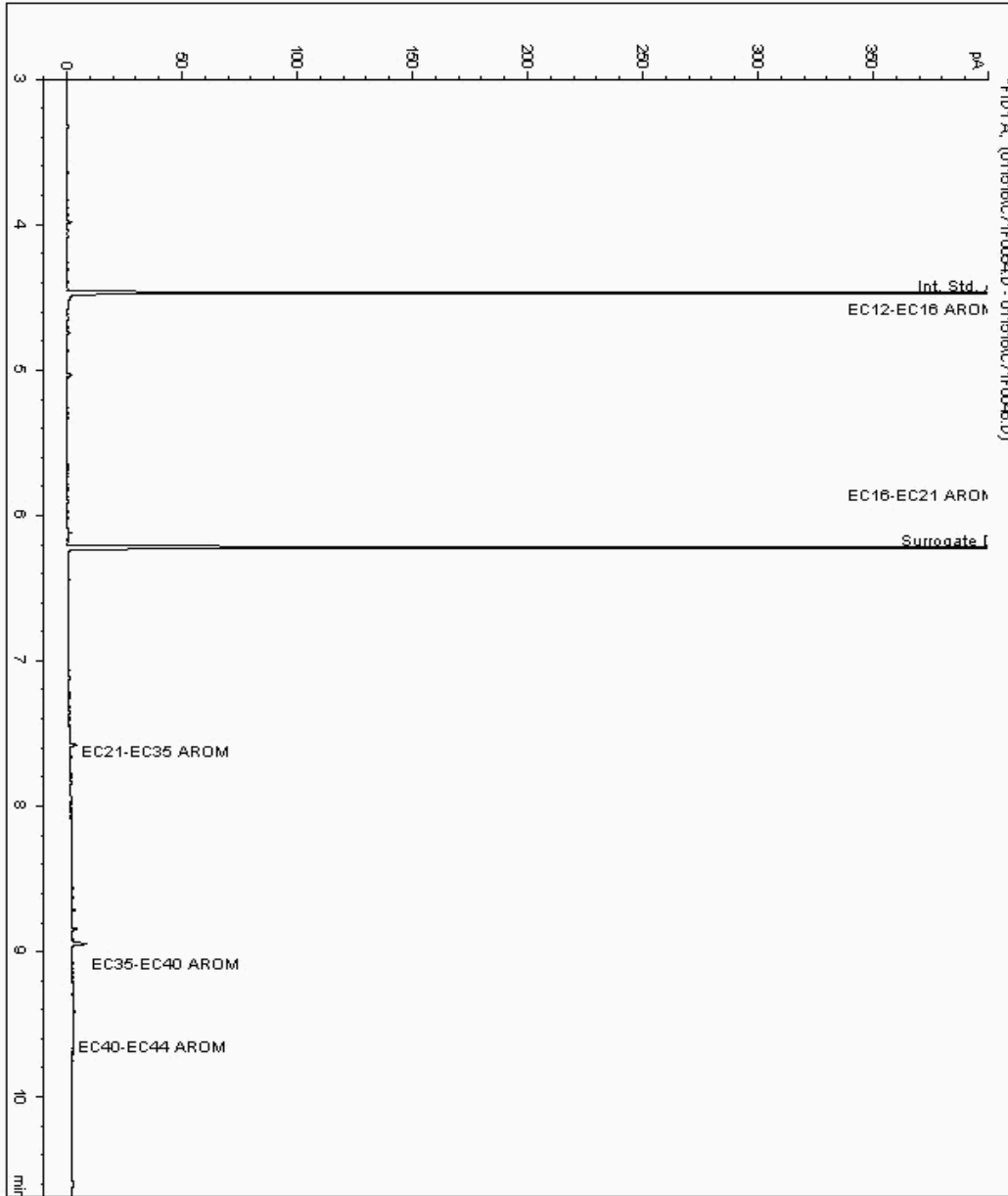
Sample No : 12757344
Sample ID : EXA07

Depth : 2.50

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

Sample Identity: 12040441-
Date Acquired : 16/01/2016 00:38:01 PM
Units : ppb
Dilution: EXA07[2.50]

->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

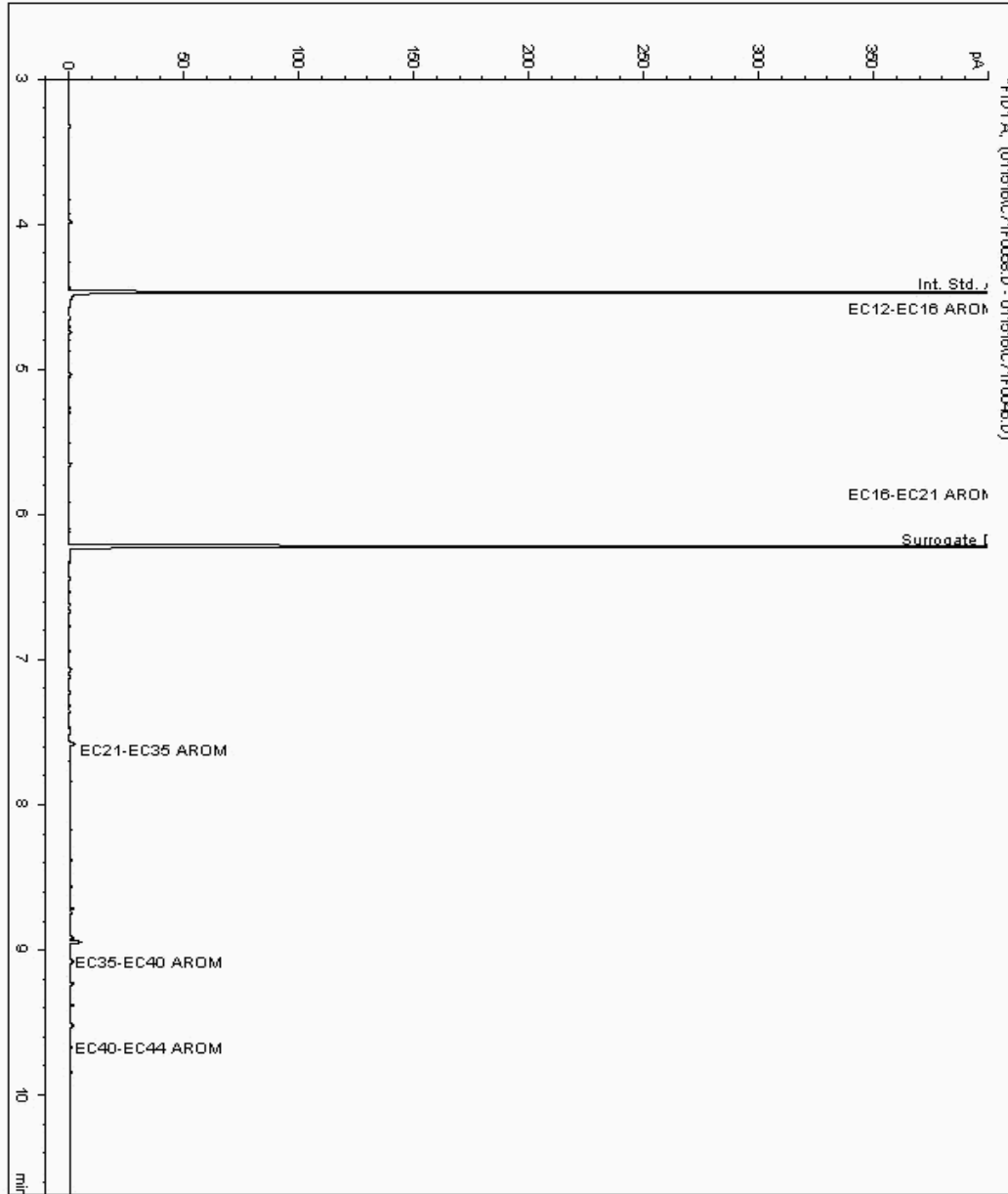
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12757406
Sample ID : EXA04

Depth : 2.50

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

Sample Identity: 12040410-
Date Acquired : 16/01/2016 01:50:15 PM
Units : ppb
Dilution: EXA04[2.50] ->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

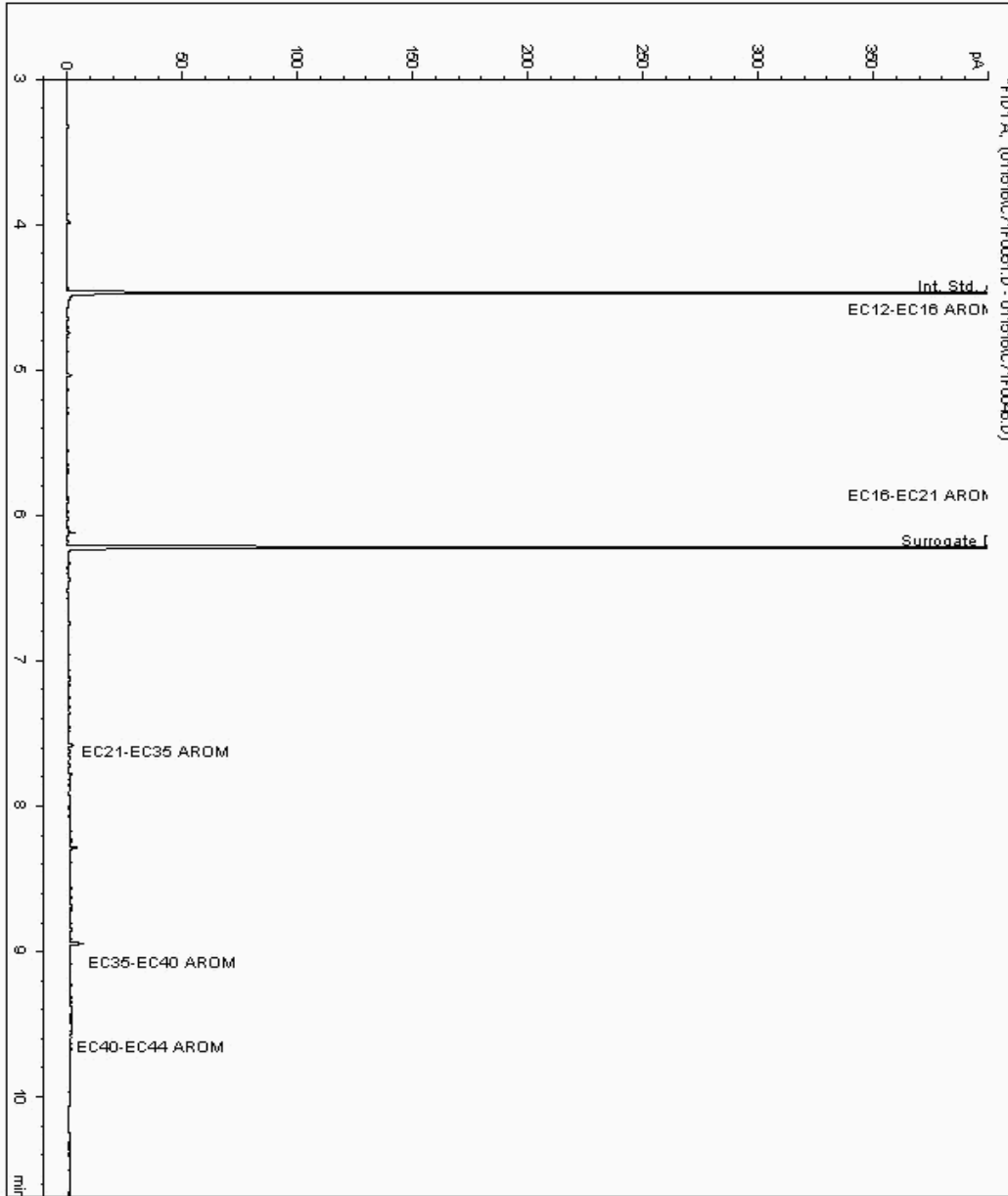
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12757478
Sample ID : EXA01

Depth : 2.50

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

Sample Identity: 12040357-
Date Acquired : 15/01/2016 23:45:53 PM
Units : ppb
Dilution: EXA01[2.50] ->





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

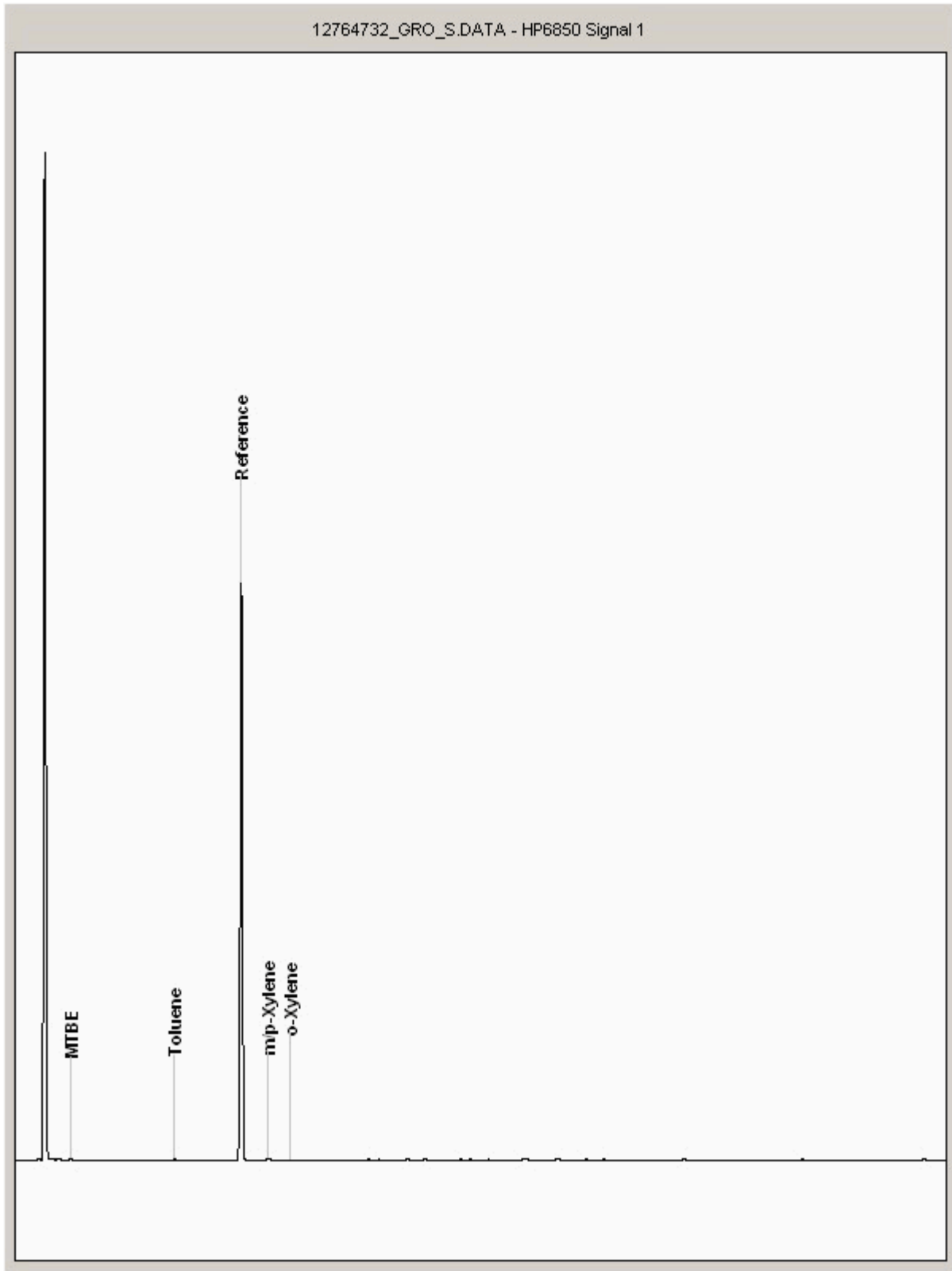
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12764732
Sample ID : EXA12

Depth : 4.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

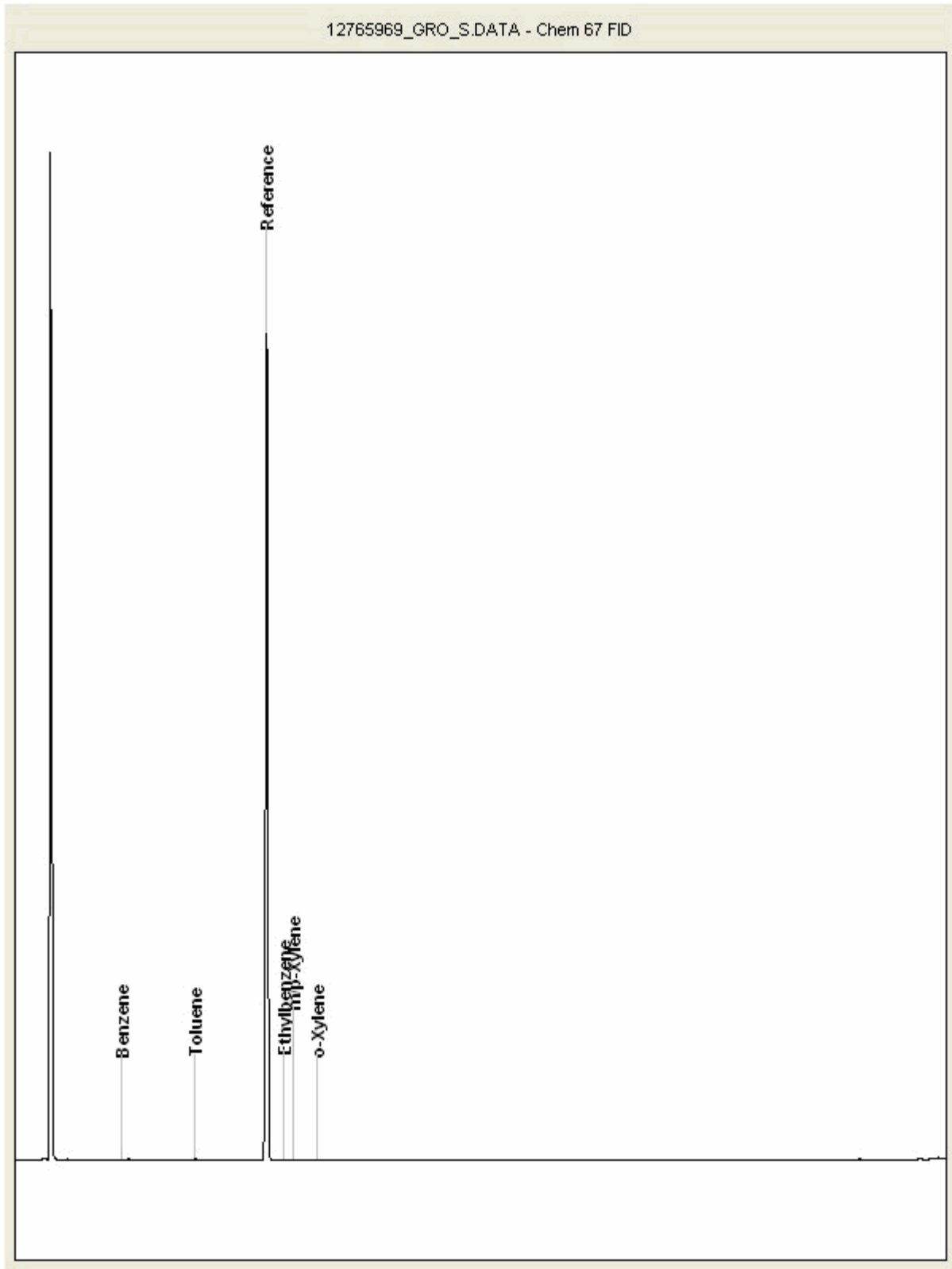
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12765969
Sample ID : EXA03

Depth : 2.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

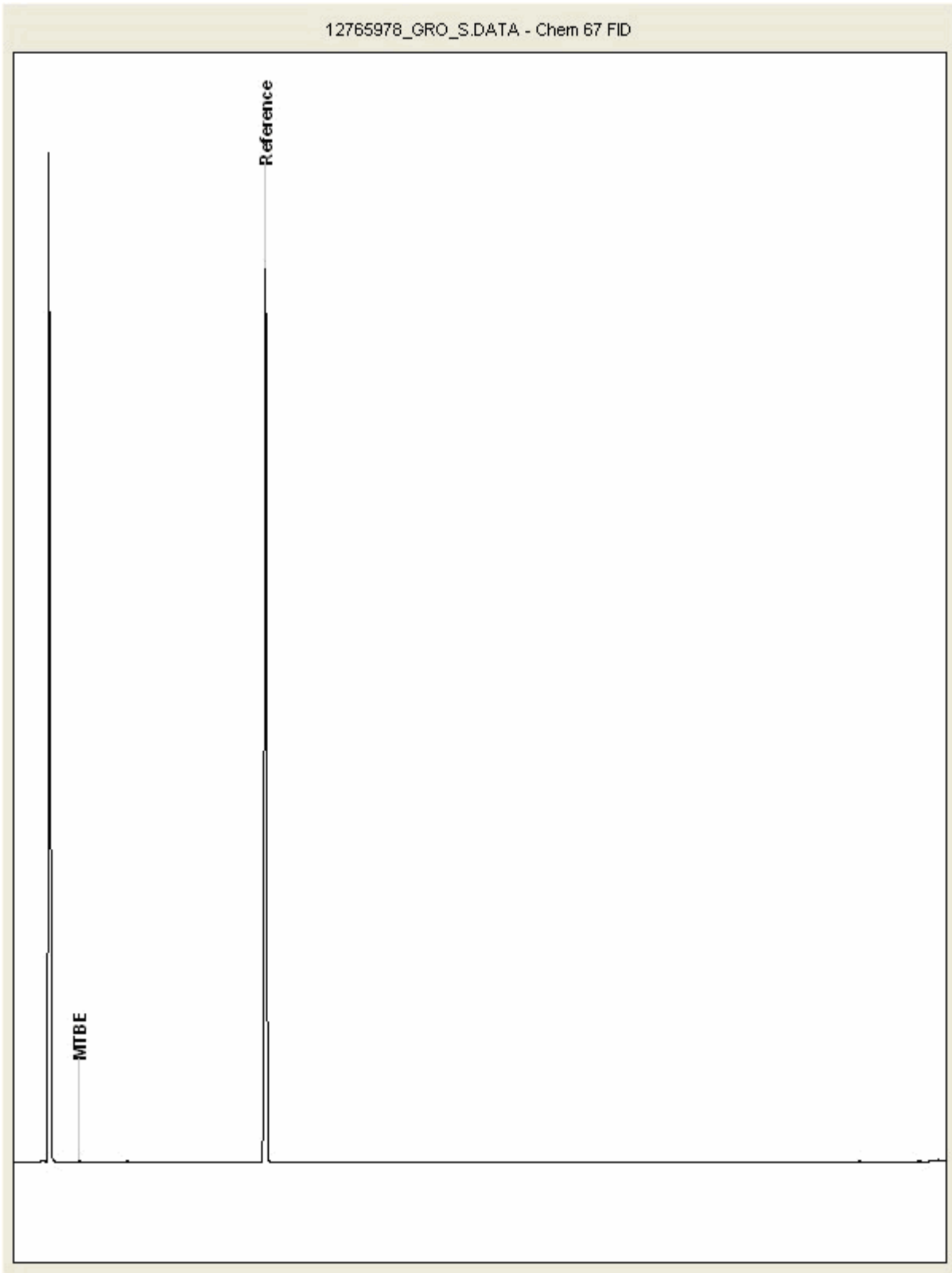
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12765978
Sample ID : EXA02

Depth : 2.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

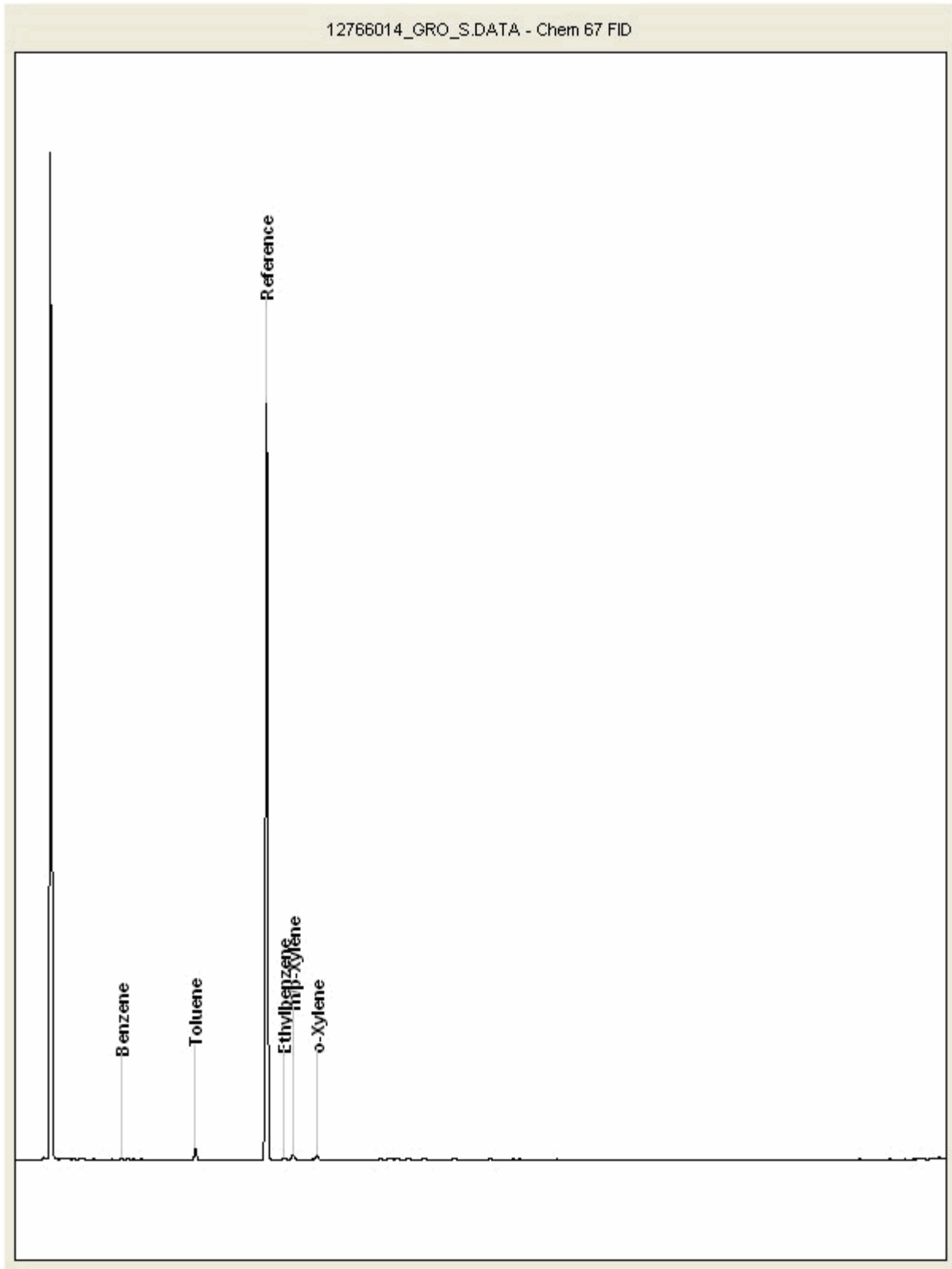
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12766014
Sample ID : EXA01

Depth : 2.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

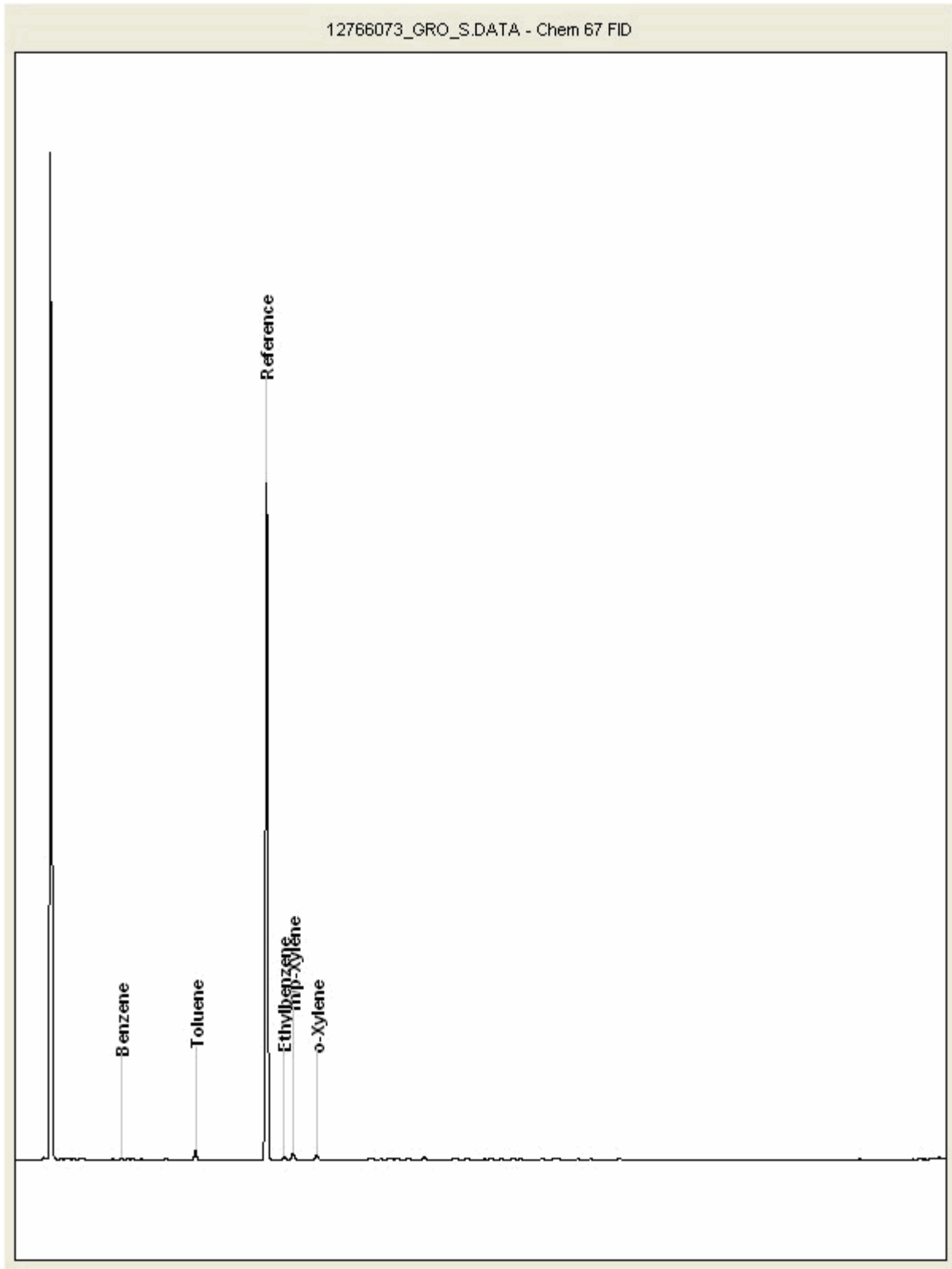
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12766073
Sample ID : EXA07

Depth : 2.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

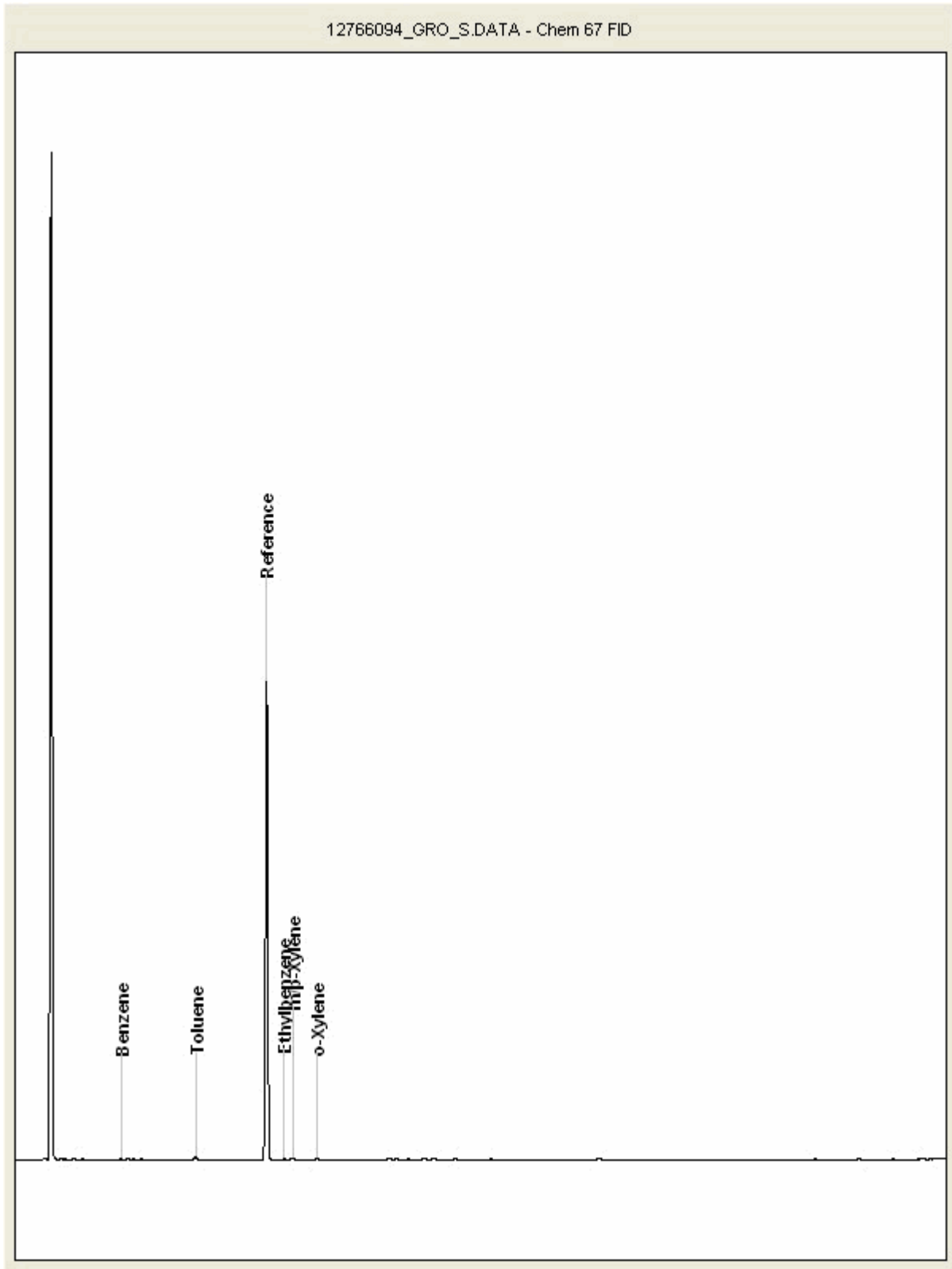
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12766094
Sample ID : EXA04

Depth : 2.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

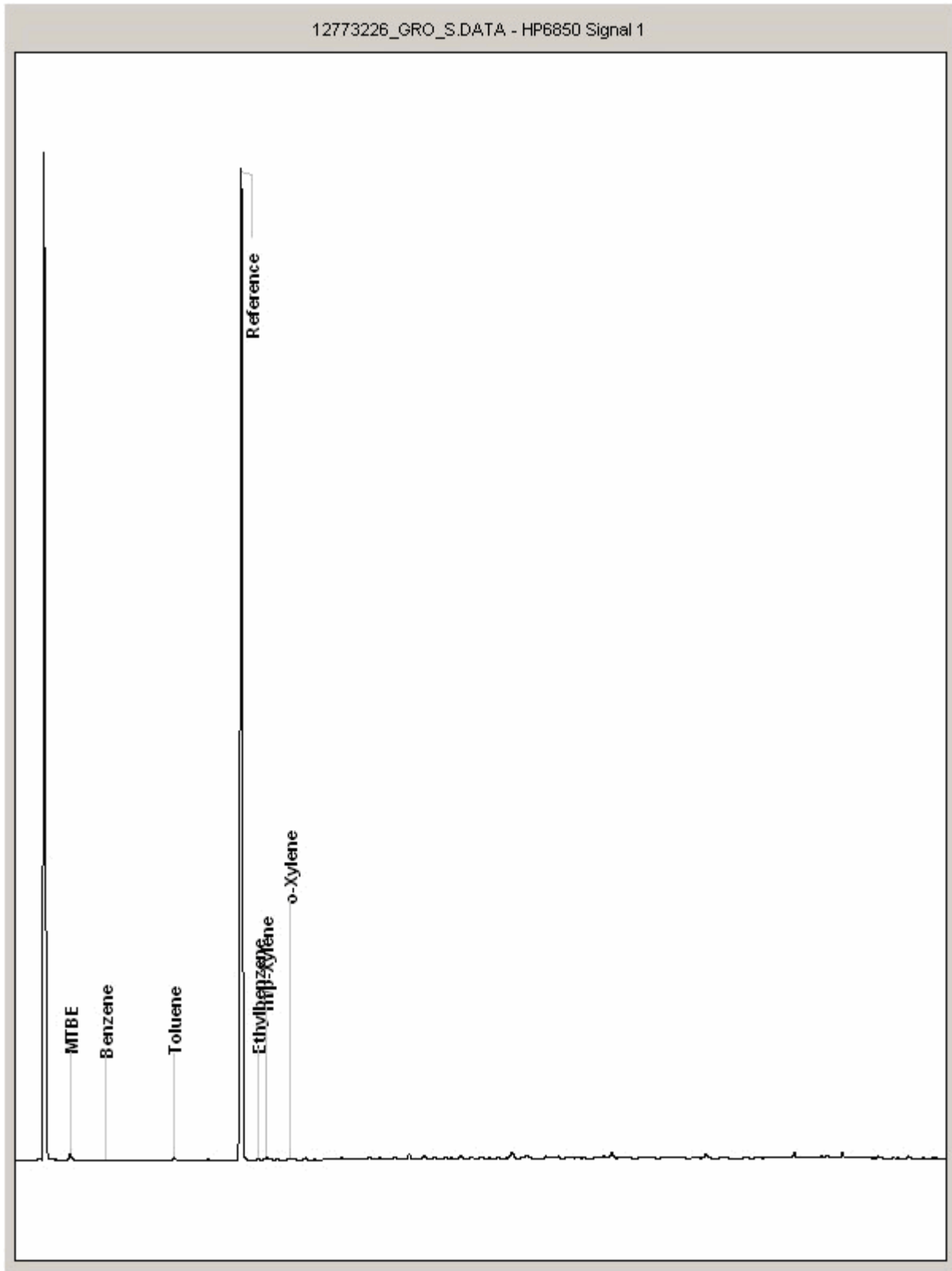
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12773226
Sample ID : EXA11

Depth : 4.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

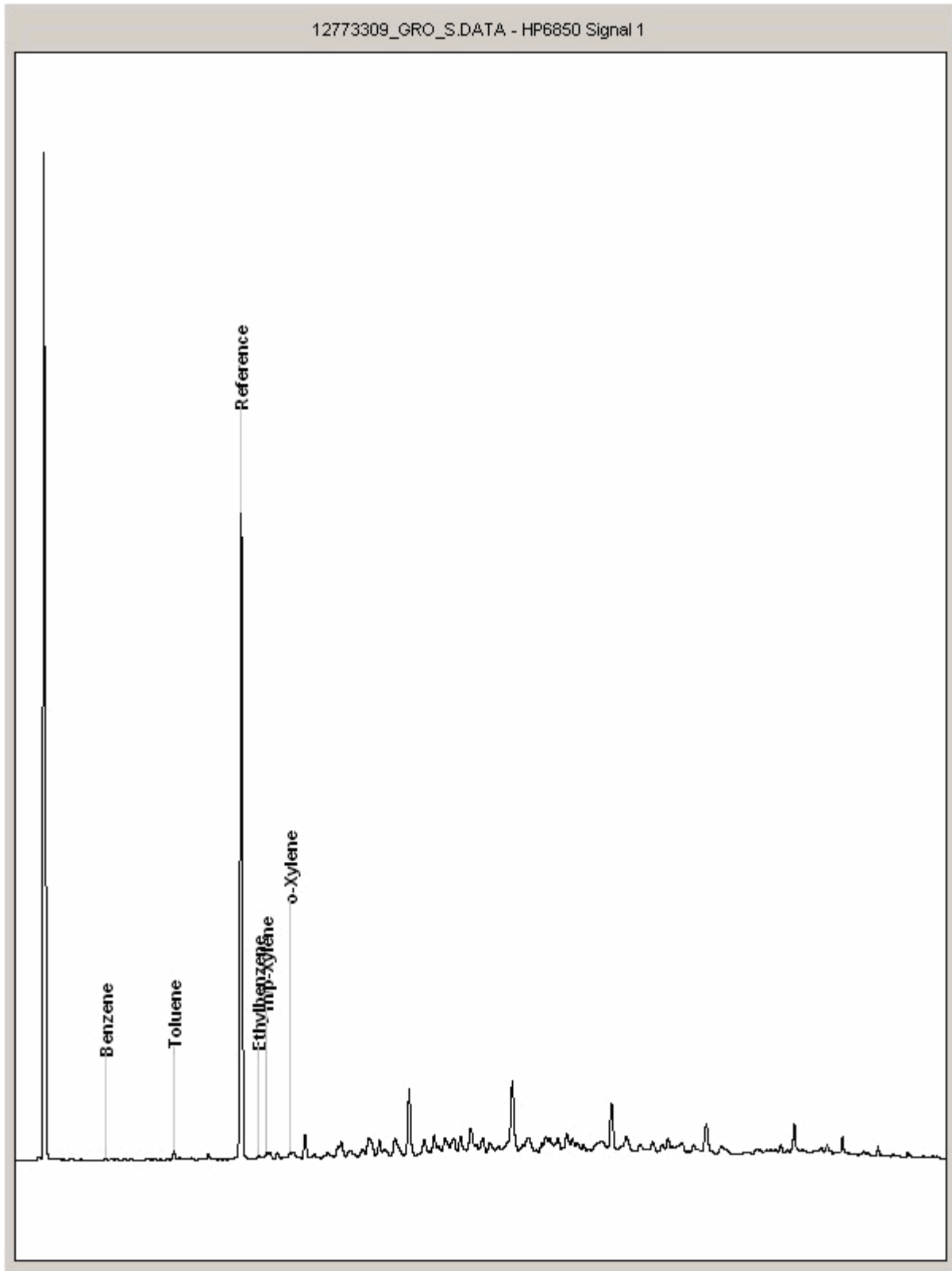
Order Number: 60481674
Report Number: 346181
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12773309
Sample ID : EXA08

Depth : 2.50





SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
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 Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXHERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXHERM	HFLC
PHENOLSBY GOMS	WET	DOM	SOXHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CWG BY GC	D&C	HEXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HFLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HFLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HFLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

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

SDG: 160115-31
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 346181
Superseded Report:

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 25 January 2016
Customer: H_URS_WIM
Sample Delivery Group (SDG): 160116-71
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 346243

We received 5 samples on Saturday January 16, 2016 and 4 of these samples were scheduled for analysis which was completed on Monday January 25, 2016. 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: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12762585	DUP			14/01/2016
12762581	EXA05			14/01/2016
12762582	EXA06		2.50	14/01/2016
12762583	EXA09		4.50	14/01/2016
12762584	EXA10			14/01/2016

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



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

SOLID Results Legend Test No Determination Possible	Lab Sample No(s)	12762581	12762582	12762583	12762584	
	Customer Sample Reference	EXA05	EXA06	EXA09	EXA10	
	AGS Reference					
	Depth (m)		2.50	4.50		
	Container	250g Amber Jar (AL)	250g Amber Jar (AL)	250g Amber Jar (AL)	60g VOC (ALE215)	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 4				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 4				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4				
Oxygenates (S)	All	NDPs: 0 Tests: 4				
PAH by GCMS	All	NDPs: 0 Tests: 4				
Sample description	All	NDPs: 0 Tests: 4				
Total Organic Carbon	All	NDPs: 0 Tests: 4				
VOC MS (S)	All	NDPs: 0 Tests: 4				



SDG: 160116-71
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 346243
 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
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
12762581	EXA05		Dark Brown	Sand	0.1 - 2 mm	Stones	Vegetation
12762582	EXA06	2.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
12762583	EXA09	4.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
12762584	EXA10		Dark Brown	Sand	0.1 - 2 mm	Oil/Petroleum	None

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

Validated

SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Table with columns for Results Legend, Customer Sample R, EXA05, EXA06, EXA09, EXA10, Component, LOD/Units, Method, and numerical data for various chemical components like Moisture Content Ratio, Fraction Organic Carbon, Ethanol, etc.



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

EPH CWG (Aliphatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXA05, EXA06, EXA09, EXA10, Component, LOD/Units, Method. Includes data for Aliphatics >C12-C16, >C16-C21, >C21-C35, >C35-C44.



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Results Legend, Customer Sample R, EXA05, EXA06, EXA09, EXA10. Rows include component analysis for Aromatics >EC12-EC16, >EC16-EC21, and >EC21-EC35.



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample R, EXA05, EXA06, EXA09, EXA10. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

VOC MS (S)

Table with columns: Results Legend, Customer Sample R, EXA05, EXA06, EXA09, EXA10. Rows include components like Toluene-d8, Methyl Tertiary Butyl Ether, Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, Tert-amyl methyl ether.

SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
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)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Test Completion Dates

Lab Sample No(s)	12762581	12762582	12762583	12762584
Customer Sample Ref.	EXA05	EXA06	EXA09	EXA10
AGS Ref.				
Depth		2.50	4.50	
Type	SOLID	SOLID	SOLID	SOLID
EPH CWG (Aliphatic) GC (S)	21-Jan-2016	21-Jan-2016	21-Jan-2016	21-Jan-2016
EPH CWG (Aromatic) GC (S)	21-Jan-2016	21-Jan-2016	21-Jan-2016	21-Jan-2016
GRO by GC-FID (S)	22-Jan-2016	22-Jan-2016	22-Jan-2016	22-Jan-2016
Oxygenates (S)	19-Jan-2016	19-Jan-2016	19-Jan-2016	19-Jan-2016
PAH by GCMS	20-Jan-2016	22-Jan-2016	22-Jan-2016	22-Jan-2016
Sample description	18-Jan-2016	18-Jan-2016	18-Jan-2016	18-Jan-2016
Total Organic Carbon	20-Jan-2016	20-Jan-2016	25-Jan-2016	20-Jan-2016
VOC MS (S)	22-Jan-2016	22-Jan-2016	22-Jan-2016	22-Jan-2016



SDG: 160116-71
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 346243
 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1207
Total Aliphatics >C12-C35	TM173	87.29 68.25 : 114.73

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1207
Total Aromatics >EC12-EC35	TM173	80.0 60.67 : 124.27

GRO by GC-FID (S)

Component	Method Code	QC 1243
Benzene by GC (Moisture Corrected)	TM089	107.5 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	110.5 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	109.75 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	107.0 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	111.0 80.03 : 117.19
QC	TM089	92.63 69.60 : 117.16
Toluene by GC (Moisture Corrected)	TM089	109.5 82.06 : 117.54

Oxygenates (S)

Component	Method Code	QC 1275
Benzene raw	TM288	100.0 77.75 : 124.62
Diisopropyl ether raw	TM288	102.0 81.07 : 125.84
Ethanol raw	TM288	79.3 12.71 : 182.13
Ethylbenzene raw	TM288	107.5 86.91 : 124.43
o-Xylene raw	TM288	97.25 82.52 : 115.85
p/m-Xylene raw	TM288	106.13 82.74 : 124.08
tert Butanol raw	TM288	93.0 27.29 : 165.57
tert-amyl methyl ether raw	TM288	100.0 82.15 : 125.05



SDG: 160116-71
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 346243
 Superseded Report:

Oxygenates (S)

		QC 1275
tert-butyl ethyl ether raw	TM288	103.25 81.24 : 125.04
tert-butyl methyl ether raw	TM288	102.0 80.97 : 130.09
Toluene raw	TM288	92.25 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1289	QC 1229	QC 1249
Acenaphthene	TM218	95.5 78.41 : 114.87	101.5 77.34 : 118.20	103.5 78.41 : 114.87
Acenaphthylene	TM218	83.5 72.38 : 111.60	97.0 62.65 : 116.35	97.5 72.38 : 111.60
Anthracene	TM218	91.0 72.78 : 117.53	98.0 73.54 : 114.21	97.5 72.78 : 117.53
Benz(a)anthracene	TM218	101.5 79.50 : 130.50	104.5 74.99 : 132.24	118.5 79.50 : 130.50
Benzo(a)pyrene	TM218	107.0 79.50 : 130.50	100.5 80.75 : 127.25	122.5 79.50 : 130.50
Benzo(b)fluoranthene	TM218	101.0 78.10 : 127.57	102.5 75.84 : 127.12	110.5 78.10 : 127.57
Benzo(ghi)perylene	TM218	106.0 81.67 : 122.61	102.5 74.74 : 124.03	118.5 81.67 : 122.61
Benzo(k)fluoranthene	TM218	108.5 81.20 : 118.10	101.5 80.00 : 125.00	115.0 81.20 : 118.10
Chrysene	TM218	105.0 80.60 : 117.80	100.0 77.24 : 120.84	114.5 80.60 : 117.80
Dibenzo(ah)anthracene	TM218	107.5 77.93 : 124.42	106.0 76.00 : 122.50	124.0 77.93 : 124.42
Fluoranthene	TM218	95.5 80.39 : 114.39	99.0 78.51 : 118.75	103.0 80.39 : 114.39
Fluorene	TM218	93.5 79.50 : 118.50	102.5 76.95 : 117.18	102.5 79.50 : 118.50
Indeno(123cd)pyrene	TM218	104.5 80.30 : 128.30	100.0 75.34 : 127.46	119.0 80.30 : 128.30
Naphthalene	TM218	95.0 82.25 : 118.25	98.0 76.24 : 112.91	109.5 82.25 : 118.25
Phenanthrene	TM218	98.0 71.53 : 114.48	101.0 76.49 : 119.30	102.0 71.53 : 114.48
Pyrene	TM218	95.0 79.12 : 114.39	97.5 78.25 : 118.17	99.5 79.12 : 114.39

Total Organic Carbon

Component	Method Code	QC 1239	QC 1245
Total Organic Carbon	TM132	103.2 88.82 : 111.18	101.83 88.82 : 111.18

VOC MS (S)



SDG: 160116-71
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 346243
 Superseded Report:

VOC MS (S)

Component	Method Code	QC 1248
1,1,1,2-tetrachloroethane	TM116	94.4 83.24 : 124.28
1,1,1-Trichloroethane	TM116	105.8 81.77 : 121.07
1,1,2-Trichloroethane	TM116	91.2 78.55 : 105.28
1,1-Dichloroethane	TM116	108.4 74.63 : 123.32
1,2-Dichloroethane	TM116	110.4 86.58 : 129.62
1,4-Dichlorobenzene	TM116	99.6 73.23 : 116.39
2-Chlorotoluene	TM116	89.0 69.22 : 110.64
4-Chlorotoluene	TM116	86.2 68.57 : 106.26
Benzene	TM116	103.4 84.33 : 124.27
Carbon Disulphide	TM116	114.8 77.20 : 122.80
Carbontetrachloride	TM116	101.0 84.20 : 119.90
Chlorobenzene	TM116	101.0 85.28 : 129.96
Chloroform	TM116	110.8 82.73 : 119.72
Chloromethane	TM116	109.8 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	106.0 80.55 : 123.13
Dibromomethane	TM116	94.2 73.40 : 116.60
Dichloromethane	TM116	122.2 81.68 : 125.21
Ethylbenzene	TM116	95.0 80.07 : 125.98
Hexachlorobutadiene	TM116	83.0 30.92 : 132.28
Isopropylbenzene	TM116	84.0 69.27 : 125.32
Naphthalene	TM116	114.4 79.15 : 121.98
o-Xylene	TM116	77.6 72.94 : 106.80
p/m-Xylene	TM116	88.9 76.97 : 121.75
Sec-Butylbenzene	TM116	77.2 49.27 : 129.90
Tetrachloroethene	TM116	100.8 87.96 : 133.65
Toluene	TM116	95.4 79.23 : 114.58



SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

VOC MS (S)

		QC 1248
Trichloroethene	TM116	91.6 81.65 : 115.27
Trichlorofluoromethane	TM116	112.6 81.26 : 121.09
Vinyl Chloride	TM116	116.2 59.68 : 118.68

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: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

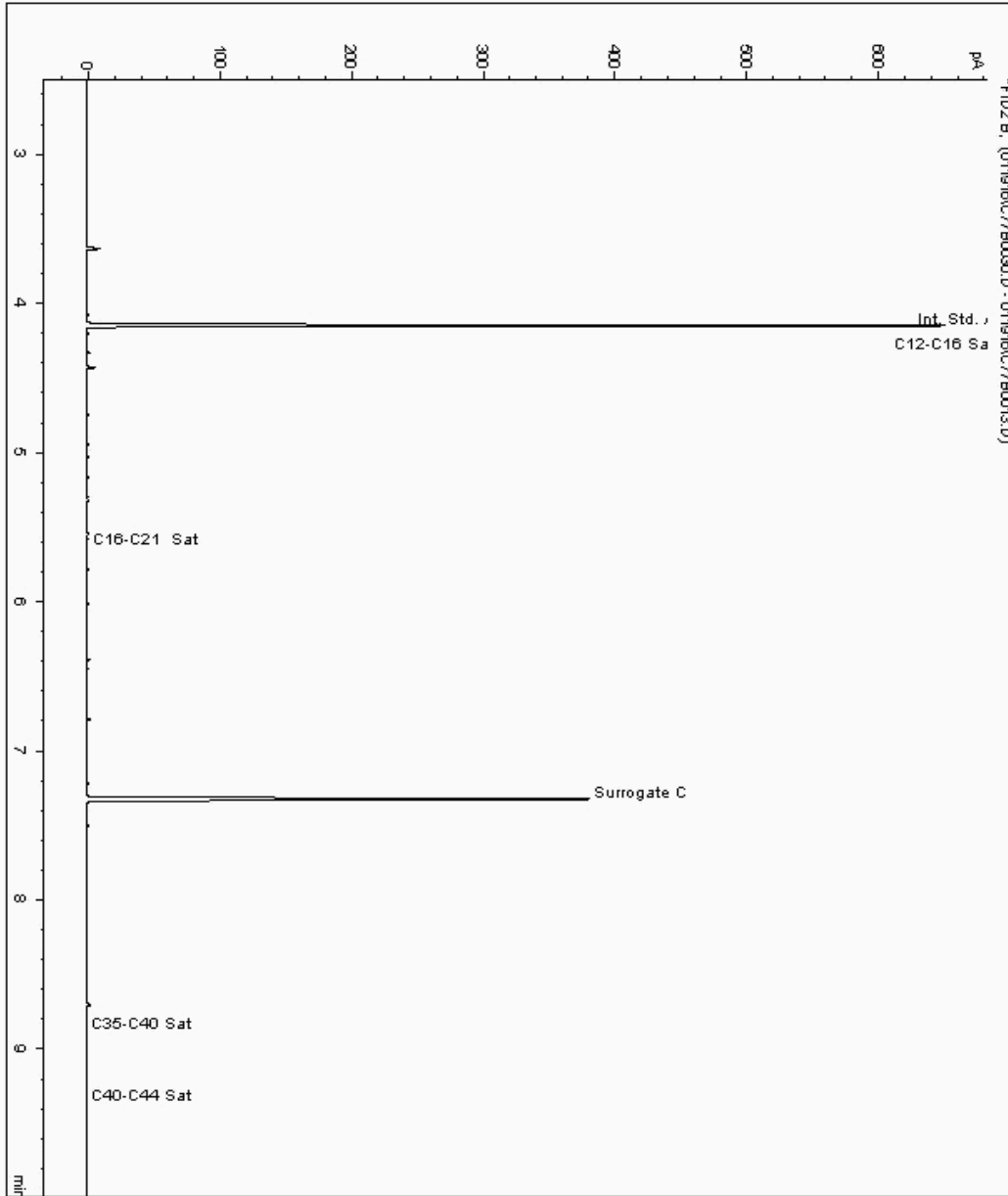
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12767256
Sample ID : EXA09

Depth : 4.50

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

Sample Identity: 12047769-
Date Acquired : 20/01/2016 14:10:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.978





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

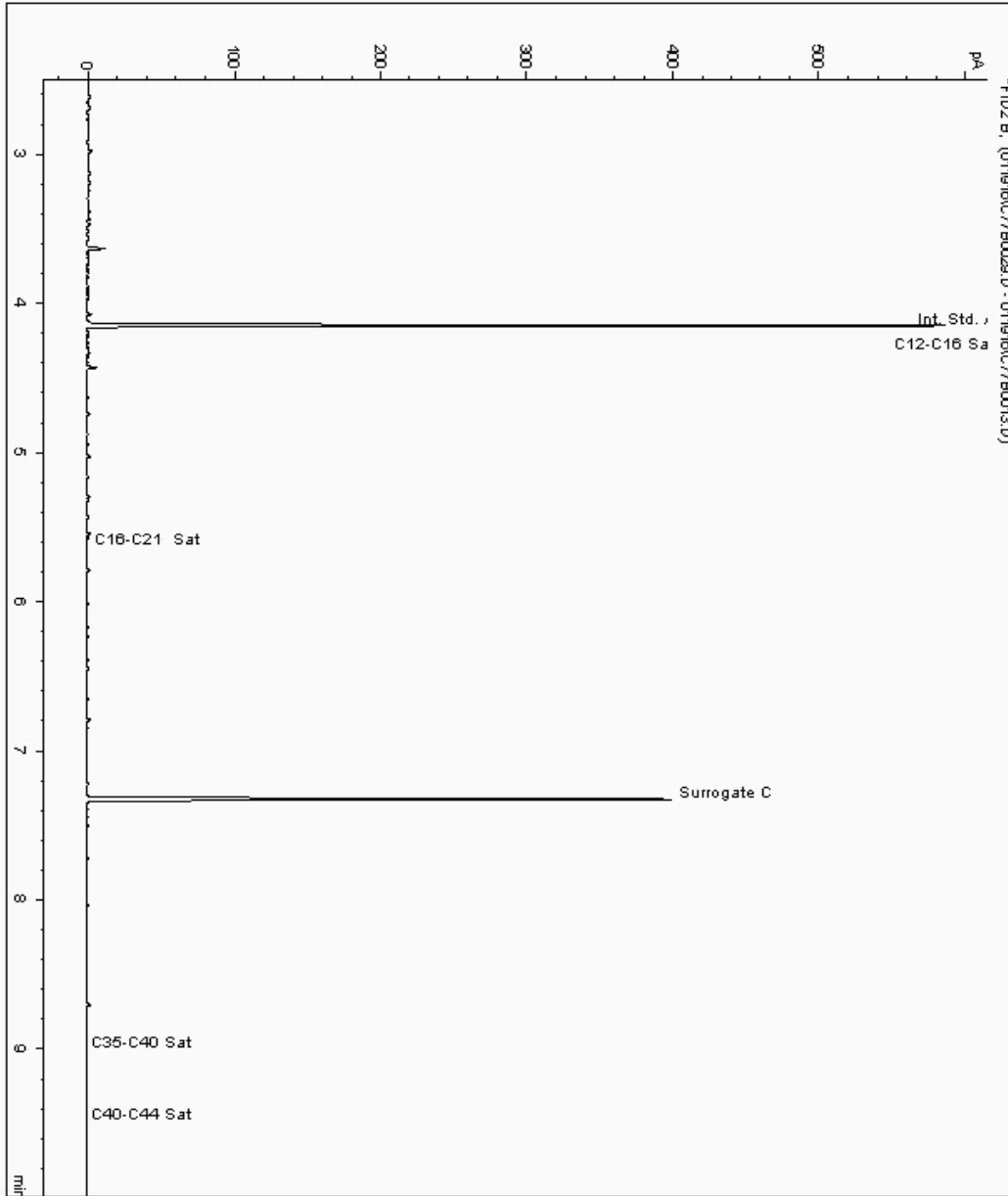
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12767371
Sample ID : EXA10

Depth :

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

Sample Identity: 12047779-
Date Acquired : 20/01/2016 13:50:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.998





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

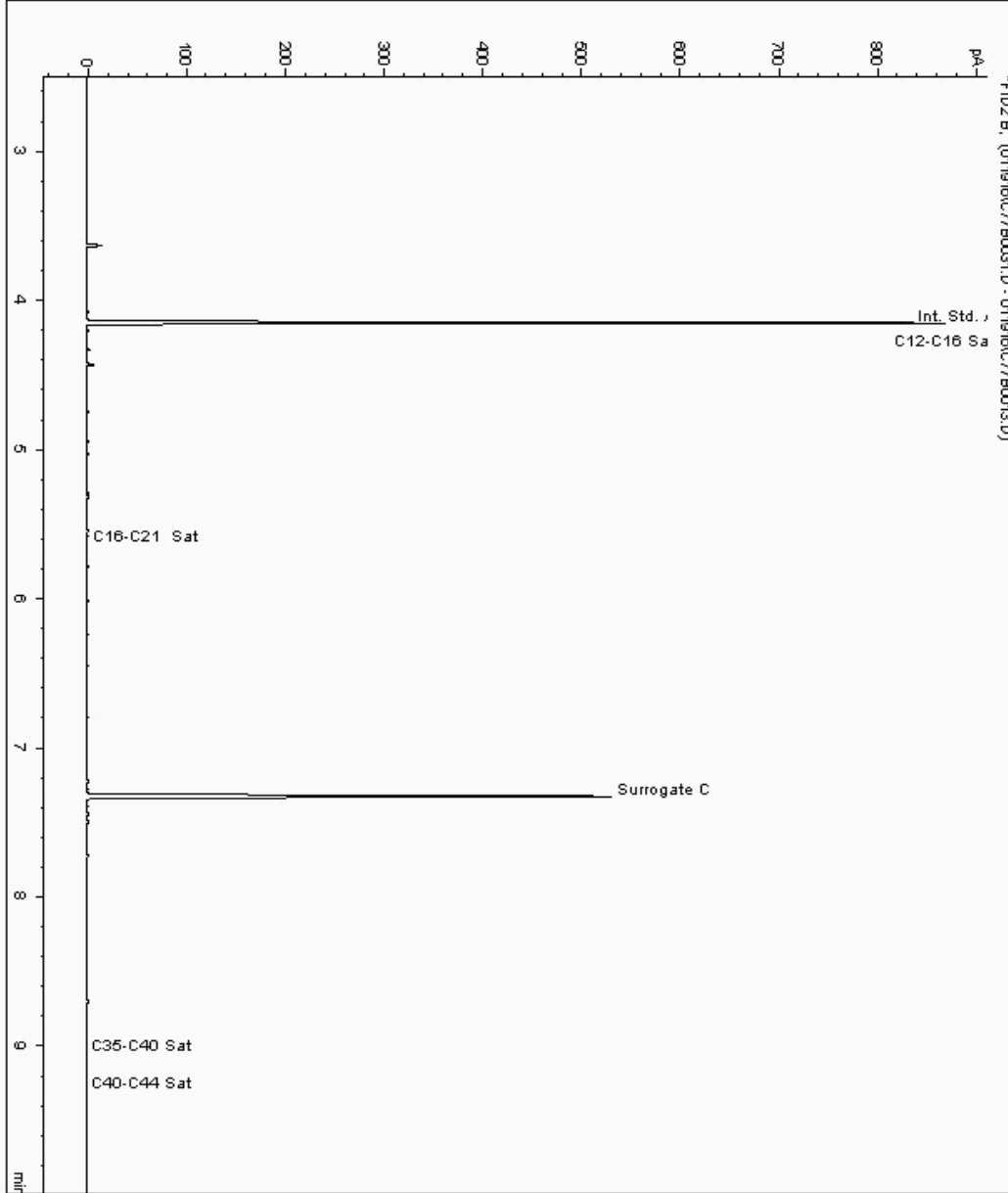
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12767399
Sample ID : EXA06

Depth : 2.50

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

Sample Identity: 12047759-
Date Acquired : 20/01/2016 14:30:59 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.991





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

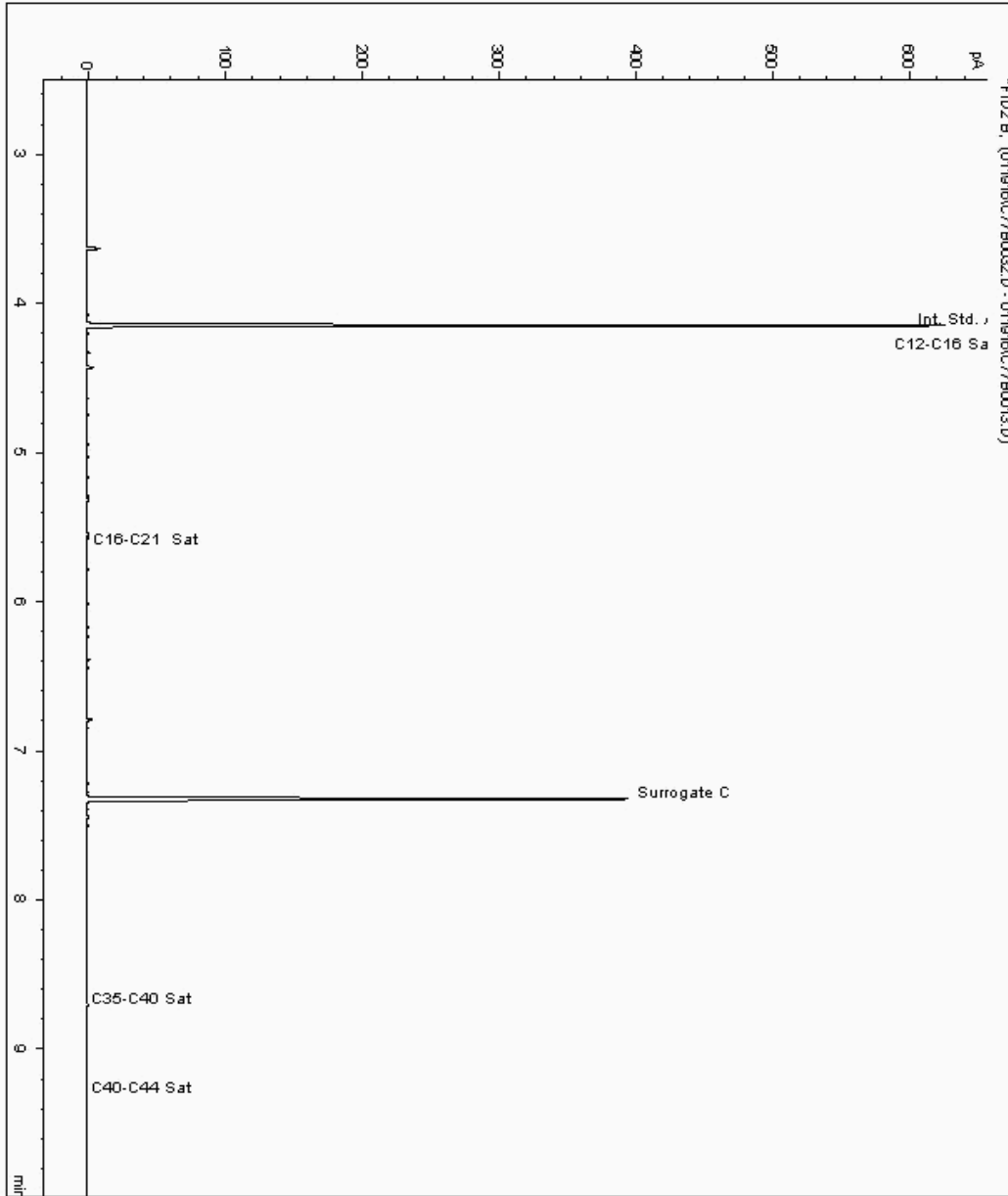
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12767432
Sample ID : EXA05

Depth :

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

Sample Identity: 12047749-
Date Acquired : 20/01/2016 14:51:03 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.988





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

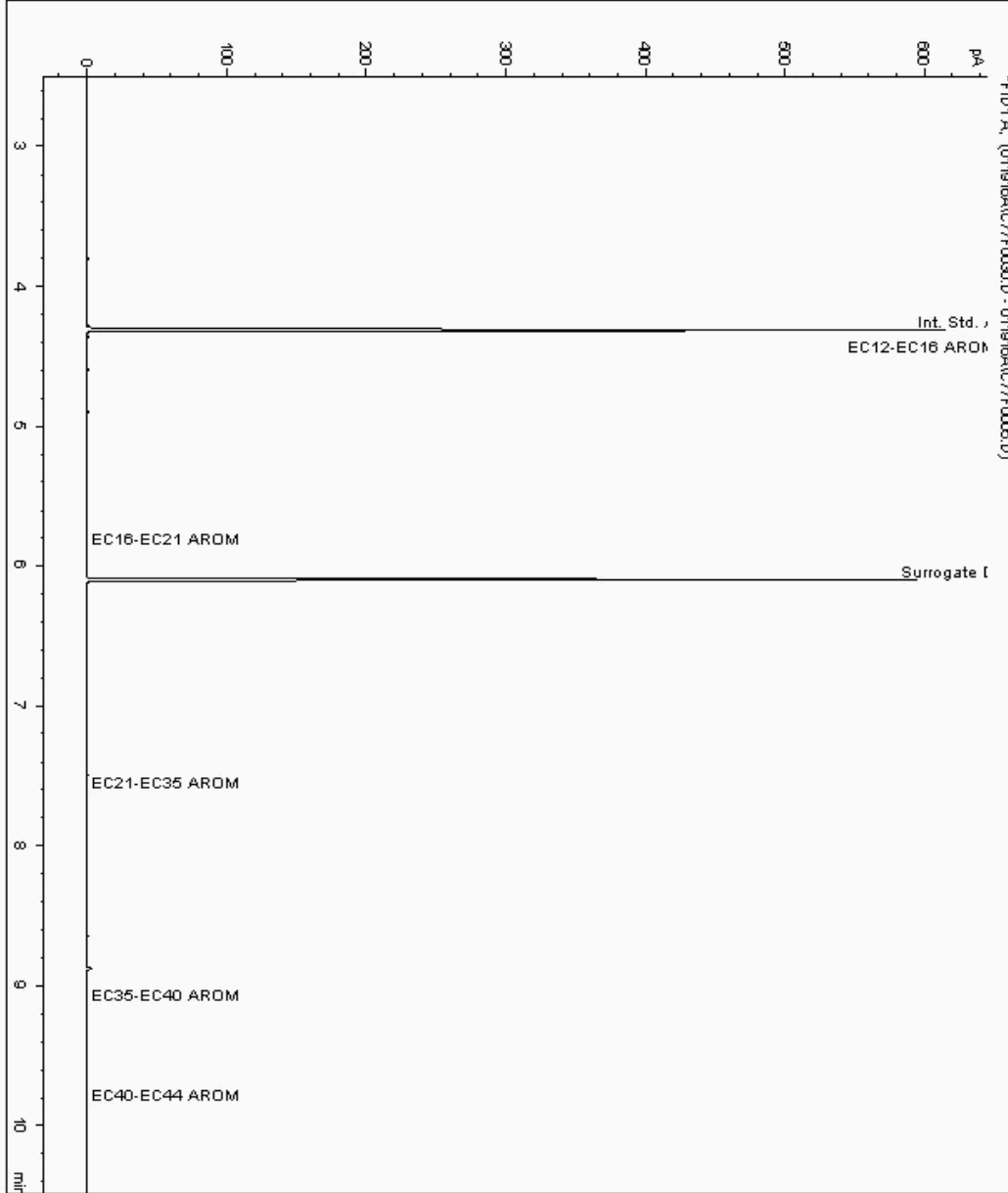
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12767256
Sample ID : EXA09

Depth : 4.50

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

Sample Identity: 12047770-
Date Acquired : 20/01/2016 00:48:33 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.978





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

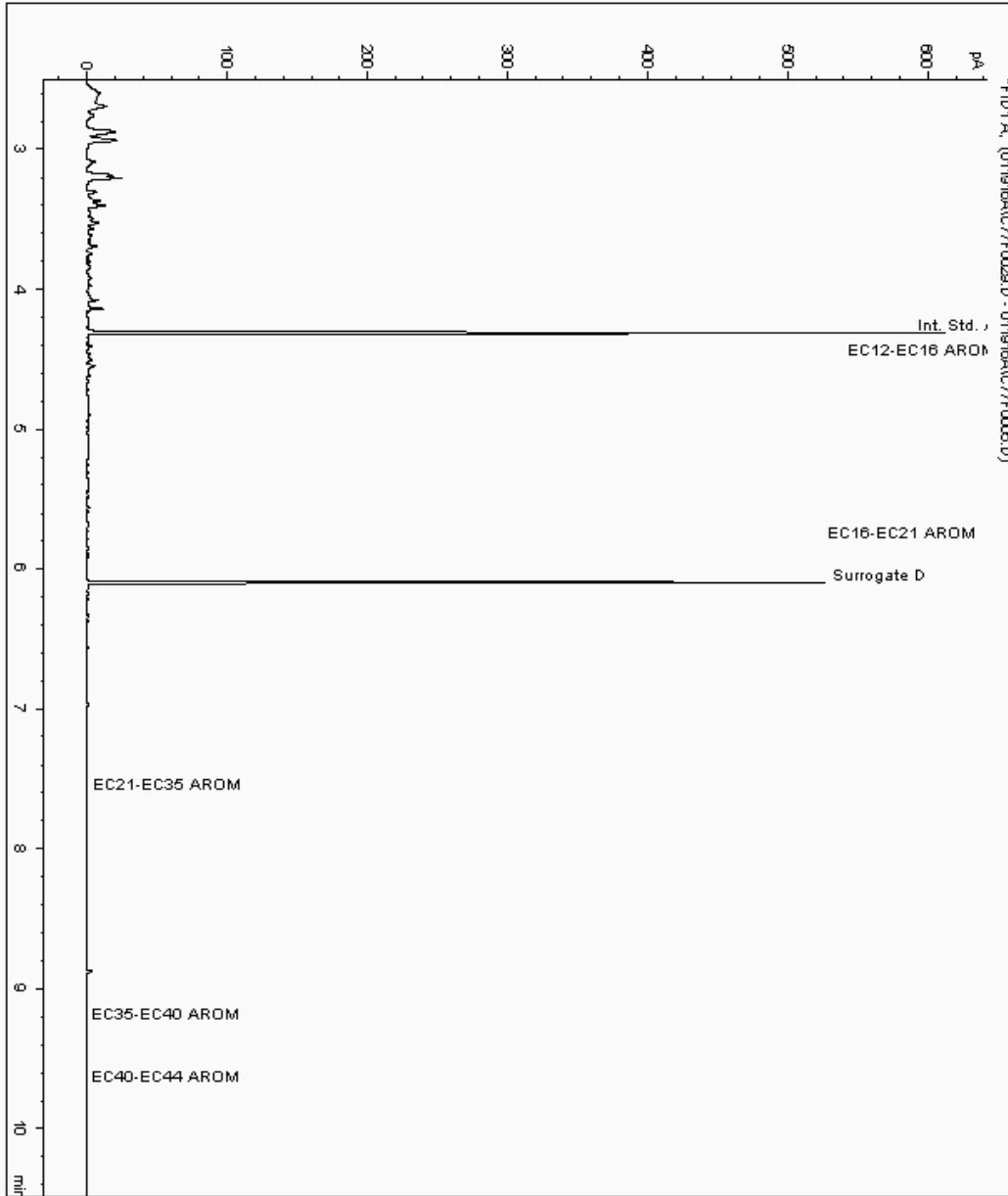
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12767371
Sample ID : EXA10

Depth :

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

Sample Identity: 12047780-
Date Acquired : 20/01/2016 00:28:29 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.998





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

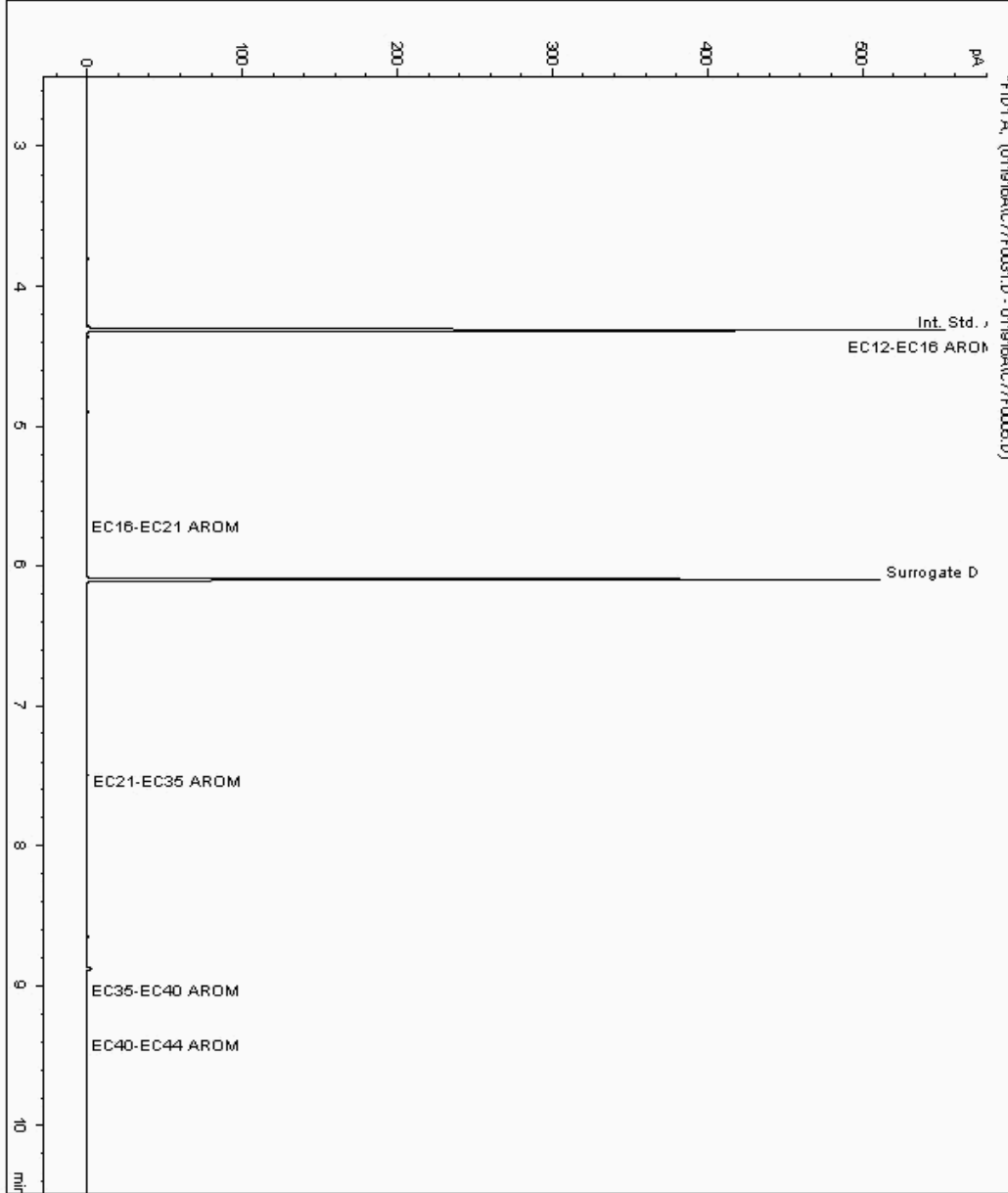
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12767399
Sample ID : EXA06

Depth : 2.50

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

Sample Identity: 12047760-
Date Acquired : 20/01/2016 01:08:30 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.991





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

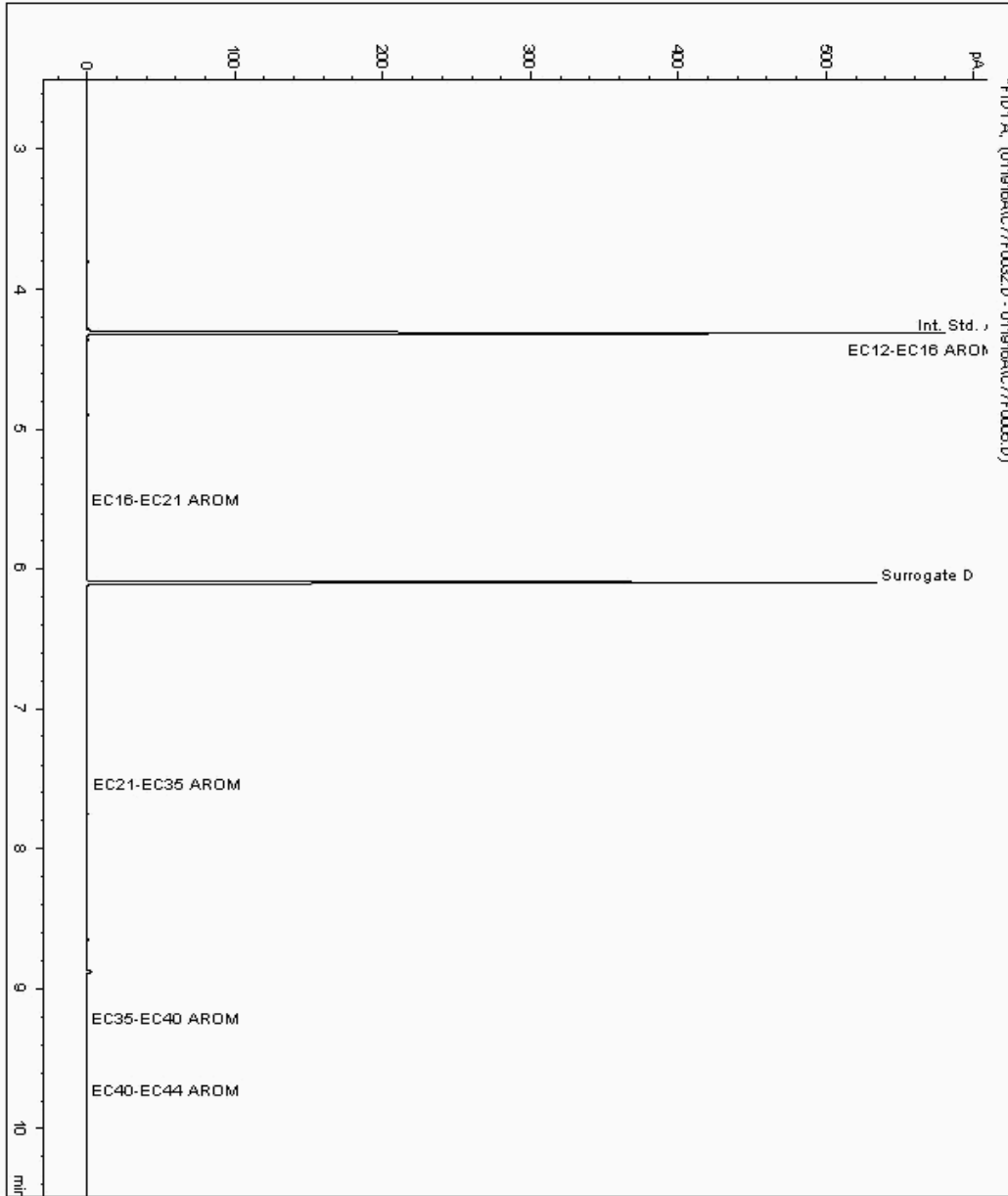
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12767432
Sample ID : EXA05

Depth :

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

Sample Identity: 12047750-
Date Acquired : 20/01/2016 01:28:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.988





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

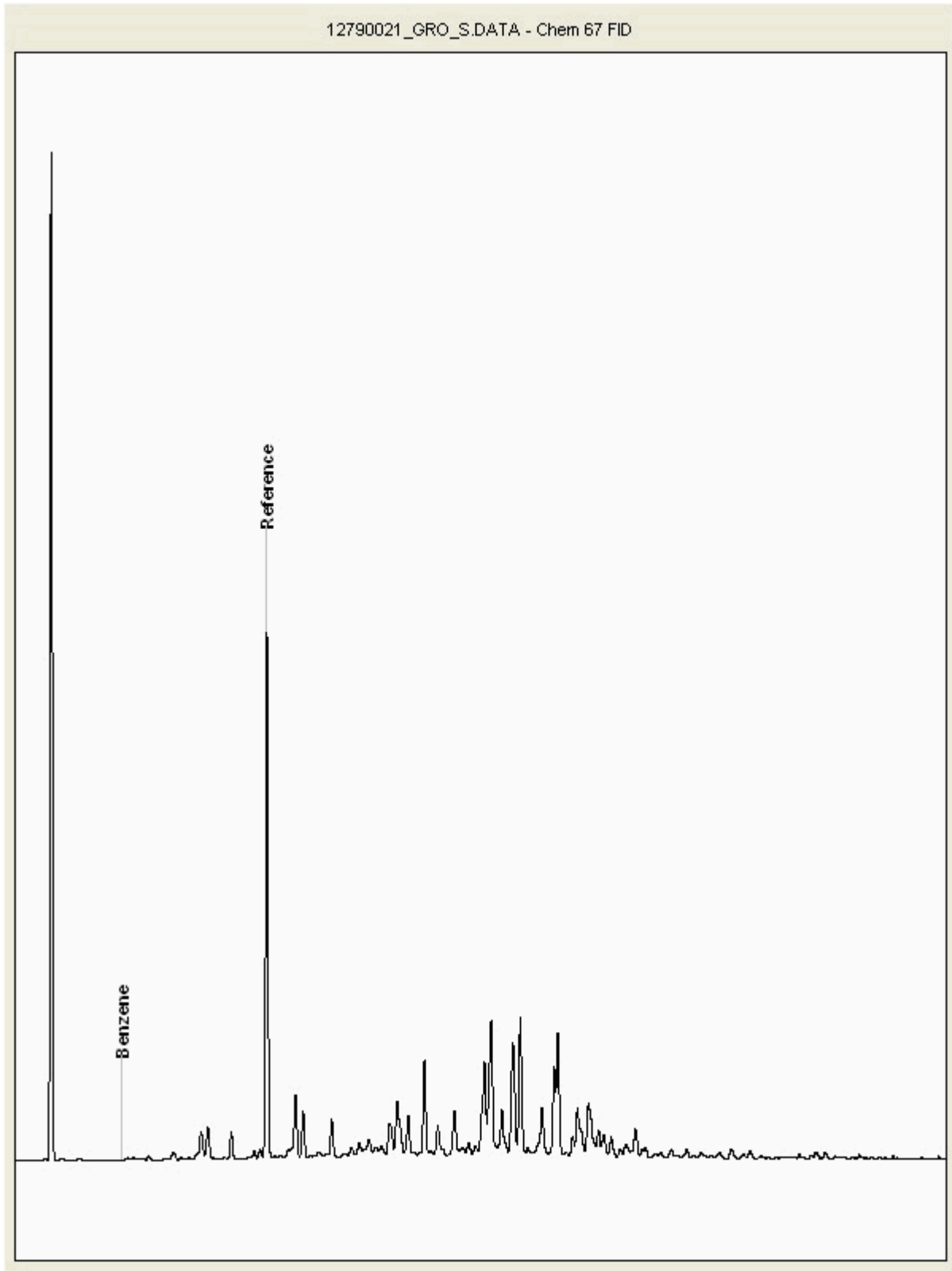
Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12790021
Sample ID : EXA10

Depth :





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

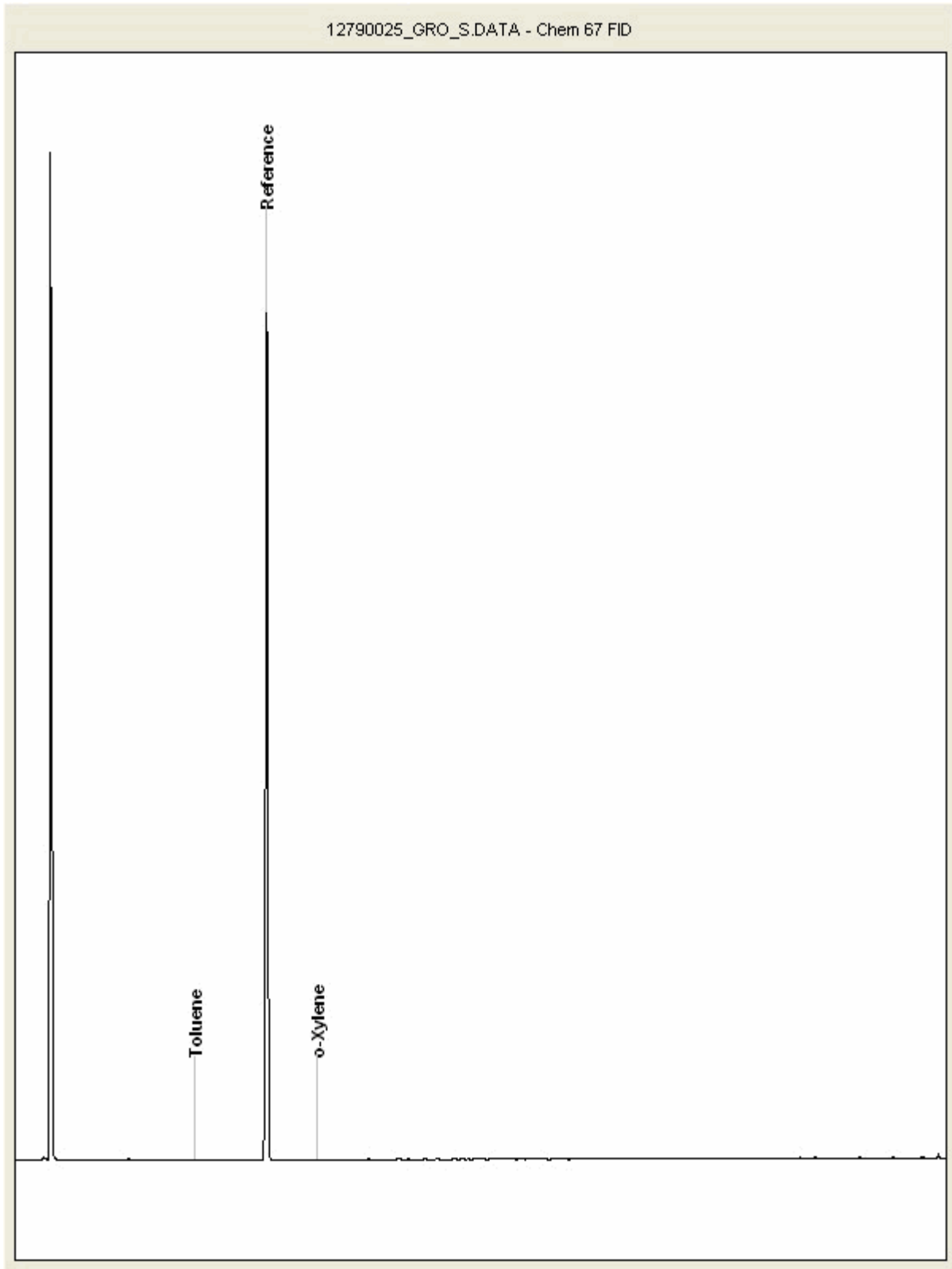
Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12790025
Sample ID : EXA06

Depth : 2.50





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

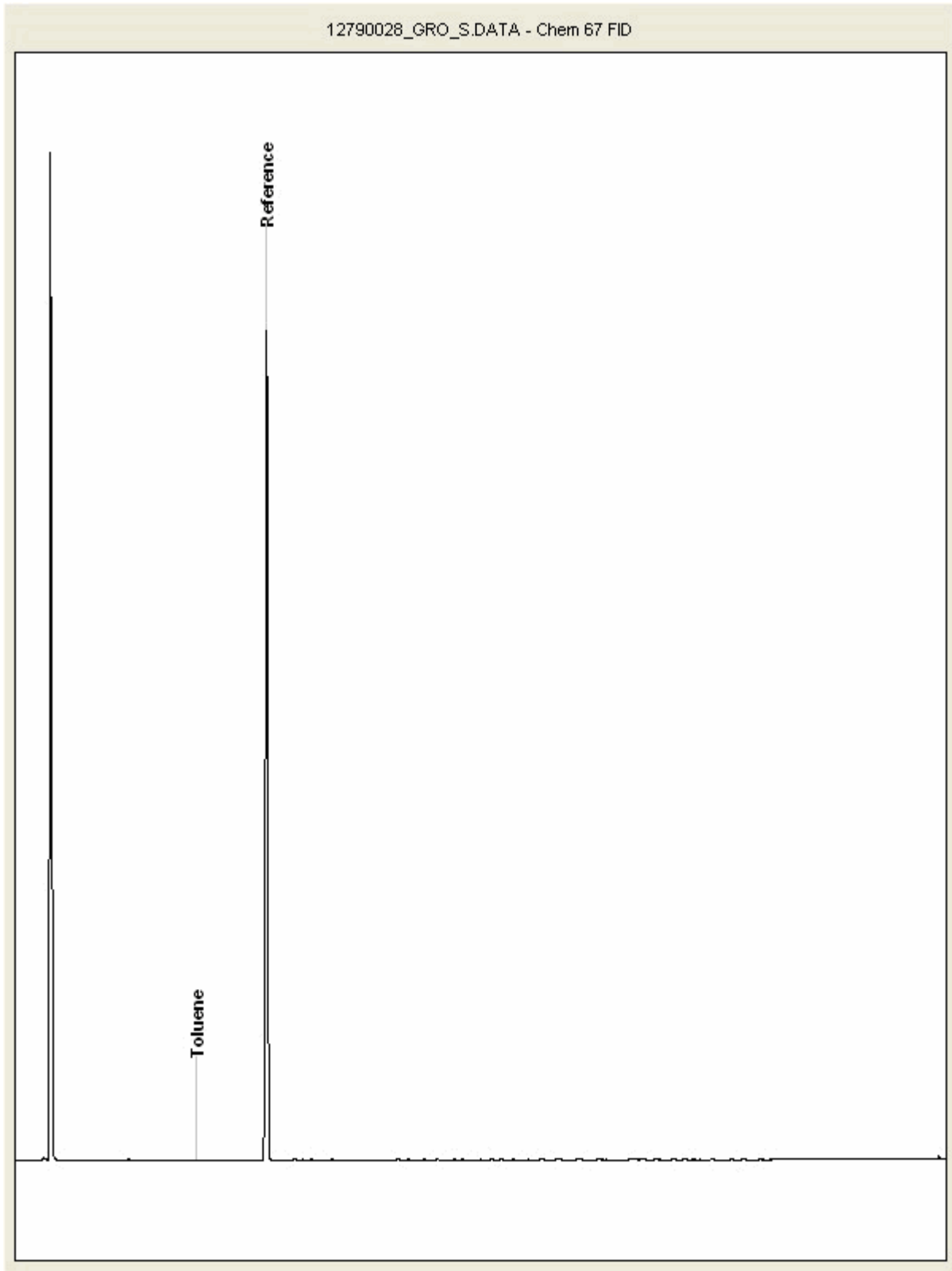
Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12790028
Sample ID : EXA05

Depth :





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

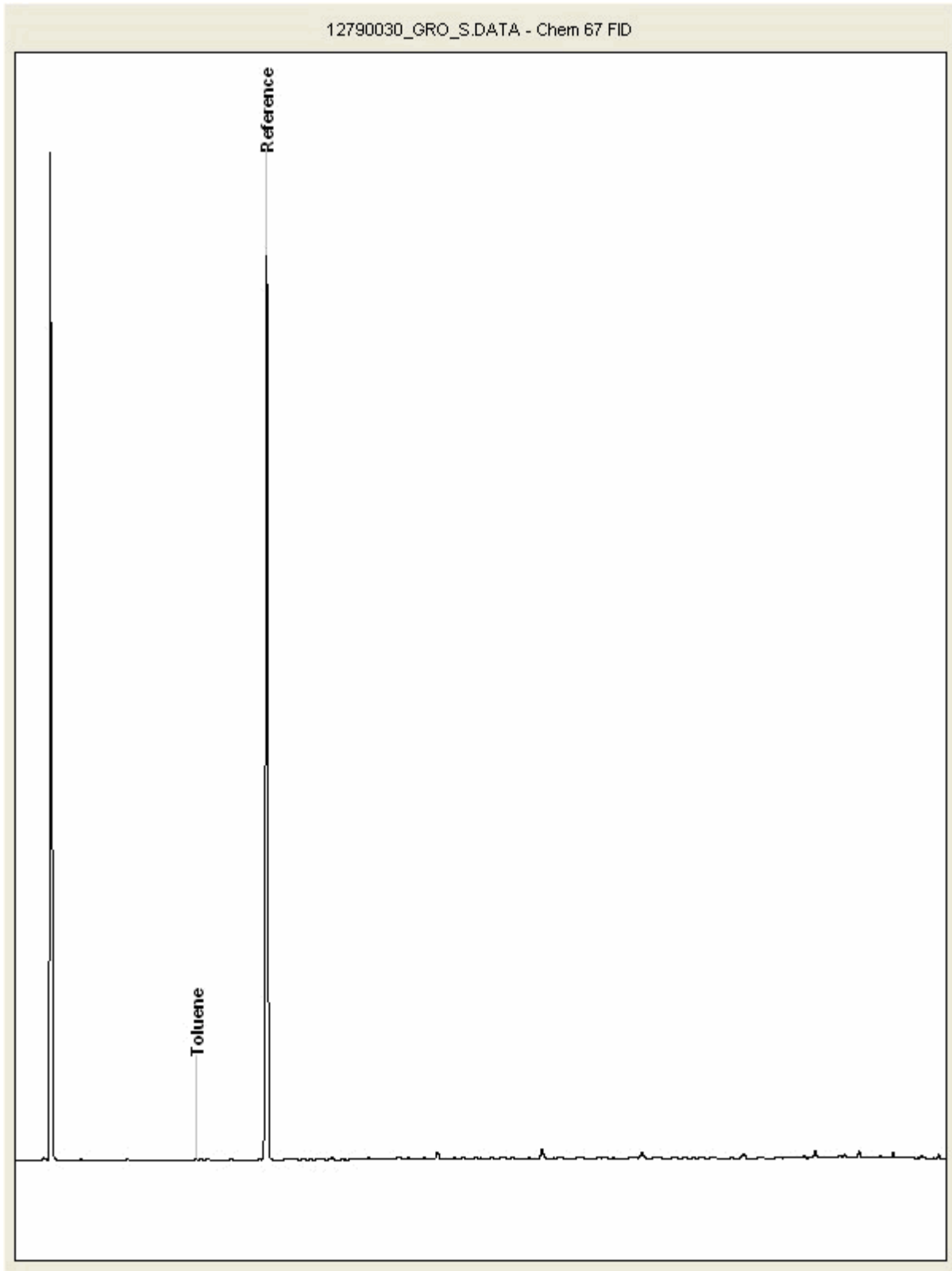
Order Number:
Report Number: 346243
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12790030
Sample ID : EXA09

Depth : 4.50





SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
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 Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXHERM	ATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXHERM	HFLC
PHENOLSBY GOMS	WET	DOM	SOXHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CWG BY GC	D&C	HEXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DOM	SOLID PHASE EXTRACTION	HFLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HFLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HFLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

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

SDG: 160116-71
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 346243
Superseded Report:

Appendix General

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 6 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** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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 Anthophyllite	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 23 February 2016
Customer: H_URS_WIM
Sample Delivery Group (SDG): 160217-33
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 350628

We received 2 samples on Wednesday February 17, 2016 and 2 of these samples were scheduled for analysis which was completed on Monday February 22, 2016. 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: 160217-33
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 350628
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
12939615	PI01_1.5		1.50	16/02/2016
12939616	PI02_1.5		1.50	16/02/2016


















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



SDG: 160217-33
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number:
 Report Number: 350628
 Superseded Report:

SOLID Results Legend  Test  No Determination Possible	Lab Sample No(s)	12939615	12939616	
		Customer Sample Reference	PI01_1.5	PI02_1.5
		AGS Reference		
		Depth (m)	1.50	1.50
		Container	250g Amber Jar (AL)	60g VOC (ALE215) 250g Amber Jar (AL) 60g VOC (ALE215)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2	 	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2	 	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2	 	
Oxygenates (S)	All	NDPs: 0 Tests: 2	 	
PAH by GCMS	All	NDPs: 0 Tests: 2	 	
Sample description	All	NDPs: 0 Tests: 2	 	
VOC MS (S)	All	NDPs: 0 Tests: 2	 	



SDG: 160217-33
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 350628
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
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
12939615	PI01_1.5	1.50	Dark Brown	Loamy Sand	0.1 - 2 mm	Stones	Vegetation
12939616	PI02_1.5	1.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Brick	Stones

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.



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Superseded Report:

GRO by GC-FID (S)

Table with columns: Component, LOD/Units, Method, PI01_1.5, PI02_1.5. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



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PAH by GCMS

Results Legend		Customer Sample R	PI01_1.5	PI02_1.5			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	PI01_1.5	PI02_1.5			
M	mCERTS accredited.		1.50	1.50			
aq	Aqueous / settled sample.		Soil/Solid	Soil/Solid			
diss.filt	Dissolved / filtered sample.		16/02/2016	16/02/2016			
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						
1-5&*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	97.7	115			
Acenaphthene-d10 % recovery**	%	TM218	98	116			
Phenanthrene-d10 % recovery**	%	TM218	96.4	113			
Chrysene-d12 % recovery**	%	TM218	84.4	102			
Perylene-d12 % recovery**	%	TM218	96.6	104			
Naphthalene	<9 µg/kg	TM218	14.9	87.3			
			M	M			
Acenaphthylene	<12 µg/kg	TM218	<12	<12			
			M	M			
Acenaphthene	<8 µg/kg	TM218	<8	51.1			
			M	M			
Fluorene	<10 µg/kg	TM218	<10	48.9			
			M	M			
Phenanthrene	<15 µg/kg	TM218	50.5	461			
			M	M			
Anthracene	<16 µg/kg	TM218	<16	98.2			
			M	M			
Fluoranthene	<17 µg/kg	TM218	57.6	490			
			M	M			
Pyrene	<15 µg/kg	TM218	52.5	424			
			M	M			
Benz(a)anthracene	<14 µg/kg	TM218	58	225			
			M	M			
Chrysene	<10 µg/kg	TM218	26.7	241			
			M	M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	42.7	193			
			M	M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	17.8	96.4			
			M	M			
Benzo(a)pyrene	<15 µg/kg	TM218	36	156			
			M	M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	80.7			
			M	M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	26.5			
			M	M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	27.3	107			
			M	M			
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	384	2790			



CERTIFICATE OF ANALYSIS

Validated

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VOC MS (S)

Table with columns: Results Legend, Customer Sample R, PI01_1.5, PI02_1.5, Component, LOD/Units, Method. Rows include Toluene-d8**, Methyl Tertiary Butyl Ether, Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, Tert-amyl methyl ether.



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Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	PI02_1.5 1.50 SOLID 16/02/2016 00:00:00 20/02/2016 10:06:19 160217-33 12939616 TM048	22/02/16	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

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Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample ¹	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



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Test Completion Dates

Lab Sample No(s)	12939615	12939616
Customer Sample Ref.	PI01_1.5	PI02_1.5
AGS Ref.		
Depth	1.50	1.50
Type	SOLID	SOLID

Asbestos ID in Solid Samples		22-Feb-2016
EPH CWG (Aliphatic) GC (S)	19-Feb-2016	19-Feb-2016
EPH CWG (Aromatic) GC (S)	19-Feb-2016	19-Feb-2016
GRO by GC-FID (S)	19-Feb-2016	19-Feb-2016
Oxygenates (S)	18-Feb-2016	18-Feb-2016
PAH by GCMS	19-Feb-2016	22-Feb-2016
Sample description	17-Feb-2016	17-Feb-2016
VOC MS (S)	18-Feb-2016	18-Feb-2016



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ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1208	QC 1296
Total Aliphatics >C12-C35	TM173	88.54 68.25 : 114.73	86.25 70.80 : 111.51

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1208	QC 1296
Total Aromatics >EC12-EC35	TM173	79.33 60.67 : 124.27	99.33 65.21 : 121.32

GRO by GC-FID (S)

Component	Method Code	QC 1285
Benzene by GC (Moisture Corrected)	TM089	104.5 76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	105.0 73.32 : 122.02
m & p Xylene by GC (Moisture Corrected)	TM089	104.25 72.90 : 122.64
MTBE GC-FID (Moisture Corrected)	TM089	102.0 72.17 : 124.81
o Xylene by GC (Moisture Corrected)	TM089	104.0 71.65 : 124.40
QC	TM089	99.01 68.82 : 125.04
Toluene by GC (Moisture Corrected)	TM089	105.0 74.60 : 120.38

Oxygenates (S)

Component	Method Code	QC 1287
Benzene raw	TM288	102.25 77.75 : 124.62
Diisopropyl ether raw	TM288	102.25 81.07 : 125.84
Ethanol raw	TM288	234.0 12.71 : 182.13
Ethylbenzene raw	TM288	107.75 86.91 : 124.43
o-Xylene raw	TM288	96.75 82.52 : 115.85
p/m-Xylene raw	TM288	110.88 82.74 : 124.08
tert Butanol raw	TM288	143.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	97.0 82.15 : 125.05



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Oxygenates (S)

		QC 1287
tert-butyl ethyl ether raw	TM288	99.5 81.24 : 125.04
tert-butyl methyl ether raw	TM288	101.25 80.97 : 130.09
Toluene raw	TM288	94.5 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1239	QC 1253
Acenaphthene	TM218	95.5 68.50 : 116.50	101.0 68.50 : 116.50
Acenaphthylene	TM218	87.5 65.00 : 110.00	90.5 65.00 : 110.00
Anthracene	TM218	88.0 75.14 : 109.30	93.5 75.14 : 109.30
Benz(a)anthracene	TM218	101.0 70.00 : 115.00	90.5 70.00 : 115.00
Benzo(a)pyrene	TM218	104.0 82.80 : 121.21	89.5 82.80 : 121.21
Benzo(b)fluoranthene	TM218	102.0 81.11 : 119.79	94.0 81.11 : 119.79
Benzo(ghi)perylene	TM218	97.5 81.23 : 116.67	96.0 81.23 : 116.67
Benzo(k)fluoranthene	TM218	96.5 79.07 : 114.76	93.0 79.07 : 114.76
Chrysene	TM218	89.0 77.94 : 118.46	99.0 77.94 : 118.46
Dibenzo(ah)anthracene	TM218	95.5 79.94 : 120.03	92.0 79.94 : 120.03
Fluoranthene	TM218	96.0 77.89 : 110.15	99.5 77.89 : 110.15
Fluorene	TM218	96.0 80.93 : 113.54	101.0 80.93 : 113.54
Indeno(123cd)pyrene	TM218	96.0 80.37 : 120.17	92.0 80.37 : 120.17
Naphthalene	TM218	96.5 79.70 : 112.37	96.0 79.70 : 112.37
Phenanthrene	TM218	95.5 78.44 : 113.95	101.5 78.44 : 113.95
Pyrene	TM218	94.5 66.00 : 114.00	99.5 66.00 : 114.00

VOC MS (S)

Component	Method Code	QC 1204
1,1,1,2-tetrachloroethane	TM116	101.8 83.24 : 124.28
1,1,1-Trichloroethane	TM116	109.2 81.77 : 121.07
1,1,2-Trichloroethane	TM116	97.0 78.55 : 105.28
1,1-Dichloroethane	TM116	111.6 74.63 : 123.32



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VOC MS (S)

		QC 1204
1,2-Dichloroethane	TM116	114.6 86.58 : 129.62
1,4-Dichlorobenzene	TM116	106.2 73.23 : 116.39
2-Chlorotoluene	TM116	98.4 69.22 : 110.64
4-Chlorotoluene	TM116	98.4 68.57 : 106.26
Benzene	TM116	110.0 84.33 : 124.27
Carbon Disulphide	TM116	107.8 77.20 : 122.80
Carbontetrachloride	TM116	109.4 84.20 : 119.90
Chlorobenzene	TM116	105.8 85.28 : 129.96
Chloroform	TM116	114.8 82.73 : 119.72
Chloromethane	TM116	92.6 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	101.8 80.55 : 123.13
Dibromomethane	TM116	94.4 73.40 : 116.60
Dichloromethane	TM116	113.2 81.68 : 125.21
Ethylbenzene	TM116	105.2 81.09 : 116.49
Hexachlorobutadiene	TM116	140.2 30.92 : 132.28
Isopropylbenzene	TM116	101.0 64.86 : 120.15
Naphthalene	TM116	111.6 75.39 : 124.61
o-Xylene	TM116	87.4 69.11 : 101.06
p/m-Xylene	TM116	102.0 76.97 : 121.75
Sec-Butylbenzene	TM116	120.2 49.99 : 131.78
Tetrachloroethene	TM116	114.8 87.96 : 133.65
Toluene	TM116	104.8 79.23 : 114.58
Trichloroethene	TM116	102.4 81.65 : 115.27
Trichlorofluoromethane	TM116	108.6 81.26 : 121.09
Vinyl Chloride	TM116	96.4 59.68 : 118.68



CERTIFICATE OF ANALYSIS

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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 .



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Chromatogram

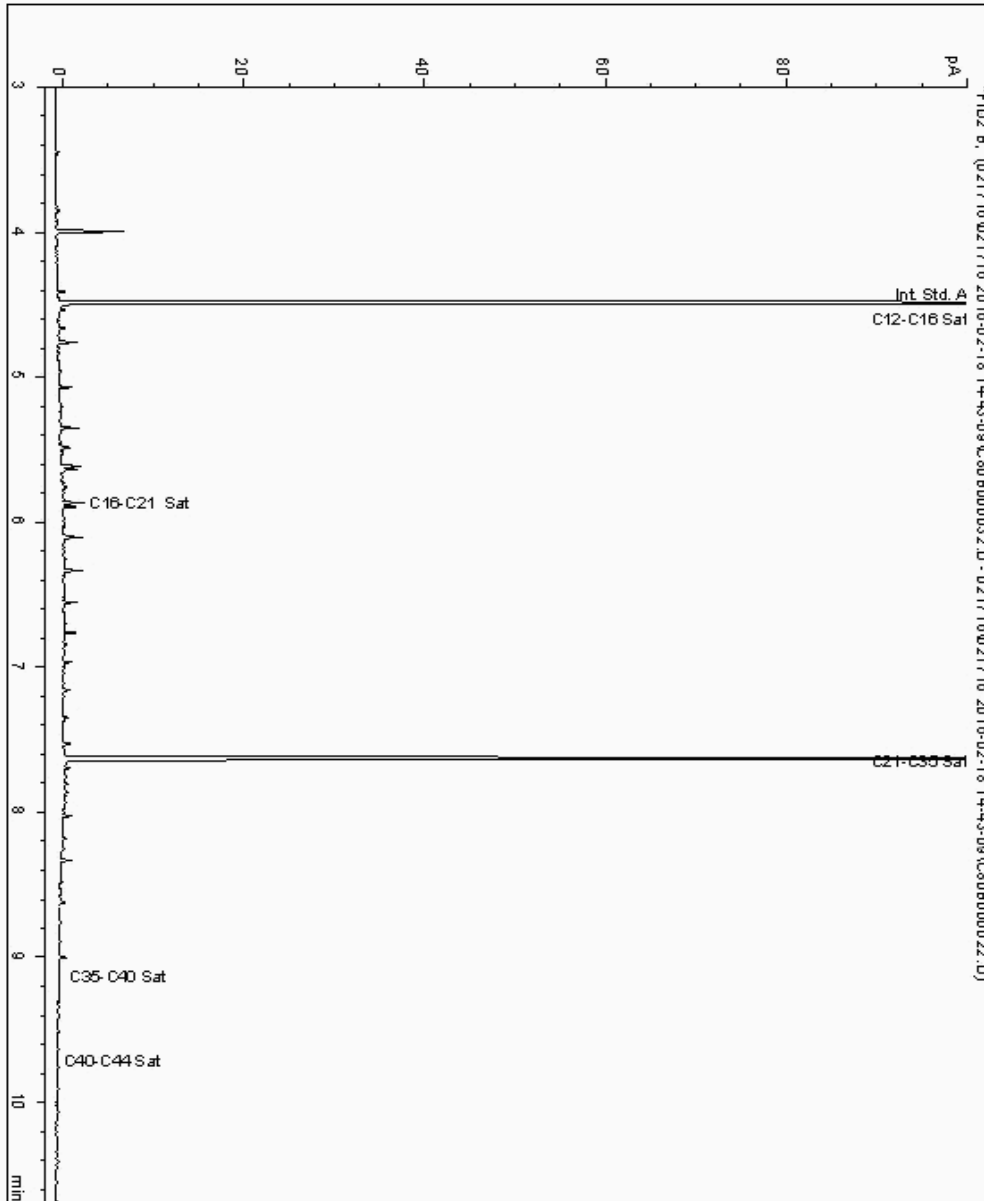
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12942645
Sample ID : PI01_1.5

Depth : 1.50

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

Sample Identity: 12203694-
Date Acquired : 18/02/16 18:09:28
Units : ppb
Dilution :
CF : 1
Multiplier : 1.015





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Chromatogram

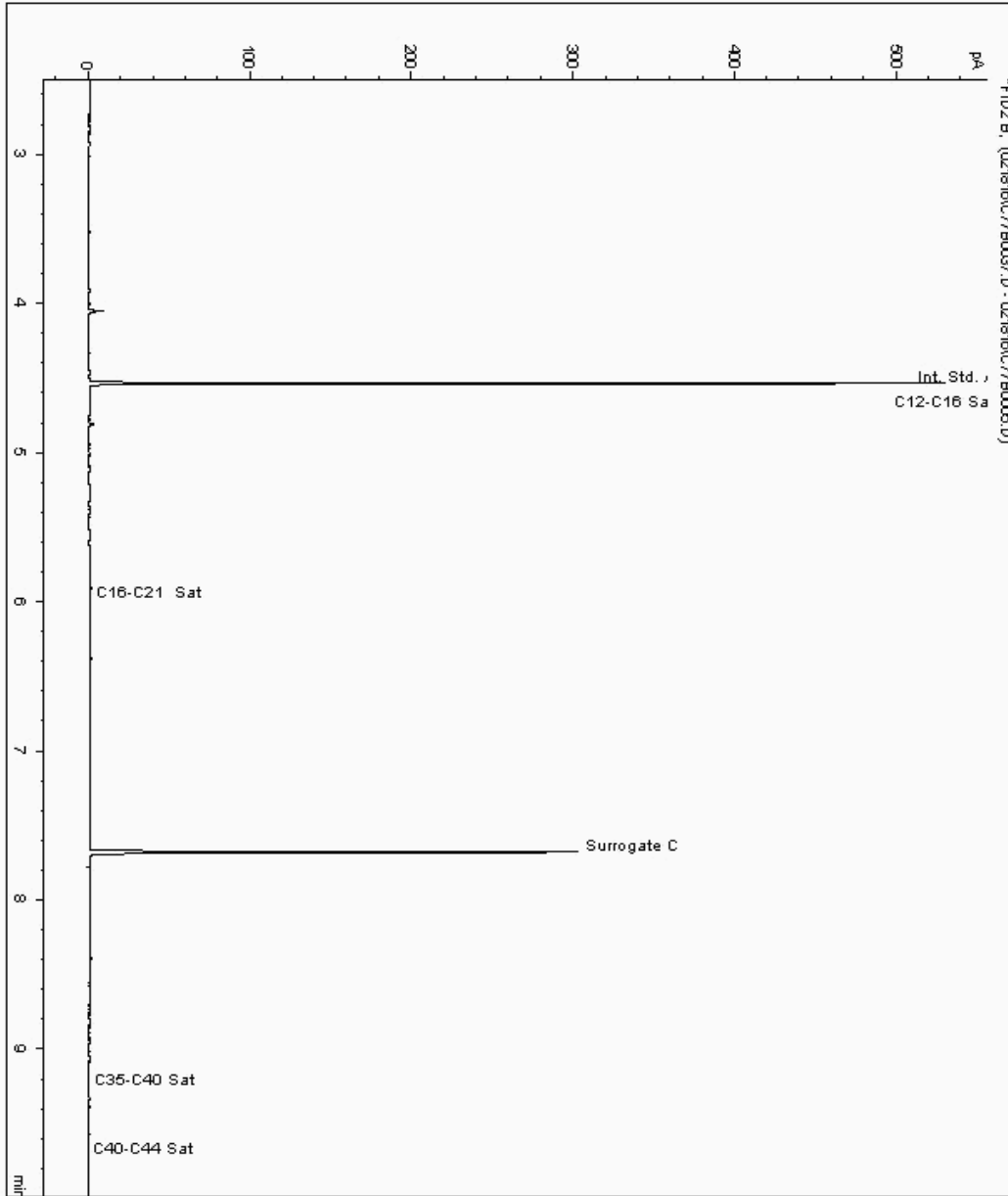
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 12943212
Sample ID : PI02_1.5

Depth : 1.50

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

Sample Identity: 12203703-
Date Acquired : 18/02/2016 22:18:05 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.999





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Chromatogram

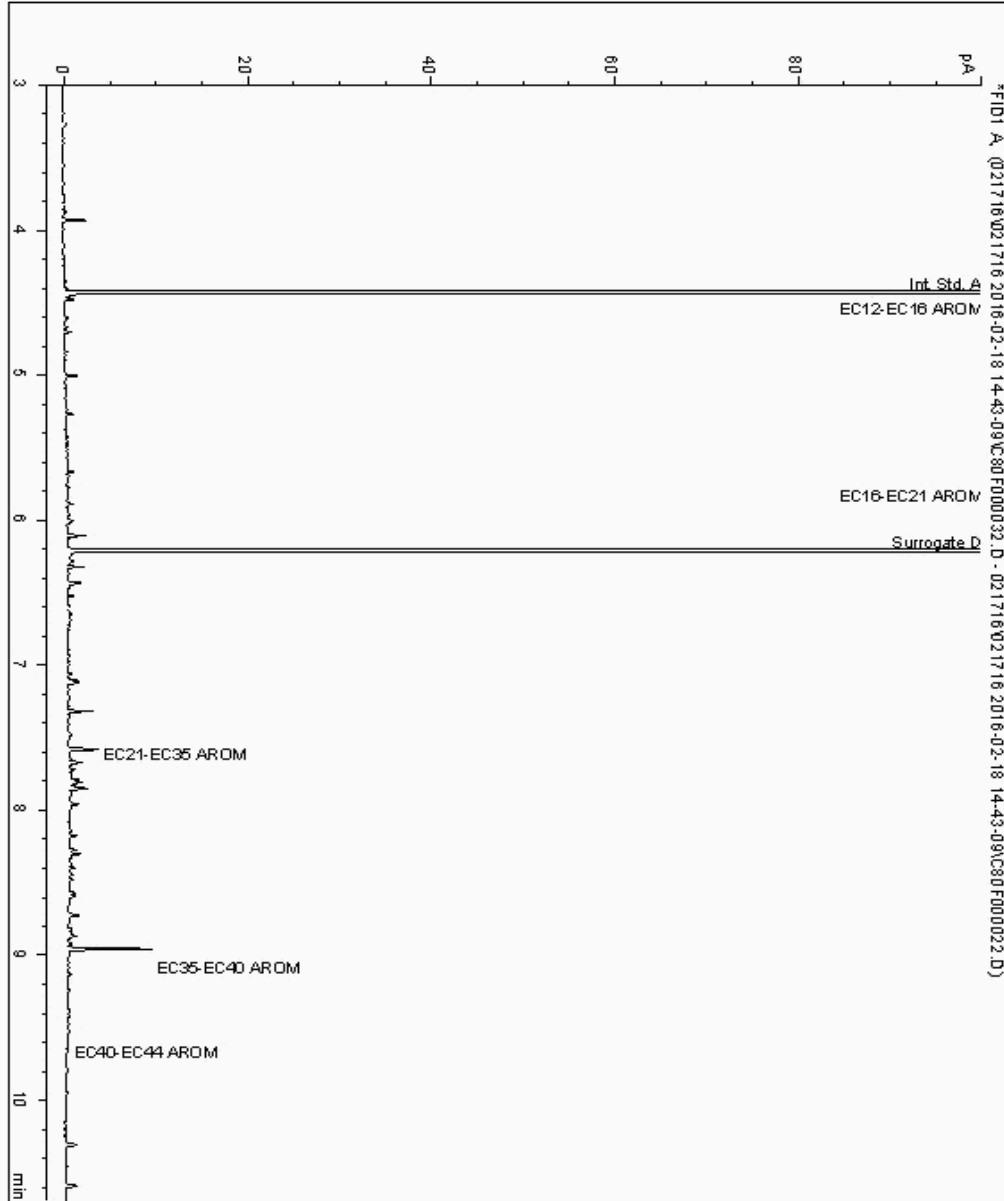
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12942645
Sample ID : PI01_1.5

Depth : 1.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 12203695-
Date Acquired : 18/02/16 18:09:28
Units : ppb
Dilution :
CF : 1
Multiplier : 1.015





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Location: Shell Blackhorse
Customer: AECOM
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Superseded Report:

Chromatogram

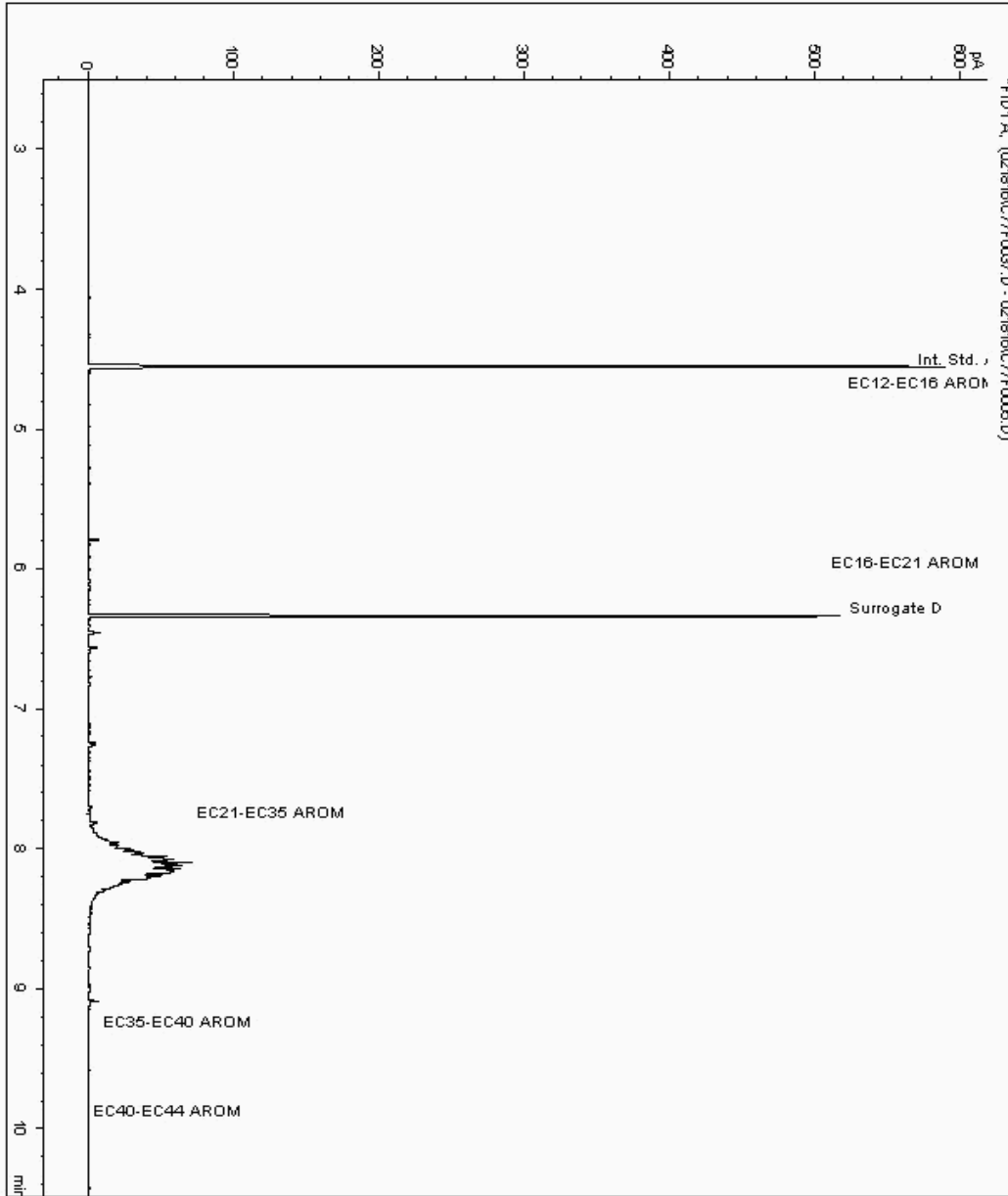
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 12943212
Sample ID : PI02_1.5

Depth : 1.50

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

Sample Identity: 12203704-
Date Acquired : 18/02/2016 22:18:05 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.999





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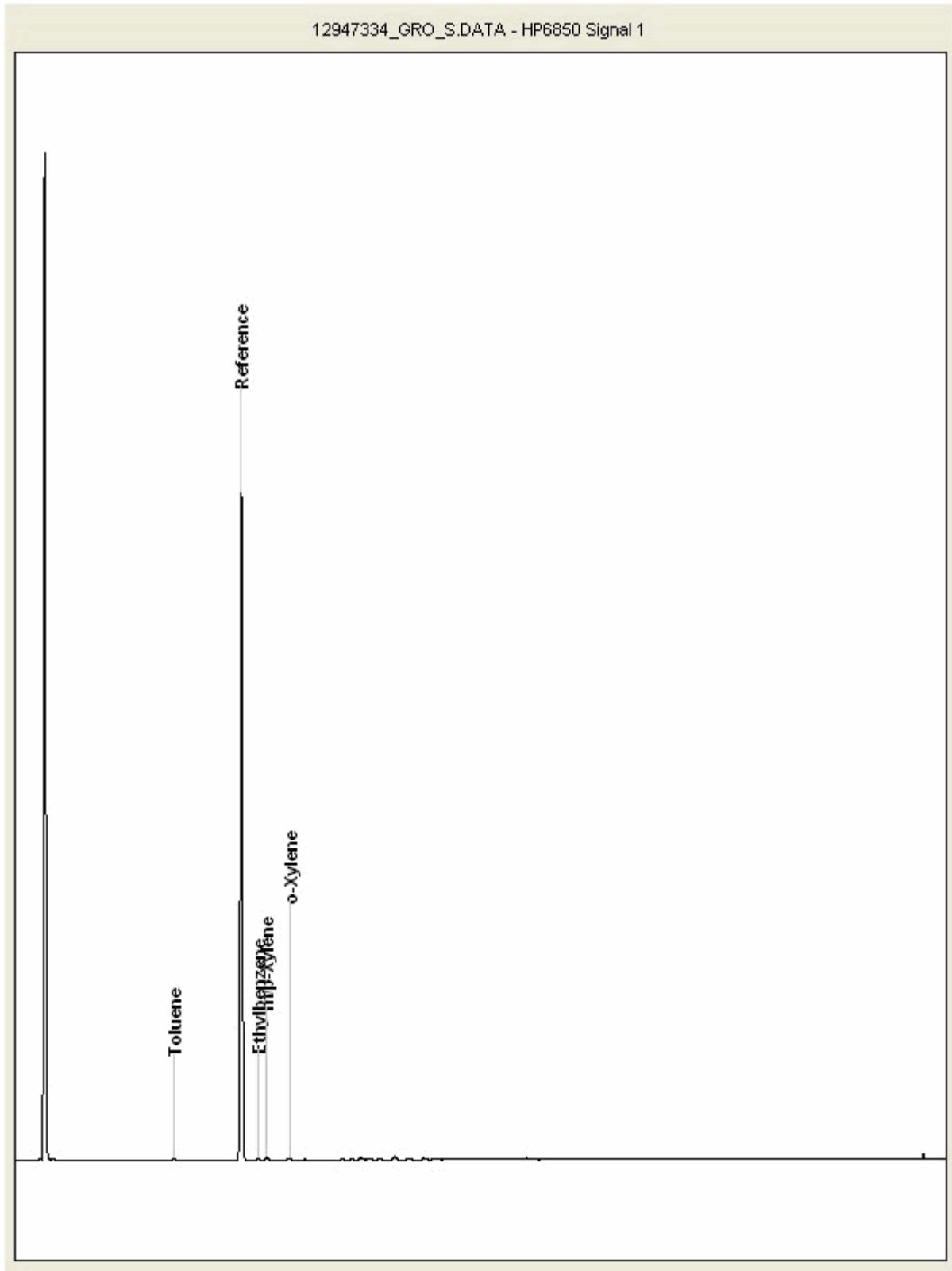
Order Number:
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Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12947334
Sample ID : PI02_1.5

Depth : 1.50





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Location: Shell Blackhorse
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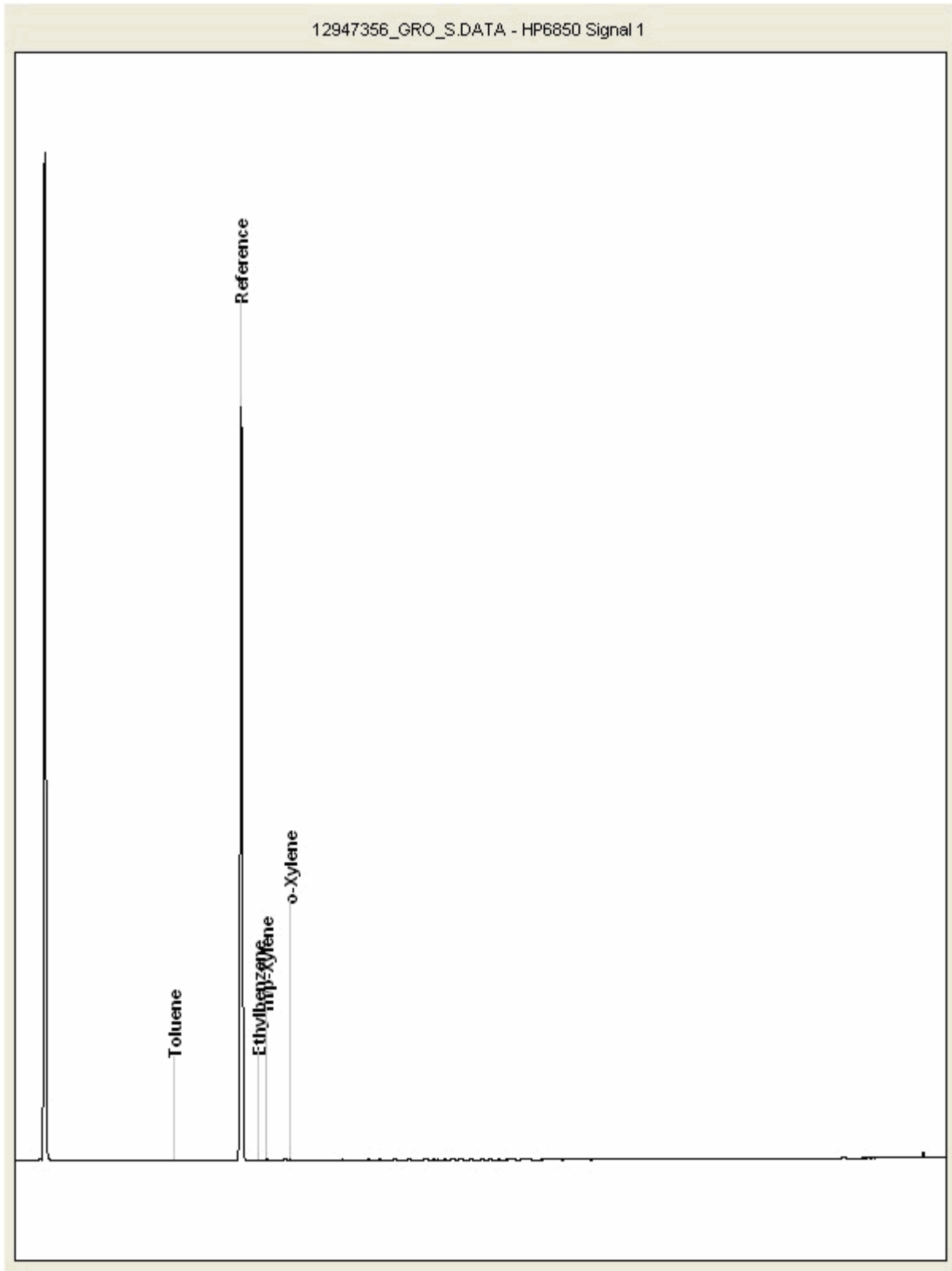
Order Number:
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Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12947356
Sample ID : PI01_1.5

Depth : 1.50





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Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXTERM	HFLC
PHENOLSBY GOMS	WET	DOM	SOXTERM	GCMS
HERBICIDES	D&C	HBXANACETONE	SOXTERM	GCMS
PESTICIDES	D&C	HBXANACETONE	SOXTERM	GCMS
EPH (DRO)	D&C	HBXANACETONE	END OVEREND	GCFD
EPH (MINOIL)	D&C	HBXANACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HBXANACETONE	END OVEREND	GCFD
EPH CWG BY GC	D&C	HBXANACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HBXANACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HBXANACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HBXANACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HBXANACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HFLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HFLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HFLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

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



SDG: 160217-33
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number:
Report Number: 350628
Superseded Report:

Appendix

General

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 6 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 (NDP). 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 (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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 leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

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.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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
Crystalline	White Asbestos
Amphibole	Brown Asbestos
Crystalline	Blue Asbestos
Fibrous Asbestos	-
Fibrous Amphibole	-
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.



AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Phil Allen

CERTIFICATE OF ANALYSIS

Date: 09 March 2016
Customer: H_URS_WIM
Sample Delivery Group (SDG): 160304-82
Your Reference: 46370438
Location: Shell Blackhorse
Report No: 352749

We received 2 samples on Friday March 04, 2016 and 2 of these samples were scheduled for analysis which was completed on Wednesday March 09, 2016. 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: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
13036319	Backfill 1			02/03/2016
13036323	Backfill 2			02/03/2016

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



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

SOLID Results Legend X Test N No Determination Possible	Lab Sample No(s)	13036319	13036323
	Customer Sample Reference	Backfill 1	Backfill 2
	AGS Reference		
	Depth (m)		
	Container	250g Amber Jar (AL)	60g VOC (ALE215) 250g Amber Jar (AL)
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2	X X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2	X X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2	X X
Oxygenates (S)	All	NDPs: 0 Tests: 2	X X
PAH by GCMS	All	NDPs: 0 Tests: 2	X X
Sample description	All	NDPs: 0 Tests: 2	X X
VOC MS (S)	All	NDPs: 0 Tests: 2	X X

SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<input type="checkbox"/> <0.063mm	fine	<input type="checkbox"/> 0.063mm - 0.1mm	medium	<input type="checkbox"/> 0.1mm - 2mm	coarse	<input type="checkbox"/> 2mm - 10mm	very coarse	<input type="checkbox"/> >10mm
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Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
13036319	Backfill 1		Light Brown	Stone/Soil	2 - 10 mm	Stones	None
13036323	Backfill 2		Light Brown	Sand	0.1 - 2 mm	Stones	None

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.



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Table with columns: Results Legend, Customer Sample R, Backfill 1, Backfill 2, Component, LOD/Units, Method. Includes data for Moisture Content Ratio, Ethanol, tert Butanol, Diisopropyl ether, and tert-butyl ethyl ether.



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

EPH CWG (Aromatic) GC (S)

Table with columns: Results Legend, Customer Sample R, Backfill 1, Backfill 2, Component, LOD/Units, Method. Includes rows for Aromatics >EC12-EC16, Aromatics >EC16-EC21, and Aromatics >EC21-EC35.



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

GRO by GC-FID (S)

Table with columns: Results Legend, Customer Sample R, Backfill 1, Backfill 2, Component, LOD/Units, Method. Rows include GRO Surrogate % recovery, Aliphatics >C5-C6, Aliphatics >C6-C8, Aliphatics >C8-C10, Aliphatics >C10-C12, Aromatics >EC5-EC7, Aromatics >EC7-EC8, Aromatics >EC8-EC10, Aromatics >EC10-EC12.



SDG: 160304-82
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60481674
 Report Number: 352749
 Superseded Report:

PAH by GCMS

Results Legend		Customer Sample R	Backfill 1	Backfill 2			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.		Soil/Solid	Soil/Solid			
aq	Aqueous / settled sample.		02/03/2016	02/03/2016			
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		04/03/2016	04/03/2016			
*	Subcontracted test.		160304-82	160304-82			
**	% 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		13036319	13036323			
(F)	Trigger breach confirmed						
1-5&*\$@	Sample deviation (see appendix)						
Component	LOD/Units		Method				
Naphthalene-d8 % recovery**	%	TM218	99.3	101			
Acenaphthene-d10 % recovery**	%	TM218	96.9	99.6			
Phenanthrene-d10 % recovery**	%	TM218	95.8	97.8			
Chrysene-d12 % recovery**	%	TM218	89.5	91.1			
Perylene-d12 % recovery**	%	TM218	86.2	89.5			
Naphthalene	<9 µg/kg	TM218	<9	9.41			
Acenaphthylene	<12 µg/kg	TM218	<12	<12	#	M	
Acenaphthene	<8 µg/kg	TM218	<8	<8	#	M	
Fluorene	<10 µg/kg	TM218	<10	<10	#	M	
Phenanthrene	<15 µg/kg	TM218	<15	17.9	#	M	
Anthracene	<16 µg/kg	TM218	<16	<16	#	M	
Fluoranthene	<17 µg/kg	TM218	<17	19.4	#	M	
Pyrene	<15 µg/kg	TM218	<15	17.4	#	M	
Benz(a)anthracene	<14 µg/kg	TM218	<14	<14	#	M	
Chrysene	<10 µg/kg	TM218	<10	<10	#	M	
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	#	M	
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	#	M	
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	#	M	
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	#	M	
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	#	M	
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	#	M	
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118			



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

VOC MS (S)

Table with columns: Results Legend, Customer Sample R, Backfill 1, Backfill 2, Component, LOD/Units, Method. Rows include Toluene-d8**, Methyl Tertiary Butyl Ether, Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, Tert-amyl methyl ether.



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
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)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		

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



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Test Completion Dates

Lab Sample No(s)	13036319	13036323
Customer Sample Ref.	Backfill 1	Backfill 2
AGS Ref.		
Depth		
Type	SOLID	SOLID

EPH CWG (Aliphatic) GC (S)	09-Mar-2016	09-Mar-2016
EPH CWG (Aromatic) GC (S)	09-Mar-2016	09-Mar-2016
GRO by GC-FID (S)	08-Mar-2016	08-Mar-2016
Oxygenates (S)	08-Mar-2016	08-Mar-2016
PAH by GCMS	08-Mar-2016	08-Mar-2016
Sample description	07-Mar-2016	07-Mar-2016
VOC MS (S)	08-Mar-2016	08-Mar-2016



SDG: 160304-82
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60481674
 Report Number: 352749
 Superseded Report:

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1313
Total Aliphatics >C12-C35	TM173	90.0 70.80 : 111.51

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1313
Total Aromatics >EC12-EC35	TM173	88.0 65.21 : 121.32

GRO by GC-FID (S)

Component	Method Code	QC 1333
Benzene by GC (Moisture Corrected)	TM089	85.5 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	83.5 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	82.5 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	89.0 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	85.0 80.03 : 117.19
QC	TM089	86.55 69.60 : 117.16
Toluene by GC (Moisture Corrected)	TM089	84.0 82.06 : 117.54

Oxygenates (S)

Component	Method Code	QC 1343
Benzene raw	TM288	111.25 77.75 : 124.62
Diisopropyl ether raw	TM288	114.25 81.07 : 125.84
Ethanol raw	TM288	89.0 12.71 : 182.13
Ethylbenzene raw	TM288	121.25 86.91 : 124.43
o-Xylene raw	TM288	108.25 82.52 : 115.85
p/m-Xylene raw	TM288	120.38 82.74 : 124.08
tert Butanol raw	TM288	92.5 27.29 : 165.57
tert-amyl methyl ether raw	TM288	111.5 82.15 : 125.05



SDG: 160304-82
 Job: H_URS_WIM-282
 Client Reference: 46370438

Location: Shell Blackhorse
 Customer: AECOM
 Attention: Phil Allen

Order Number: 60481674
 Report Number: 352749
 Superseded Report:

Oxygenates (S)

		QC 1343
tert-butyl ethyl ether raw	TM288	112.25 81.24 : 125.04
tert-butyl methyl ether raw	TM288	110.75 80.97 : 130.09
Toluene raw	TM288	103.0 78.97 : 116.51

PAH by GCMS

Component	Method Code	QC 1307
Acenaphthene	TM218	103.5 78.84 : 114.36
Acenaphthylene	TM218	97.5 65.50 : 119.50
Anthracene	TM218	99.0 75.54 : 110.88
Benz(a)anthracene	TM218	111.0 78.02 : 127.38
Benzo(a)pyrene	TM218	110.0 79.21 : 128.01
Benzo(b)fluoranthene	TM218	108.5 80.00 : 125.00
Benzo(ghi)perylene	TM218	101.5 80.11 : 120.52
Benzo(k)fluoranthene	TM218	107.0 78.77 : 120.72
Chrysene	TM218	102.5 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	103.0 76.39 : 122.63
Fluoranthene	TM218	105.0 77.25 : 117.75
Fluorene	TM218	104.0 79.28 : 117.35
Indeno(123cd)pyrene	TM218	103.0 78.87 : 122.50
Naphthalene	TM218	101.0 74.75 : 118.25
Phenanthrene	TM218	104.0 78.61 : 113.98
Pyrene	TM218	102.5 76.15 : 115.26

VOC MS (S)

Component	Method Code	QC 1322
1,1,1,2-tetrachloroethane	TM116	94.8 83.24 : 124.28
1,1,1-Trichloroethane	TM116	99.0 81.77 : 121.07
1,1,2-Trichloroethane	TM116	91.0 78.55 : 105.28
1,1-Dichloroethane	TM116	102.8 74.63 : 123.32



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

VOC MS (S)

		QC 1322
1,2-Dichloroethane	TM116	109.0 86.58 : 129.62
1,4-Dichlorobenzene	TM116	100.8 73.23 : 116.39
2-Chlorotoluene	TM116	100.0 69.22 : 110.64
4-Chlorotoluene	TM116	92.0 68.57 : 106.26
Benzene	TM116	107.8 84.33 : 124.27
Carbon Disulphide	TM116	98.2 77.20 : 122.80
Carbontetrachloride	TM116	106.4 84.20 : 119.90
Chlorobenzene	TM116	98.8 85.28 : 129.96
Chloroform	TM116	98.8 82.73 : 119.72
Chloromethane	TM116	123.6 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	98.6 80.55 : 123.13
Dibromomethane	TM116	100.2 73.40 : 116.60
Dichloromethane	TM116	107.4 81.68 : 125.21
Ethylbenzene	TM116	103.4 81.09 : 116.49
Hexachlorobutadiene	TM116	102.4 30.92 : 132.28
Isopropylbenzene	TM116	103.6 64.86 : 120.15
Naphthalene	TM116	102.8 75.39 : 124.61
o-Xylene	TM116	86.4 69.50 : 105.49
p/m-Xylene	TM116	97.9 76.97 : 121.75
Sec-Butylbenzene	TM116	108.6 49.99 : 131.78
Tetrachloroethene	TM116	104.6 87.96 : 133.65
Toluene	TM116	100.6 79.23 : 114.58
Trichloroethene	TM116	97.2 81.65 : 115.27
Trichlorofluoromethane	TM116	96.8 81.26 : 121.09
Vinyl Chloride	TM116	108.0 59.68 : 118.68



CERTIFICATE OF ANALYSIS

Validated

SDG:	160304-82	Location:	Shell Blackhorse	Order Number:	60481674
Job:	H_URS_WIM-282	Customer:	AECOM	Report Number:	352749
Client Reference:	46370438	Attention:	Phil Allen	Superseded Report:	

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: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Chromatogram

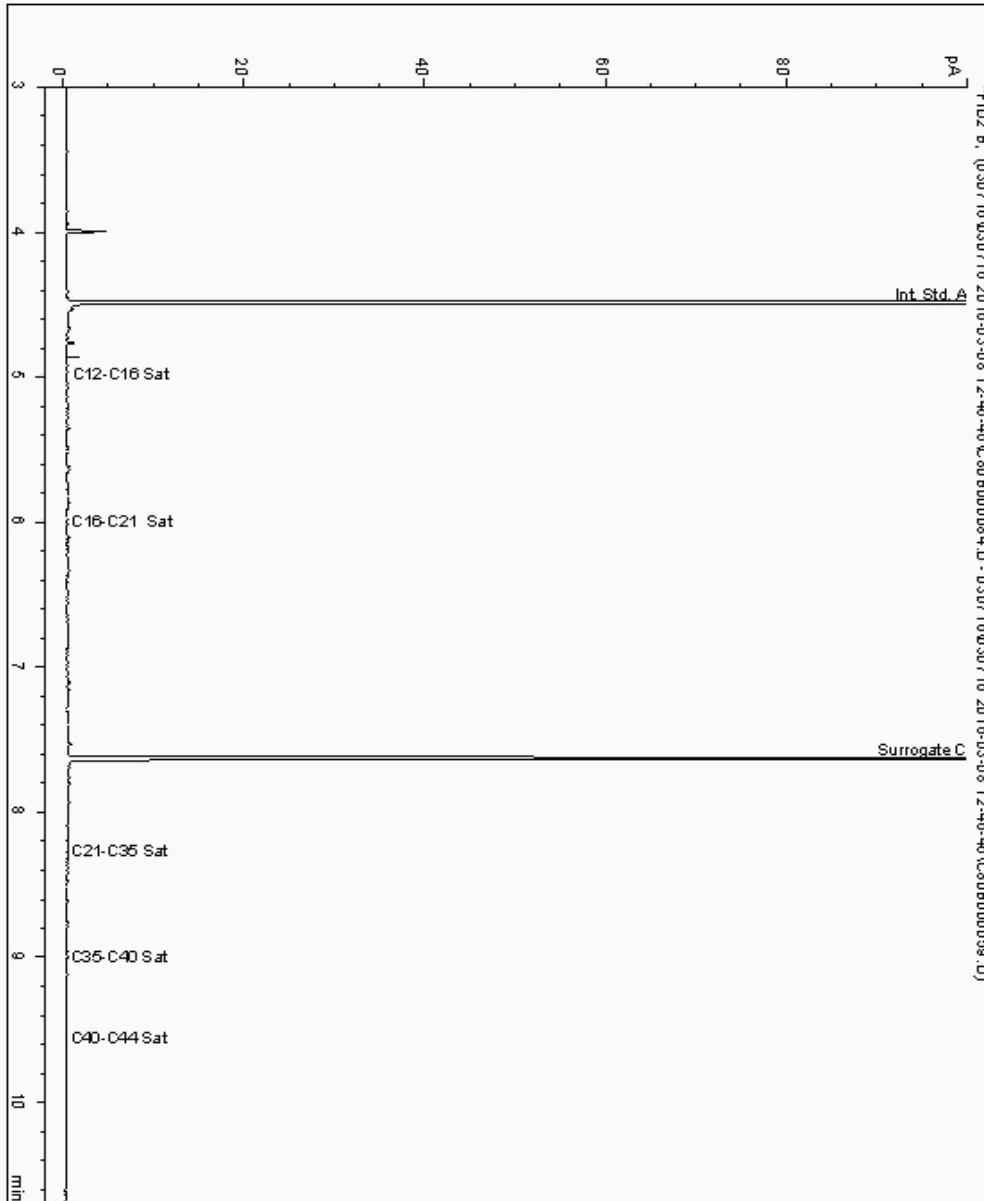
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13045108
Sample ID : Backfill 2

Depth :

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

Sample Identity: 12288574-
Date Acquired : 08/03/16 20:58:55
Units : ppb
Dilution :
CF : 1
Multiplier : 0.995





SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Chromatogram

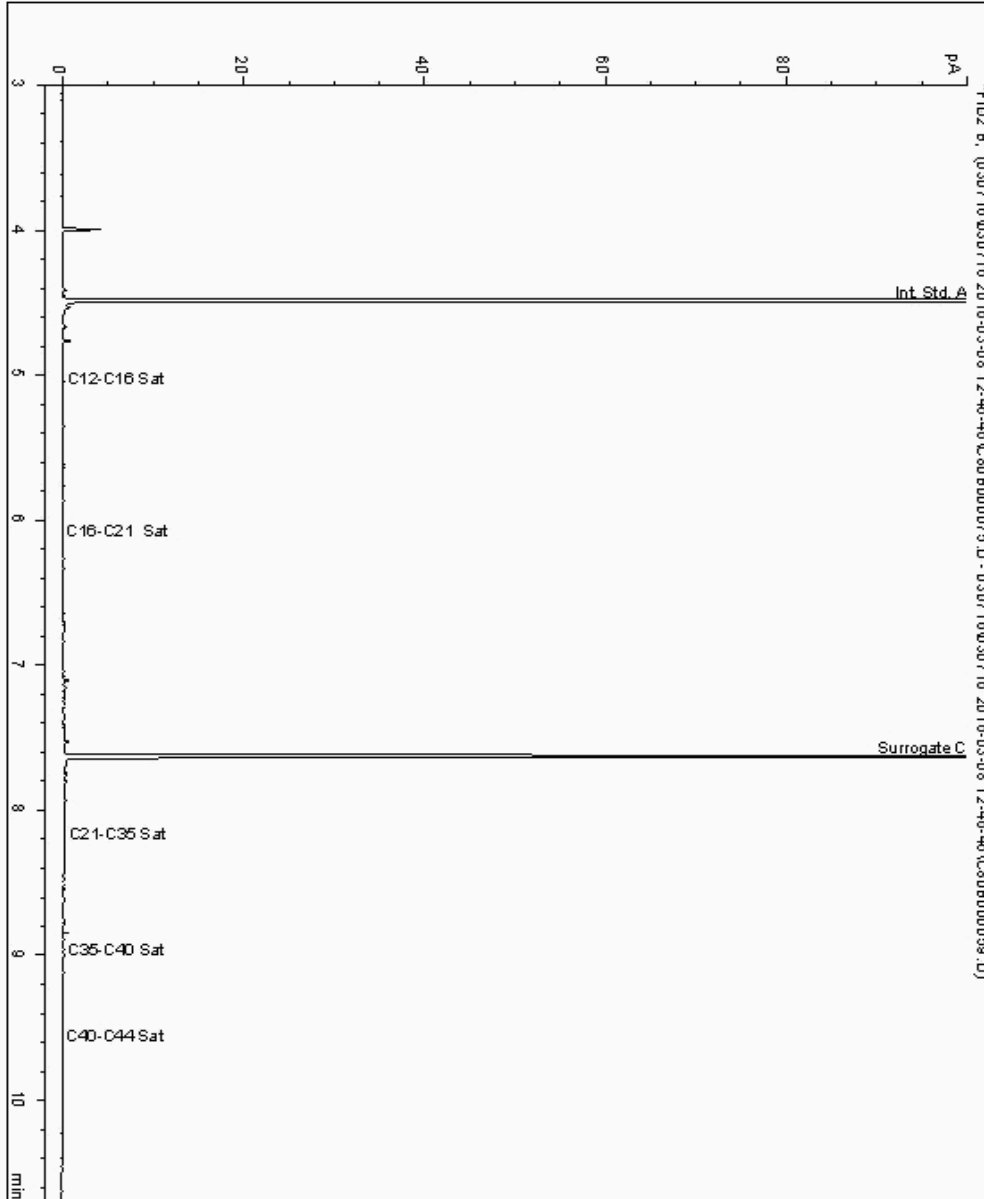
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 13045130
Sample ID : Backfill 1

Depth :

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

Sample Identity: 12288564-
Date Acquired : 08/03/16 18:13:23
Units : ppb
Dilution :
CF : 1
Multiplier : 1.011





SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Chromatogram

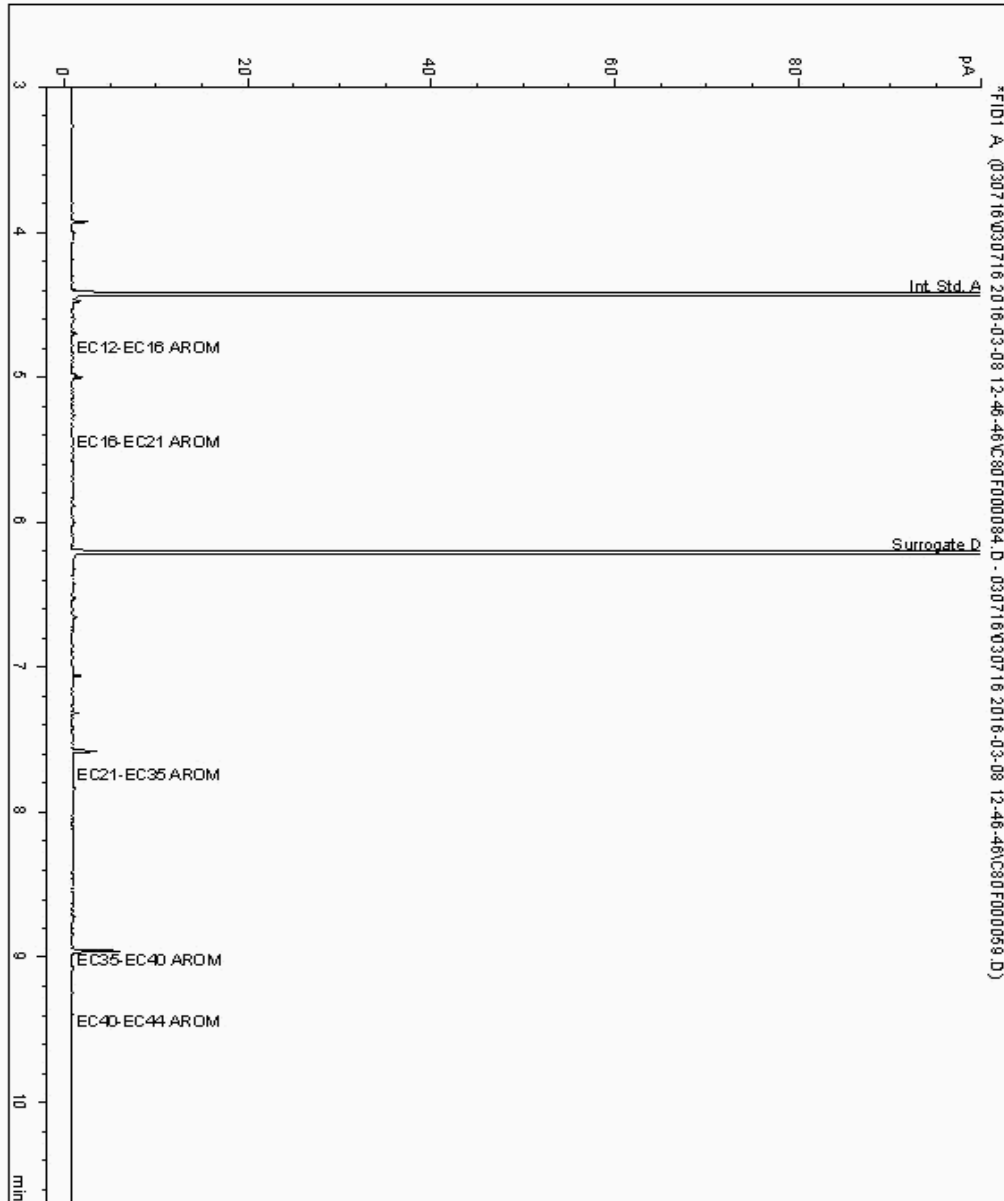
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13045108
Sample ID : Backfill 2

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 12288575-
Date Acquired : 08/03/16 20:58:55
Units : ppb
Dilution :
CF : 1
Multiplier : 0.995





SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Chromatogram

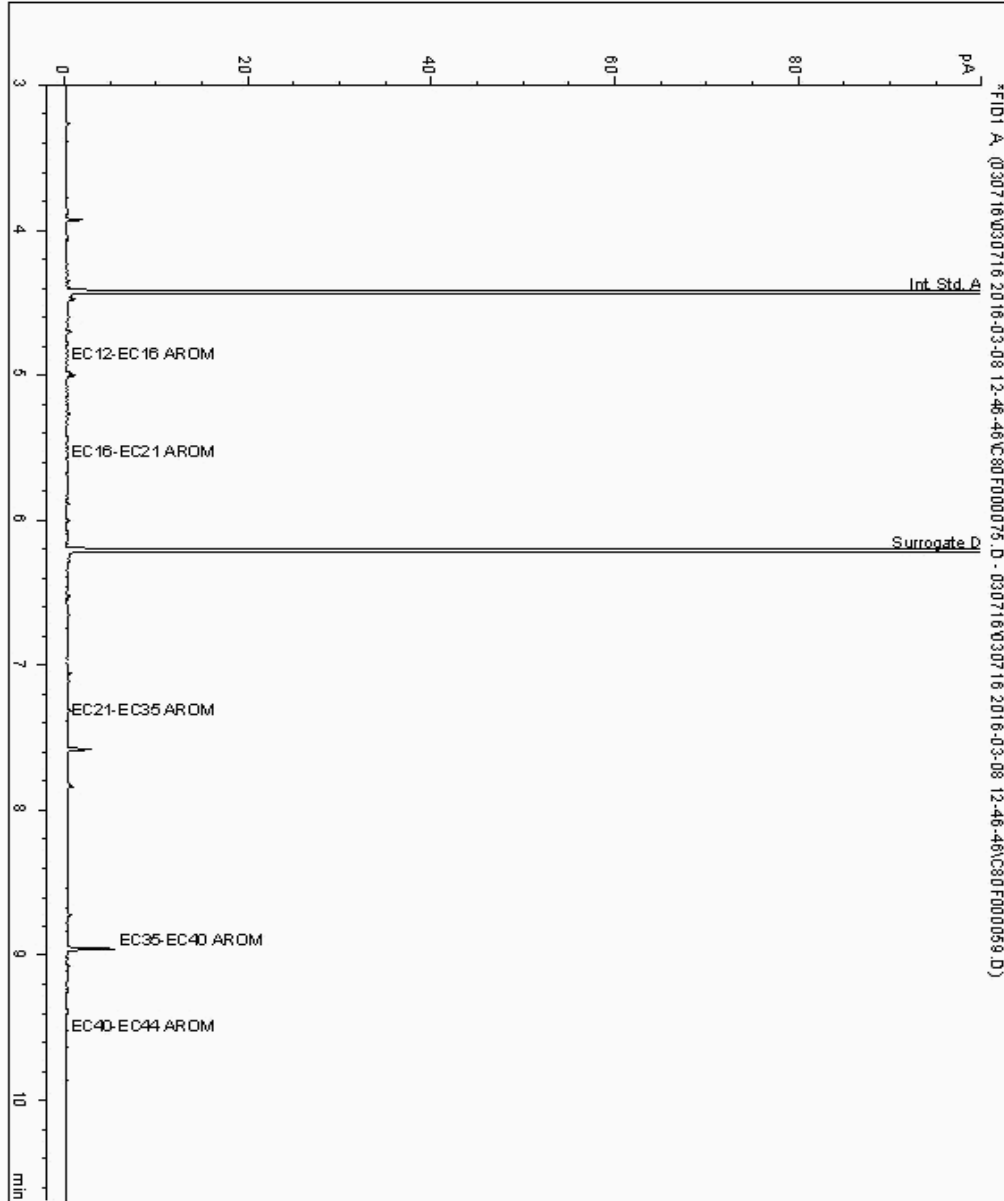
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 13045130
Sample ID : Backfill 1

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 12288565-
Date Acquired : 08/03/16 18:13:23
Units : ppb
Dilution :
CF : 1
Multiplier : 1.011





SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

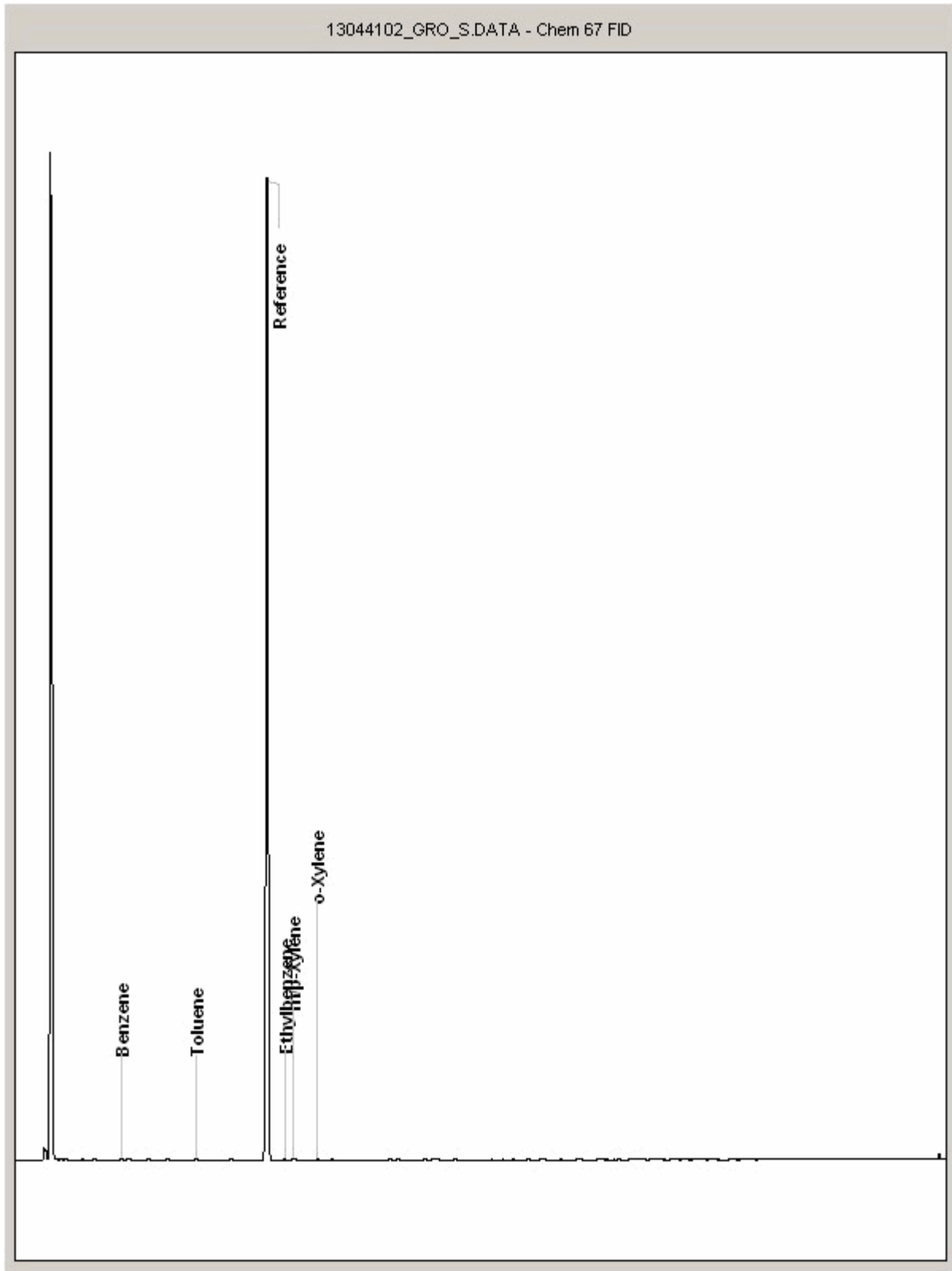
Order Number: 60481674
Report Number: 352749
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 13044102
Sample ID : Backfill 2

Depth :





SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

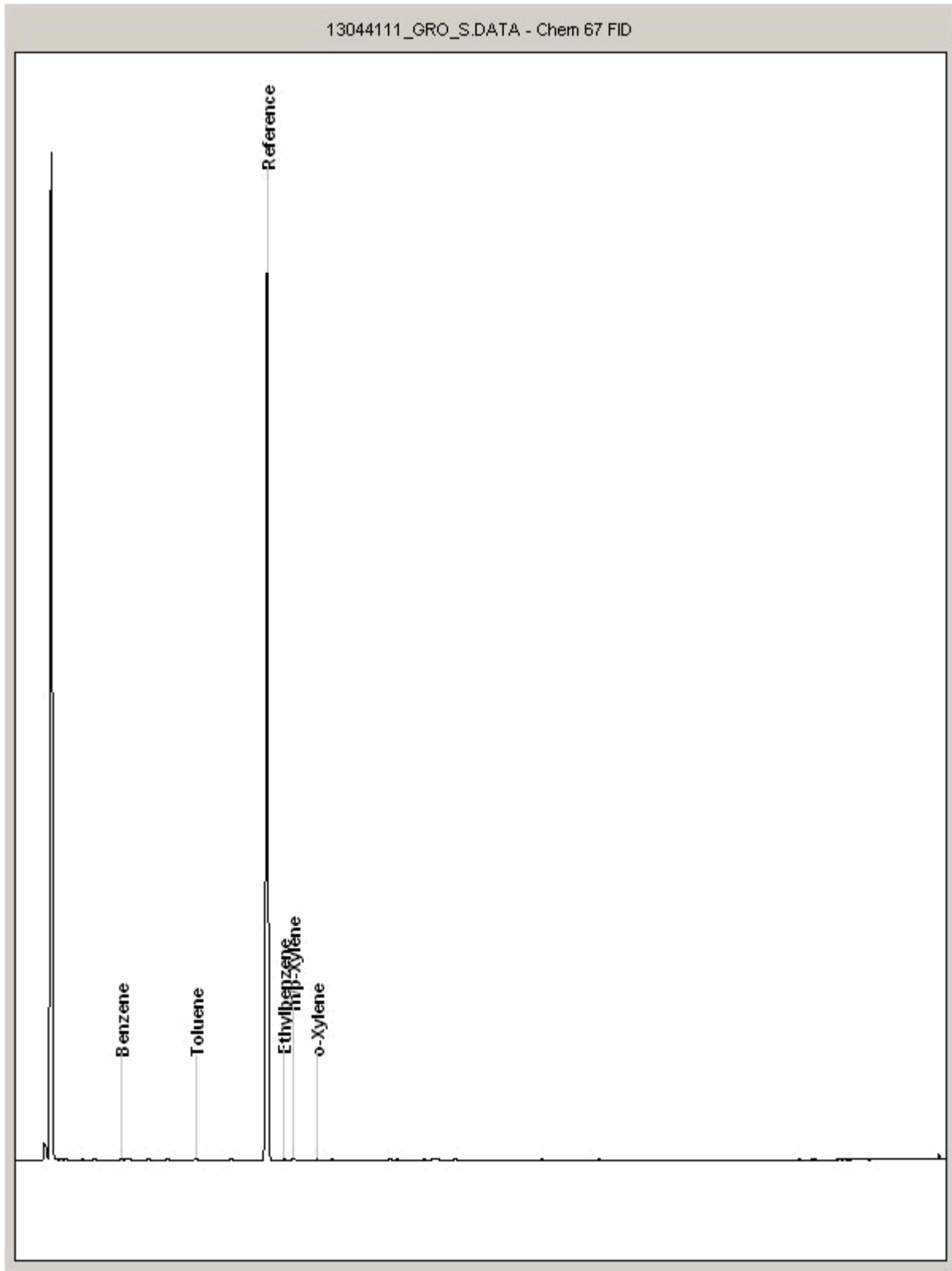
Order Number: 60481674
Report Number: 352749
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 13044111
Sample ID : Backfill 1

Depth :





SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
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 Leach tests, flash point, ammonium as NH₄ by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS 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 both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos 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 screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

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. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

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 14).

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

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.

19. 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.

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

21. 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.

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

23. 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.

24. 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 C4 -C10 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
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXHERM	HFLC
PHENOLSBY GOMS	WET	DOM	SOXHERM	GCMS
HERBICIDES	D&C	HBXANEACETONE	SOXHERM	GCMS
PESTICIDES	D&C	HBXANEACETONE	SOXHERM	GCMS
EPH (DRO)	D&C	HBXANEACETONE	END OVEREND	GCFD
EPH (MINOIL)	D&C	HBXANEACETONE	END OVEREND	GCFD
EPH (CLEANED UP)	D&C	HBXANEACETONE	END OVEREND	GCFD
EPH CWG BY GC	D&C	HBXANEACETONE	END OVEREND	GCFD
PCB TOT / PCB CON	D&C	HBXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HBXANEACETONE	MICROWAVE TM18.	GCMS
C8-C40 (C8-C40) EZ FLASH	WET	HBXANEACETONE	SHAKER	GCEZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HBXANEACETONE	SHAKER	GCEZ
SEM VOLATILE ORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
MINERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCFD
PCB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVOC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DOM	SOLID PHASE EXTRACTION	HFLC
PEST COPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (R)	TCE	LIQUID/LIQUID SHAKE	HFLC
MINERAL OIL by R	TCE	LIQUID/LIQUID SHAKE	HFLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', 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).

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 MDHS 100.

The identification of asbestos containing materials 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.

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



SDG: 160304-82
Job: H_URS_WIM-282
Client Reference: 46370438

Location: Shell Blackhorse
Customer: AECOM
Attention: Phil Allen

Order Number: 60481674
Report Number: 352749
Superseded Report:

Appendix

General

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 6 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 (NDP). 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 (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

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 leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

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.

24. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before preservation was performed
\$	Sampled on date not provided
+	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials 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
Crystalline	White Asbestos
Amphibole	Brown Asbestos
Crystalline	Blue Asbestos
Fibrous Asbestos	-
Fibrous Amphibole	-
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.

Field Duplicates (Gas)
 Filter: ALL and Site_ID IN('12038435_E

SDG	151210-90	151210-90
Field ID	VP201 142	VP201(DUP) 210
Sampled_Date-Time	09/12/2015	09/12/2015

Parameter	Units	Method	Detection Limit		
BTEX					
Benzene	mg/m3		0.00667	0.00573	15
Toluene	mg/m3		0.0412	0.0342	19
Ethylbenzene	mg/m3		0.00838	0.00675	22
Xylene (m & p)	mg/m3		0.0191	0.0218	13
Xylene (o)	mg/m3		0.00619	0.00757	20
Gas VOC					
Decane	mg/m3	0.0008	<0.0008	<0.0008	0
Dodecane	mg/m3		0.00439	0.00455	4
Octane	mg/m3		0.00294	<0.0025	16
GRO_C6-C12	mg/m3		0.924	0.927	0
Other					
1,2,3-trimethylbenzene	mg/m3	0.003	<0.003	<0.003	0
Oxygenates					
Diisopropyl Ether	mg/m3	0.005	<0.005	<0.005	0
Ethyl Tert Butyl Ether	mg/m3	0.005	<0.005	<0.005	0
Methyl Tert Butyl Ether	mg/m3	0.005	<0.005	<0.005	0
Tert Amyl Methyl Ether	mg/m3	0.005	<0.005	<0.005	0
n-Hexane	mg/m3		0.0221	0.0212	4
PAH					
Naphthalene	mg/m3	0.002	<0.002	<0.002	0
SVOC					
1-Methylnaphthalene	mg/m3	0.004	<0.004	<0.004	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Field Duplicates (Water)
Filter: ALL and Site_ID IN('12038435_')

SDG	150922-33	150922-33	151210-90	151210-90
Field ID	MW4	Dup	MW4	DUP01
Sampled_Date-Time	21/09/2015	21/09/2015	09/12/2015	09/12/2015
		RPD		RPD

Parameter	Units	Method	Detection Limit					
BTEX								
Benzene	µg/L	1	<1	<1	0	<1	<1	0
Toluene	µg/L	1	<1	<1	0	<1	<1	0
Ethylbenzene	µg/L	1	<1	<1	0	<1	<1	0
Xylene (m & p)	µg/L	1	<1	<1	0	<1	<1	0
Xylene (o)	µg/L	1	<1	<1	0	<1	<1	0
Metals								
Arsenic (Filtered)	µg/L	0.12	1.48	1.48	0			
Boron (Filtered)	µg/L	9.4	23.3	27.3	16			
Cadmium (Filtered)	µg/L	0.1	<0.1	<0.1	0			
Chromium (hexavalent)	µg/l	30	<30	<30	0			
Chromium (III+VI) (Filtered)	µg/L	0.22	2.43	1.85	27			
Cobalt (Filtered)	µg/L	0.06	0.254	0.256	1			
Copper (Filtered)	µg/L	0.85	5.04	4.84	4			
Lead (Filtered)	µg/L	0.02	0.133	0.137	3			
Mercury (Filtered)	µg/L	0.01	<0.01	<0.01	0			
Molybdenum (Filtered)	µg/L	0.24	<0.24	<0.24	0			
Nickel (Filtered)	µg/L	0.15	3.37	3.05	10			
Selenium (Filtered)	µg/L	0.39	<0.39	<0.39	0			
Tin (Filtered)	µg/L	0.36	<0.36	<0.36	0			
Zinc (Filtered)	µg/L	0.41	5.51	11.5	70			
Misc								
Ferrous Iron	µg/l	100	<100	<100	0			
Manganese (Filtered)	µg/L	0.04	1.13	0.992	13			
Methane	µg/L	1	<2.27	<2.27	0			
Nitrate (as NO3-)	mg/l	0.3	26	26.5	2			
Sulphate (soluble)	mg/l	2	45.5	48.2	6			
Oxygenates								
Diisopropyl Ether	µg/L	1	<1	<1	0	<1	<1	0
Ethyl Tert Butyl Ether	µg/L	1	<1	<1	0	<1	<1	0
Methyl Tert Butyl Ether	µg/L	1	<1	<1	0	<1	<1	0
Tert Amyl Methyl Ether	µg/L	1	<1	<1	0	<1	<1	0
Tert Butyl Alcohol	µg/L	10	<10	<10	0	<10	<10	0
Ethanol	µg/L	50	<50	<50	0	<50	<50	0
PAH								
Acenaphthene	µg/L	0.015	<0.015	<0.015	0	<0.015	<0.015	0
Acenaphthylene	µg/L	0.011	<0.011	<0.011	0	<0.011	<0.011	0
Anthracene	µg/L	0.015	<0.015	<0.015	0	<0.015	<0.015	0
Benzo(a)anthracene	µg/L	0.017	<0.017	<0.017	0	<0.017	<0.017	0
Benzo(a)pyrene	µg/L	0.009	<0.009	<0.009	0	<0.009	<0.009	0
Benzo(b)fluoranthene	µg/L	0.023	<0.023	<0.023	0	<0.023	<0.023	0
Benzo(g,h,i)perylene	µg/L	0.016	<0.016	<0.016	0	<0.016	<0.016	0
Benzo(k)fluoranthene	µg/L	0.027	<0.027	<0.027	0	<0.027	<0.027	0
Chrysene	µg/L	0.013	<0.013	<0.013	0	<0.013	<0.013	0
Dibenz(a,h)anthracene	µg/L	0.016	<0.016	<0.016	0	<0.016	<0.016	0
Fluoranthene	µg/L	0.017	<0.017	<0.017	0	<0.017	<0.017	0
Fluorene	µg/L	0.014	<0.014	<0.014	0	<0.014	<0.014	0
Indeno(1,2,3-c,d)pyrene	µg/L	0.014	<0.014	<0.014	0	<0.014	<0.014	0
Naphthalene	µg/L	0.1	<0.1	<0.1	0	<0.1	<0.1	0
Phenanthrene	µg/L	0.022	<0.022	<0.022	0	<0.022	<0.022	0
Pyrene	µg/L	0.015	<0.015	<0.015	0	<0.015	<0.015	0
PAH 16 Total	µg/L	0.344	<0.344	<0.344	0	<0.344	<0.344	0
TPH								
>EC5-EC7 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>EC7-EC8 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>EC8-EC10 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>EC10-EC12 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>EC12-EC16 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>EC16-EC21 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>EC21-EC35 Aromatics	µg/L	10	<10	<10	0	<10	<10	0
>C5-C6 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0
>C6-C8 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0
>C8-C10 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0
>C10-C12 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0
>C12-C16 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0
>C16-C21 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0
>C21-C35 Aliphatics	µg/L	10	<10	<10	0	<10	<10	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Field Blanks (Water)
Filter: SDG in('160304-82','16021

SDG	150922-33	151210-90	150922-33	151210-90
Field_ID	EB	EQT BLANK	Trip Blank	TRIP BLANK BCBQ5527V
Sampled_Date-Time	21/09/2015	09/12/2015	21/09/2015	09/12/2015
Sample_Type	Rinsate	Rinsate	Trip_B	Trip_B

ChemName	Units	EQL				
BTEX						
Benzene	µg/L	1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1
Ethylbenzene	µg/L	1	<1	<1	<1	<1
Xylene (m & p)	µg/L	1	<1	<1	<1	<1
Xylene (o)	µg/L	1	<1	<1	<1	<1
Xylene Total	µg/L	2	<2	<2	<2	<2
Metals						
Arsenic (Filtered)	µg/L	0.12	2.56			
Boron (Filtered)	µg/L	9.4	34.5			
Cadmium (Filtered)	µg/L	0.1	<0.1			
Chromium (hexavalent)	µg/l	30	<30			
Chromium (III+VI) (Filtered)	µg/L	0.22	7.84			
Cobalt (Filtered)	µg/L	0.06	0.213			
Copper (Filtered)	µg/L	0.85	130			
Lead (Filtered)	µg/L	0.02	0.549			
Mercury (Filtered)	µg/L	0.01	<0.01			
Molybdenum (Filtered)	µg/L	0.24	0.3			
Nickel (Filtered)	µg/L	0.15	3.29			
Selenium (Filtered)	µg/L	0.39	0.583			
Tin (Filtered)	µg/L	0.36	<0.36			
Zinc (Filtered)	µg/L	0.41	101			
Misc						
Ferrous Iron	µg/l	100	<100			
Manganese (Filtered)	µg/L	0.04	0.398			
Methane	µg/L	1	<2.27			
Nitrate (as NO3-)	mg/l	0.3	27.2			
Sulphate (soluble)	mg/l	2	48.5			
Oxygenates						
Diisopropyl Ether	µg/L	1	<1			
Ethyl Tert Butyl Ether	µg/L	1	<1			
Methyl Tert Butyl Ether	µg/L	1	<1			
Tert Amyl Methyl Ether	µg/L	1	<1			
Tert Butyl Alcohol	µg/L	10	<10			
Ethanol	µg/L	50	<50			
PAH						
Acenaphthene	µg/L	0.015	<0.015			
Acenaphthylene	µg/L	0.011	<0.011			
Anthracene	µg/L	0.015	<0.015			
Benzo(a)anthracene	µg/L	0.017	<0.017			
Benzo(a)pyrene	µg/L	0.009	<0.009			
Benzo(b)fluoranthene	µg/L	0.023	<0.023			
Benzo(g,h,i)perylene	µg/L	0.016	<0.016			
Benzo(k)fluoranthene	µg/L	0.027	<0.027			
Chrysene	µg/L	0.013	<0.013			
Dibenz(a,h)anthracene	µg/L	0.016	<0.016			
Fluoranthene	µg/L	0.017	<0.017			
Fluorene	µg/L	0.014	<0.014			
Indeno(1,2,3-c,d)pyrene	µg/L	0.014	<0.014			
Naphthalene	µg/L	0.1	<0.1			
Phenanthrene	µg/L	0.022	<0.022			
Pyrene	µg/L	0.015	<0.015			
PAH 16 Total	µg/L	0.344	<0.344			
TPH						
>EC5-EC7 Aromatics	µg/L	10	<10			
>EC7-EC8 Aromatics	µg/L	10	<10			
>EC8-EC10 Aromatics	µg/L	10	<10			
>EC10-EC12 Aromatics	µg/L	10	<10			
>EC12-EC16 Aromatics	µg/L	10	<10			
>EC16-EC21 Aromatics	µg/L	10	<10			
>EC21-EC35 Aromatics	µg/L	10	<10			
>C5-C6 Aliphatics	µg/L	10	<10			
>C6-C8 Aliphatics	µg/L	10	<10			
>C8-C10 Aliphatics	µg/L	10	<10			
>C10-C12 Aliphatics	µg/L	10	<10			
>C12-C16 Aliphatics	µg/L	10	<10			
>C16-C21 Aliphatics	µg/L	10	<10			
>C21-C35 Aliphatics	µg/L	10	<10			

Field Blanks (Water)
 Filter: SDG in('160304-82','16021

SDG
Field_ID
Sampled_Date-Time
Sample_Type

ChemName	Units	EQL
BTEX		
Benzene	µg/L	1
Toluene	µg/L	1
Ethylbenzene	µg/L	1
Xylene (m & p)	µg/L	1
Xylene (o)	µg/L	1
Xylene Total	µg/L	2
Metals		
Arsenic (Filtered)	µg/L	0.12
Boron (Filtered)	µg/L	9.4
Cadmium (Filtered)	µg/L	0.1
Chromium (hexavalent)	µg/l	30
Chromium (III+VI) (Filtered)	µg/L	0.22
Cobalt (Filtered)	µg/L	0.06
Copper (Filtered)	µg/L	0.85
Lead (Filtered)	µg/L	0.02
Mercury (Filtered)	µg/L	0.01
Molybdenum (Filtered)	µg/L	0.24
Nickel (Filtered)	µg/L	0.15
Selenium (Filtered)	µg/L	0.39
Tin (Filtered)	µg/L	0.36
Zinc (Filtered)	µg/L	0.41
Misc		
Ferrous Iron	µg/l	100
Manganese (Filtered)	µg/L	0.04
Methane	µg/L	1
Nitrate (as NO3-)	mg/l	0.3
Sulphate (soluble)	mg/l	2
Oxygenates		
Diisopropyl Ether	µg/L	1
Ethyl Tert Butyl Ether	µg/L	1
Methyl Tert Butyl Ether	µg/L	1
Tert Amyl Methyl Ether	µg/L	1
Tert Butyl Alcohol	µg/L	10
Ethanol	µg/L	50
PAH		
Acenaphthene	µg/L	0.015
Acenaphthylene	µg/L	0.011
Anthracene	µg/L	0.015
Benzo(a)anthracene	µg/L	0.017
Benzo(a)pyrene	µg/L	0.009
Benzo(b)fluoranthene	µg/L	0.023
Benzo(g,h,i)perylene	µg/L	0.016
Benzo(k)fluoranthene	µg/L	0.027
Chrysene	µg/L	0.013
Dibenz(a,h)anthracene	µg/L	0.016
Fluoranthene	µg/L	0.017
Fluorene	µg/L	0.014
Indeno(1,2,3-c,d)pyrene	µg/L	0.014
Naphthalene	µg/L	0.1
Phenanthrene	µg/L	0.022
Pyrene	µg/L	0.015
PAH 16 Total	µg/L	0.344
TPH		
>EC5-EC7 Aromatics	µg/L	10
>EC7-EC8 Aromatics	µg/L	10
>EC8-EC10 Aromatics	µg/L	10
>EC10-EC12 Aromatics	µg/L	10
>EC12-EC16 Aromatics	µg/L	10
>EC16-EC21 Aromatics	µg/L	10
>EC21-EC35 Aromatics	µg/L	10
>C5-C6 Aliphatics	µg/L	10
>C6-C8 Aliphatics	µg/L	10
>C8-C10 Aliphatics	µg/L	10
>C10-C12 Aliphatics	µg/L	10
>C12-C16 Aliphatics	µg/L	10
>C16-C21 Aliphatics	µg/L	10
>C21-C35 Aliphatics	µg/L	10

[Contents](#)

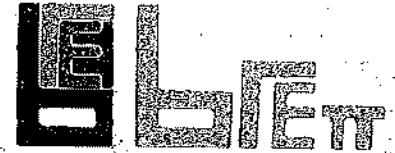
Surrogate Variation > 25% or outside lab LCL or UCL or outside lab LCL or UCL

SDG	Sample_Type	Matrix_Type	SampleCode	Field_ID	Depth	Sampled_Date_Time	Compound	Recovery %	Unit	LCL	UCL
151203-38	Normal	Soil	12562506	VP201	0.500	01/12/2015	GRO Surrogate %	72 %			
151204-91	Normal	Soil	12575735	SB201_2.5	2.500 - 2.500	02/12/2015	GRO Surrogate %	131 %			
151210-90	Normal	Soil	12613830	EXD06	2.300	09/12/2015	GRO Surrogate %	126 %			
160115-31	Normal	Soil	12755557	EXA01	2.500	13/01/2016	d8-Naphthalene (SS)	127 %			
160116-71	Normal	Soil	12762584	EXA10	4.000 - 5.000	14/01/2016	GRO Surrogate %	151 %			

APPENDIX G IMPORTED FILL DOCUMENTS

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel: 01932 571895
 Fax: 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd		TIME 09:59	DATE 01/02/16	TICKET No. 30961064
ACCOUNT CODE 5102902	ORDER NO. 300043 47259	DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
HAULIER NAME Brett Aggregate Western		FLEET CODE ZWEST		ROAD MILES 9.15
WASTE CARRIER LICENCE DETAILS		DRIVER NAME Marinel Modre		REGISTRATION GN65MZF
WEIGHED AT QUEEN MARY		TRANSFER NOTE NO.		
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309008 - INTERNAL USE ONLY - DE92				
WASTE MAN LICENCE				

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.90	13.30	18.60	
ORDERED	40.00	TALLY ROLL			
DELIVERED	18.60				

DAY WORK	Arrived			Time Agreed CUSTOMER SIGNATURE
	Left			
WAITING TIME	Arrived			Time Agreed CUSTOMER SIGNATURE
	Left			

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY Sere	PRINT NAME M. HAWALYUK
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	

Landfill Tax Paid Is Not Recoverable As VAT Input Tax

CE & DOP CERTIFICATE
Information is available via www.brett.co.uk or on request

A Tallyroll Record Of This Transaction Is Available For Six Months Only.

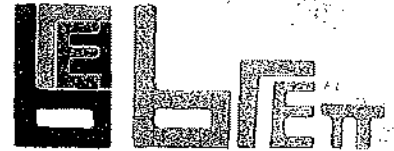
VAT REG NO GB 201 1388 18

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

461145

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel: 01932 571895
 Fax: 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE S102902	ORDER NO. 300043 47259

HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME Bernard Haxton	REGISTRATION GNE5MZL

WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 11:27	DATE 01/02/16	TICKET No. 30961084
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309008 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	WEIGHT
1205230	4/10mm Gravel BS EN 12620 / 13242	31.78	13.32	18.46	

ORDERED	SOURCE CODE	TALLY ROLL
DELIVERED: 40.00 37.06		

DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME IAN PARKES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461165

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME	Soil & Water Solutions Ltd
---------------	----------------------------

ACCOUNT CODE	ORDER NO.
S102902	300043 47259

HAULIER NAME	Brett Aggregate Western
--------------	-------------------------

WASTE CARRIER LICENCE DETAILS	FLEET CODE
	ZWEST

DRIVER NAME	REGISTRATION
Bernard Haxton	GNG5MZL

WEIGHED AT	TRANSFER NOTE NO.
QUEEN MARY	

WASTE MAN LICENCE	
-------------------	--

TIME	DATE	TICKET No.
11:26	03/02/16	30961202

DELIVERY ADDRESS
Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD

ROAD MILES
9.15

SPECIAL DELIVERY INSTRUCTIONS
07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.80	13.38	18.42	

ORDERED	SOURCE CODE	TALLY ROLL	GOODS TOTAL
160.00			
DELIVERED			
56.48			

DAY WORK	Arrived			Time Agreed CUSTOMER SIGNATURE
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WAITING TIME	Arrived			Time Agreed CUSTOMER SIGNATURE
	Left			

VAT	
INVOICE TOTAL	

WEIGHBRIDGE OPERATOR	MATERIAL RECEIVED BY	PRINT NAME
		IAN PARKES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461283

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 6102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME Antanas Remencius	REGISTRATION GN65MZP
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 11:28	DATE 03/02/16	TICKET No. 30961203
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.82	13.38	18.44	
ORDERED	160.00	SOURCE CODE		TALLY ROLL	GOODS TOTAL
DELIVERED	74.92				VAT %
					INVOICE TOTAL

DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME SRP
Signed for and on behalf of BRETT AGGREGATES LIMITED		Signed for and on behalf of CUSTOMER

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461284

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE S102902	ORDER NO. 300043 47259

HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME John Humphries	REGISTRATION EY64CJV

WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 11:42	DATE 03/02/16	TICKET No. 30961205
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.84	12.52	19.32	

ORDERED 160.00	SOURCE CODE	TALLY ROLL	GOODS TOTAL
DELIVERED 94.24			

DAY WORK	Arrived	Time Agreed CUSTOMER SIGNATURE
	Left	
WAITING TIME	Arrived	Time Agreed CUSTOMER SIGNATURE
	Left	

VAT %	
INVOICE TOTAL	

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY SEFB	PRINT NAME M. KAWALON
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461286

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 8102002	ORDER NO. 300043 47259
HAULIER NAME Dafcon Hsvlage LTD	
WASTE CARRIER LICENCE DETAILS	FLEET CODE 02806
DRIVER NAME	REGISTRATION EUB5XBW
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 13:52	DATE 22/02/16	TICKET No. 30962011
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309010 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.70	13.86	17.84	
ORDERED	20.00	TALLY ROLL		GOODS TOTAL	
DELIVERED	17.84			VAT %	
				INVOICE TOTAL	

DAY WORK	Arrived		Time Agreed CUSTOMER SIGNATURE
	Left		
WAITING TIME	Arrived		Time Agreed CUSTOMER SIGNATURE
	Left		

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME IAN PARNES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NR Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused
Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only	462096

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE S102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME Jack Doran	REGISTRATION EY64CJX
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 13:58	DATE 03/02/16	TICKET No. 30961218
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.86	12.64	19.22	

ORDERED	160.00	SOURCE CODE	TALLY ROLL	GOODS TOTAL
DELIVERED	113.46			

DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

VAT %	
INVOICE TOTAL	

WEIGHBRIDGE OPERATOR Signed for and on behalf of BRETT AGGREGATES LIMITED	MATERIAL RECEIVED BY Signed for and on behalf of CUSTOMER	PRINT NAME IAN PARNES
---	--	------------------------------

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461299

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 8102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME Antanas Remencius	REGISTRATION GN65MZF
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 14:16	DATE 03/02/16	TICKET No. 30961220
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.82	13.30	18.52	
ORDERED	SOURCE CODE	TALLY ROLL		GOODS TOTAL	
160.00					
DELIVERED				VAT %	
131.98				INVOICE TOTAL	

DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME IAN PARWES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461301

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd		TIME 14:29	DATE 03/02/16	TICKET No. 30961224
ACCOUNT CODE 5102902	ORDER NO. 300043 47259	DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
HAULIER NAME Brett Aggregate Western		WASTE CARRIER LICENCE DETAILS		FLEET CODE ZWEST
DRIVER NAME Bernard Haxton		REGISTRATION GN65MZL		ROAD MILES 9.15
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.			
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92				

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.94	13.26	18.68	
ORDERED	SOURCE CODE	TALLY ROLL		GOODS TOTAL	
160.00					
DELIVERED				VAT %	
150.66				INVOICE TOTAL	

DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME KAN PARVES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only	461305
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18	

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME	Soil & Water Solutions Ltd
---------------	----------------------------

ACCOUNT CODE	ORDER NO.
S102902	300043 47259

HAULIER NAME	Brett Aggregate Western
--------------	-------------------------

WASTE CARRIER LICENCE DETAILS	FLEET CODE
	ZWEST

DRIVER NAME	REGISTRATION
Sebastian Baranowski	GN65MZO

WEIGHED AT	TRANSFER NOTE NO.
QUEEN MARY	

WASTE MAN LICENCE	
-------------------	--

TIME	DATE	TICKET No.
14:47	03/02/16	30961226

DELIVERY ADDRESS	ROAD MILES
Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD	9.15

SPECIAL DELIVERY INSTRUCTIONS
07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309000 - INTERNAL USE ONLY - DE92

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.92	13.26	18.66	

ORDERED	SOURCE CODE	TALLY ROLL	GOODS TOTAL
160.00			
DELIVERED			
169.32			

DAY WORK	Arrived	Time Agreed	CUSTOMER SIGNATURE
	Left		
WAITING TIME	Arrived	Time Agreed	CUSTOMER SIGNATURE
	Left		

VAT %	
INVOICE TOTAL	

WEIGHBRIDGE OPERATOR	MATERIAL RECEIVED BY	PRINT NAME
		IAN PARWES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461307

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 8102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME Marinel Modre	REGISTRATION GN65MZP
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 14:51	DATE 03/02/16	TICKET No. 30961227
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards, 309000 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	UNIT
1205230	4/10mm Gravel BS EN 12620 / 13242	31.66	13.24	18.42	
ORDERED	SOURCE CODE	TALLY ROLL		RODS TOTAL	
160.00				VAT	
DELIVERED				INVOICE TOTAL	
187.74					

DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME VAN PARNES
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused
Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only	461308
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18	

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 5102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME Bernard Haxton	REGISTRATION GNGSMZL
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 12:21	DATE 04/02/16	TICKET No. 30961281
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm		
Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309011 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.70	13.32	18.38	
ORDERED	30.00	SOURCE CODE		TALLY ROLL	
DELIVERED	18.38			GOODS TOTAL	
				VAT	
				INVOICE TOTAL	

DAY WORK	Arrived			Time Agreed CUSTOMER SIGNATURE
	Left			
WAITING TIME	Arrived			Time Agreed CUSTOMER SIGNATURE
	Left			

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY SORG	PRINT NAME M. J. HAXTON
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

461362

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 8102902	ORDER NO. 300043 47259
HAULIER NAME COLLECT	
WASTE CARRIER LICENCE DETAILS	FLEET CODE 0
DRIVER NAME <i>Hieron Maddox</i>	REGISTRATION EU14KTD
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 08:43	DATE 05/02/16	TICKET No. 30961315
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309010 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.72	12.42	19.30	
ORDERED	SOURCE CODE	TALLY ROLL			
DELIVERED				GOODS TOTAL	
				VAT	
				INVOICE TOTAL	

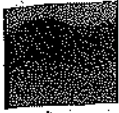
DAY WORK	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				
WAITING TIME	Arrived				Time Agreed CUSTOMER SIGNATURE
	Left				

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME A. Parkes
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

461396



Soil & Water Solutions Limited

Duty of Care Controlled Waste Transfer Note

A1 Conveyance Note Number: **L 1076**



PART A - Notification Details

A1 - Address of Transfer/Collection Point (Site):

*Brett Q E 2
Gairn*

A2 - Name & Address of Destination:

*Toureen Shell
Richmond*

Postcode:

Permit/Exemption No:

PART B - Description of Waste/Material

B1 - SIC Code:

41.20/2 Residential Building 41.20/1 Commercial Building 43.11/0 Demolition 42.11/0 Groundworks

B2 - EWC Code:

17 05 04 - Clean/Inert Muck 17 05 04 - Non-Hazardous 17 01 01 - Concrete
17 01 07 - Mixed Hardcore 17 03 01 - Hazardous Tarmac 17 03 02 - Tarmac

Classification of Waste/Recovered Material: Clean/Inert Non-hazardous Hazardous

B3 - Material:

10 - Shingle

B4 - How is the Waste Transported: No./weight/volume if Applicable:

8 Wheeler Tipper Lorry load: (tonnes)

Waste is: Load Other

18.74

PART C - Carrier Certificate

I certify that I today collected the consignment and that the details in A1, A2, B1, B2, B3 & B4 are correct and I have been advised of any special handling requirements

Company Name: **SOIL AND WATER SOLUTIONS LTD**

Address: **UNIT 50, 264 LAVENDER HILL, CLAPHAM JUNCTION, LONDON**

Postcode: **SW11 1LJ**

Waste Carriers Licence No: **CB/RE5985TT**

Vehicle Registration: *EY64 CFE*

Driver Name: *A. Weller*

Signature: *[Signature]*

Date: *16.2.16* Time:

PART D - Consignor's Certificate

I certify that the information completed in A, B & C is correct, that the carrier is registered of exempt and was advised of the appropriate precautionary measures. All of the waste/recovered material is packaged and labelled correctly and the carrier has been advised of any special handling requirements. I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England & Wales) regulations 2011.

Name: *IONLITE*

Signature: *[Signature]*

Date: *16.2.16* Time: *13:40*

CUSTOMERS ORDERING VEHICLES OFF THE PUBLIC ROAD DO SO ENTIRELY AT THEIR OWN RISK & RESPONSIBILITY
We cannot accept responsibility for damage caused by our vehicles delivering or disposing to your site

White copy: Site Blue copy: Haulier Yellow copy: Waste facility Pink copy: PC/site

TICKET No.	
16	30001755
ROAD MILES	
0.00	
min 2% of recovered waste produced to WRAP and EU standards. FOR USE ONLY	

NETT	18.74	CASH SALE
GOODS TOTAL		
VAT %		
INVOICE TOTAL		

WORK	Left			
WAITING TIME	Arrived			
	Left			

Time Agreed CUSTOMER SIGNATURE

WRIGHT BRIDGE OPERATOR
[Signature]
Signed for and on behalf of
WRIGHT BRIDGE OPERATOR LIMITED

MATERIAL RECEIVED BY

PRINT NAME

Signed for and on behalf of CUSTOMER

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Labour Tax Paid is Not Recoverable As VAT Input Tax
VAT CERTIFICATE
Available via www.brett.co.uk or on request

A Tallyroll Record Of This Transaction Is Available For Six Months Only

VAT REG NO GB 201 1388 18

461834

COPIES: WHITE-COMPANY, YELLOW-CUSTOMER, GREEN-DRIVER, BLUE-FILE

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 9NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Soil & Water Solutions Ltd	
ACCOUNT CODE 5102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME David Peacock	REGISTRATION EY6ACKD
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTEMAN LICENCE	

TIME 10:59	DATE 29/02/16	TICKET No. 30962332
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309013 - INTERNAL USE ONLY - DE92		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.80	12.54	19.26	

ORDERED	SOURCE CODE	TALLY ROLL	GOODS TOTAL
DELIVERED			

DAY WORK	Arrived	Time Agreed CUSTOMER SIGNATURE	VAT %
	Left		
WAITING TIME	Arrived	Time Agreed CUSTOMER SIGNATURE	INVOICE TOTAL
	Left		

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY SERG	PRINT NAME M. HADJALYUK
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	

Landfill Tax Paid Is Not Recoverable As VAT Input Tax
 CE & DOP CERTIFICATE information is available via www.brett.co.uk or on request
 A Tallyroll Record Of This Transaction Is Available For Six Months Only
 VAT REG NO GB 201 1388 18

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

462417

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME	Soil & Water Solutions Ltd
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ACCOUNT CODE	ORDER NO.
B102902	300043 47259

HAULIER NAME	Brett Aggregate Western
--------------	-------------------------

WASTE CARRIER LICENCE DETAILS	FLEET CODE
	ZWEST

DRIVER NAME	REGISTRATION
Simon Pike	EY64CKC

WEIGHED AT	TRANSFER NOTE NO.
QUEEN MARY	

WASTE MAN LICENCE	
-------------------	--

TIME	DATE	TICKET No.
08:38	01/03/16	30962375

DELIVERY ADDRESS
Shell Blackhorse, Sheen Road
Richmond, TW9 1XD
TW9 1XD

ROAD MILES
9.15

SPECIAL DELIVERY INSTRUCTIONS
07717 527 435 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm
Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309013 - INTERNAL USE ONLY - DE92

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	32.00	12.58	19.42	

ORDERED	40.00	SOURCE CODE	TALLY ROLL	GOODS TOTAL
DELIVERED	19.42			

DAY WORK	Arrived	Time Agreed	CUSTOMER SIGNATURE	VAT %
	Left			
WAITING TIME	Arrived	Time Agreed	CUSTOMER SIGNATURE	INVOICE TOTAL
	Left			

WEIGHBRIDGE OPERATOR	MATERIAL RECEIVED BY	PRINT NAME
		M. Martin
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	

NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid Is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only	462460
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18	

COPIES: WHITE-COMPANY, YELLOW-CUSTOMER, GREEN-DRIVER, BLUE-FILE

Brett Aggregates Limited
 Littleton Lane
 Shepperton
 Middlesex
 TW17 0NF

CONVEYANCE/TRANSFER NOTE



Tel 01932 571895
 Fax 01932 570862
 www.brett.co.uk



CUSTOMER NAME Boil & Water Solutions Ltd	
ACCOUNT CODE S102902	ORDER NO. 300043 47259
HAULIER NAME Brett Aggregate Western	
WASTE CARRIER LICENCE DETAILS	FLEET CODE ZWEST
DRIVER NAME David Peacock	REGISTRATION EY64CKD
WEIGHED AT QUEEN MARY	TRANSFER NOTE NO.
WASTE MAN LICENCE	

TIME 09:11	DATE 01/03/16	TICKET No. 30962378
DELIVERY ADDRESS Shell Blackhorse, Sheen Road Richmond, TW9 1XD TW9 1XD		
		ROAD MILES 9.15
SPECIAL DELIVERY INSTRUCTIONS 07717 527 436 Lloyd Martin * 08.30 onw Shell Blackhorse, 174, Sheen Rd, Richm Products may contain a % of Recycled Aggregate, which are produced to WRAP Quality Protocol and EU standards. 309013 - INTERNAL USE ONLY - DESE		

CODE	DESCRIPTION	GROSS	TARE	NETT	CASH SALE
1205230	4/10mm Gravel BS EN 12620 / 13242	31.86	12.56	19.30	

ORDERED	40.00	SOURCE CODE	TALLY ROLL	GOODS TOTAL	
DELIVERED	38.72				

DAY WORK	Arrived		Time Agreed CUSTOMER SIGNATURE <i>DR</i>
	Left		
WAITING TIME	Arrived		Time Agreed CUSTOMER SIGNATURE <i>MAN HARNES</i>
	Left		

VAT %	
INVOICE TOTAL	

WEIGHBRIDGE OPERATOR 	MATERIAL RECEIVED BY 	PRINT NAME
Signed for and on behalf of BRETT AGGREGATES LIMITED	Signed for and on behalf of CUSTOMER	NB Customers ordering vehicles off the public road do so entirely at their own responsibility for any damage caused

Landfill Tax Paid is Not Recoverable As VAT Input Tax	A Tallyroll Record Of This Transaction Is Available For Six Months Only
CE & DOP CERTIFICATE Information is available via www.brett.co.uk or on request	VAT REG NO GB 201 1388 18

462463

AGGREGATES

BULK MATERIAL CONVEYANCE NOTE

YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 0208 763 6708

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
14/12/15	13:56	1	368	2905065
VEHICLE REG.	HAULIER'S CODE/NAME	DRIVER'S NAME		
BX61	1 DAY AGGREGATES	GARY RICE		

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

SITE ADDRESS:
SHELL PETROL STATION
RICHMOND, 174 SHEEN ROAD

POST CODE: ZONE CODE: TW9 1XD
TW9

INSTRUCTIONS:

CUSTOMER ORDER No.: JASON

MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY	
8 DAYTOL	tonnes	32.18	12.72	19.46 to	
CASH SALE DETAILS		RATE	NETT	VAT	TOTAL

THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY	TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
	REASON FOR WAITING			
	SIGNED BY		PRINT NAME	

DRIVERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY		PRINT NAME	L. MARTIN

THIS LOAD IS SOLD SUBJECT TO OUR CONDITIONS OF BUSINESS (AVAILABLE ON REQUEST). DAY AGGREGATES IS A DIVISION OF DAY GROUP LTD. REGISTRATION NO. 432417. VAT REGISTRATION NO. GB 222 6559 65. WASTE CARRIERS LICENCE NO. CR/P5935/KB RECYCLED AGGREGATES PRODUCED BY DAY GROUP ARE MANUFACTURED IN ACCORDANCE WITH WRAP QUALITY PROTOCOL. THE SIGNEE CONFIRMS THAT THE WASTE HIERARCHY HAS BEEN APPLIED AS REQUIRED BY REGULATION 12 OF THE WASTE (ENGLAND & WALES) REGULATIONS 2011.

DISTRIBUTION:- WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 0208 763 6708

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
15/12/15	11:09	1	523	2905704
VEHICLE REG.	HAULIER'S CODE/NAME		DRIVER'S NAME	
DD15	1 DAY AGGREGATES		DARREN BROWN	

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

SITE ADDRESS: SHELL PETROL STATION RICHMOND, 174 SHEEN ROAD

POST CODE: TW9 1XD ZONE CODE: TW9

INSTRUCTIONS:

CUSTOMER ORDER No.: JASON

MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.R.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY
8 DAYTOL	tonnes	32.44	12.44	20.00 to

CASH SALE DETAILS	RATE	NETT	VAT	TOTAL
-------------------	------	------	-----	-------

TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
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THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY

REASON FOR WAITING

SIGNED BY: PRINT NAME

CUSTOMERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY	<i>SERG</i>	PRINT NAME	<i>M. J. JAMES</i>

THIS LOAD IS SOLD SUBJECT TO OUR CONDITIONS OF BUSINESS (AVAILABLE ON REQUEST). DAY AGGREGATES IS A DIVISION OF DAY GROUP LTD. REGISTRATION NO. 432417. VAT REGISTRATION NO. GB 222 6659 65. WASTE CARRIERS LICENCE NO. CB/PE5939/KB RECYCLED AGGREGATES PRODUCED BY DAY GROUP ARE MANUFACTURED IN ACCORDANCE WITH WRAP QUALITY PROTOCOL. THE SIGNEE CONFIRMS THAT THE WASTE HIERARCHY HAS BEEN APPLIED AS REQUIRED BY REGULATION 12 OF THE WASTE (ENGLAND & WALES) REGULATIONS 2011.

DISTRIBUTION:- WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

AGGREGATES

BULK MATERIAL CONVEYANCE NO1

YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 020 8380 9677

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
27/12/15	12:27	1	184	2907304

VEHICLE REG.	HAULIER'S CODE/NAME	DRIVER'S NAME
BP15	1 DAY AGGREGATES	PAUL WOOD

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

SITE ADDRESS:
SHELL PETROL STATION
RICHMOND, 174 SHEEN ROAD

POST CODE: TW9 1XD ZONE CODE: TW9

INSTRUCTIONS:

CUSTOMER ORDER No.: MARK VERBAL

MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY
1 DAYBRENT	tonnes	31.46	12.42	19.04 t

CASH SALE DETAILS	RATE	NETT	VAT	TOTAL

TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
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THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY

REASON FOR WAITING

SIGNED BY: [Signature] PRINT NAME

CUSTOMERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY	PRINT NAME
	[Signature]	L.M.D. [Signature]

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DISTRIBUTION:- WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

AGGREGATES

BULK MATERIAL CONVEYANCE NOTE

YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 020 8380 9677

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
27/12/15	11:06	1	184	2907224
VEHICLE REG.	HAULIER'S CODE/NAME	DRIVER'S NAME		
AX63	1 DAY AGGREGATES	KEN HEAD		

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

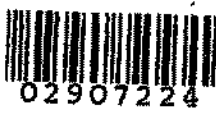
SITE ADDRESS: SHELL PETROL STATION RICHMOND, 174 SHEEN ROAD

CUSTOMER CODE: TW9 1XD ZONE CODE: TW9

INSTRUCTIONS:

CUSTOMER ORDER No.: MARK VERBAL

MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY
1 DAYBRENT	tonnes	32.40	12.48	19.92 t
CASH SALE DETAILS		RATE	NETT	VAT
				TOTAL

THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY

TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
REASON FOR WAITING			
SIGNED BY		PRINT NAME	

VEHICLES ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY	<i>[Signature]</i>	PRINT NAME	L MARZON
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DISTRIBUTION:- WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

AGGREGATES

BULK MATERIAL CONVEYANCE NO1

YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 020 8380 9677

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
17/12/15	11:02	1	184	2907218
VEHICLE REG.	HAULIER'S CODE/NAME		DRIVER'S NAME	
JJ62	1 DAY AGGREGATES		WILLIAM ELKINS	

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

DELIVERY ADDRESS: SHELL PETROL STATION RICHMOND, 174 SHEEN ROAD

POSTCODE: TW9 1XD ZONE CODE: TW9

INSTRUCTIONS:

CUSTOMER ORDER No.: MARK VERBAL

MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY	
1 DAYBRENT	tonnes	32.32	12.48	19.84 t	
CASH SALE DETAILS		RATE	NETT	VAT	TOTAL

THIS BLOCK TO BE USED FOR WAITING TIME OR 1 DAY WORK ONLY

TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
REASON FOR WAITING			
SIGNED BY		PRINT NAME	

CUSTOMERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY		PRINT NAME	L. MARTON
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DISTRIBUTION:- WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

AGGREGATES

BULK MATERIAL CONVEYANCE NOTE

YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 020 8380 9677

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
18/12/15	08:41	1	377	2907829
VEHICLE REG.	HAULIER'S CODE/NAME		DRIVER'S NAME	
EE14	1 DAY AGGREGATES		MICK COSTER	

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

SITE ADDRESS: SHELL PETROL STATION
RICHMOND, 174 SHEEN ROAD

CUSTOMER CODE: ZONE CODE: TW9 1XD
TW9

INSTRUCTIONS:
CUSTOMER ORDER No.: MARK VERBAL
MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY
1 DAYBRENT	tonnes	31.86	12.48	19.38 tc
CASH SALE DETAILS	RATE	NETT	VAT	TOTAL

TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
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REASON FOR WAITING

SIGNED BY: PRINT NAME

THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY

CUSTOMERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY	PRINT NAME
	<i>SRLB</i>	<i>M. HAMMOND</i>

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DISTRIBUTION:- WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

A1 Conveyance Note Number: **L 4724**

PART A - Notification Details

A1 - Address of Transfer/Collection Point (Site):

*Day
Brentford*

A2 - Name & Address of Destination:

*Loureen Shell
Richmond*

Postcode:

Postcode:

Permit/Exemption No:

0677

TICKET NUMBER

2949716

PART B - Description of Waste/Material

B1 - SIC Code:

41.20/2 Residential Building 41.20/1 Commercial Building 43.11/0 Demolition 42.11/0 Groundworks

B2 - EWC Code:

17 05 04 - Clean/Inert Muck 17 05 04 - Non-Hazardous 17 01 01 - Concrete
17 01 07 - Mixed Hardcore 17 03 01 - Hazardous Tarmac 17 03 02 - Tarmac

Classification of Waste/Recovered Material: Clean/Inert Non-hazardous Hazardous

B3 - Material:

Mot. T. one

B4 - How is the Waste Transported: No./weight/volume if Applicable:

8 Wheeler Tipper Lorry load: (tonnes) *19.30* Waste is: Load Other

PART C - Carrier Certificate

I certify that I today collected the consignment and that the details in A1, A2, B1, B2, B3 & B4 are correct and I have been advised of any special handling requirements

Company Name: **SOIL AND WATER SOLUTIONS LTD**
Address: **UNIT 50, 264 LAVENDER HILL, CLAPHAM JUNCTION, LONDON**
Postcode: **SW11 1LJ**

Waste Carriers Licence No: **CB/RE5985TT**

Vehicle Registration: *EJ14 KFE*

Driver Name: *A Weller*

Signature: *[Signature]*

Date: *7 13 16* Time:

PART D - Consignor's Certificate

I certify that the information completed in A, B & C is correct, that the carrier is registered of exempt and was advised of the appropriate precautionary measures. All of the waste/recovered material is packaged and labelled correctly and the carrier has been advised of any special handling requirements. I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England & Wales) regulations 2011.

Name: *Darius*

Signature: *[Signature]*

Date: Time:

CUSTOMERS ORDERING VEHICLES OFF THE PUBLIC ROAD DO SO ENTIRELY AT THEIR OWN RISK & RESPONSIBILITY
We cannot accept responsibility for damage caused by our vehicles delivering or disposing to your site

White copy: Site Blue copy: Haulier Yellow copy: Waste facility Pink copy: PC/site

SIGNED BY: *[Signature]*

CUSTOMERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY		PRINT NAME
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WEIGHT	NET QUANTITY
<i>2.50</i>	<i>19.30</i>
TOTAL	
MINUTES	

A Weller

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DISTRIBUTION: WHITE - RETURN TO OFFICE PINK - HAULIER'S COPY GREEN - CUSTOMER

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YOUR LOCAL ORDER OFFICE TELEPHONE NUMBER IS 020 8380 9677

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER
04/03/16	07:40	1	327	2948222

VEHICLE REG.	HAULIER'S CODE/NAME	DRIVER'S NAME
LK07RCV	282 KERRY TRANSPORT	DEXTER BURNS

CUSTOMER NAME: 203664 SOIL & WATER SOLUTIONS LTD SIC CODE:

TE ADDRESS: SHELL PETROL STATION
RICHMOND, 174 SHEEN ROAD

UTS CODE: TW9 1XD
ZONE CODE: TW9

INSTRUCTIONS: AM IF POSSIBLE

CUSTOMER ORDER No.: TCL236

MATERIAL DESCRIPTION: TYPE 1 (SHW803) PRIMARY (LS)



Where applicable CE information is available on request, email technical@daygroup.co.uk

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY
1 DAYBRENT	tonnes	32.00	12.60	19.40 t

CASH SALE DETAILS	RATE	NETT	VAT	TOTAL

THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY	TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
	REASON FOR WAITING			
	SIGNED BY		PRINT NAME	

DRIVERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY	PRINT NAME
	<i>J. Evans</i>	J. EVANS

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