APPENDIX E LABORATORY ANALYTICAL RESULTS CERTIFICATES

ALcontrol Laboratories

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AECOM
St. George's House
2nd Floor
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SW19 4DR

Attention: Tim Rolfe

CERTIFICATE OF ANALYSIS

Date:	04 October 2016
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	160928-95
Your Reference:	
Location:	Shell Shoreham Airport
Report No:	380920

We received 7 samples on Wednesday September 28, 2016 and 7 of these samples were scheduled for analysis which was completed on Tuesday October 04, 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.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

Approved By:

[redacted]

Sonia McWhan

Operations Manager

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CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14229039	FL 03		0.60	27/09/2016
14229041	FL 04		0.60	27/09/2016
14229042	FL 05		0.60	27/09/2016
14229035	PI 01		0.60	27/09/2016
14229036	PI 02		0.60	27/09/2016
14229037	PI 03		0.60	27/09/2016
14229038	PI 04		0.60	27/09/2016

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

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SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			14229039	14229041	14229042	14229035	14229036	14229037	14229038
Customer Sample Reference			FL 03	FL 04	FL 05	PI 01	PI 02	PI 03	PI 04
AGS Reference									
Depth (m)			0.60	0.60	0.60	0.60	0.60	0.60	0.60
Container			250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	400g Tub (ALE214)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	400g Tub (ALE214)	250g Amber Jar (ALE21	400g Tub (ALE214)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)	250g Amber Jar (ALE21	60g VOC (ALE215)
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3																														X						X				X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 7	X		X		X		X		X				X		X		X				X				X															
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 7	X		X		X		X		X				X		X		X				X				X															
GRO by GC-FID (S)	All	NDPs: 0 Tests: 7		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Oxygenates (S)	All	NDPs: 0 Tests: 7		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
PAH by GCMS	All	NDPs: 0 Tests: 7	X		X		X		X		X				X		X		X				X				X															
Sample description	All	NDPs: 0 Tests: 6		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Total Organic Carbon	All	NDPs: 0 Tests: 4		X				X						X		X		X																									
VOC MS (S)	All	NDPs: 0 Tests: 7		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	

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SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**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
14229039	FL 03	0.60	Cream	Clay	0.002 - 0.063 mm	N/A	None
14229041	FL 04	0.60	Light Brown	Sandy Loam	0.002 - 0.063 mm	Stones	Crushed Brick
14229042	FL 05	0.60	Light Brown	Clay Loam	0.002 - 0.063 mm	Crushed Brick	Stones
14229035	PI 01	0.60	Light Brown	Stone/Soil	2.00 - 60.00 mm	Brick	N/A
14229036	PI 02	0.60	Light Brown	Clay	0.002 - 0.063 mm	Stones	N/A
14229037	PI 03	0.60	Light Brown	Clay Loam	0.002 - 0.063 mm	Stones	N/A
14229038	PI 04	0.60	Light Brown	Stone/Soil	2.00 - 60.00 mm	Concrete/Aggregate	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 ocurring 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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Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	FL 03	FL 04	FL 05	PI 01	PI 02	PI 03
			Depth (m)	0.60	0.60	0.60	0.60	0.60	0.60
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
			Sampled Time	-	-	-	-	-	-
			Date Received	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016
			SDG Ref	160928-95	160928-95	160928-95	160928-95	160928-95	160928-95
			Lab Sample No.(s)	14229039	14229041	14229042	14229035	14229036	14229037
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		20	8.5	13	11	23	20
Fraction Organic Carbon Low	<0.0002 -	TM132			0.0116 #		0.00921 #		0.0139 #
Bromofluorobenzene**	%	TM288		117	105	99.2	112	117	123
Ethanol	<50 µg/kg	TM288		<50	<50	<50	<50	<50	<50
tert Butanol	<10 µg/kg	TM288		<10	<10	<10	<10	<10	<10
Diisopropyl ether	<1 µg/kg	TM288		<1	<1	<1	<1	<1	<1
tert-butyl ethyl ether	<1 µg/kg	TM288		<1	<1	<1	<1	<1	<1

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	PI 04
			Depth (m)	0.60
			Sample Type	Soil/Solid
			Date Sampled	27/09/2016
			Sampled Time	-
			Date Received	28/09/2016
			SDG Ref	160928-95
			Lab Sample No.(s)	14229038
			AGS Reference	
Moisture Content Ratio (% of as received sample)	%	PM024		14
Fraction Organic Carbon Low	<0.0002 -	TM132		0.0173 #
Bromofluorobenzene**	%	TM288		106
Ethanol	<50 µg/kg	TM288		<50
tert Butanol	<10 µg/kg	TM288		<10
Diisopropyl ether	<1 µg/kg	TM288		<1
tert-butyl ethyl ether	<1 µg/kg	TM288		<1

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SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

EPH CWG (Aliphatic) GC (S)

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	FL 03	FL 04	FL 05	PI 01	PI 02	PI 03
			Depth (m)	0.60	0.60	0.60	0.60	0.60	0.60
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
			Sampled Time	-	-	-	-	-	-
			Date Received	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016
			SDG Ref	160928-95	160928-95	160928-95	160928-95	160928-95	160928-95
			Lab Sample No.(s)	14229039	14229041	14229042	14229035	14229036	14229037
			AGS Reference						
Aliphatics >C12-C16	<100 µg/kg	TM173		1040	23000	23000	<100	1630	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		2320	68200	94600	2110	7590	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		5430	78700	115000	17500	6270	2350
Aliphatics >C35-C44	<100 µg/kg	TM173		<100	16200	18500	8890	<100	<100

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SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

EPH CWG (Aliphatic) GC (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	PI 04
			Depth (m)	0.60
			Sample Type	Soil/Solid
			Date Sampled	27/09/2016
			Sampled Time	-
			Date Received	28/09/2016
			SDG Ref	160928-95
			Lab Sample No.(s)	14229038
			AGS Reference	
Aliphatics >C12-C16	<100 µg/kg	TM173		17300
Aliphatics >C16-C21	<100 µg/kg	TM173		52300
Aliphatics >C21-C35	<100 µg/kg	TM173		55200
Aliphatics >C35-C44	<100 µg/kg	TM173		8660

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

EPH CWG (Aromatic) GC (S)

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	FL 03	FL 04	FL 05	PI 01	PI 02	PI 03
			Depth (m)	0.60	0.60	0.60	0.60	0.60	0.60
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
			Sampled Time	-	-	-	-	-	-
			Date Received	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016
			SDG Ref	160928-95	160928-95	160928-95	160928-95	160928-95	160928-95
			Lab Sample No.(s)	14229039	14229041	14229042	14229035	14229036	14229037
			AGS Reference						
Aromatics >EC12-EC16	<100 µg/kg	TM173		2540	12100	10300	2600	1540	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173		25700	60500	90100	22400	11400	1040
Aromatics >EC21-EC35	<100 µg/kg	TM173		75400	155000	243000	154000	39900	6480

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

EPH CWG (Aromatic) GC (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	PI 04
			Depth (m)	0.60
			Sample Type	Soil/Solid
			Date Sampled	27/09/2016
			Sampled Time	-
			Date Received	28/09/2016
			SDG Ref	160928-95
			Lab Sample No.(s)	14229038
			AGS Reference	
Aromatics >EC12-EC16	<100 µg/kg	TM173		7070
Aromatics >EC16-EC21	<100 µg/kg	TM173		38600
Aromatics >EC21-EC35	<100 µg/kg	TM173		96300

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

GRO by GC-FID (S)

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	FL 03	FL 04	FL 05	PI 01	PI 02	PI 03
			Depth (m)	0.60	0.60	0.60	0.60	0.60	0.60
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
			Sampled Time	-	-	-	-	-	-
			Date Received	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016
			SDG Ref	160928-95	160928-95	160928-95	160928-95	160928-95	160928-95
			Lab Sample No.(s)	14229039	14229041	14229042	14229035	14229036	14229037
			AGS Reference						
GRO Surrogate % recovery**	%	TM089		97	106	107	70	87	94
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	21.9	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	397	274	209	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	161	434	396	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	445	917	222	<10	<10
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	82	56.4	220	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	189	385	1340	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	296	611	148	<10	<10

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

GRO by GC-FID (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	
			Depth (m)	0.60
			Sample Type	Soil/Solid
			Date Sampled	27/09/2016
			Sampled Time	-
			Date Received	28/09/2016
			SDG Ref	160928-95
			Lab Sample No.(s)	14229038
			AGS Reference	PI 04
GRO Surrogate % recovery**	%	TM089		127
Aliphatics >C5-C6	<10 µg/kg	TM089		33.9
Aliphatics >C6-C8	<10 µg/kg	TM089		2070
Aliphatics >C8-C10	<10 µg/kg	TM089		2920
Aliphatics >C10-C12	<10 µg/kg	TM089		3120
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		2010
Aromatics >EC10-EC12	<10 µg/kg	TM089		2080

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	FL 03	FL 04	FL 05	PI 01	PI 02	PI 03
			Depth (m)	0.60	0.60	0.60	0.60	0.60	0.60
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
			Sampled Time	-	-	-	-	-	-
			Date Received	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016
			SDG Ref	160928-95	160928-95	160928-95	160928-95	160928-95	160928-95
			Lab Sample No.(s)	14229039	14229041	14229042	14229035	14229036	14229037
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		120	101	102	101	110	107
Acenaphthene-d10 % recovery**	%	TM218		118	101	102	101	109	106
Phenanthrene-d10 % recovery**	%	TM218		114	101	101	98.5	106	103
Chrysene-d12 % recovery**	%	TM218		99.2	98.1	92.1	87.2	91.5	88.5
Perylene-d12 % recovery**	%	TM218		105	105	97	87.5	95.5	88.1
Naphthalene	<9 µg/kg	TM218		352 M	770 M	111 M	39.1 M	64.8 M	16.7 M
Acenaphthylene	<12 µg/kg	TM218		652 M	238 M	268 M	80.1 M	225 M	66.5 M
Acenaphthene	<8 µg/kg	TM218		49.1 M	1990 M	97.3 M	17 M	31.5 M	<8 M
Fluorene	<10 µg/kg	TM218		169 M	1410 M	142 M	18 M	53.4 M	<10 M
Phenanthrene	<15 µg/kg	TM218		2240 M	10800 M	1870 M	319 M	1290 M	243 M
Anthracene	<16 µg/kg	TM218		1080 M	3380 M	657 M	151 M	305 M	58 M
Fluoranthene	<17 µg/kg	TM218		5970 M	14300 M	6450 M	1820 M	3570 M	684 M
Pyrene	<15 µg/kg	TM218		5660 M	12600 M	5980 M	1710 M	3130 M	585 M
Benz(a)anthracene	<14 µg/kg	TM218		2690 M	5800 M	3280 M	941 M	1370 M	262 M
Chrysene	<10 µg/kg	TM218		2480 M	4670 M	2600 M	810 M	1430 M	322 M
Benzo(b)fluoranthene	<15 µg/kg	TM218		3890 M	7570 M	3670 M	1140 M	1970 M	342 M
Benzo(k)fluoranthene	<14 µg/kg	TM218		1420 M	2750 M	1560 M	511 M	810 M	184 M
Benzo(a)pyrene	<15 µg/kg	TM218		3350 M	6470 M	3400 M	1040 M	1680 M	310 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218		1920 M	3620 M	1990 M	643 M	875 M	196 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218		423 M	851 M	523 M	171 M	248 M	55.9 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218		2290 M	4240 M	2390 M	832 M	1050 M	252 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218		34700	81500	35000	10200	18100	3580

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CERTIFICATE OF ANALYSIS

Validated

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			PI 04	0.60	Soil/Solid	27/09/2016	-	28/09/2016	160928-95	14229038	
Naphthalene-d8 % recovery**	%	TM218	103								
Acenaphthene-d10 % recovery**	%	TM218	102								
Phenanthrene-d10 % recovery**	%	TM218	99.6								
Chrysene-d12 % recovery**	%	TM218	92.9								
Perylene-d12 % recovery**	%	TM218	93.7								
Naphthalene	<9 µg/kg	TM218	64.5 M								
Acenaphthylene	<12 µg/kg	TM218	132 M								
Acenaphthene	<8 µg/kg	TM218	46 M								
Fluorene	<10 µg/kg	TM218	51.9 M								
Phenanthrene	<15 µg/kg	TM218	712 M								
Anthracene	<16 µg/kg	TM218	264 M								
Fluoranthene	<17 µg/kg	TM218	2980 M								
Pyrene	<15 µg/kg	TM218	2840 M								
Benz(a)anthracene	<14 µg/kg	TM218	1610 M								
Chrysene	<10 µg/kg	TM218	1350 M								
Benzo(b)fluoranthene	<15 µg/kg	TM218	2030 M								
Benzo(k)fluoranthene	<14 µg/kg	TM218	847 M								
Benzo(a)pyrene	<15 µg/kg	TM218	1920 M								
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	1130 M								
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	307 M								
Benzo(g,h,i)perylene	<24 µg/kg	TM218	1410 M								
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	17700								

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CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	FL 03	FL 04	FL 05	PI 01	PI 02	PI 03
			Depth (m)	0.60	0.60	0.60	0.60	0.60	0.60
			Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
			Date Sampled	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016	27/09/2016
			Sampled Time	-	-	-	-	-	-
			Date Received	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016	28/09/2016
			SDG Ref	160928-95	160928-95	160928-95	160928-95	160928-95	160928-95
			Lab Sample No.(s)	14229039	14229041	14229042	14229035	14229036	14229037
			AGS Reference						
Toluene-d8**	%	TM116		99.7	95.7	97.4	88.2	99.1	100
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	14.2 M	<10 M
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Toluene	<7 µg/kg	TM116		<7 M	18.7 M	16.3 M	125 M	<7 M	<7 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	4.98 M	4.81 M	57.3 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	13 #	16.2 #	136 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	11.1 M	17.4 M	192 M	<10 M	<10 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #

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CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			PI 04	0.60	Soil/Solid	27/09/2016	-	28/09/2016	160928-95	14229038	
Toluene-d8**	%	TM116	90.5								
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M								
Benzene	<9 µg/kg	TM116	<9 M								
Toluene	<7 µg/kg	TM116	9 M								
Ethylbenzene	<4 µg/kg	TM116	<4 M								
p/m-Xylene	<10 µg/kg	TM116	<10 #								
o-Xylene	<10 µg/kg	TM116	<10 M								
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #								

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CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**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 Receieved SDG Original Sample Method Number	PI 01 0.60 SOLID 27/09/2016 00:00:00 29/09/2016 06:26:14 160928-95 14229035 TM048	03/10/16	Chris Swindells	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 Receieved SDG Original Sample Method Number	PI 03 0.60 SOLID 27/09/2016 00:00:00 29/09/2016 06:27:44 160928-95 14229037 TM048	03/10/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	PI 04 0.60 SOLID 27/09/2016 00:00:00 29/09/2016 06:28:42 160928-95 14229038 TM048	03/10/16	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**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		
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	The determination of PAH in soil samples by microwave extraction and GC-MS		
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.

Chemical testing (unless subcontracted) performed at ALcontrol Laboratories Hawarden (Method codes TM) or ALcontrol Laboratories Aberdeen (Method codes S).

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CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	14229039	14229041	14229042	14229035	14229036	14229037	14229038
Customer Sample Ref.	FL03	FL04	FL05	PI01	PI02	PI03	PI04
AGS Ref.							
Depth	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Asbestos ID in Solid Samples				04-Oct-2016		04-Oct-2016	04-Oct-2016
EPH CWG (Aliphatic) GC (S)	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016
EPH CWG (Aromatic) GC (S)	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016
GRO by GC-FID (S)	02-Oct-2016	02-Oct-2016	02-Oct-2016	02-Oct-2016	04-Oct-2016	02-Oct-2016	02-Oct-2016
Oxygenates (S)	04-Oct-2016	04-Oct-2016	04-Oct-2016	04-Oct-2016	04-Oct-2016	04-Oct-2016	04-Oct-2016
PAH by GCMS	03-Oct-2016	04-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016	03-Oct-2016
Sample description	29-Sep-2016	29-Sep-2016	29-Sep-2016	29-Sep-2016	29-Sep-2016	29-Sep-2016	29-Sep-2016
Total Organic Carbon		03-Oct-2016		03-Oct-2016		03-Oct-2016	03-Oct-2016
VOC MS (S)	01-Oct-2016	01-Oct-2016	01-Oct-2016	03-Oct-2016	01-Oct-2016	01-Oct-2016	01-Oct-2016

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1489	QC 1459
Total Aliphatics >C12-C35	TM173	**80.0** 68.25 : 114.73	**83.96** 68.25 : 114.73

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1489	QC 1459
Total Aromatics >EC12-EC35	TM173	**84.67** 61.40 : 102.00	**84.0** 61.40 : 102.00

GRO by GC-FID (S)

Component	Method Code	QC 1461	QC 1474	QC 1483
Benzene by GC (Moisture Corrected)	TM089	**90.0** 76.23 : 120.71	**88.5** 76.23 : 120.71	**114.5** 76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	**90.0** 73.32 : 122.02	**91.0** 73.32 : 122.02	**114.0** 73.32 : 122.02
m & p Xylene by GC (Moisture Corrected)	TM089	**91.0** 72.90 : 122.64	**91.5** 72.90 : 122.64	**115.75** 72.90 : 122.64
MTBE GC-FID (Moisture Corrected)	TM089	**94.0** 72.17 : 124.81	**92.5** 72.17 : 124.81	**118.0** 72.17 : 124.81
o Xylene by GC (Moisture Corrected)	TM089	**93.5** 71.65 : 124.40	**94.5** 71.65 : 124.40	**117.5** 71.65 : 124.40
QC	TM089	**82.38** 68.17 : 113.61	**81.19** 68.17 : 113.61	**94.03** 68.17 : 113.61
Toluene by GC (Moisture Corrected)	TM089	**90.0** 74.60 : 120.38	**89.5** 74.60 : 120.38	**115.0** 74.60 : 120.38

Oxygenates (S)

Component	Method Code	QC 1489	QC 1480
Diisopropyl ether raw	TM288	**95.0** 75.85 : 124.81	**94.5** 75.85 : 124.81
Ethanol raw	TM288	**107.0** 20.18 : 141.28	**86.9** 20.18 : 141.28
tert Butanol raw	TM288	**98.0** 27.29 : 165.57	**97.5** 27.29 : 165.57
tert-amyl methyl ether raw	TM288	**98.75** 78.96 : 124.84	**98.5** 78.96 : 124.84
tert-butyl ethyl ether raw	TM288	**96.25** 76.41 : 125.42	**95.5** 76.41 : 125.42
tert-butyl methyl ether raw	TM288	**101.75** 78.20 : 126.30	**100.25** 78.20 : 126.30

PAH by GCMS

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

PAH by GCMS

Component	Method Code	QC 1463	QC 1429	QC 1411
Acenaphthene	TM218	**96.5** 68.50 : 116.50	**99.0** 78.84 : 114.36	**94.5** 76.50 : 121.50
Acenaphthylene	TM218	**90.0** 65.00 : 110.00	**93.5** 72.95 : 108.95	**90.0** 73.50 : 118.50
Anthracene	TM218	**91.0** 75.14 : 109.30	**95.0** 75.54 : 110.88	**93.5** 74.25 : 117.75
Benz(a)anthracene	TM218	**86.5** 70.00 : 115.00	**95.5** 78.55 : 123.55	**98.0** 82.07 : 118.33
Benzo(a)pyrene	TM218	**89.5** 82.80 : 121.21	**96.5** 78.70 : 123.70	**96.0** 79.75 : 116.97
Benzo(b)fluoranthene	TM218	**91.5** 81.11 : 119.79	**97.5** 80.00 : 125.00	**101.0** 82.41 : 117.15
Benzo(ghi)perylene	TM218	**93.5** 81.23 : 116.67	**88.5** 77.90 : 118.70	**95.0** 77.09 : 114.38
Benzo(k)fluoranthene	TM218	**91.5** 79.07 : 114.76	**95.5** 78.77 : 120.72	**98.0** 81.43 : 115.17
Chrysene	TM218	**93.5** 77.94 : 118.46	**92.5** 78.77 : 118.99	**97.0** 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	**92.5** 79.94 : 120.03	**88.0** 76.39 : 122.63	**95.5** 81.00 : 120.00
Fluoranthene	TM218	**95.0** 77.89 : 110.15	**102.5** 77.25 : 117.75	**98.5** 78.67 : 117.61
Fluorene	TM218	**98.5** 80.93 : 113.54	**102.0** 79.28 : 117.35	**97.0** 76.50 : 121.50
Indeno(123cd)pyrene	TM218	**92.5** 80.37 : 120.17	**89.5** 78.87 : 122.50	**98.5** 79.19 : 117.60
Naphthalene	TM218	**100.5** 79.70 : 112.37	**103.0** 74.75 : 118.25	**100.0** 77.00 : 117.50
Phenanthrene	TM218	**98.0** 78.44 : 113.95	**100.5** 78.61 : 113.98	**98.5** 75.00 : 123.00
Pyrene	TM218	**94.0** 77.35 : 110.35	**100.0** 76.15 : 115.26	**96.0** 77.82 : 116.98

Total Organic Carbon

Component	Method Code	QC 1428
Total Organic Carbon	TM132	**112.79** 77.42 : 122.37

VOC MS (S)

Component	Method Code	QC 1419	QC 1490
1,1,1,2-tetrachloroethane	TM116	**87.2** 76.60 : 121.00	**101.0** 79.61 : 114.85
1,1,1-Trichloroethane	TM116	**87.0** 77.80 : 123.40	**107.6** 81.77 : 121.07
1,1,2-Trichloroethane	TM116	**82.6** 75.40 : 119.80	**94.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**93.8** 74.46 : 129.15	**105.4** 74.63 : 123.32

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

VOC MS (S)

		QC 1419	QC 1490
1,2-Dichloroethane	TM116	**97.2** 86.62 : 136.90	**106.6** 86.58 : 129.62
1,4-Dichlorobenzene	TM116	**93.8** 72.76 : 126.34	**104.6** 73.23 : 116.39
2-Chlorotoluene	TM116	**90.6** 74.00 : 117.20	**89.4** 69.22 : 110.64
4-Chlorotoluene	TM116	**87.2** 71.20 : 113.20	**92.4** 68.57 : 106.26
Benzene	TM116	**91.0** 79.60 : 125.20	**101.0** 84.33 : 124.27
Carbon Disulphide	TM116	**98.0** 74.91 : 122.14	**105.8** 77.20 : 122.80
Carbontetrachloride	TM116	**93.4** 87.07 : 120.37	**98.4** 83.53 : 123.46
Chlorobenzene	TM116	**88.6** 75.00 : 115.53	**101.0** 81.40 : 118.90
Chloroform	TM116	**91.2** 82.00 : 128.80	**108.2** 82.73 : 119.72
Chloromethane	TM116	**95.6** 68.36 : 154.01	**100.8** 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	**92.0** 57.23 : 143.96	**98.0** 80.55 : 123.13
Dibromomethane	TM116	**86.4** 73.40 : 116.60	**89.8** 73.40 : 116.60
Dichloromethane	TM116	**97.0** 86.60 : 137.00	**104.6** 81.68 : 125.21
Ethylbenzene	TM116	**88.6** 73.60 : 115.60	**100.8** 77.25 : 115.15
Hexachlorobutadiene	TM116	**73.0** 42.69 : 142.65	**105.0** 27.70 : 164.24
Isopropylbenzene	TM116	**106.0** 64.24 : 119.40	**93.0** 64.86 : 120.15
Naphthalene	TM116	**98.6** 77.06 : 119.98	**116.2** 75.39 : 124.61
o-Xylene	TM116	**87.2** 51.65 : 118.61	**82.0** 63.65 : 97.29
p/m-Xylene	TM116	**84.5** 71.30 : 112.70	**95.5** 73.58 : 109.43
Sec-Butylbenzene	TM116	**96.6** 54.99 : 144.98	**96.6** 49.99 : 131.78
Tetrachloroethene	TM116	**94.6** 83.42 : 123.69	**112.0** 83.87 : 129.89
Toluene	TM116	**83.8** 76.08 : 110.17	**94.6** 79.23 : 114.58
Trichloroethene	TM116	**86.6** 78.17 : 121.37	**94.8** 81.65 : 115.27
Trichlorofluoromethane	TM116	**92.6** 75.01 : 124.99	**104.2** 81.26 : 121.09
Vinyl Chloride	TM116	**103.4** 66.81 : 138.46	**107.0** 64.90 : 133.10

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**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.

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

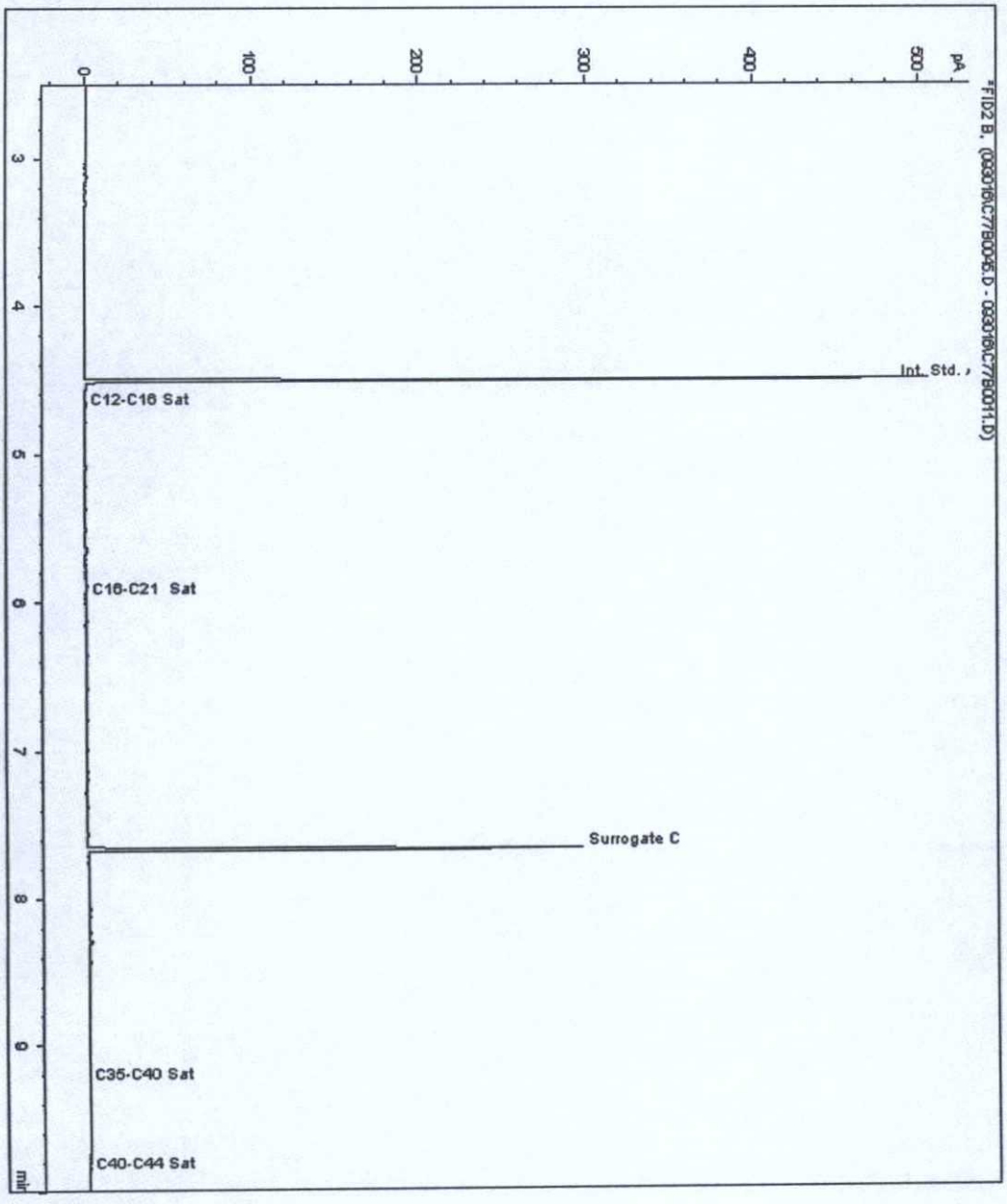
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14230103
Sample ID : PI 01

Depth : 0.60

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

Sample Identity: 13364520-
Date Acquired : 10/2/2016 6:54:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.964



ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

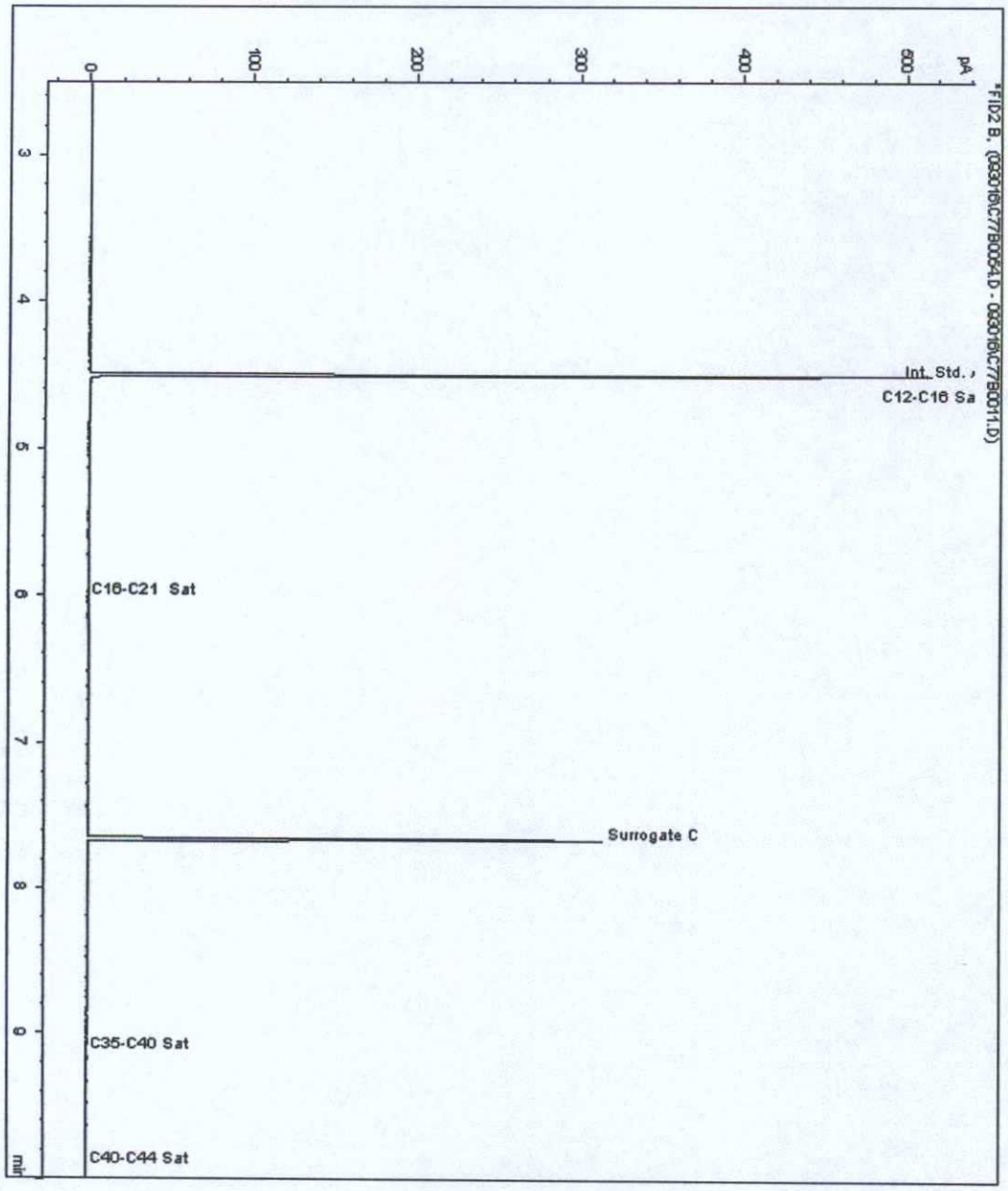
SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 14230111 **Sample ID :** PI 03 **Depth :** 0.60

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

Sample Identity: 13364541-
Date Acquired : 10/2/2016 9:22:47 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.962



ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

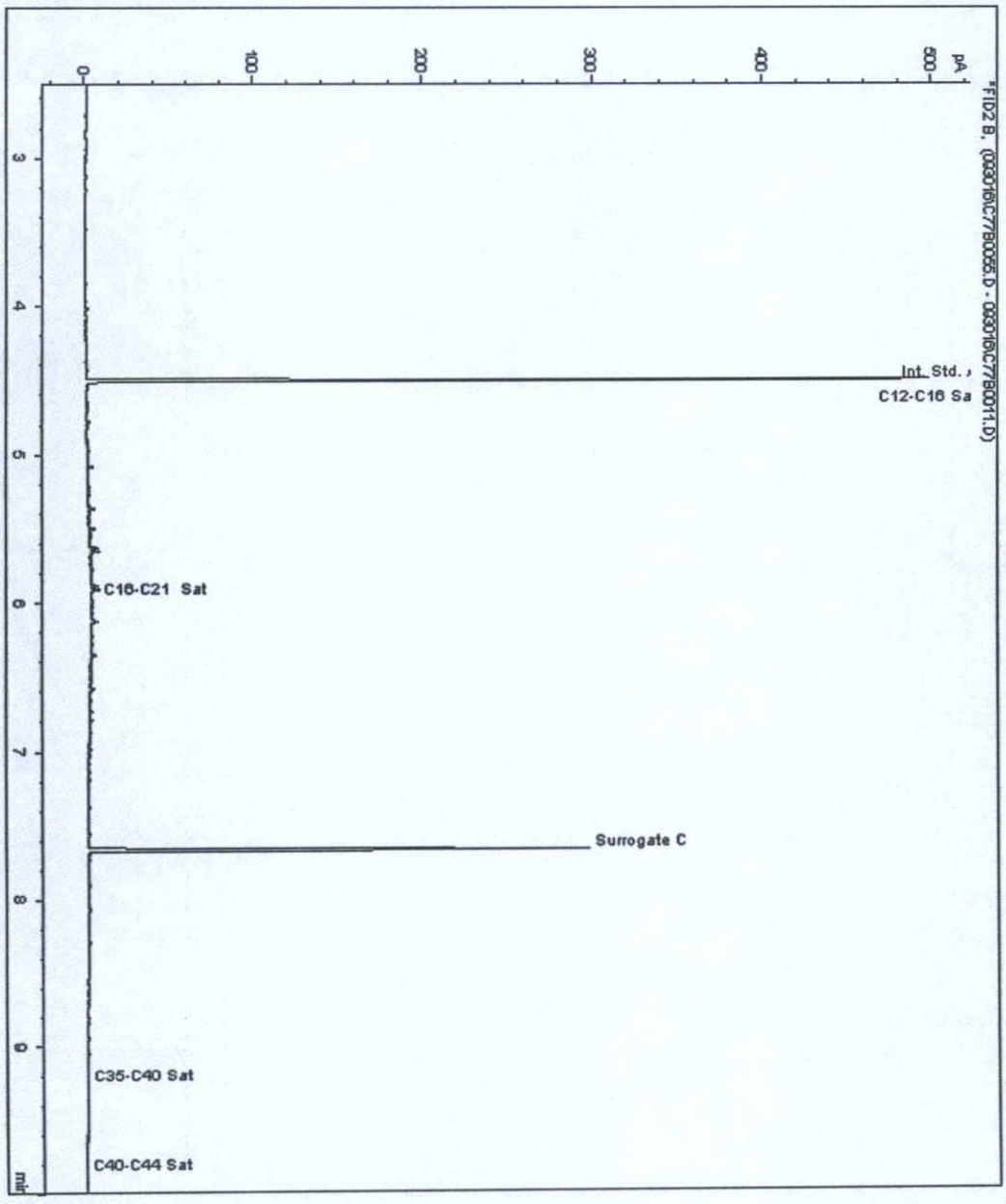
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14230145
Sample ID : PI 04

Depth : 0.60

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

Sample Identity: 13364554-
Date Acquired : 10/2/2016 9:42:53 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.019



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Validated

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

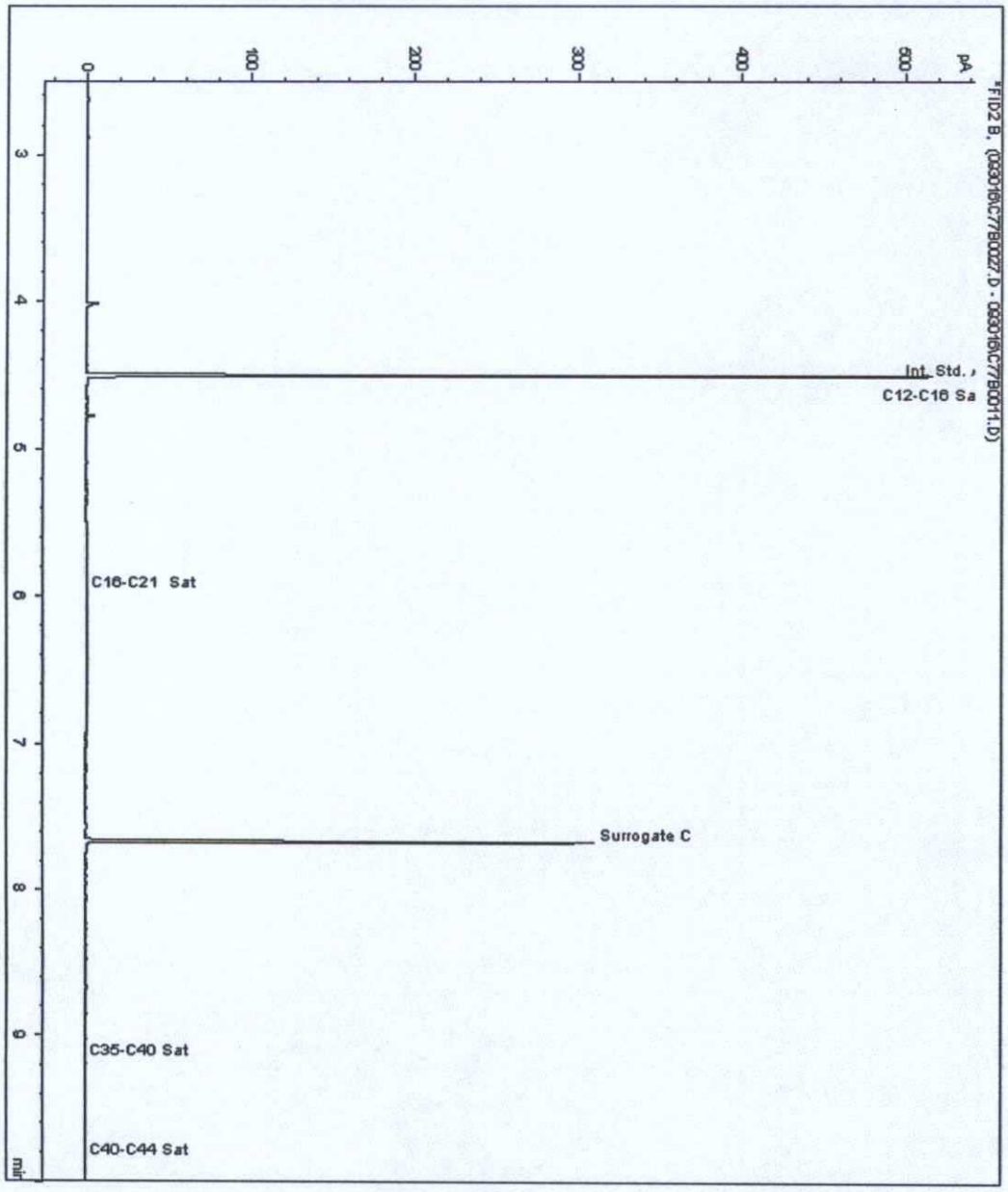
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14231600
Sample ID : PI 02

Depth : 0.60

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

Sample Identity: 13364532-
Date Acquired : 9/30/2016 4:12:50 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.001



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Validated

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

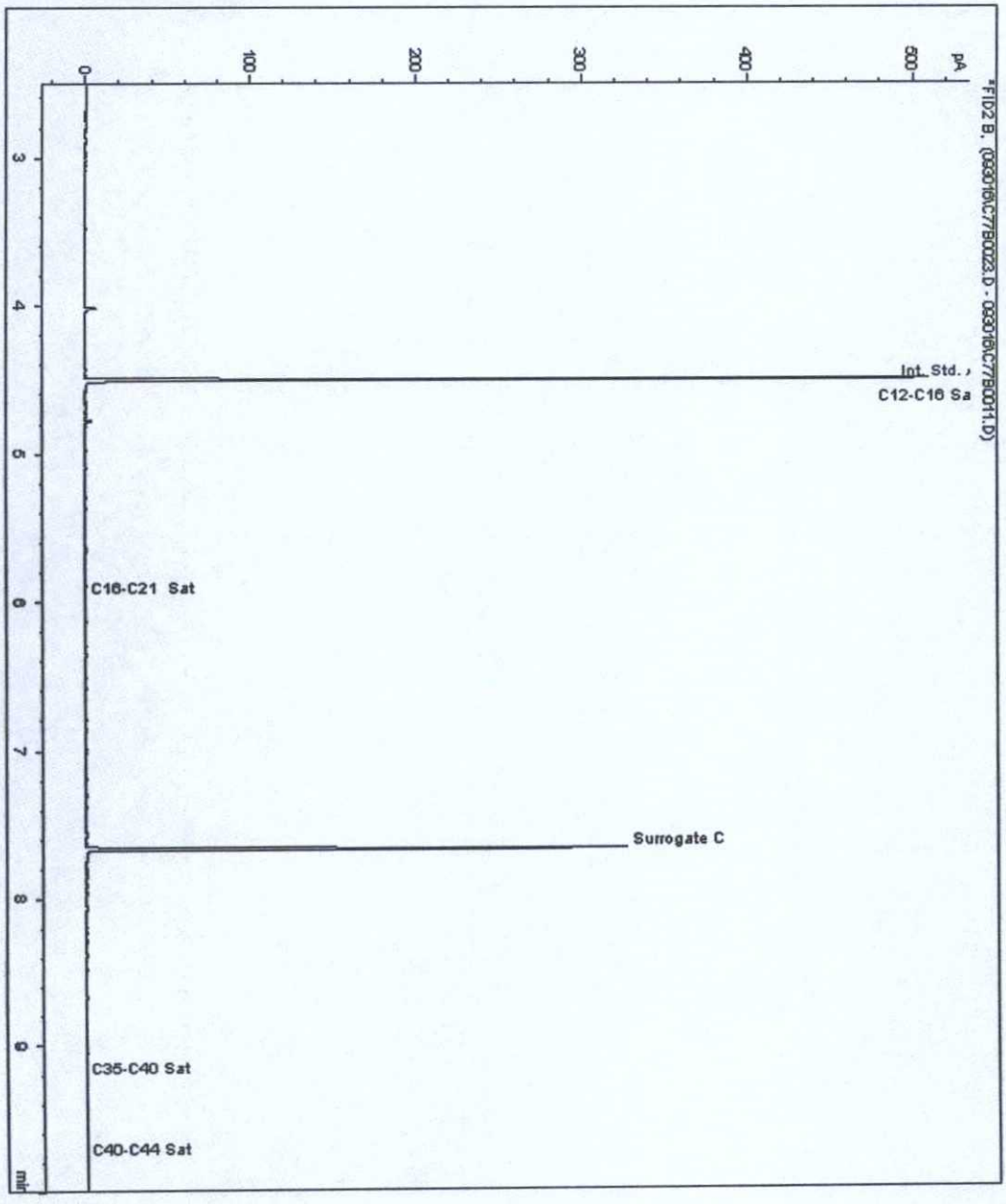
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14232349
Sample ID : FL 03

Depth : 0.60

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

Sample Identity: 13364566-
Date Acquired : 9/30/2016 2:59:29 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.009



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CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

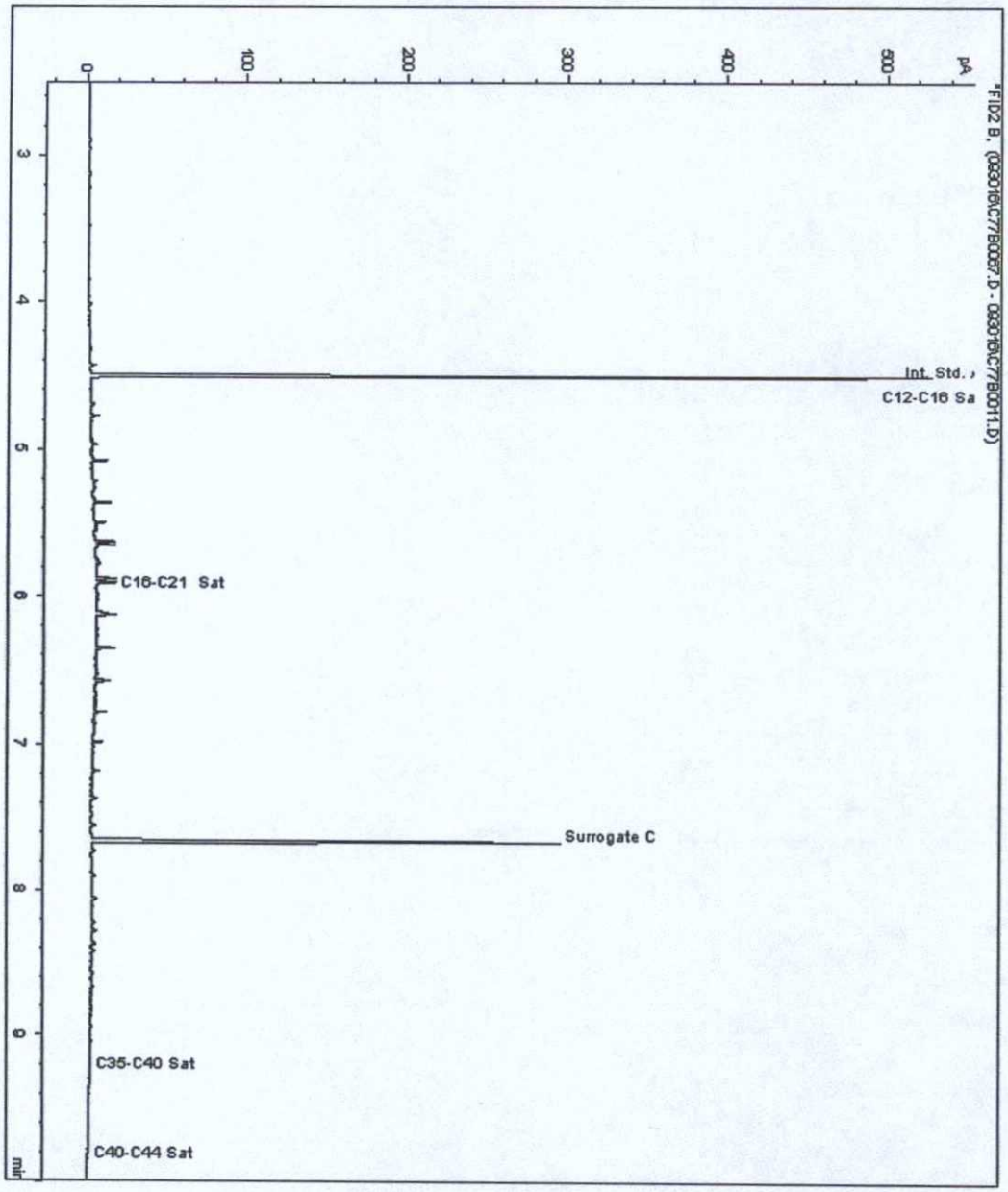
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14233316
Sample ID : FL 04

Depth : 0.60

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

Sample Identity: 13364575-
Date Acquired : 10/3/2016 1:02:41 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960



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Validated

CERTIFICATE OF ANALYSIS

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

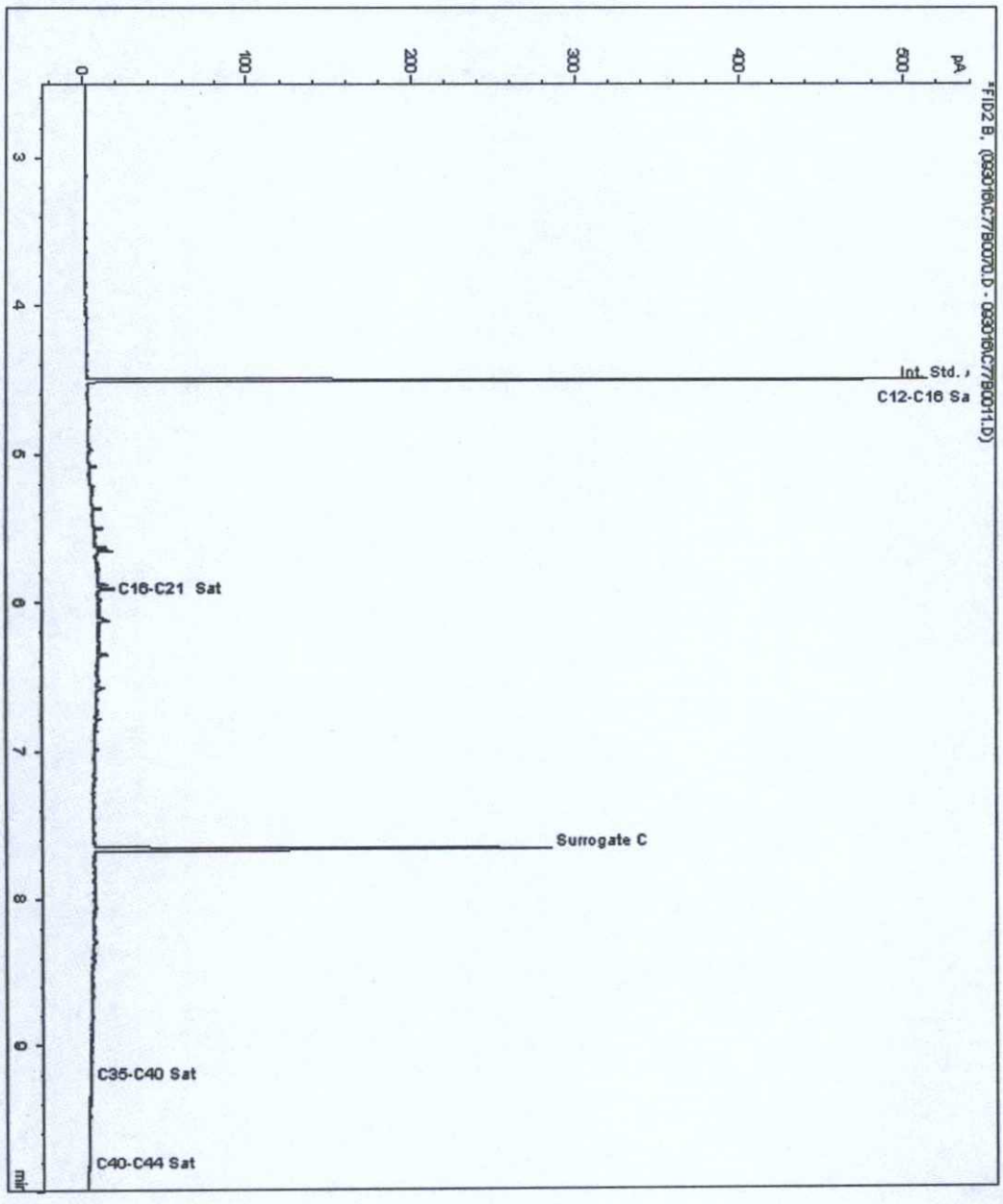
Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 14233382
Sample ID : FL 05

Depth : 0.60

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

Sample Identity: 13364587-
Date Acquired : 10/3/2016 1:46:11 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.973



ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

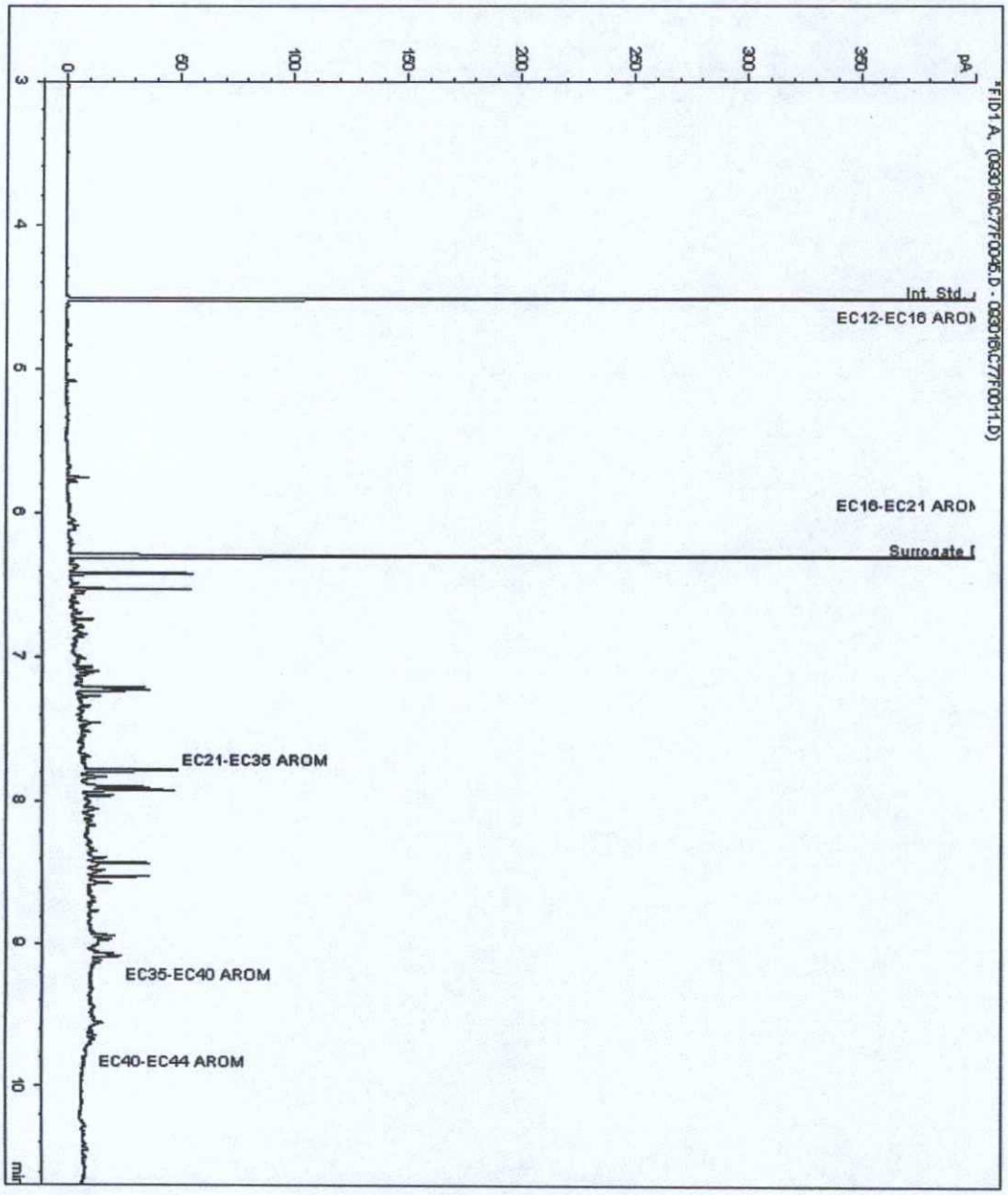
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14230103
Sample ID : PI 01

Depth : 0.60

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

Sample Identity: 13364521-
Date Acquired : 10/2/2016 6:54:48 PM
Units : ppb
Dilution:



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Validated

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

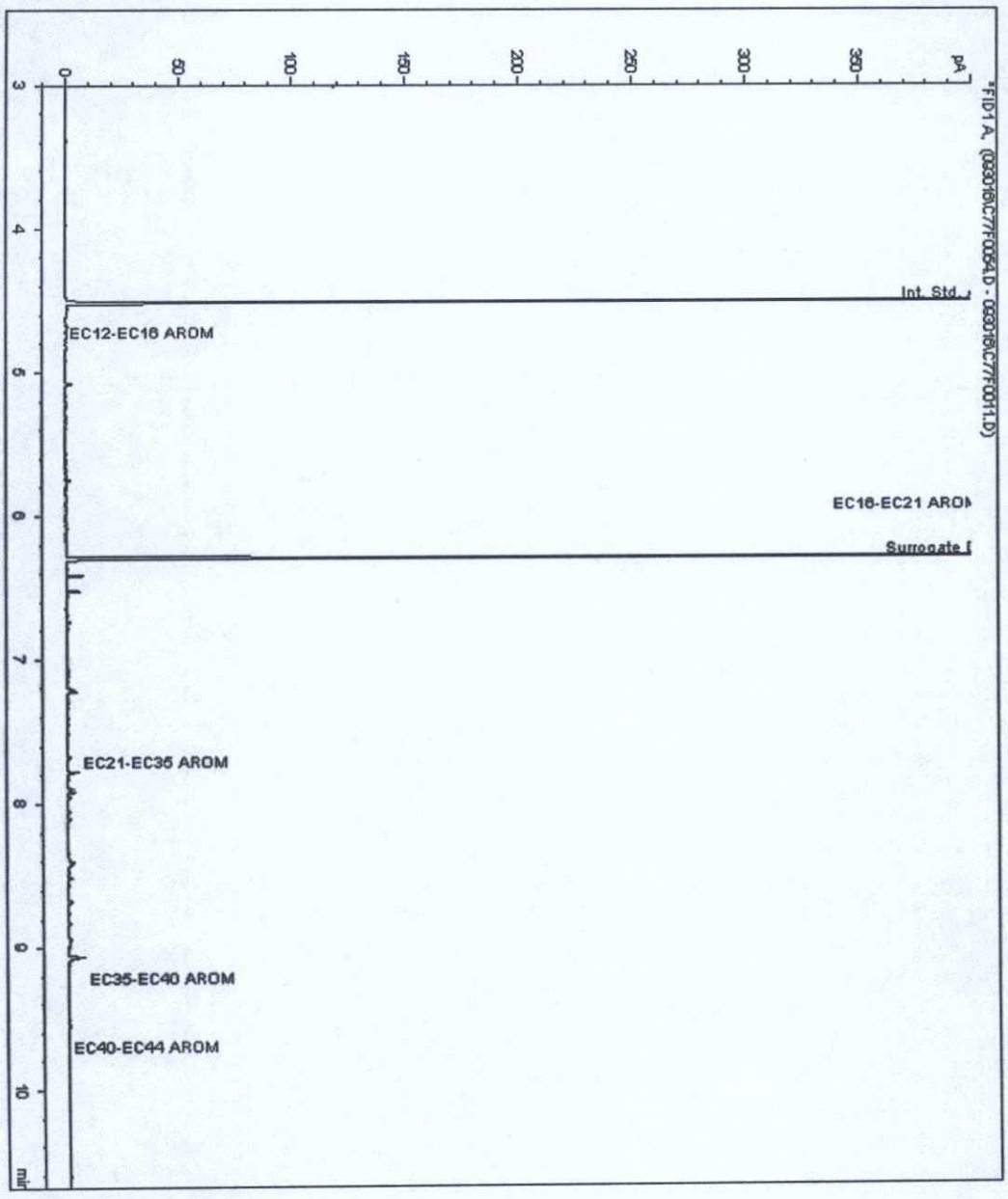
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14230111
Sample ID : PI 03

Depth : 0.60

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

Sample Identity: 13364542-
Date Acquired : 10/2/2016 9:22:47 PM
Units : ppb
Dilution:



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Validated

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

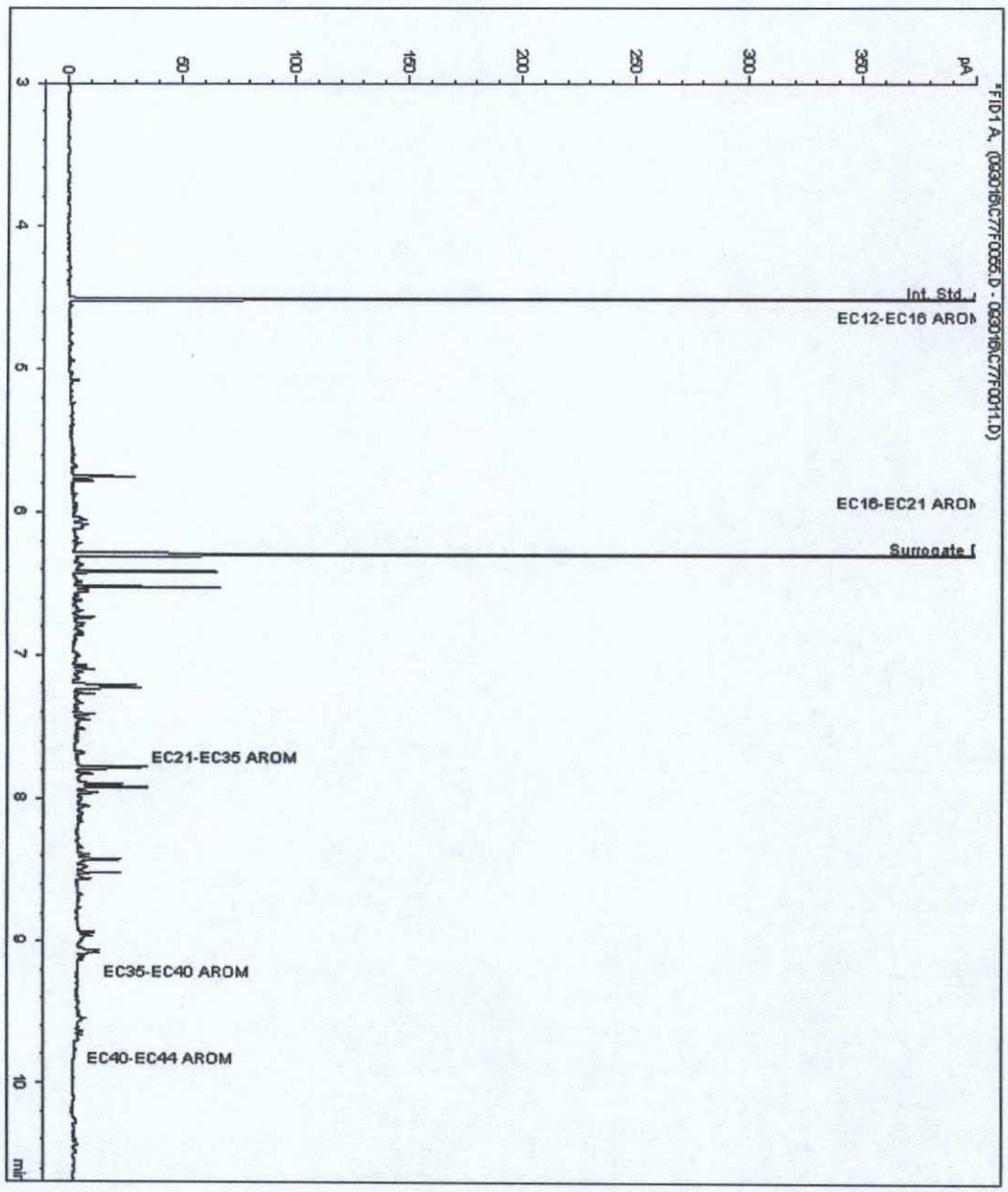
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14230145
Sample ID : PI 04

Depth : 0.60

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

Sample Identity: 13364555-
Date Acquired : 10/2/2016 9:42:53 PM
Units : ppb
Dilution:



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Validated

CERTIFICATE OF ANALYSIS

SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14231600
Sample ID : PI 02

Depth : 0.60

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

Sample Identity: 13364533-
Date Acquired : 9/30/2016 4:12:50 PM
Units : ppb
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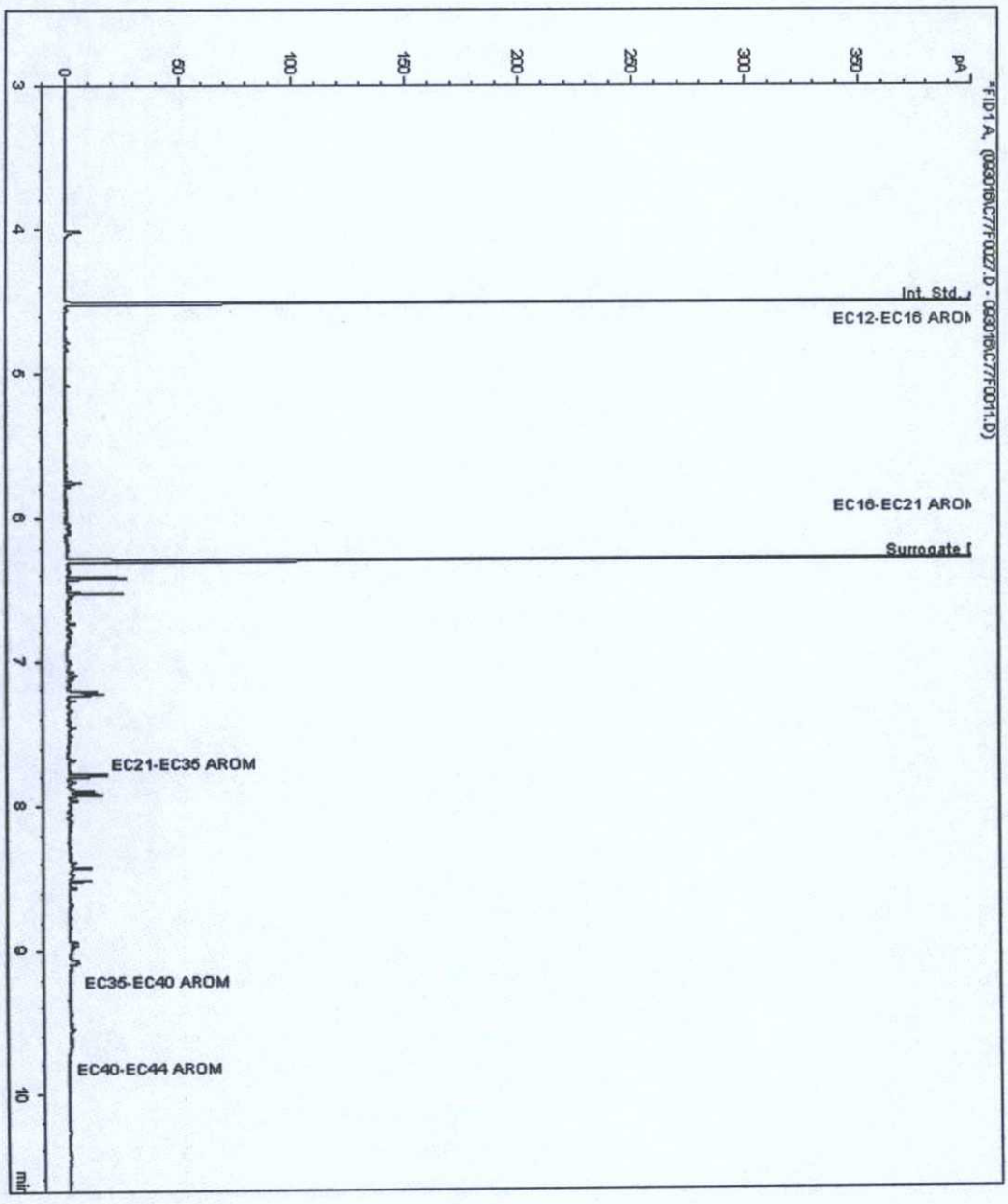

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

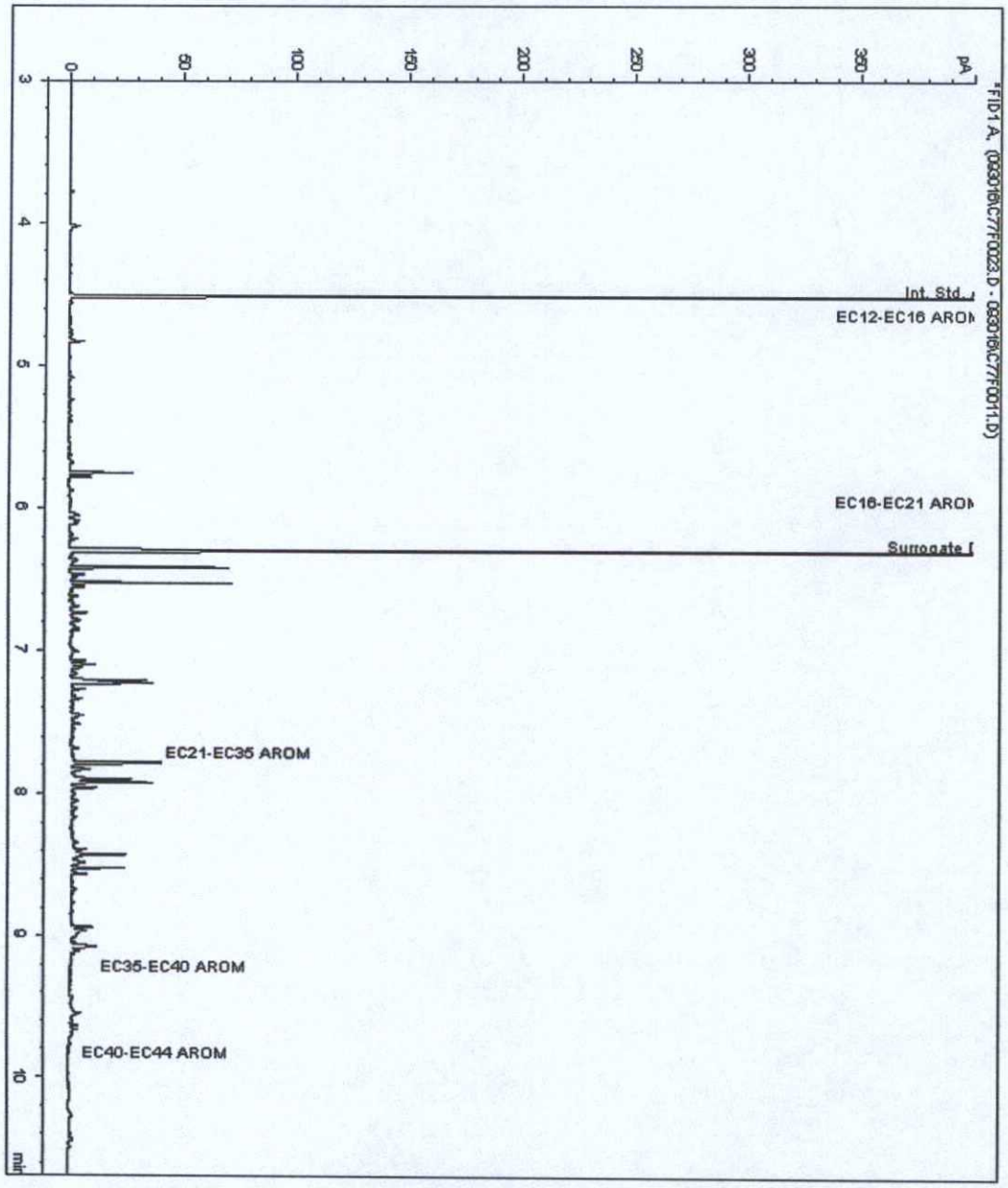
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14232349
Sample ID : FL 03

Depth : 0.60

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

Sample Identity: 13364567-
Date Acquired : 9/30/2016 2:59:29 PM
Units : ppb
Dilution:



ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

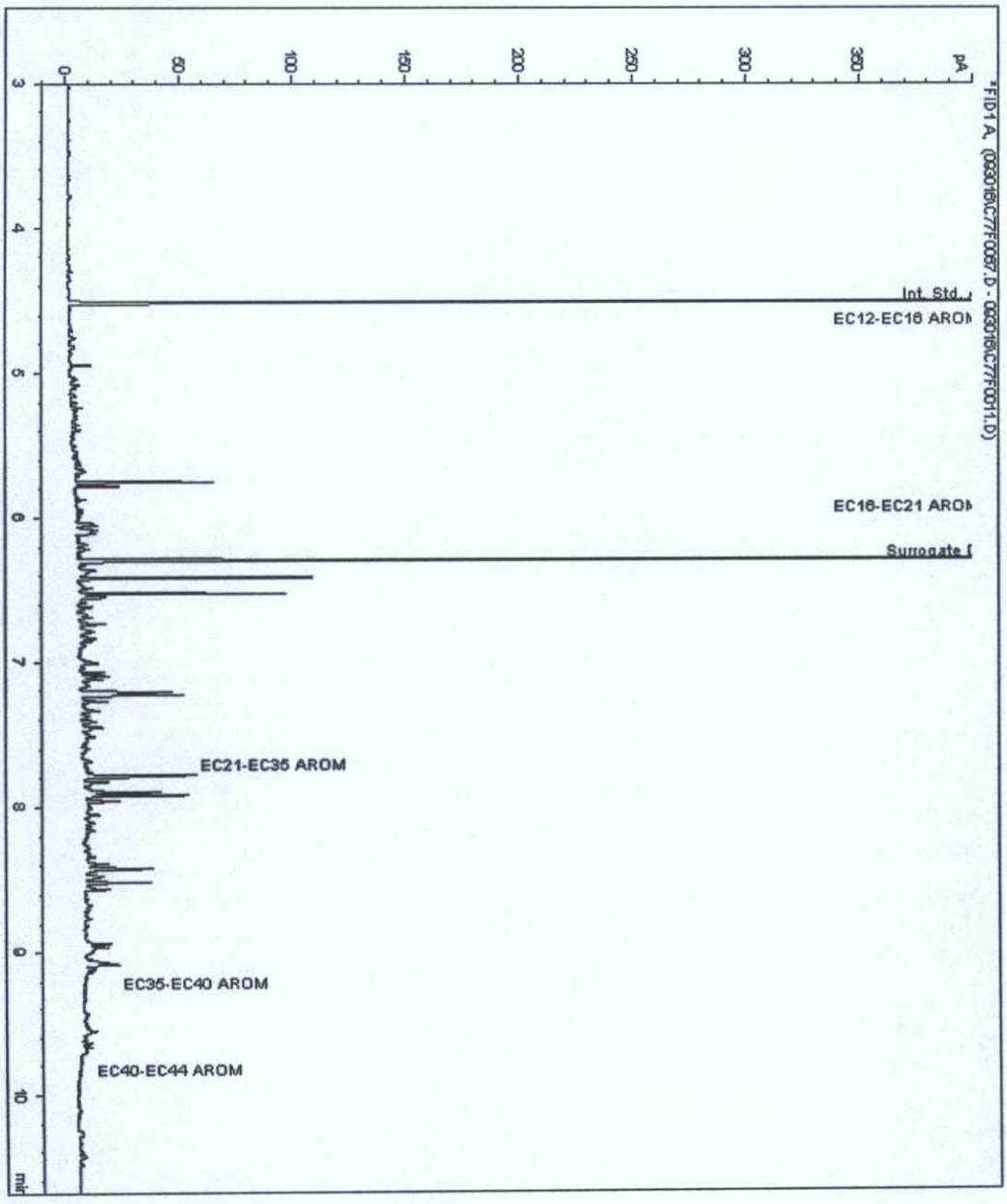
SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 14233316 **Sample ID :** FL 04 **Depth :** 0.60

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

Sample Identity: 13364576-
Date Acquired : 10/3/2016 1:02:41 AM
Units : ppb
Dilution:



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Validated

CERTIFICATE OF ANALYSIS

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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

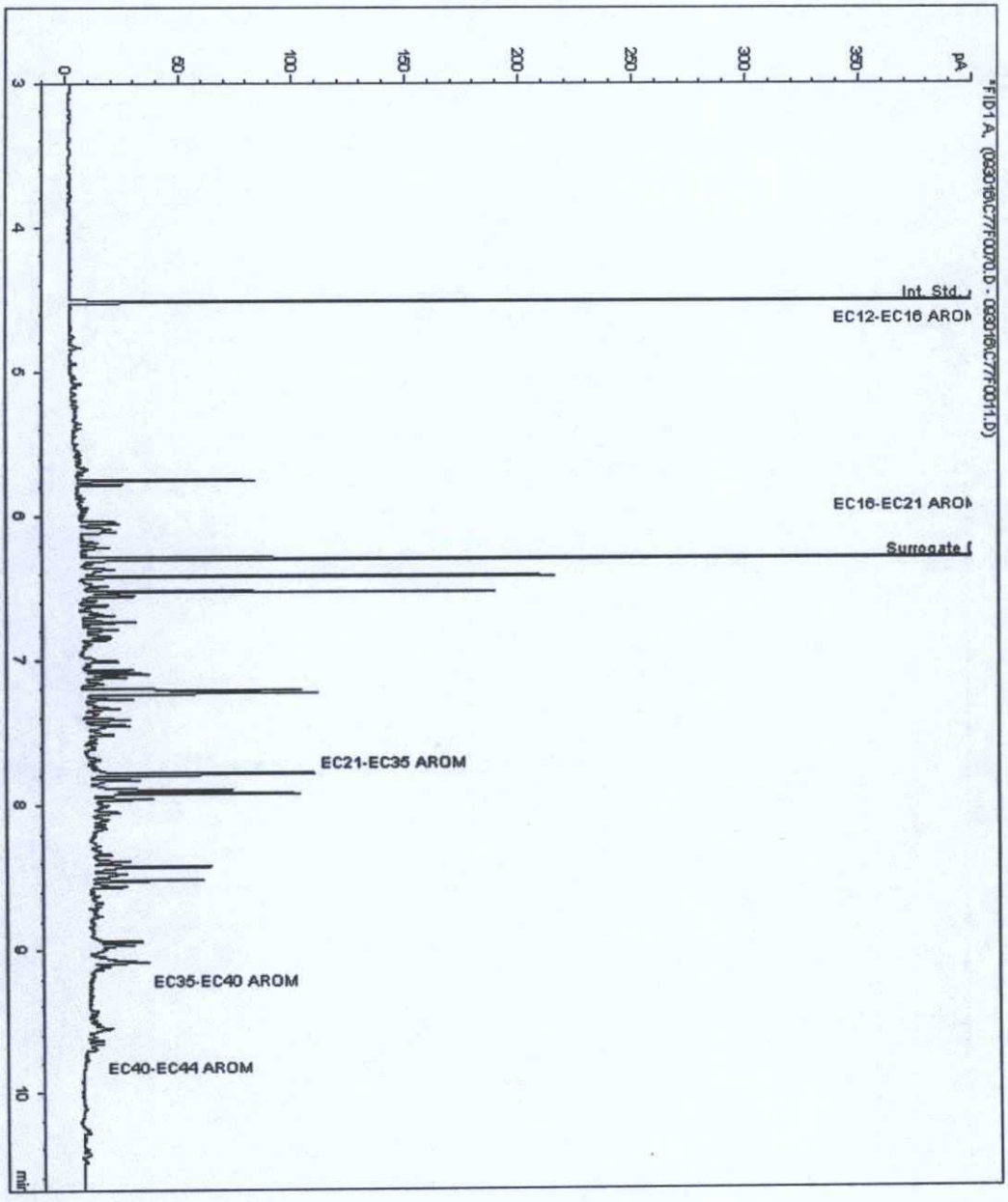
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14233382
Sample ID : FL 05

Depth : 0.60

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

Sample Identity: 13364588-
Date Acquired : 10/3/2016 1:46:11 AM
Units : ppb
Dilution:



ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

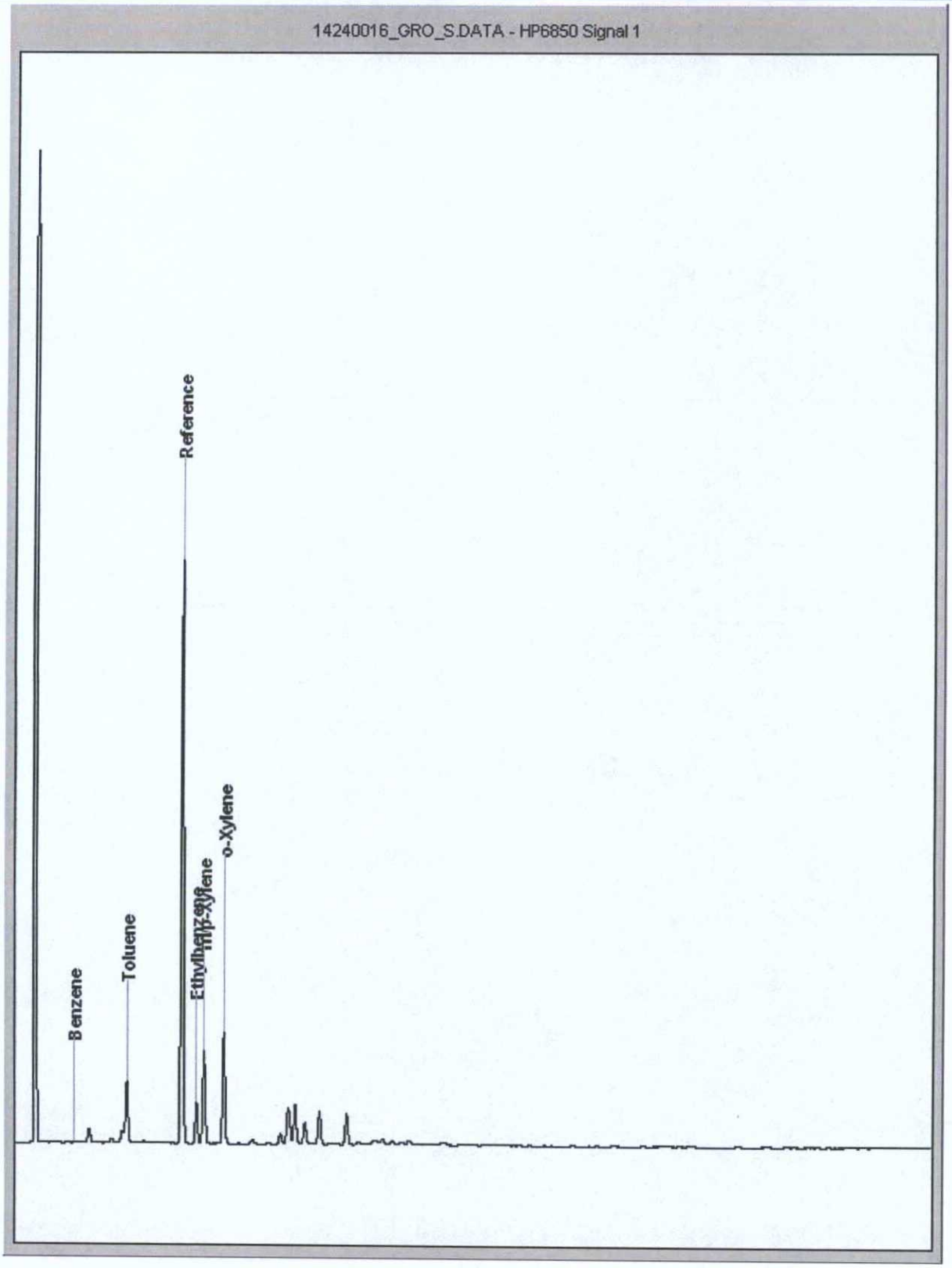
SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14240016
Sample ID : PI 01

Depth : 0.60



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Validated

CERTIFICATE OF ANALYSIS

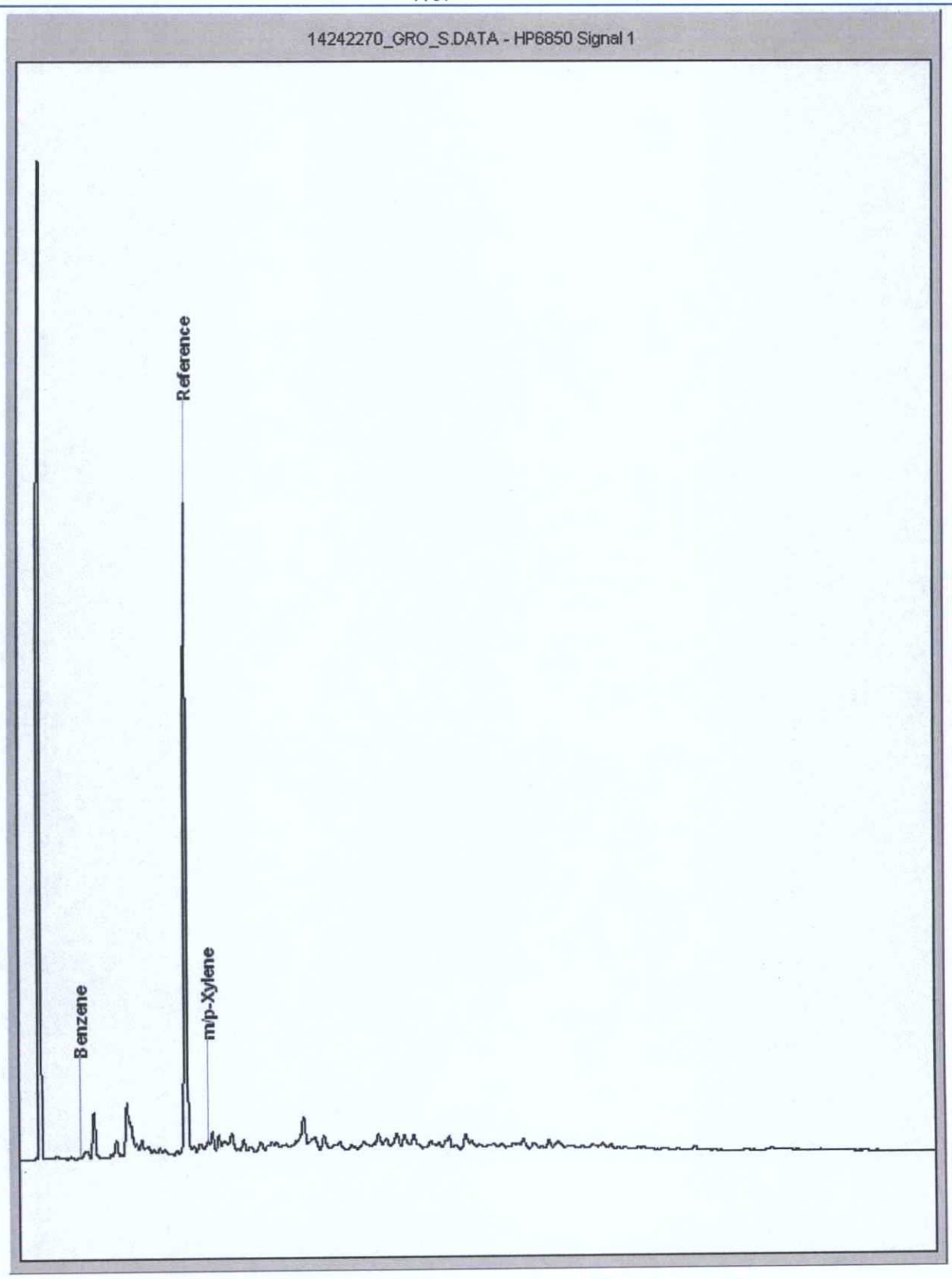
SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14242270
Sample ID : PI 04

Depth : 0.60



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CERTIFICATE OF ANALYSIS

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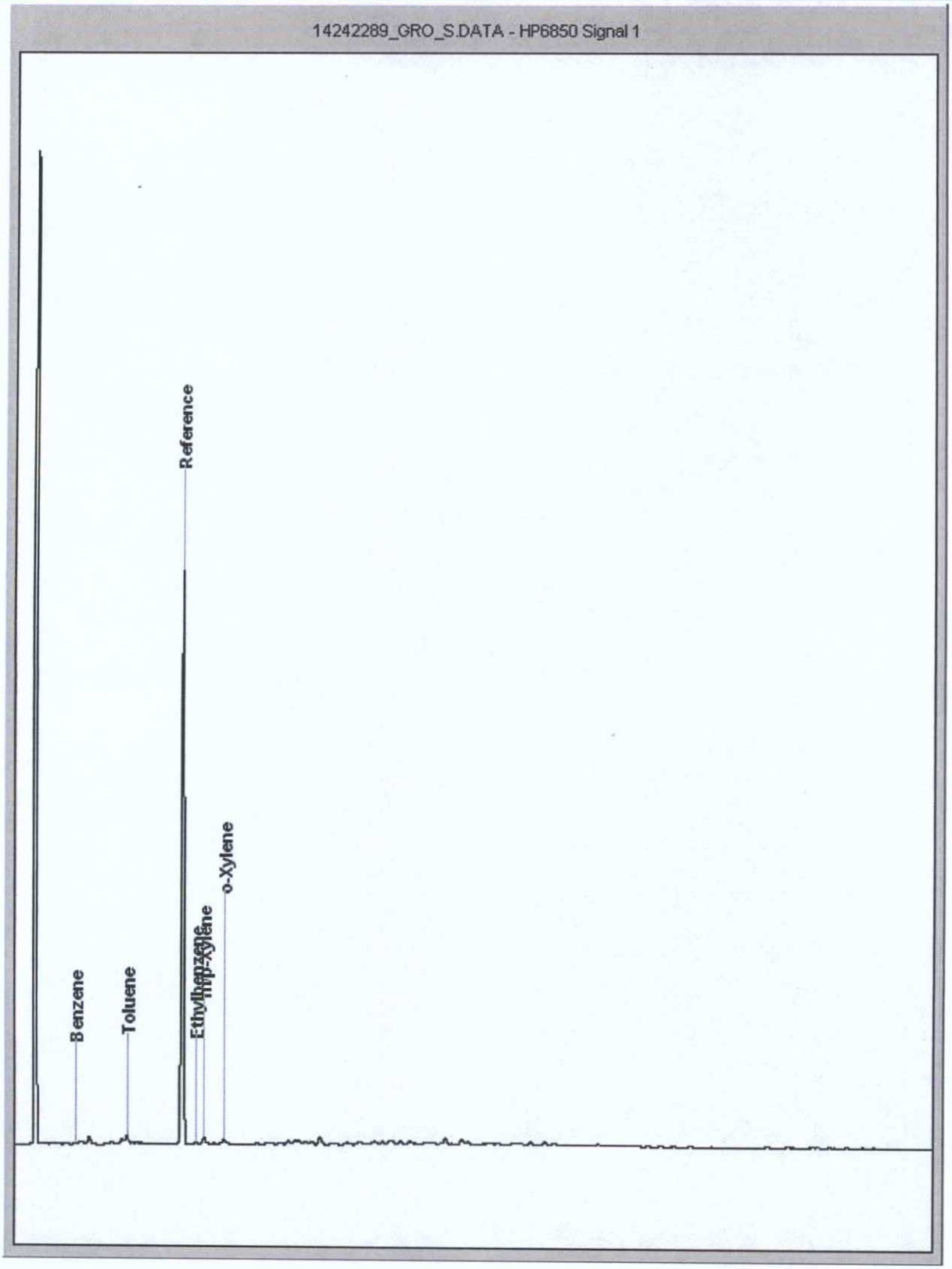
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14242289
Sample ID : FL 05

Depth : 0.60



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Validated

CERTIFICATE OF ANALYSIS

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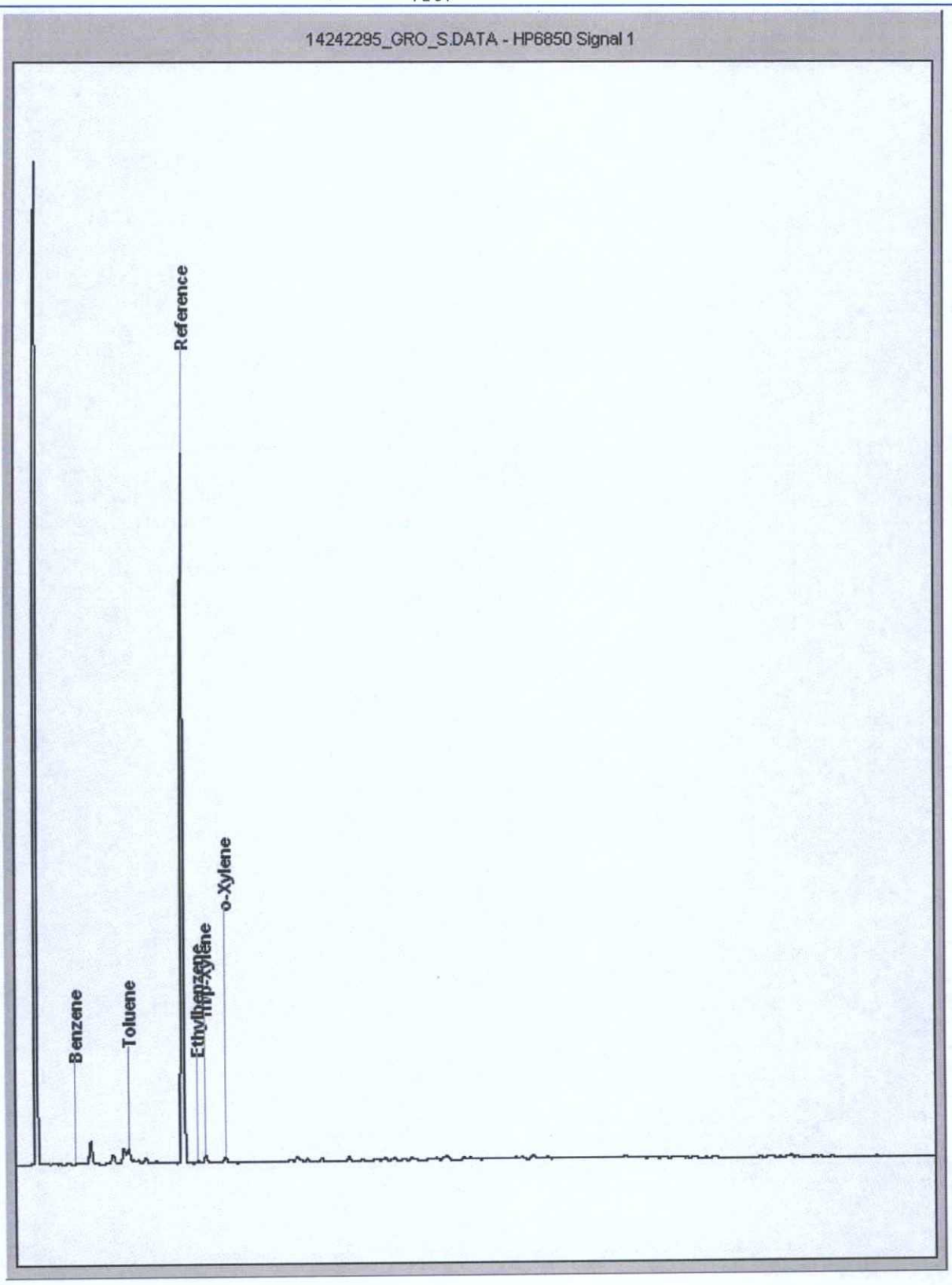
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14242295
Sample ID : FL 04

Depth : 0.60



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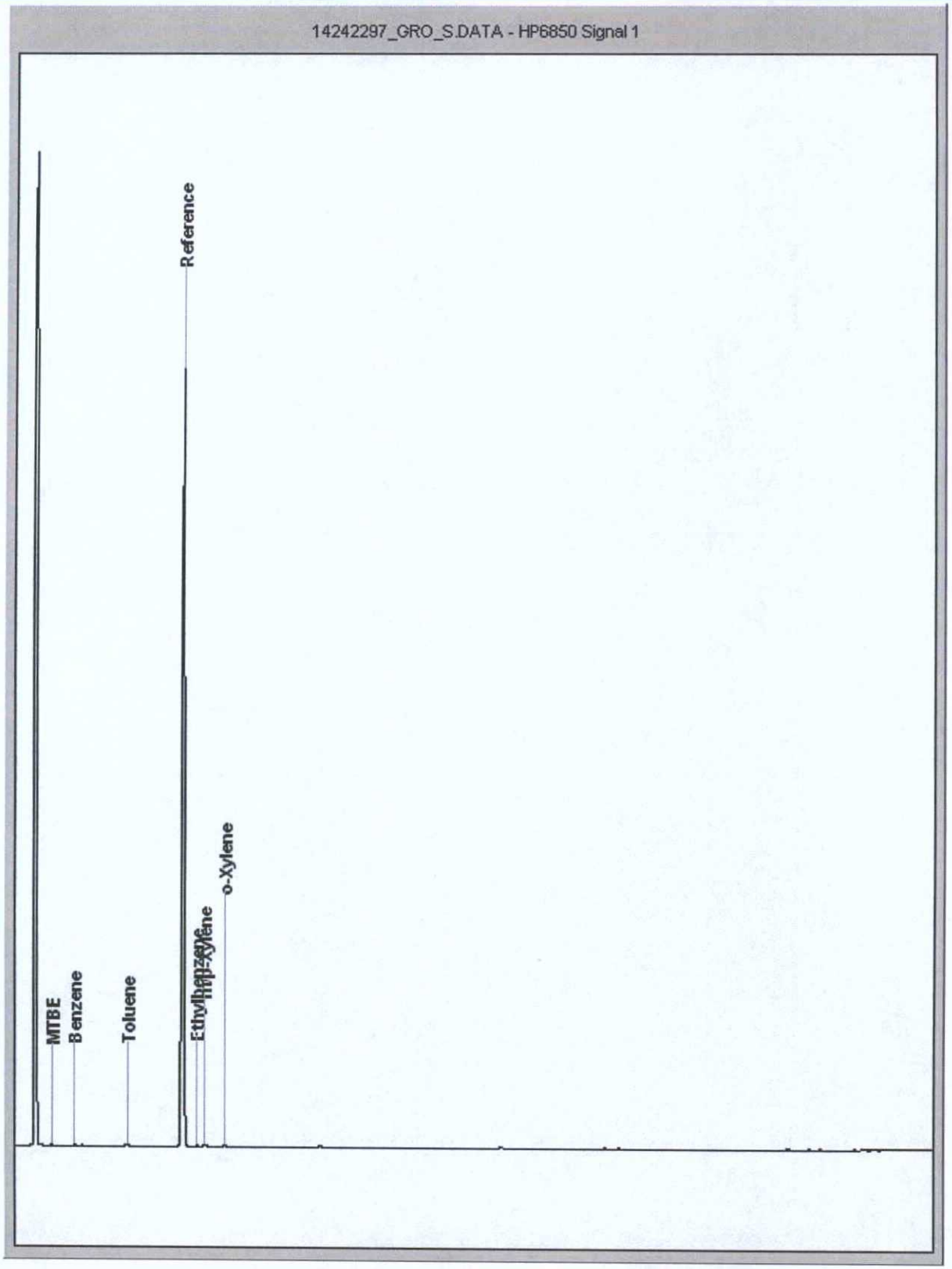
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14242297
Sample ID : FL 03

Depth : 0.60



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Validated

CERTIFICATE OF ANALYSIS

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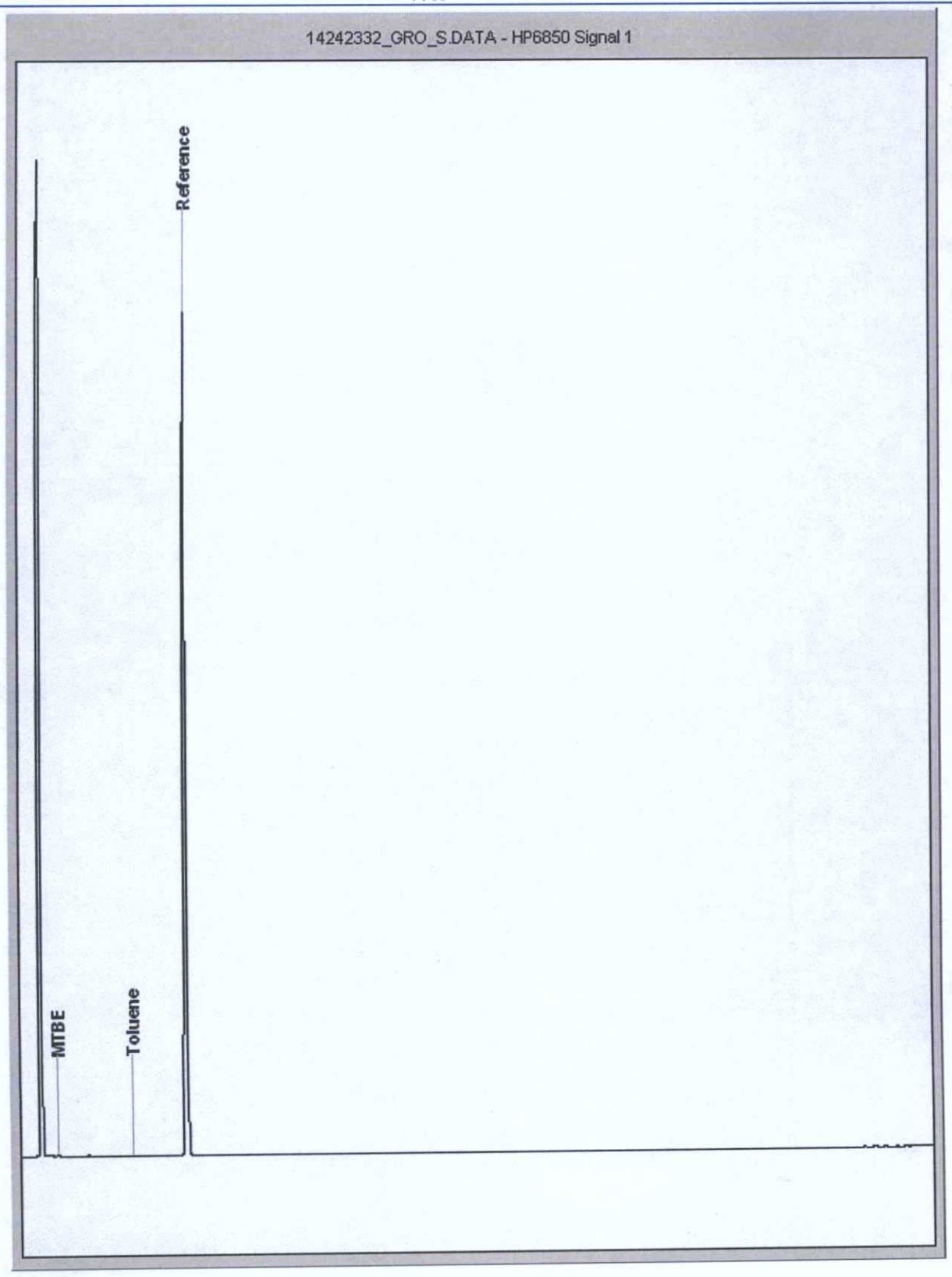
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14242332
Sample ID : PI 03

Depth : 0.60



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CERTIFICATE OF ANALYSIS

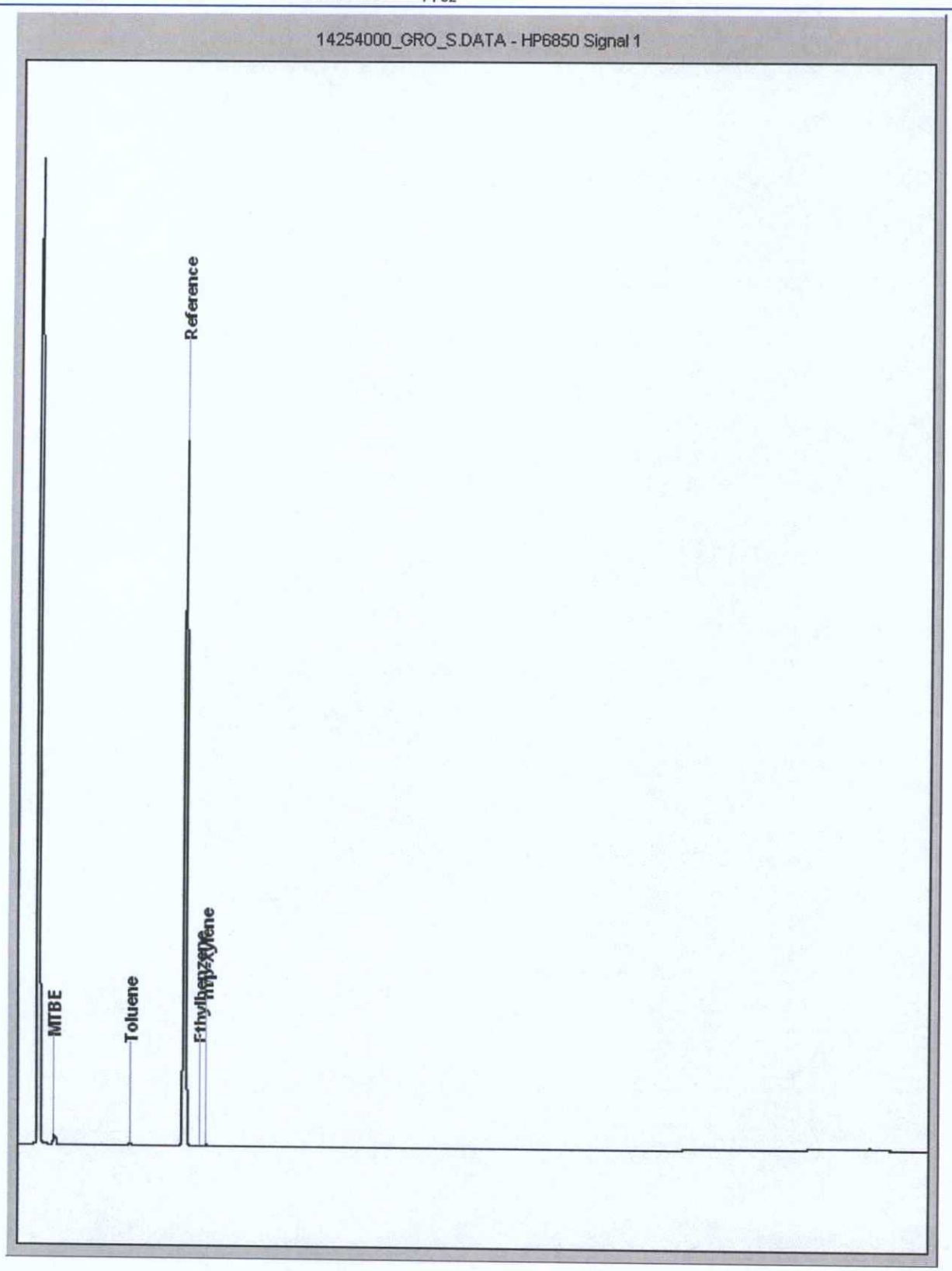
SDG:	160928-95	**Location:**	Shell Shoreham Airport	**Order Number:**	60491603
Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14254000
Sample ID : PI 02

Depth : 0.60



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Job:	H_URS_WIM-237	**Customer:**	AECOM	**Report Number:**	380920
Client Reference:		**Attention:**	Tim Rolfe	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) 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 Dimethyphenol, 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.

General

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 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.

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Attention: Kathryn Mellor

CERTIFICATE OF ANALYSIS

Date:	28 December 2016
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	161215-87
Your Reference:	60491603
Location:	SHELL SHOREHAM
Report No:	391965

We received 2 samples on Thursday December 15, 2016 and 2 of these samples were scheduled for analysis which was completed on Wednesday December 28, 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.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Approved By:

[redacted]

Sonia McWhan

Operations Manager

1291

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CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
14720754	BH201		2.50	13/12/2016
14720755	BH201		5.00	13/12/2016

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

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	14720754	14720755
			Customer Sample Reference	BH201	BH201
			AGS Reference		
			Depth (m)	2.50	5.00
			Container	250g Amber Ja / 60g VOC (ALE2)	250g Amber Ja / 60g VOC (ALE2)
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
n-Hexane in Solids	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
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X	X
Total Organic Carbon	All	NDPs: 0 Tests: 2		X	X
VOC MS (S)	All	NDPs: 0 Tests: 2		X	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**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
14720754	BH201	2.50	Light Brown	Sandy Clay Loam	0.063 - 2.00 mm	None	None
14720755	BH201	5.00	Light Brown	Sand	0.063 - 2.00 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 ocurring 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.

Validated

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Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201				
			Depth (m)	2.50	5.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/12/2016	13/12/2016				
			Sampled Time	-	-				
			Date Received	15/12/2016	15/12/2016				
			SDG Ref	161215-87	161215-87				
			Lab Sample No.(s)	14720754	14720755				
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		17	11				
Fraction Organic Carbon Low	<0.0002 -	TM132		0.0022 #	0.00402 #				
Bromofluorobenzene**	%	TM288		123	126				
Ethanol	<50 µg/kg	TM288		<50	<50				
tert Butanol	<10 µg/kg	TM288		<10	<10				
Diisopropyl ether	<1 µg/kg	TM288		<1	<1				
tert-butyl ethyl ether	<1 µg/kg	TM288		<1	<1				
n-Hexane	<10 µg/kg	TM336		<10	<10				

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

EPH CWG (Aliphatic) GC (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201
			Depth (m)	2.50	5.00
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	13/12/2016	13/12/2016
			Sampled Time	-	-
			Date Received	15/12/2016	15/12/2016
			SDG Ref	161215-87	161215-87
			Lab Sample No.(s)	14720754	14720755
			AGS Reference		
Aliphatics >C12-C16	<100 µg/kg	TM173		450	<100
Aliphatics >C16-C21	<100 µg/kg	TM173		2520	<100
Aliphatics >C21-C35	<100 µg/kg	TM173		6390	11100
Aliphatics >C35-C44	<100 µg/kg	TM173		1280	1710

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

EPH CWG (Aromatic) GC (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201				
			Depth (m)	2.50	5.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/12/2016	13/12/2016				
			Sampled Time	-	-				
			Date Received	15/12/2016	15/12/2016				
			SDG Ref	161215-87	161215-87				
			Lab Sample No.(s)	14720754	14720755				
			AGS Reference						
Aromatics >EC12-EC16	<100 µg/kg	TM173		<100	<100				
Aromatics >EC16-EC21	<100 µg/kg	TM173		<100	<100				
Aromatics >EC21-EC35	<100 µg/kg	TM173		<100	1900				

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

GRO by GC-FID (S)

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201
			Depth (m)	2.50	5.00
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	13/12/2016	13/12/2016
			Sampled Time	-	-
			Date Received	15/12/2016	15/12/2016
			SDG Ref	161215-87	161215-87
			Lab Sample No.(s)	14720754	14720755
			AGS Reference		
GRO Surrogate % recovery**	%	TM089		127	110
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089		<10	<10
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089		<10	<10

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201				
			Depth (m)	2.50	5.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/12/2016	13/12/2016				
			Sampled Time	-	-				
			Date Received	15/12/2016	15/12/2016				
			SDG Ref	161215-87	161215-87				
			Lab Sample No.(s)	14720754	14720755				
			AGS Reference						
Naphthalene-d8 % recovery**	%	TM218		103	103				
Acenaphthene-d10 % recovery**	%	TM218		97.9	99.7				
Phenanthrene-d10 % recovery**	%	TM218		94.2	95.1				
Chrysene-d12 % recovery**	%	TM218		96	99.6				
Perylene-d12 % recovery**	%	TM218		99.5	105				
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				

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201
			Depth (m)	2.50	5.00
			Sample Type	Soil/Solid	Soil/Solid
			Date Sampled	13/12/2016	13/12/2016
			Sampled Time	-	-
			Date Received	15/12/2016	15/12/2016
			SDG Ref	161215-87	161215-87
			Lab Sample No.(s)	14720754	14720755
			AGS Reference		
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
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	Customer Sample Ref.	BH201	BH201				
			Depth (m)	2.50	5.00				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	13/12/2016	13/12/2016				
			Sampled Time	-	-				
			Date Received	15/12/2016	15/12/2016				
			SDG Ref	161215-87	161215-87				
			Lab Sample No.(s)	14720754	14720755				
			AGS Reference						
Toluene-d8**	%	TM116		101	100				
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M				
Benzene	<9 µg/kg	TM116		<9 M	<9 M				
Toluene	<7 µg/kg	TM116		<7 M	<7 M				
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M				
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #				
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M				
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #				

Validated

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SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**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		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM218	Determination of PAH by GCMS Microwave extraction	The determination of PAH in soil samples by microwave extraction and GC-MS		
TM288		Determination of Oxygenates in Soils by Headspace/GC-MS		
TM336				

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

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Validated

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SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	14720754	14720755
Customer Sample Ref.	BH201	BH201
AGS Ref.		
Depth	2.50	5.00
Type	SOLID	SOLID
EPH CWG (Aliphatic) GC (S)	21-Dec-2016	21-Dec-2016
EPH CWG (Aromatic) GC (S)	21-Dec-2016	21-Dec-2016
GRO by GC-FID (S)	20-Dec-2016	20-Dec-2016
n-Hexane in Solids	22-Dec-2016	22-Dec-2016
Oxygenates (S)	17-Dec-2016	17-Dec-2016
PAH by GCMS	20-Dec-2016	20-Dec-2016
Sample description	16-Dec-2016	16-Dec-2016
Semi Volatile Organic Compounds	19-Dec-2016	19-Dec-2016
Total Organic Carbon	28-Dec-2016	28-Dec-2016
VOC MS (S)	20-Dec-2016	20-Dec-2016

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

ASSOCIATED AQC DATA

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1420
Total Aliphatics >C12-C35	TM173	**87.08** 55.42 : 102.92

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1420
Total Aromatics >EC12-EC35	TM173	**78.67** 59.92 : 107.95

GRO by GC-FID (S)

Component	Method Code	QC 1475
Benzene by GC (Moisture Corrected)	TM089	**103.5** 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	**102.0** 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	**102.0** 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	**104.5** 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	**101.5** 80.03 : 117.19
QC	TM089	**97.55** 69.60 : 117.16
Toluene by GC (Moisture Corrected)	TM089	**103.0** 75.79 : 116.75

n-Hexane in Solids

Component	Method Code	QC 1458	QC 1418
n_Hexane Raw	TM336	**95.25** 58.61 : 129.98	**91.03** 58.61 : 129.98

Oxygenates (S)

Component	Method Code	QC 1437
Diisopropyl ether raw	TM288	**97.0** 75.85 : 124.81
Ethanol raw	TM288	**100.0** 20.18 : 141.28
tert Butanol raw	TM288	**99.5** 27.29 : 165.57

CERTIFICATE OF ANALYSIS

Validated

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Oxygenates (S)

		QC 1437
tert-amyl methyl ether raw	TM288	**98.75** 78.96 : 124.84
tert-butyl ethyl ether raw	TM288	**98.0** 76.41 : 125.42
tert-butyl methyl ether raw	TM288	**101.5** 78.20 : 126.30

PAH by GCMS

Component	Method Code	QC 1462
Acenaphthene	TM218	**91.5** 78.41 : 114.87
Acenaphthylene	TM218	**88.0** 72.38 : 111.60
Anthracene	TM218	**89.5** 74.05 : 107.65
Benz(a)anthracene	TM218	**104.0** 79.95 : 123.45
Benzo(a)pyrene	TM218	**114.0** 79.90 : 124.90
Benzo(b)fluoranthene	TM218	**116.5** 78.10 : 127.57
Benzo(ghi)perylene	TM218	**110.0** 81.67 : 122.61
Benzo(k)fluoranthene	TM218	**106.0** 82.90 : 120.40
Chrysene	TM218	**97.5** 83.70 : 117.60
Dibenzo(ah)anthracene	TM218	**112.0** 77.93 : 124.42
Fluoranthene	TM218	**95.5** 79.75 : 111.25
Fluorene	TM218	**93.5** 78.30 : 113.70
Indeno(123cd)pyrene	TM218	**112.0** 80.20 : 122.50
Naphthalene	TM218	**94.0** 77.40 : 117.90
Phenanthrene	TM218	**90.5** 79.60 : 111.10
Pyrene	TM218	**94.0** 76.20 : 112.20

Semi Volatile Organic Compounds

Component	Method Code	QC 1470
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**100.5** 63.00 : 117.00
Hexachlorobutadiene (Soil)	TM157	**99.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**94.5** 67.55 : 125.45

Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Semi Volatile Organic Compounds

		QC 1470
Nitrobenzene (Soil)	TM157	**99.5** 66.50 : 123.50
Phenol (Soil)	TM157	**99.0** 64.00 : 121.00

Total Organic Carbon

Component	Method Code	QC 1404
Total Organic Carbon	TM132	**110.5** 83.54 : 99.94

VOC MS (S)

Component	Method Code	QC 1489
1,1,1,2-tetrachloroethane	TM116	**108.6** 79.61 : 114.85
1,1,1-Trichloroethane	TM116	**99.8** 81.77 : 121.07
1,1,2-Trichloroethane	TM116	**92.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**90.6** 74.63 : 123.32
1,2-Dichloroethane	TM116	**111.6** 86.58 : 129.62
1,4-Dichlorobenzene	TM116	**108.0** 73.23 : 116.39
2-Chlorotoluene	TM116	**99.0** 66.81 : 118.43
4-Chlorotoluene	TM116	**95.4** 65.69 : 122.56
Benzene	TM116	**98.2** 84.33 : 124.27
Carbon Disulphide	TM116	**90.8** 77.20 : 122.80
Carbontetrachloride	TM116	**114.2** 83.53 : 123.46
Chlorobenzene	TM116	**105.2** 75.96 : 121.69
Chloroform	TM116	**96.8** 82.73 : 119.72
Chloromethane	TM116	**88.2** 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	**91.8** 80.55 : 123.13
Dibromomethane	TM116	**103.4** 73.40 : 116.60
Dichloromethane	TM116	**96.6** 81.68 : 125.21
Ethylbenzene	TM116	**105.6** 77.25 : 115.15

CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

VOC MS (S)

		QC 1489
Hexachlorobutadiene	TM116	**102.6** 27.70 : 164.24
Isopropylbenzene	TM116	**108.4** 54.66 : 144.10
Naphthalene	TM116	**100.6** 75.39 : 124.61
o-Xylene	TM116	**92.6** 62.75 : 104.75
p/m-Xylene	TM116	**99.8** 73.58 : 109.43
Sec-Butylbenzene	TM116	**123.0** 52.99 : 139.70
Tetrachloroethene	TM116	**114.8** 83.87 : 129.89
Toluene	TM116	**98.2** 79.23 : 114.58
Trichloroethene	TM116	**98.6** 81.65 : 115.27
Trichlorofluoromethane	TM116	**98.0** 81.26 : 121.09
Vinyl Chloride	TM116	**81.8** 64.90 : 133.10

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.

Validated

CERTIFICATE OF ANALYSIS

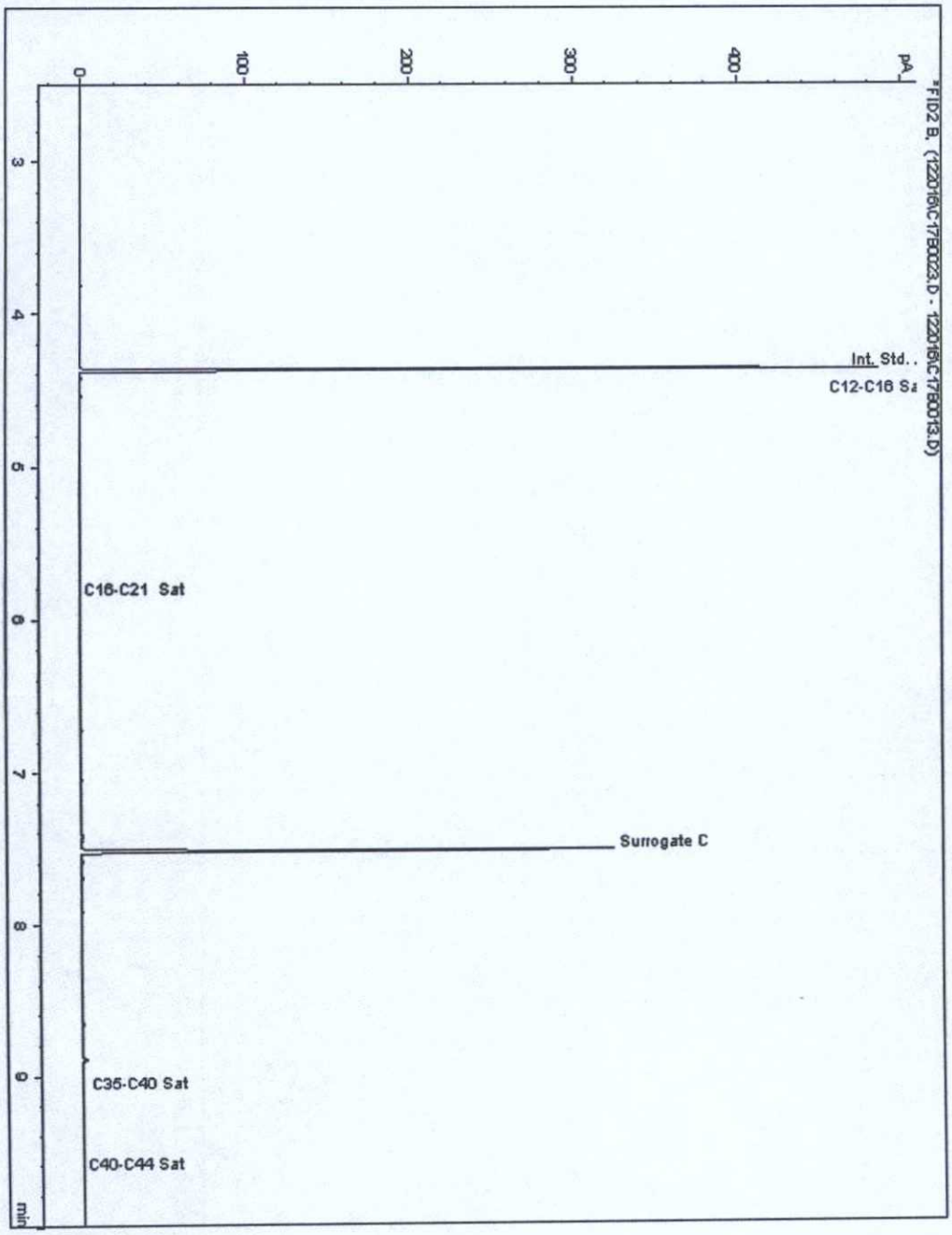
SDG:	161215-87	Client Reference:	60491603	Report Number:	391965
Location:	SHELL SHOREHAM	Order Number:	60491603	Superseded Report:	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 14728148 **Depth :** 2.50
Sample ID : BH201

Speciated TPH - SATS (C12 - C40)

Sample Identity: 13799059-
Date Acquired : 20/12/2016 13:45:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.033



Validated

CERTIFICATE OF ANALYSIS

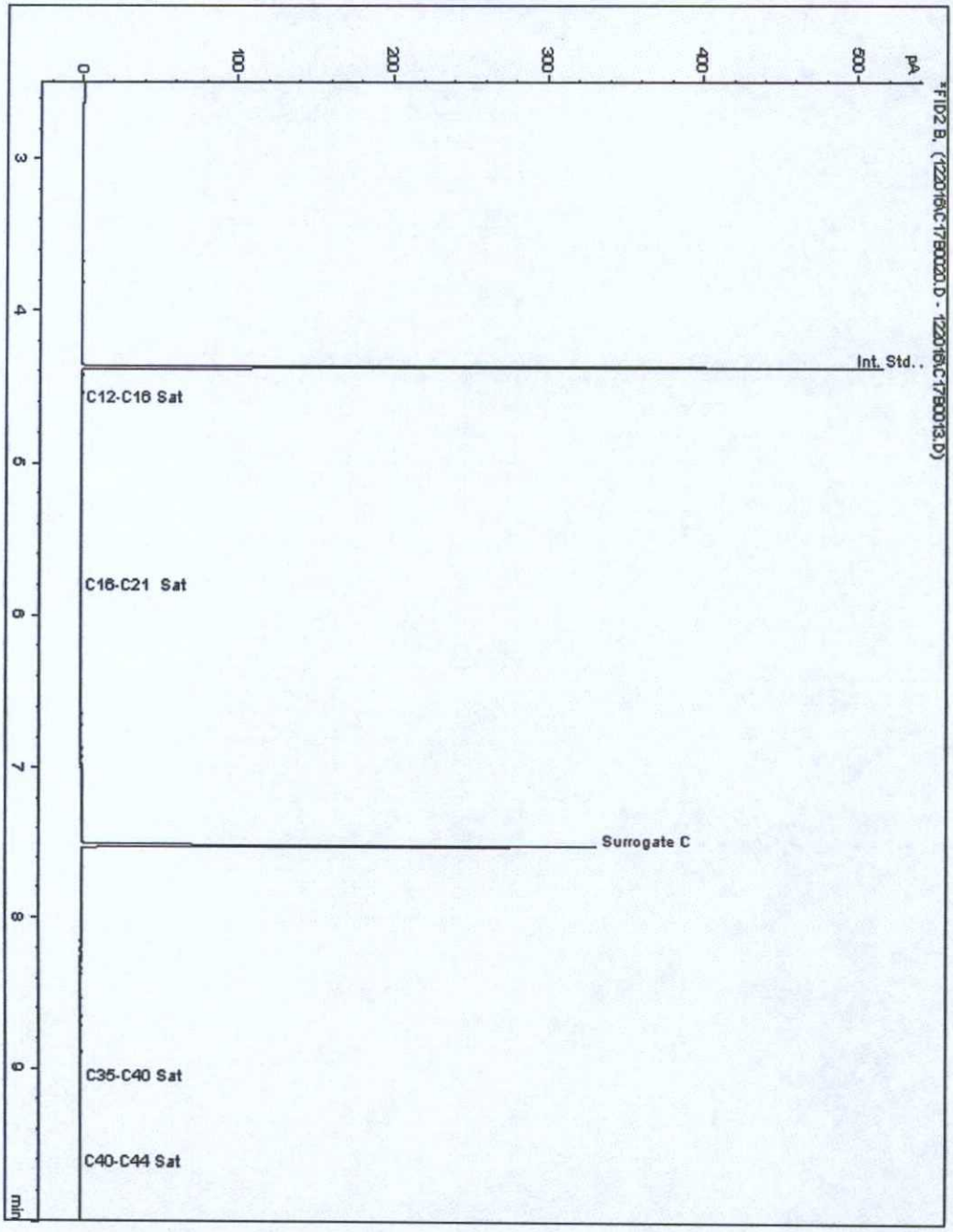
SDG:	161215-87	Client Reference:	60491603	Report Number:	391965
Location:	SHELL SHOREHAM	Order Number:	60491603	Superseded Report:	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 14728339 **Sample ID :** BH201 **Depth :** 5.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 13799070-
Date Acquired : 20/12/2016 12:44:44 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.975



Validated

CERTIFICATE OF ANALYSIS

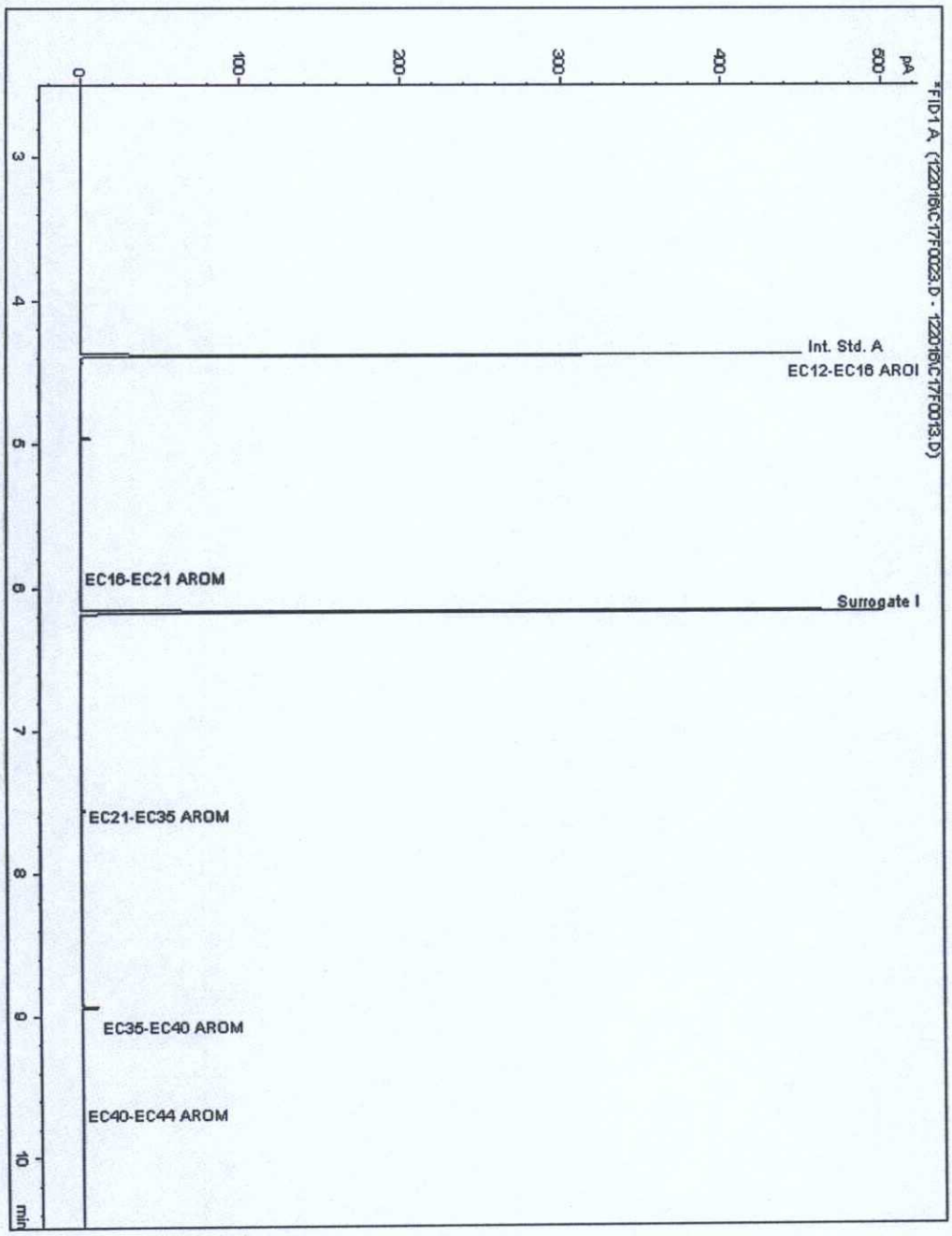
SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 14728148 **Sample ID :** BH201 **Depth :** 2.50

Speciated TPH - AROM (C12 - C40)

Sample Identity: 13799060-
Date Accuired : 20/12/2016 13:45:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.033



Validated

CERTIFICATE OF ANALYSIS

SDG:	161215-87	Client Reference:	60491603	Report Number:	391965
Location:	SHELL SHOREHAM	Order Number:	60491603	Superseded Report:	

Chromatogram

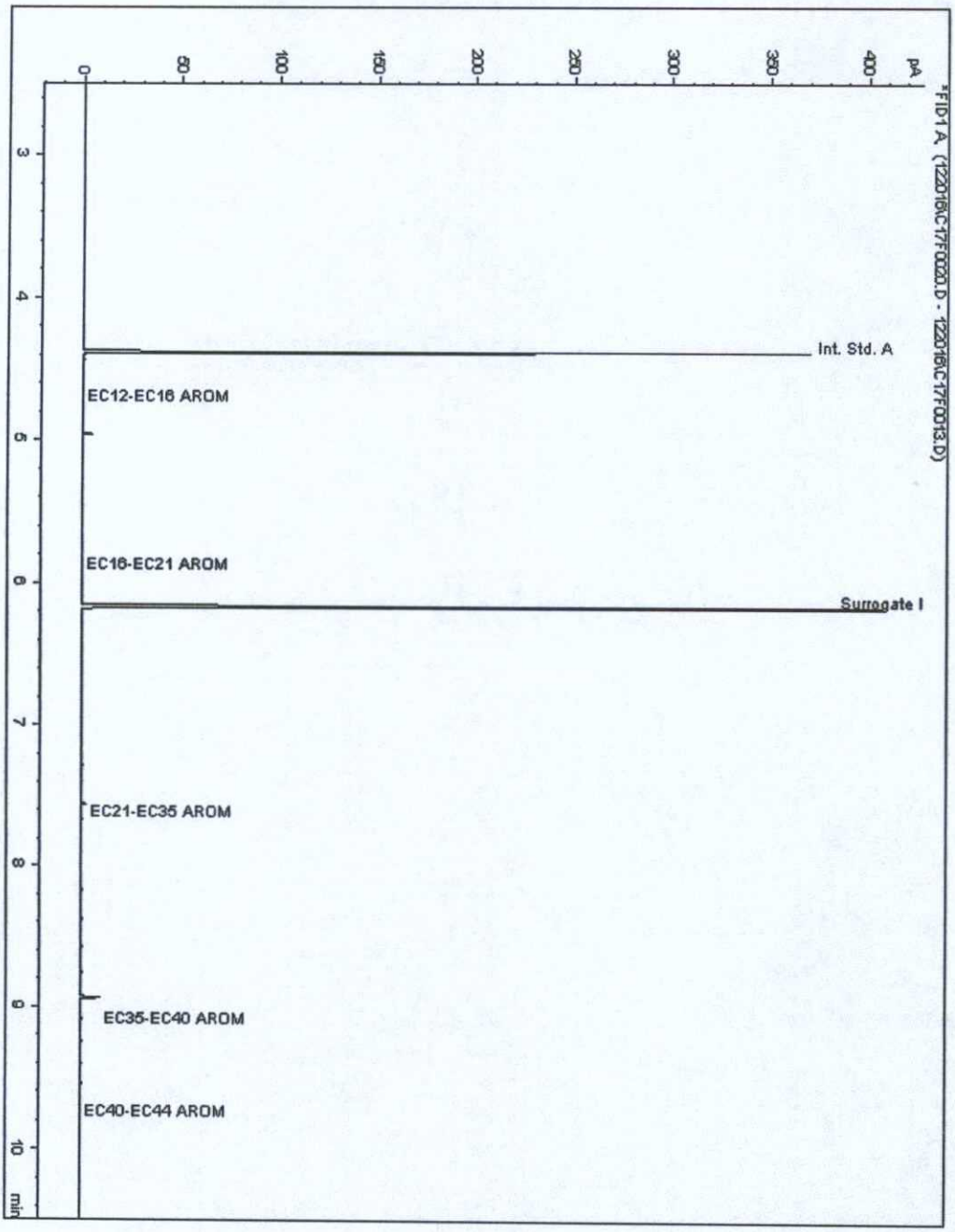
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 14728339
Sample ID : BH201

Depth : 5.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 13799071-
Date Acquired : 20/12/2016 12:44:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.975



Validated

CERTIFICATE OF ANALYSIS

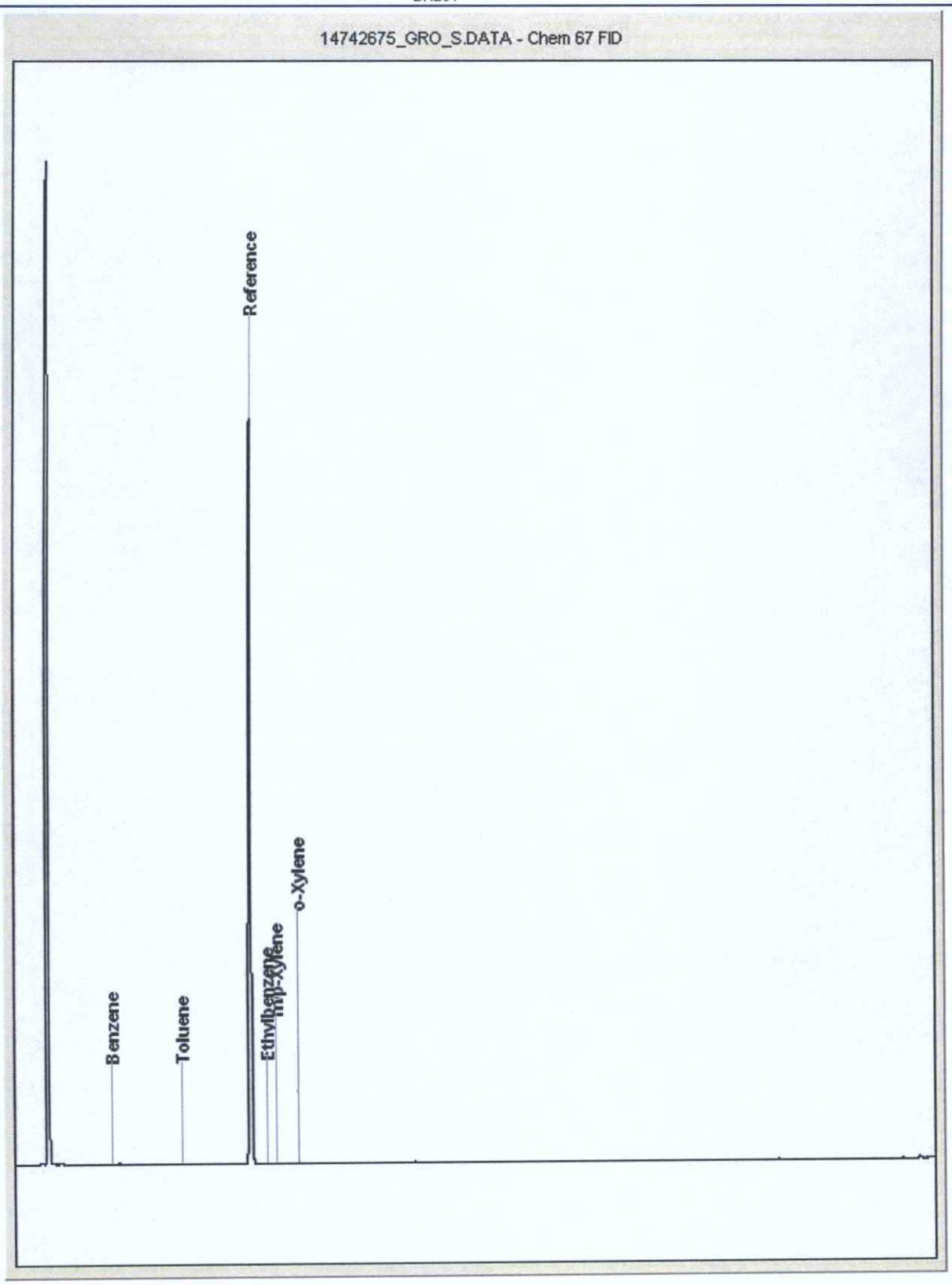
SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14742675
Sample ID : BH201

Depth : 2.50



Validated

CERTIFICATE OF ANALYSIS

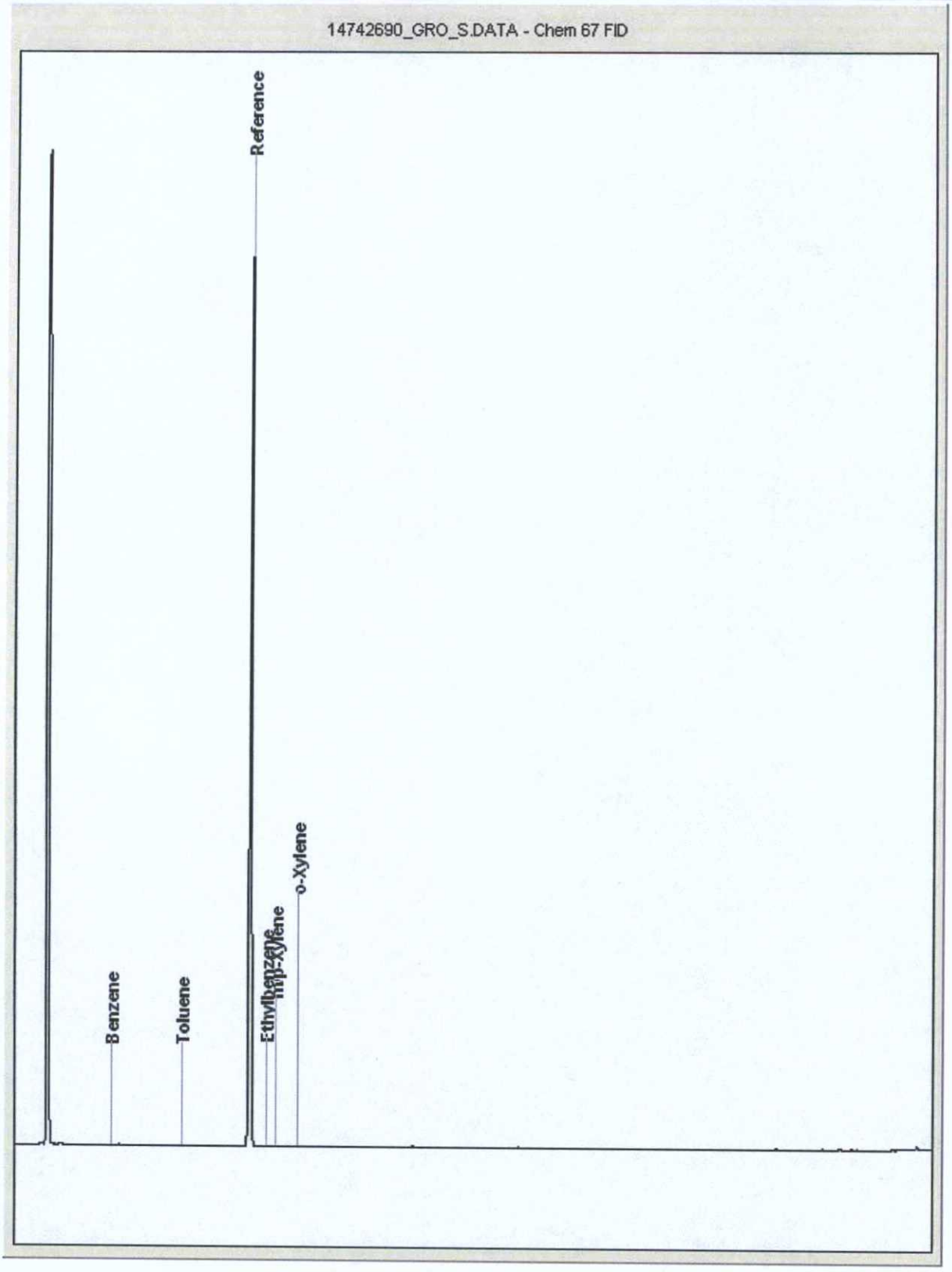
SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 14742690
Sample ID : BH201

Depth : 5.00



CERTIFICATE OF ANALYSIS

SDG:	161215-87	**Client Reference:**	60491603	**Report Number:**	391965
Location:	SHELL SHOREHAM	**Order Number:**	60491603	**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. ALS 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 Dimethyphenol, 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 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 ALS (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 ALS (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.