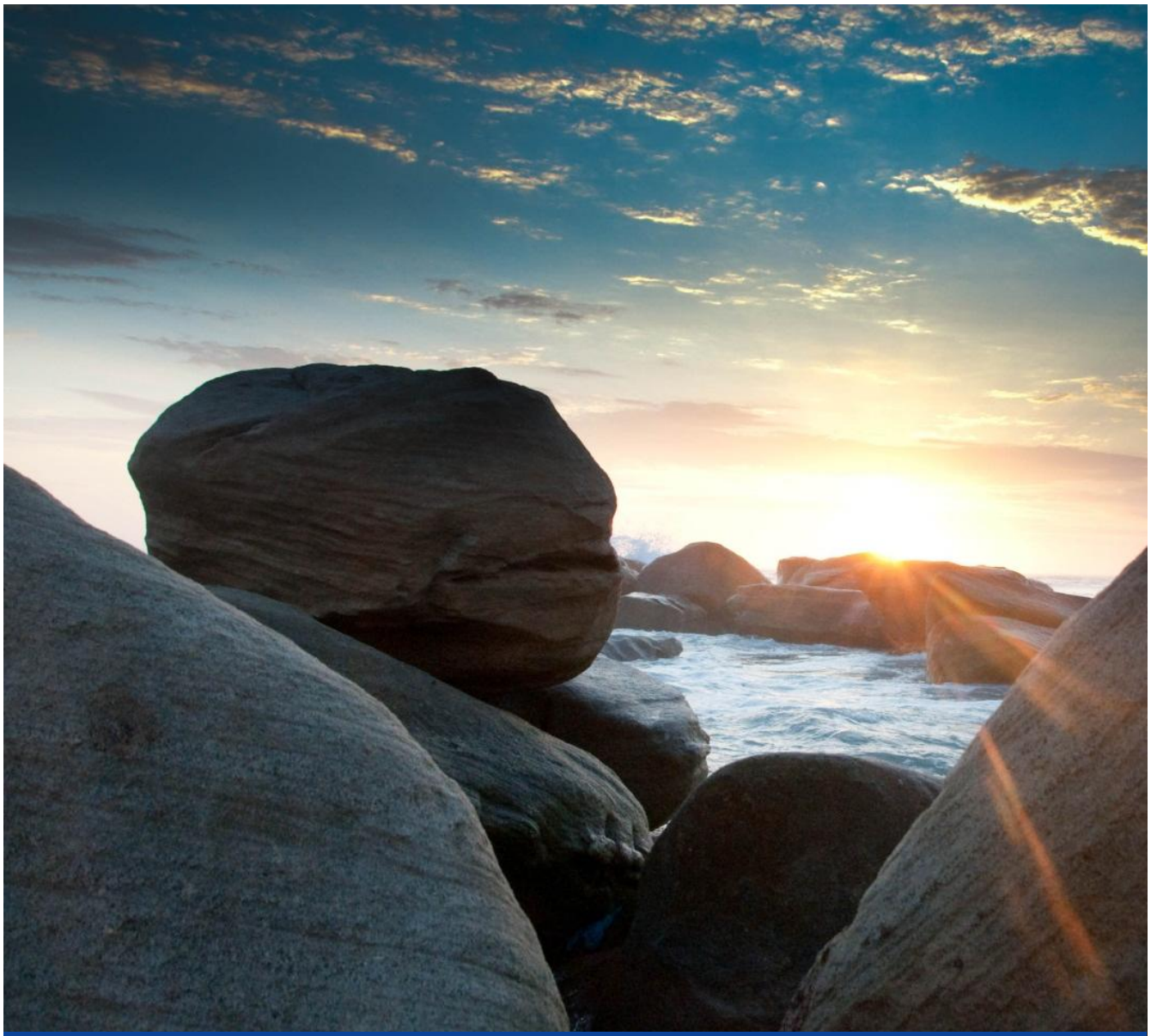

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WSP

VERIFICATION REPORT

Remedial Works at West Pond, Barry Waterfront Development

20/06/2014 Revised: 26/09/2014

Quality Management

Issue/revision	Issue 1	Revision 1	Revision 2
Remarks	Regulatory Review	Final (incl Regulatory Approval)	
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Signature		 Pollock, Ross I am approving this document 2014.10.13 09:39:41 +01'00'	
Project number	39784		
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File reference	39784.VR01		

VERIFICATION REPORT

Remedial Works at West Pond, Barry Waterfront Development

20/06/2014

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Cuddy Group

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Appendices

1 Introduction

1.1 Instruction

WSP Remediation Ltd (WSP) was instructed by Cuddy Group (Cuddy) to undertaken remedial works at West Pond, Barry Waterfront Development, Barry, South Wales (the Site). The instruction required WSP to complete the execution of an approved remediation strategy, which was designed by a third party; QDS Environmental Ltd (QDS). The strategy was based on LNAPL removal and the treatment of dissolved phase contaminants in groundwater.

1.2 Initial Site Assessment

A number of previous site investigation works have been undertaken at the site, the findings of which have informed the design of the remediation strategy. Further details of the works previously completed are summarised in the following reports:

- Geo-Environmental Site Investigation Report – West Pond, Over Arup and Partners Ltd (Report Ref: 08/7383, September 2008);
- Barry Waterfront Development West Pond – Controlled Water Risk Assessment, Earth Science Partnership (Report Ref: ESP4563s/1636, June 2010); and
- Barry Waterfront Development West Pond – Supplementary Controlled Water Risk Assessment (Rev 1), Earth Science Partnership (Report Ref: ESP4563s/1636a, October 2010);

Following on from this, QDS completed environmental delineation and testing of the soil and groundwater that were identified as impacted with hydrocarbons in the area of West Pond, Barry Waterfront. The findings of these works are included within the following report:

- Proposed Remediation Strategy Report – West Pond, Barry Waterfront, Barry South Wales (Report Ref: 5007/4/3758/JH, September 2012).

2 Site Information

Full details of the site can be found in QDS's Proposed Remediation Strategy Report; however, for reference a summary is included below.

2.1 Site Details

The Site is located to the west of Barry No. 1 dock on Barry Waterfront, Barry and occupies an area of approximately 0.2km^2. Historically, the site was reclaimed land from the sea, with parts used as a municipal landfill site. A tank farm was developed in the east of the site in the late 1930's for the storage of fuel (e.g. heavy fuel oil) and other substances (e.g. coal tars and cashew nut shell liquid). These tanks were decommissioned in the 1980's. In the 1960's, railway wagons and engines were stored and dismantled in the area. Presently, the site is open land comprising a sand and mud surface with abundant overgrown plants.

The geology beneath the site, as documented on QDS trial pit logs, is Made Ground to 5m bgl. No further information is provided at trial pits were not advanced beyond this depth. The Made Ground typically comprised sandy clay with frequent gravels, which grades with depth into occasional cobbles. It is understood that superficial deposit underlay the Made Ground; the alluvium consisting of predominantly of clay, silt and sand.

Two groundwater bodies have been identified at site; perched shallow groundwater within the Made Ground at approximately 1m bgl, and a deeper body within the alluvium at approximately 3.5 – 4.0m bgl. The Controlled Waters Risk Assessment undertaken by Earth Science Partnership in 2010 identified a possible link between the perched water in the made ground and the groundwater within the alluvium. In 2012, QDS undertook a series of hydrogeological tests which indicated a variable hydraulic conductivity of 0.03 to 0.58 m/d in the wells monitoring on site. A peizometric survey undertaken by QDS identified groundwater flow direction in both shallow and deep groundwater bodies to be in a west / south west direction. Groundwater depth measurements at high and low tide varied in the same well by a maximum of 0.03m, therefore it is considered that there is no significant tidal influence on the shallow groundwater on site.

2.2 Contaminant Profile

Historic site investigation works have identified up to 0.05 m of Light Non-Aqueous Phase Liquid (LNAPL) on the groundwater to the east of the site, beneath the former tank farm. The most recent historic investigation however did not detect a measurable quantity of LNAPL.

QDS advanced 10no. trial pits to 5m bgl in 2012 in order to collect soil data and also to observe any free product ingress when encountering groundwater. This exercise identified visual and olfactory evidence of hydrocarbon impacts in soil from all trial pits at 1.6m bgl to 5m bgl (extent of investigation depth), in the east of the site. Headspace testing was undertaken using a Flame Ionisation Detector (FID) at every 1m within trial pits; the maximum observed reading was 4,500 ppm within TPQ06 at 1.0 – 2.0m bgl.

Chemical testing results revealed samples most impacted by Total TPH were TP02, TP04 and TP07, with concentrations ranging between 1,426 and 9,692 mg/kg. The analysis indicated the presence of heavy end hydrocarbons, predominantly C10 – C35 indicating diesel to heavy oil contamination which is in line with substances previously used in the area. Analysis in TPQ04 (3 - 4m) and TPQ08 (2 - 3m) identified Total PAH concentrations of 1,719 and 111 mg/kg respectively.

4no. monitoring wells screened within the deeper alluvium across the site have exhibited elevated concentrations of hydrocarbons within the groundwater, with maximum total TPH concentrations of 9,062 and 8,464 µg/l in BHE5 (deep) and BH25 (deep) respectively. Although no evidence of the presence of LNAPL was identified, the concentrations of hydrocarbons in groundwater are at levels indicative of LNAPL being present. No elevated hydrocarbon concentrations were identified within the monitored shallow wells. BHE5 (deep) was the only well to contain phenol, with a concentration of 0.27 mg/lg.

3 Proposed Remediation Approach

3.1 Identified Pollutant Linkages

The main sources of contamination have been identified as the old tank farm, the former pond area, the landfill area and the tank wash building area.

The lack of tidal influence on the groundwater as identified during peizometric tests indicated that the dock wall is of a low permeability, therefore it has been concluded that the hydraulic linkages between the dock water in Dock 1 to the east of the site and the site was limited. As such, QDS considered the groundwater beneath the site to be of no significant risk to nearby water bodies.

It is also considered that the infiltration of rainwater and the subsequent migration of contaminants will be greatly reduced by the development of buildings and extended areas of hardstanding, in addition to construction of a capping layer to raise the ground level for flood prevention purposes.

The Geo-Environmental Site investigation Report (Ove Arup and Partners Ltd, 2008) and the DQRA enclosed within have concluded that the areas proposed for commercial end-use may be redeveloped without the need for remedial works. The areas in the more impacted (south) eastern areas of the site; however, which are proposed to be redeveloped as residential end-use will require remediation to address the LNAPL impact and reduce the contaminant load of the groundwater, thus removing the risk currently posed by the site.

3.2 Remedial Methodology

The Remediation Strategy concluded that, although perched groundwater impact does not present a significant risk to nearby water bodies, hydrocarbon concentrations were at levels indicative of LNAPL being present and that there was a requirement for remediation work to address the LNAPL impact and reduce the contaminant load on the perched groundwater. QDS derived a Remedial Action Plan relating to the discharge of Part 4 of condition 40 of planning permission 2009/00946/OUT and correspondence from Mr Gwion Thorpe (Ref. SE/2012/115884/03-L01, see Appendix E) confirmed that the information was sufficient to recommend discharge of this conditions. The targets of the works are:

- To remove any identified LNAPL to the maximum possible extent within the limitations of the geology. LNAPL removal works would continue until asymptotic conditions were achieved where recovery rates were too low for further remediation works to be of significant benefit; and
- To reduce the dissolved phase contaminant mass within the perched groundwater by pumped mass recovery.

Similarly to QDS's proposal following a review of all previous documentation relating to the site, the following scope of works was recommended:

- Excavate circa 50no. trial pits to approximately 5m below ground level, which equates to approximately 2m below the water table across the impacted area;
- De-water these locations with a diesel pump into a holding lagoon (circa 200m^3);
- Pump these waters through a water treatment plant comprising particular removal, oil/water separation and activated carbon filtration;
- Discharge treated water to sewer under appropriate consent from Dŵr Cymru (see Appendix E);
- Install approximately 15no. 100mm diameter HDPE boreholes to a depth of approximately 5.0 – 7.0m bgl. the boreholes will be left proud of the surface and designed to enable the installation of pneumatic groundwater and product skimming pumps;
- Develop all wells and undertake groundwater sampling for laboratory analysis (TPH, BTEX, Phenol and PAH), including 2no. rounds of product thickness monitoring and product / groundwater recharge testing;

- Install a combination of pneumatic groundwater and product only pumps to concurrently target the 10no. most impacted wells at any one time; and
- Install pipework, compressor and control system to allow an automated water treatment system.

4 Remedial Works

4.1 Phase One Works

WSP undertook the first phase of works between 18th and 26th June 2013, which comprised the excavation of 52no. trial pits on a circa 10m grid to approximately 5m bgl. Ground conditions encountered were consistent with those previously reported, and comprised variable clayey sandy and gravelly made ground. Following the identification of gross contamination, an LNAPL skimmer and a groundwater treatment plant was deployed to recover contaminants direct from trial pits and open excavations. Further details of these works are presented below.

4.1.1 Contamination Assessment

The trial pits encountered limited evidence of NAPL impacted soil; the evidence of visual and / or olfactory is provided in Table 4.1 below. A Photo-Ionisation Detector (PID) was used throughout excavation works to record total volatile organic compounds (VOC's). The trial pit locations are illustrated on Figure 1 and the logs are provided within Appendix A.

Table 4.1 – Visual / Olfactory Evidence of NAPL impact

Trial Pit	Observations
A1	Slight hydrocarbon odour 3.2m (0.2ppm) and 4.3 (0.5ppm)
A3	Slight hydrocarbon odour at 3m (11.1ppm)
A4	Hydrocarbon odour and sheen at 2.3m (7ppm)
A5	Slight hydrocarbon odour at 2.5m (0.1ppm) and at 3.3m (7ppm)
A6	Slight hydrocarbon odour at 2.2m (0.2ppm), hydrocarbon odour at 4m (8.7ppm) and visible pockets of product
A7	Hydrocarbon odour and sheen at 2.1m (33ppm) with oily sludge ingress
A8	Strong hydrocarbon odour and oily sludge at 1.9m (3.2ppm), hydrocarbon odour at 2.7m (42.3ppm) and oily sludge ingress (115ppm)
B3	Slight hydrocarbon odour at 1.8m (0ppm), at 3.2m (0.2ppm) and at 3.5m (0.6ppm)
B4	Hydrocarbon odour at 2.1m (1.2ppm), hydrocarbon odour and sheen at 2.9m (17.4ppm)
B5	Hydrocarbon odour at 2m (0.1ppm), at 2.5m (0.7ppm), at 3.5m (1.4ppm) and at 4.1m (1.9ppm)
B6	Hydrocarbon odour and sheen at 2.8m (11.8ppm)
B7	Hydrocarbon odour and sheen at 2.6m (1.2ppm) and at 3.6m (13.2ppm)
B8	Slight hydrocarbon odour at 3.1m (0ppm) and at 3.6m (1.8ppm)
B9	Slight hydrocarbon odour at 3.7m (0.2ppm)
C7	Strong hydrocarbon odour at 3.3m (156.7ppm)
D5	Hydrocarbon odour at 3m (61.2ppm)
D6	Hydrocarbon odour at 2.8m (41.2ppm)

D7	Slight hydrocarbon odour at 2.5m (0ppm) and free product at 3.9m (1.7ppm)
E3	Slight hydrocarbon odour at 3.65m (2.6ppm)
E4	Oily sheen on water at 3.8m
E5	Slight hydrocarbon odour at 2.1m (4.4ppm)
E6	Slight hydrocarbon odour at 3.1m (0ppm)
F1	Hydrocarbon odour at 2.7m (14.2ppm), sheen at 3m with very strong hydrocarbon odour (315ppm)
F2	Slight hydrocarbon odour at 3.1m (27.2ppm), free product at 3.6m (21.5ppm)
F3	Strong hydrocarbon odour at 1m (1241ppm), oily sheen at 2.8m (101ppm), free product at 3.7m

4.1.2 Groundwater Treatment Plant

A Water Treatment Plant was established and agreed under WSP's Environmental Permit and comprised particulate removal (lamella plate separator), oil / water separator and activated carbon filtration vessels. The plant included an automated system of pumps and level controls to enable the treatment and discharge of water.

4.1.3 Excavation Works

The trial pits remained open, for up to two weeks, to allow groundwater ingress and they were subsequently de-watered using a 3-inch diesel powered trash pump. The impacted groundwater was removed to a holding lagoon prior to treatment and consented discharge to foul sewer. Trial pits exhibiting the presence of LNAPL remained open for up to two weeks to allow continued de-watering, whilst pits where soil arising's showed some visual / olfactory evidence of contamination, but no evidence of LNAPL were backfilled after three days. Trial pits that were installed in areas where no contamination was evident were backfilled immediately after logging and collection of samples. Approximately 50m^3 of groundwater was pumped from the trial pits and approximately 50 litres of LNAPL was recovered.

4.1.4 Phase One Results

The TPH results of the initial round of sampling are illustrated in Figure 2 and copies of the chemical analysis results are included in Appendix B. Initially, boreholes BH01, BH04, BH05, BH06 and BH11 were found to contain LNAPL, with a maximum thickness of 7mm (BH05) and a maximum concentration of 334µg/l TPH recorded in BH05. LNAPL was observed to be heavy end and this was also evidence in the speciated analysis where results were predominantly within the C10 – C35 aromatic hydrocarbon range.

4.2 Phase Two Works

The second phase of LNAPL recovery commenced on 15th August 2013 following the installation of dedicated recovery wells in the locations where LNAPL was encountered in trial pits. An automated full-time (24 hour) groundwater abstraction and LNAPL recovery system was installed and operated for 4 months until LNAPL recharge into the wells ceased. Further details are on the Phase 2 works are presented below.

4.2.1 Borehole Installation

Following the initial phase of product recovery, all remaining trial pits were backfilled by 1st August 2013 in preparation for the installation of dedicated LNAPL recovery wells. 15no. boreholes were drilled to a depth of approximately 6 – 7m bgl and 100mm diameter HDPE abstraction wells constructed between 2nd and 8th August 2013. The boreholes were constructed in the positions of trials pits A6, A7, A8, B5, B6, B7, C7, D5, D6, E4, E7, F1, F2, F3 and F4. The abstraction wells were purged and developed prior to an initial round of monitoring and sampling being undertaken; samples were analysed for TPHCWG, BTEX, phenol and PAH).

4.2.2 Groundwater Treatment System

The existing groundwater treatment plant (as outlined in Section 4.1.2) was modified to receive effluent from 10no. pneumatic borehole pumps. The modifications included the installation of a manifold, a network of pipework, compressor and a level/pressure control system. A header pipe, together with gated spurs was also installed to allow the transfer of impacted groundwater to the WTP.

A total of 10no. top-loading total fluids pneumatic pumps were installed in the most impacted wells. This comprised boreholes BH01, BH02, BH03, BH04, BH05, BH06, BH08, BH11, BH12 and BH13. A flow-meter was installed down-gradient of the GAC filters to measure the combined volume of water being treated and discharged to sewer. Treatment was maintained throughout the treatment period with the exception of shut-downs associated with refuelling of the generator and scheduled breaks to allow recharge and monitoring of groundwater levels and LNAPL thickness.

4.2.3 System Monitoring

Regular monitoring of the system was undertaken to ensure that pumps remained working and that the water treatment system and environmental permit was being appropriately managed. Analysis of influent and effluent was undertaken on a monthly basis to monitor the treatment performance and satisfy Dŵr Cymru's consent to discharge. Correspondence from Dŵr Cymru is included in Appendix C. Following a six week period (beginning of October), the pumps from BH08, BH12 and BH13 were transferred to boreholes BH09, BH10 and BH15.

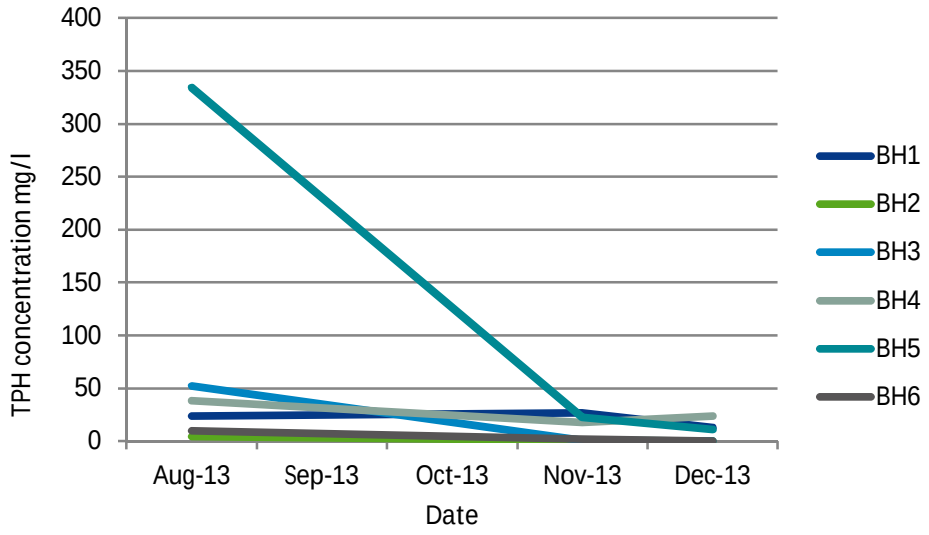
4.2.4 Phase Two Results

Abstraction and treatment terminated on 15th November 2013. LNAPL was not observed during monitoring since 15th October 2013. LNAPL was also not observed to be present within the influent to the groundwater treatment plant from 15th October 2013. Samples were retrieved from the boreholes and monitoring continued on a regular basis to measure groundwater level and presence of LNAPL. The chemical analysis results from samples retrieved on 15th November 2013 and subsequently on 16th December 2013 record a significant improvement in groundwater quality compared to the results pre-remediation and the most impacted boreholes (BH1 - BH6) generally record at least an order of magnitude in improvement. A table providing a summary of TPH results for BH1-BH6 is provided as Table 4.2 below and Graph 1 overleaf. The results for all boreholes are also illustrated on Figures 2 - 4. Full copies of chemical analysis certificates are provided as Appendix B.

Table 4.2 – Summary of TPH (mg/l) results for BH1 – BH6

Well ID	August 2013	November 2013	December 2013
BH1	23.5	27	12.7
BH2	4.68	0.478	0.365
BH3	51.9	0.728	0.033
BH4	38.5	17.6	23.7
BH5	334	22.8	11
BH6	9.77	1.68	0.01

Graph 1 – TPH concentrations in impacted wells



In total 2,502m^3 of perched groundwater has been abstracted, treated and discharged during the treatment period. Monitoring post remediation has recorded no presence of LNAPL within any of the abstraction wells. A table showing the groundwater levels and LNAPL monitoring is provided as Table 4.3 overleaf.

4.3 Contaminant Mass Removal

The Total TPH and Total PAH mass removed from the 2,502m^3 of water passed through the water treatment system has been calculated as 75kg. This is based on an assumption of negligible concentrations of Total PAH and Total TPH discharged from the water treatment system as per the chemical testing results for the effluent, sampled in October 2013 (contained in Appendix B, Report No. 246363). Concentrations of Total TPH and Total PAH within the influent passing into the system were 28,100 and 1,860 µg/l respectively. In addition, approximately 550 litres of LNAPL, including emulsified oil / water has been recovered during the second phase, together with the wash down and cleansing fluids from decommissioning the system. Assuming a density of 0.8 kg/l, this is an additional 440kg of product recovered from the site, resulting in a total recovered mass of 515 kg. The LNAPL and wash down materials have been disposed off-site. All waste documentation is contained in Appendix D.

Table 4.3 – Groundwater Levels and LNAPL Monitoring

Date > / Borehole v	Depth to Base of Borehole	15/8/13		16/9/13		15/10/13		15/11/13		28/11/13		11/12/13		20/12/13		7/1/14		20/1/14		4/2/14	
		Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water	Depth to LNAPL	Depth to Water
BH01	7.36	2.810	2.811	-	2.46	-	2.142	-	1.69	-	1.85	-	1.88	-	1.61	-	2.18	-	1.85	-	1.71
BH02	7.35	-	6.108	-	2.145	-	1.943	-	1.84	-	1.66	-	1.715	-	1.51	-	1.44	-	1.58	-	1.46
BH03	7.24	-	2.085	-	2.354	-	2.346	-	2.28	-	2.72	-	2.755	-	2.35	-	1.52	-	1.63	-	1.49
BH04	7.25	2.836	2.838	-	2.503	-	2.416	-	2.16	-	2.36	-	2.42	-	2.18	-	2.04	-	1.95	-	1.87
BH05	7.29	3.573	3.58	2.556	2.556	-	2.42	-	2.12	-	2.35	-	2.42	-	2.08	-	1.94	-	1.93	-	1.84
BH06	7.19	3.454	3.455	-	2.665	-	2.515	-	2.2	-	2.51	-	2.611	-	2.035	-	2	-	1.98	-	1.97
BH07	7.18	-	2.868	-	2.894	-	2.754	-	2.93	-	3.64	-	3.119	-	3.11	-	2.71	-	2.64	-	2.58
BH08	6.98	-	3.02	-	3.15	-	3.083	-	3.1	-	3.86	-	3.28	-	3.28	-	2.91	-	2.78	-	2.65
BH09	6.98	-	3.11	-	3.24	-	3.105	-	3.15	-	3.91	-	3.35	-	3.355	-	2.94	-	2.79	-	2.68
BH10	7.00	-	6.745	-	3.458	-	3.234	-	2.98	-	3.61	-	3.188	-	2.77	-	2.43	-	2.38	-	2.36
BH11	7.00	2.940	2.941	-	2.976	-	2.88	-	2.65	-	2.91	-	2.895	-	2.77	-	2.76	-	2.54	-	2.52
BH12	6.65	-	2.928	-	2.808	-	2.927	-	2.7	-	3.4	-	2.891	-	2.88	-	2.491	-	2.27	-	2.19
BH13	6.70	-	2.697	-	2.82	-	2.736	-	2.65	-	3.36	-	2.845	-	2.85	-	2.43	-	2.24	-	2.17
BH14	6.80	-	2.618	-	2.845	-	2.783	-	2.72	-	3.43	-	2.935	-	2.916	-	2.51	-	2.3	-	2.35
BH15	6.50	-	2.663	-	2.83	-	2.804	-	2.7	-	3.48	-	3.018	-	3.05	-	2.525	-	2.32	-	2.41

5 Environmental Monitoring

A PID was used to monitoring VOCs throughout the works; no readings >0ppm were recorded at any monitored locations along the site boundary. The PID readings during headspace analysis are contained in Table 4.1 within this report.

As per the agreed Environmental Monitoring Plan (contained within Appendix E for reference), no dust or noise monitoring was undertaken at site as it was considered that none of the permitted activities occurring on site were likely to give rise to dust or noise emissions.

6 Rebound Monitoring

Post remediation monitoring was undertaken over the agreed 3 month period to check the presence of LNAPL rebound. An oil water interface meter, accurate to 1mm (Geotech instruments), was lowered within each borehole to determine groundwater level and presence of LNAPL. The probe contains an infra-red emitter and infra-red detector to determine if the probe is within air or liquid. At the same time, two conductivity probes are testing for conductivity. If the fluid does not conduct electricity then the probe is in product and a solid tone is emitted from the instrument. If the fluid conducts electricity (i.e. within water), then the instrument emits an intermittent tone. The rebound phase of monitoring was undertaken between 15th November 2013 and 4th February 2014 (as illustrated in Table 4.3) and demonstrates that there has been no evidence of LNAPL rebound. In addition, no sheen or staining on the interface probe was evident during the rebound monitoring.

7 Conclusions

A maximum of 7mm (BH5, 15th August 2013) of LNAPL was recorded prior to remediation works and the presence of recordable LNAPL was limited to five of the fifteen boreholes, predominantly within the southern area.

A total of 2,502m^3 of perched groundwater has been abstracted, treated and discharged during the treatment period. A total of 600 litres of emulsified oil/water and LNAPL from the two phases has been recovered and disposed from site, together with the wash down and cleansing fluids from the groundwater treatment kit.

LNAPL recovery diminished following two months of active abstraction (15th August to 15th October 2013). Abstraction continued for a further month (15th October to 15th November 2013), during which time LNAPL recovery was not observed. Monitoring continued for a 3 month period, in which time no LNAPL rebound was observed.

The remediation works have successfully achieved the objectives set out, i.e. achieved a reduction in the dissolved phase contaminant mass and removal of identified LNAPL to maximum possible extents.

Figures

Date Modified: 06/01/2013

Drawn By: Thomas Miles

Legend

WSP Trial Pit Locations

TPF1
TPG1
TPF2
TPE1
TPG2
TPF3
TPE2
TPG3
TPD1
TPF4
TPE3
TPD2
TPE4
TPC1
TPD3
TPC2
TPE5
TPD4
TPB1
TPC3
TPE6
TPB2
TPD5
TPF5
TPA1
TPC4
TPB3
TPE7
TPD6
TPA2
TPC5
TPE8
TPB4
TPD7
TPA3
TPC6
TPD8
TPB5
TPA4
TPC7
TPD9
TPB6
TPA5
TPC8
TPB7
TPA6
TPC9
TPB8
TPA7
TPB9
TPA8
TPA9

0 10 20 40 60 80 Meters

File:

WSP

TITLE:

WSP Trial Pit Locations

FIGURE No:

FIGURE 1

Date Modified: 06/01/2013

Drawn By: Thomas Miles

BH12
1010ug/l

BH13
788ug/l

BH14
1200ug/l

BH15
35ug/l

BH10
246ug/l

BHE4
10ug/l

BHE5
10ug/l

BH8
1270ug/l

BH11
29ug/l

BH9
32ug/l

BH4
38500ug/l

BH7
30ug/l

BH5
334000ug/l

BH6
9770ug/l

BHE6
422ug/l

BH1
23500ug/l

BH2
4680ug/l

BH3
51900ug/l

Pre-Remediation Values (August 2013)

- Below LOD
- >LOD to 100ug/l
- 100ug/l to 1000ug/l
- 1000ug/l to 10,000ug/l
- 10,000ug/l to 20,000ug/l
- 20,000ug/l +

QDS 2012 Remediation Strategy Data

- Below LOD
- >LOD to 100ug/l
- 100ug/l to 1000ug/l
- 1000ug/l to 10,000ug/l
- 10,000ug/l to 20,000ug/l
- 20,000ug/l +

0 5 10 20 30 40 Meters

File:

WSP

TITLE:

Pre Remediation Values (August 2013)

FIGURE No:

FIGURE 2

Date Modified: 06/01/2013

Drawn By: Thomas Miles

BH13
10ug/l

BH14
551ug/l

BH15
10ug/l

BH10
142ug/l

BH8
144ug/l

BH11
32ug/l

BH9
1190ug/l

BH4
17600ug/l

BH7
69ug/l

BH5
22800ug/l

BH6
1680ug/l

BH1
27100ug/l

BH2
478ug/l

BH3
728ug/l

Max Total TPH November 2013

- Below LOD
- >LOD to 100ug/l
- 100ug/l to 1000ug/l
- 1000ug/l to 10,000ug/l
- 10,000ug/l to 20,000ug/l
- 20,000ug/l +

0 5 10 20 30 40 Meters

File:

WSP

TITLE:

November 2013

FIGURE No:

FIGURE 3

Date Modified: 06/01/2013

Drawn By: Thomas Miles

File:

Max Total TPH December 2013

- Below LOD
- >LOD to 100ug/l
- 100ug/l to 1000ug/l
- 1000ug/l to 10,000ug/l
- 10,000ug/l to 20,000ug/l
- 20,000ug/l +

BH12
22ug/l

BH13
10ug/l

BH14
279ug/l

BH15
83ug/l

BH10
10ug/l

BH8
42ug/l

BH11
326ug/l

BH9
10ug/l

BH4
23700ug/l

BH7
10ug/l

BH5
11000ug/l

BH6
10ug/l

BH1
12700ug/l

BH2
365ug/l

BH3
33ug/l

0 5 10 20 30 40 Meters

WSP

TITLE:

December 2013

FIGURE No:

FIGURE 4

Appendix A – Trial Pit Logs

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA1**

Project: Barry Waterfront Development

Sheet: 1 of 1

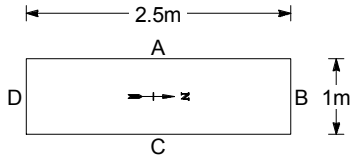
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311363.387 N 167190.208	

SAMPLES & TESTS						STRATA				
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
							(0.60) 0.60	Loose, dark brown, slightly clayey, gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subangular, concrete and brick. MADE GROUND. 0.4-0.5mbgl pocket of loose, black, ash SAND. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.40) 1.20	Firm, red brown, slightly sandy, gravelly CLAY. Gravel is fine to coarse, angular to subangular, stone, limestone and clinker. MADE GROUND.		NODATA	
							(0.40) 1.60	Loose, brown, sandy, fine to coarse, angular to subangular, stone, clinker and brick GRAVEL. MADE GROUND.		NODATA	
							(2.40) 4.00	Loose, yellow brown, gravelly SAND. Gravel is fine to coarse, angular to rounded, stone. MADE GROUND. Metallic lustre on gravel and grains, deposited on glove after handling. Damp, slight HCO. 0.2ppm headspace test.		NODATA	
							4.05	Wet, loose, dark grey, gravelly SAND. Gravel is fine to coarse, angular stone. MADE GROUND.		NODATA	
							(0.45) 4.50	Slight HCO. 0.5ppm headspace test. Wet, loose, brown, sandy, fine to medium, angular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.50) 5.00	Wet, loose, lack and grey, sandy SILT. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA2**

Project: Barry Waterfront Development

Sheet: 1 of 2

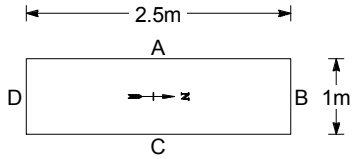
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311357.131 N 167183.442	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, dark brown, slightly clayey, gravelly SAND with few concrete Cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.65	Loose, slightly sandy, angualr to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.35) 1.00	Black geotextile membrane. Loose, black, gravelly, ash SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND.		NODATA	
							(1.00) 2.00	Black geotextile membrane. Loose, brown, slightly sandy, fine to medium, angular to subangular, stone, brick and clinker GRAVEL. MADE GROUND.		NODATA	
							(1.20) 3.20	Loose, slightly clayey, sandy, fine to coarse, angular to subangular, stone, brick, concrete and clinker GRAVEL. MADE GROUND.		NODATA	
							(1.30) 4.50	Damp, loose, gravelly SAND. Gravel is fine to coarse, angular to rounded, brick, stone concrete and clinker.		NODATA	
							(0.30) 4.80	Wet, loose, gravelly, fine to coarse SAND. Gravel id fine to coarse, angular to rounded, brick, pipework, stone and concrete. MADE GROUND.		NODATA	
								Wet, loose, grey and dark grey, slightly gravelly, silty, fine to coarse SAND. Gravel is fine to medium, angular to subangularstone and brick. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA2**

Project: Barry Waterfront Development

Sheet: 2 of 2

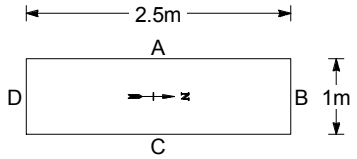
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311357.131 N 167183.442	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.40) 5.20	Wet, loose, grey and dark grey, slightly gravelly, silty, fine to coarse SAND. Gravel is fine to medium, angular to subangularstone and brick. MADE GROUND. *(continued)*		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA3**

Project: Barry Waterfront Development

Sheet: 1 of 1

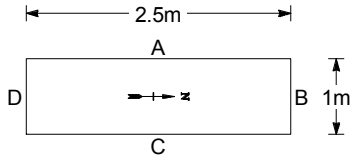
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311350.145 N 167176.437	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, dark brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.65	Loose, slightly sandy, angualr to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.35) 1.00	Black Geotextile membrane. Loose, black, gravelly, ash SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND.		NODATA	
							(0.70) 1.70	Black Geotextile membrane. Loose, brown, slightly clayey, sandy, fine to coarse, angular to subangular, stone and clinker GRAVEL. MADE GROUND.		NODATA	
							(0.30) 2.00	Cohesive, red and grey mottled, slightly sandy, gravelly CLAY. Gravel is fine to coarse, angular, stone and clinker. Pockets of loose black ash. MADE GROUND.		NODATA	
							(0.80) 2.80	Soft, blue/grey mottled CLAY. MADE GROUND. Pocket of wet, grey, fine to medium SAND at 2.5mbgl. MADE GROUND.		NODATA	
							(1.20) 4.00	Wet, cohesive, blue brown mottled, slightly sandy SILT. MADE GROUND. Slight HCO. 11.1ppm headspace test.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA4**

Project: Barry Waterfront Development

Sheet: 1 of 1

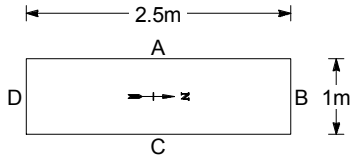
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311342.610 N 167168.835	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50)	Loose, dark brown, slightly clayey, gravelly SAND with few concrete Cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.50				
							0.60	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular Clinker. MADE GROUND.		NODATA	
								Black Geotextile membrane.			
								Loose, brown, slightly clayey, sandy, fine to coarse, angular to subangular, concrete, stone and brick GRAVEL. MADE GROUND.			
								Brick wall uncovered along North side of TP. This extended from 0.75 to base of TP at 4.0mbgl.			
							(3.40)	Water ingress at 2.2mbgl. HCO and sheen observed. PID reading = 0.1ppm and 7ppm in headspace test.		NODATA	
							4.00				



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA5**

Project: Barry Waterfront Development

Sheet: 1 of 2

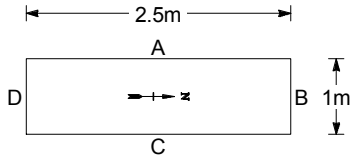
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311335.624 N 167161.369	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, dark brown, slightly clayey, gravelly SAND with few concrete Cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.60	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular Clinker. MADE GROUND.		NODATA	
							(1.80) 2.40	Black Geotextile membrane. Loose, dark brown, sandy, fine to coarse, angular to subangular, brick and concrete GRAVEL. MADE GROUND. Re-bar present. Steel rope uncovered and removed.		NODATA	
							(1.80) 4.20	Soft, grey black mottled, slightly gravelly CLAY. Gravel is fine to medium, angular clinker. MADE GROUND. Slight HCO. PID reading = 0.1ppm.		NODATA	
							(0.40) 4.60	Wet, grey, silty, fine SAND. MADE GROUND. HCO. PID reading = 0.8ppm.		NODATA	
							(0.60)	Soft, grey black mottled, slightly gravelly CLAY. Gravel is fine to medium, angular clinker. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA5**

Project: Barry Waterfront Development

Sheet: 2 of 2

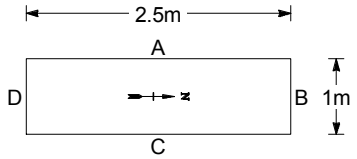
Job No: 39784

Client: Cuddy Group

Date: 18-06-13
18-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311335.624 N 167161.369	

SAMPLES & TESTS					Water	STRATA				Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)		Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							5.20	Soft, grey black mottled, slightly gravelly CLAY. Gravel is fine to medium, angular clinker. MADE GROUND. *(continued)*		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA6**

Project: Barry Waterfront Development

Sheet: 1 of 1

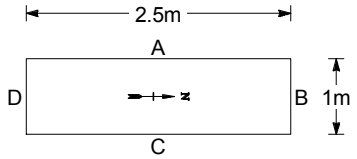
Job No: 39784

Client: Cuddy Group

Date: 19-06-13
19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311328.452 N 167153.782	

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
							(0.50) 0.50	Loose, dark brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							(0.25) 0.75	Loose, grey, slightly sandy, fine to medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							0.95	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular Clinker. MADE GROUND.		NODATA	
							(1.15) 2.10	Geotextile membrane. Loose, brown, slightly silty, gravelly, fine to coarse SAND. Gravel is fine to medium, angular to subangular, stone and brick. MADE GROUND.		NODATA	
							(0.30) 2.40	Damp, loose, brown, silty, fine to medium SAND. MADE GROUND. Slight HCO. PID reading = 0.2ppm headspace.		NODATA	
							(2.60) 5.00	Wet, cohesive, grey black mottled, silty, fine to medium SAND. MADE GROUND. HCO and sheen visible. Pockets of product increase with depth. PID reading = 8.7ppm headspace. Pockets of product decrease with depth but still present at base of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA7**

Project: Barry Waterfront Development

Sheet: 1 of 1

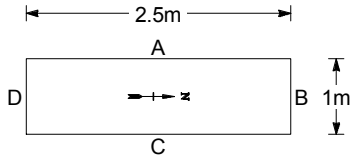
Job No: 39784

Client: Cuddy Group

Date: 19-06-13
19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311321.662 N 167146.221	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.80) 0.80	Loose, dark brown, slightly clayey, gravelly SAND with few concrete Cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							(1.20) 2.00	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane. Damp. No HCO. Wet. No HCO, no sheen.		NODATA	
							(3.00) 5.00	Wet, loose, grey, silty, fine to medium SAND. MADE GROUND. HCO and sheen visible. PID readings = maximum of 13.0ppm at TP edge and maximum 33.0ppm headspace. Oily sludge in gress at NW corner of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA8**

Project: Barry Waterfront Development

Sheet: 1 of 1

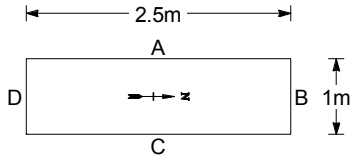
Job No: 39784

Client: Cuddy Group

Date: 19-06-13
19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311315.844 N 167138.972	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, dark brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, stone GRAVEL. MADE GROUND.		NODATA	
							(1.20) 2.00	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane. Strong HCO, visible oily sludge in SE corner of TP. PID reading 3.2ppm.		NODATA	
							(0.50) 2.50	Loose, angular brick and concrete Cobbles with clay pipe in centre of TP. MADE GROUND.		NODATA	
							(1.50) 4.00	Wet, Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Wet, HCO. PID reading = 42.3ppm headspace. Oily sludge ingress in Western side of TP. PID readings = maximum of 15.2ppm at TP edge; 115ppm headspace. Oily sludge ingress on all sides of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPA9**

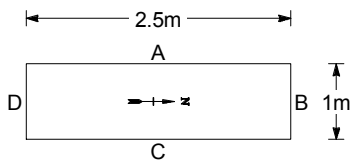
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311309.269 N 167132.430	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Wet, loose, grey, sandy, fine to coarse, angular to subangular, concrete and brick GRAVEL. MADE GROUND.		NODATA	
							(0.30) 0.80	Loose, dark brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.90	Loose, grey, sandy, medium, angular, stone and brick GRAVEL. MADE GROUND.		NODATA	
							1.00	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND.		NODATA	
							(1.20) 2.20	Geotextile membrane. Cohesive, brown, clayey fine to coarse SAND. MADE GROUND.		NODATA	
							(1.20) 3.40	Damp, loose, brown, slightly gravelly SAND. GFravel is fine to coarse, angular to rounded, clinker and pebbles.		NODATA	
							(0.40) 3.80	Wet, loose, brown, gravelly SAND. Gravel is fine to coarse, angular to subangular of stone. MADE GROUND. Wet, but no HCO or sheen. PID reading = 0.8ppm. Water ingress. PID reading = 1.2ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
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TRIAL PIT LOG

Hole No. **TPB1**

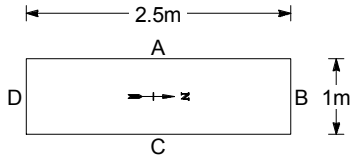
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311356.871 N 167198.565	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, dark brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.70	Loose, grey, slightly sandy, medium, angular to sub angular stone and brick GRAVEL. MADE GROUND.		NODATA	
							0.85	Geotextile membrane. Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND.		NODATA	
							(0.75) 1.60	Geotextile membrane. Firm, red, gravelly CLAY. Gravel is fine to coarse, angular to subrounded, brick, stone and clinker. MADE GROUND.		NODATA	
							(0.40) 2.00	Loose, brwon, gravelly SAND. Gravel is fine to coarse, angular to subrounded,stone and clinker. MADE GROUND.		NODATA	
							(2.00) 4.00	Loose, yellow brown, fine to coarse SAND. MADE GROUND. Wet. No HCO. PID reading = 0.0ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPB2**

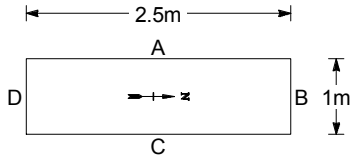
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311350.622 N 167192.810	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND with few concrete Cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND.		NODATA	
							(1.85) 2.60	Geotextile membrane. Loose, brown red, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, concrete, brick and stone. Few Cobbles of stone. MADE GROUND.		NODATA	
							2.80	Wet, loose, light brown, gravelly SAND. Gravel is fine to coarse, angular to subrounded, of concrete, stone and brick. Occasional subangular, stone cobbles. MADE GROUND.		NODATA	
							(0.80) 3.60	No HCO, or sheen. PID reading = 0.0ppm. Wet, sandy, gravelly, angular stone COBBLES. Gravel is fine to coarse, angular to subangular stone. MADE GROUND.		NODATA	
							(0.40) 4.00	Wet, loose, light brown, gravelly SAND. Gravel is fine to coarse, angular to subrounded, of concrete, stone and brick. Occasional subangular, stone cobbles. MADE GROUND.		NODATA	
								Water ingress. TP collapse at base.			



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

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TRIAL PIT LOG

Hole No. **TPB3**

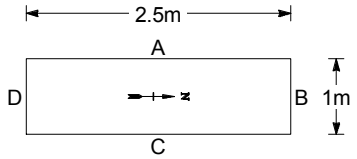
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311343.229 N 167184.979	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, brown, slightly clayey, gravelly SAND with few concrete Cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.55	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.30) 0.85	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND.		NODATA	
							(0.75) 1.60	Geotextile membrane. Loose, brown, slightly cobbly, gravelly SAND. Gravel is fine to coarse, angular to subangular, stone. MADE GROUND.		NODATA	
							(0.60) 2.20	Loose, yellow, slightly gravelly, SAND. Gravel is fine to medium, angular, clinker. MADE GROUND. Slight HCO. PID reading = 0.0ppm.		NODATA	
							(0.80) 3.00	Firm, brown CLAY. MADE GROUND.		NODATA	
							3.10	Wet, loose, grey and black, silty, fine to coarse SAND. MADE GROUND.		NODATA	
							3.30	Slight HCO and visible sheen. PID reading = 0.2ppm headspace. Wet, loose, brown, fine to coarse SAND. MADE GROUND.		NODATA	
							(0.70) 4.00	Wet, loose, grey and black silty, fine to coarse SAND. MADE GROUND. HCO. PID reading = 0.6ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

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TRIAL PIT LOG

Hole No. **TPB4**

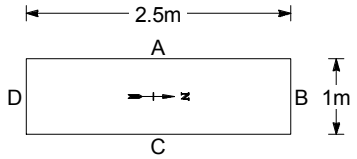
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311336.197 N 167178.163	

SAMPLES & TESTS						STRATA				
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, fine to medium, angular to subangular stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.65) 1.40	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane.		NODATA	
							(0.60) 2.00	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular stone.		NODATA	
							(0.80) 2.80	Cohesive, brwon, black and grey, clayey, fine SAND. MADE GROUND. HCO. PID reading = 1.2ppm headspace.		NODATA	
							(1.20) 4.00	Wet, soft, grey CLAY with pockets of dark grey wet sand. MADE GROUND. HCO and sheen. PID reading = 17.4ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPB5**

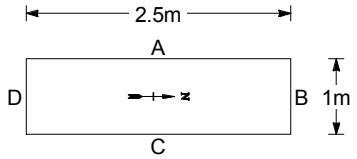
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311329.247 N 167170.243	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.70) 0.70	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							(1.20) 1.90	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane.		NODATA	
							(0.40) 2.30	Damp, soft, grey CLAY. MADE GROUND. HCO. PID reading = 0.1ppm.		NODATA	
							(1.70) 4.00	Wet, soft, grey CLAY with pockets of dark grey, fine to coarse SAND. MADE GROUND. PID reading = 0.7ppm Water present. PID reading = 1.4ppm.		NODATA	
								PID reading 1.9ppm.			



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
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TRIAL PIT LOG

Hole No. **TPB6**

Project: Barry Waterfront Development

Sheet: 1 of 1

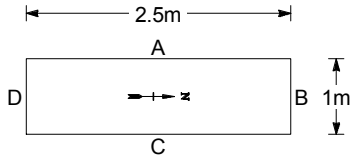
Job No: 39784

Client: Cuddy Group

Date: 19-06-13
19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311321.905 N 167162.937	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							(0.90) 1.50	Loose, black gravelly, ash SAND with occasional cobbles of concrete and stone. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane.		NODATA	
							1.65	Concrete slab.		NODATA	
							(1.05) 2.70	Firm to stiff, grey, red and brown mottled CLAY. MADE GROUND.		NODATA	
							(1.50) 4.20	Wet, loose, grey and black, silty, fine to coarse SAND. MADE GROUND. HCO and sheen. PID reading = 11.8ppm. HCO and sheen. PID reading = 3.7ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
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TRIAL PIT LOG

Hole No. **TPB7**

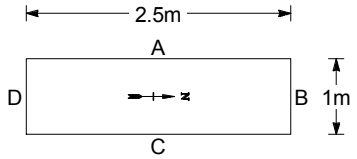
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	19-06-13 19-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311314.594 N 167154.950	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.70	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.30) 2.00	Geotextile membrane. Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane.		NODATA	
							(0.30) 2.30	Firm, brown CLAY. MADE GROUND.		NODATA	
							2.50	Damp, cohesive, dark brown and grey, clayey, SAND. MADE GROUND.		NODATA	
							(1.70) 4.20	Wet, loose, dark grey, fine to coarse SAND with wood fragments. MADE GROUND. HCO and sheen. PID reading = 1.2ppm headspace. HCO. PID reading = 13.2ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
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TRIAL PIT LOG

Hole No. **TPB8**

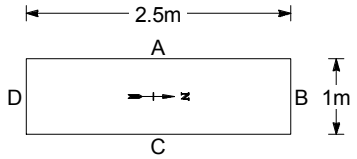
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	20-06-13 20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311309.591 N 167148.586	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.00) 1.80	Geotextile membrane. Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane.		NODATA	
							(0.70) 2.50	Soft, brown, slightly gravelly CLAY. Gravel is fine to medium, angular, clinker and brick. MADE GROUND.		NODATA	
							(0.50) 3.00	Firm red brown, gravelly CLAY. Gravel is fine to medium, angular to rounded of brick,clinker and pebbles. MADE GROUND.		NODATA	
							(1.00) 4.00	Wet, loose, dark grey, gravelly SAND. Gravel is fine to coarse, angular to subangular, stone and brick. MADE GROUND. Slight hydrocarbon odour PID reading = 0.0ppm Slight hydrocarbon odour PID reading = 1.8ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

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TRIAL PIT LOG

Hole No. **TPB9**

Project: Barry Waterfront Development

Sheet: 1 of 1

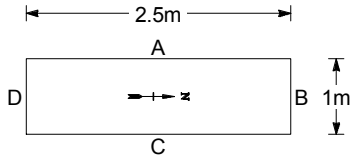
Job No: 39784

Client: Cuddy Group

Date: 20-06-13
20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311301.918 N 167141.290	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Firm, brown slightly sandy, gravelly CLAY. Gravel is medium to coarse, angular, concrete, stone and brick. MADE GROUND.		NODATA	
							0.70	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.20) 1.90	Geotextile membrane. Loose, black gravelly, ash SAND with occasional angular concrete cobbles. Gravel is fine to medium, angular clinker. MADE GROUND. Geotextile membrane.		NODATA	
							(2.30) 4.20	Loose, red brown, clayey, gravelly SAND. Gravel is fine to medium, angular to subangular, stone. MADE GROUND. Wet Wet, slight hydrocarbon odour PID = 0.2ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPC1**

Project: Barry Waterfront Development

Sheet: 1 of 1

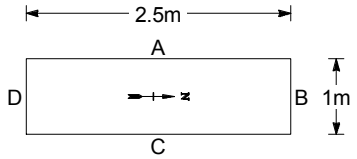
Job No: 39784

Client: Cuddy Group

Date: 20-06-13
20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311349.456 N 167209.951	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.65) 1.40	Geotextile membrane. Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker and brick. MADE GROUND. Geotextile membrane.		NODATA	
							(0.80) 2.20	Loose, grey, slightly cobbly, sandy, fine to coarse, angular, stone and brick GRAVEL. Cobbles are angular to subangular stone. MADE GROUND.		NODATA	
							(2.00) 4.20	Loose, light brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, stone and brick. MADE GROUND. Wet. No HCO. PID reading = 0.0ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

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TRIAL PIT LOG

Hole No. **TPC2**

Project: Barry Waterfront Development

Sheet: 1 of 1

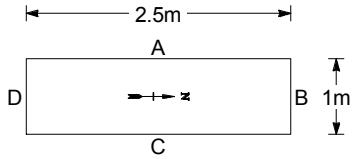
Job No: 39784

Client: Cuddy Group

Date: 20-06-13
20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311342.243 N 167204.283	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.55) 0.55	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.60) 1.35	Geotextile membrane. Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker and brick. MADE GROUND. Geotextile membrane.		NODATA	
							(0.45) 1.80	loose, black and brown, gravelly, cobbly, SAND. Cobbles are angular to subangular stone. Gravel is fine to coarse, angular to subangular, stone, concrete and brick. MADE GROUND.		NODATA	
							(1.20) 3.00	Loose, black, yellow, red and brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick and stone. MADE GROUND. Wet. No HCO. PID reading = 0.0ppm.		NODATA	
							(0.50) 3.50	Loose, yellow, fine to coarse SAND with pockets of firm grey clay. MADE GROUND.		NODATA	
							(0.70) 4.20	Wet, loose, light grey brown, slightly clayey, gravelly SAND. Gravel is fine to medium, angular to subangular, stgone and brick. MADE GROUND. No HCO. PID reading = 0.0ppm.		NODATA	
								Water ingress into base of TP.			



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPC3**

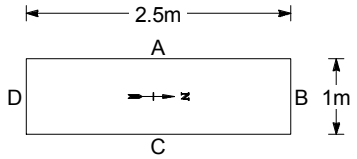
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	20-06-13 20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311333.831 N 167196.370	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.15) 1.90	Geotextile membrane. Loose, black gravelly, ash SAND with occasional cobbles of brick and stone.. Gravel is fine to medium, angular clinker and brick. MADE GROUND. Geotextile membrane. Concrete slab, widened TP in order to remove.		NODATA	
							2.10	Loose, brown, slightly gravelly, clayey SAND. Gravel is fine to medium, angular to subangular of brick and stone. MADE GROUND.		NODATA	
							(2.10) 4.20	Concrete slab in east end of TP. Wet, loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick and stone. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

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TRIAL PIT LOG

Hole No. **TPC4**

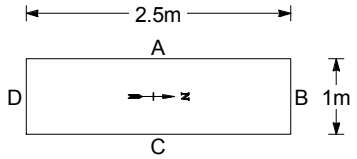
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	20-06-13 20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311327.353 N 167189.238	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.25) 1.00	Geotextile membrane.		NODATA	
							(1.00) 2.00	Loose, black gravelly, ash SAND. Gravel is fine to medium, angular clinker and brick. MADE GROUND. Geotextile membrane. Concrete slab and angular cobbles of sotne and concrete.		NODATA	
							(0.40) 2.40	Loose, yellow, gravelly SAND. Gravel is fine to coarse, angular to subangular of stone. MADE GROUND.		NODATA	
							(0.90) 3.30	Wet, loose, grey, gravelly SAND. Gravel is fine to coarse, angular to subangular, stone and brick. MADE GROUND. Very slight HCO. PID reading 0.0ppm.		NODATA	
							(0.70) 4.00	Wet, loose, grey, slightly gravelly, fine to medium SAND. Gravel is fine to coarse, angular to rounded, pebbles and shell fragments. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPC5**

Project: Barry Waterfront Development

Sheet: 1 of 1

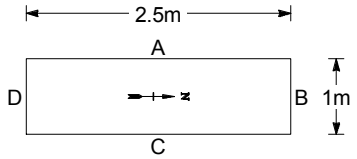
Job No: 39784

Client: Cuddy Group

Date: 20-06-13
20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311320.151 N 167180.670	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.85	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.15) 2.00	Geotextile membrane. Loose, black, gravelly SAND with angular stone cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.40) 2.40	Loose, yellow and brown, slightly clayey, gravelly SAND with angular stone cobbles. Gravel is fine to coarse, angular to subangular, brick, stone and conrete. MADE GROUND.		NODATA	
							(1.40) 3.80	Wet, loose, grey brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND. Wet sand. No HCO. PID reading = 0.0ppm.		NODATA	
							4.00	Wet, loose, grey, slightly gravelly, fine to coarse SAND. Gravel is fine to coarse, angular to subangular stone. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPC6**

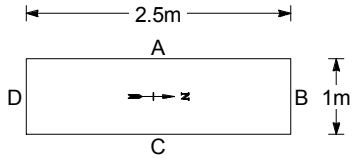
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	20-06-13 20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311314.309 N 167172.701	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.80) 1.60	Geotextile membrane. Loose, black, gravelly SAND with angular brick cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.40) 2.00	Firm to stiff, slightly sandy, gravelly CLAY. Gravel is fine to medium, angular to subangular, stone and brick. MADE GROUND.		NODATA	
							2.20	Loose, yellow, gravelly SAND. Gravel is fine to medium, angular to subangular of brick and stone. MADE GROUND.		NODATA	
							(0.40) 2.60	Loose, grey brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, brick and stone. MADE GROUND. Sand is wet at 2.5mbgl.		NODATA	
							2.70	Loose, yellow, slightly gravelly, fine to coarse SAND. Gravel is medium to coarse, angular, stone. MADE GROUND.		NODATA	
							(1.30) 4.00	Loose, grey brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, brick and stone. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

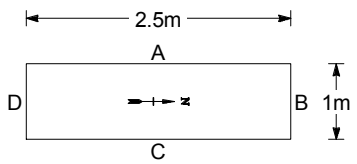
Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation Regus Cardiff Bay, Falcon Drive Cardiff Bay, Cardiff CF10 4RU Telephone: +44 (0)29 2036 6300 Fax: +44 (0)29 2036 6399	**TRIAL PIT LOG**	Hole No. **TPC7**
	Project: Barry Waterfront Development	Sheet: 1 of 1
Job No: 39784	Client: Cuddy Group	Date: 20-06-13 20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311306.745 N 167164.850	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.65	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.10) 1.75	Geotextile membrane. Loose, black, gravelly SAND of ash, with angular brick cobbles and concrete blocks at 0.9mbgl. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.25) 2.00	Firm, brown, sandy, gravelly CLAY. Gravel is fine to coarse, angular to subangular, brick and concrete. MADE GROUND.		NODATA	
							(0.90) 2.90	Loose, dark grey/black, gravelly SAND. Gravel is fine tocarse, angular to subangular, brick and stone. MADE GROUND.		NODATA	
							(0.30) 3.20	Wet, soft, grey, slightly sandy, gravelly CLAY. Gravel is fine to coarse, angular to subangular stone. MADE GROUND. Strong HCO. Minimum PID reading = 156.7 headspace; Average PID reading = 43.2ppm headspace; Maximum PID reading = 115ppm headspace.		NODATA NODATA	
							(0.80) 4.00	Loose, yellow, gravelly SAND. Gravel is fine to coarse, subangular to subrounded stone. MADE GROUND. Wet, soft, grey, slightly sandy, gravelly CLAY. Gravel is fine to coarse, angular to subangular stone. MADE GROUND.		NODATA	



Length	Shoring/Support:
2.5mm	
Width: 1mm	Stability:
Orientation: 90 degrees from north	

Water Strikes					
Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25	Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
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TRIAL PIT LOG

Hole No. **TPC8**

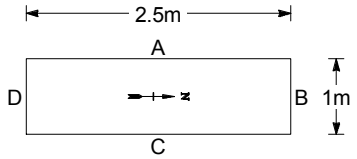
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	20-06-13 20-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311300.436 N 167159.152	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, slightly clayey, gravelly SAND with few concrete and brickwork, angular cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(1.40) 2.20	Geotextile membrane. Loose, black, gravelly SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.40) 2.60	Cohesive, grey, sandy SILT with wood fragments. MADE GROUND.		NODATA	
							(0.40) 3.00	Wet, cohesive, slightly gravelly, sandy SILT. Gravel is fine to medium, subangular to subrounded stone. MADE GROUND. Wet		NODATA	
							(1.00) 4.00	Loose, red, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular stone. MADE GROUND.		NODATA	
							4.20	Wet, loose, slightly sandy, fine to coarse, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes					
Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPC9**

Project: Barry Waterfront Development

Sheet: 1 of 1

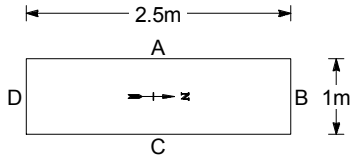
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311292.169 N 167150.610	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.55) 0.55	Loose, slightly clayey, gravelly SAND with few concrete and brickwork, angular cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.75) 1.50	Geotextile membrane. Loose, black, gravelly SAND with few angular, stone, cobbles.. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(1.00) 2.50	Loose, grey, silty, fine SAND. MADE GROUND.		NODATA	
							(1.70) 4.20	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, concrete, brick and stone. MADE GROUND. Wet at 3.0mbgl. NO HCO. PID reading = 0.0ppm. Water ingress into TP from North side of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
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TRIAL PIT LOG

Hole No. **TPD1**

Project: Barry Waterfront Development

Sheet: 1 of 1

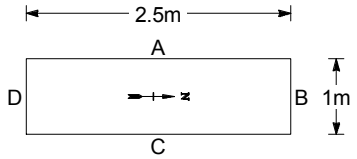
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311343.015 N 167220.575	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, slightly clayey, gravelly SAND with few concrete and brickwork, angular cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.90) 1.65	Geotextile membrane. Loose, black, gravelly SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.55) 2.20	Loose, grey and yellow, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, clinker and stone. MADE GROUND.		NODATA	
							(1.60) 3.80	Loose, light brown, slightly gravelly, silty, fine SAND. Gravel is fine to coarse, angular to rounded, stone, brick and clinker. MADE GROUND. Wet. No HCO. PID reading = 0.0ppm.		NODATA	
							4.00	Wet, loose, grey, clayey, fine SAND. MADE GROUND.		NODATA	
								Water ingress.			



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPD2**

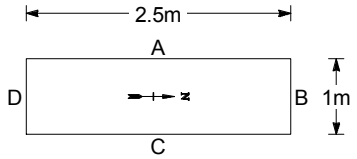
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	21-06-13 21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311333.265 N 167213.818	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, slightly clayey, gravelly SAND with few concrete and brickwork, angular cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.75) 1.50	Geotextile membrane. Loose, black, gravelly, cobbly SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. Cobbles are angular to subrounded, brickwork, concrete and stone.MADE GROUND. Geotextile membrane.		NODATA	
							(0.30) 1.80	Loose, grey, lightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular stone. MADE GROUND.		NODATA	
							1.95	Soft, grey and brown mottled CLAY. MADE GROUND.		NODATA	
							(0.55) 2.50	Loose, grey, lightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular stone. MADE GROUND.		NODATA	
							(1.70) 4.20	Cohesive, grey, silty, fine SAND. MADE GROUND. Wet. Slight HCO. PID reading = 0.0ppm. Water Ingress (slow) from SW corner of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPD3**

Project: Barry Waterfront Development

Sheet: 1 of 1

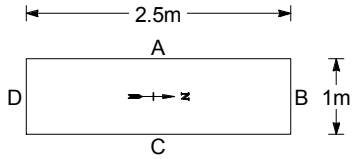
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311324.939 N 167207.360	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.05) 1.80	Geotextile membrane. Loose, black, gravelly SAND with angular brick cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							2.00	Loose, brown, gravelly, silty, fine SAND. Gravel is fine to medium, angular to subangular clinker and stone. MADFE GROUND.		NODATA	
							(0.80) 2.80	Soft, grey, slightly gravelly, sandy CLAY. Gravel is fine to medium, angular to rounded, stone and clinker. MADE GROUND.		NODATA	
							(1.20) 4.00	Wet, loose, black, sandy, fine to coarse, angular to subangular, stone GRAVEL. MADE GROUND. Wet at 2.8mbgl. Ingress of water from SW corner of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

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TRIAL PIT LOG

Hole No. **TPD4**

Project: Barry Waterfront Development

Sheet: 1 of 1

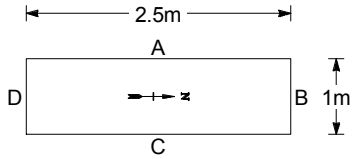
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311318.600 N 167200.621	

SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
							(0.55) 0.55	Loose, slightly clayey, gravelly SAND with few concrete and brickwork, angular cobbles. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.70	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(1.20) 1.90	Geotextile membrane. Loose, black, gravelly, ashy SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. Cobbles 1.4-1.9mbgl. Cobbles are angular to subrounded, brickwork, concrete and stone.MADE GROUND. Geotextile membrane.		NODATA	
							2.10	Loose, brown, clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick and stone. MADE GROUND.		NODATA	
							(0.90) 3.00	Loose, black, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular of brick and stone. MADE GROUND. Wet. Slight HCO. PID reading = 0.0ppm.		NODATA	
							(0.70) 3.70	Soft, grey, slightly gravelly, sandy CLAY. Gravel is fine to coarse, angular to subangular, stone. MADE GROUND.		NODATA	
							(0.30) 4.00	Wet, loose, grey, slightly gravelly, slightly clayey, fine to coarse SAND. Gravel is fine to medium, angular to rounded, stone, pebbles and shell fragments.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPD5**

Project: Barry Waterfront Development

Sheet: 1 of 1

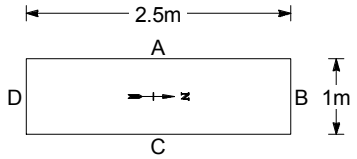
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311311.445 N 167192.419	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.70	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND. Geotextile membrane.		NODATA	
							(1.30) 2.00	Loose, black, gravelly SAND with occasional angular brick cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(2.00) 4.00	Loose, grey, slightly gravelly, silty, fine SAND. Gravel is fine to medium, angular to subangular of stone. MADE GROUND. Wet at 3.0mbgl. HCO PID reading = 41.2ppm		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
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TRIAL PIT LOG

Hole No. **TPD6**

Project: Barry Waterfront Development

Sheet: 1 of 1

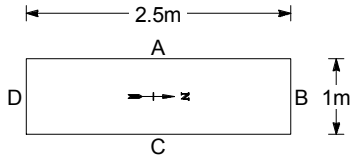
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311304.866 N 167183.666	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.55) 0.55	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND.		NODATA	
							0.75	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.25) 2.00	Geotextile membrane. Loose, black, gravelly SAND with angular concrete cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(2.00) 4.00	Loose, grey, slightly gravelly, silty, fine SAND. Gravel is fine to coarse, anguolar of stone. MADE GROUND. Slight odour. PID reading =1.1ppm at TP edge. PID reading = 41.2ppm headspace. Wet.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
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TRIAL PIT LOG

Hole No. **TPD7**

Project: Barry Waterfront Development

Sheet: 1 of 1

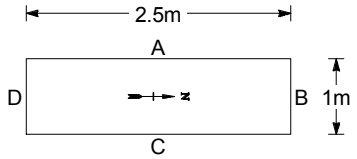
Job No: 39784

Client: Cuddy Group

Date: 21-06-13
21-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311299.080 N 167177.496	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, slightly cobbly, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(1.00) 1.80	Geotextile membrane. Loose, black, gravelly SAND with angular stone cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.60) 2.40	Cohesive, grey, slightly gravelly, silty, fine SAND. Gravel is fine to medium, angular to subrounded, stone. MADE GROUND.		NODATA	
							(0.25) 2.65	Cohesive, grey, slightly gravelly, silty, fine SAND. Gravel is fine to coarse, angular to rounded, clinker and stone. MADE GROUND.		NODATA	
							(1.05) 3.70	Wet, soft, grey and yellow mottled, black staining throughout, slightly gravelly, sandy CLAY. MADE GROUND. Wet. Slight HCO. PID reading = 0.0ppm.		NODATA	
							(0.50) 4.20	Wet, oily, soft, sandy CLAY. MADE GROUND. Water ingress at base of TP. PID reading = 1.7ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
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TRIAL PIT LOG

Hole No. **TPD8**

Project: Barry Waterfront Development

Sheet: 1 of 1

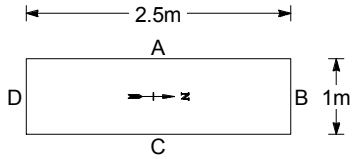
Job No: 39784

Client: Cuddy Group

Date: 24-06-13
24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311291.535 N 167170.931	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, slightly cobbly, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							(0.50) 1.30	Geotextile membrane. Loose, black, gravelly SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.25) 1.55	Soft to firm, brown grey mottled, slightly gravelly, sandy CLAY. MADE GROUND.		NODATA	
							(1.85) 3.40	Loose, grey, slightly gravelly, SAND. Gravel is fine to medium, angular to subangular. MADE GROUND. Wet. No HCO, PID reading 0.0ppm.		NODATA	
							(1.00) 4.40	Wet, loose, brown and grey, gravelly SAND with ocasional, angular, stone cobbles. Gravel is fine to coarse, angular stone. MADE GROUND. Water Ingress (slow) at base of TP. Water Ingress (fast) at base of TP.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPD9**

Project: Barry Waterfront Development

Sheet: 1 of 1

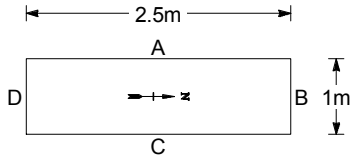
Job No: 39784

Client: Cuddy Group

Date: 24-06-13
24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311282.687 N 167163.394	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick concrete and stone. MADE GROUND.		NODATA	
							0.85	Loose, grey, slightly sandy, medium, angular to subangular, stone GRAVEL. MADE GROUND.		NODATA	
							1.00	Geotextile membrane.		NODATA	
							(0.80) 1.80	Loose, black, gravelly SAND with few angular stone cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane. Rebar present at 0.9mbgl. Concrete slab. TP widened to remove. MADE GROUND.		NODATA	
							(2.60) 4.40	Loose, grey, slightly gravelly, clayey SAND. MADE GROUND. Damp, Wetness increases with depth. No HCO. PID reading = 0.0ppm. Wet. Slight HCO. PID reading = 0.0ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPE1**

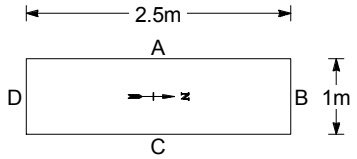
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	24-06-13 24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311332.495 N 167235.129	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick concrete and stone. MADE GROUND.		NODATA	
							0.85	Loose, grey, slightly sandy, medium, angular to subrounded, stone GRAVEL. MADE GROUND.		NODATA	
							1.00	Geotextile membrane.		NODATA	
								Loose, black, gravelly SAND with rare, angular, concrete cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND.			
								Geotextile membrane.			
								Cohesive, grey, slightly gravelly, clayey, fine to medium SAND. Gravel is fine to coarse, angular to subrounded, stone brick and concrete. MADE GROUND.			
								Damp. No HCO. PID reading = 0.0ppm.			
							(3.40)			NODATA	
								Wet at 2.9mbgl. No HCO. PID reading = 0.0ppm.			
								Water ingress in SW corner of TP. No HCO. PID reading = 0.0ppm.			
							4.40				
								Water ingress at base of TP. NO HCO. PID reading = 0.0ppm.			



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
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Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPE2**

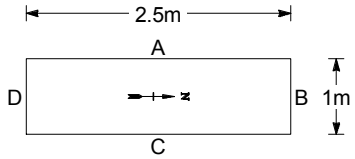
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	24-06-13 24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311323.120 N 167227.323	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.65) 0.65	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, brick concrete and stone. MADE GROUND.		NODATA	
							0.85	Loose, grey, slightly sandy, medium, angular to subrounded, stone, concret and brick GRAVEL. MADE GROUND.		NODATA	
							(0.40) 1.25	Geotextile membrane. Loose, black, gravelly SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(2.15) 3.40	Cohesive, grey, slightly gravelly, clayey SAND. Gravel is fine to coarse, angular to rounded, stone, concrete, brick, clinker and shell fragments. MADE GROUND. Wet. No HCO. PID reading = 0.0ppm.		NODATA	
							(0.80) 4.20	Loose, grey, slightly gravelly, silty SAND. Gravel is fine to coarse, angular to subrounded of stone and shell fragments. MADE GROUND. Water ingress at base of TP. No HCO. PID readings = 0.0ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPE3**

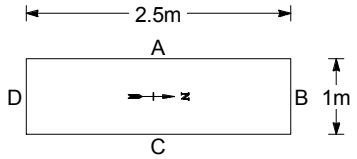
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	24-06-13 24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311314.403 N 167219.079	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND with few angular, concrete cobbles. Gravel is fine to coarse, angular to subangular, brick concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subrounded, stone GRAVEL. MADE GROUND.		NODATA	
							(0.50) 1.30	Geotextile membrane. Loose, black, gravelly, ash SAND with angular, brick and concrete cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(1.70) 3.00	Loose, brown grey, clayey SAND. MADE GROUND. Damp. No HCO. PID reading = 0.0ppm.		NODATA	
							(1.00) 4.00	Wet, loose, grey, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, stone. MADE GROUND. Water Ingress in base TP. No HCO. Slight sheen. PID reading = 0.0ppm. Water ingress from SW corner of TP. Slight HCO. PID reading = 2.6ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPE4**

Project: Barry Waterfront Development

Sheet: 1 of 1

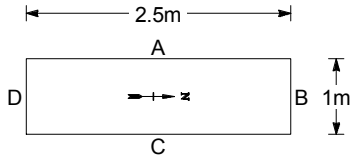
Job No: 39784

Client: Cuddy Group

Date: 24-06-13
24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311305.750 N 167209.949	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular, concrete, brick, stone and clinker. MADE GROUND.		NODATA	
							0.65	Loose, black, gravelly, ash SAND. Gravel is fine to coarse, angular to rounded, stone, brick and concrete. MADE GROUND.		NODATA	
							0.85	Cohesive, slightly gravelly, clayey SAND. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND.		NODATA	
							1.00	Loose, slightly sandy, fine to medium, angular to rounded, brick and stone GRAVEL. MADE GROUND.		NODATA	
							(0.60) 1.60	Geotextile membrane. Loose, black, gravelly SAND with angular, brick and stone Cobbles. Gravel is fine to coarse, angular to subangular of brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.50) 2.10	Cohesive, grey and brown mottled, slightly gravelly, clayey SAND. Gravel is fine to coarse, angular to rounded, brick, clinker, concrete, pebbles and shell fragments. MADE GROUND.		NODATA	
							(1.90) 4.00	Loose, grey, slightly gravelly, silty, fine to coarse SAND. Gravel is fine to coarse, angular to rounded, brick and stone. MADE GROUND. Slight HCO. PID reading = 0.0ppm Fast water ingress from North side of TP, with oily sheen.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
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TRIAL PIT LOG

Hole No. **TPE5**

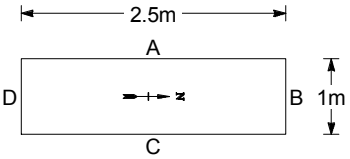
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	24-06-13 24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311296.071 N 167200.768	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, brown, slightly clayey, slightly cobbly, gravelly SAND with occasional angular concrete cobbles.. Gravel is fine to coarse, angular to subrounded, brick concrete and stone. MADE GROUND.		NODATA	
							0.65	Loose, grey, slightly sandy, medium, angular to subangular, stone and brick, GRAVEL. MADE GROUND.		NODATA	
							(1.35) 2.00	Geotextile membrane. Loose, black, gravelly SAND with angular stone cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(1.80) 3.80	Soft, grey, slightly gravelly CLAY. Gravel is fine to medium, angular to rounded, stone and clinker. MADE GROUND. Slight hydrocarbon odour at 2.1m PID reading = 4.4ppm Wet at 3.1mbgl. No HCO. PID reading = 0.0ppm.		NODATA	
							(0.40) 4.20	Loose, grey, gravelly SAND. Gravel is fine to coarse, angular stone. MADE GROUND.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
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TRIAL PIT LOG

Hole No. **TPE6**

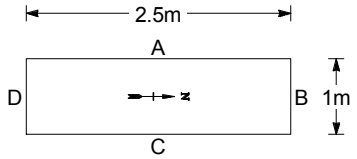
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	24-06-13 24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311289.939 N 167193.032	

SAMPLES & TESTS						STRATA				
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
							(0.55) 0.55	Loose, brown, slightly clayey, slightly cobbly, gravelly SAND. Cobbles are angular concrete. Gravel is fine to coarse, angular to subrounded, brick concrete and stone. MADE GROUND.		NODATA	
							0.65	Loose, grey, slightly sandy, medium, angular to subangular, stone and brick, GRAVEL. MADE GROUND.		NODATA	
							(1.25) 1.90	Geotextile membrane. Loose, black, gravelly SAND with angular brick cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(3.10) 5.00	Loose, grey, slightly clayey, slightly gravelly SAND. Gravel is fine to coarse, angular to rounded, stone, pebble, clinker and brick. MADE GROUND. Damp, Slight HCO. PID reading = 0.0ppm. Wet. Slight HCO at 3.1, PID reading = 0.0ppm.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
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TRIAL PIT LOG

Hole No. **TPE7**

Project: Barry Waterfront Development

Sheet: 1 of 1

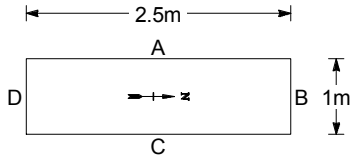
Job No: 39784

Client: Cuddy Group

Date: 24-06-13
24-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311281.682 N 167183.967	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, brick concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone and brick, GRAVEL. MADE GROUND.		NODATA	
							1.00	Geotextile membrane. Loose, black, gravelly SAND with angular brick cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND.		NODATA	
							(0.40) 1.40	Geotextile membrane. Loose, angular to subangular, brickwork and stone COBBLES. MADE GROUND. Slight HCO. PID reading = 0.0ppm.		NODATA	
							(0.90) 2.30	Loose, black, slightly cobbly, gravelly SAND. Cobbles are angular brickwork. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. Occasional metal bars/bracket uncovered. MADE GROUND. Asbestos Identified. Potential asbestos encountered, trial pit terminated.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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TRIAL PIT LOG

Hole No. **TPF1**

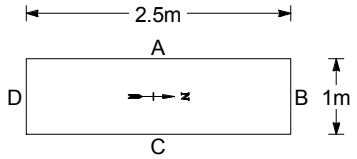
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311329.312 N 167245.439	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, brick concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone and brick, GRAVEL. MADE GROUND.		NODATA	
							0.90	Geotextile membrane.		NODATA	
							(0.50)	Loose, black, gravelly SAND with angular brick cobbles. Gravel is fine to coarse, angular to subangular, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							1.40	Loose, brown, clayey, gravelly, SAND. Gravel is fine to coarse, angular to rounded, stone and brick			
							(2.60)	Soft, grey, slightly gravelly, sandy CLAY. Gravel is fine to medium, angular to rounded, clinker and stone. MADE GROUND. Damp. HCO. PID reading = 1.9ppm at TP edge. PID reading = 14.2ppm headspace. Wet at 3.0mbgl. Visible sheen. Very strong HCO. PID reading at edge of TP = 8.1ppm. PID reading at edge of stockpile = 17.7ppm. PID reading for headspace = 315.1ppm. slow Water ingress at base of TP at 3.0mbgl. Slight HCO remains. PID reading = 4.0ppm Slight HCO. PID reading = 6.3ppm.		NODATA	
							4.00	HCO. PID reading = 15.6ppm at TP edge. PID reading = 764ppm headspace. End of TP due to collapse.			



Length	Shoring/Support:
2.5mm	
Width	
1mm	Stability:
Orientation	
90 degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPF2**

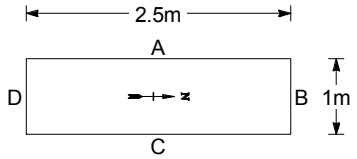
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311319.273 N 167235.649	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.60) 0.60	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, brick concrete and stone. MADE GROUND.		NODATA	
							0.80	Loose, grey, slightly sandy, medium, angular to subangular, stone and brick, GRAVEL. MADE GROUND.		NODATA	
							(0.40) 1.20	Geotextile membrane. Loose, black, gravelly SAND with angular brick cobbles. Gravel is fine to coarse, angular to subrounded, clinker, brick and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.60) 1.80	Concrete slab. MADE GROUND.		NODATA	
							(2.00) 3.80	Cohesive, grey, slightly gravelly, silty SAND. MADE GROUND. Damp. Slight HCO. PID Reading = 2.2ppm at TP edge. PID reading = 27.2ppm headspace. Water Ingress (fast) with free product visible. PID reading = 2.2ppm at TP edge. PID reading = 21.5ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
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Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
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TRIAL PIT LOG

Hole No. **TPF3**

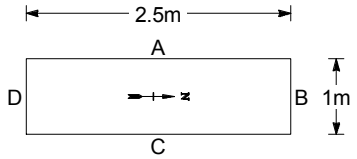
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311309.086 N 167227.637	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.55) 0.55	Loose, brown, slightly gravelly, clayey SAND. Gravel is fine to coarse, angular to subangular, stone, concrete and brick. MADE GROUND.		NODATA	
							0.65	Loose, grey, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(0.35) 1.00	Geotextile membrane. Loose, black, gravelly SAND with occasional re-bar, and few angular, stone Cobbles at 0.9mbgl. Gravel is fine to coarse, angular to subangular, stone and brick. MADE GROUND.		NODATA	
							(1.20) 2.20	Geotextile membrane. Concrete blocks containing re-bar. MADE GROUND. Strong hydrocarbon odour. PID readings taken: 7.5ppm at TP edge 1.8ppm at TP edge after 1minute. 11.6ppm 2m downwind of stockpile. 46.2ppm at stockpile. 1241ppm headspace.		NODATA	
							(0.60) 2.80	Loose, black, gravelly SAND. Gravel is fine to coarse, angular to subangular, stone and brick. MADE GROUND.		NODATA	
							(1.20) 4.00	Loose, grey, silty SAND. MADE GROUND. Damp at 2.8mbgl. Oily sheen visible on sand. HCO. PID reading = 101ppm. Water Ingress. Free product observed. PID reading = 3.4ppm at TP edge. PID reading = 43.8ppm headspace.		NODATA	
							(0.30) 4.30	Wet, loose, grey, slightly gravelly, silty SAND. MADE GROUND. Wet, oily sheen still visible. HCO. PID reading = 9.4ppm at TP edge. PID reading = 72.7ppm headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
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TRIAL PIT LOG

Hole No. **TPF4**

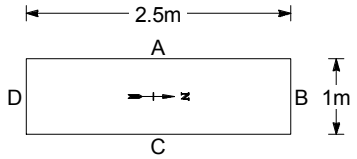
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311298.880 N 167219.054	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.55) 0.55	Loose, brown, slightly gravelly, clayey SAND. Gravel is fine to coarse, angular to subrounded, stone, concrete and brick. MADE GROUND.		NODATA	
							0.65	Loose, grey, slightly sandy, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(2.85)	Geotextile membrane. Loose, black, gravelly, ash SAND. Gravel is fine to coarse, angular, stone brick and clinker. Cobbles at 1.0mbgl. MADE GROUND. Geotextile membrane. Wet, No HCO, no sheen. PID reading = 0.0ppm. Water ingress from North side of pit at 3.0mbgl. Speed of water ingress increased at 3.5mbgl. No HCO, no sheen, PID reading = 0.0ppm.		NODATA	
							3.50 (0.30) 3.80	Wet, soft, grey CLAY. MADE GROUND.		NODATA	
							(1.10) 4.90	Cohesive, grey brown, slightly gravelly, silty, fine to coarse SAND. Gravel is fine, subrounded to rounded, pebbles and stone. MADE GROUND. End TP at 4.2 due to sides collapsing from 2.0mbgl.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPG1**

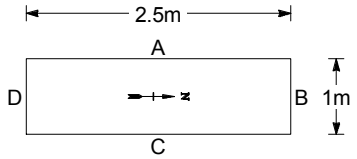
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311316.460 N 167238.591	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angualar to subangular, stone, brick and concrete. MADE GROUND.		NODATA	
							0.65	Loose, grey, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
							(1.35) 2.00	Geotextile membrane. Loose, black, gravelly SAND. Gravel is fine to coarse, angular to subrounded, stone, brick, concrete and clinker. MADE GROUND. Geotextile membrane. Cobbles at 1.0mbgl.		NODATA	
							(2.20) 4.20	Loose, grey, slightly grvelly, clayey, fine to coarse SAND. Gravel is fine to medium, angular to rounded, stone and pebble. MADE GROUND. Wet. No HCO. PID reading = 0.0ppm Headspace.		NODATA	



Length: 2.5mm

Width: 1mm

Orientation: 90 degrees from north

Shoring/Support:

Stability:

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPG2**

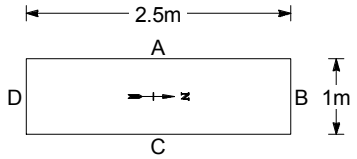
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311306.223 N 167231.429	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.55) 0.55	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subrounded, stone, concrete and brick. MADE GROUND.		NODATA	
							0.70	Loose, grey, slightly sandy, fine to medium, angular to subrounded, stone and brick, GRAVEL. MADE GROUND.		NODATA	
							(3.10) 3.80	Geotextile membrane. Loose, black, gravelly, ash SAND with few cobbles of concrete. Gravel is fine to coarse, angular to subangular, brick, concrete and stone. MADE GROUND. Geotextile membrane.		NODATA	
							(0.40) 4.20	Wet, soft, grey, fine sandy, SILT.		NODATA	



Length	Shoring/Support:
2.5mm	
Width	
1mm	Stability:
Orientation	
90 degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

WSP Remediation
Regus Cardiff Bay, Falcon Drive
Cardiff Bay, Cardiff CF10 4RU
Telephone: +44 (0)29 2036 6300
Fax: +44 (0)29 2036 6399

TRIAL PIT LOG

Hole No. **TPG3**

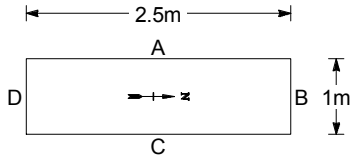
Project: Barry Waterfront Development

Sheet: 1 of 1

Job No	Client	Date
39784	Cuddy Group	25-06-13 25-06-13

Contractor / Driller	Method/Plant Used	Logged By	Co-Ordinates (NGR)	Ground Level (m AOD)
	360 Excavator	CR	E 311295.450 N 167224.130	

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P.Pen (kN/m2)	Water	Elev. (mAOD)	Depth (Thick-ness)	Description	Legend	Geology	
							(0.50) 0.50	Loose, brown, slightly clayey, gravelly SAND. Gravel is fine to coarse, angular to subangular, concrete, stone and brick. MADE GROUND.		NODATA	
							0.65	Loose, grey, fine to medium, angular to subrounded, stone and brick GRAVEL. MADE GROUND.		NODATA	
								Geotextile membrane.			
							(3.15)	Loose, black, gravelly, ash SAND with cobbles of stone and brick. Gravel is fine to coarse, angular to subangular, concrete, brick and stone. MADE GROUND.		NODATA	
								Geotextile membrane.			
								Wet. No visual or olfactory evidence of hydrocarbon contamination.			
							3.80				
							(0.40) 4.20	Wet, cohesive, grey, silty SAND. MADE GROUND.		NODATA	



Length	Shoring/Support:
2.5mm	
Width	
1mm	Stability:
Orientation	
90 degrees from north	

Water Strikes

Date	Time	Strike	Minutes	Standing	Remarks

General Remarks

Scale 1:31.25

Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.

08 WSP TP LOG STANDARD BARRY TRIAL PITS.GPJ WSPETEMPLATE1.03.GDT 7/7/14

Appendix B – Chemical Analysis Certificates

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

WSP Remediation
Fairway House
Paramount Business Park
St Mellons
Cardiff
South Glamorgan
CF3 0LW

Attention: Steve Gronow

CERTIFICATE OF ANALYSIS

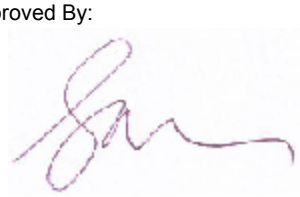
Date:	30 August 2013
Customer:	H_WSP_CDF
Sample Delivery Group (SDG):	130816-80
Your Reference:	39784.001
Location:	Barry Waterfront
Report No:	240124

We received 15 samples on Friday August 16, 2013 and 15 of these samples were scheduled for analysis which was completed on Friday August 30, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
7945544	BH1	EW		15/08/2013
7945545	BH2	EW		15/08/2013
7945547	BH3	EW		15/08/2013
7945548	BH4	EW		15/08/2013
7945550	BH5	EW		15/08/2013
7945551	BH6	EW		15/08/2013
7945552	BH7	EW		15/08/2013
7945553	BH8	EW		15/08/2013
7945554	BH9	EW		15/08/2013
7945559	BH10	EW		15/08/2013
7945560	BH11	EW		15/08/2013
7945561	BH12	EW		15/08/2013
7945564	BH13	EW		15/08/2013
7945566	BH14	EW		15/08/2013
7945567	BH15	EW		15/08/2013

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

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

LIQUID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15	7945544	BH1	EW		1l Glass bottle (ALE
			7945544	BH1	EW		Vial (ALE297)
			7945545	BH2	EW		1l Glass bottle (ALE
			7945545	BH2	EW		Vial (ALE297)
			7945547	BH3	EW		1l Glass bottle (ALE
			7945547	BH3	EW		Vial (ALE297)
			7945548	BH4	EW		1l Glass bottle (ALE
			7945548	BH4	EW		Vial (ALE297)
			7945550	BH5	EW		1l Glass bottle (ALE
			7945550	BH5	EW		Vial (ALE297)
			7945551	BH6	EW		1l Glass bottle (ALE
			7945551	BH6	EW		Vial (ALE297)
			7945552	BH7	EW		1l Glass bottle (ALE
			7945552	BH7	EW		Vial (ALE297)
			7945553	BH8	EW		1l Glass bottle (ALE
			7945553	BH8	EW		Vial (ALE297)
			7945554	BH9	EW		1l Glass bottle (ALE
			7945554	BH9	EW		Vial (ALE297)
			7945559	BH10	EW		1l Glass bottle (ALE
			7945559	BH10	EW		Vial (ALE297)
			7945560	BH11	EW		1l Glass bottle (ALE
			7945560	BH11	EW		Vial (ALE297)
			7945561	BH12	EW		1l Glass bottle (ALE
			7945561	BH12	EW		Vial (ALE297)
			7945564	BH13	EW		1l Glass bottle (ALE
			7945564	BH13	EW		Vial (ALE297)
			7945566	BH14	EW		1l Glass bottle (ALE
			7945566	BH14	EW		Vial (ALE297)
			7945567	BH15	EW		1l Glass bottle (ALE
			7945567	BH15	EW		Vial (ALE297)
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 15					
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 15					
Phenols by HPLC (W)	All	NDPs: 0 Tests: 15					
TPH CWG (W)	All	NDPs: 0 Tests: 15					
VOC MS (W)	All	NDPs: 0 Tests: 15					

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	.	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013
			SDG Ref	130816-80	130816-80	130816-80	130816-80	130816-80	130816-80
			Lab Sample No.(s)	7945544	7945545	7945547	7945548	7945550	7945551
			AGS Reference	EW	EW	EW	EW	EW	EW
Phenols, Total Detected monohydric	<16 µg/l	TM259		23700 2 #	100 2 #	1740 2 #	12700 2 #	105000 2 #	20 2 #

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	.	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013
			SDG Ref	130816-80	130816-80	130816-80	130816-80	130816-80	130816-80
			Lab Sample No.(s)	7945552	7945553	7945554	7945559	7945560	7945561
			AGS Reference	EW	EW	EW	EW	EW	EW
Phenols, Total Detected monohydric	<16 µg/l	TM259		80 2 #	<16 2 #	<16 2 #	<16 2 #	<16 2 #	<16 2 #

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	.	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/08/2013	15/08/2013	15/08/2013			
			Sampled Time	.	.	.			
			Date Received	16/08/2013	16/08/2013	16/08/2013			
			SDG Ref	130816-80	130816-80	130816-80			
			Lab Sample No.(s)	7945564	7945566	7945567			
			AGS Reference	EW	EW	EW			
Phenols, Total Detected monohydric	<16 µg/l	TM259		240 2 #	<16 2 #	<16 2 #			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	.	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013
			SDG Ref	130816-80	130816-80	130816-80	130816-80	130816-80	130816-80
			Lab Sample No.(s)	7945544	7945545	7945547	7945548	7945550	7945551
			AGS Reference	EW	EW	EW	EW	EW	EW
Naphthalene (aq)	<0.1 µg/l	TM178		<2.5 ♦ #	0.105 ♦ #	105 ♦ #	22.1 ♦ #	22100 ♦ #	4.3 ♦ #
Acenaphthene (aq)	<0.015 µg/l	TM178		180 ♦ #	0.0293 ♦ #	581 ♦ #	627 ♦ #	778 ♦ #	23.4 ♦ #
Acenaphthylene (aq)	<0.011 µg/l	TM178		15.3 ♦ #	0.0528 ♦ #	31 ♦ #	40.3 ♦ #	124 ♦ #	2.8 ♦ #
Fluoranthene (aq)	<0.017 µg/l	TM178		177 ♦ #	0.222 ♦ #	85.5 ♦ #	54.7 ♦ #	263 ♦ #	508 ♦ #
Anthracene (aq)	<0.015 µg/l	TM178		20.7 ♦ #	0.222 ♦ #	54.8 ♦ #	41.6 ♦ #	143 ♦ #	25 ♦ #
Phenanthrene (aq)	<0.022 µg/l	TM178		106 ♦ #	0.097 ♦ #	544 ♦ #	459 ♦ #	876 ♦ #	151 ♦ #
Fluorene (aq)	<0.014 µg/l	TM178		39.1 ♦ #	0.0177 ♦ #	376 ♦ #	325 ♦ #	450 ♦ #	13.3 ♦ #
Chrysene (aq)	<0.013 µg/l	TM178		19.8 ♦ #	0.111 ♦ #	7.31 ♦ #	2.9 ♦ #	95.1 ♦ #	65.5 ♦ #
Pyrene (aq)	<0.015 µg/l	TM178		123 ♦ #	0.171 ♦ #	55.8 ♦ #	34.5 ♦ #	195 ♦ #	347 ♦ #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		18.9 ♦ #	0.0508 ♦ #	6.36 ♦ #	2.21 ♦ #	86.3 ♦ #	62.1 ♦ #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		4.64 ♦ #	0.167 ♦ #	<2.3 ♦ #	<1.15 ♦ #	67.2 ♦ #	31.2 ♦ #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		6.04 ♦ #	0.117 ♦ #	<2.7 ♦ #	<1.35 ♦ #	78.7 ♦ #	32.8 ♦ #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		5.48 ♦ #	0.0936 ♦ #	1.21 ♦ #	<0.45 ♦ #	63.6 ♦ #	28.7 ♦ #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.619 ♦ #	0.0178 ♦ #	<1.6 ♦ #	<0.8 ♦ #	67.6 ♦ #	3.67 ♦ #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		1.52 ♦ #	0.0498 ♦ #	<1.6 ♦ #	<0.8 ♦ #	56 ♦ #	7.91 ♦ #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		1.44 ♦ #	0.0477 ♦ #	<1.4 ♦ #	<0.7 ♦ #	61.9 ♦ #	8.14 ♦ #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		720 ♦	1.57 ♦	1850 ♦	1610 ♦	25500 ♦	1310 ♦

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	.	.	.	.	.	.
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013	15/08/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013	16/08/2013
			SDG Ref	130816-80	130816-80	130816-80	130816-80	130816-80	130816-80
			Lab Sample No.(s)	7945552	7945553	7945554	7945559	7945560	7945561
			AGS Reference	EW	EW	EW	EW	EW	EW
Naphthalene (aq)	<0.1 µg/l	TM178		0.166 ♦ #	<0.1 ♦ #	<0.1 ♦ #	<0.1 ♦ #	<0.1 ♦ #	<0.2 ♦ #
Acenaphthene (aq)	<0.015 µg/l	TM178		0.0402 ♦ #	0.0644 ♦ #	<0.015 ♦ #	<0.015 ♦ #	0.0178 ♦ #	63.3 ♦ #
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.0142 ♦ #	0.038 ♦ #	<0.011 ♦ #	<0.011 ♦ #	0.0183 ♦ #	2.43 ♦ #
Fluoranthene (aq)	<0.017 µg/l	TM178		0.134 ♦ #	0.138 ♦ #	0.0296 ♦ #	<0.017 ♦ #	0.14 ♦ #	15.5 ♦ #
Anthracene (aq)	<0.015 µg/l	TM178		0.0483 ♦ #	0.0369 ♦ #	<0.015 ♦ #	<0.015 ♦ #	0.0308 ♦ #	0.951 ♦ #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.167 ♦ #	0.178 ♦ #	0.031 ♦ #	<0.022 ♦ #	0.135 ♦ #	<0.044 ♦ #
Fluorene (aq)	<0.014 µg/l	TM178		0.0412 ♦ #	0.0684 ♦ #	<0.014 ♦ #	0.0342 ♦ #	0.0381 ♦ #	9.05 ♦ #
Chrysene (aq)	<0.013 µg/l	TM178		0.0908 ♦ #	0.0995 ♦ #	0.0463 ♦ #	<0.013 ♦ #	0.0785 ♦ #	0.409 ♦ #
Pyrene (aq)	<0.015 µg/l	TM178		0.119 ♦ #	0.222 ♦ #	0.114 ♦ #	<0.015 ♦ #	0.111 ♦ #	16.3 ♦ #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.053 ♦ #	0.0671 ♦ #	<0.017 ♦ #	<0.017 ♦ #	0.053 ♦ #	0.488 ♦ #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.0702 ♦ #	0.0481 ♦ #	<0.023 ♦ #	<0.023 ♦ #	0.0594 ♦ #	0.0577 ♦ #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.0535 ♦ #	0.0595 ♦ #	<0.027 ♦ #	<0.027 ♦ #	0.057 ♦ #	0.0789 ♦ #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0614 ♦ #	0.0564 ♦ #	0.0151 ♦ #	<0.009 ♦ #	0.0563 ♦ #	0.0623 ♦ #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 ♦ #	<0.016 ♦ #	<0.016 ♦ #	<0.016 ♦ #	<0.016 ♦ #	<0.032 ♦ #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.0423 ♦ #	0.0445 ♦ #	<0.016 ♦ #	<0.016 ♦ #	0.0566 ♦ #	<0.032 ♦ #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.037 ♦ #	0.0379 ♦ #	<0.014 ♦ #	<0.014 ♦ #	0.0511 ♦ #	<0.028 ♦ #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		1.14 ♦	1.16 ♦	<0.247 ♦	<0.247 ♦	0.903 ♦	109 ♦

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	.	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/08/2013	15/08/2013	15/08/2013			
			Sampled Time	.	.	.			
			Date Received	16/08/2013	16/08/2013	16/08/2013			
			SDG Ref	130816-80	130816-80	130816-80			
			Lab Sample No.(s)	7945564	7945566	7945567			
			AGS Reference	EW	EW	EW			
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 ♦ #	<0.1 ♦ #	<0.1 ♦ #			
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 ♦ #	<0.015 ♦ #	<0.015 ♦ #			
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 ♦ #	0.0157 ♦ #	<0.011 ♦ #			
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 ♦ #	<0.017 ♦ #	0.0371 ♦ #			
Anthracene (aq)	<0.015 µg/l	TM178		0.0189 ♦ #	<0.015 ♦ #	<0.015 ♦ #			
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 ♦ #	<0.022 ♦ #	0.0384 ♦ #			
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 ♦ #	0.0385 ♦ #	<0.014 ♦ #			
Chrysene (aq)	<0.013 µg/l	TM178		0.0744 ♦ #	0.125 ♦ #	0.0227 ♦ #			
Pyrene (aq)	<0.015 µg/l	TM178		0.254 ♦ #	0.257 ♦ #	0.034 ♦ #			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.0475 ♦ #	0.0476 ♦ #	<0.017 ♦ #			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.132 ♦ #	0.19 ♦ #	<0.023 ♦ #			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.104 ♦ #	0.14 ♦ #	<0.027 ♦ #			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.119 ♦ #	0.153 ♦ #	0.0145 ♦ #			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.0237 ♦ #	0.0423 ♦ #	<0.016 ♦ #			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.0888 ♦ #	0.112 ♦ #	<0.016 ♦ #			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.0828 ♦ #	0.1 ♦ #	<0.014 ♦ #			
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		0.946 ♦	1.22 ♦	<0.247 ♦			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH1	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945544	EW
			BH2	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945545	EW
			BH3	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945547	EW
			BH4	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945548	EW
			BH5	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945550	EW
			BH6	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945551	EW
GRO Surrogate % recovery**	%	TM245	105	114	109	103	105	108			
GRO >C5-C12	<50 µg/l	TM245	20100 #	4390 #	18000 #	17400 #	27900 #	4990 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #			
Aliphatics >C5-C6	<10 µg/l	TM245	131	81	36	13	16	20			
Aliphatics >C6-C8	<10 µg/l	TM245	335	124	58	56	133	28			
Aliphatics >C8-C10	<10 µg/l	TM245	1780	408	1260	1450	1940	226			
Aliphatics >C10-C12	<10 µg/l	TM245	5990	1180	8080	6760	11500	2530			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	15	<10	229	155	50500	84			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	36	<10	213	143	6040	86			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	105	14	200	83	1000	244			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	156	14	642	381	57600	414			
Aromatics >EC5-EC7	<10 µg/l	TM245	1670	383	326	778	1830	58			
Aromatics >EC7-EC8	<10 µg/l	TM245	2210	427	721	1100	2010	83			
Aromatics >EC8-EC10	<10 µg/l	TM245	4040	997	2110	2710	2900	355			
Aromatics >EC10-EC12	<10 µg/l	TM245	3990	789	5380	4510	7640	1690			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	1270	46	14500	8890	85500	517			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	1410	91	14900	9140	131000	2530			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	574	131	3910	2730	32000	1330			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	3250	268	33300	20800	248000	4370			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	23500	4680	51900	38500	334000	9770			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH7	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945552	EW
			BH8	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945553	EW
			BH9	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945554	EW
			BH10	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945559	EW
			BH11	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945560	EW
			BH12	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945561	EW
GRO Surrogate % recovery**	%	TM245	116	101	109	93	96	93			
GRO >C5-C12	<50 µg/l	TM245	<50 #	584 #	<50 #	124 #	<50 #	545 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #			
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10	30	18	37			
Aliphatics >C6-C8	<10 µg/l	TM245	<10	10	<10	<10	<10	12			
Aliphatics >C8-C10	<10 µg/l	TM245	<10	59	<10	16	<10	45			
Aliphatics >C10-C12	<10 µg/l	TM245	<10	279	11	35	<10	244			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	221	<10	42	<10	45			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	244	<10	52	<10	56			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	53	<10	28	<10	35			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	518	<10	122	<10	136			
Aromatics >EC5-EC7	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	44	<10	12	<10	45			
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	186	<10	23	<10	162			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10	23	<10	<10	<10	146			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10	100	<10	<10	<10	137			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10	39	<10	<10	<10	41			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10	162	<10	<10	<10	324			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	30	1270	32	246	29	1010			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	.	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/08/2013	15/08/2013	15/08/2013			
			Sampled Time	.	.	.			
			Date Received	16/08/2013	16/08/2013	16/08/2013			
			SDG Ref	130816-80	130816-80	130816-80			
			Lab Sample No.(s)	7945564	7945566	7945567			
			AGS Reference	EW	EW	EW			
GRO Surrogate % recovery**	%	TM245		93	91	98			
GRO >C5-C12	<50 µg/l	TM245		527 #	326 #	<50 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Aliphatics >C5-C6	<10 µg/l	TM245		39	34	20			
Aliphatics >C6-C8	<10 µg/l	TM245		27	22	<10			
Aliphatics >C8-C10	<10 µg/l	TM245		70	36	<10			
Aliphatics >C10-C12	<10 µg/l	TM245		162	99	<10			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		54	216	<10			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		61	289	<10			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		47	119	<10			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		162	624	<10			
Aromatics >EC5-EC7	<10 µg/l	TM245		17	10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245		15	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245		89	51	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245		108	66	<10			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		33	64	<10			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		40	127	<10			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		27	59	<10			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		100	250	<10			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		788	1200	35			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH1	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945544	EW
			BH2	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945545	EW
			BH3	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945547	EW
			BH4	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945548	EW
			BH5	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945550	EW
			BH6	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945551	EW
Toluene-d8**	%	TM208	95.6	97.4	97.8	96.7	94.1	99.2			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #			
Benzene	<1 µg/l	TM208	1770 #	375 #	336 #	869 #	2070 #	58 #			
Toluene	<1 µg/l	TM208	2340 #	376 #	787 #	1210 #	2510 #	77.6 #			
Ethylbenzene	<1 µg/l	TM208	528 #	62.3 #	258 #	456 #	384 #	36.2 #			
m,p-Xylene	<1 µg/l	TM208	1420 #	385 #	628 #	926 #	791 #	99.8 #			
o-Xylene	<1 µg/l	TM208	548 #	153 #	340 #	512 #	405 #	49.5 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #			
Sum of detected Xylenes	<2 µg/l	TM208	1970	538	968	1440	1200	149			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH7	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945552	EW
			BH8	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945553	EW
			BH9	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945554	EW
			BH10	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945559	EW
			BH11	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945560	EW
			BH12	.	Water(GW/SW)	15/08/2013	.	16/08/2013	130816-80	7945561	EW
Toluene-d8**	%	TM208	98.2		98		98.3		98.6		99.7		97.6	
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Benzene	<1 µg/l	TM208	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Toluene	<1 µg/l	TM208	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Ethylbenzene	<1 µg/l	TM208	<1	#	2.93	#	<1	#	<1	#	<1	#	2.2	#
m,p-Xylene	<1 µg/l	TM208	<1	#	<1	#	<1	#	<1	#	<1	#	4.92	#
o-Xylene	<1 µg/l	TM208	<1	#	<1	#	<1	#	<1	#	<1	#	2.67	#
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	#	<1	#	<1	#	<1	#	<1	#	<1	#
Sum of detected Xylenes	<2 µg/l	TM208	<2		<2		<2		<2		<2		7.59	

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	.	.	.			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/08/2013	15/08/2013	15/08/2013			
			Sampled Time	.	.	.			
			Date Received	16/08/2013	16/08/2013	16/08/2013			
			SDG Ref	130816-80	130816-80	130816-80			
			Lab Sample No.(s)	7945564	7945566	7945567			
			AGS Reference	EW	EW	EW			
Toluene-d8**	%	TM208		96.1	93.6	99.6			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Benzene	<1 µg/l	TM208		18.7 #	10.4 #	<1 #			
Toluene	<1 µg/l	TM208		15.8 #	7.62 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		5.81 #	1.45 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		15.5 #	3.79 #	<1 #			
o-Xylene	<1 µg/l	TM208		6.58 #	6.19 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Sum of detected Xylenes	<2 µg/l	TM208		22.1	9.98	<2			

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	7945544	7945545	7945547	7945548	7945550	7945551	7945552	7945553	7945554	7945559
Customer Sample Ref.	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BH9	BH10
AGS Ref.	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Depth										
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
EPH CWG (Aromatic) Aqueous GC (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
GRO by GC-FID (W)	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	28-Aug-2013	28-Aug-2013	27-Aug-2013
PAH Spec MS - Aqueous (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	29-Aug-2013	30-Aug-2013	29-Aug-2013	29-Aug-2013
Phenols by HPLC (W)	27-Aug-2013	28-Aug-2013	28-Aug-2013	27-Aug-2013	28-Aug-2013	28-Aug-2013	28-Aug-2013	29-Aug-2013	27-Aug-2013	27-Aug-2013
TPH CWG (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
VOC MS (W)	27-Aug-2013	24-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	24-Aug-2013	24-Aug-2013	25-Aug-2013	25-Aug-2013	24-Aug-2013

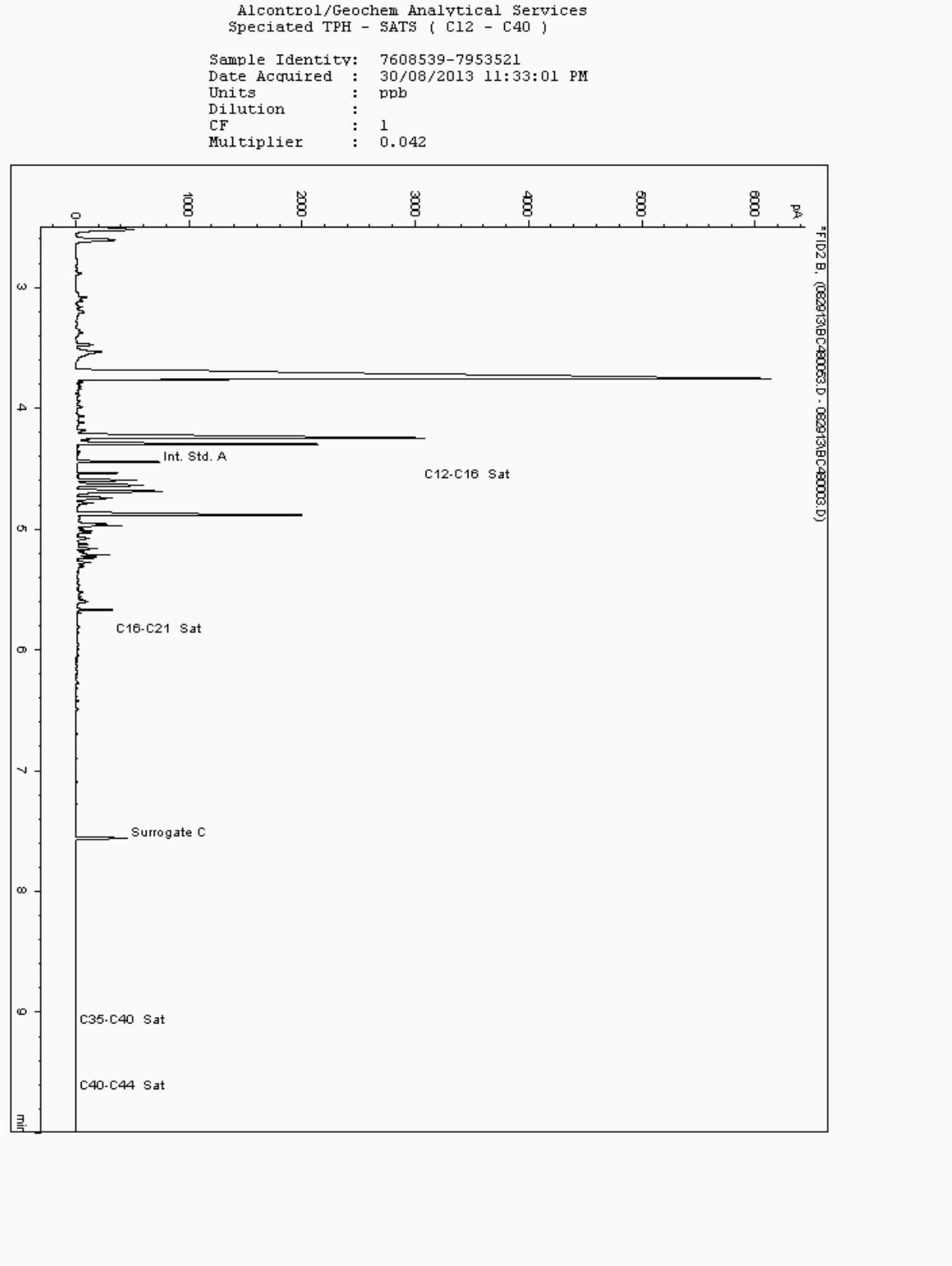
Lab Sample No(s)	7945560	7945561	7945564	7945566	7945567
Customer Sample Ref.	BH11	BH12	BH13	BH14	BH15
AGS Ref.	EW	EW	EW	EW	EW
Depth					
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
EPH CWG (Aromatic) Aqueous GC (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
GRO by GC-FID (W)	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013
PAH Spec MS - Aqueous (W)	29-Aug-2013	29-Aug-2013	29-Aug-2013	29-Aug-2013	29-Aug-2013
Phenols by HPLC (W)	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013	27-Aug-2013
TPH CWG (W)	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013	30-Aug-2013
VOC MS (W)	24-Aug-2013	24-Aug-2013	24-Aug-2013	24-Aug-2013	24-Aug-2013

CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953521 **Sample ID :** BH5 **Depth :**



CERTIFICATE OF ANALYSIS

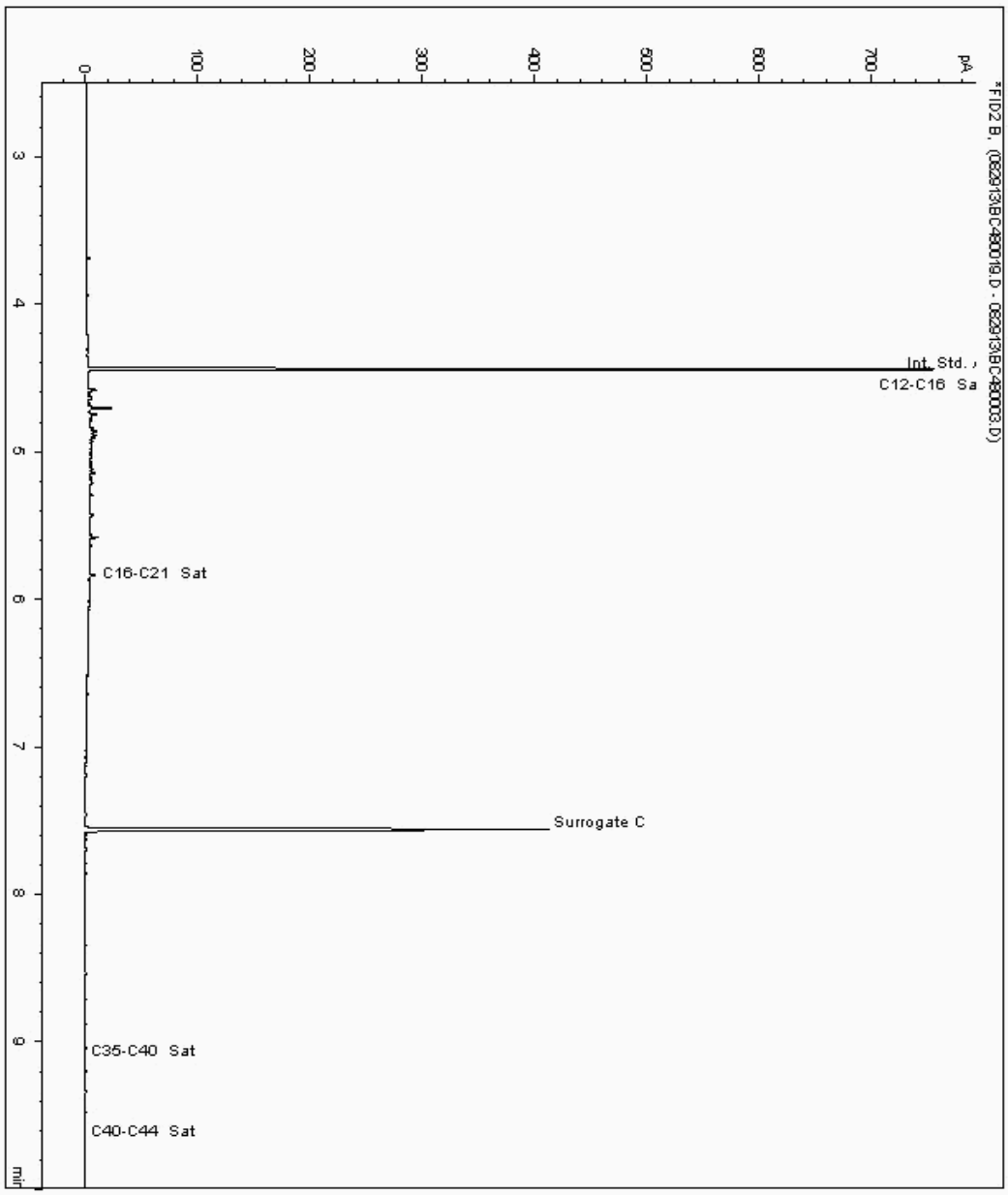
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953545 **Sample ID :** BH8 **Depth :**

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

Sample Identity: 7608566-7953545
Date Acquired : 29/08/2013 21:49:52 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

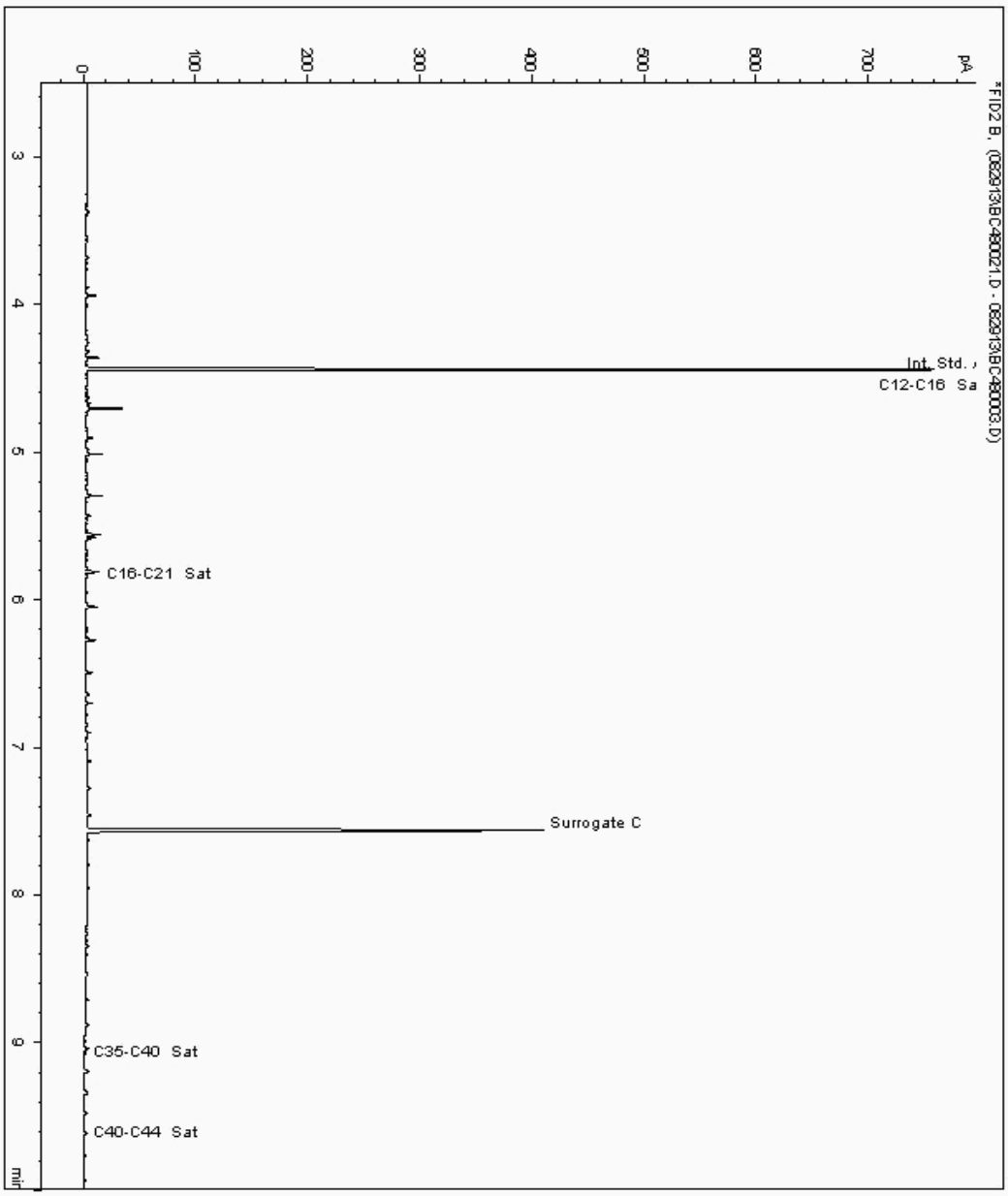
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953553 **Sample ID :** BH6 **Depth :**

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

Sample Identity: 7608548-7953553
Date Acquired : 29/08/2013 22:28:23 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

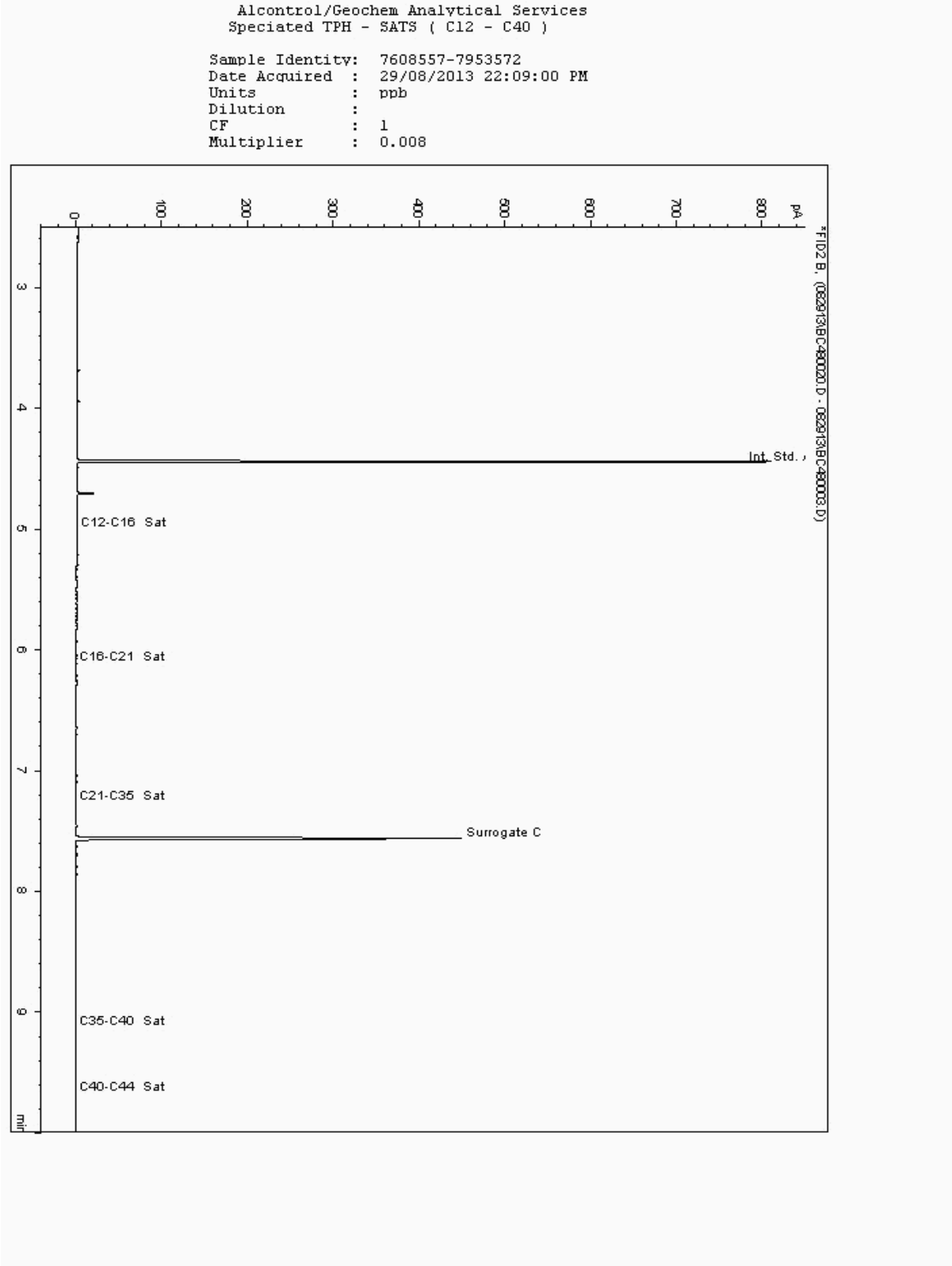


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953572 **Sample ID :** BH7 **Depth :**

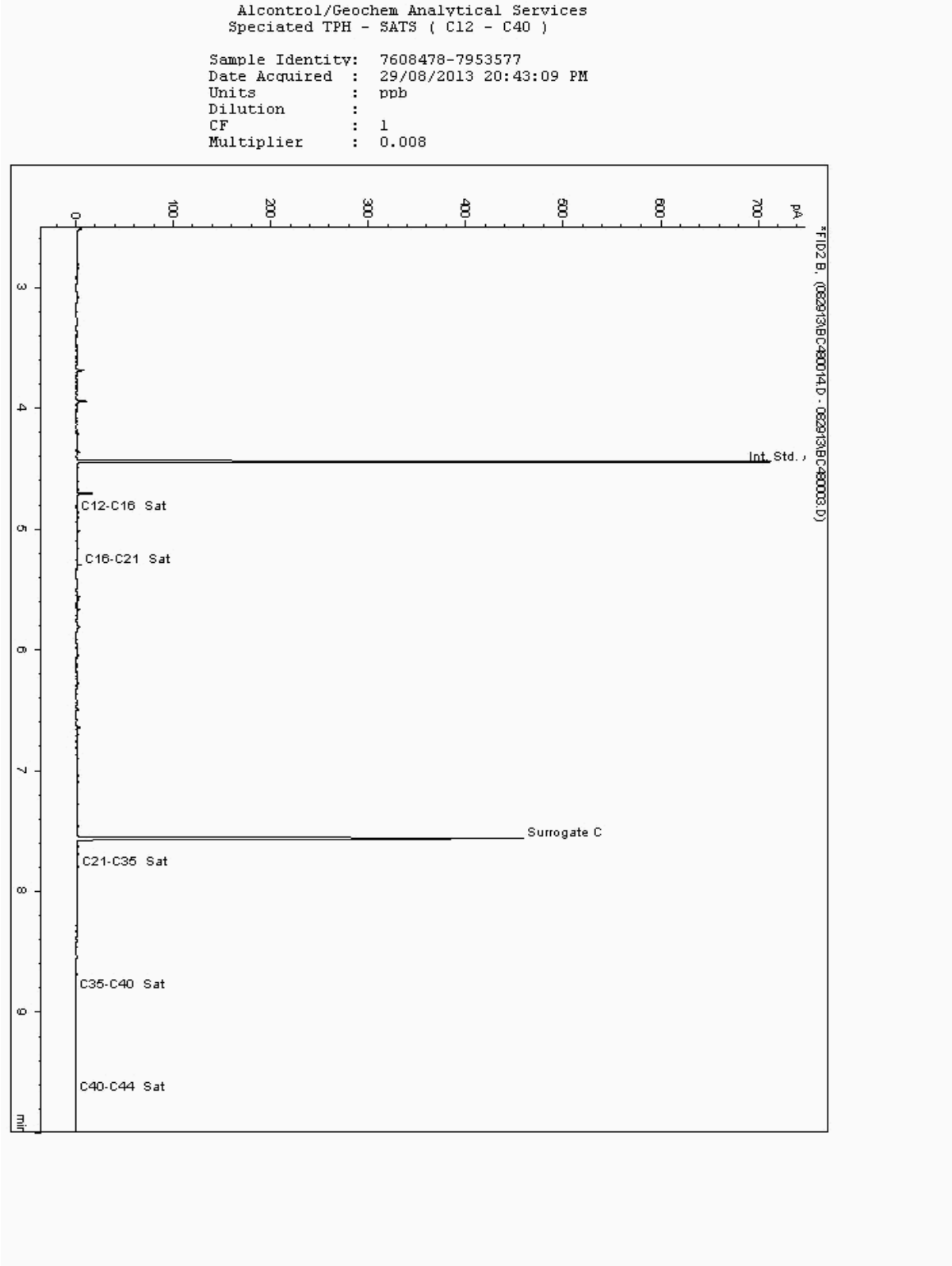


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953577 **Sample ID :** BH1 **Depth :**

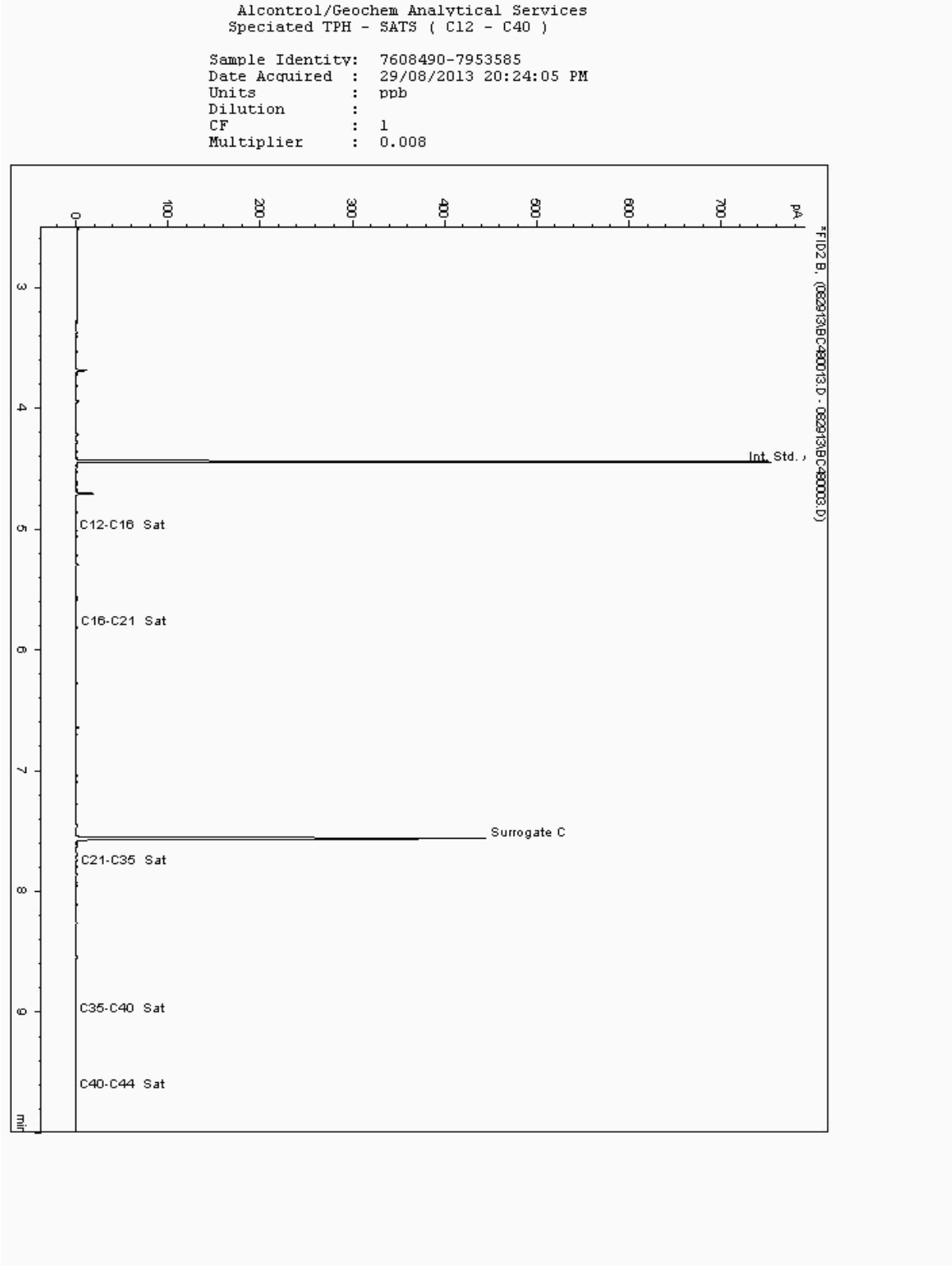


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953585 **Sample ID :** BH2 **Depth :**

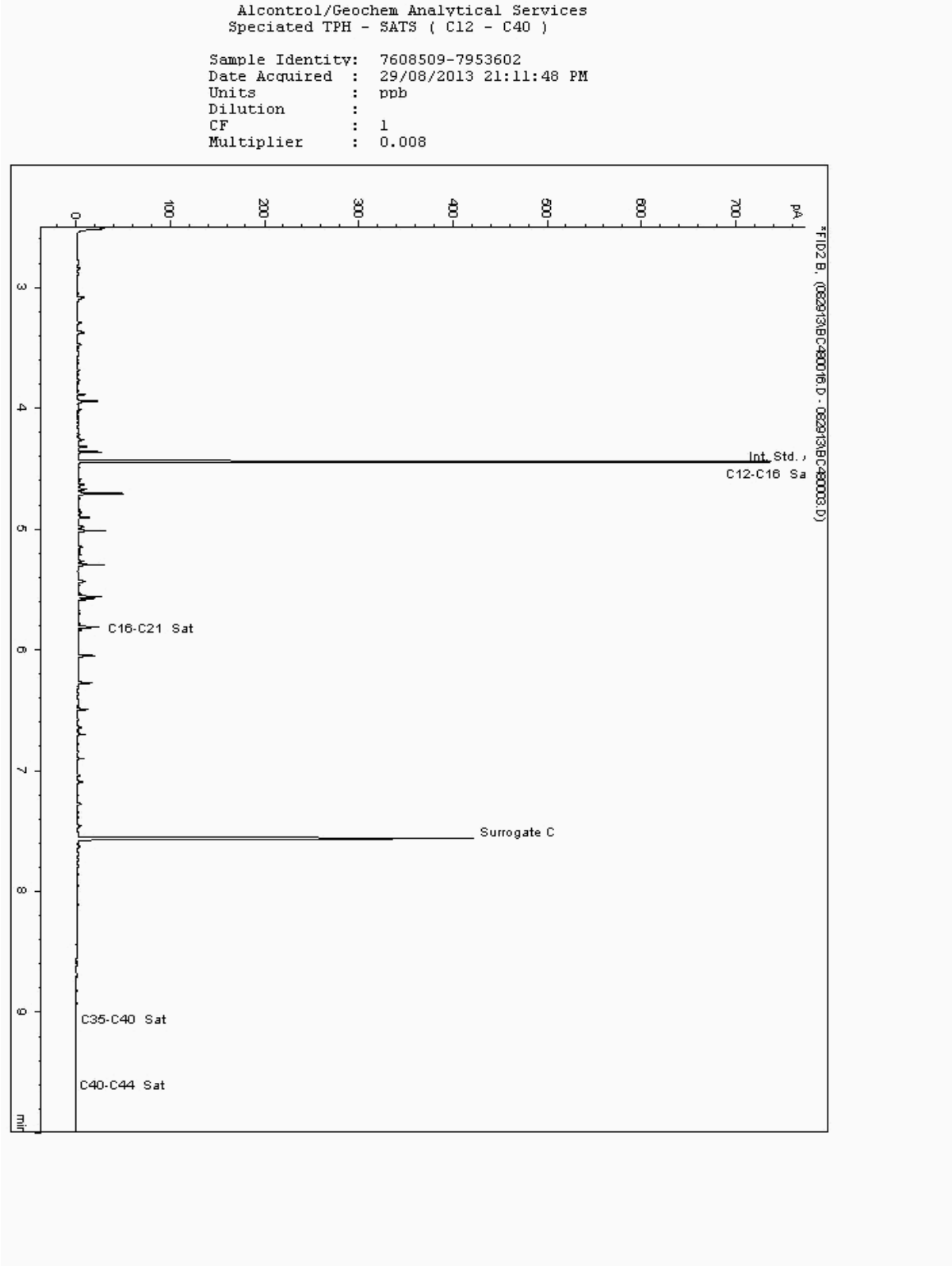


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953602 **Sample ID :** BH3 **Depth :**



CERTIFICATE OF ANALYSIS

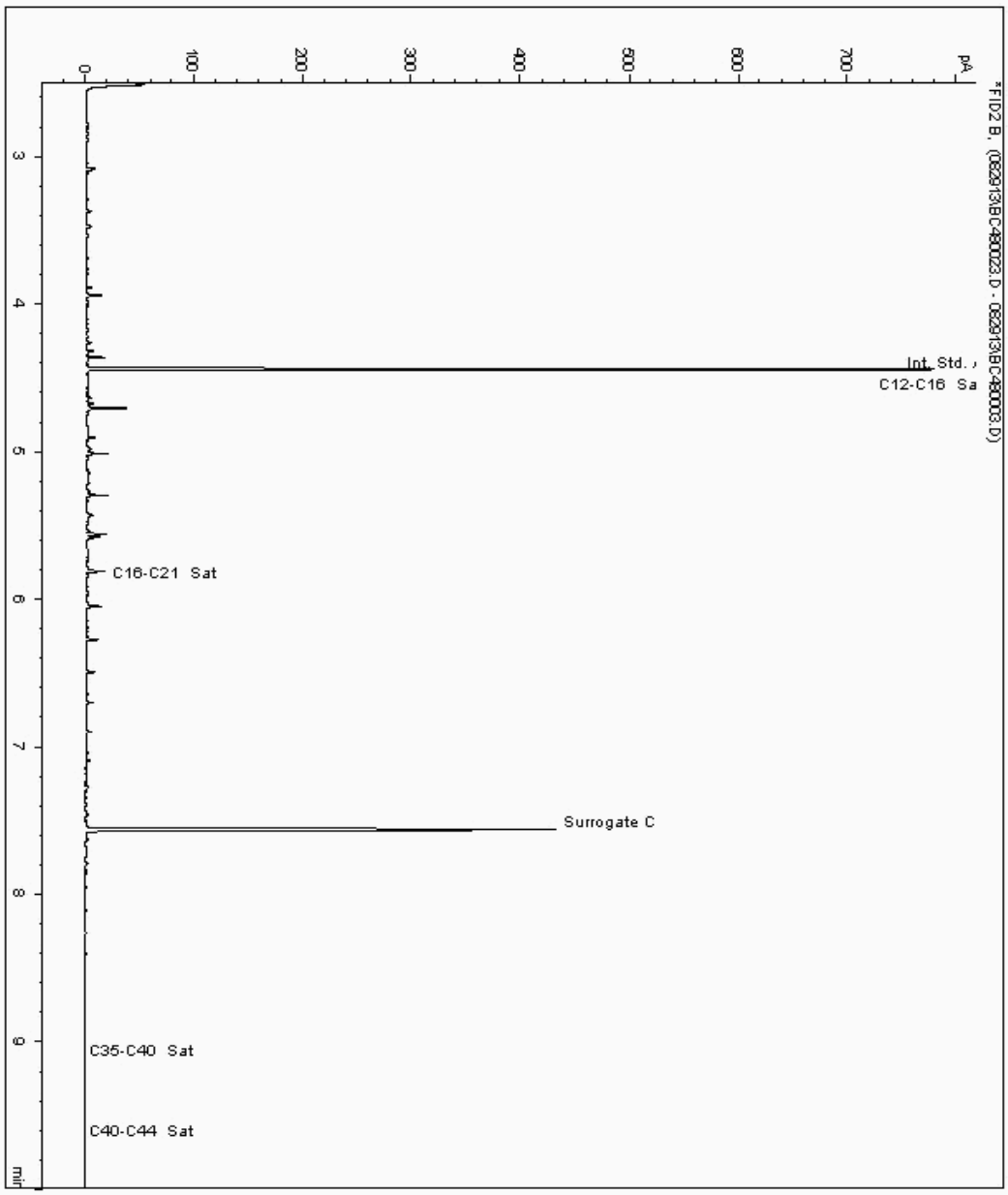
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7953611 **Sample ID :** BH4 **Depth :**

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

Sample Identity: 7608530-7953611
Date Acquired : 29/08/2013 22:57:12 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

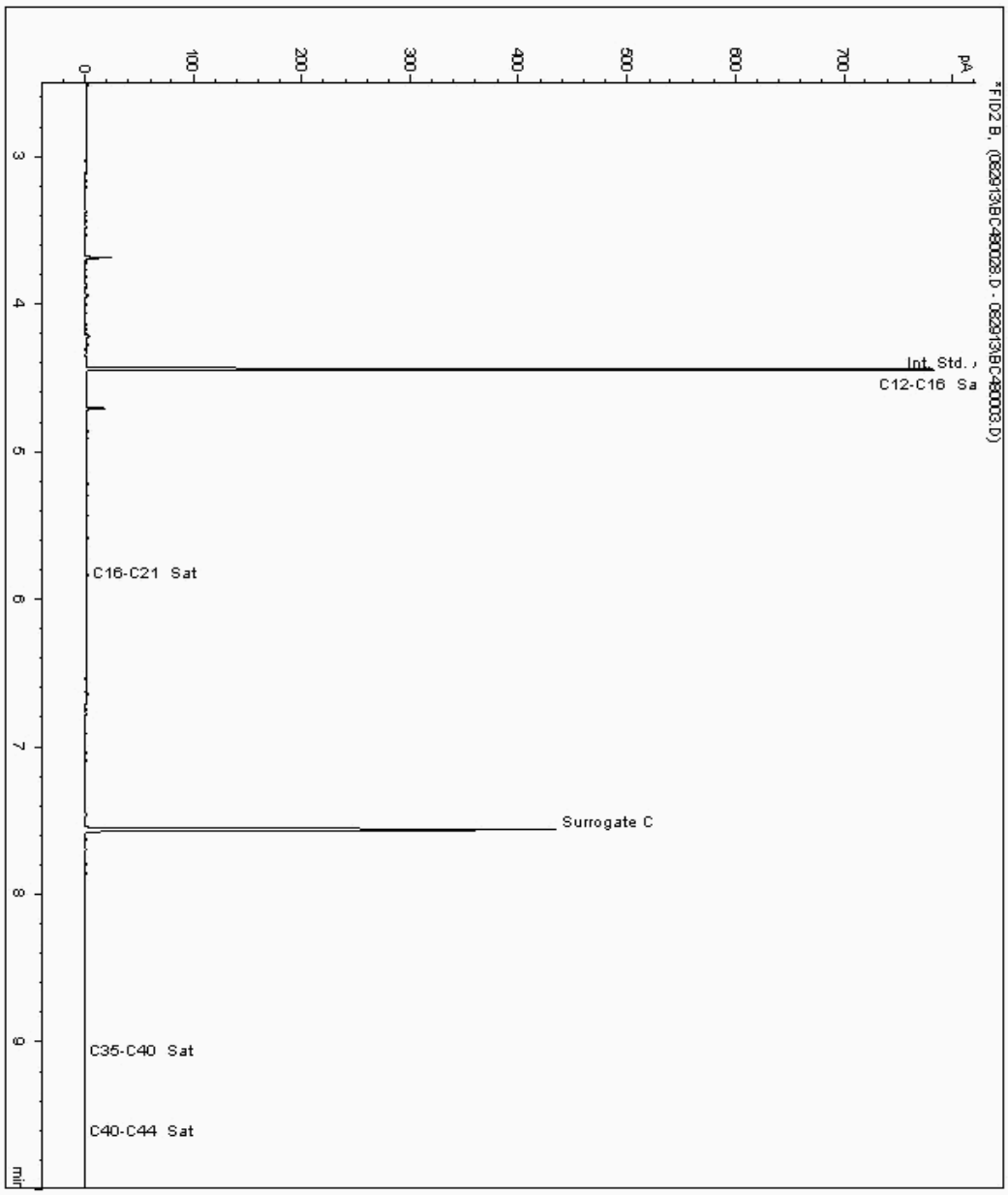
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956343 **Sample ID :** BH13 **Depth :**

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

Sample Identity: 7608629-7956343
Date Acquired : 30/08/2013 00:14:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

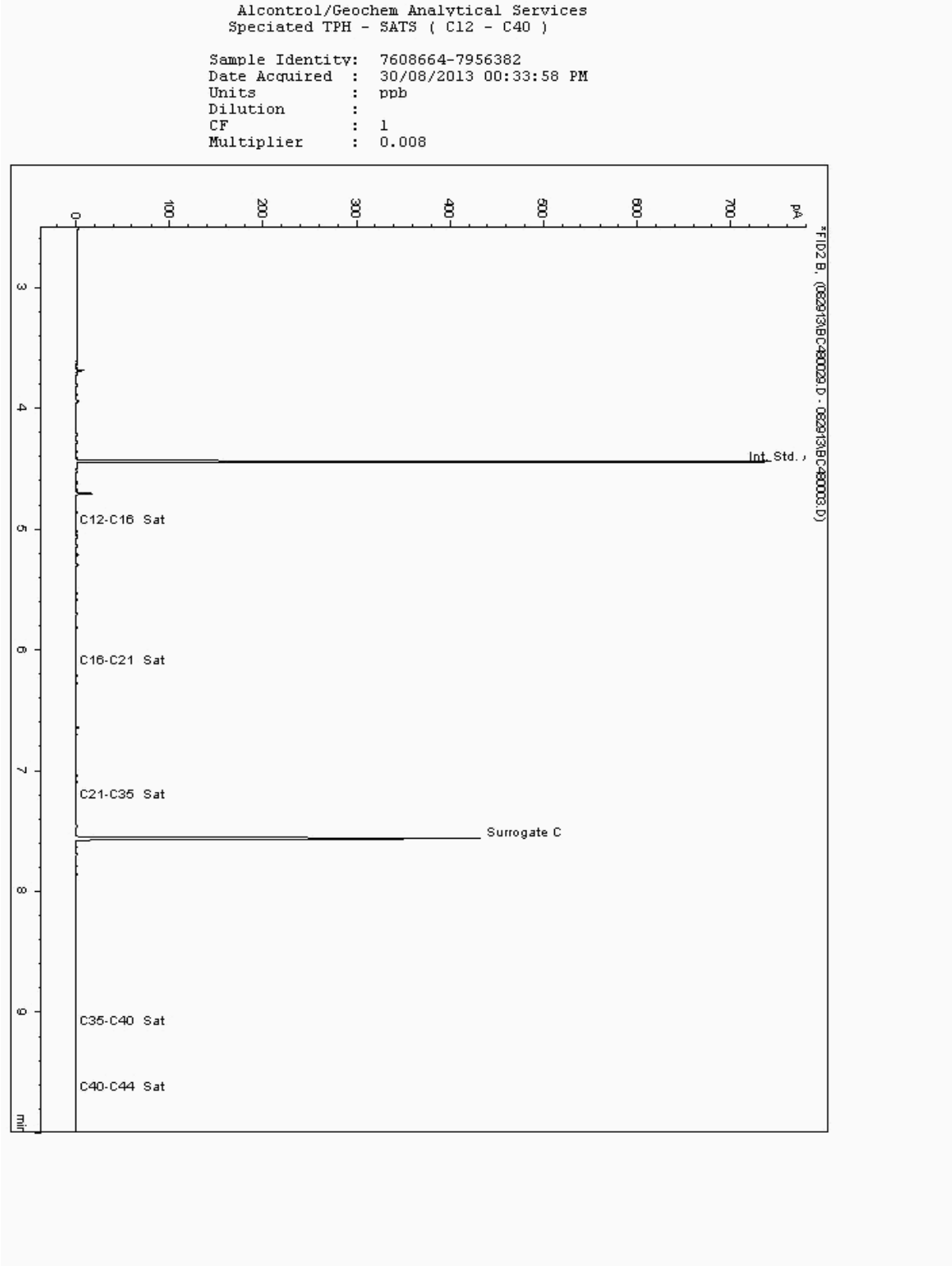


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956382 **Sample ID :** BH15 **Depth :**

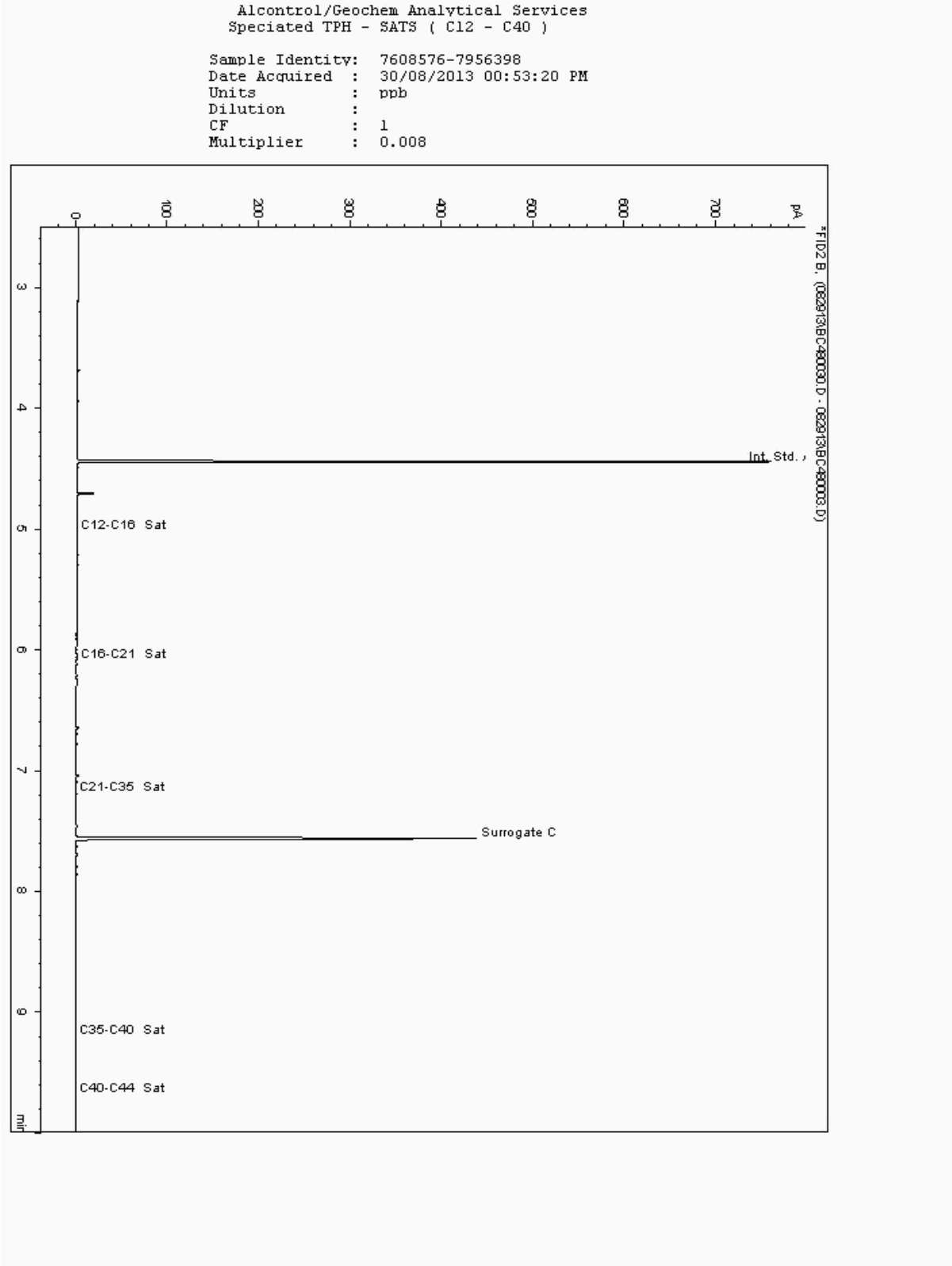


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956398 **Sample ID :** BH9 **Depth :**



CERTIFICATE OF ANALYSIS

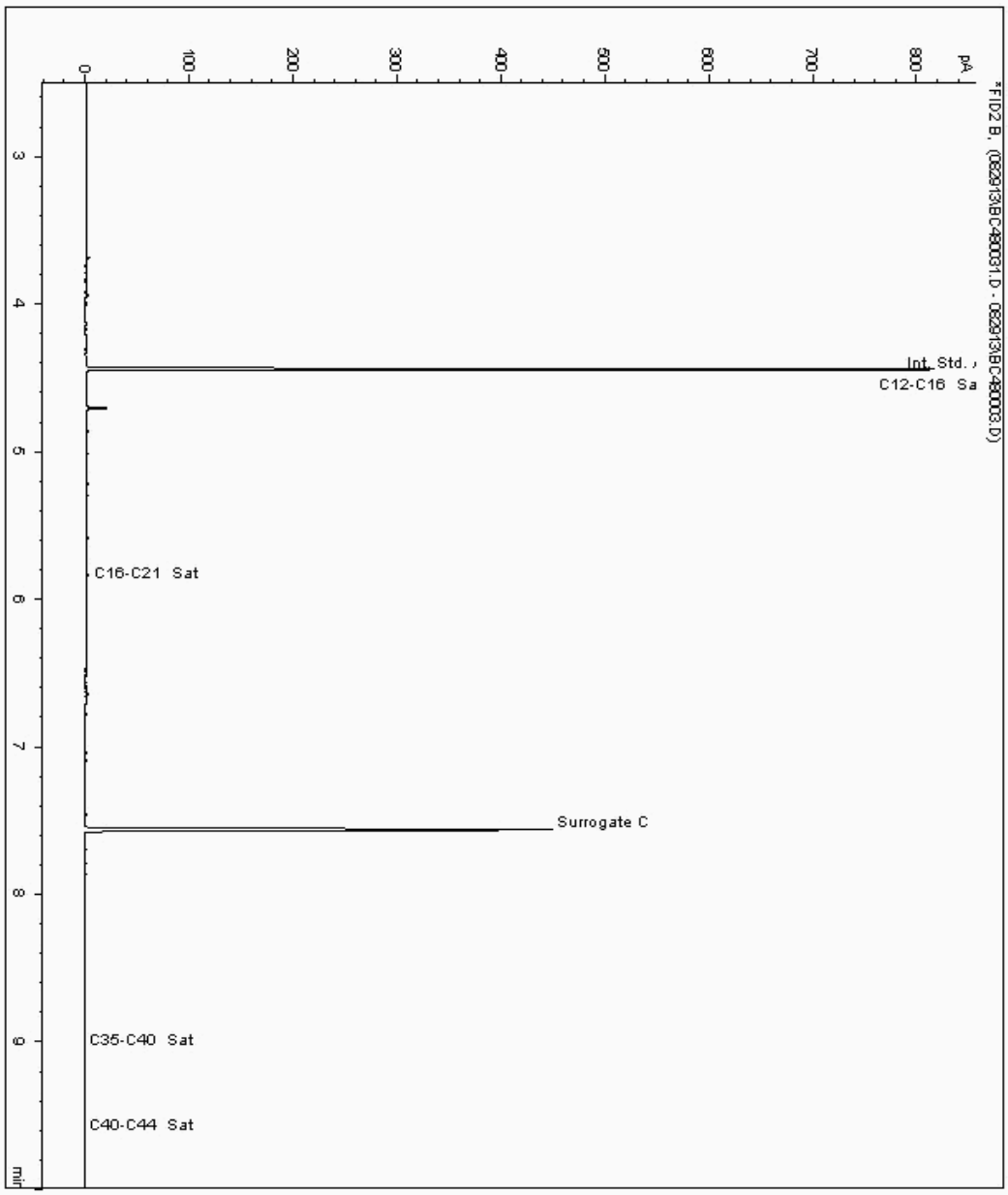
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956413 **Sample ID :** BH10 **Depth :**

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

Sample Identity: 7608585-7956413
Date Acquired : 30/08/2013 01:12:42 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

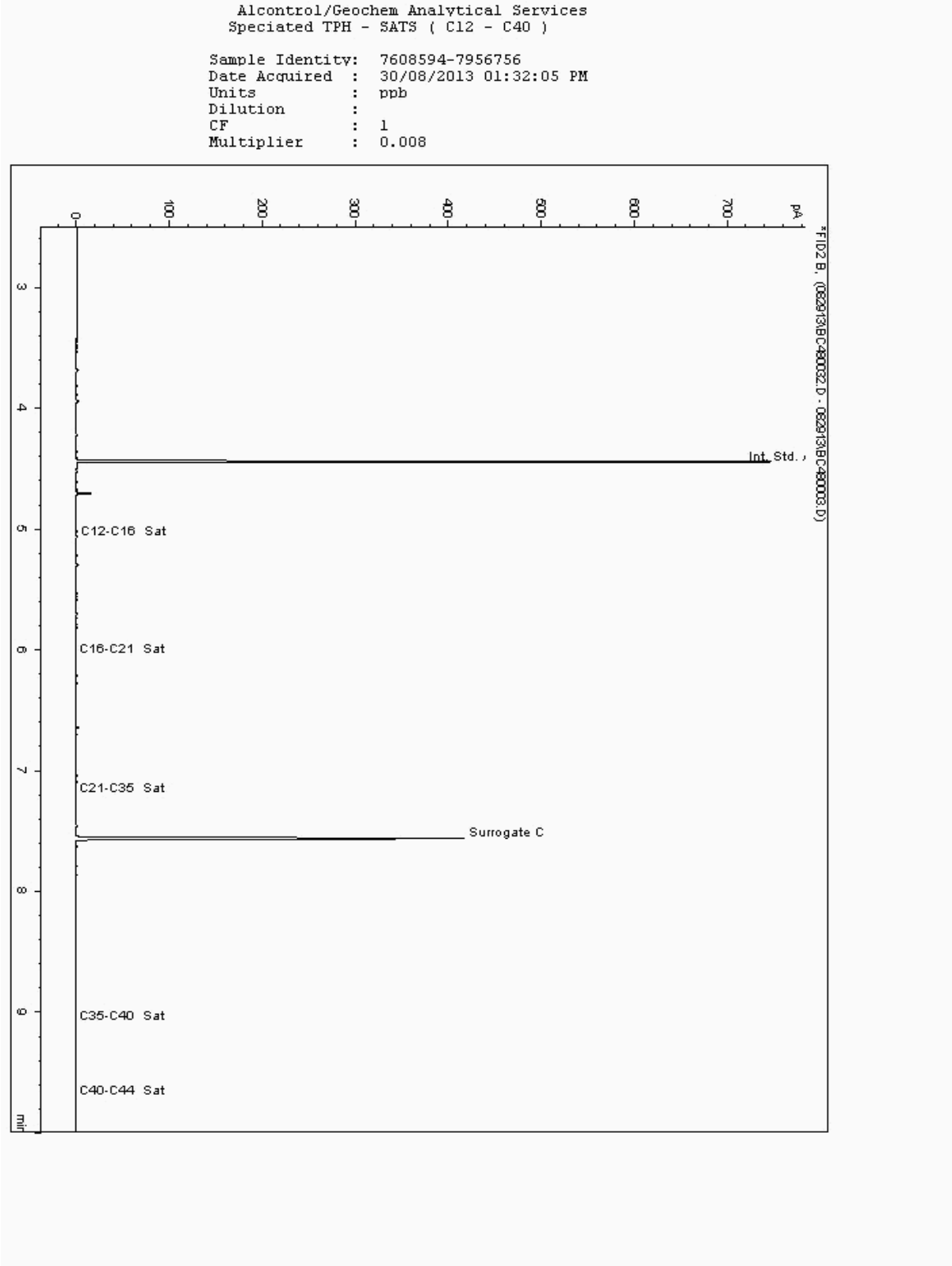


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956756 **Sample ID :** BH11 **Depth :**



CERTIFICATE OF ANALYSIS

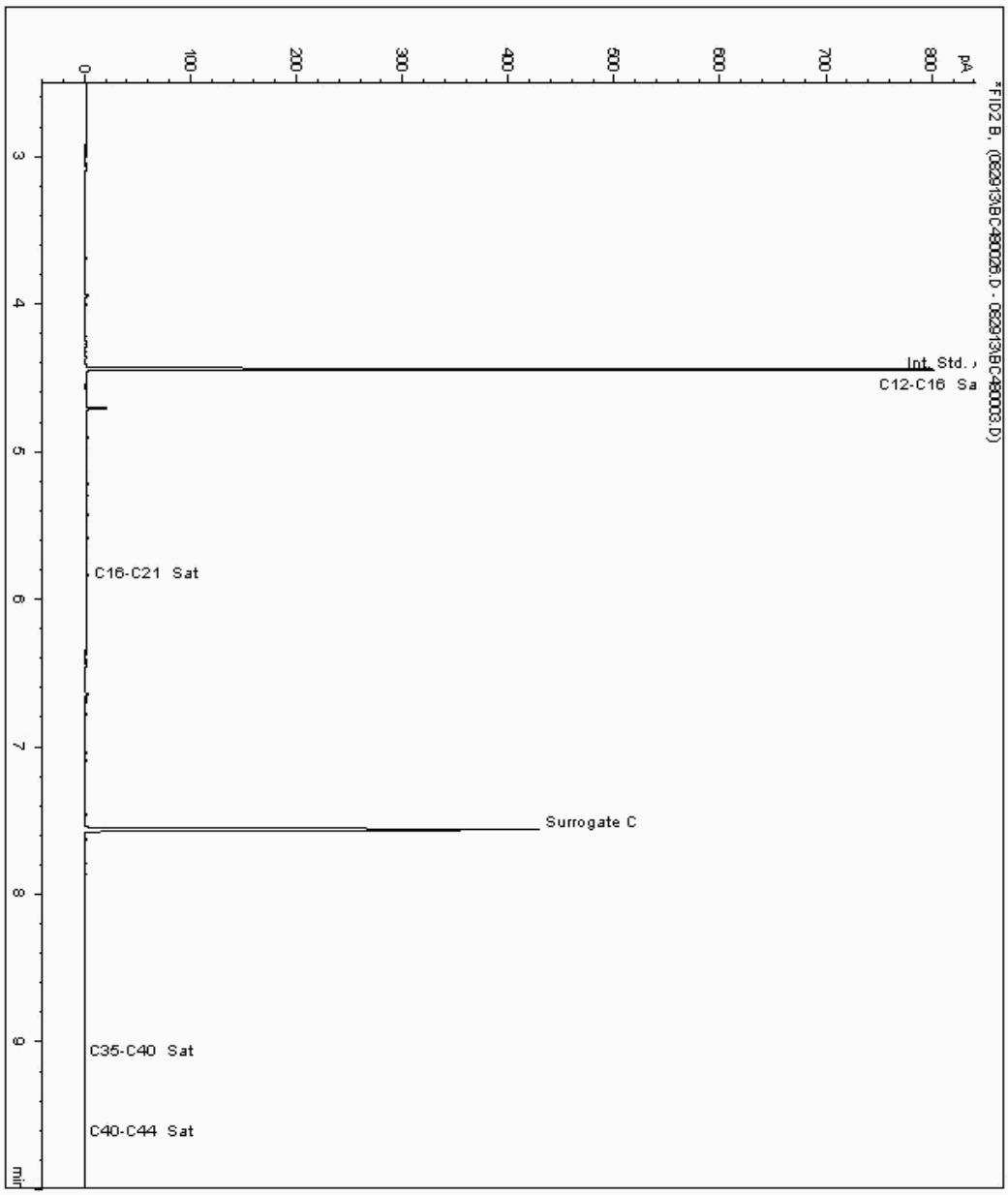
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956794 **Sample ID :** BH12 **Depth :**

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

Sample Identity: 7608603-7956794
Date Acquired : 29/08/2013 23:35:42 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

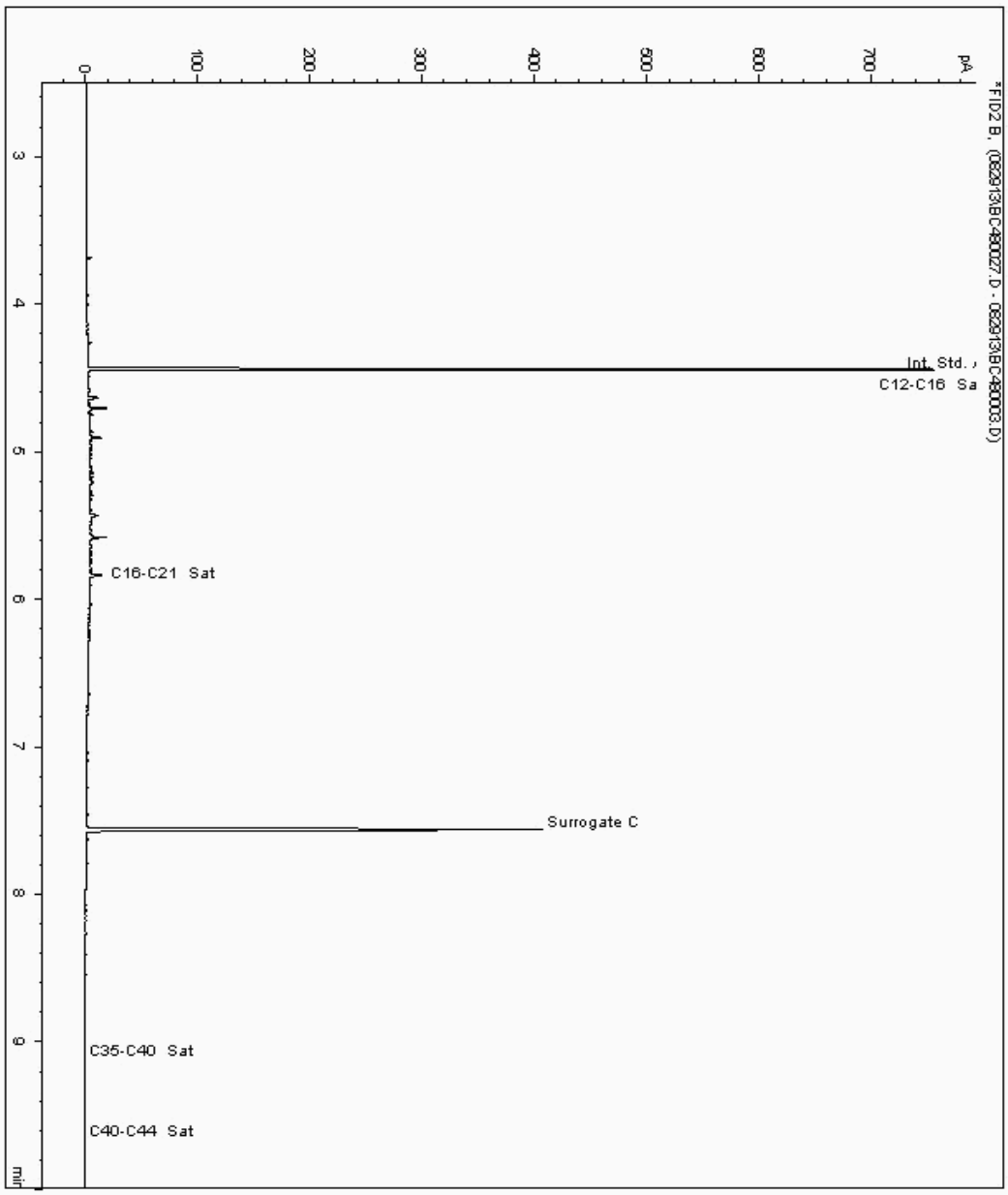
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 7956819 **Sample ID :** BH14 **Depth :**

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

Sample Identity: 7608638-7956819
Date Acquired : 29/08/2013 23:55:12 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

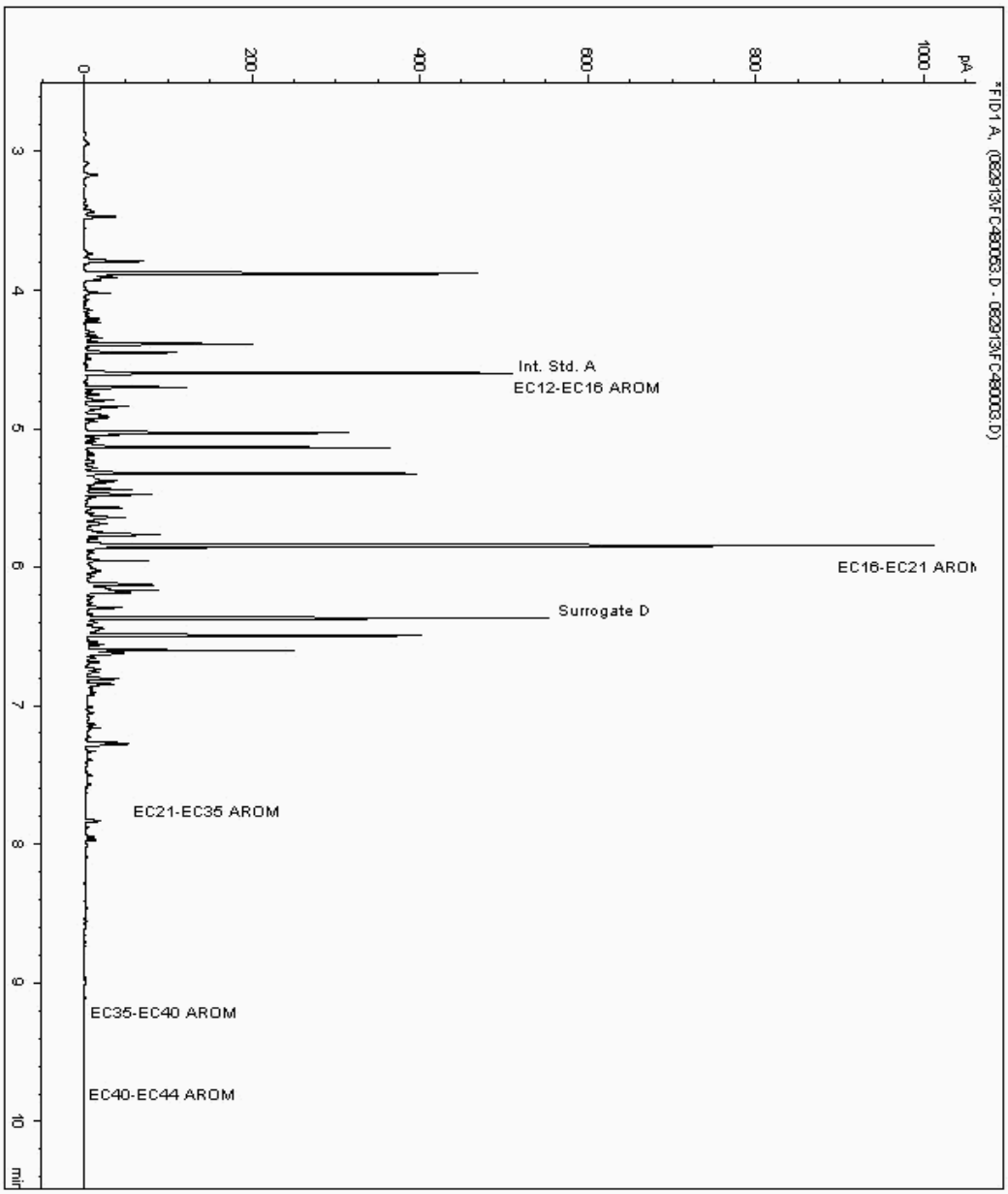
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953521 **Sample ID :** BH5 **Depth :**

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

Sample Identity: 7608540-7953521
Date Acquired : 30/08/2013 11:33:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.417

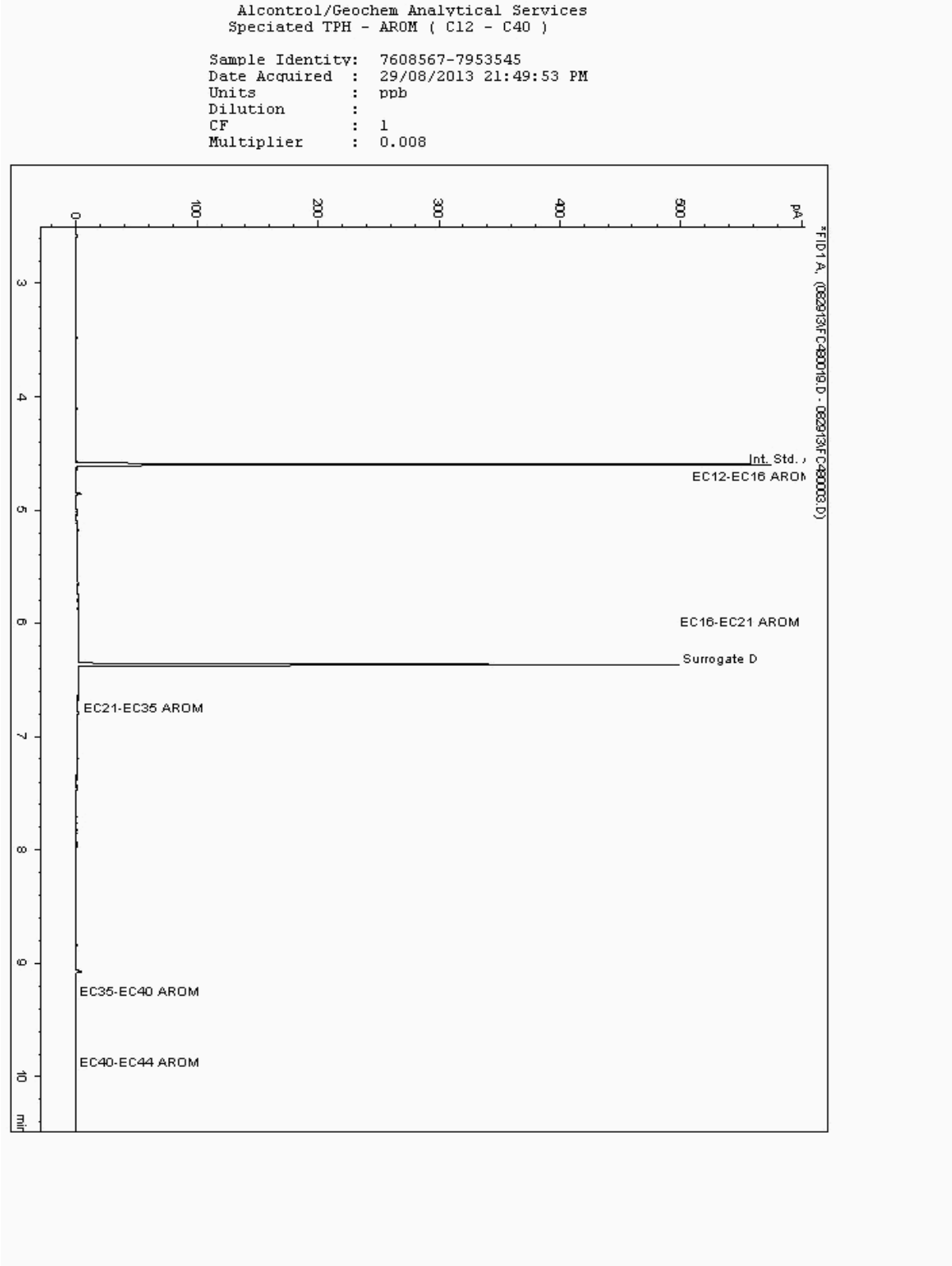


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953545 **Sample ID :** BH8 **Depth :**



CERTIFICATE OF ANALYSIS

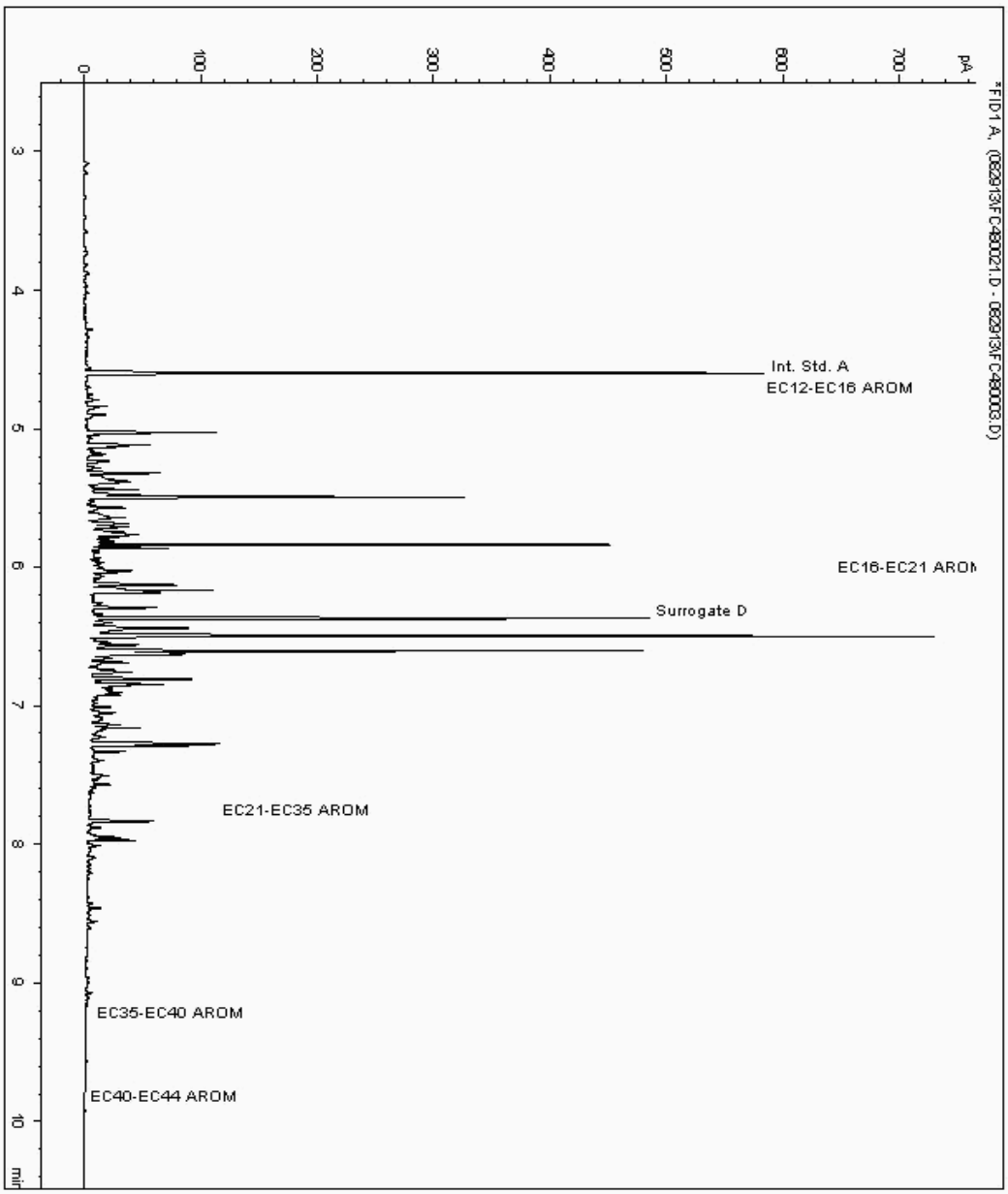
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953553 **Sample ID :** BH6 **Depth :**

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

Sample Identity: 7608549-7953553
Date Acquired : 29/08/2013 22:28:22 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

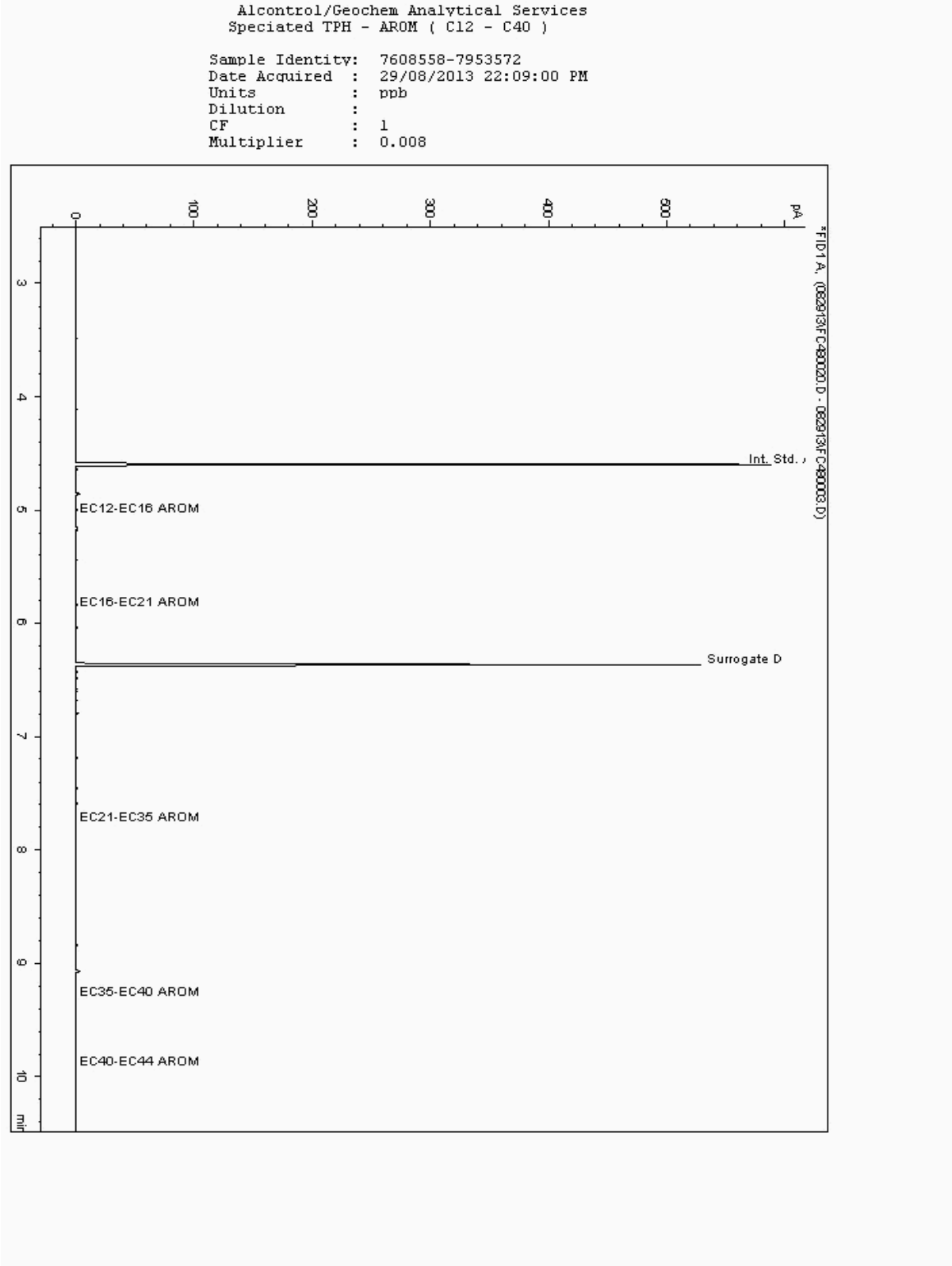


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953572 **Sample ID :** BH7 **Depth :**

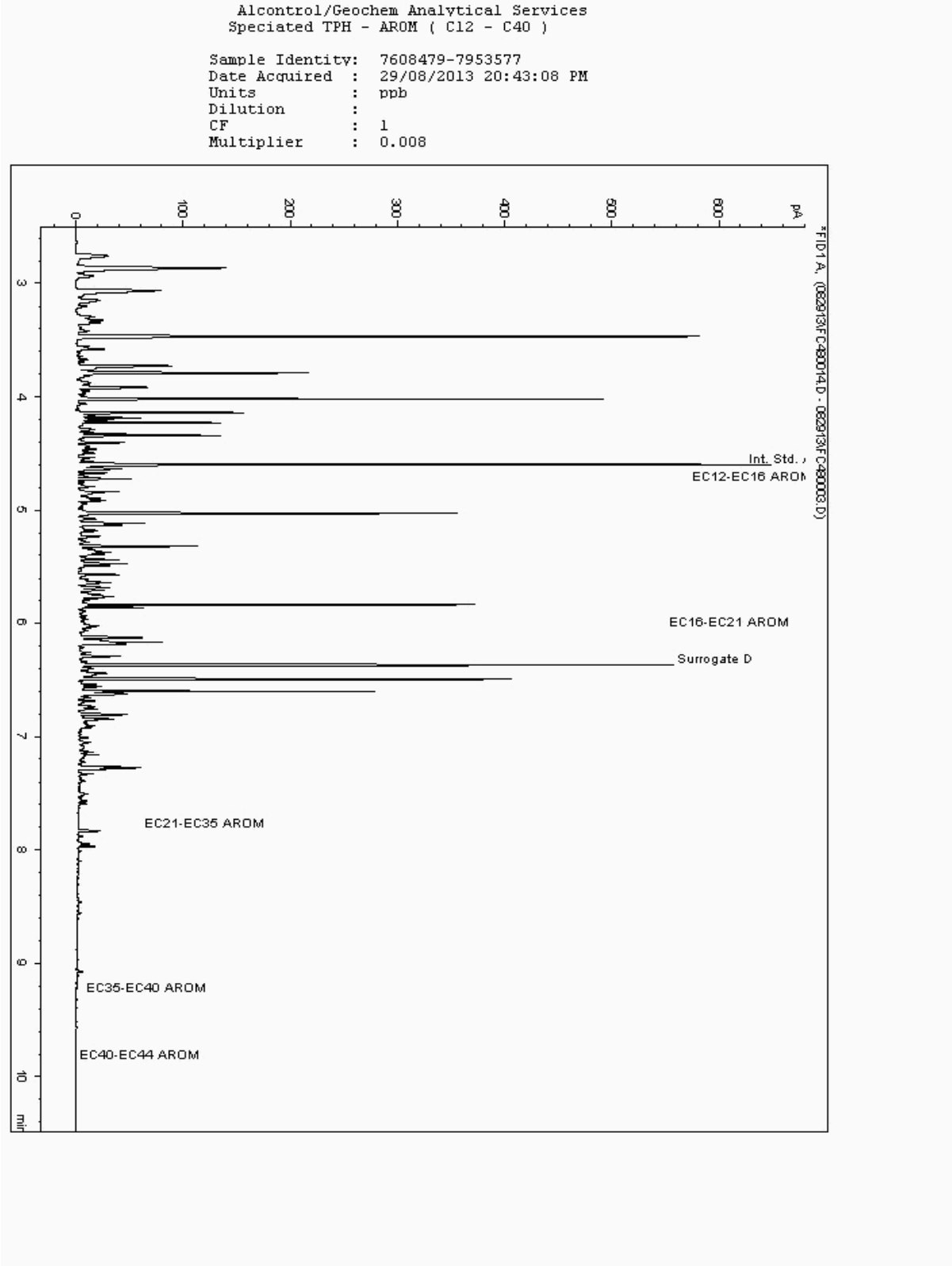


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953577 **Sample ID :** BH1 **Depth :**

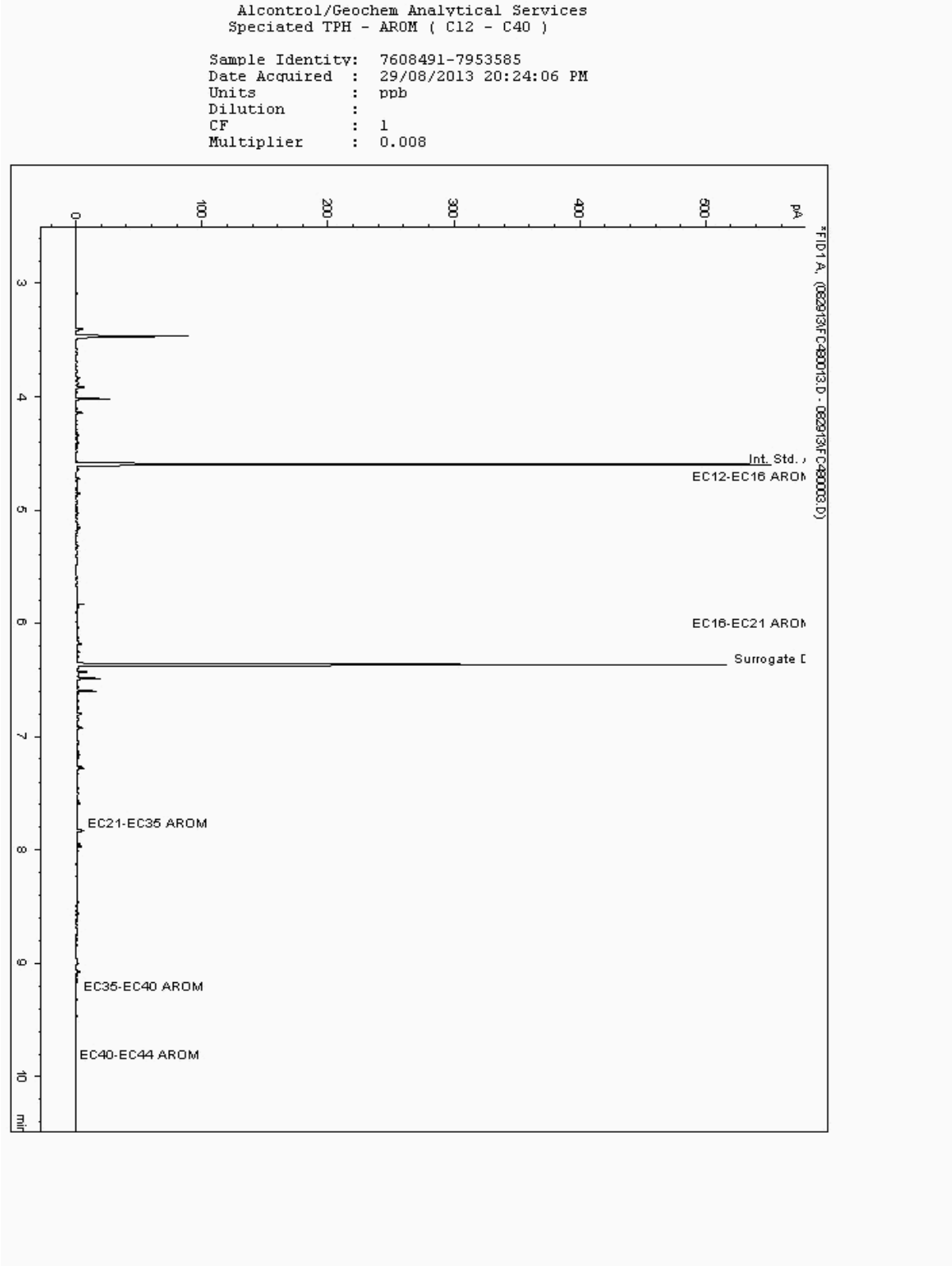


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953585 **Sample ID :** BH2 **Depth :**

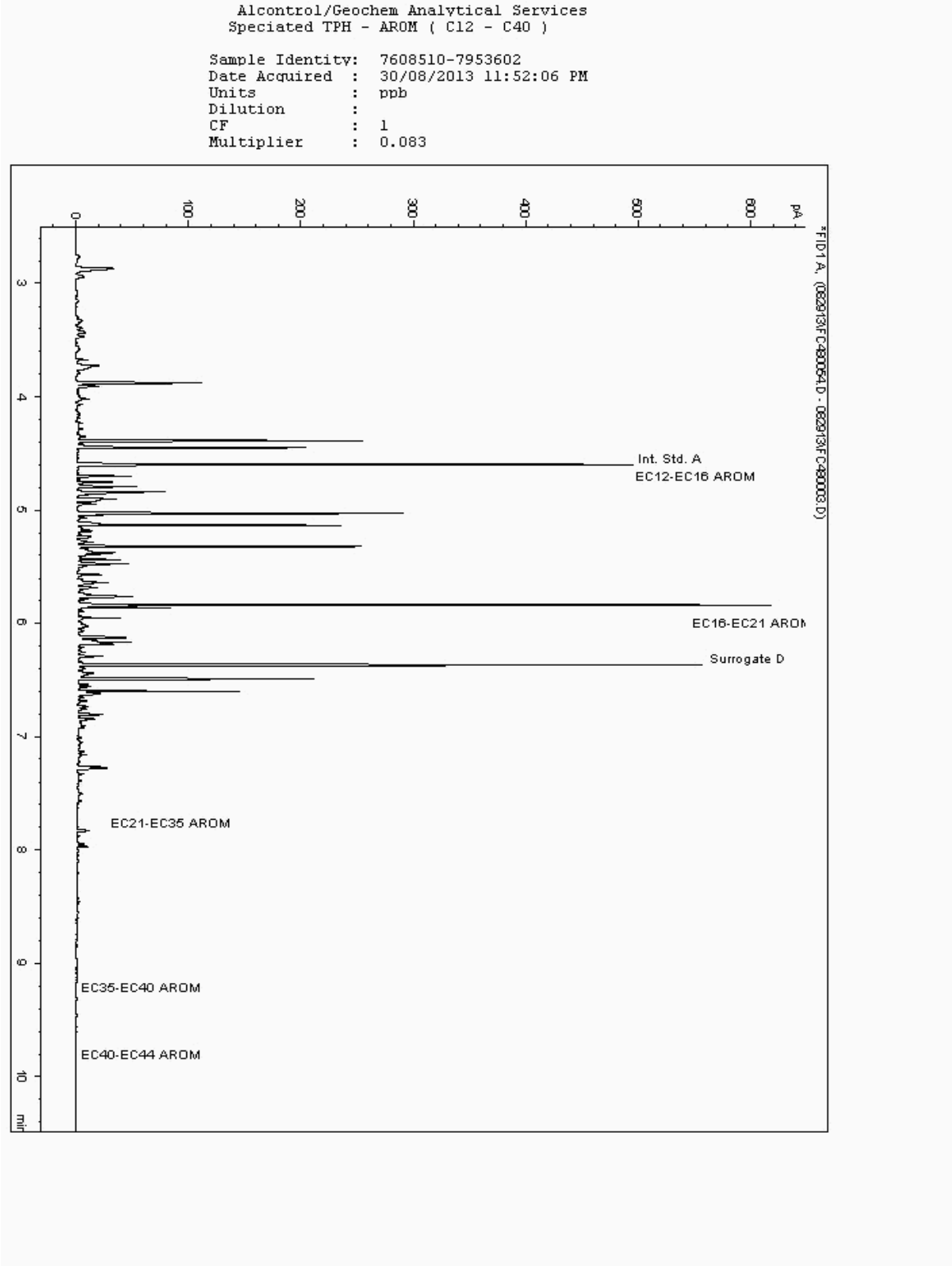


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953602 **Sample ID :** BH3 **Depth :**

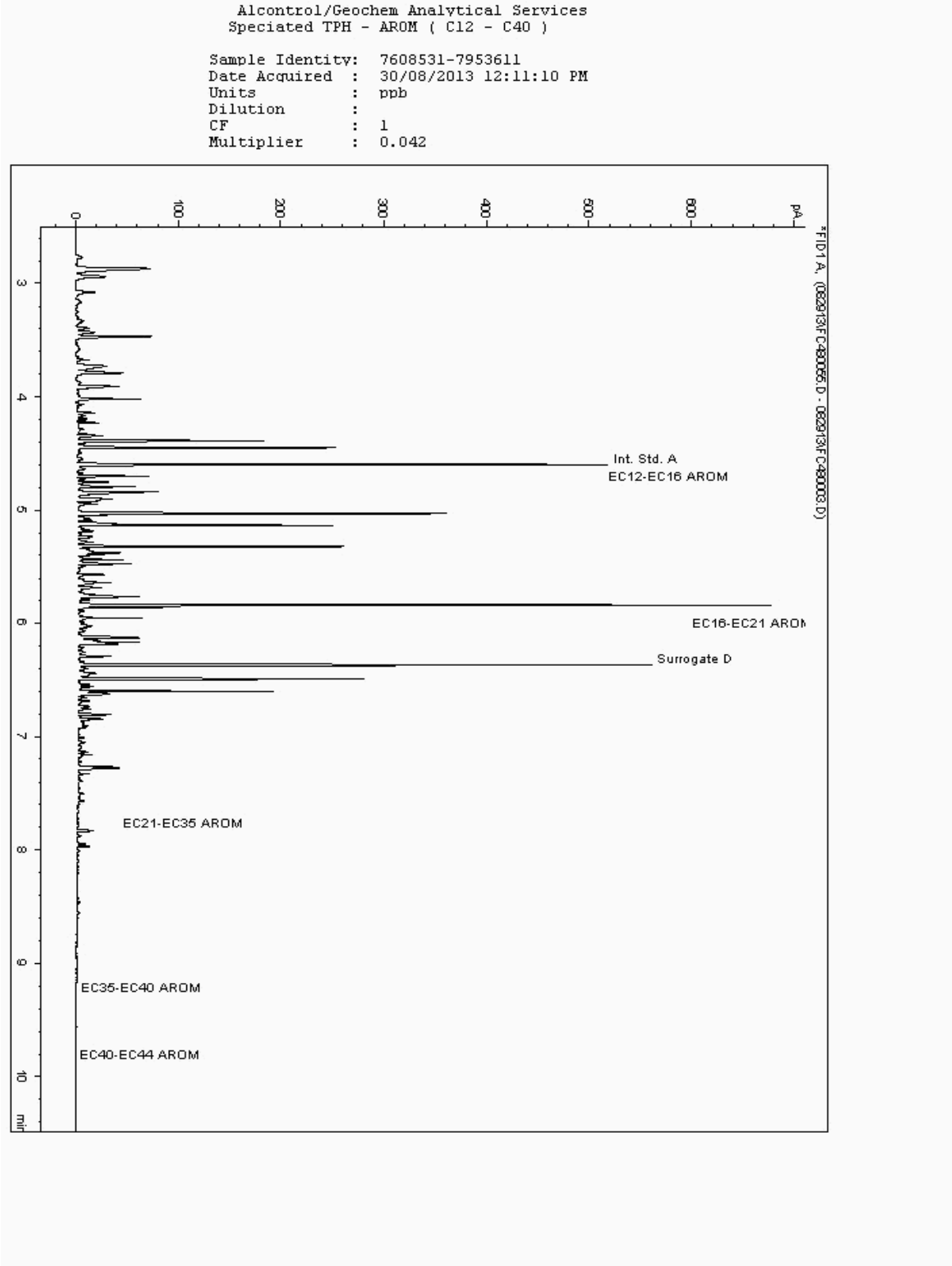


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7953611 **Sample ID :** BH4 **Depth :**

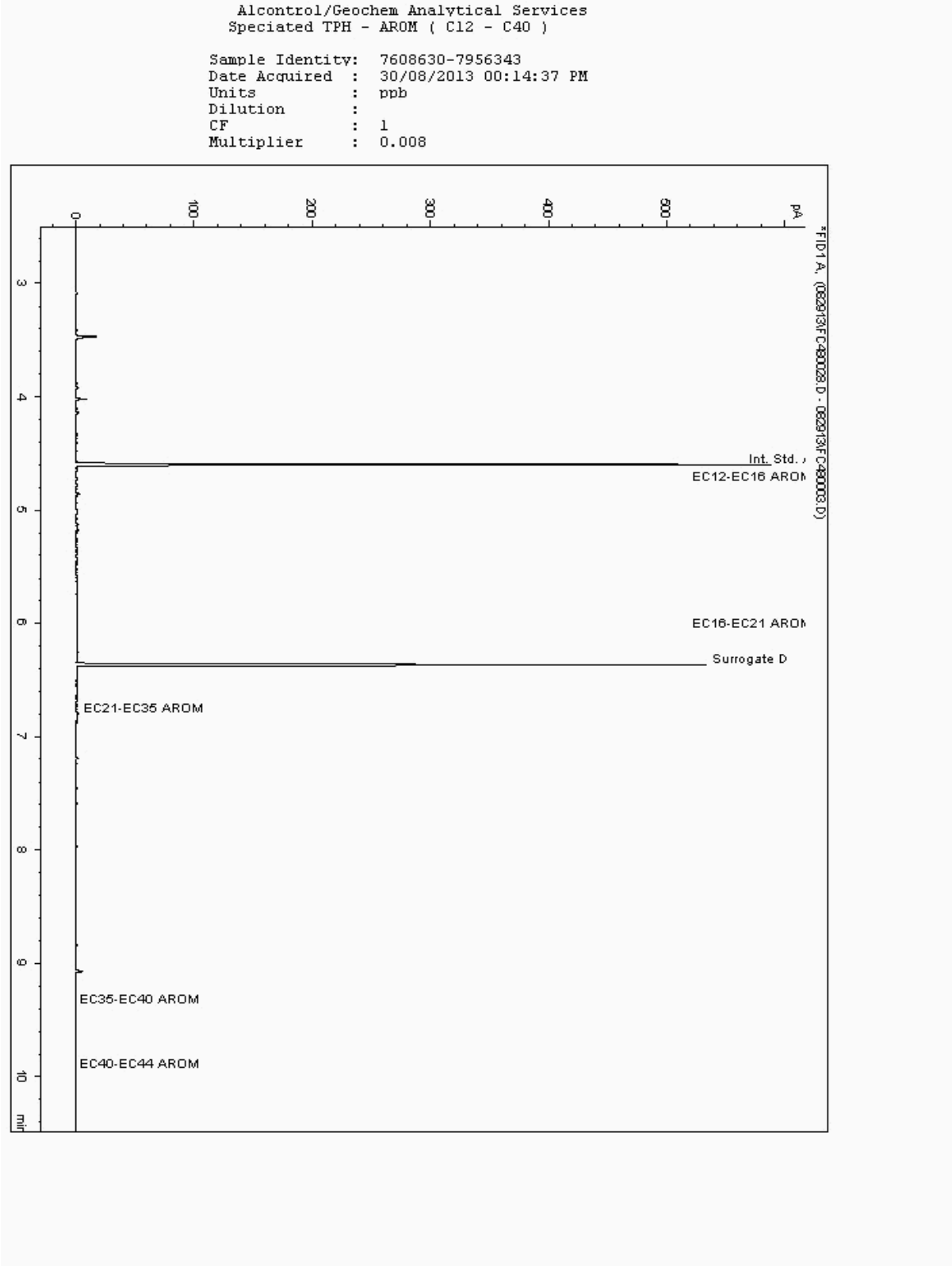


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956343 **Sample ID :** BH13 **Depth :**

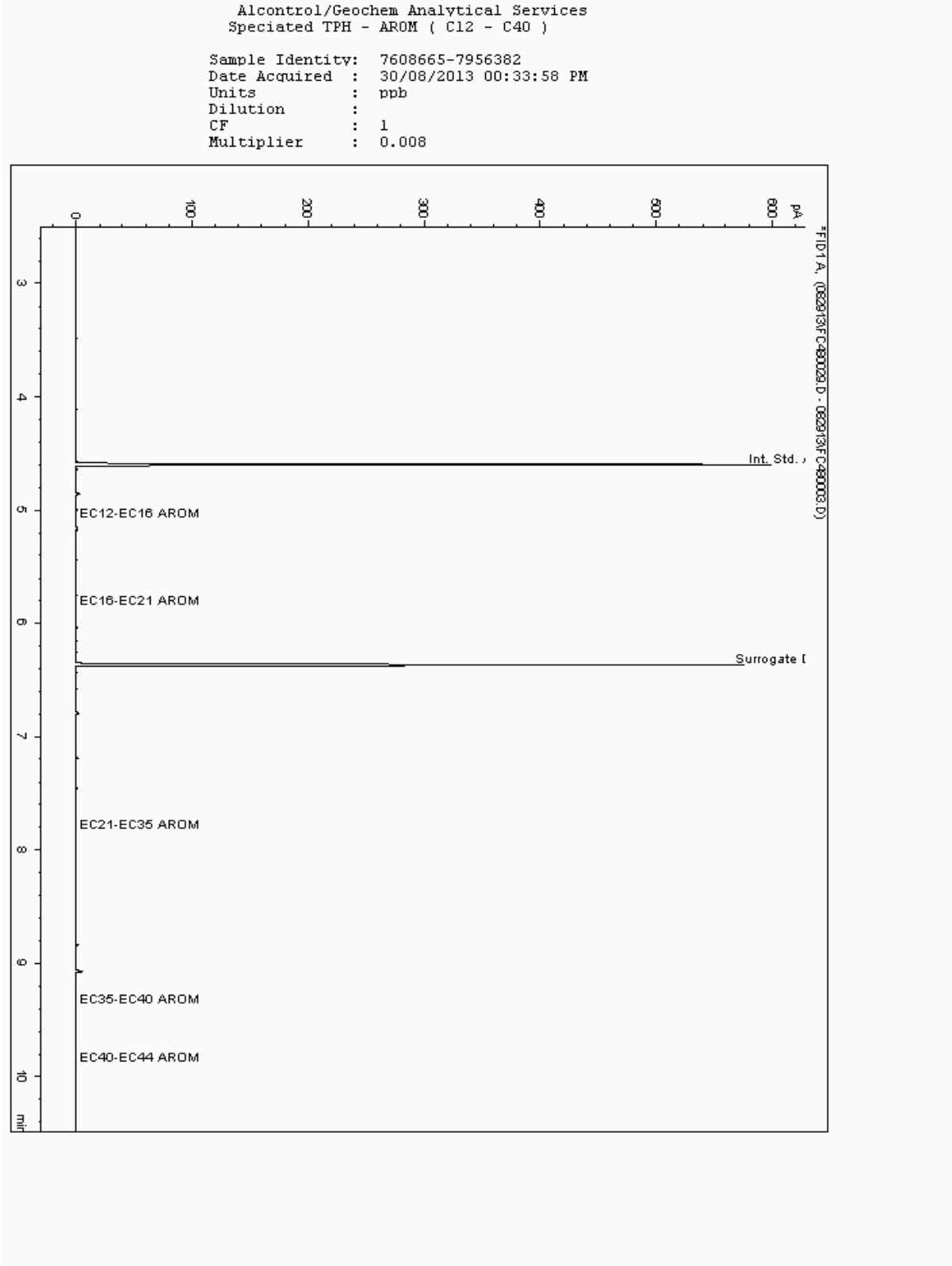


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956382 **Sample ID :** BH15 **Depth :**

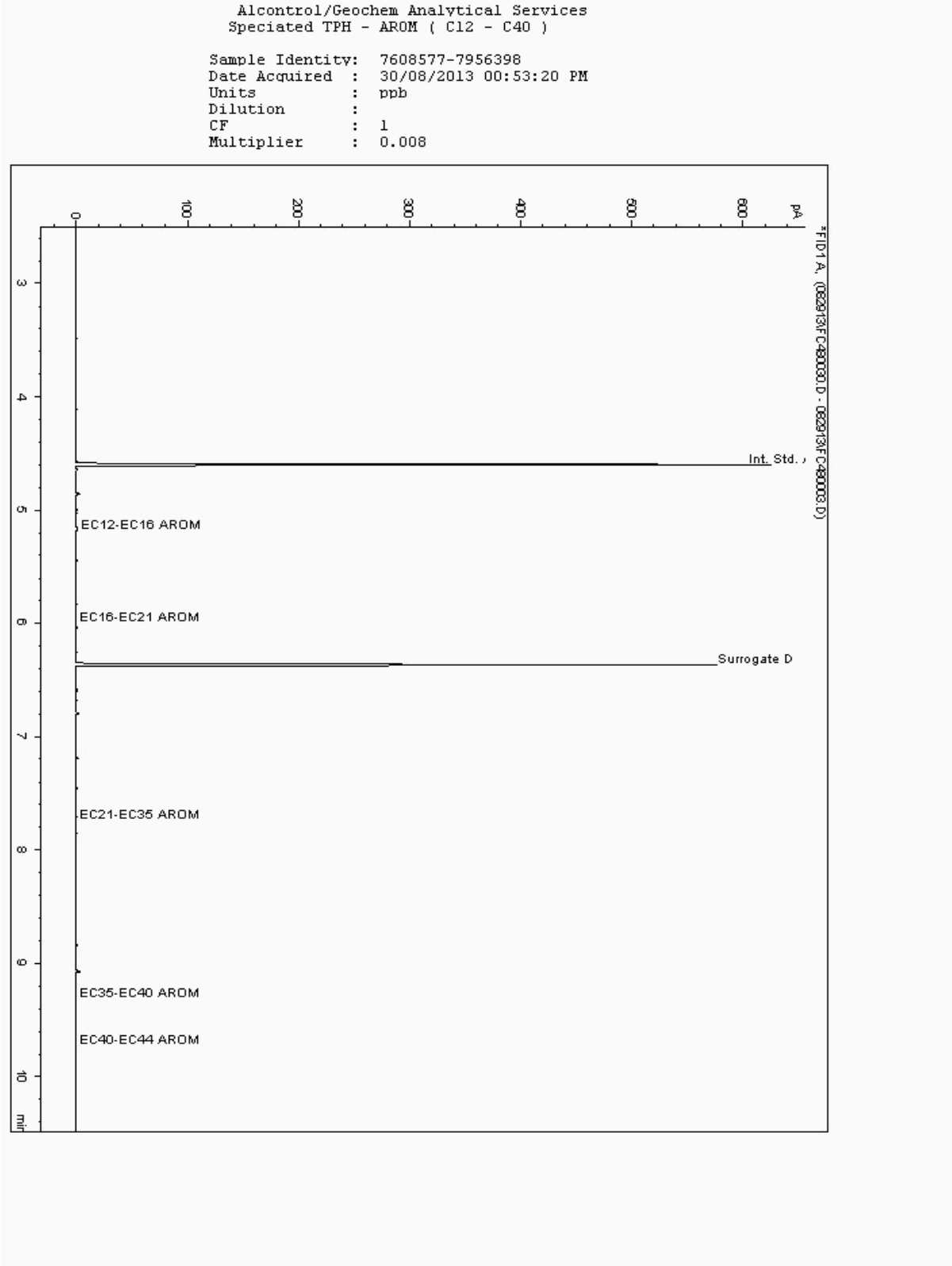


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956398 **Sample ID :** BH9 **Depth :**

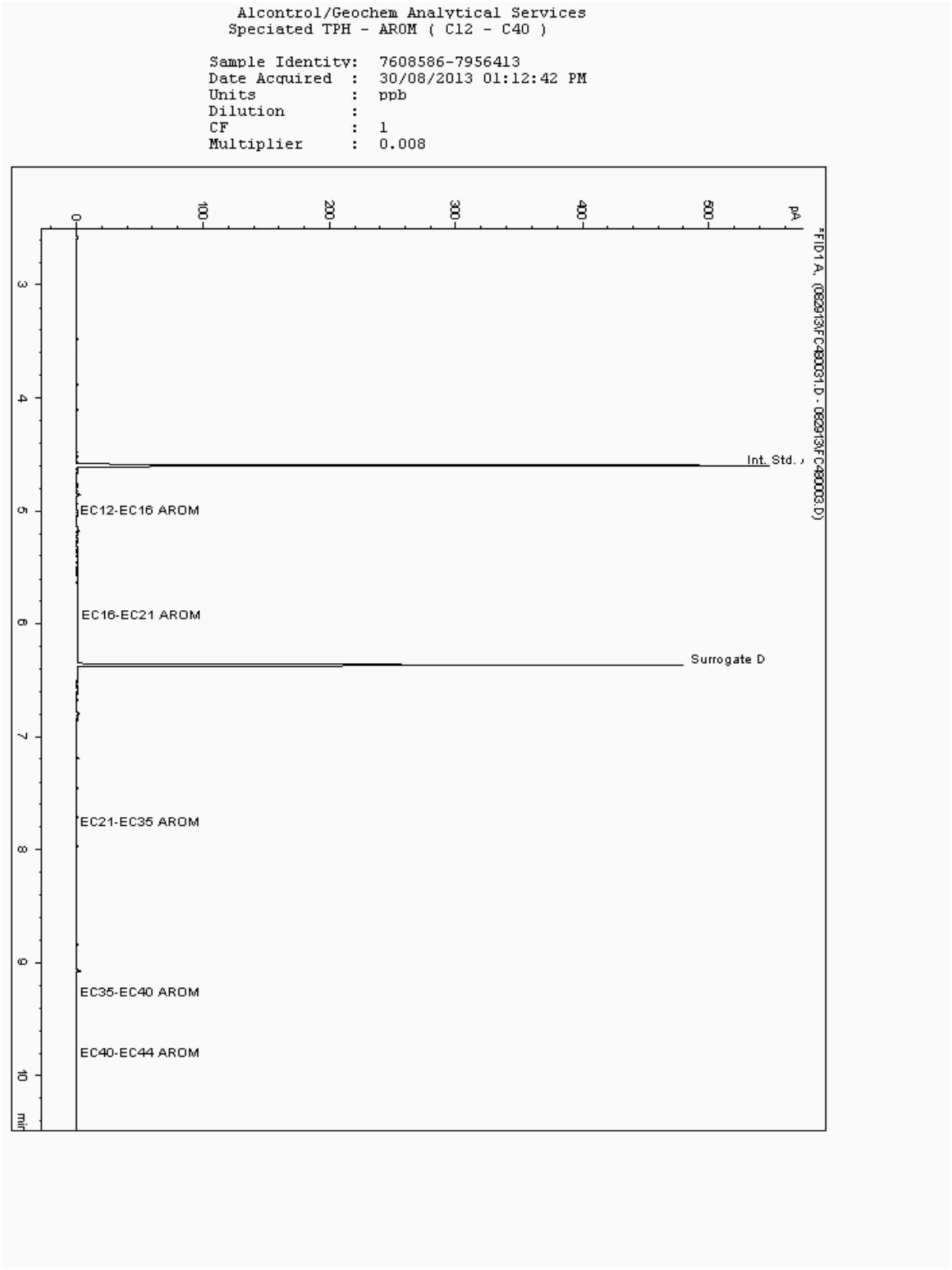


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956413 **Sample ID :** BH10 **Depth :**

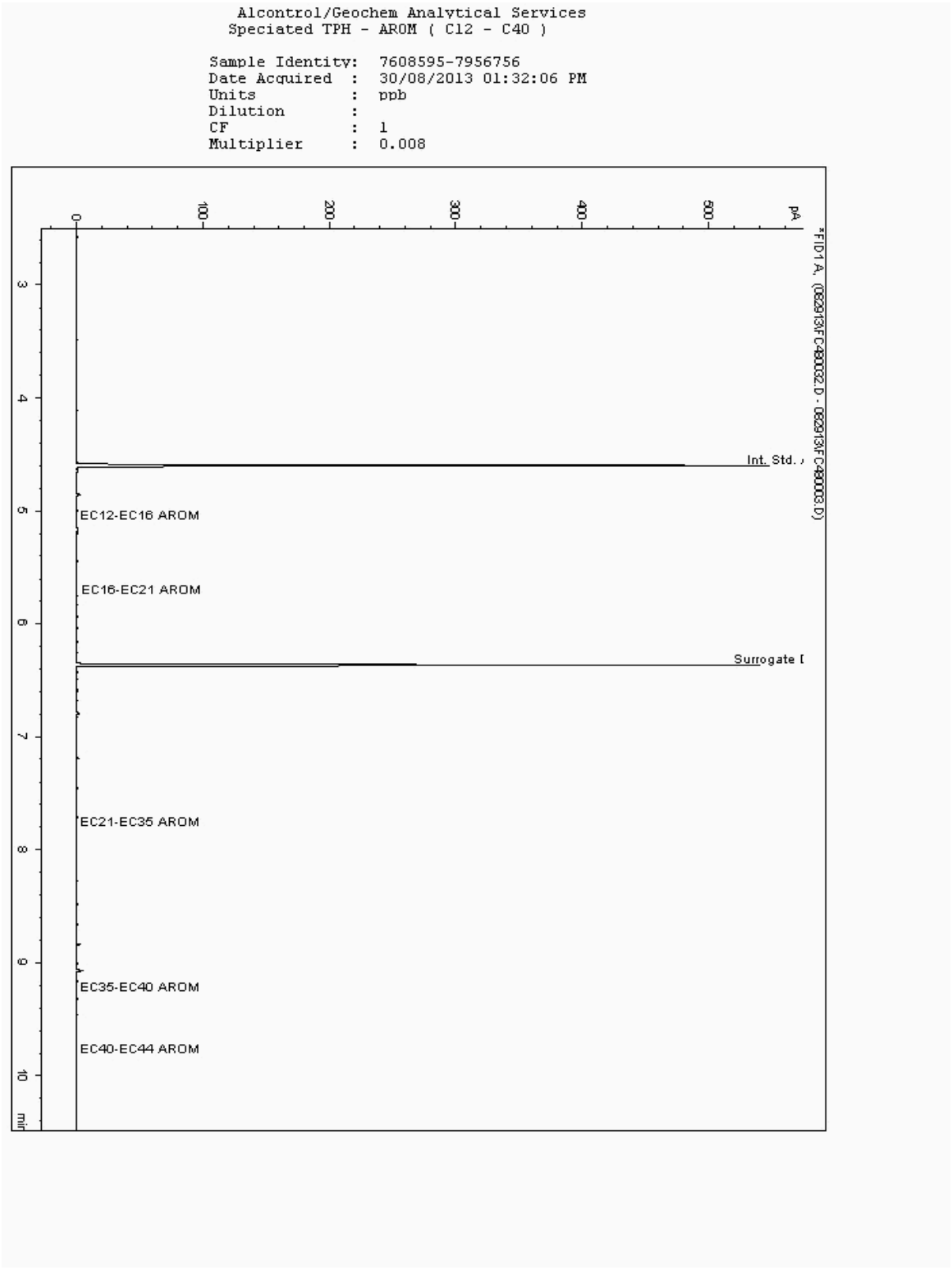


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956756 **Sample ID :** BH11 **Depth :**

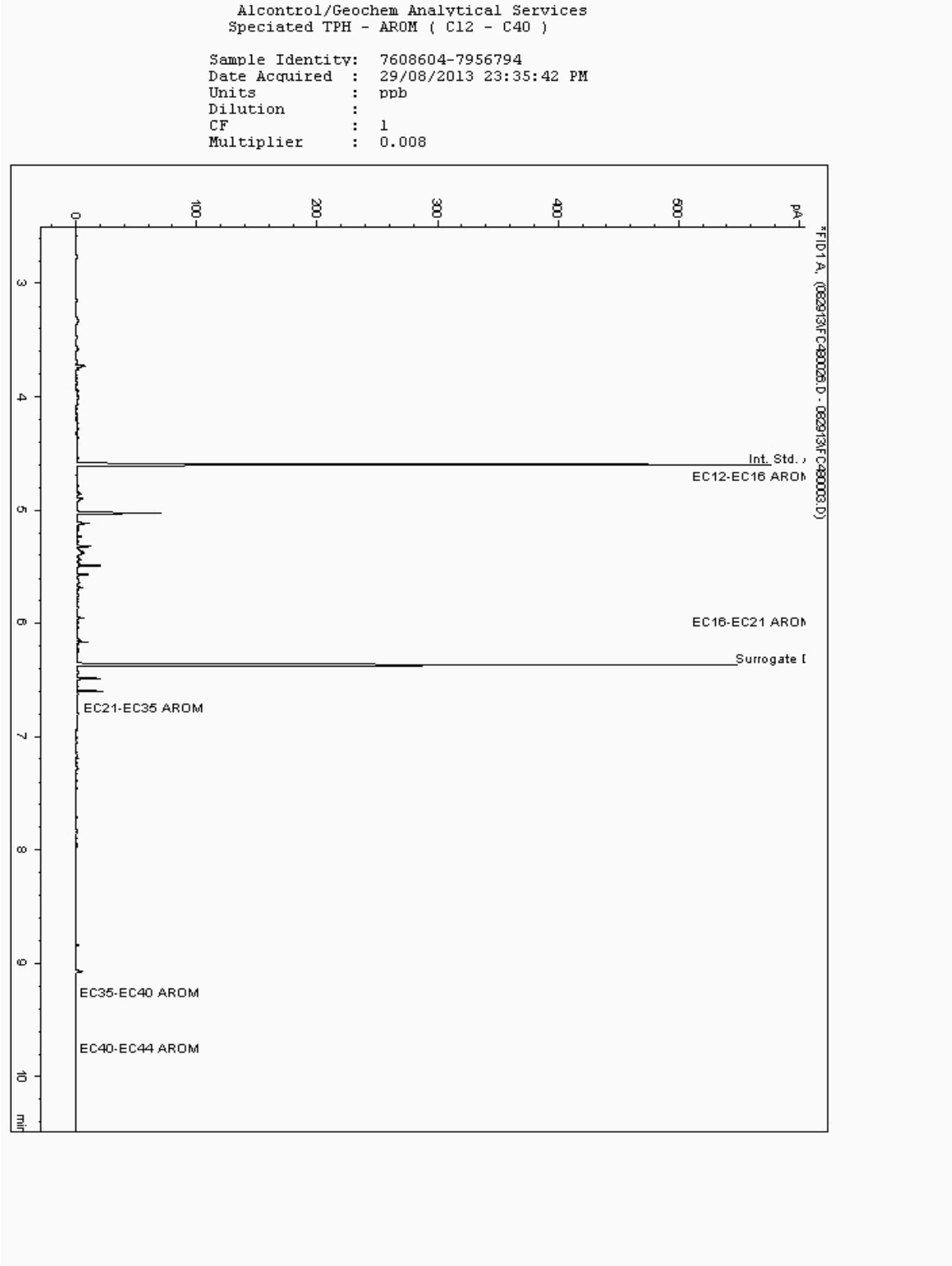


CERTIFICATE OF ANALYSIS

SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956794 **Sample ID :** BH12 **Depth :**



CERTIFICATE OF ANALYSIS

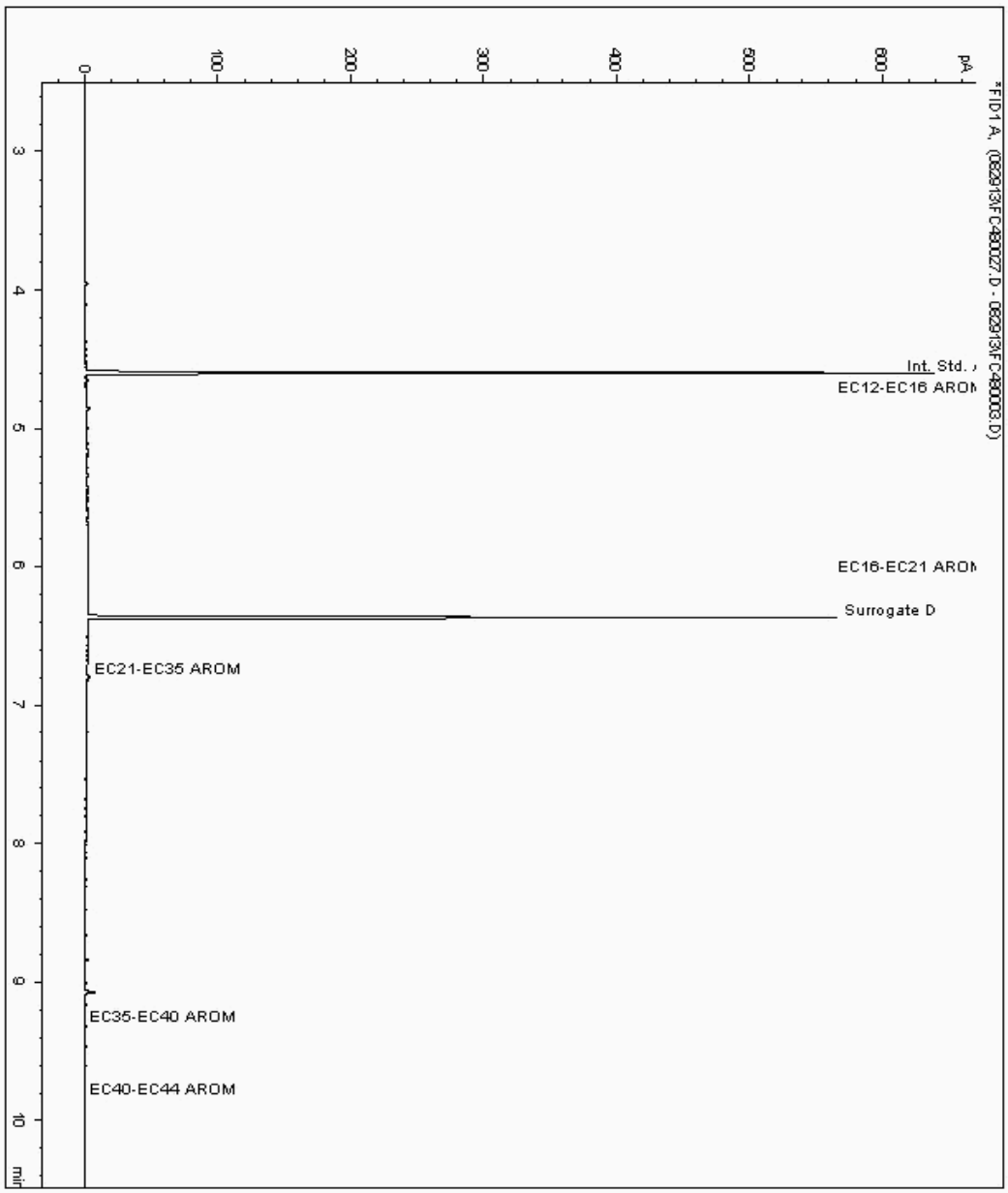
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 7956819 **Sample ID :** BH14 **Depth :**

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

Sample Identity: 7608639-7956819
Date Acquired : 29/08/2013 23:55:12 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

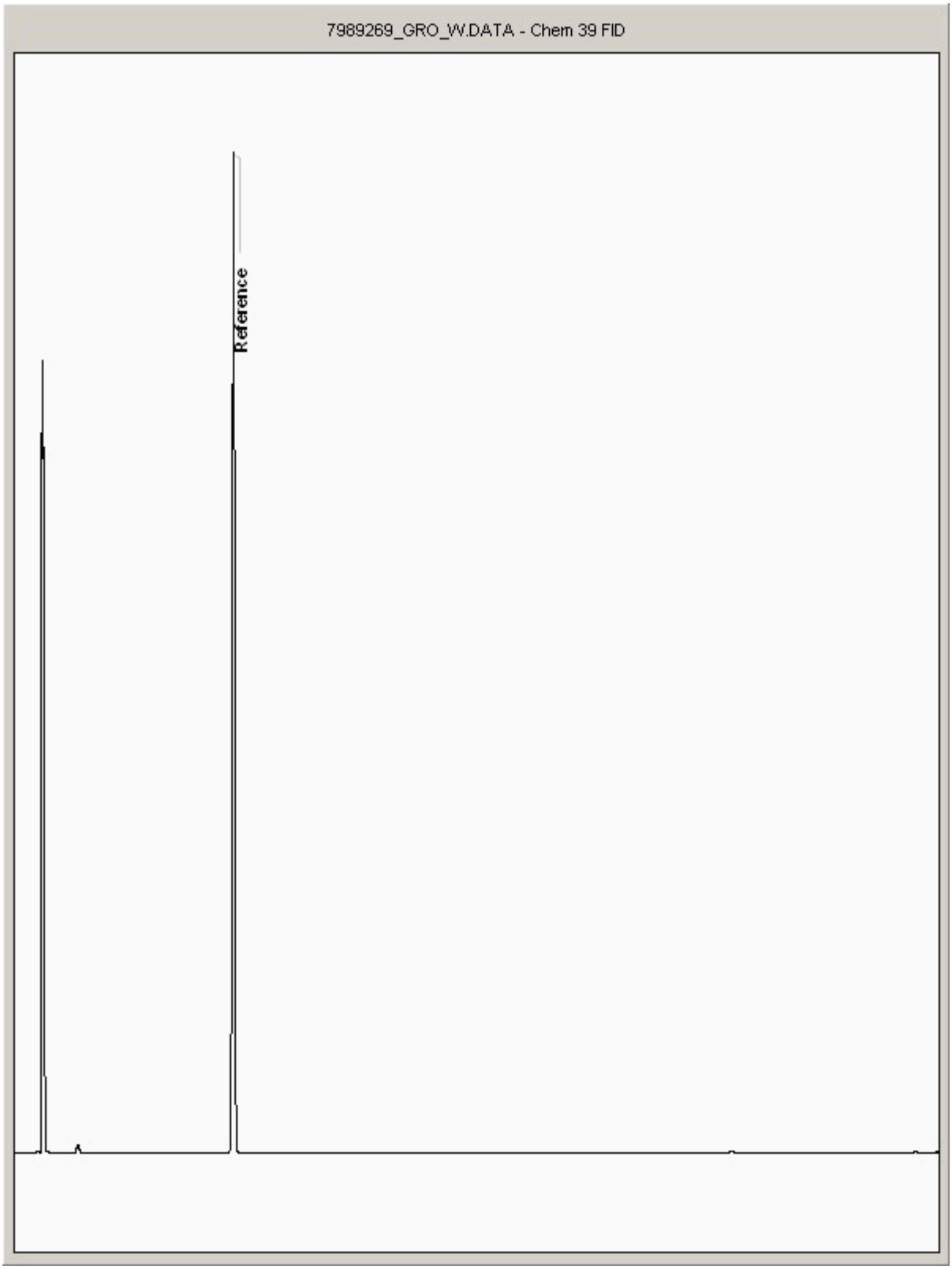
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989269
Sample ID : BH15

Depth :



CERTIFICATE OF ANALYSIS

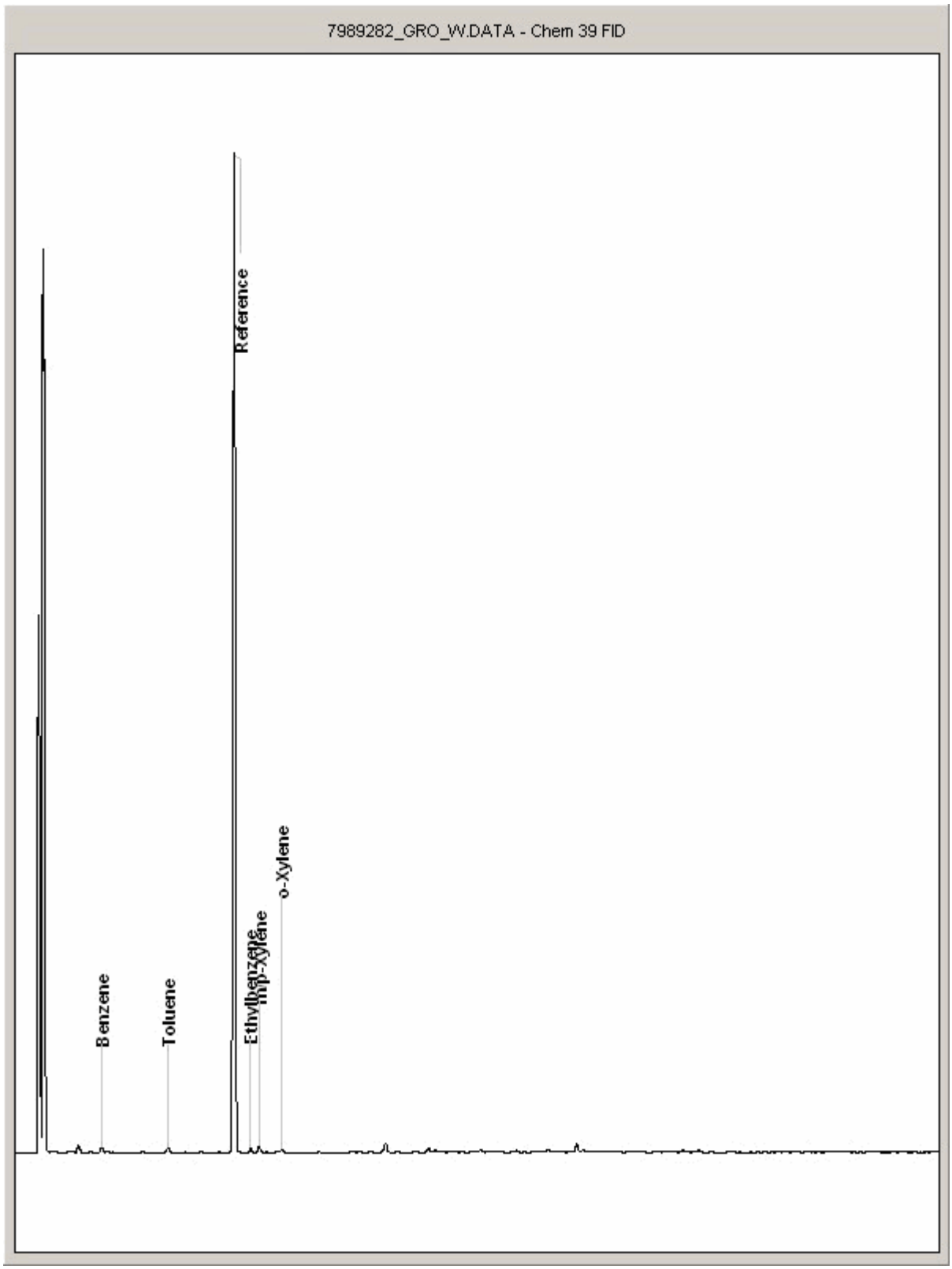
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989282
Sample ID : BH13

Depth :



CERTIFICATE OF ANALYSIS

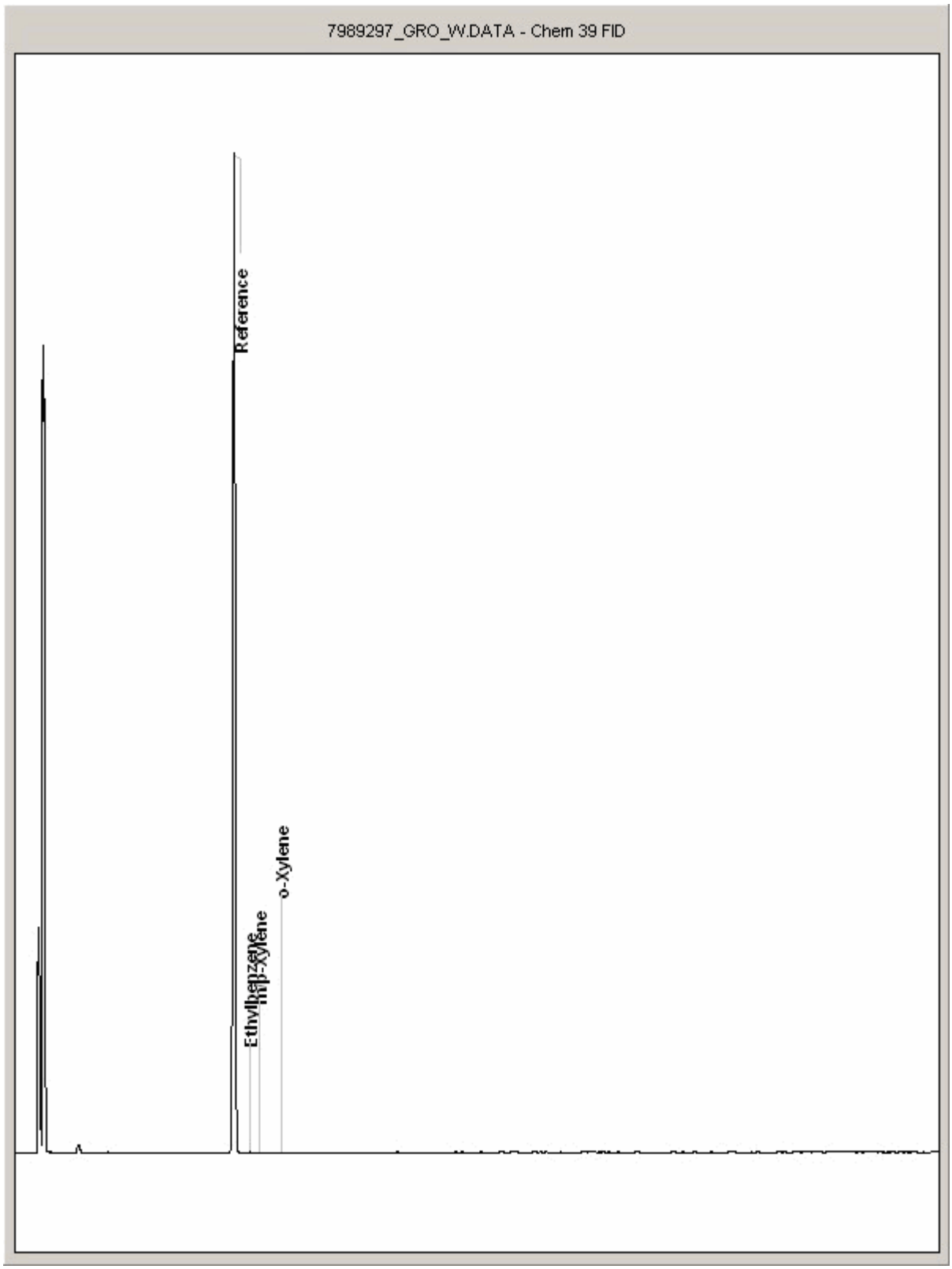
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989297
Sample ID : BH10

Depth :



CERTIFICATE OF ANALYSIS

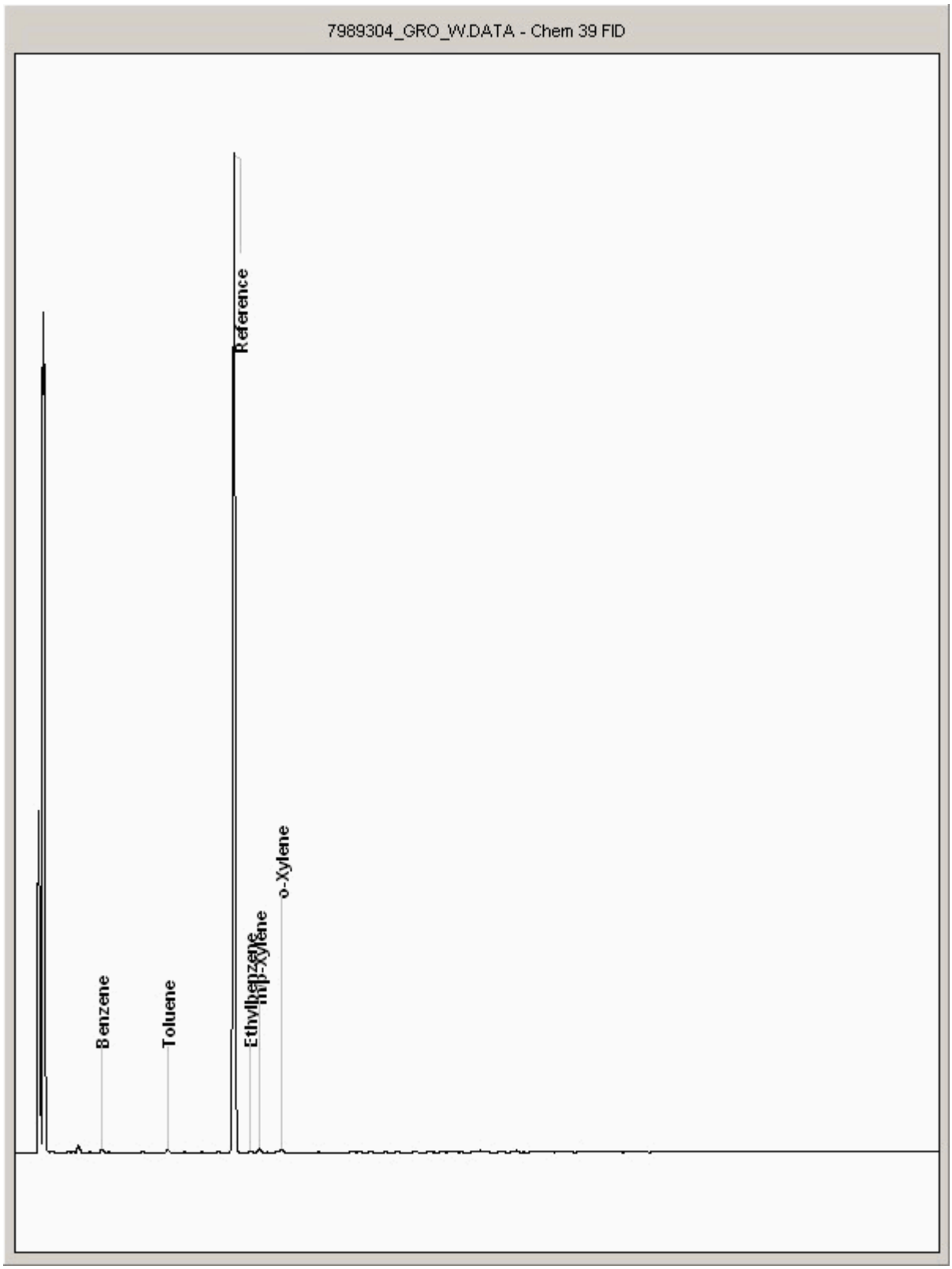
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989304
Sample ID : BH14

Depth :



CERTIFICATE OF ANALYSIS

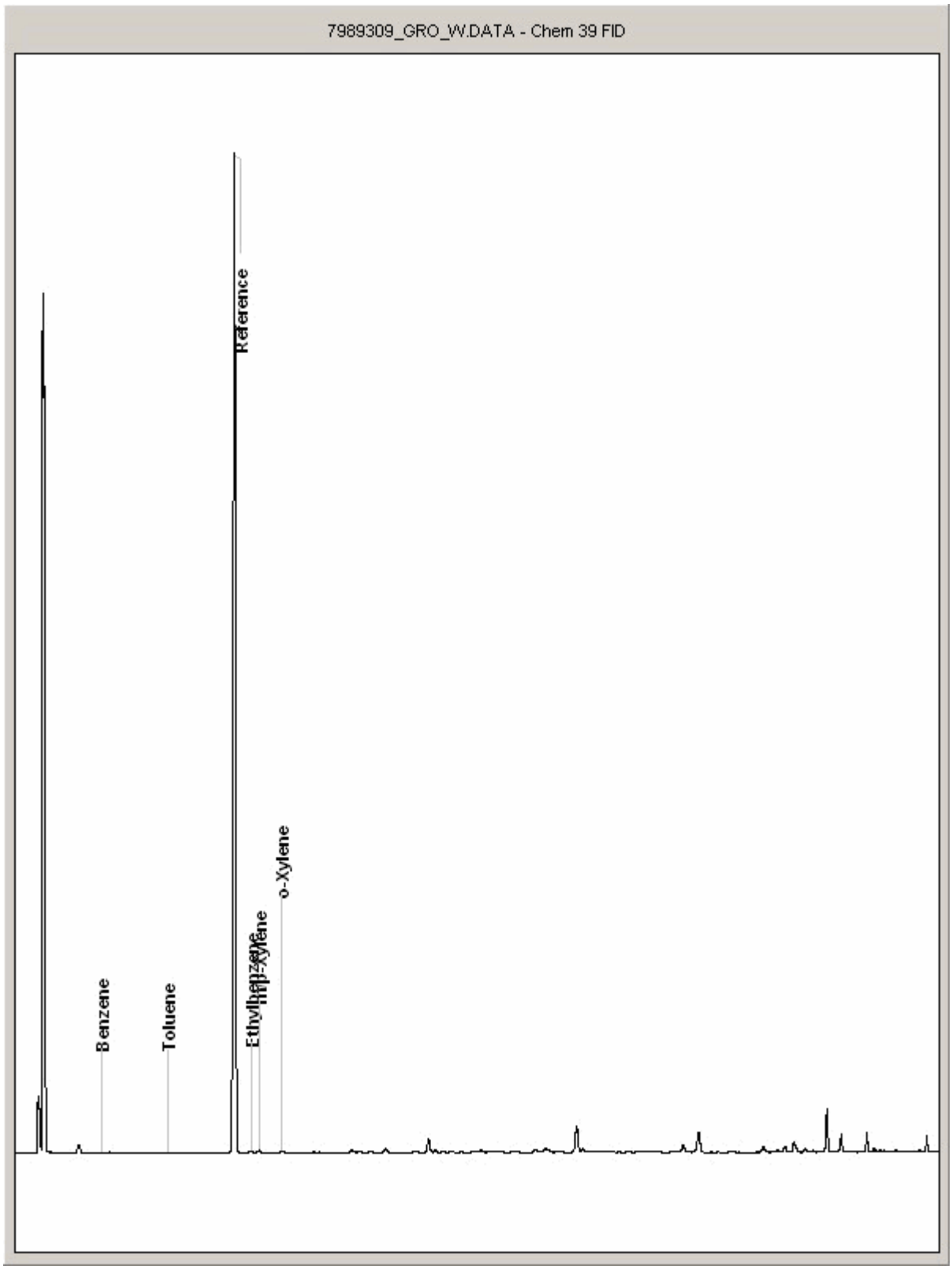
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989309
Sample ID : BH12

Depth :



CERTIFICATE OF ANALYSIS

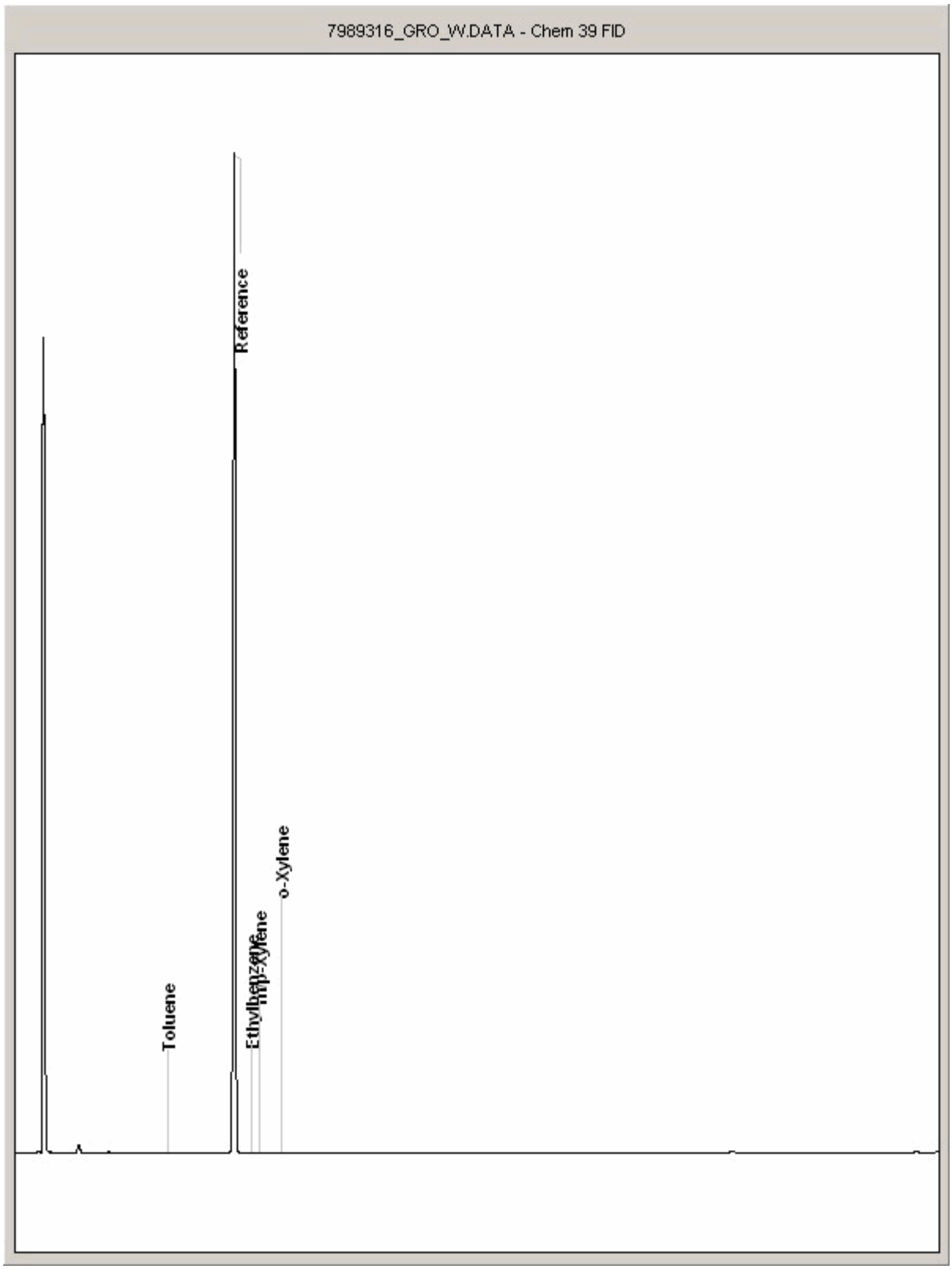
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989316
Sample ID : BH11

Depth :



CERTIFICATE OF ANALYSIS

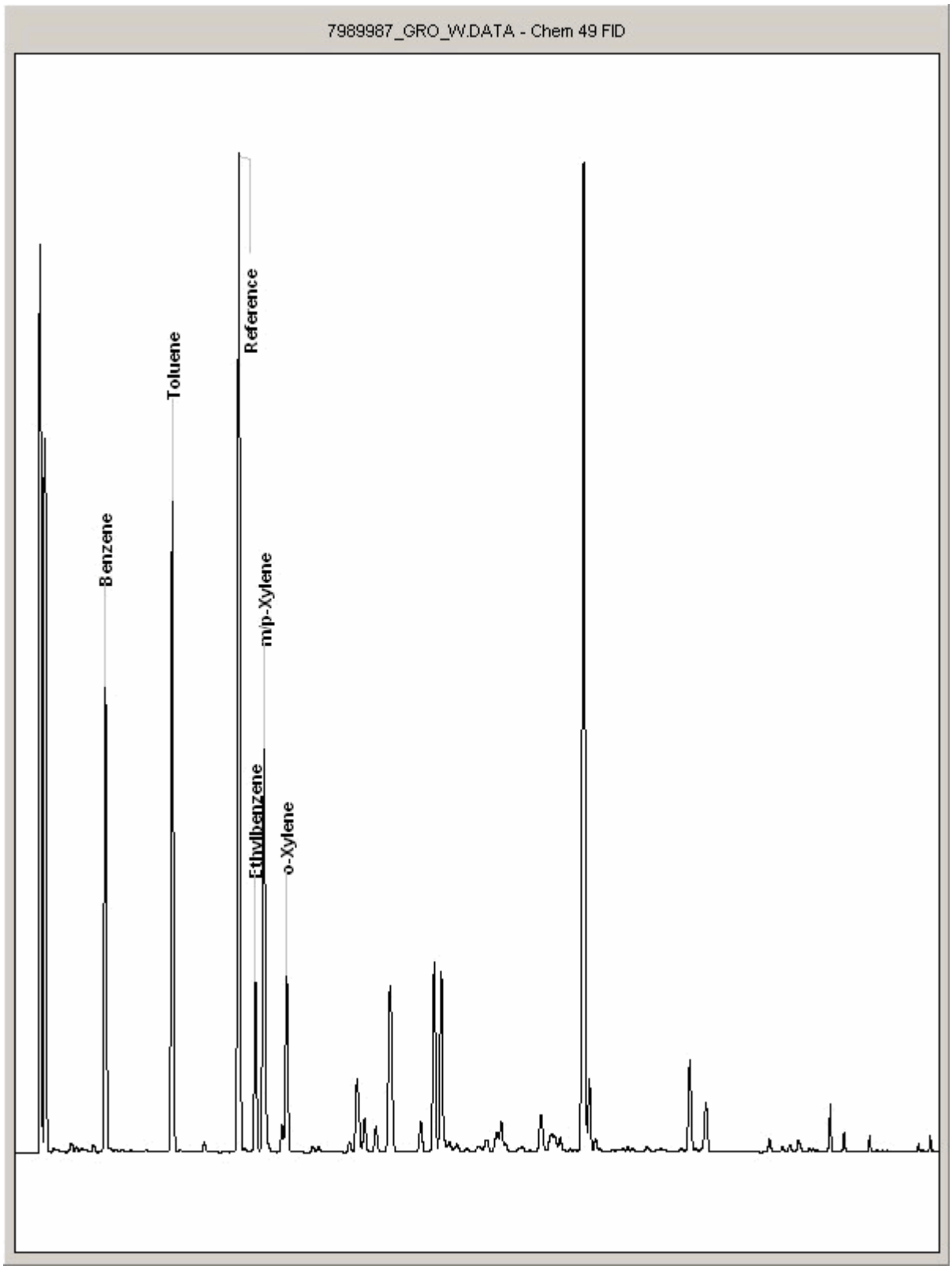
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989987
Sample ID : BH1

Depth :



CERTIFICATE OF ANALYSIS

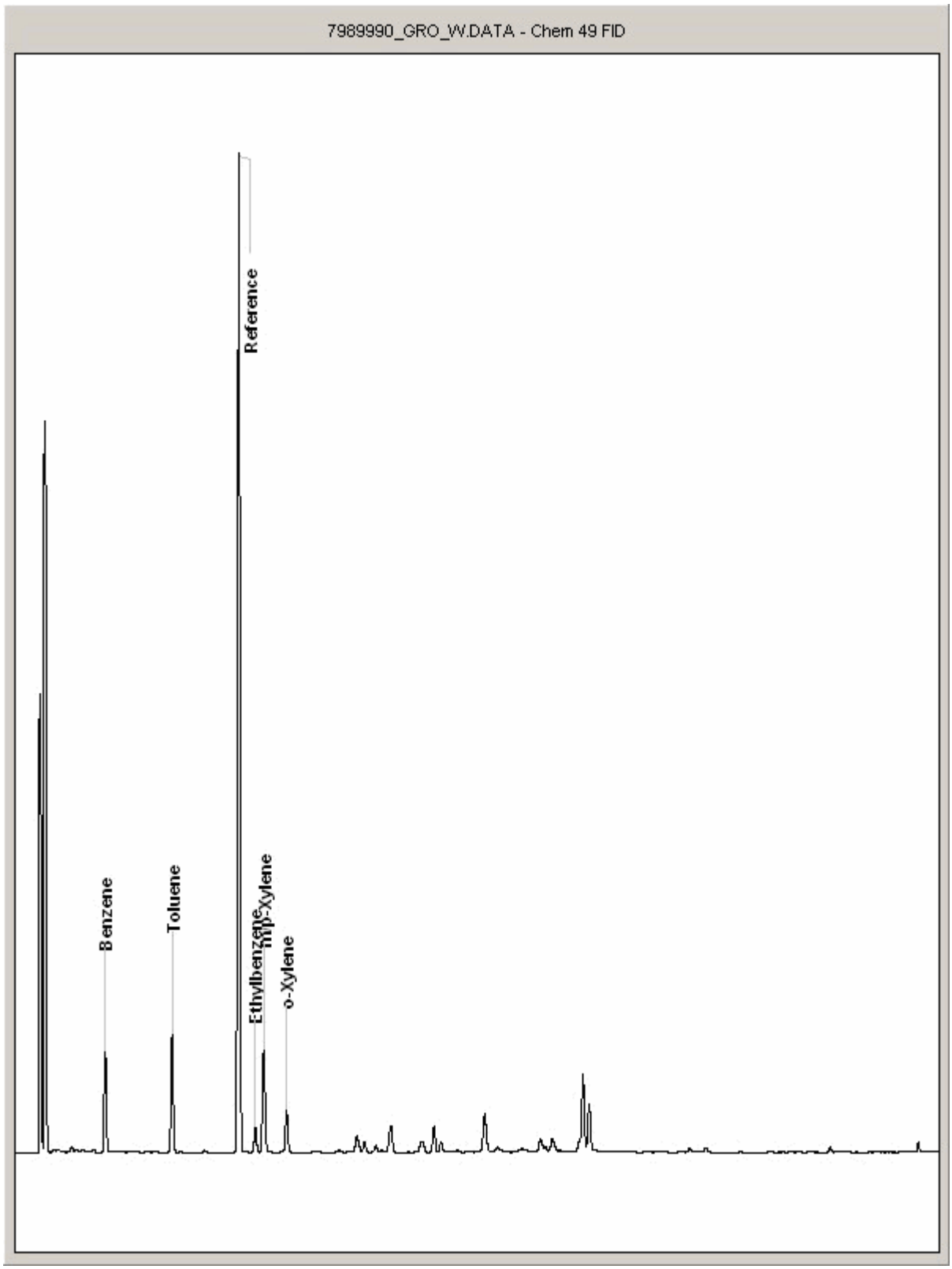
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989990
Sample ID : BH2

Depth :



CERTIFICATE OF ANALYSIS

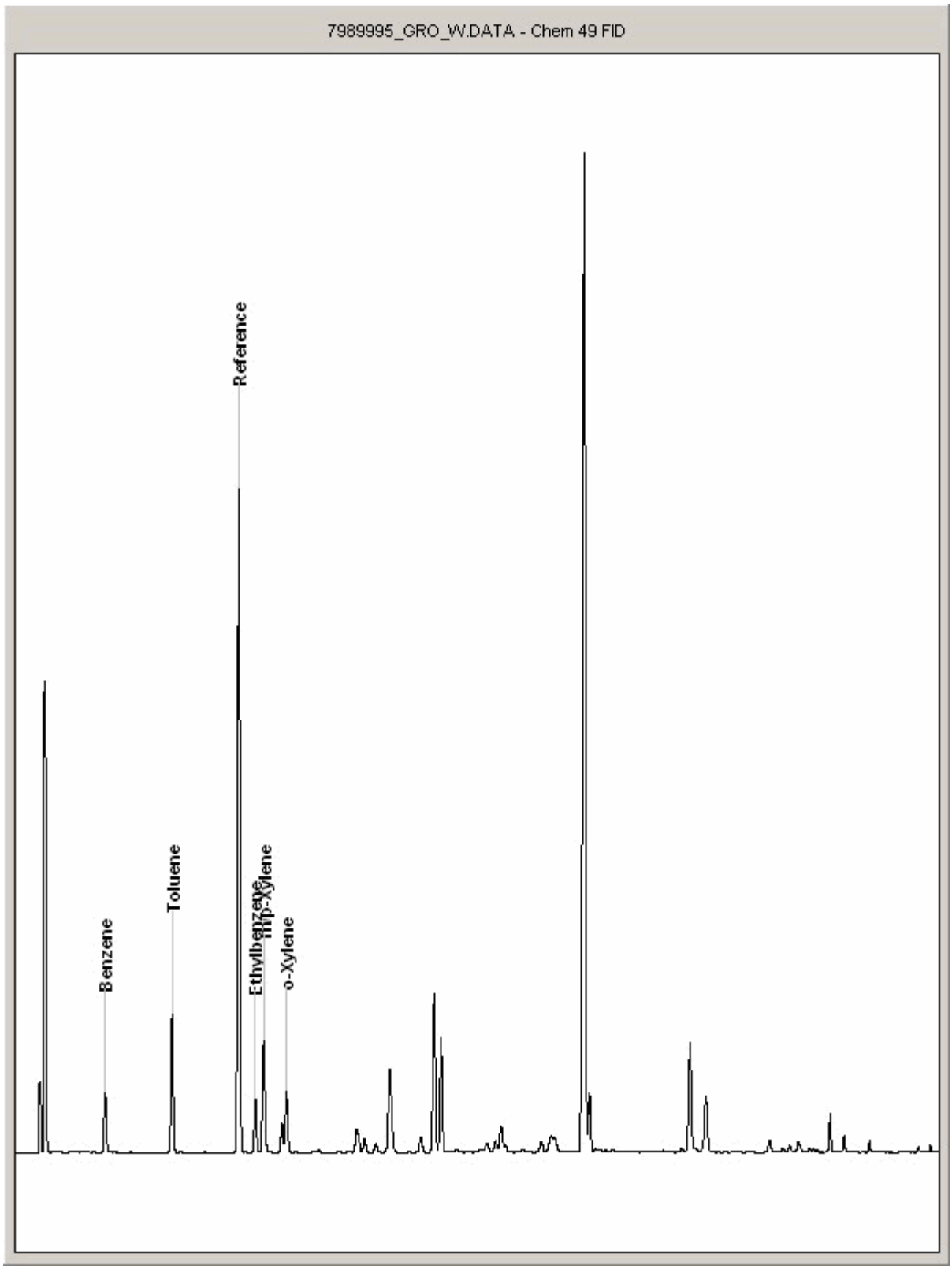
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7989995
Sample ID : BH3

Depth :



CERTIFICATE OF ANALYSIS

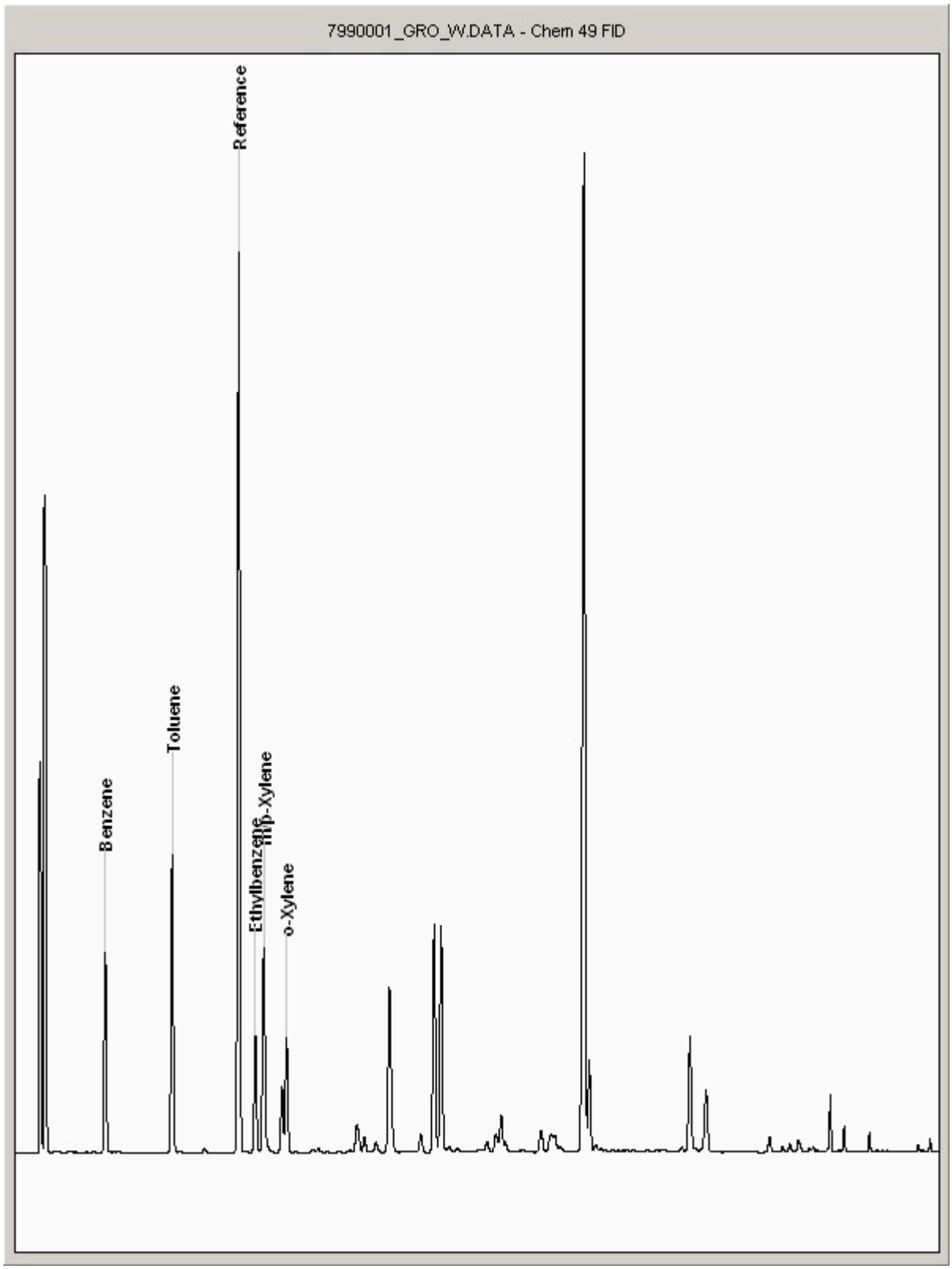
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7990001
Sample ID : BH4

Depth :



CERTIFICATE OF ANALYSIS

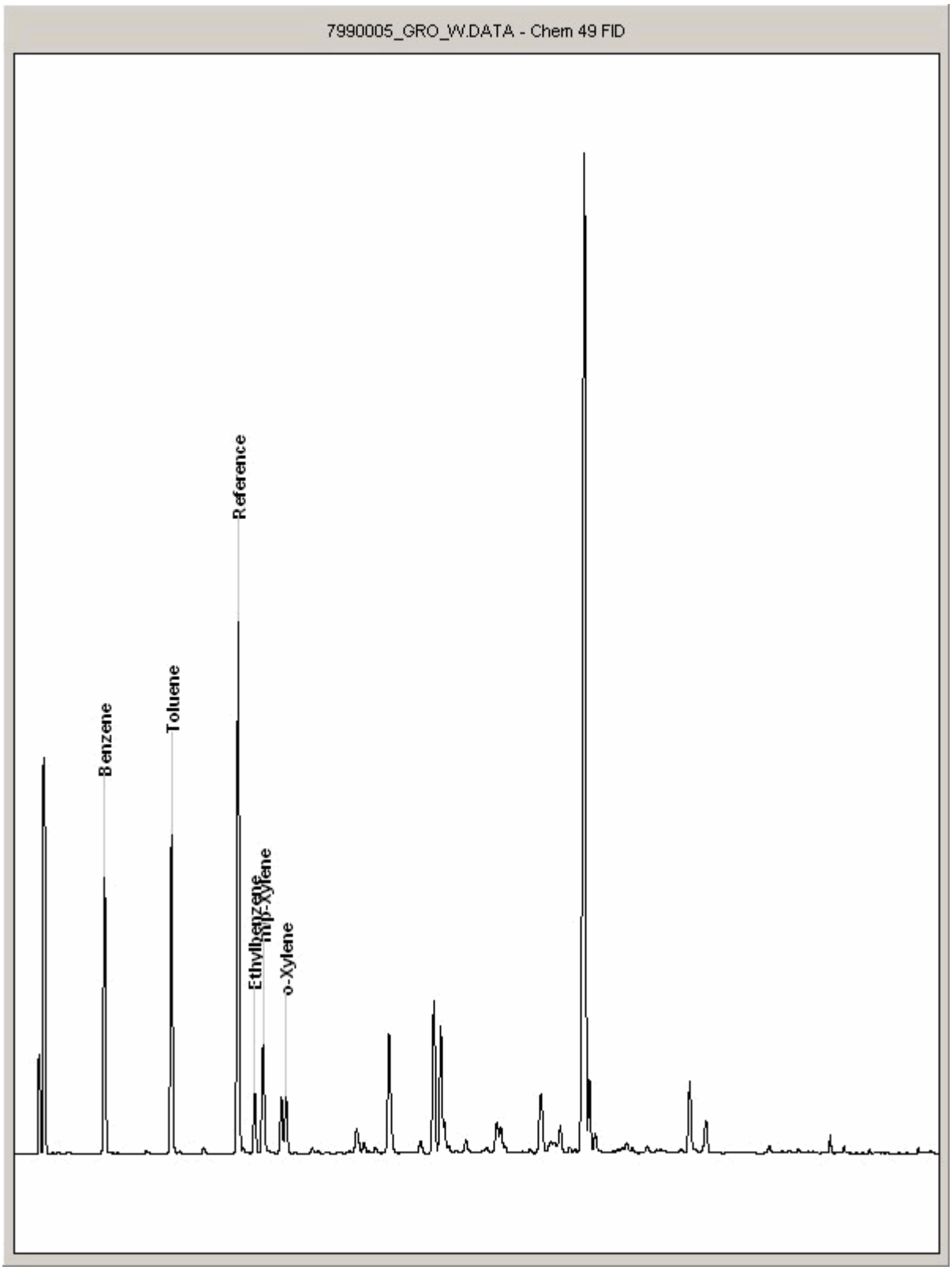
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7990005
Sample ID : BH5

Depth :



CERTIFICATE OF ANALYSIS

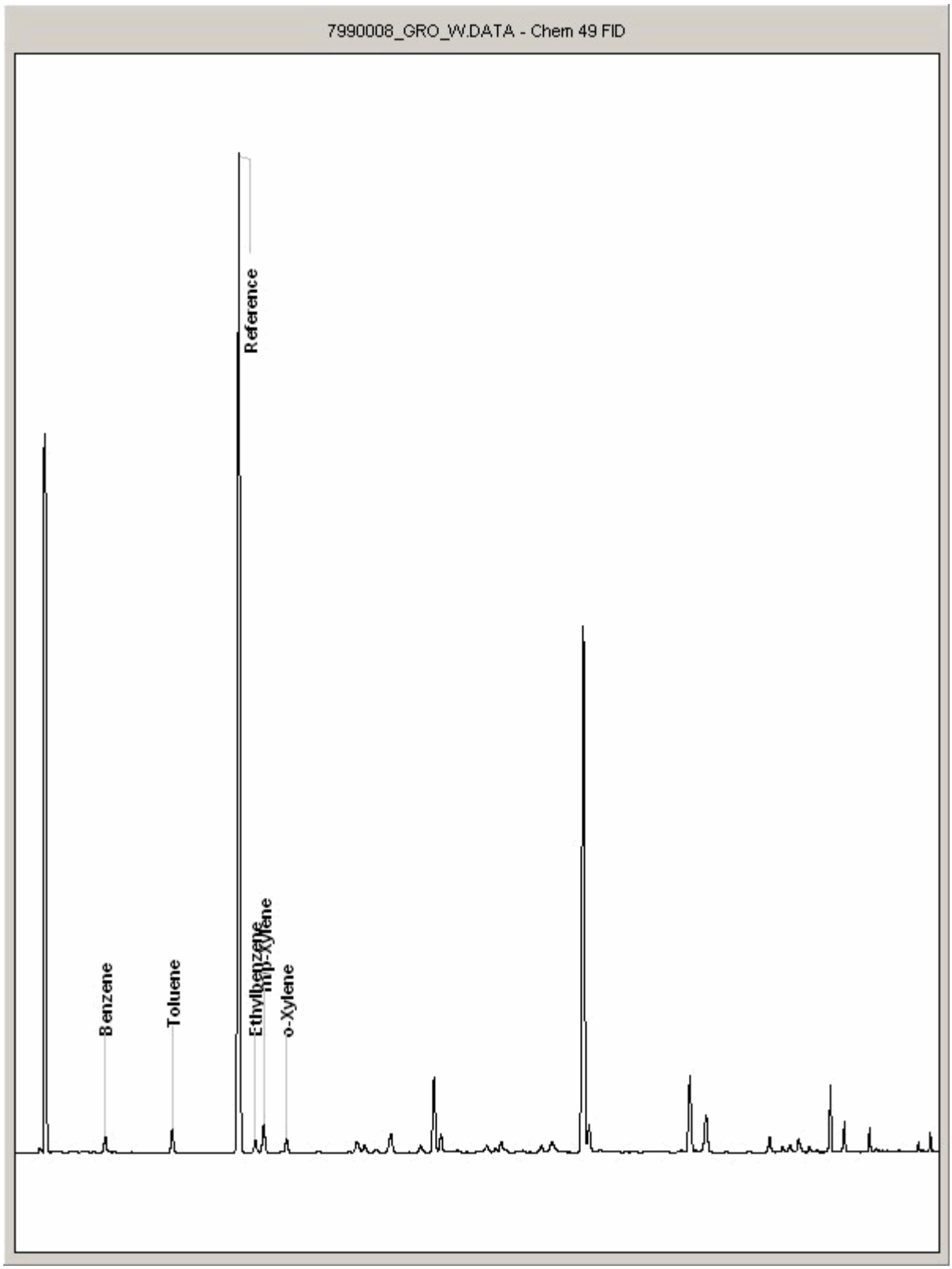
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7990008
Sample ID : BH6

Depth :



CERTIFICATE OF ANALYSIS

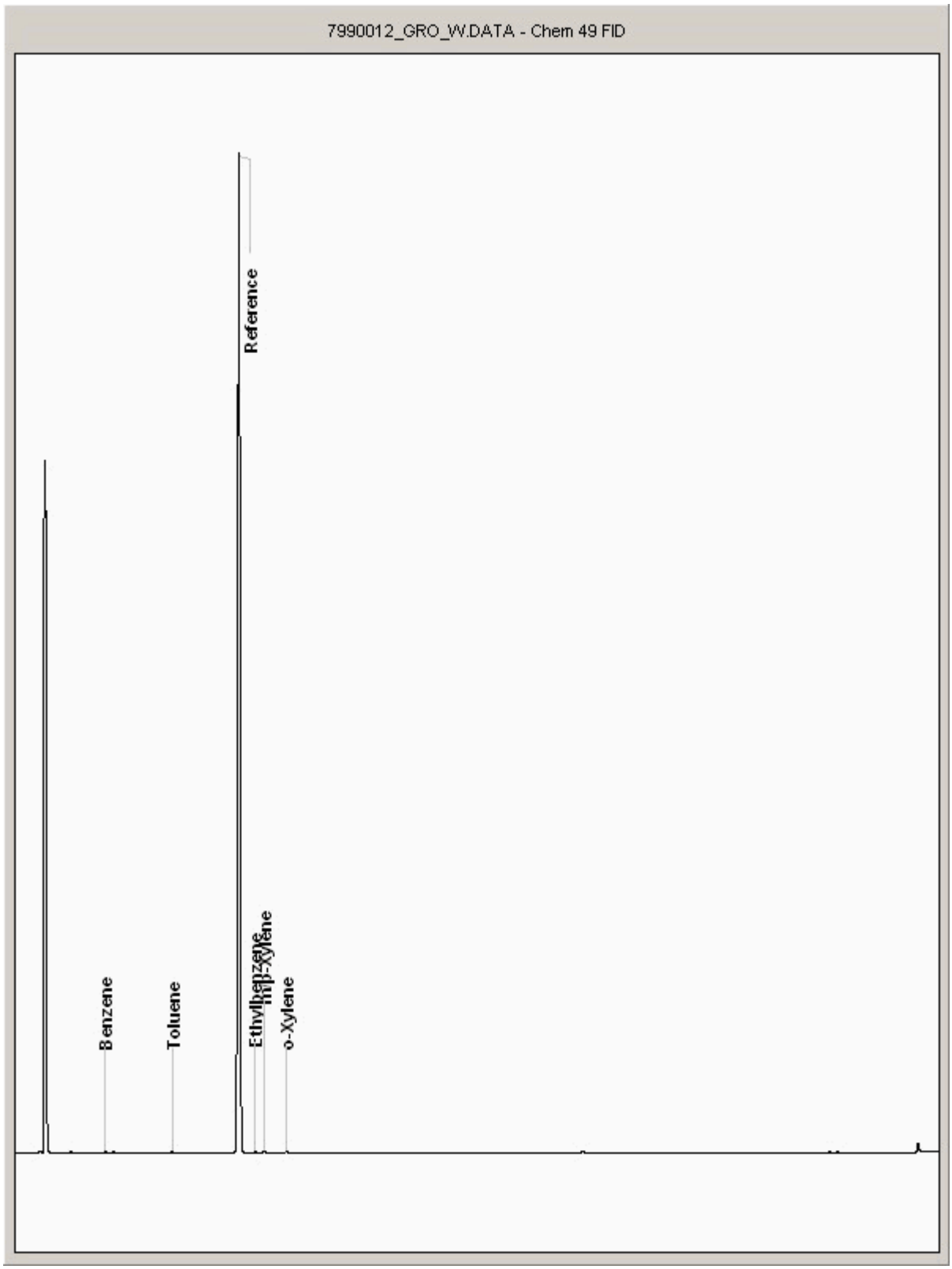
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 7990012
Sample ID : BH7

Depth :



CERTIFICATE OF ANALYSIS

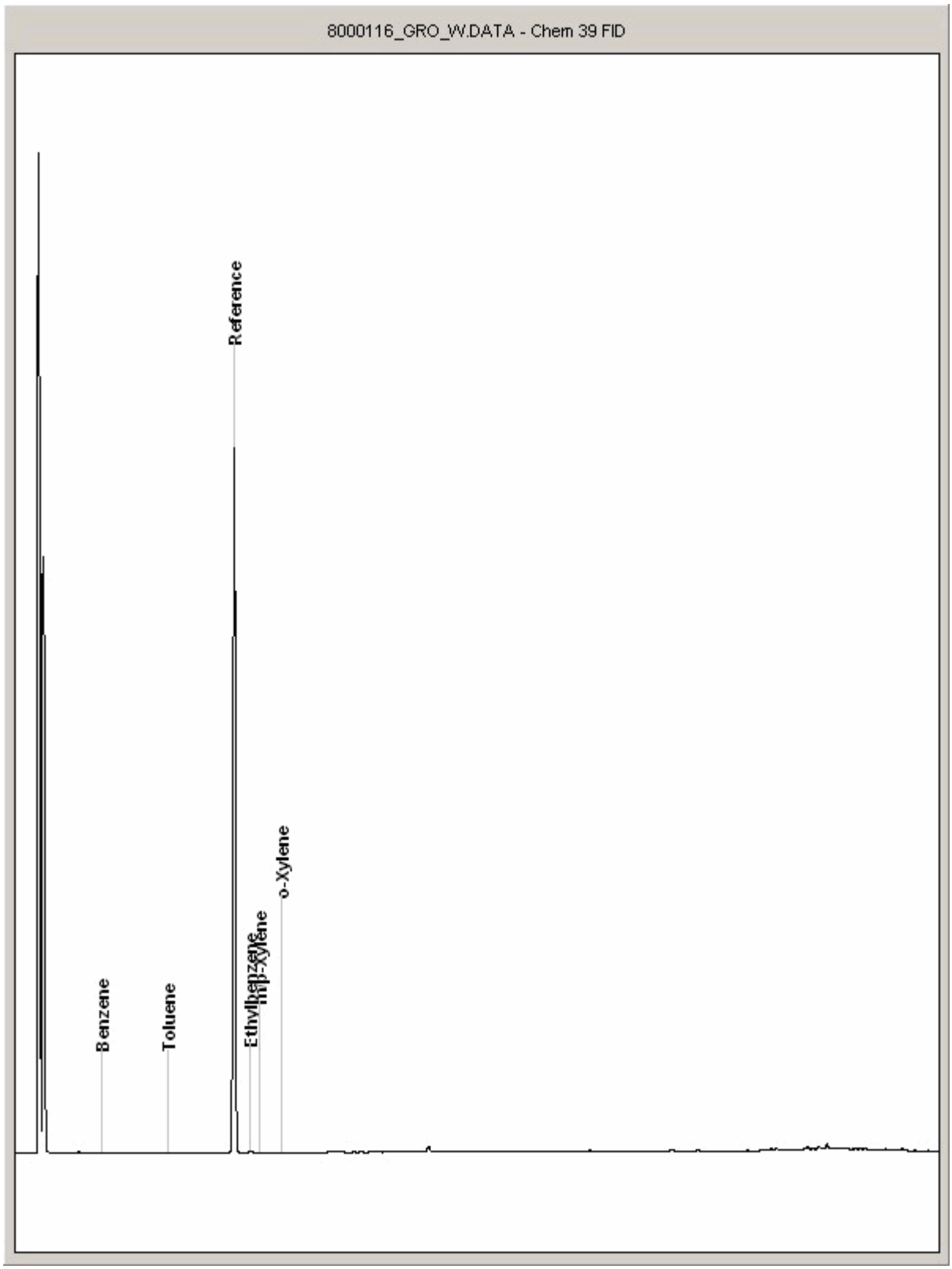
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8000116
Sample ID : BH8

Depth :



CERTIFICATE OF ANALYSIS

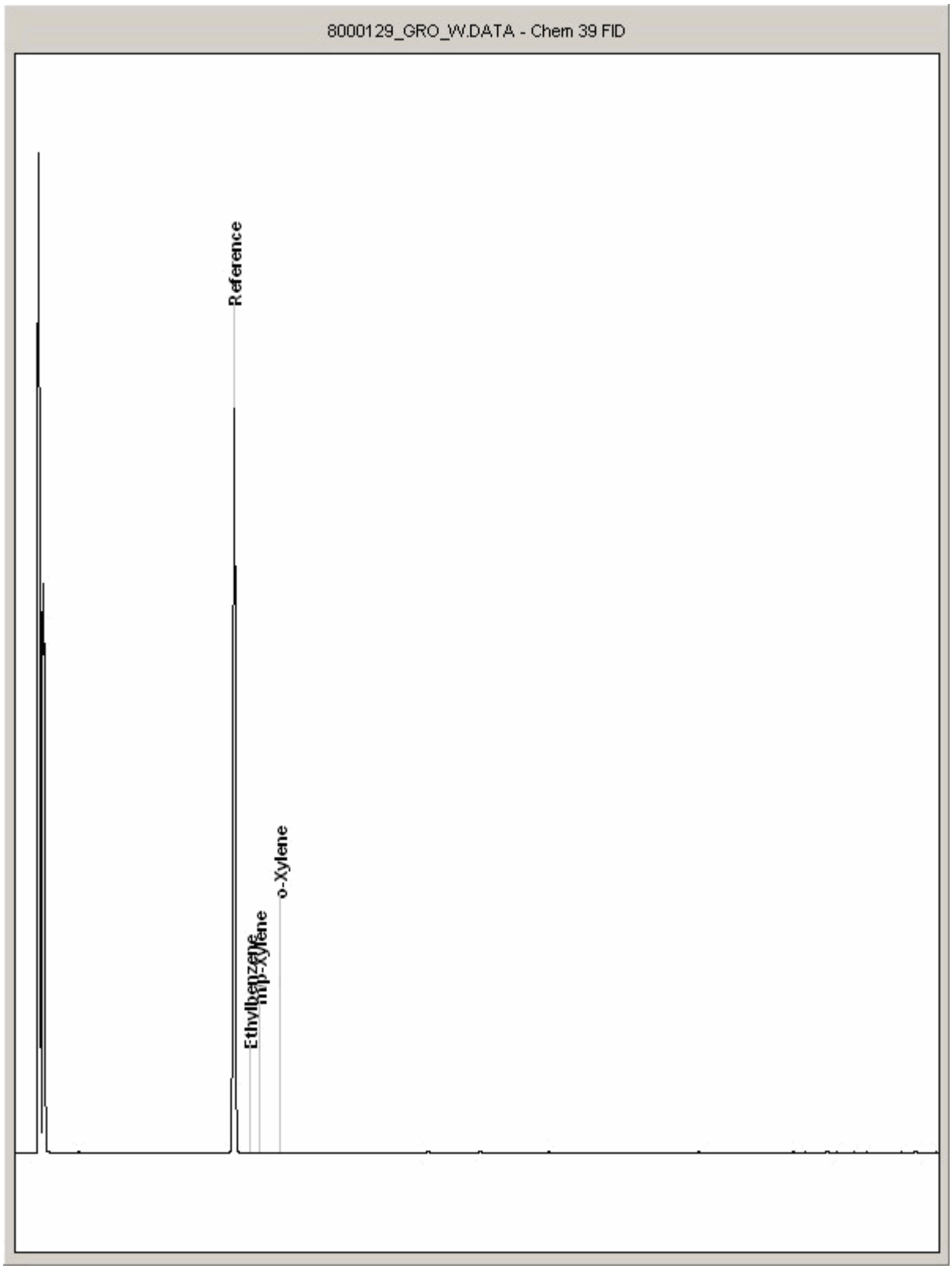
SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8000129
Sample ID : BH9

Depth :



SDG:	130816-80	**Location:**	Barry Waterfront	**Order Number:**	23336/39784/001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	240124
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Appendix
General

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 2 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

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

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

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

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

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

11. Results relate only to the items tested.

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

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

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

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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

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

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**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.

ALcontrol Laboratories

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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

WSP Remediation
Fairway House
Paramount Business Park
St Mellons
Cardiff
South Glamorgan
CF3 0LW

Attention: Steve Gronow

CERTIFICATE OF ANALYSIS

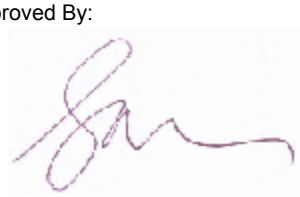
Date:	22 November 2013
Customer:	H_WSP_CDF
Sample Delivery Group (SDG):	131118-12
Your Reference:	39784.001
Location:	Barry Waterfront
Report No:	250928

We received 15 samples on Saturday November 16, 2013 and 15 of these samples were scheduled for analysis which was completed on Friday November 22, 2013. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
8440249	BH1	EW	1.69	15/11/2013
8440258	BH2	EW	1.84	15/11/2013
8440259	BH3	EW	2.28	15/11/2013
8440261	BH4	EW	2.16	15/11/2013
8440262	BH5	EW	2.12	15/11/2013
8440263	BH6	EW	2.20	15/11/2013
8440264	BH7	EW	2.93	15/11/2013
8440265	BH8	EW	3.10	15/11/2013
8440266	BH9	EW	3.15	15/11/2013
8440250	BH10	EW	2.98	15/11/2013
8440252	BH11	EW	2.65	15/11/2013
8440254	BH12	EW	2.70	15/11/2013
8440255	BH13	EW	2.65	15/11/2013
8440256	BH14	EW	2.72	15/11/2013
8440257	BH15	EW	2.70	15/11/2013

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

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

LIQUID

Results Legend

X **Test**

N **No Determination Possible**

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			8440249	BH1	EW	1.69	1l Glass bottle (ALE
			8440258	BH2	EW	1.84	Vial (ALE297)
			8440259	BH3	EW	2.28	1l Glass bottle (ALE
			8440261	BH4	EW	2.16	Vial (ALE297)
			8440262	BH5	EW	2.12	1l Glass bottle (ALE
			8440263	BH6	EW	2.20	Vial (ALE297)
			8440264	BH7	EW	2.93	1l Glass bottle (ALE
			8440265	BH8	EW	3.10	Vial (ALE297)
			8440266	BH9	EW	3.15	1l Glass bottle (ALE
			8440250	BH10	EW	2.98	Vial (ALE297)
			8440252	BH11	EW	2.65	1l Glass bottle (ALE
			8440254	BH12	EW	2.70	Vial (ALE297)
			8440255	BH13	EW	2.65	1l Glass bottle (ALE
			8440256	BH14	EW	2.72	Vial (ALE297)
			8440257	BH15	EW	2.70	1l Glass bottle (ALE
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 15		X		X		X		X		X		X		X		X		X		X		X		X		X	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TPH CWG (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
VOC MS (W)	All	NDPs: 0 Tests: 15		X		X		X		X		X		X		X		X		X		X		X		X		X	

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	1.69	1.84	2.28	2.16	2.12	2.20
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440249	8440258	8440259	8440261	8440262	8440263
			AGS Reference	EW	EW	EW	EW	EW	EW
Phenols, Total Detected monohydric	<16 µg/l	TM259		6220 2 #	90 2 #	<16 2 #	8120 2 #	17700 2 #	80 2 #

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	2.93	3.10	3.15	2.98	2.65	2.70
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440264	8440265	8440266	8440250	8440252	8440254
			AGS Reference	EW	EW	EW	EW	EW	EW
Phenols, Total Detected monohydric	<16 µg/l	TM259		<16 2 #	<16 2 #	<16 2 #	<16 2 #	<16 2 #	<16 2 #

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	2.65	2.72	2.70			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/11/2013	15/11/2013	15/11/2013			
			Sampled Time	.	.	.			
			Date Received	16/11/2013	16/11/2013	16/11/2013			
			SDG Ref	131118-12	131118-12	131118-12			
			Lab Sample No.(s)	8440255	8440256	8440257			
			AGS Reference	EW	EW	EW			
Phenols, Total Detected monohydric	<16 µg/l	TM259		<16 2 #	<16 2 #	<16 2 #			

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	1.69	1.84	2.28	2.16	2.12	2.20
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440249	8440258	8440259	8440261	8440262	8440263
			AGS Reference	EW	EW	EW	EW	EW	EW
Naphthalene (aq)	<0.1 µg/l	TM178		7350 #	0.192 #	4.31 #	10200 #	3430 #	<5 #
Acenaphthene (aq)	<0.015 µg/l	TM178		1080 #	6.88 #	39.6 #	428 #	557 #	85.4 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		90.6 #	0.447 #	1.54 #	30.9 #	53.1 #	1.7 #
Fluoranthene (aq)	<0.017 µg/l	TM178		774 #	11.5 #	29.5 #	41.9 #	76.8 #	72.9 #
Anthracene (aq)	<0.015 µg/l	TM178		193 #	1.94 #	3.08 #	23.3 #	51.2 #	6.98 #
Phenanthrene (aq)	<0.022 µg/l	TM178		2150 #	11.3 #	1.03 #	198 #	422 #	34.2 #
Fluorene (aq)	<0.014 µg/l	TM178		696 #	2.36 #	16.7 #	171 #	278 #	7.02 #
Chrysene (aq)	<0.013 µg/l	TM178		115 #	1.53 #	3.94 #	<6.5 #	8.4 #	10.2 #
Pyrene (aq)	<0.015 µg/l	TM178		526 #	7.9 #	16.8 #	27.3 #	50 #	48 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		103 #	1.39 #	2.53 #	<8.5 #	6.11 #	8.96 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		29.4 #	0.499 #	0.799 #	<11.5 #	<2.88 #	1.84 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		39.4 #	0.869 #	1.2 #	<13.5 #	<3.38 #	3.25 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		34.5 #	0.83 #	0.947 #	<4.5 #	2.28 #	2.38 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<8 #	0.0817 #	<0.4 #	<8 #	<2 #	<0.8 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		9.9 #	0.285 #	<0.4 #	<8 #	<2 #	<0.8 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		9.42 #	0.278 #	<0.35 #	<7 #	<1.75 #	<0.7 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		13200	48.3	122	11200	4940	283

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	2.93	3.10	3.15	2.98	2.65	2.70
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440264	8440265	8440266	8440250	8440252	8440254
			AGS Reference	EW	EW	EW	EW	EW	EW
Naphthalene (aq)	<0.1 µg/l	TM178		0.154 #	<0.1 #	<1 #	<0.1 #	0.108 #	0.128 #
Acenaphthene (aq)	<0.015 µg/l	TM178		1.62 #	<0.015 #	39.5 #	<0.015 #	0.0257 #	0.0616 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.13 #	<0.011 #	1.34 #	0.0421 #	0.0279 #	0.0205 #
Fluoranthene (aq)	<0.017 µg/l	TM178		4.01 #	0.0249 #	23.9 #	0.0472 #	0.165 #	0.0937 #
Anthracene (aq)	<0.015 µg/l	TM178		0.184 #	0.0309 #	4.6 #	0.039 #	0.0563 #	0.0192 #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.27 #	0.0302 #	33.6 #	0.0319 #	0.221 #	0.0368 #
Fluorene (aq)	<0.014 µg/l	TM178		0.151 #	<0.014 #	23.6 #	0.044 #	0.0559 #	0.0144 #
Chrysene (aq)	<0.013 µg/l	TM178		0.66 #	<0.013 #	2.78 #	0.021 #	0.107 #	0.0608 #
Pyrene (aq)	<0.015 µg/l	TM178		2.64 #	0.0459 #	17.5 #	0.195 #	0.252 #	0.0697 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.474 #	<0.017 #	2.46 #	<0.017 #	0.0543 #	<0.017 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.291 #	<0.023 #	0.489 #	<0.023 #	0.0651 #	0.0236 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.426 #	<0.027 #	0.757 #	<0.027 #	0.087 #	0.0306 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.368 #	<0.009 #	0.594 #	0.0132 #	0.0821 #	0.0434 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.0355 #	<0.016 #	<0.16 #	<0.016 #	0.0164 #	<0.016 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.132 #	<0.016 #	<0.16 #	<0.016 #	0.0592 #	0.0214 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.121 #	<0.014 #	<0.14 #	<0.014 #	0.0485 #	0.017 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		11.7	<0.247	151	0.433	1.43	0.641

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	2.65	2.72	2.70			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/11/2013	15/11/2013	15/11/2013			
			Sampled Time	.	.	.			
			Date Received	16/11/2013	16/11/2013	16/11/2013			
			SDG Ref	131118-12	131118-12	131118-12			
			Lab Sample No.(s)	8440255	8440256	8440257			
			AGS Reference	EW	EW	EW			
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 #	0.573 #	<0.1 #			
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 #	1.77 #	0.0515 #			
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 #	0.137 #	<0.011 #			
Fluoranthene (aq)	<0.017 µg/l	TM178		<0.017 #	0.254 #	0.0955 #			
Anthracene (aq)	<0.015 µg/l	TM178		<0.015 #	0.173 #	0.0368 #			
Phenanthrene (aq)	<0.022 µg/l	TM178		<0.022 #	0.556 #	0.0605 #			
Fluorene (aq)	<0.014 µg/l	TM178		<0.014 #	1.61 #	0.0257 #			
Chrysene (aq)	<0.013 µg/l	TM178		0.0131 #	<0.065 #	0.0419 #			
Pyrene (aq)	<0.015 µg/l	TM178		0.0847 #	0.28 #	0.131 #			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 #	<0.085 #	<0.017 #			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		<0.023 #	<0.115 #	<0.023 #			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 #	<0.135 #	<0.027 #			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0108 #	<0.045 #	0.0152 #			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.08 #	<0.016 #			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.016 #	<0.08 #	<0.016 #			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.014 #	<0.07 #	<0.014 #			
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		<0.247	5.35	0.458			

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	1.69	1.84	2.28	2.16	2.12	2.20
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440249	8440258	8440259	8440261	8440262	8440263
			AGS Reference	EW	EW	EW	EW	EW	EW
GRO Surrogate % recovery**	%	TM245		117	124	118	80	128	114
GRO >C5-C12	<50 µg/l	TM245		13100 #	328 #	191 #	13900 #	14800 #	866 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		50	12	<10	10	11	<10
Aliphatics >C6-C8	<10 µg/l	TM245		103	20	<10	41	42	<10
Aliphatics >C8-C10	<10 µg/l	TM245		907	32	21	1080	857	51
Aliphatics >C10-C12	<10 µg/l	TM245		5090	74	71	5260	6340	421
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		116	<10	<10	<10	44	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		103	<10	<10	<10	26	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		41	<10	<10	<10	19	15
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		260	<10	<10	<10	89	15
Aromatics >EC5-EC7	<10 µg/l	TM245		612	14	<10	600	822	12
Aromatics >EC7-EC8	<10 µg/l	TM245		911	30	<10	926	1060	19
Aromatics >EC8-EC10	<10 µg/l	TM245		2040	96	36	2500	1420	73
Aromatics >EC10-EC12	<10 µg/l	TM245		3390	49	48	3510	4230	281
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		6310	38	160	2880	5140	245
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		5450	54	227	696	2200	355
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		1960	58	150	69	608	199
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		13700	150	537	3650	7950	799
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		27100	478	728	17600	22800	1680

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	2.93	3.10	3.15	2.98	2.65	2.70
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440264	8440265	8440266	8440250	8440252	8440254
			AGS Reference	EW	EW	EW	EW	EW	EW
GRO Surrogate % recovery**	%	TM245		112	115	117	117	114	114
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	787 #	63 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	31	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	390	24	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	20	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	41	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	13	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	74	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	12	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	89	<10	16	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	260	16	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		10	13	154	36	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		25	39	166	24	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		20	18	79	20	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		55	70	399	80	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		69	144	1190	142	32	<10

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	2.65	2.72	2.70			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/11/2013	15/11/2013	15/11/2013			
			Sampled Time	.	.	.			
			Date Received	16/11/2013	16/11/2013	16/11/2013			
			SDG Ref	131118-12	131118-12	131118-12			
			Lab Sample No.(s)	8440255	8440256	8440257			
			AGS Reference	EW	EW	EW			
GRO Surrogate % recovery**	%	TM245		114	108	123			
GRO >C5-C12	<50 µg/l	TM245		<50 #	325 #	<50 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C8-C10	<10 µg/l	TM245		<10	15	<10			
Aliphatics >C10-C12	<10 µg/l	TM245		<10	66	<10			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	187	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	44	<10			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	149	<10			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	56	<10			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	22	<10			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	227	<10			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	551	<10			

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	1.69	1.84	2.28	2.16	2.12	2.20
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440249	8440258	8440259	8440261	8440262	8440263
			AGS Reference	EW	EW	EW	EW	EW	EW
Dibromofluoromethane**	%	TM208		103	101	98.8	100	104	103
Toluene-d8**	%	TM208		97	97.9	99.4	96	97.2	98.4
4-Bromofluorobenzene**	%	TM208		96.1	99.8	98.2	88.9	92.9	99.1
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Benzene	<1 µg/l	TM208		586 #	7.14 #	3 #	990 #	817 #	11.9 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		847 #	16.6 #	10.3 #	1560 #	1010 #	19 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	1.69	1.84	2.28	2.16	2.12	2.20
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440249	8440258	8440259	8440261	8440262	8440263
			AGS Reference	EW	EW	EW	EW	EW	EW
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		267 #	3.63 #	4.74 #	854 #	148 #	1.89 #
m,p-Xylene	<1 µg/l	TM208		745 #	43.2 #	8.79 #	1220 #	319 #	13.5 #
o-Xylene	<1 µg/l	TM208		328 #	19.9 #	5.16 #	615 #	159 #	10.5 #
Styrene	<1 µg/l	TM208		122 #	<1 #	<1 #	498 #	177 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		10.2 #	<1 #	<1 #	17 #	5.29 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		9.41 #	<1 #	<1 #	7.65 #	2.1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		73.8 #	4.04 #	4 #	63.4 #	30.5 #	5.19 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		220 #	5.61 #	6.38 #	184 #	85.9 #	6.53 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		29.1 #	3.4 #	<1 #	62.4 #	29.5 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		11800 #	1.43 #	<1 #	19700 #	11200 #	224 #

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH1	BH2	BH3	BH4	BH5	BH6
			Depth (m)	1.69	1.84	2.28	2.16	2.12	2.20
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440249	8440258	8440259	8440261	8440262	8440263
			AGS Reference	EW	EW	EW	EW	EW	EW
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Sum of detected Xylenes	<2 µg/l	TM208		1070	63.1	14	1840	478	24

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	2.93	3.10	3.15	2.98	2.65	2.70
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440264	8440265	8440266	8440250	8440252	8440254
			AGS Reference	EW	EW	EW	EW	EW	EW
Dibromofluoromethane**	%	TM208		108	105	105	106	104	103
Toluene-d8**	%	TM208		99.3	98.8	97.9	100	99	99.7
4-Bromofluorobenzene**	%	TM208		99	96.1	98.4	97.7	99	96.9
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Benzene	<1 µg/l	TM208		3.36 #	<1 #	3.5 #	<1 #	11.6 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		3.63 #	<1 #	4.47 #	<1 #	2.7 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	2.93	3.10	3.15	2.98	2.65	2.70
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440264	8440265	8440266	8440250	8440252	8440254
			AGS Reference	EW	EW	EW	EW	EW	EW
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	20.2 #	<1 #	1.34 #	<1 #
m,p-Xylene	<1 µg/l	TM208		2.69 #	<1 #	14.8 #	<1 #	3.4 #	<1 #
o-Xylene	<1 µg/l	TM208		1.13 #	<1 #	5.28 #	<1 #	4 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	2.49 #	<1 #	1.2 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	6.41 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	335 #	1.43 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH7	BH8	BH9	BH10	BH11	BH12
			Depth (m)	2.93	3.10	3.15	2.98	2.65	2.70
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013	15/11/2013
			Sampled Time	.	.	.	.	.	.
			Date Received	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013	16/11/2013
			SDG Ref	131118-12	131118-12	131118-12	131118-12	131118-12	131118-12
			Lab Sample No.(s)	8440264	8440265	8440266	8440250	8440252	8440254
			AGS Reference	EW	EW	EW	EW	EW	EW
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Sum of detected Xylenes	<2 µg/l	TM208		3.82	<2	20.1	<2	7.4	<2

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	2.65	2.72	2.70			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/11/2013	15/11/2013	15/11/2013			
			Sampled Time	.	.	.			
			Date Received	16/11/2013	16/11/2013	16/11/2013			
			SDG Ref	131118-12	131118-12	131118-12			
			Lab Sample No.(s)	8440255	8440256	8440257			
			AGS Reference	EW	EW	EW			
Dibromofluoromethane**	%	TM208		105	104	106			
Toluene-d8**	%	TM208		99.1	100	99.4			
4-Bromofluorobenzene**	%	TM208		97	98	98.6			
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1			
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1			
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1			
Benzene	<1 µg/l	TM208		<1 #	1.53 #	<1 #			
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	2.65	2.72	2.70			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/11/2013	15/11/2013	15/11/2013			
			Sampled Time	.	.	.			
			Date Received	16/11/2013	16/11/2013	16/11/2013			
			SDG Ref	131118-12	131118-12	131118-12			
			Lab Sample No.(s)	8440255	8440256	8440257			
			AGS Reference	EW	EW	EW			
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	168 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	1.31 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	15.8 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	BH13	BH14	BH15			
			Depth (m)	2.65	2.72	2.70			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	15/11/2013	15/11/2013	15/11/2013			
			Sampled Time	.	.	.			
			Date Received	16/11/2013	16/11/2013	16/11/2013			
			SDG Ref	131118-12	131118-12	131118-12			
			Lab Sample No.(s)	8440255	8440256	8440257			
			AGS Reference	EW	EW	EW			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1			
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2			

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	8440249	8440258	8440259	8440261	8440262	8440263	8440264	8440265	8440266	8440250
Customer Sample Ref.	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8	BH9	BH10
AGS Ref.	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Depth	1.69	1.84	2.28	2.16	2.12	2.20	2.93	3.10	3.15	2.98
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
EPH CWG (Aromatic) Aqueous GC (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
GRO by GC-FID (W)	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013
PAH Spec MS - Aqueous (W)	22-Nov-2013	21-Nov-2013	21-Nov-2013	22-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
Phenols by HPLC (W)	20-Nov-2013	20-Nov-2013	20-Nov-2013	20-Nov-2013	20-Nov-2013	21-Nov-2013	21-Nov-2013	20-Nov-2013	20-Nov-2013	20-Nov-2013
TPH CWG (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
VOC MS (W)	20-Nov-2013	20-Nov-2013	19-Nov-2013	20-Nov-2013	20-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013

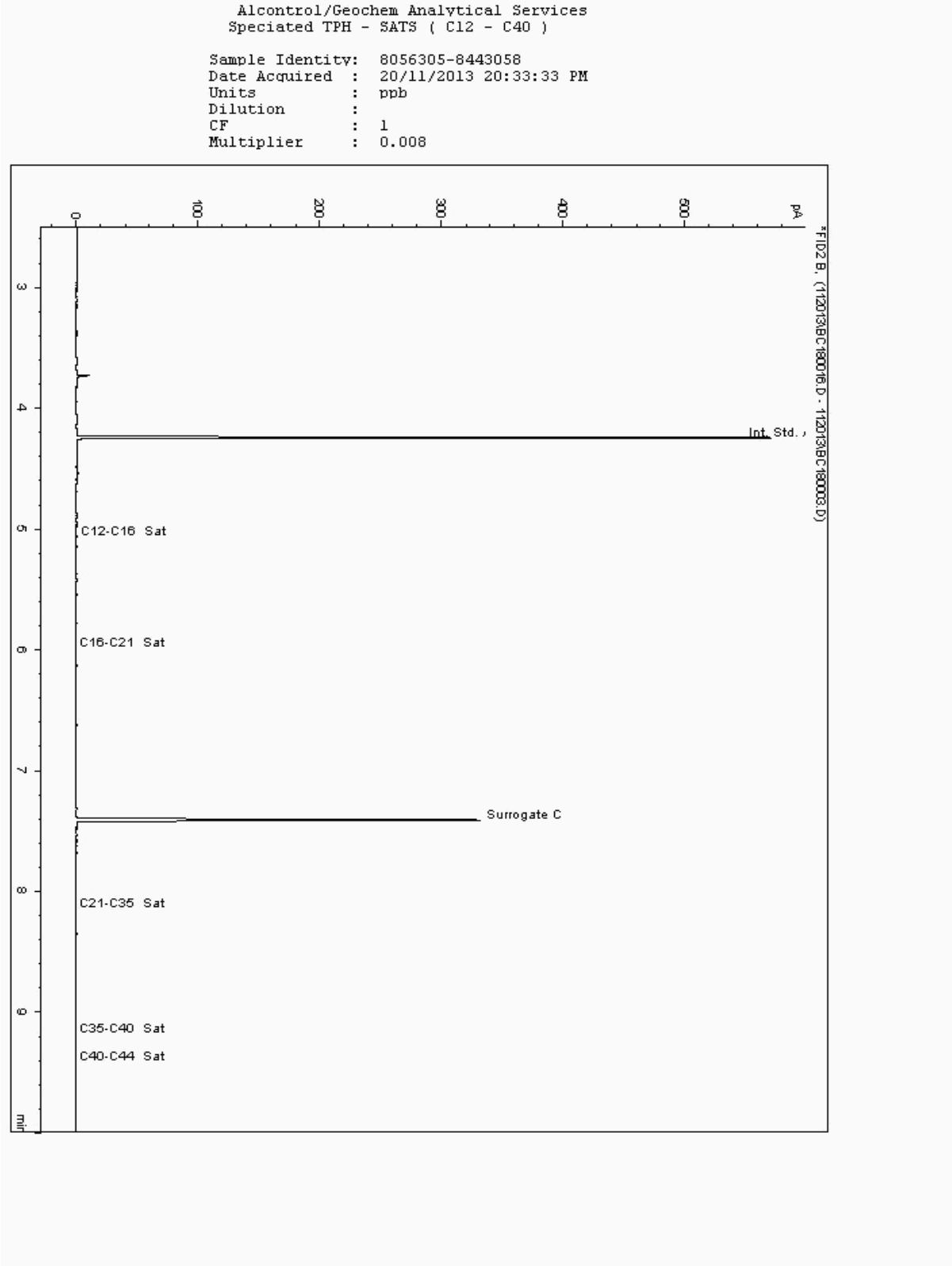
Lab Sample No(s)	8440252	8440254	8440255	8440256	8440257
Customer Sample Ref.	BH11	BH12	BH13	BH14	BH15
AGS Ref.	EW	EW	EW	EW	EW
Depth	2.65	2.70	2.65	2.72	2.70
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
EPH CWG (Aromatic) Aqueous GC (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
GRO by GC-FID (W)	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013
PAH Spec MS - Aqueous (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
Phenols by HPLC (W)	21-Nov-2013	21-Nov-2013	20-Nov-2013	20-Nov-2013	21-Nov-2013
TPH CWG (W)	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013	21-Nov-2013
VOC MS (W)	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013	19-Nov-2013

CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443058 **Sample ID :** BH15 **Depth :** 2.70

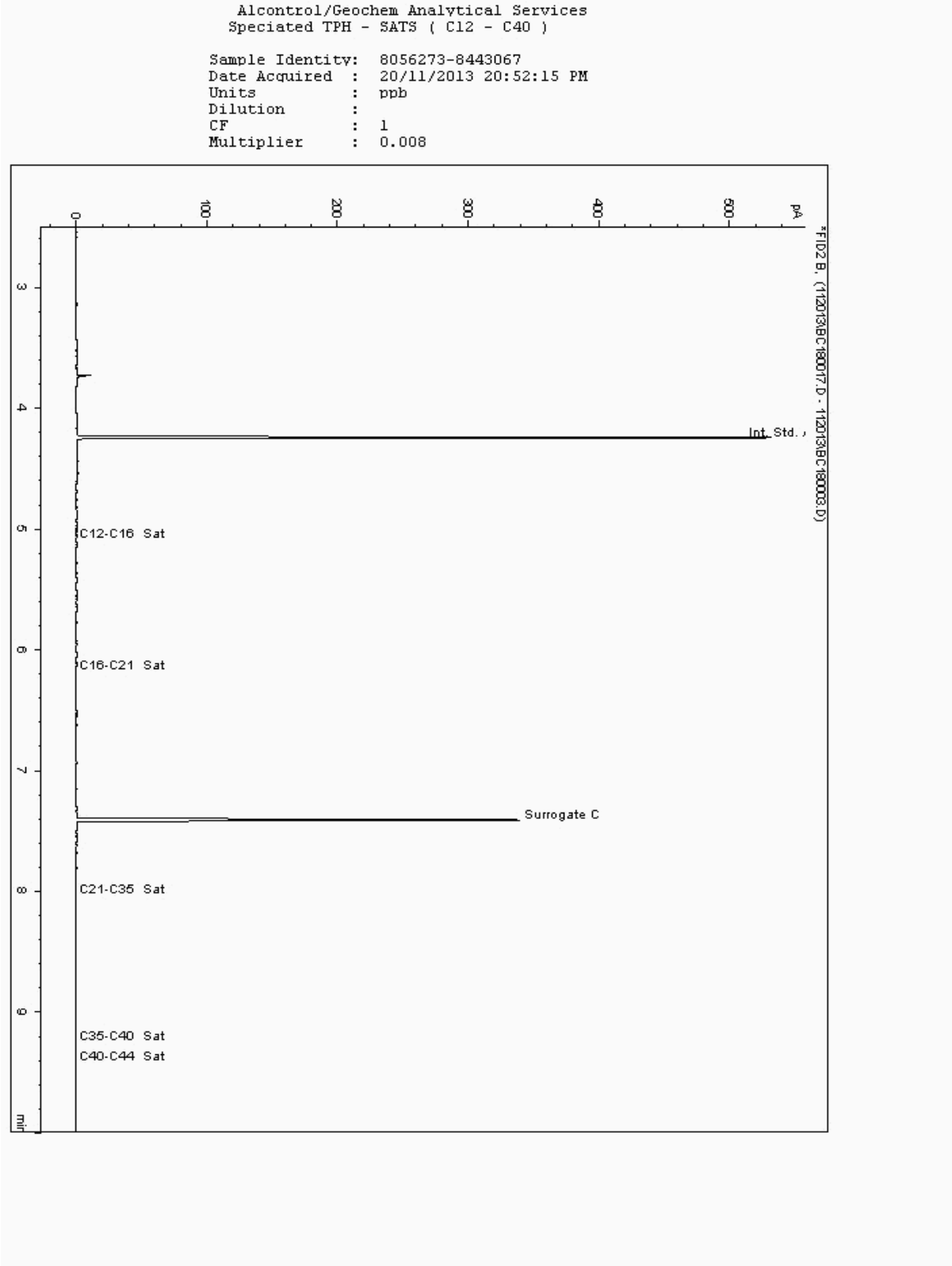


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443067 **Sample ID :** BH12 **Depth :** 2.70

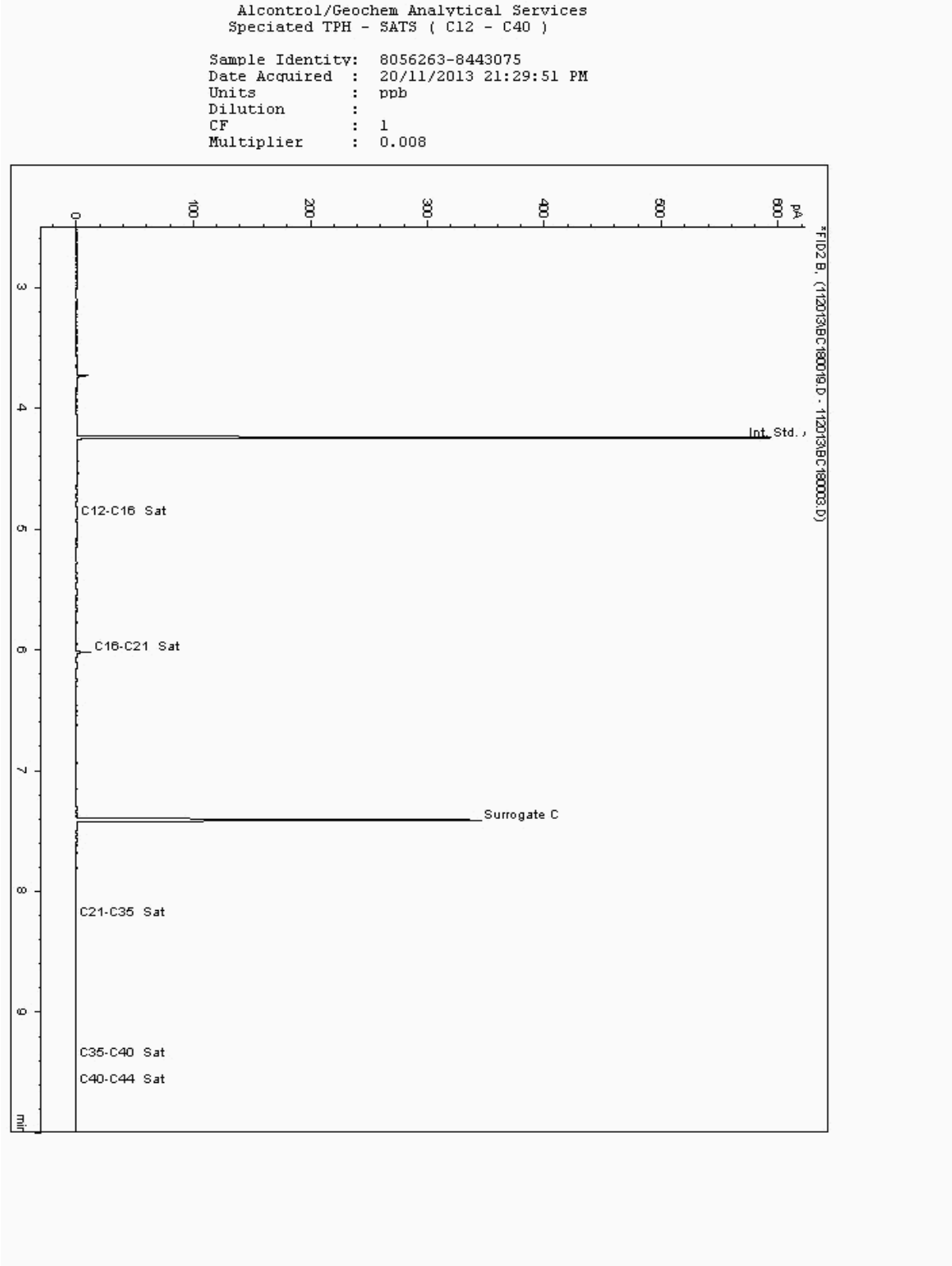


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443075 **Sample ID :** BH11 **Depth :** 2.65

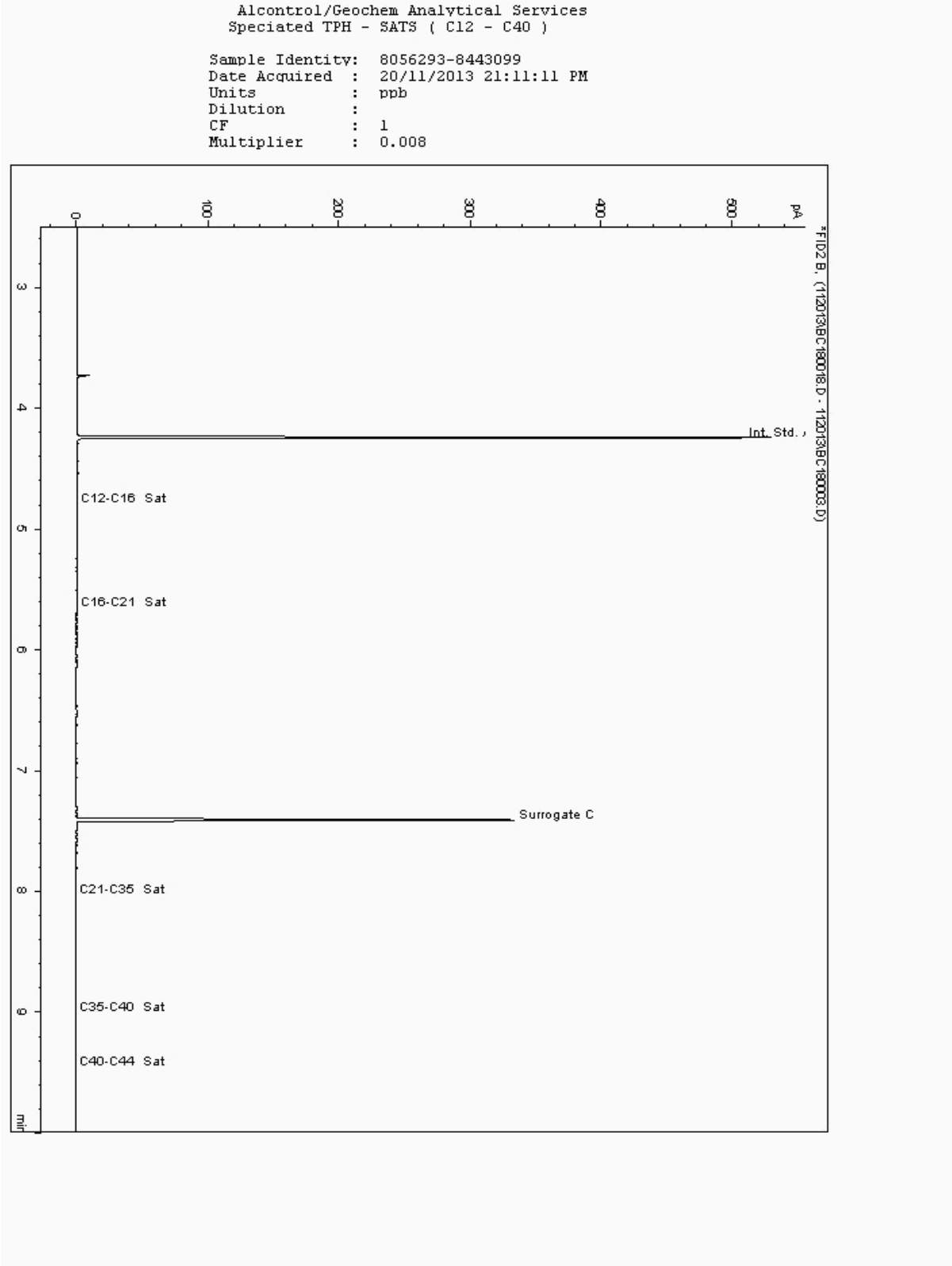


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443099 **Sample ID :** BH14 **Depth :** 2.72

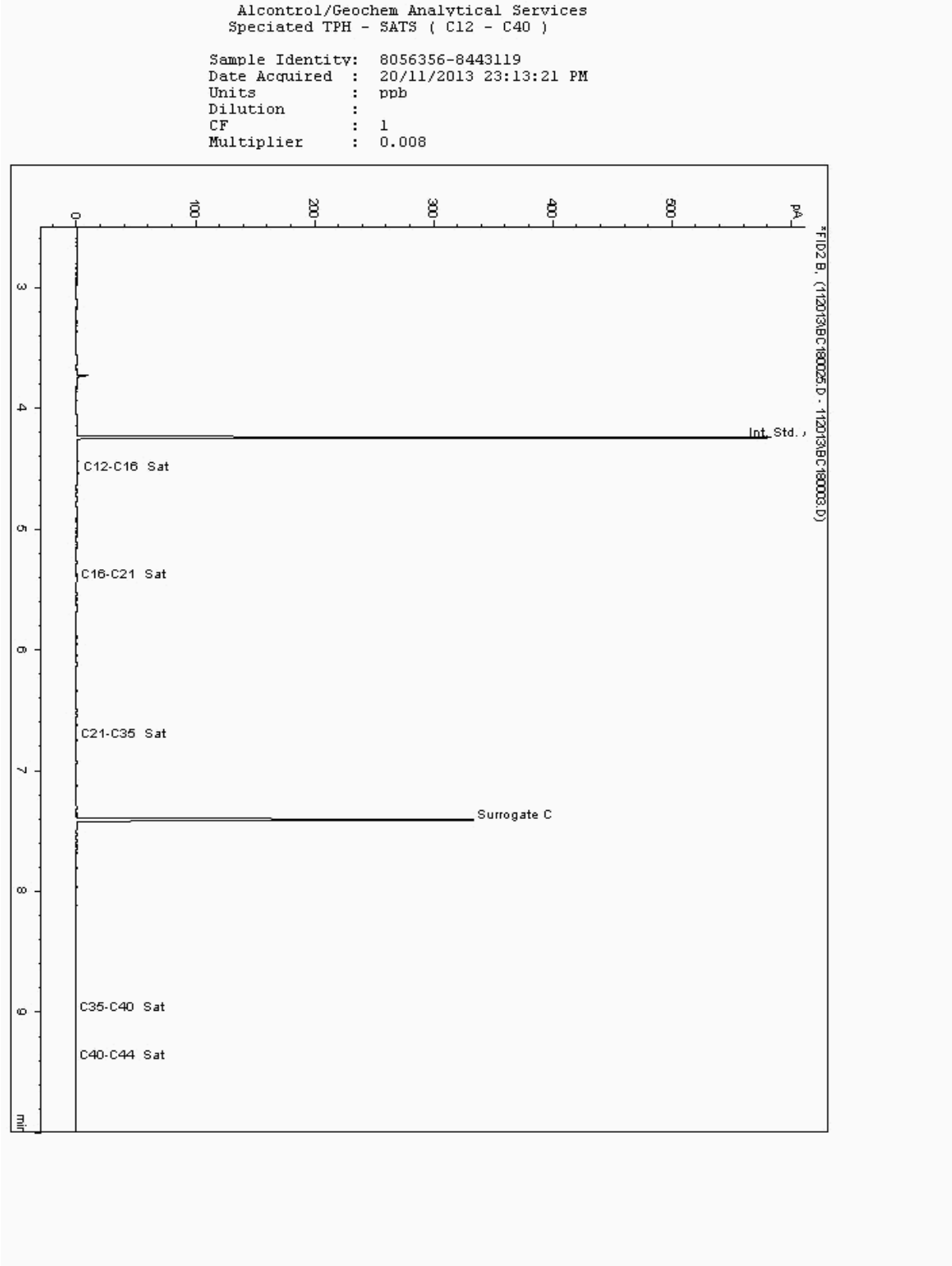


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443119 **Sample ID :** BH6 **Depth :** 2.20

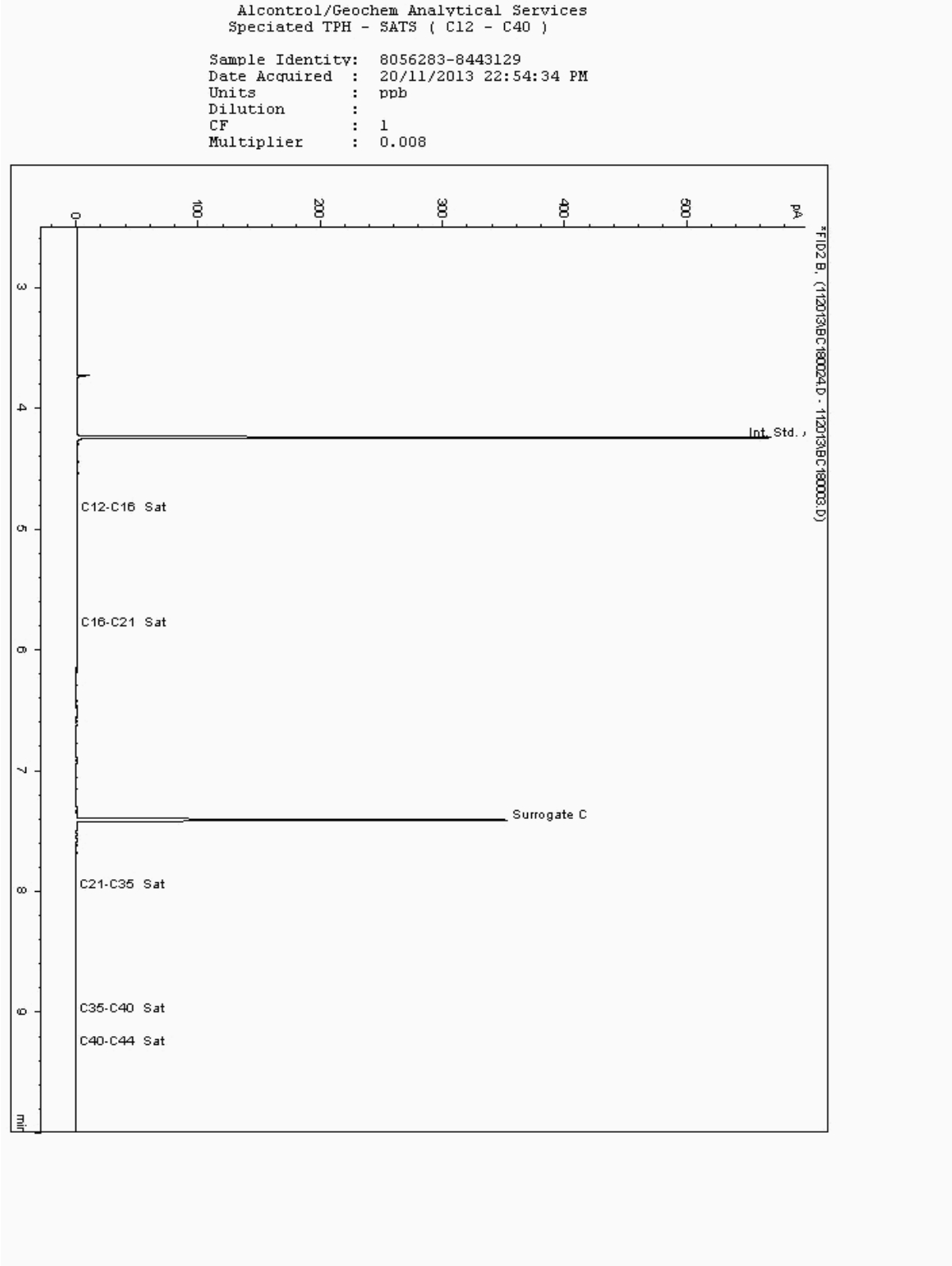


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443129 **Sample ID :** BH13 **Depth :** 2.65

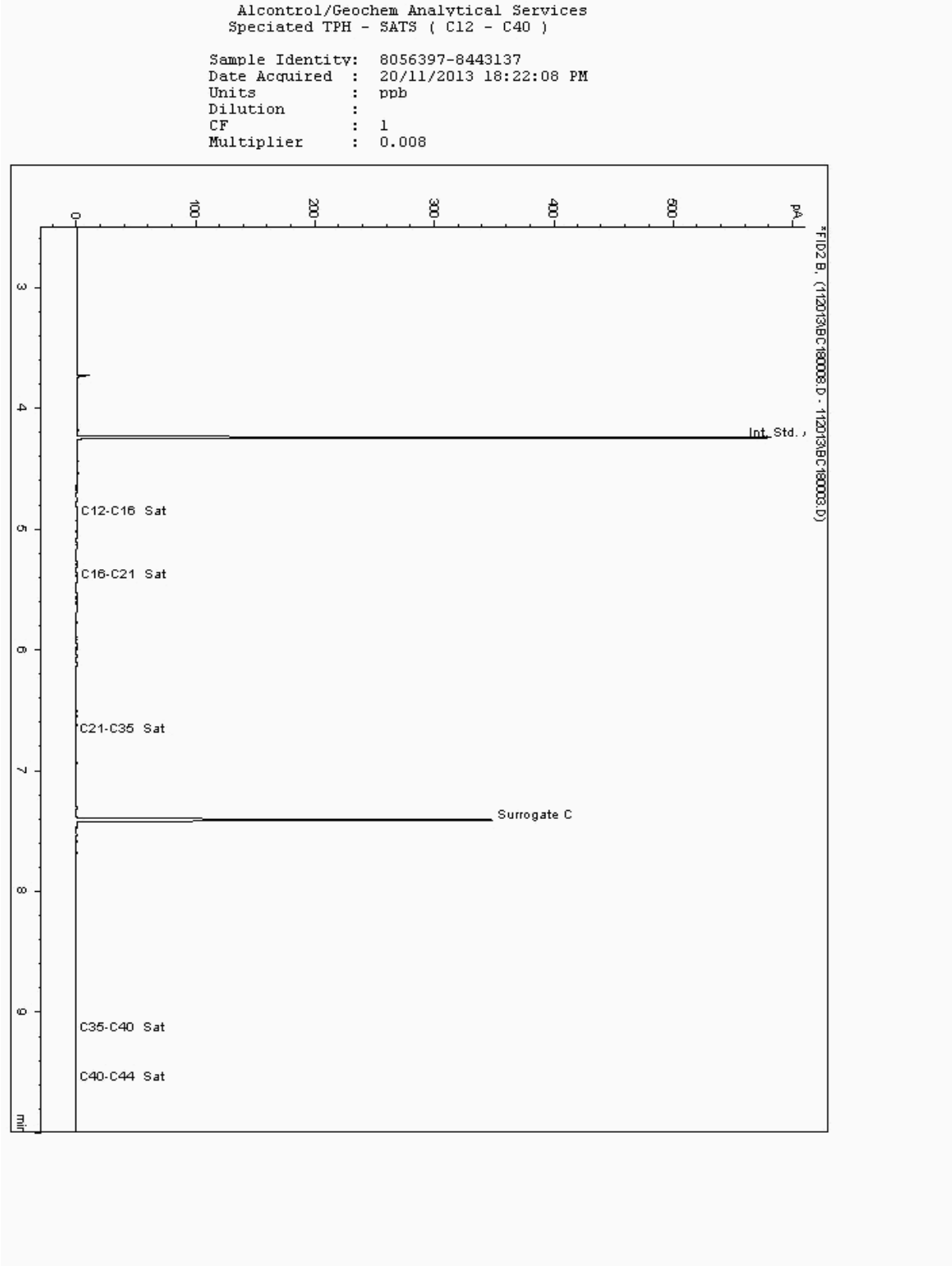


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443137 **Sample ID :** BH9 **Depth :** 3.15

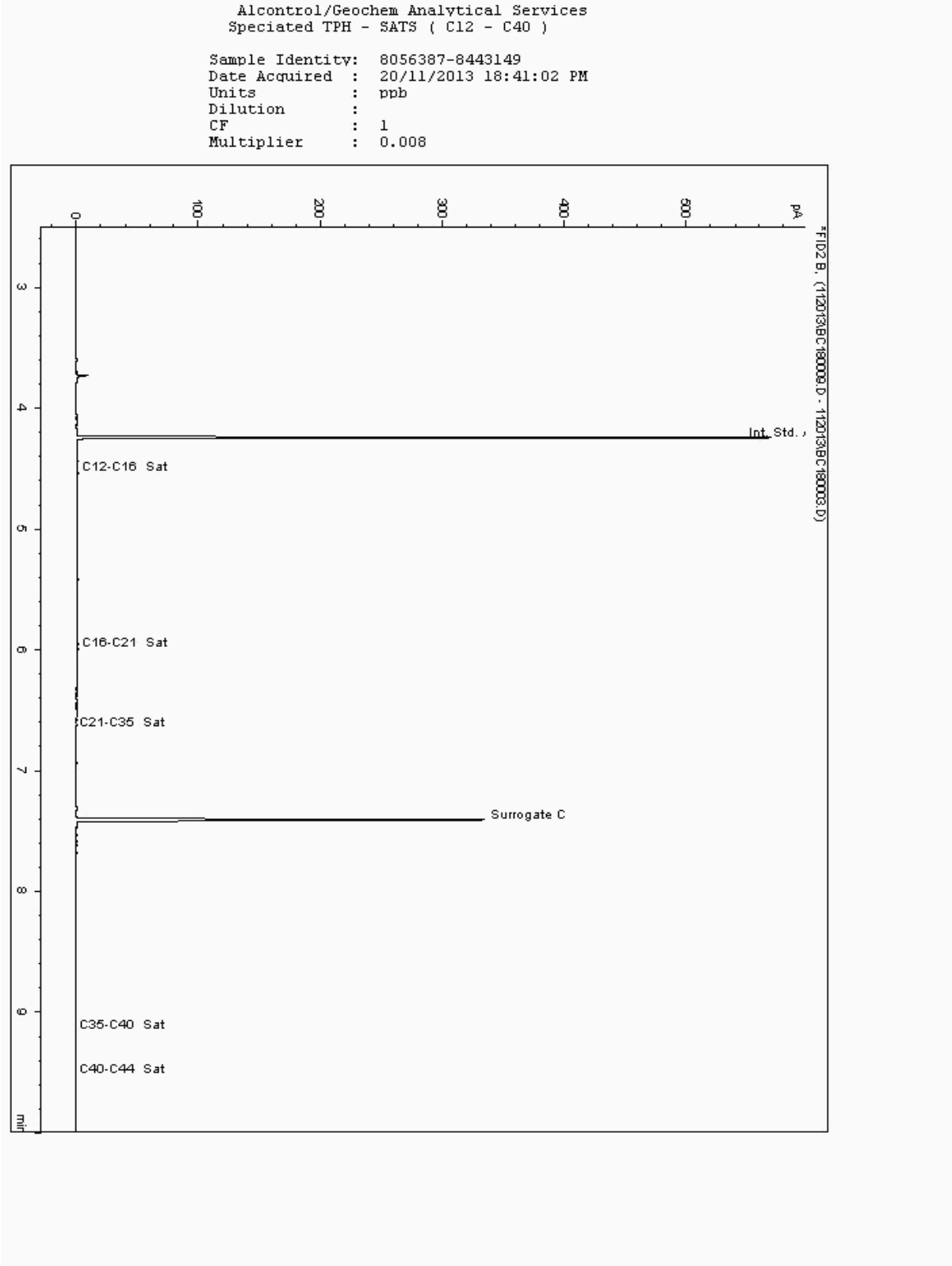


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443149 **Sample ID :** BH8 **Depth :** 3.10

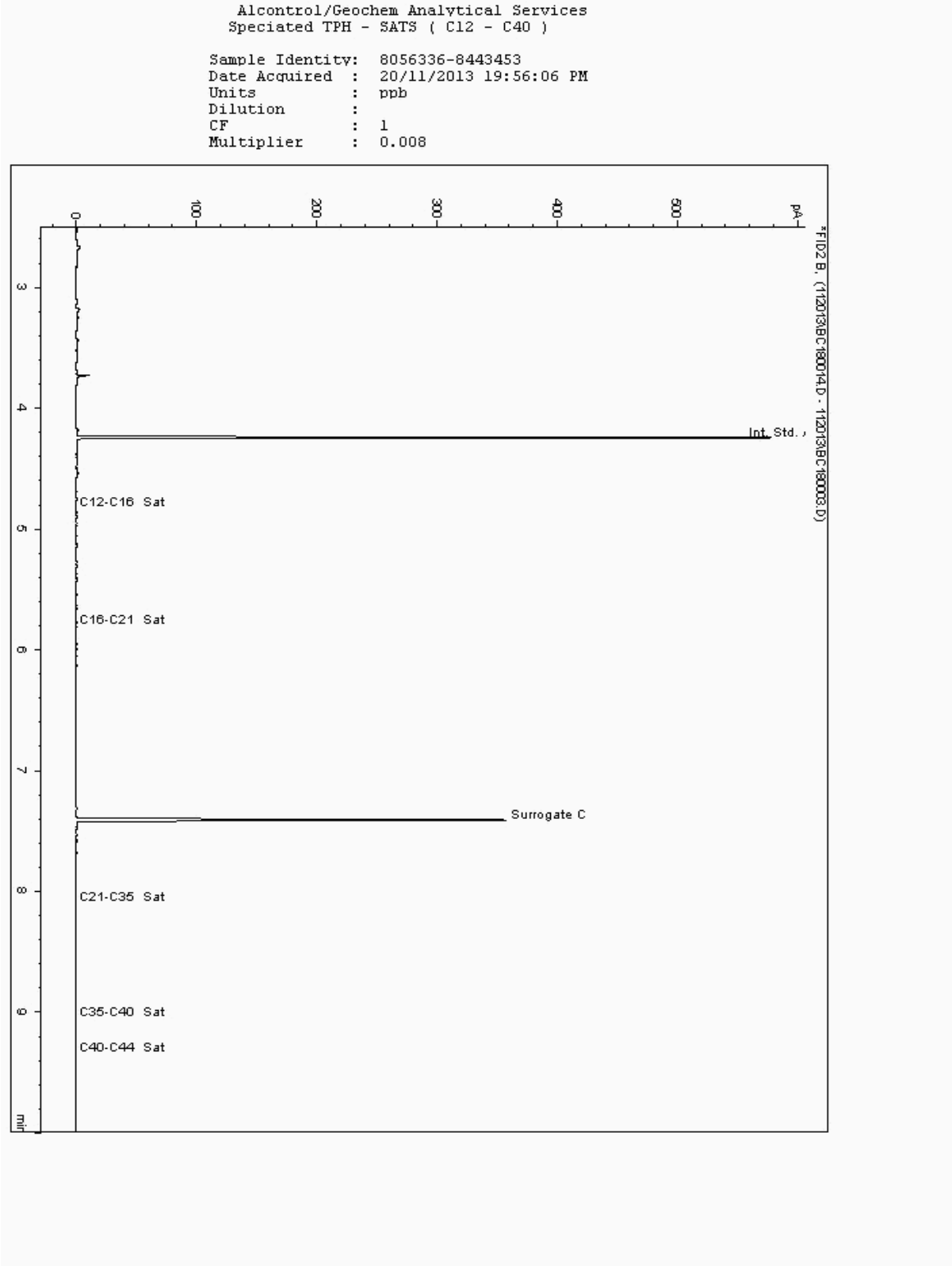


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443453 **Sample ID :** BH4 **Depth :** 2.16

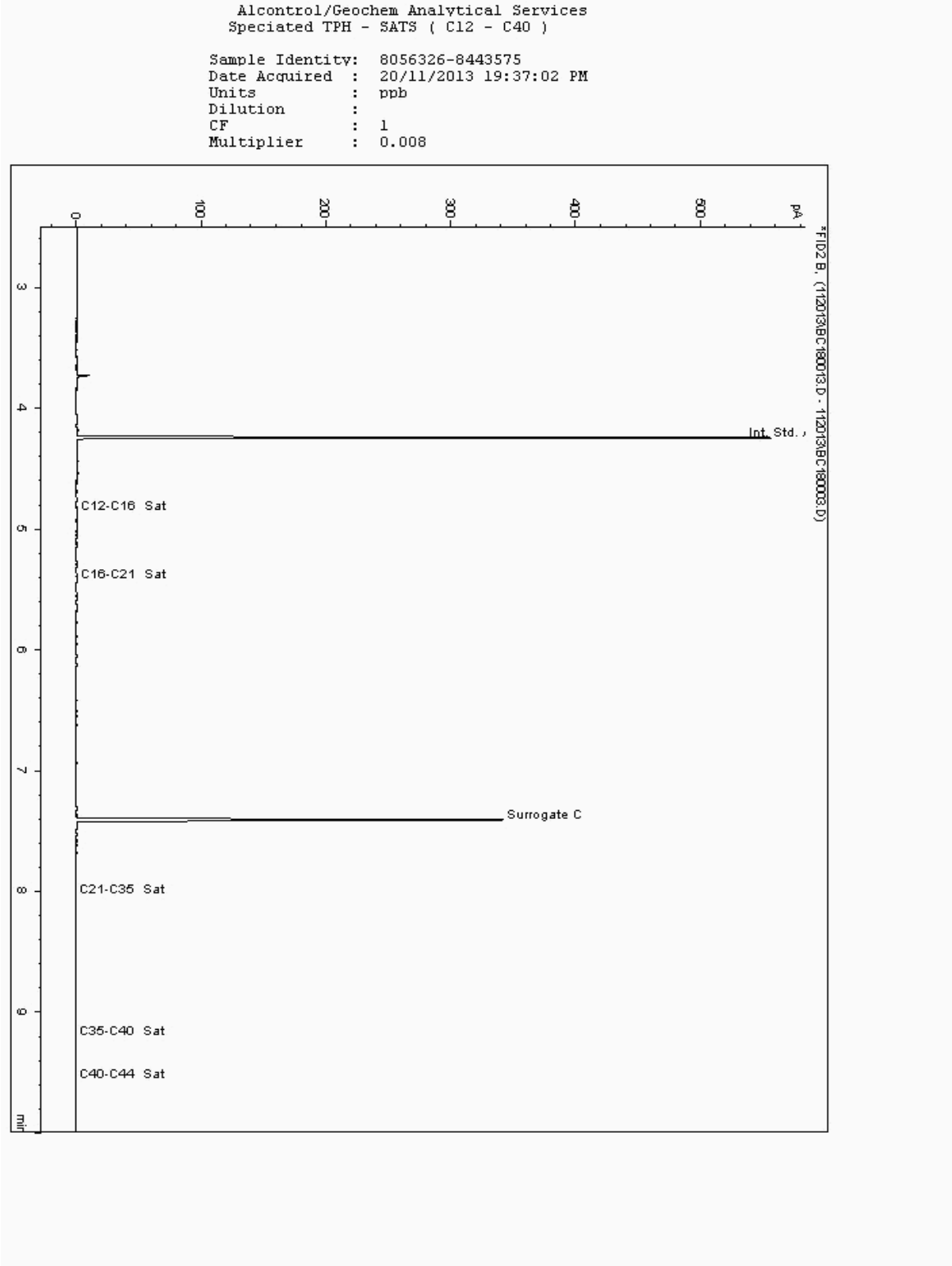


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443575 **Sample ID :** BH3 **Depth :** 2.28

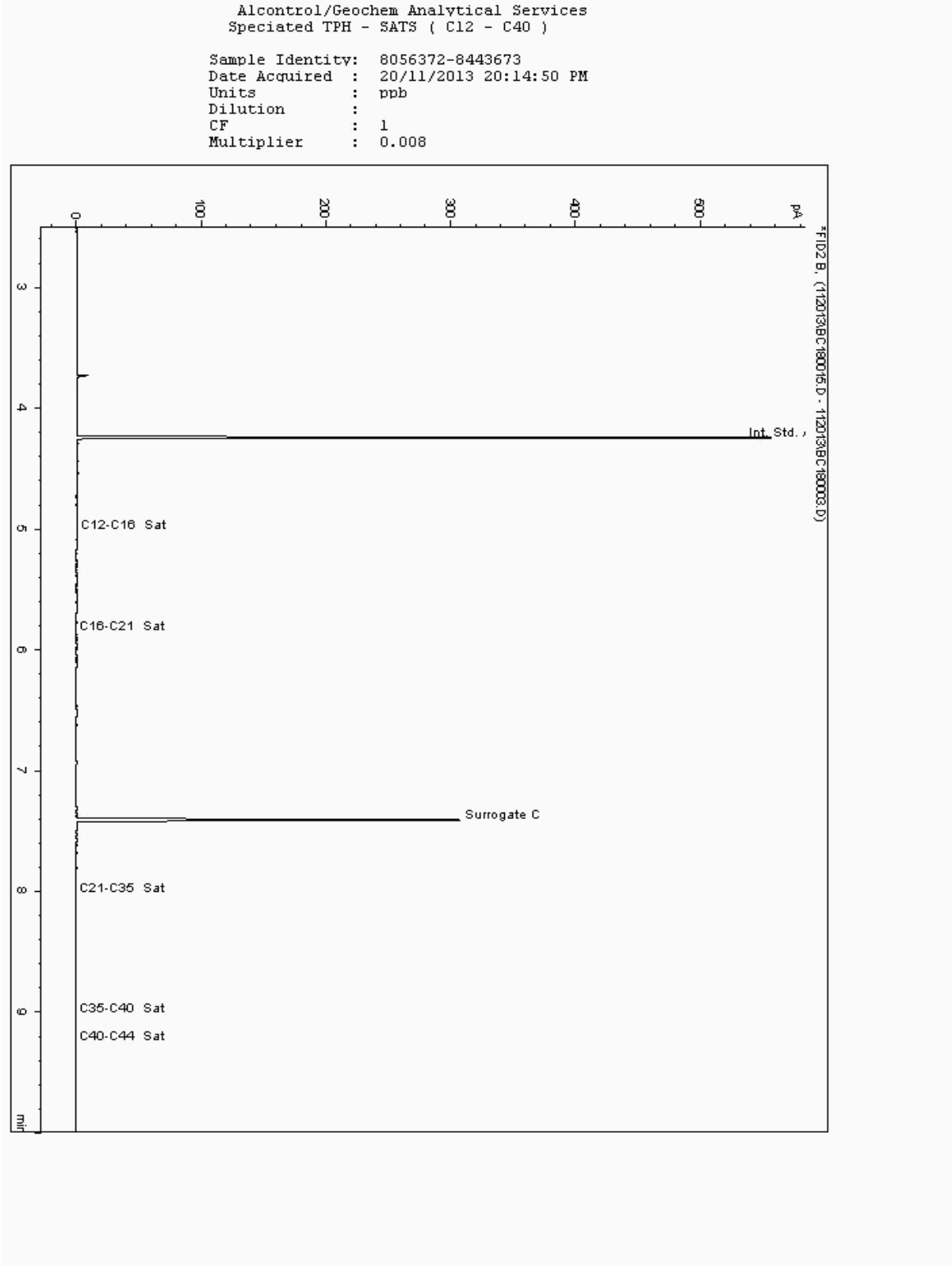


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443673 **Sample ID :** BH7 **Depth :** 2.93

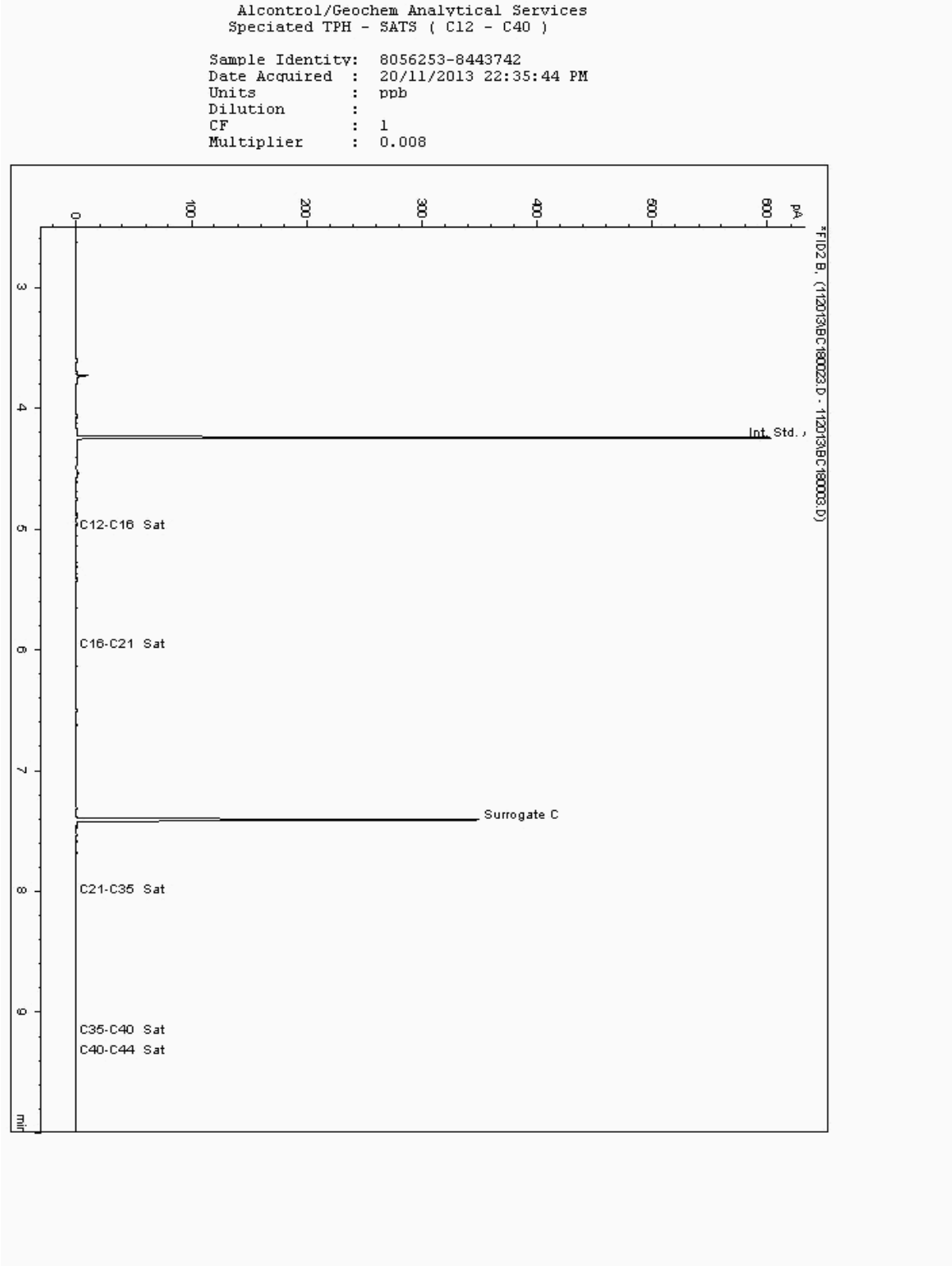


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443742 **Sample ID :** BH10 **Depth :** 2.98

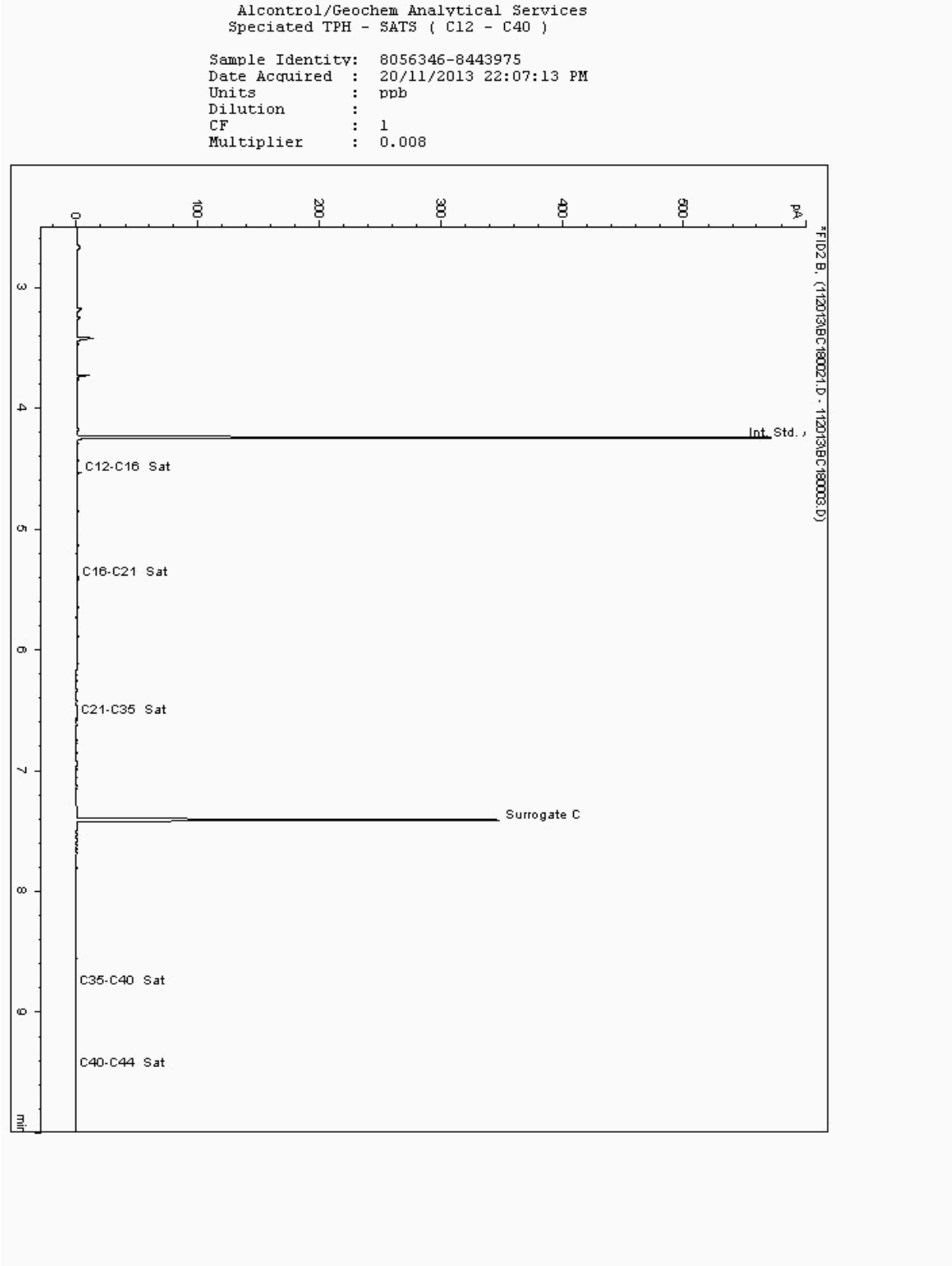


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443975 **Sample ID :** BH5 **Depth :** 2.12

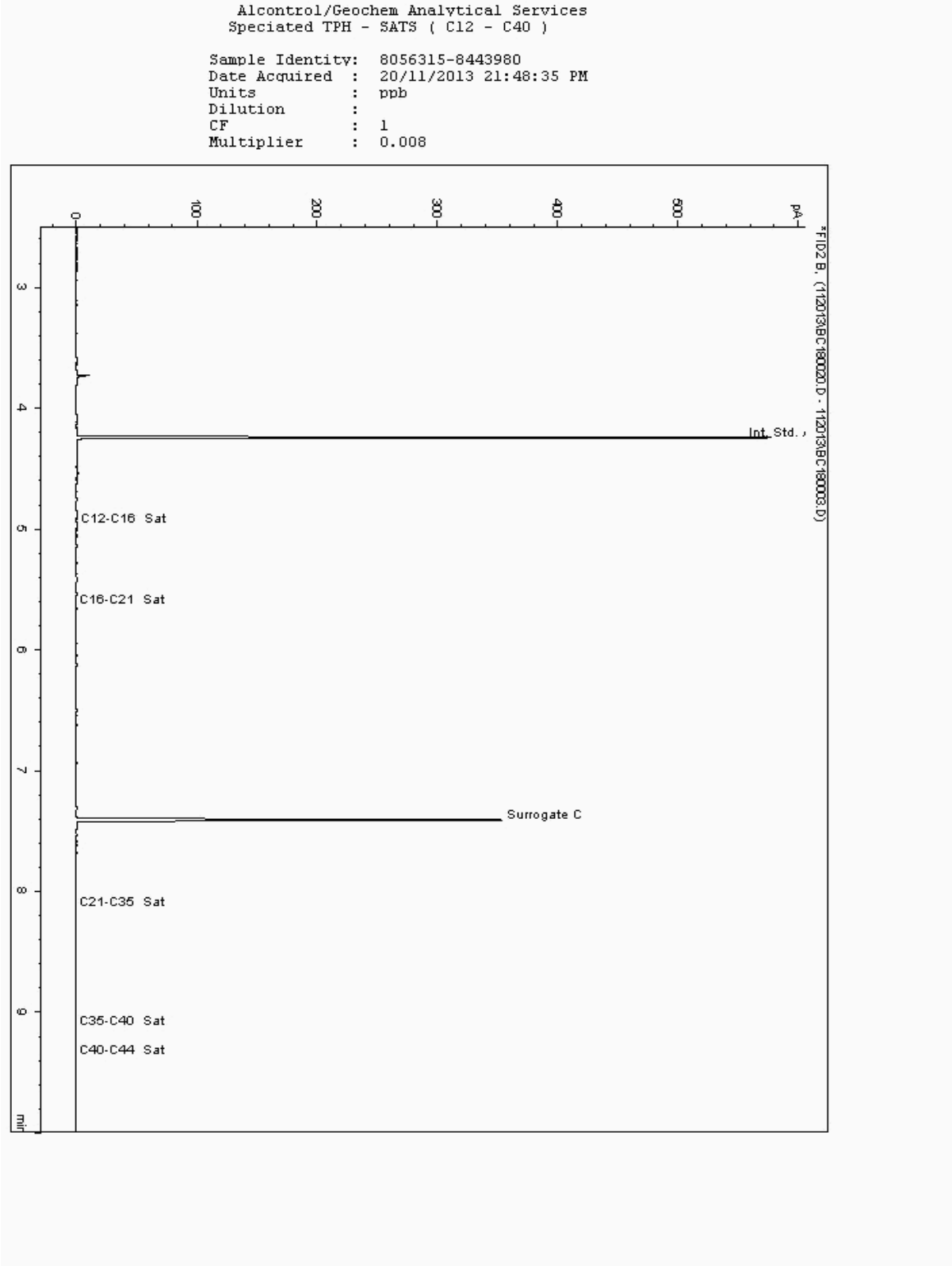


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443980 **Sample ID :** BH2 **Depth :** 1.84

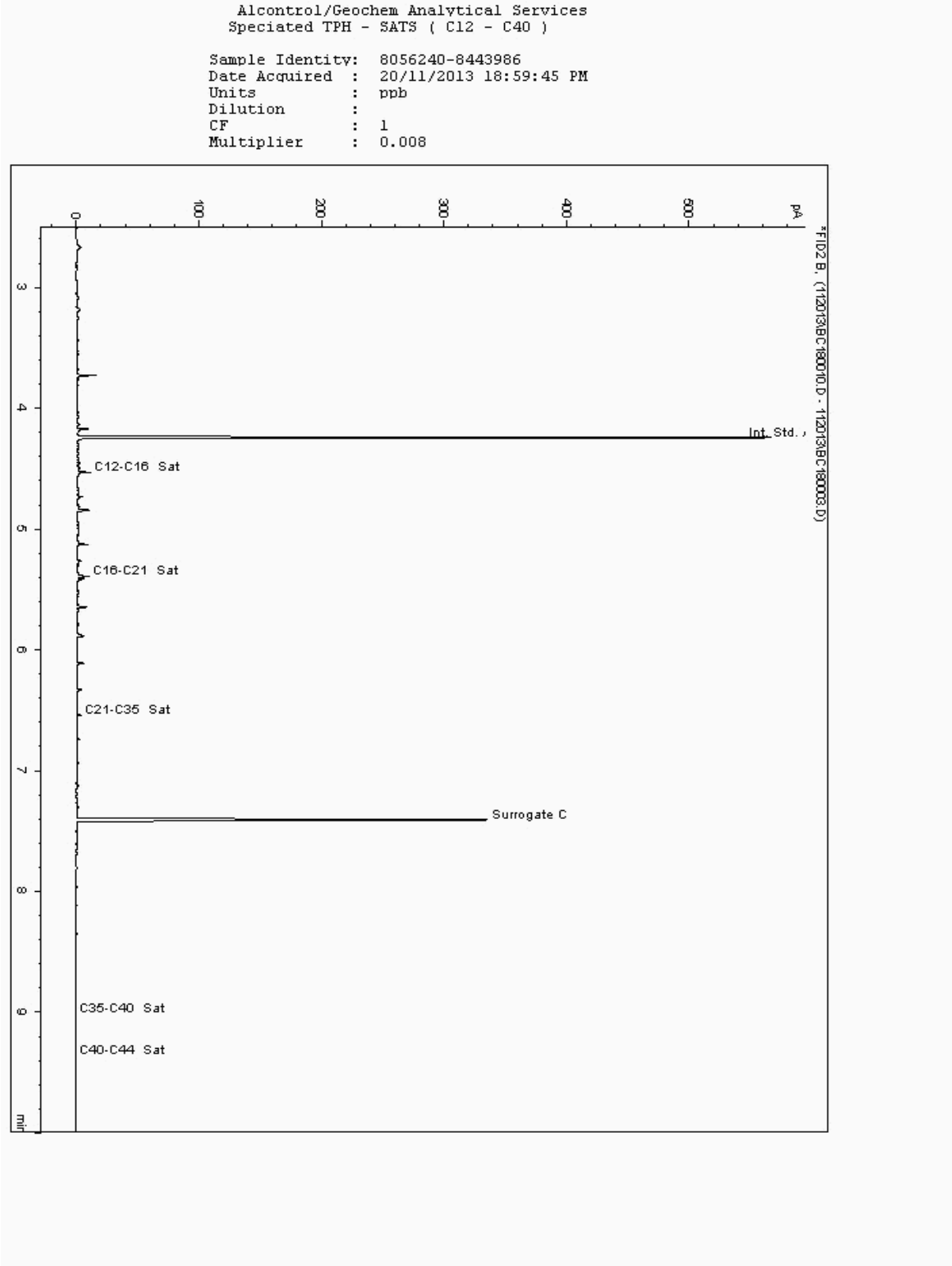


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8443986 **Sample ID :** BH1 **Depth :** 1.69

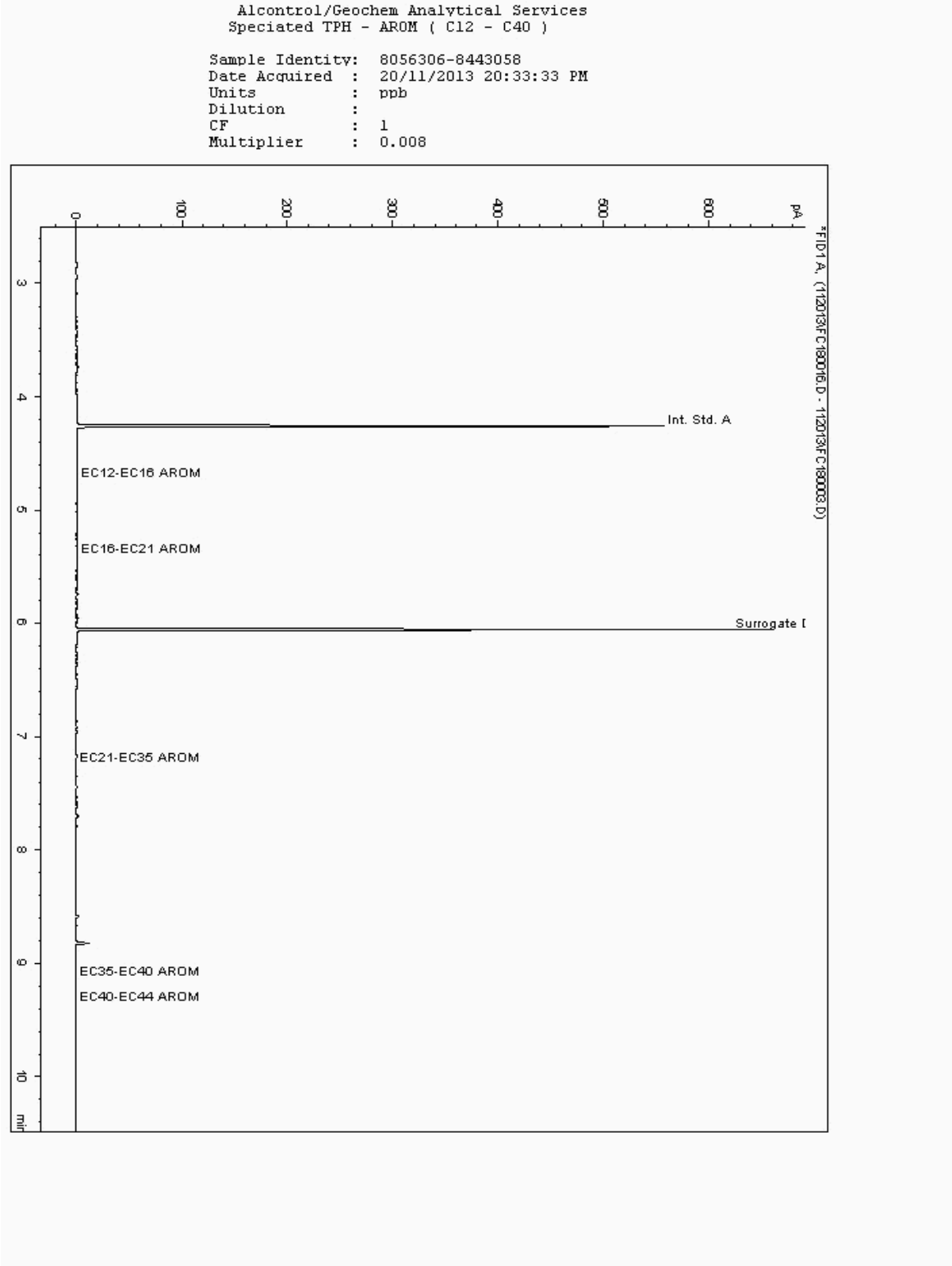


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443058 **Sample ID :** BH15 **Depth :** 2.70

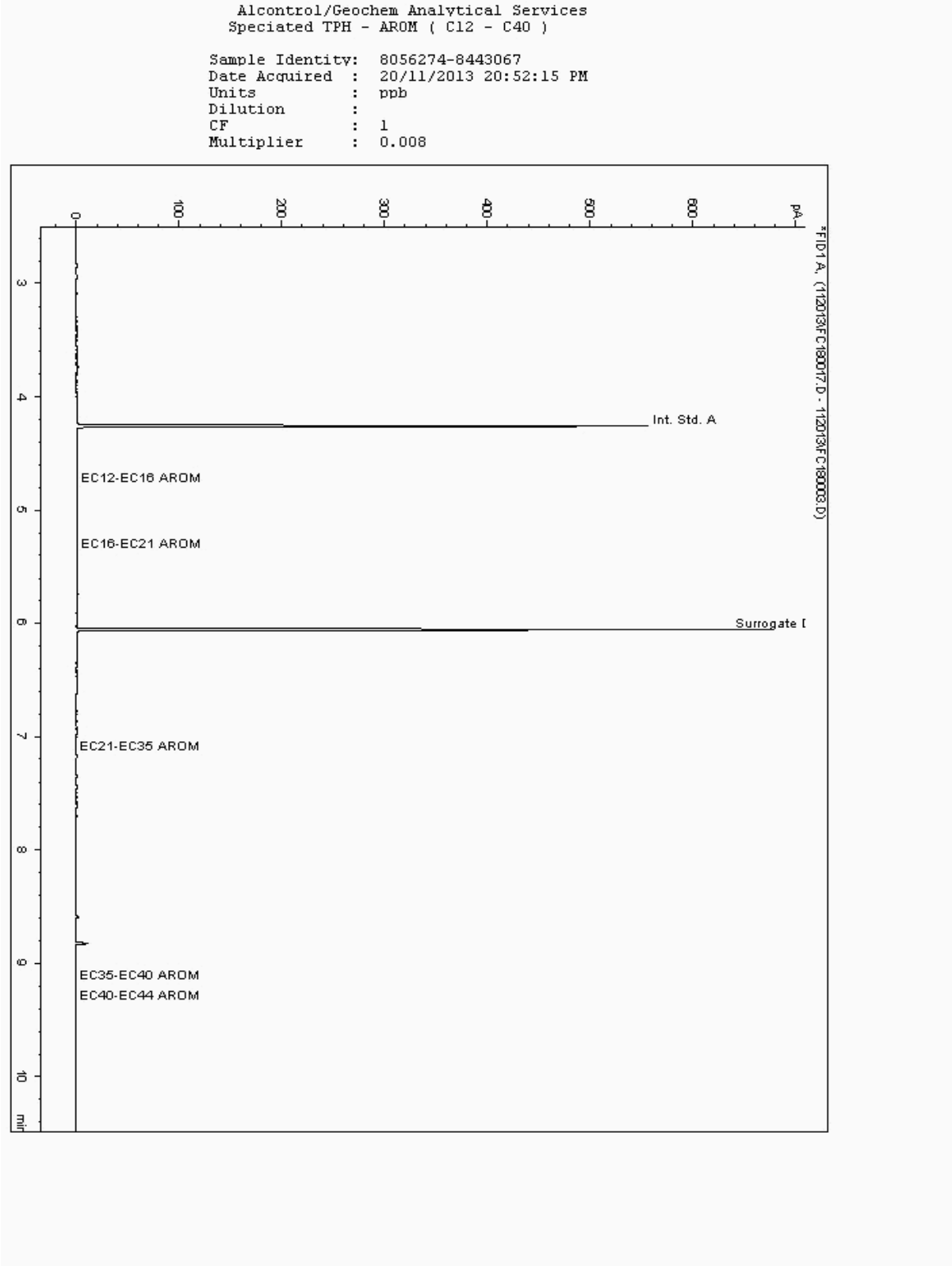


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443067 **Sample ID :** BH12 **Depth :** 2.70

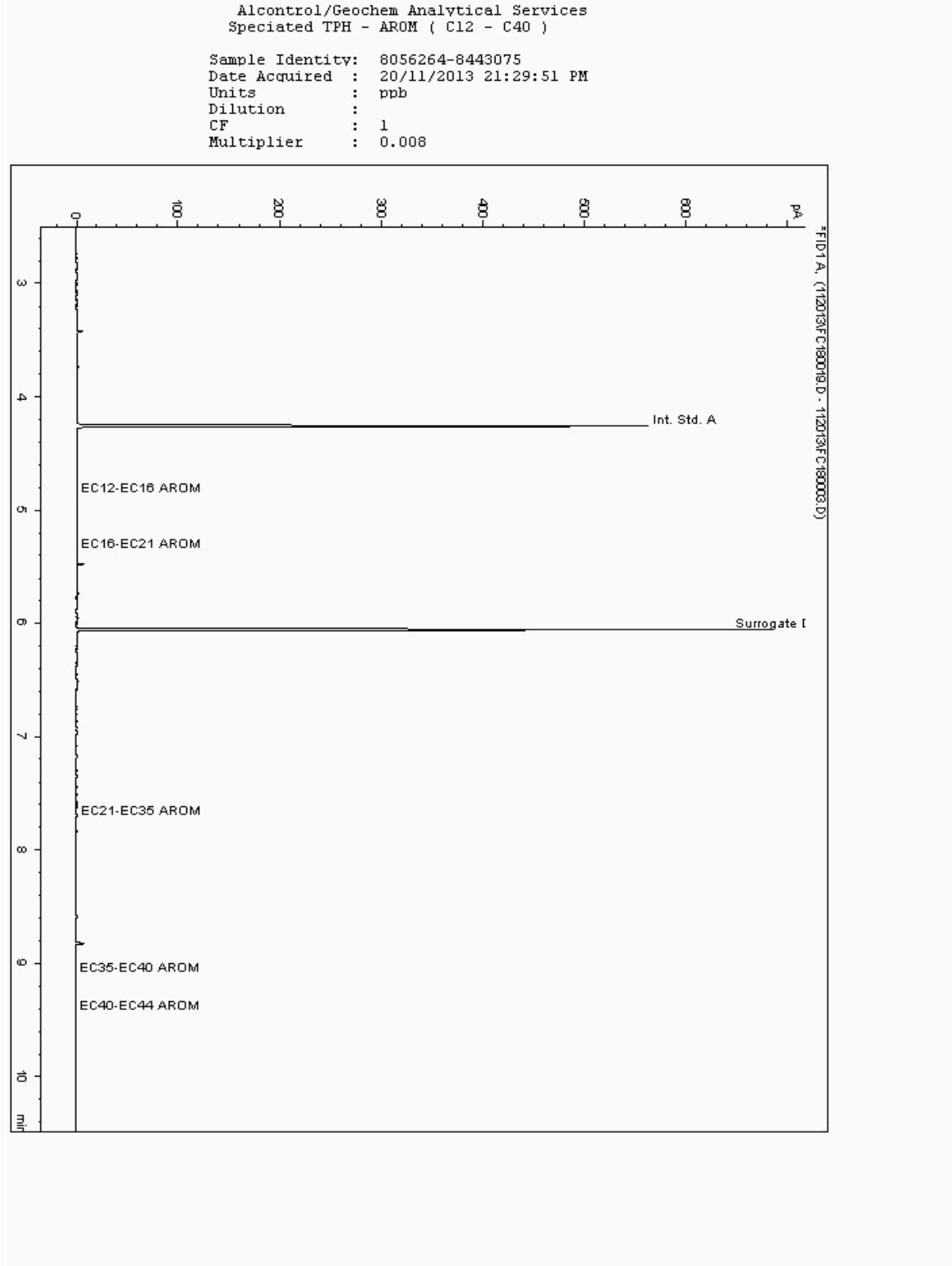


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443075 **Sample ID :** BH11 **Depth :** 2.65

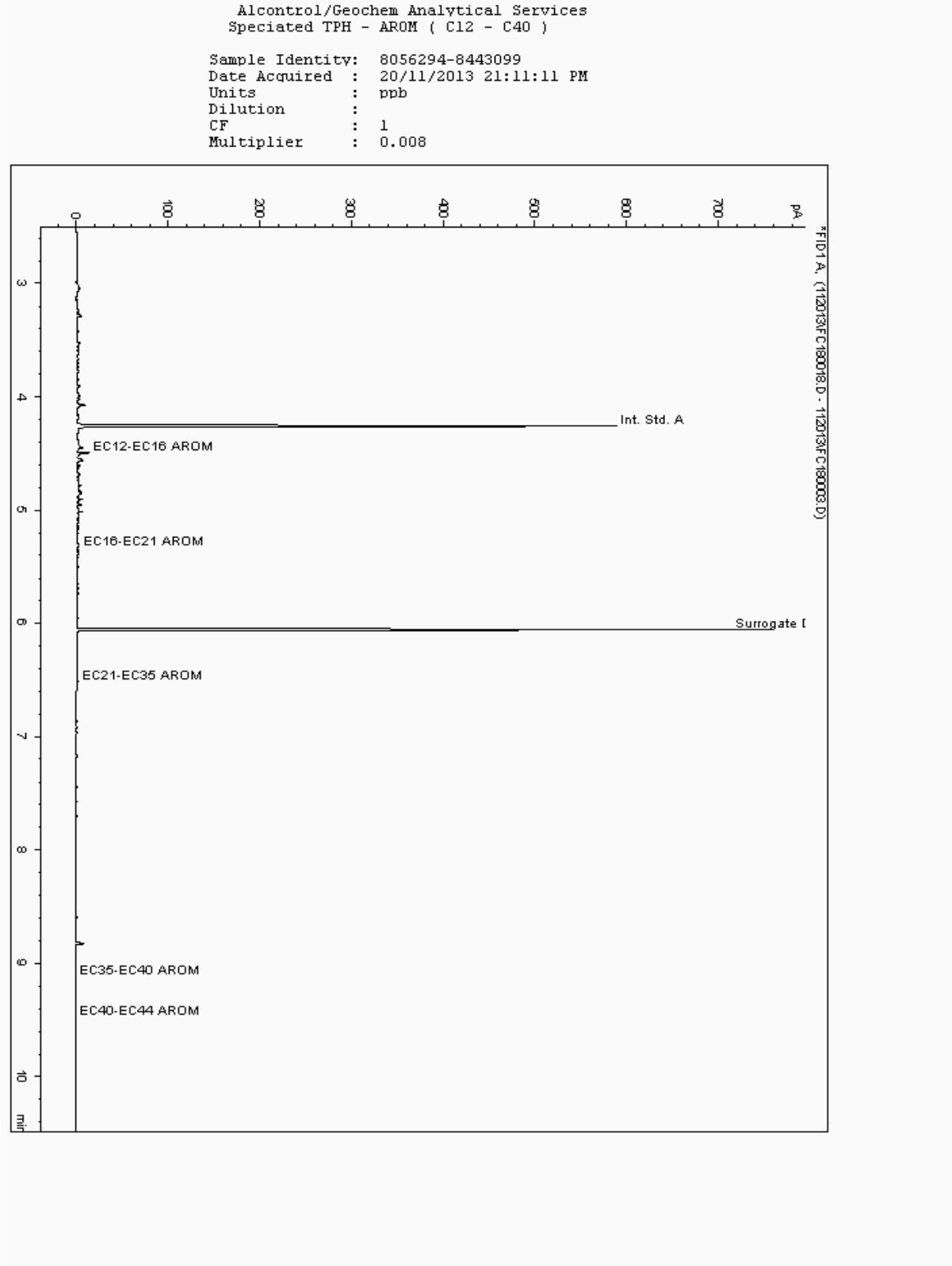


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443099 **Sample ID :** BH14 **Depth :** 2.72

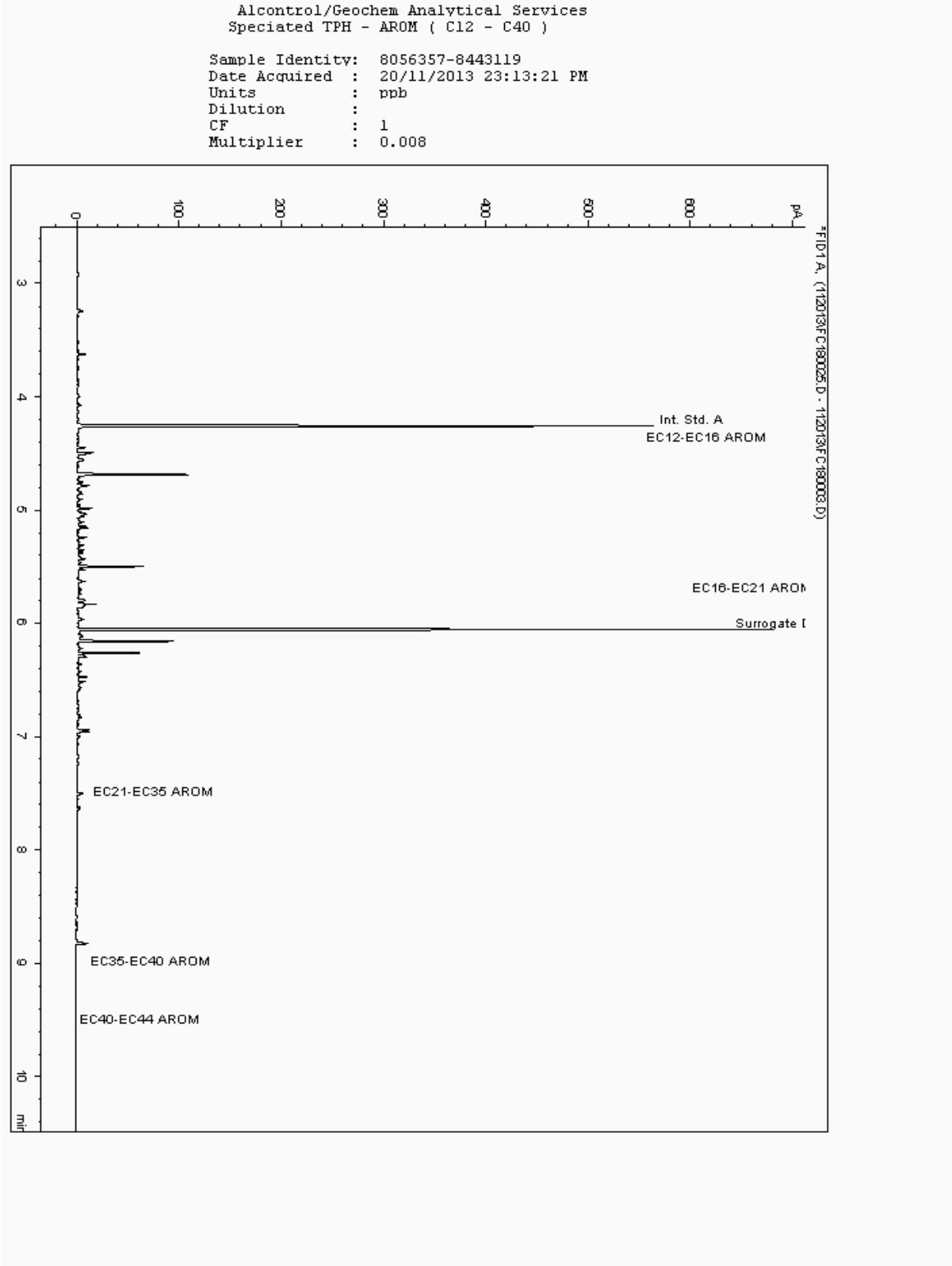


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443119 **Sample ID :** BH6 **Depth :** 2.20

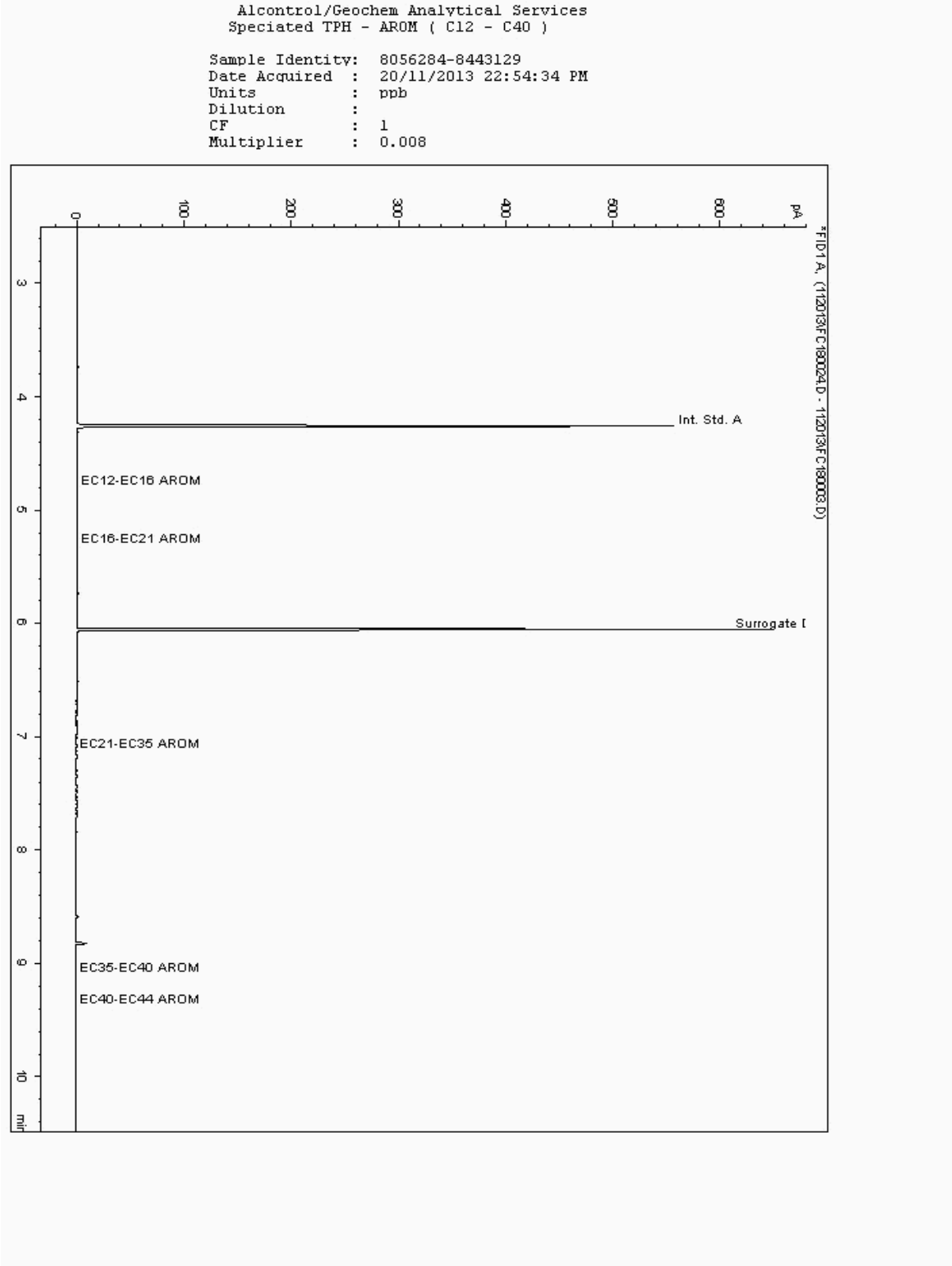


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443129 **Sample ID :** BH13 **Depth :** 2.65



CERTIFICATE OF ANALYSIS

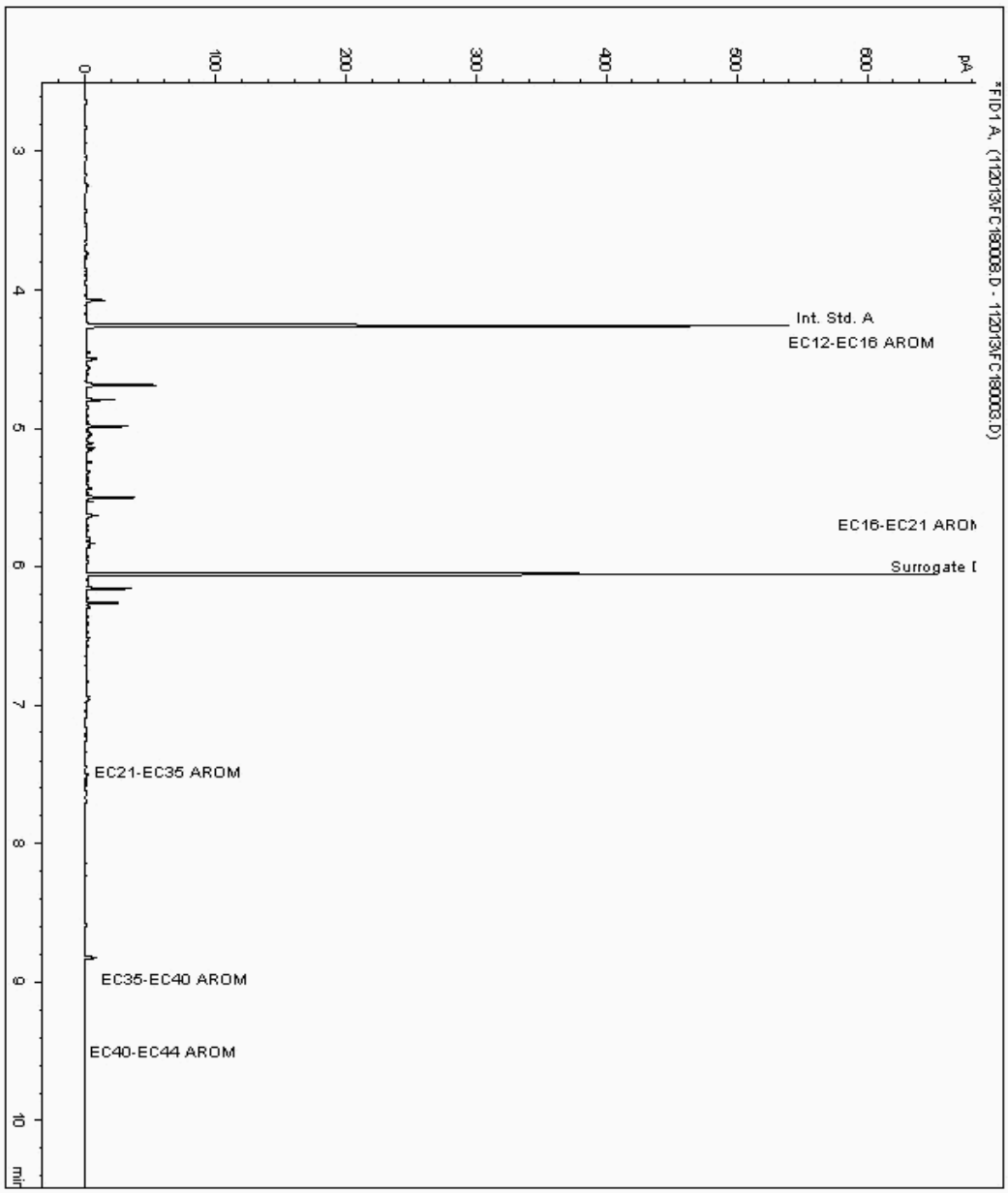
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443137 **Sample ID :** BH9 **Depth :** 3.15

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

Sample Identity: 8056398-8443137
Date Acquired : 20/11/2013 18:22:08 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

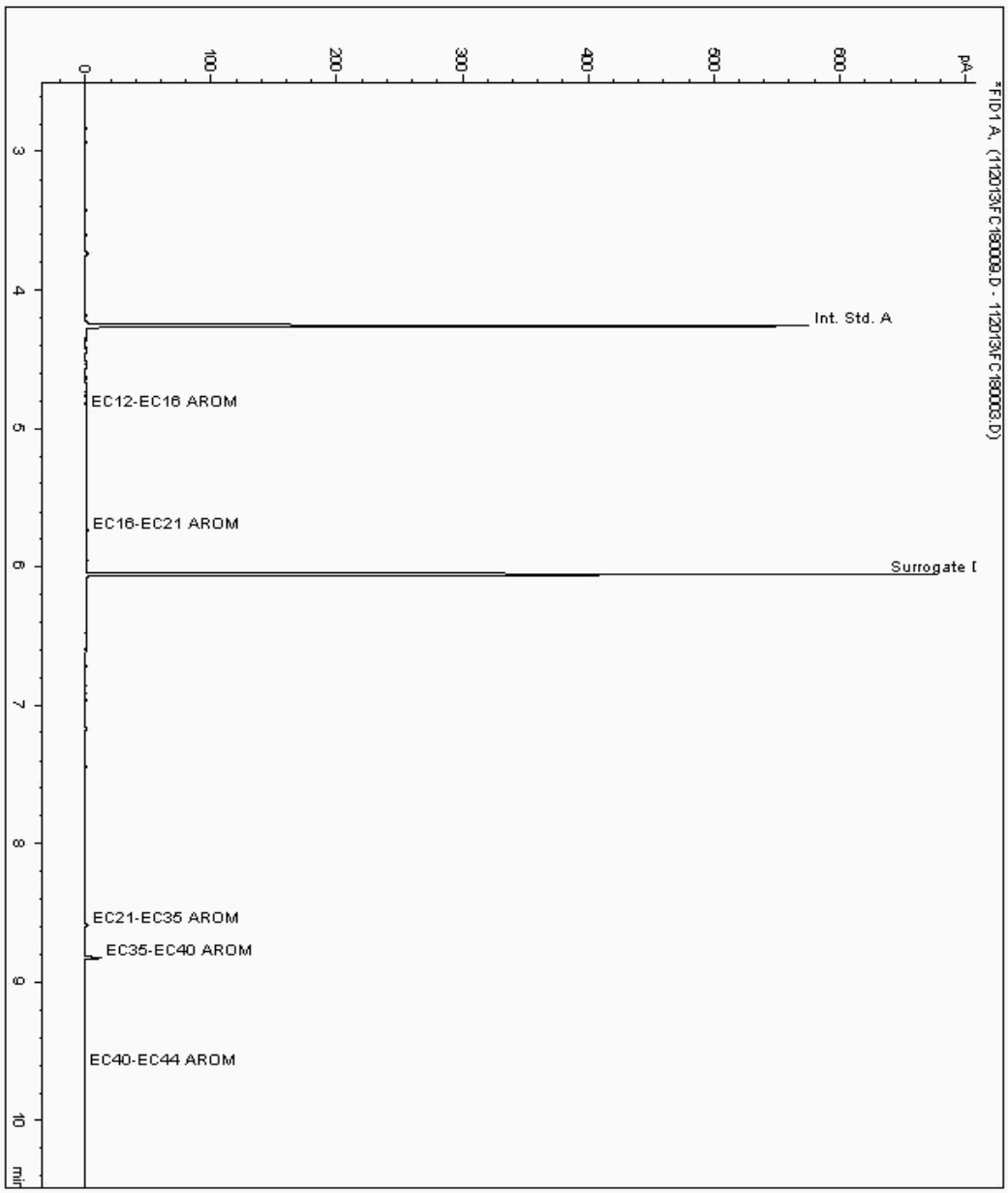
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443149 **Sample ID :** BH8 **Depth :** 3.10

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

Sample Identity: 8056388-8443149
Date Acquired : 20/11/2013 18:41:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

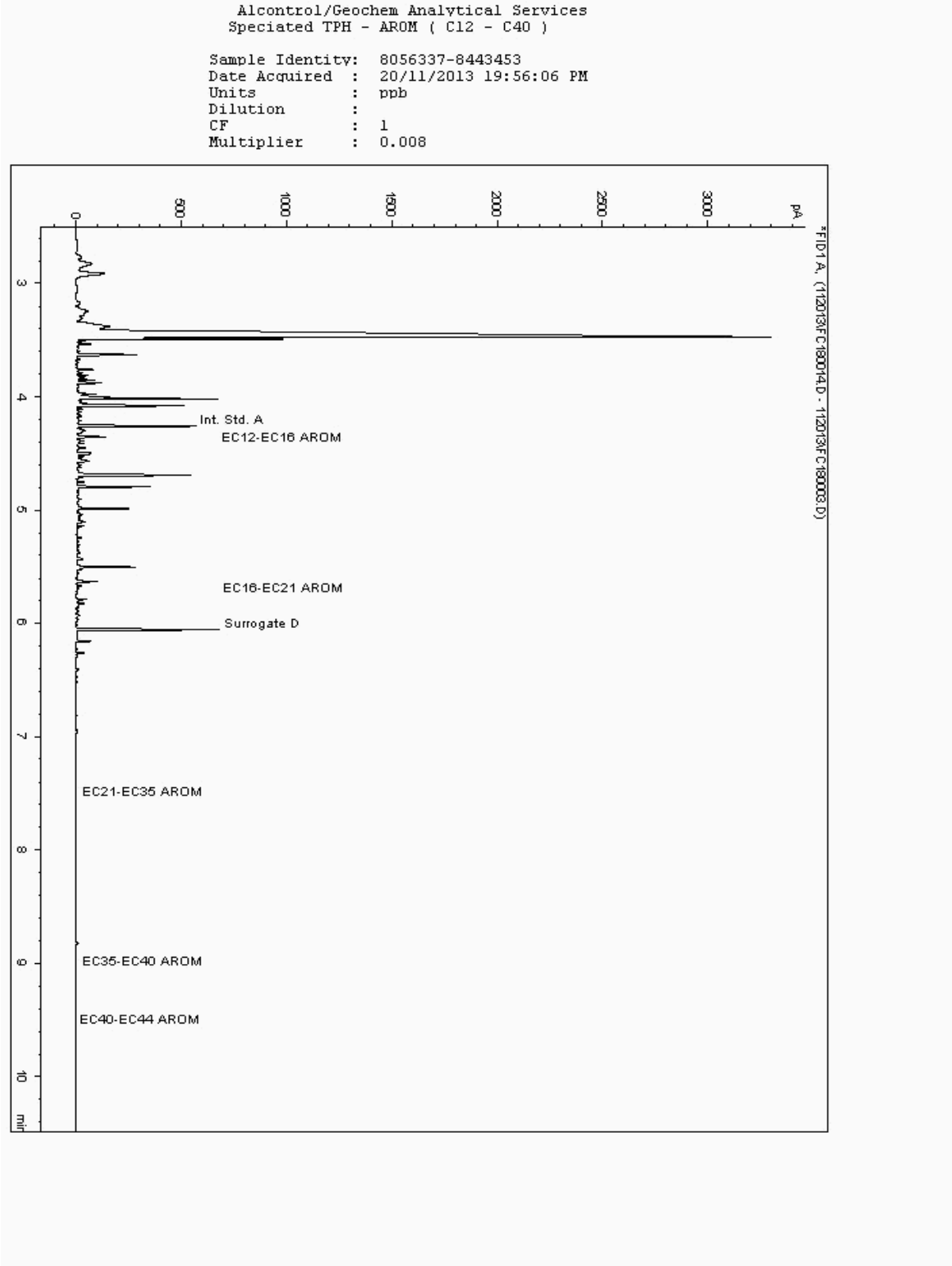


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443453 **Sample ID :** BH4 **Depth :** 2.16

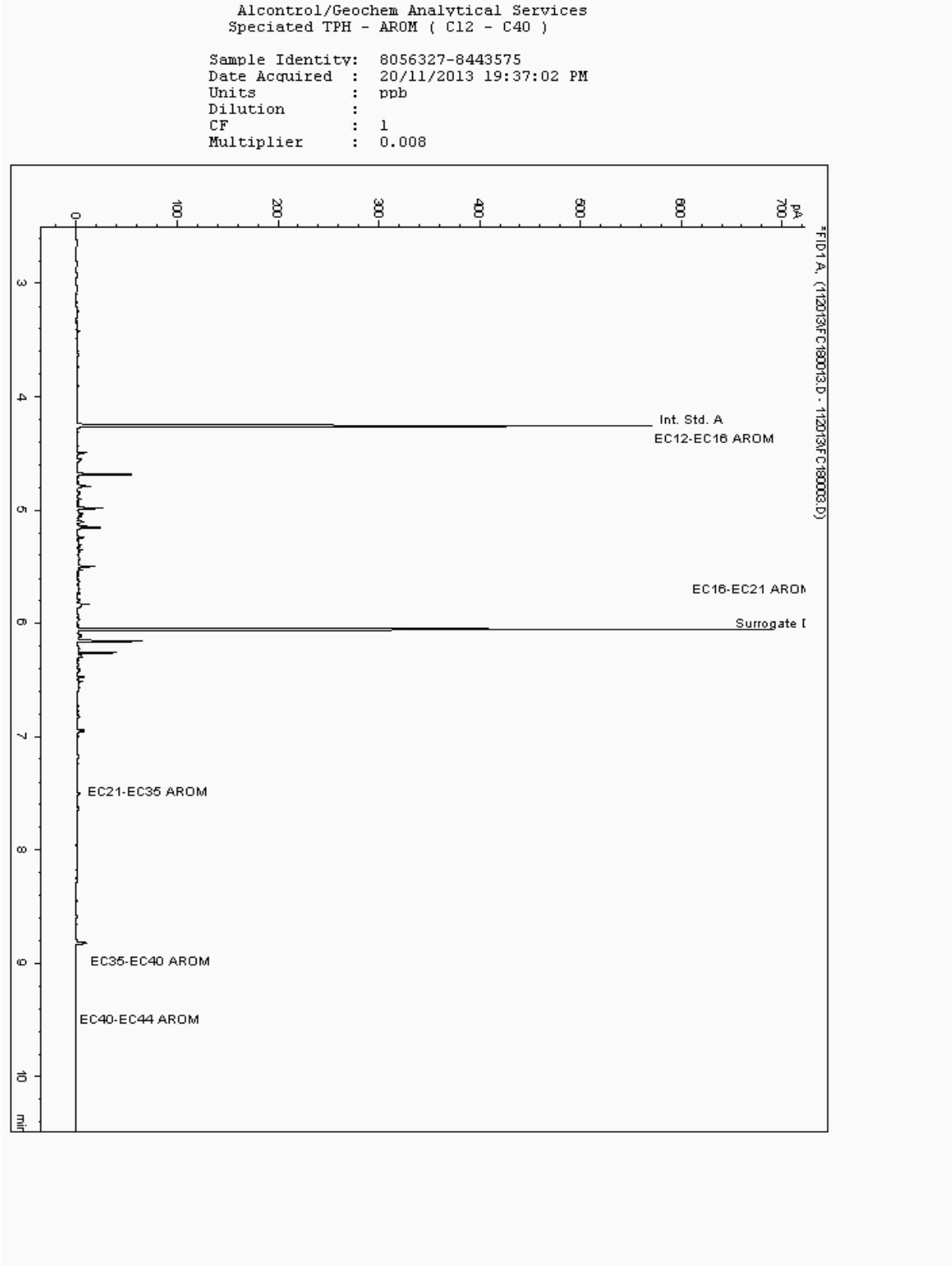


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443575 **Sample ID :** BH3 **Depth :** 2.28



CERTIFICATE OF ANALYSIS

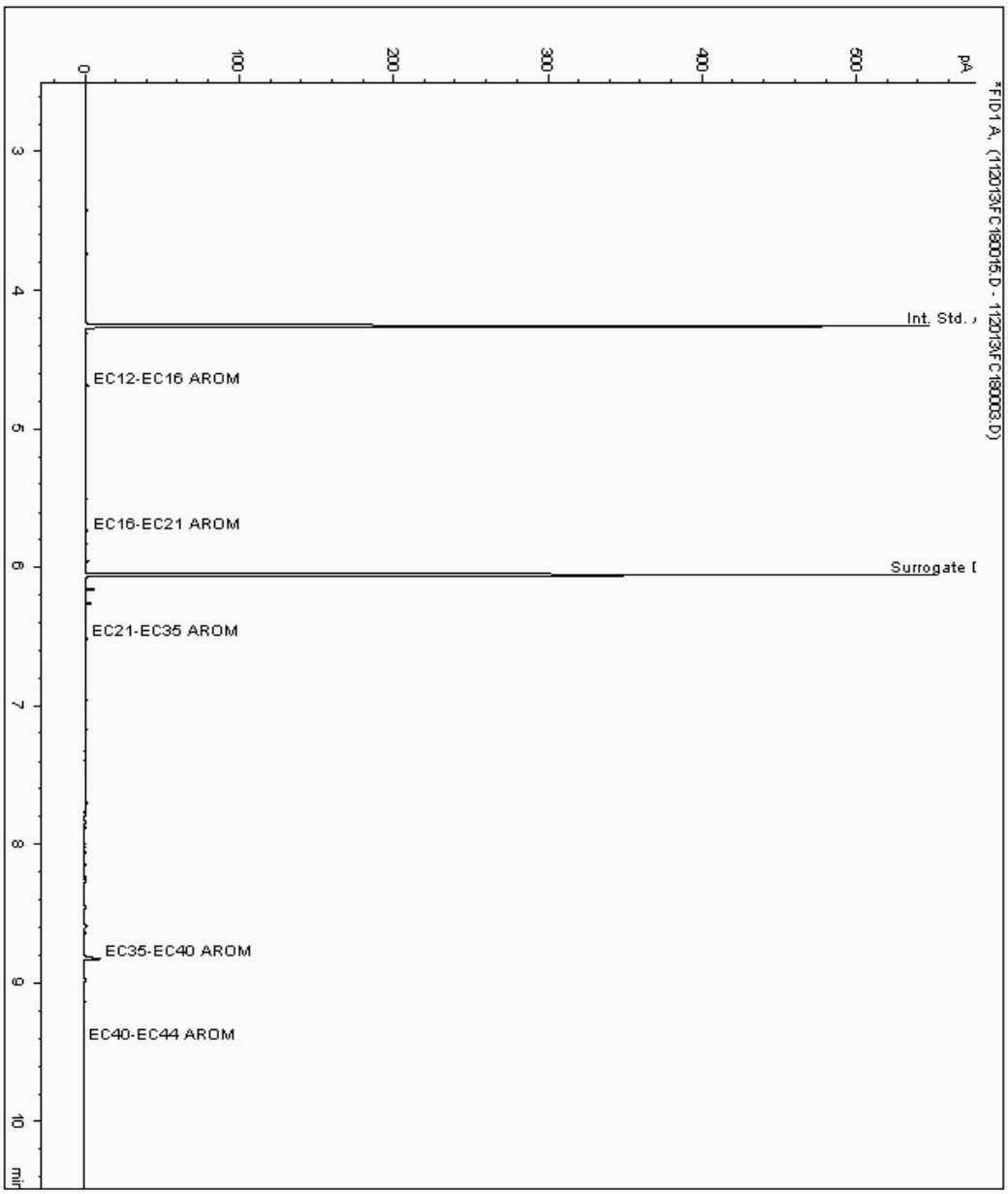
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443673 **Sample ID :** BH7 **Depth :** 2.93

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

Sample Identity: 8056373-8443673
Date Acquired : 20/11/2013 20:14:50 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

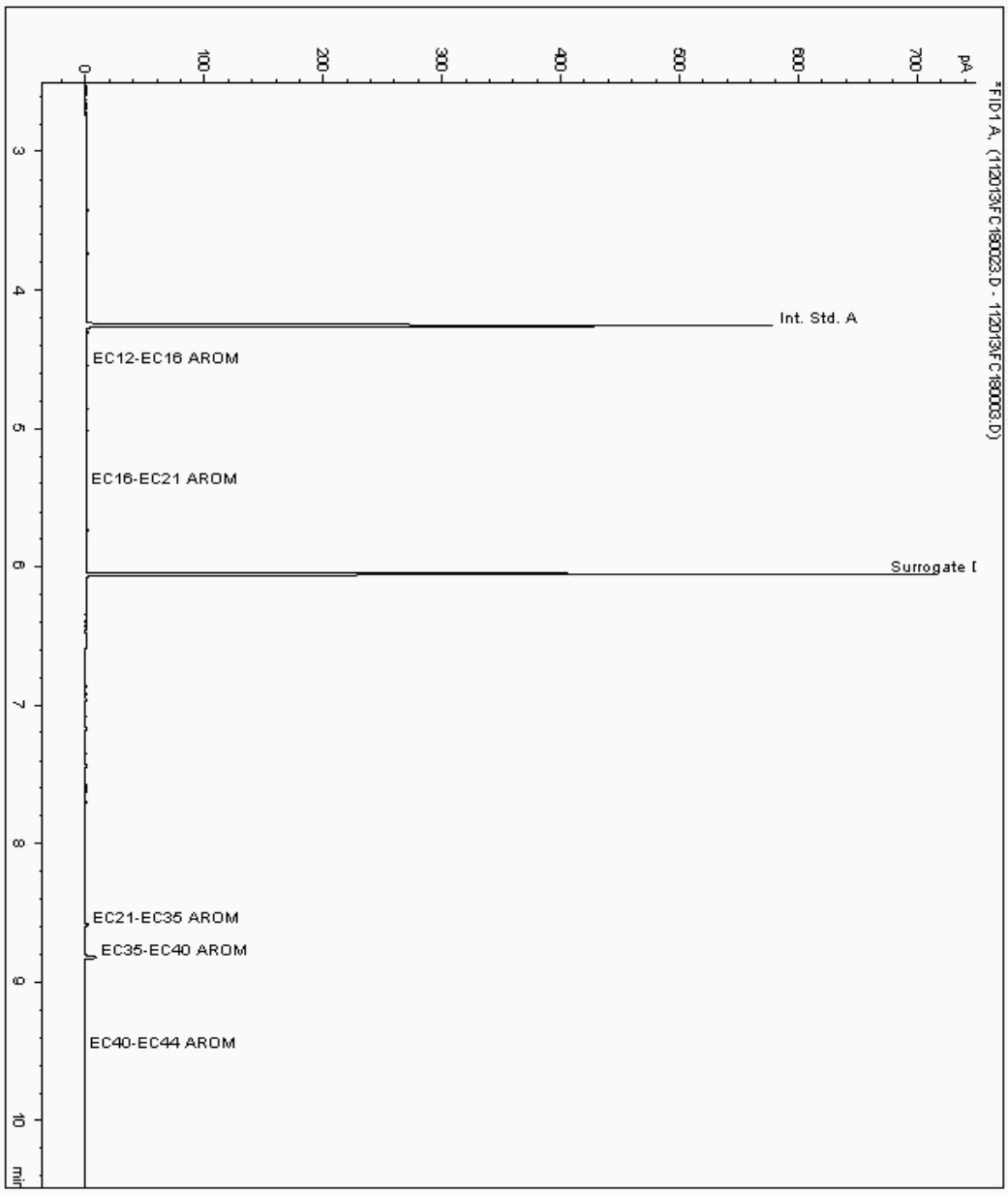
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443742 **Sample ID :** BH10 **Depth :** 2.98

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

Sample Identity: 8056254-8443742
Date Acquired : 20/11/2013 22:35:44 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

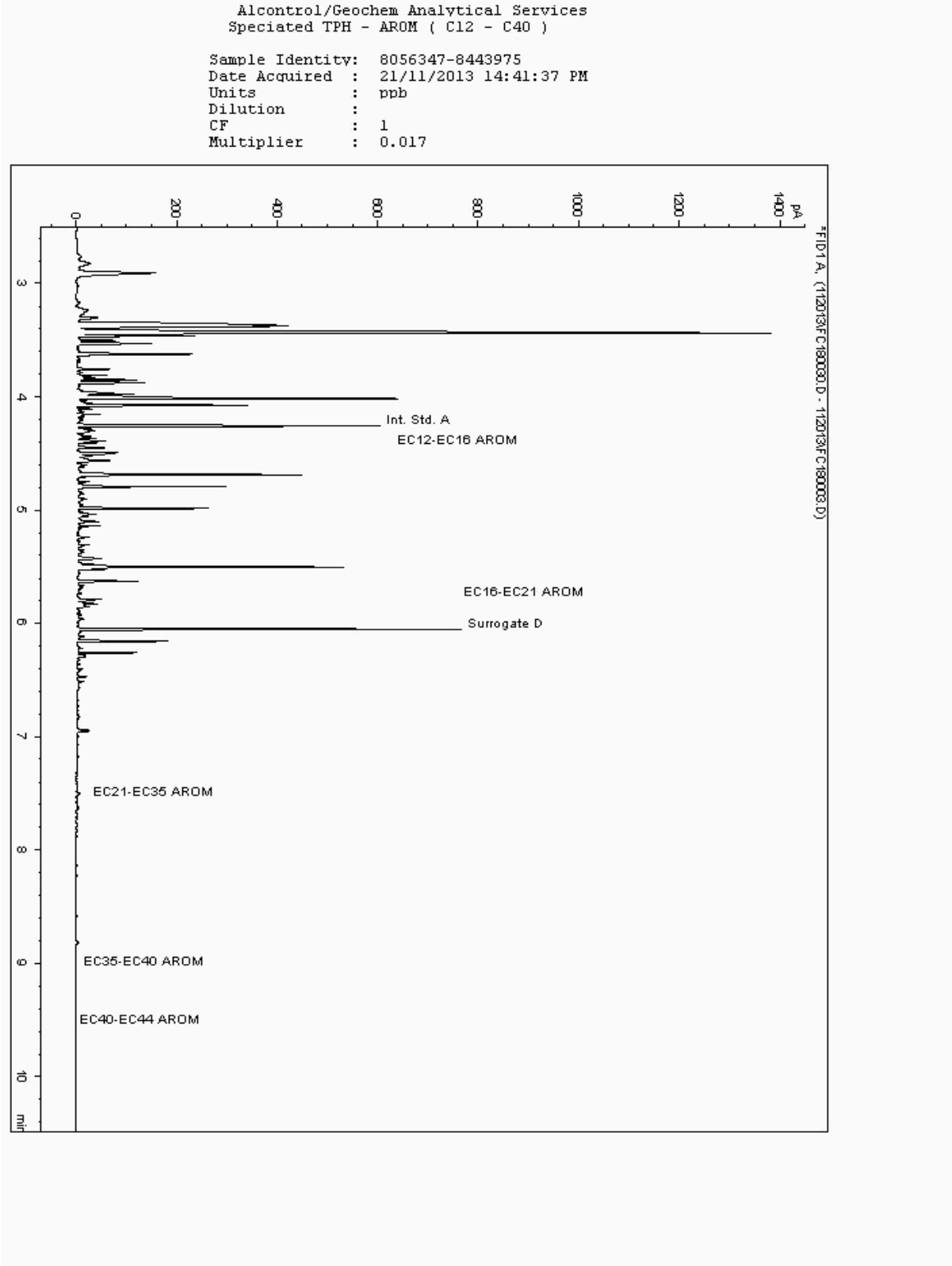


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443975 **Sample ID :** BH5 **Depth :** 2.12

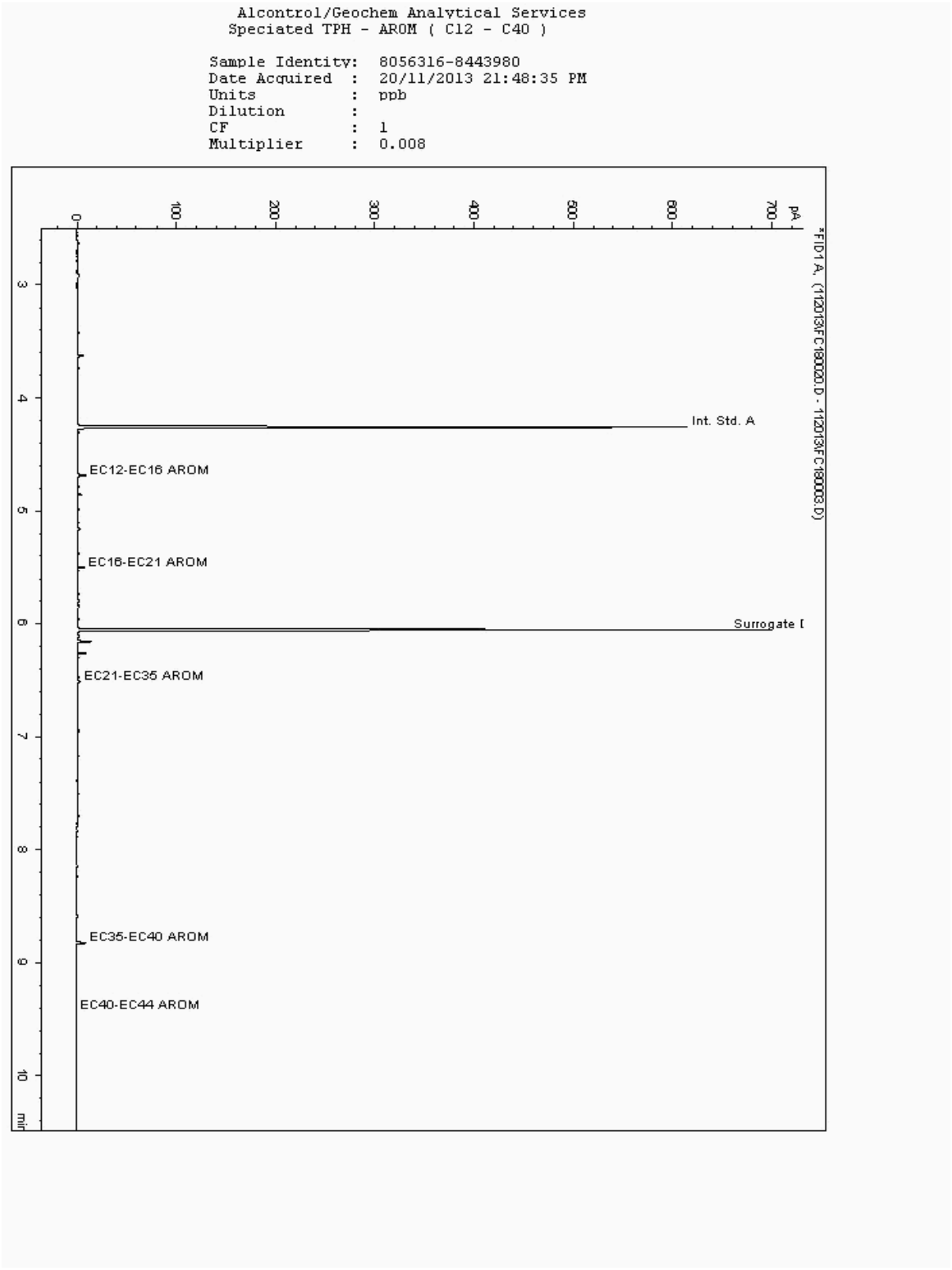


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443980 **Sample ID :** BH2 **Depth :** 1.84

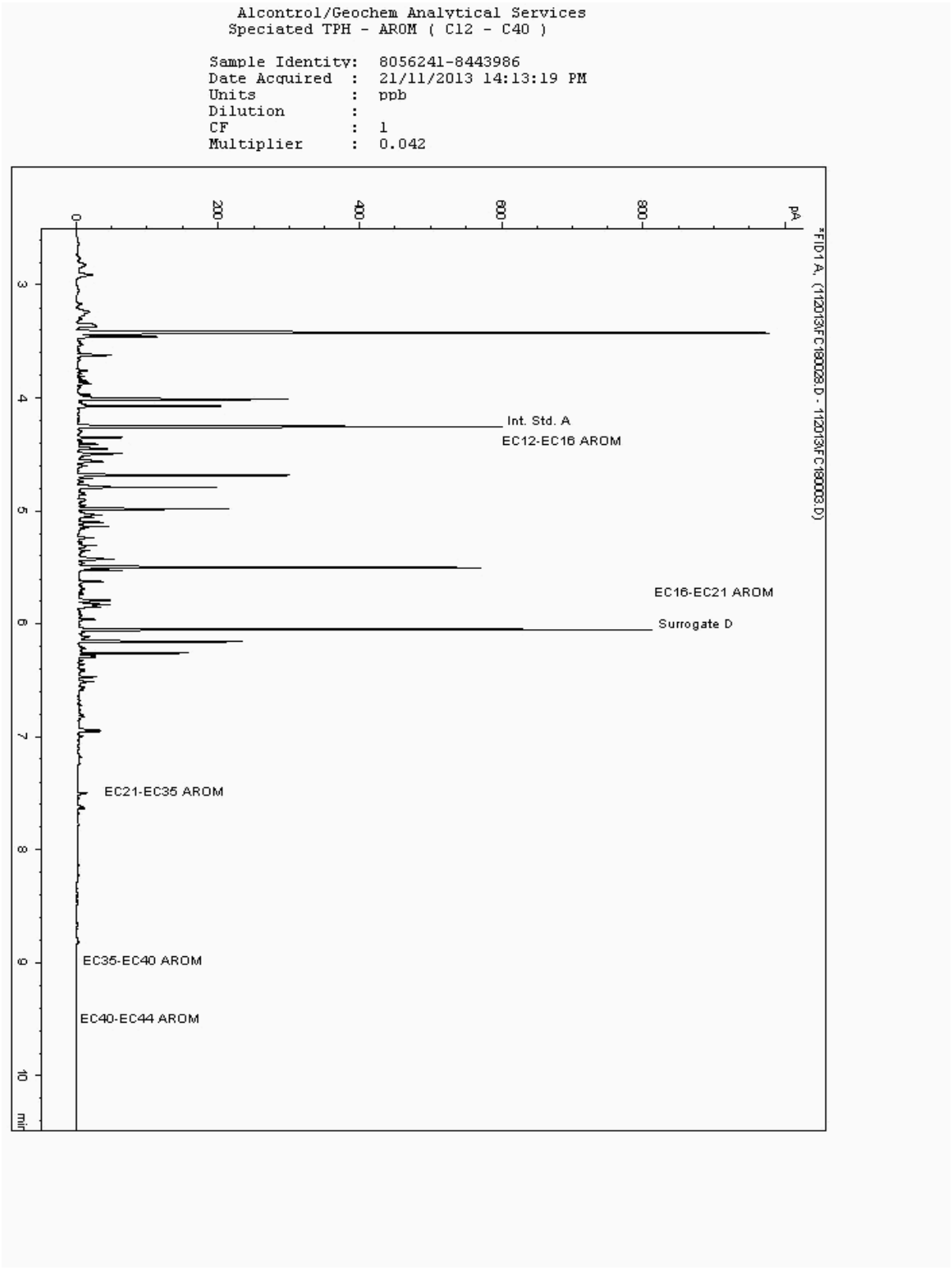


CERTIFICATE OF ANALYSIS

SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8443986 **Sample ID :** BH1 **Depth :** 1.69



CERTIFICATE OF ANALYSIS

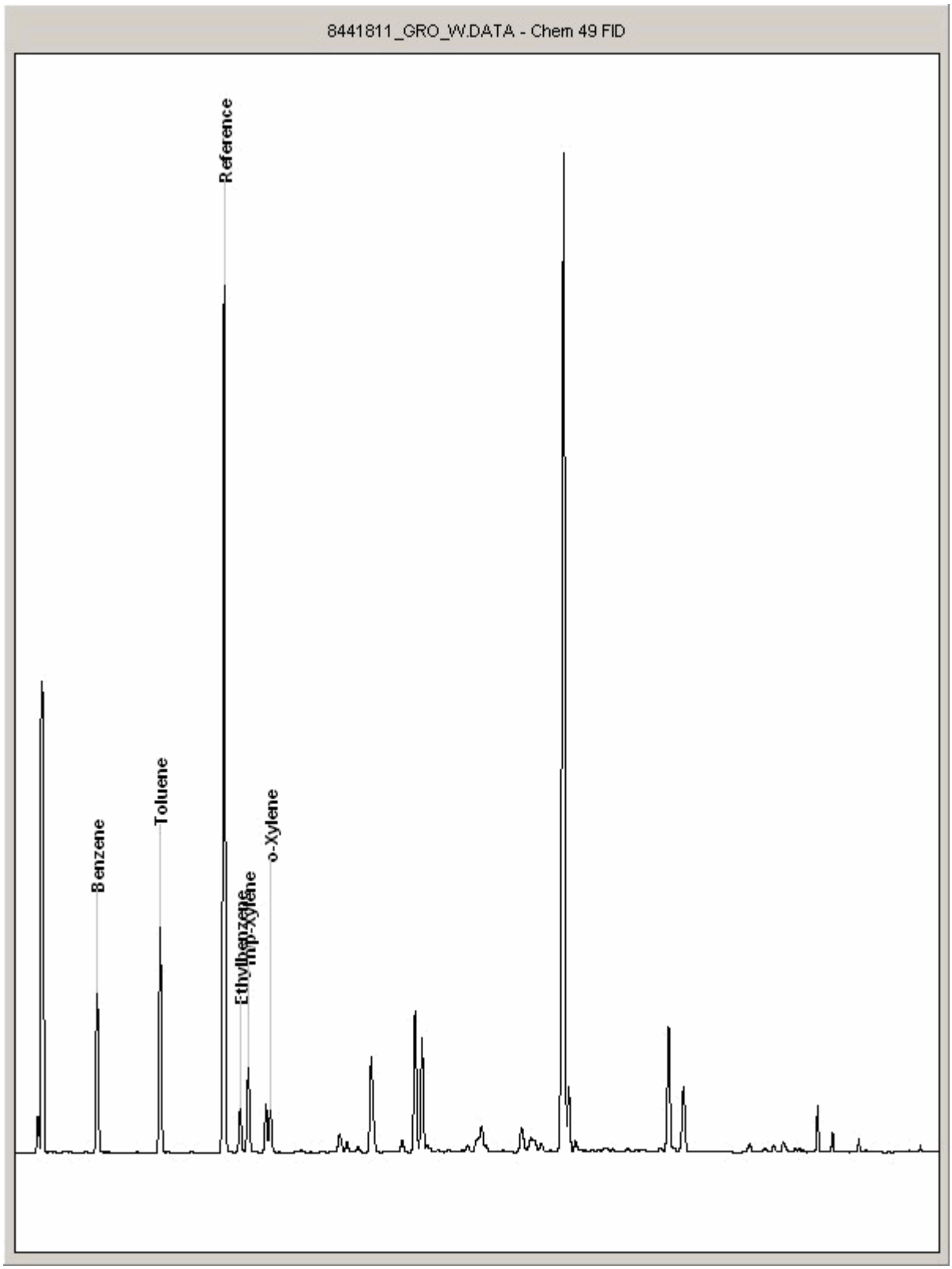
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441811
Sample ID : BH5

Depth : 2.12



CERTIFICATE OF ANALYSIS

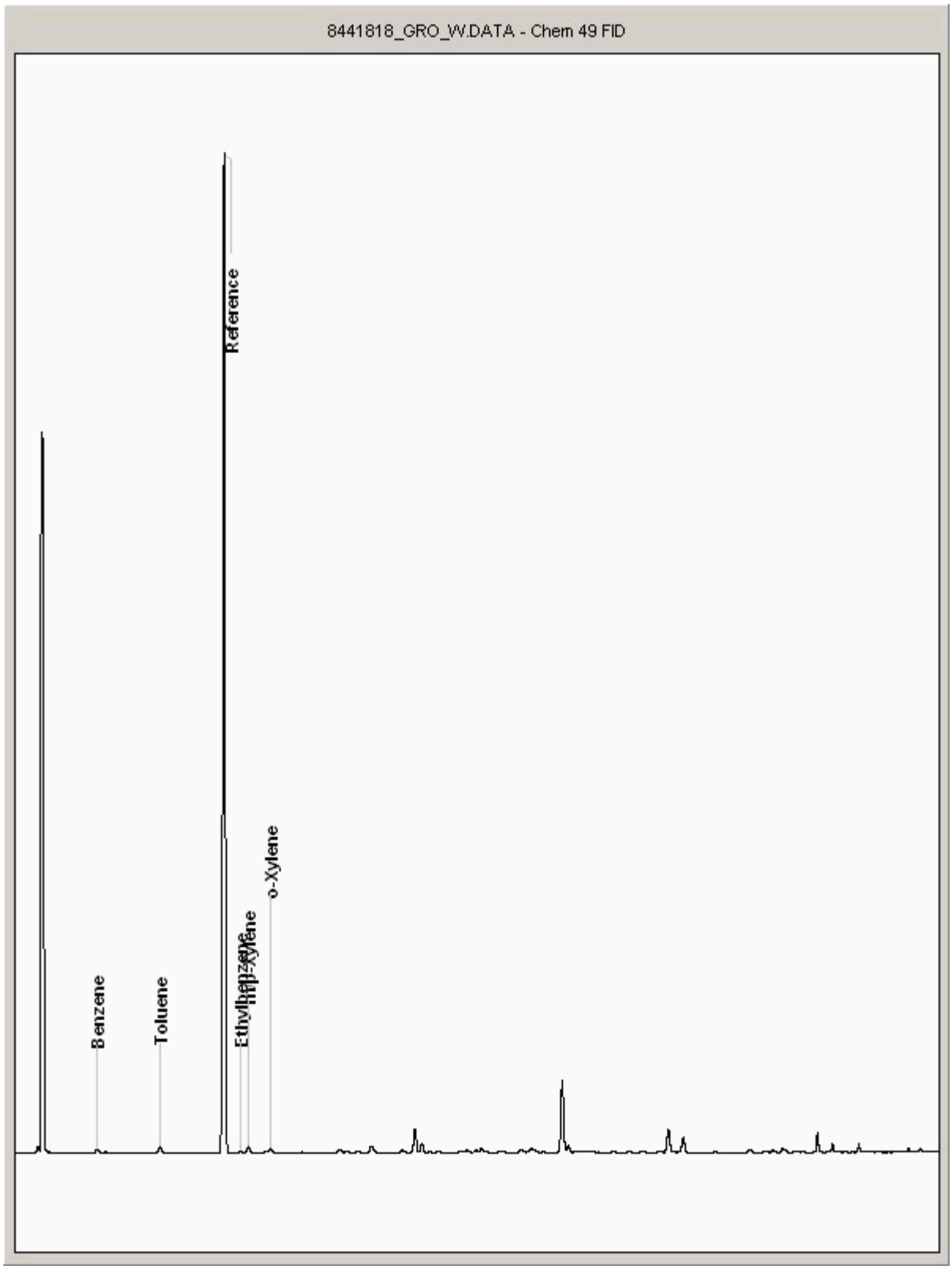
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441818
Sample ID : BH6

Depth : 2.20



CERTIFICATE OF ANALYSIS

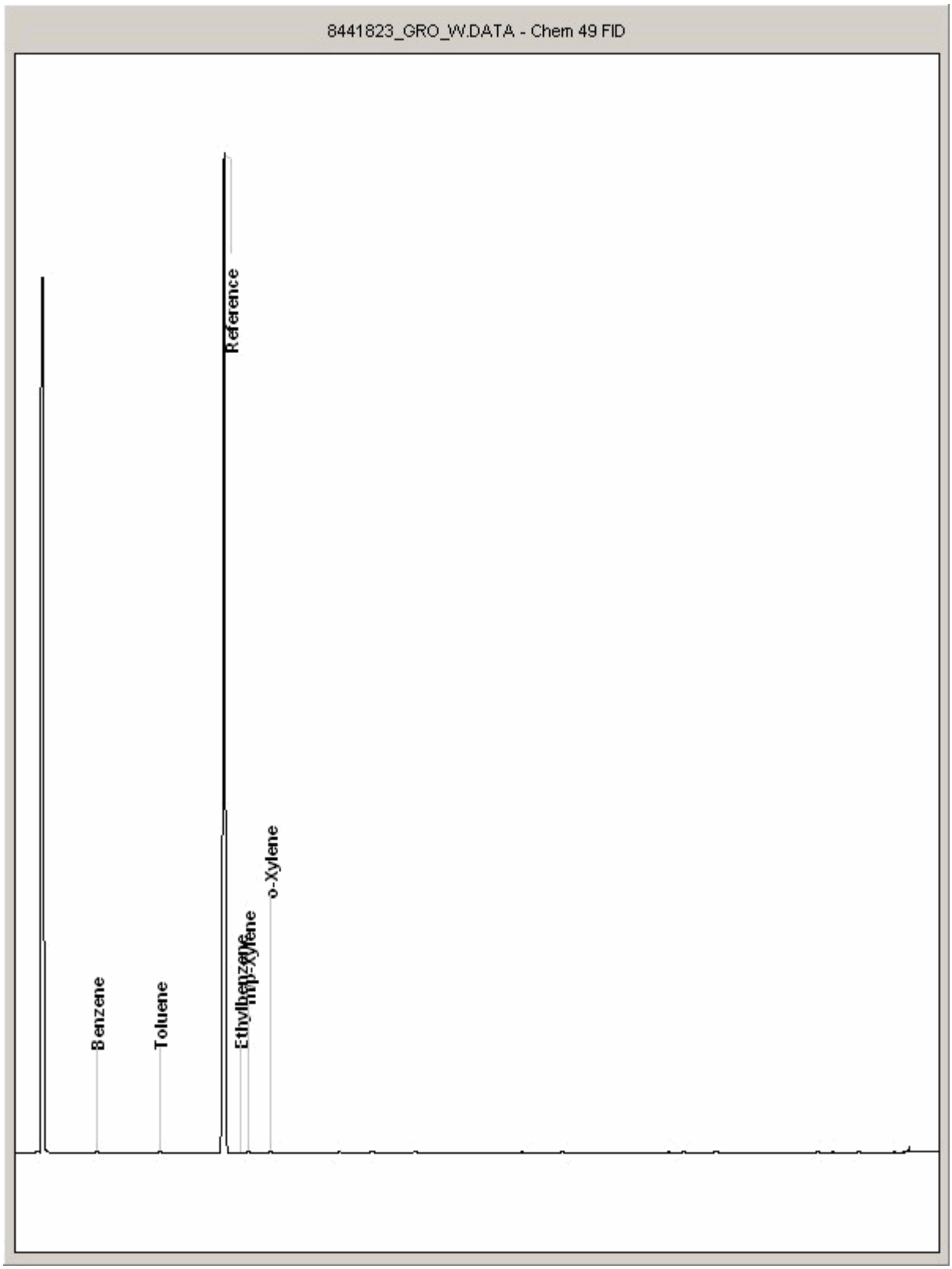
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441823
Sample ID : BH7

Depth : 2.93



CERTIFICATE OF ANALYSIS

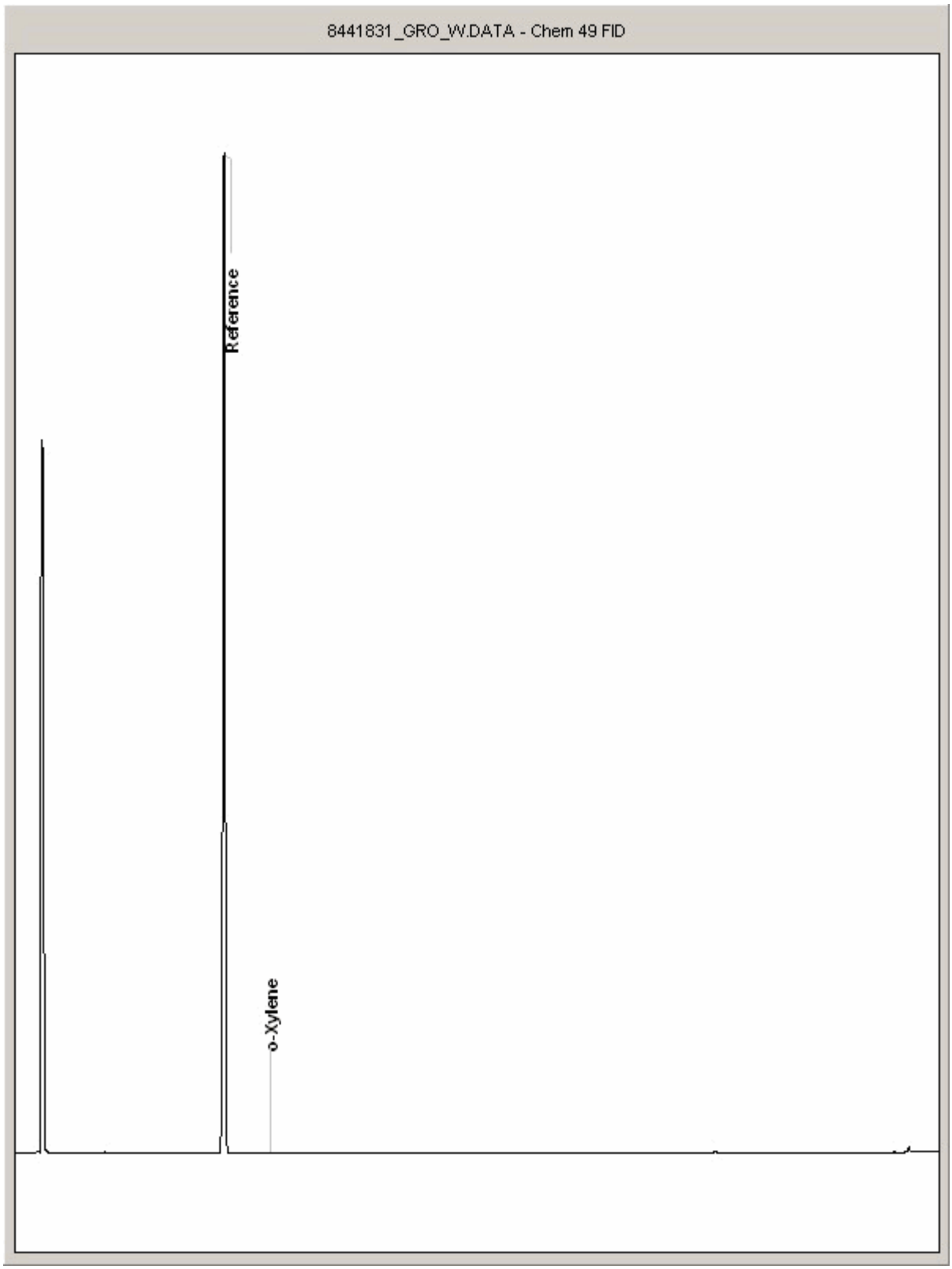
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441831
Sample ID : BH8

Depth : 3.10



CERTIFICATE OF ANALYSIS

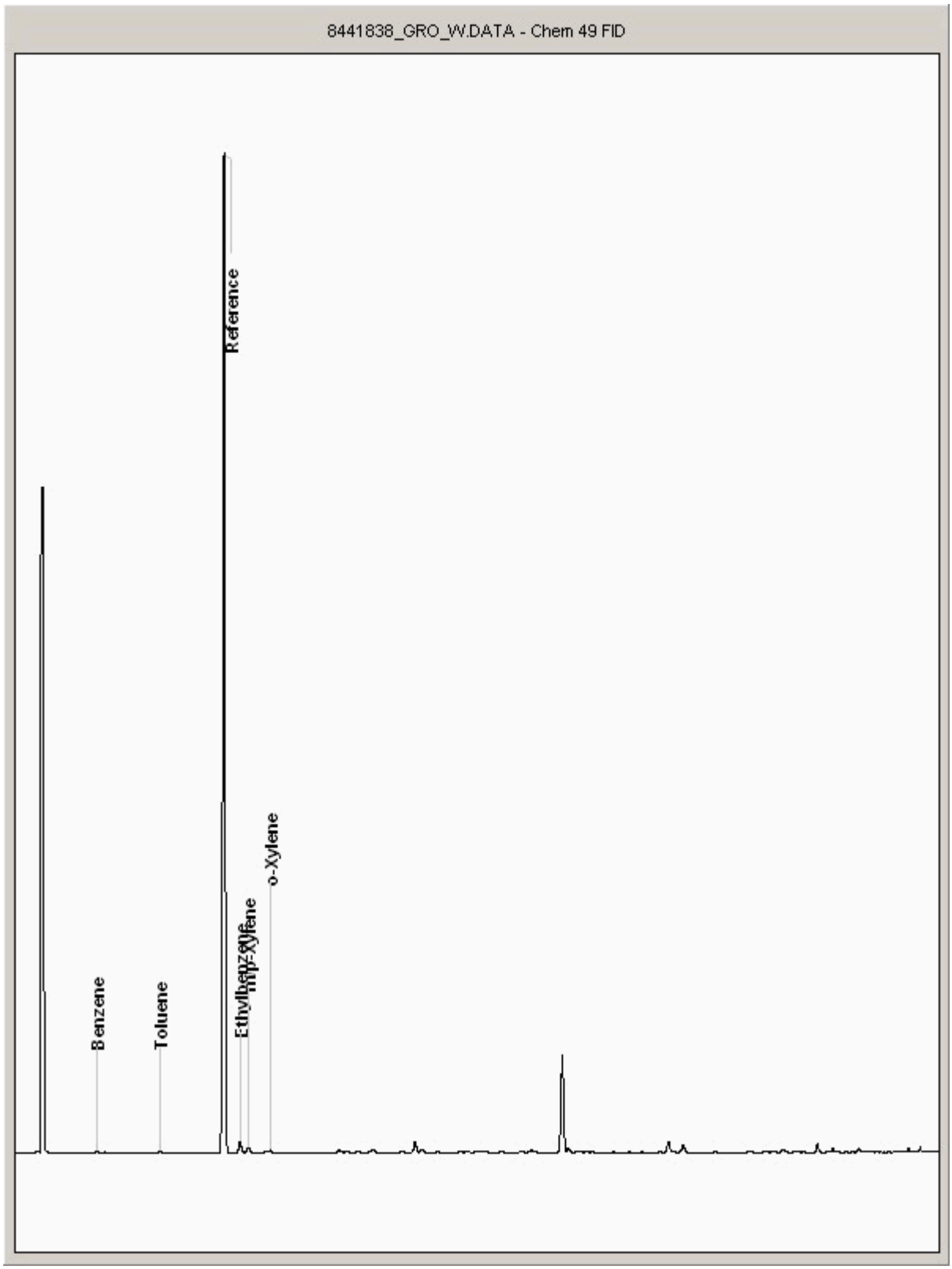
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441838
Sample ID : BH9

Depth : 3.15



CERTIFICATE OF ANALYSIS

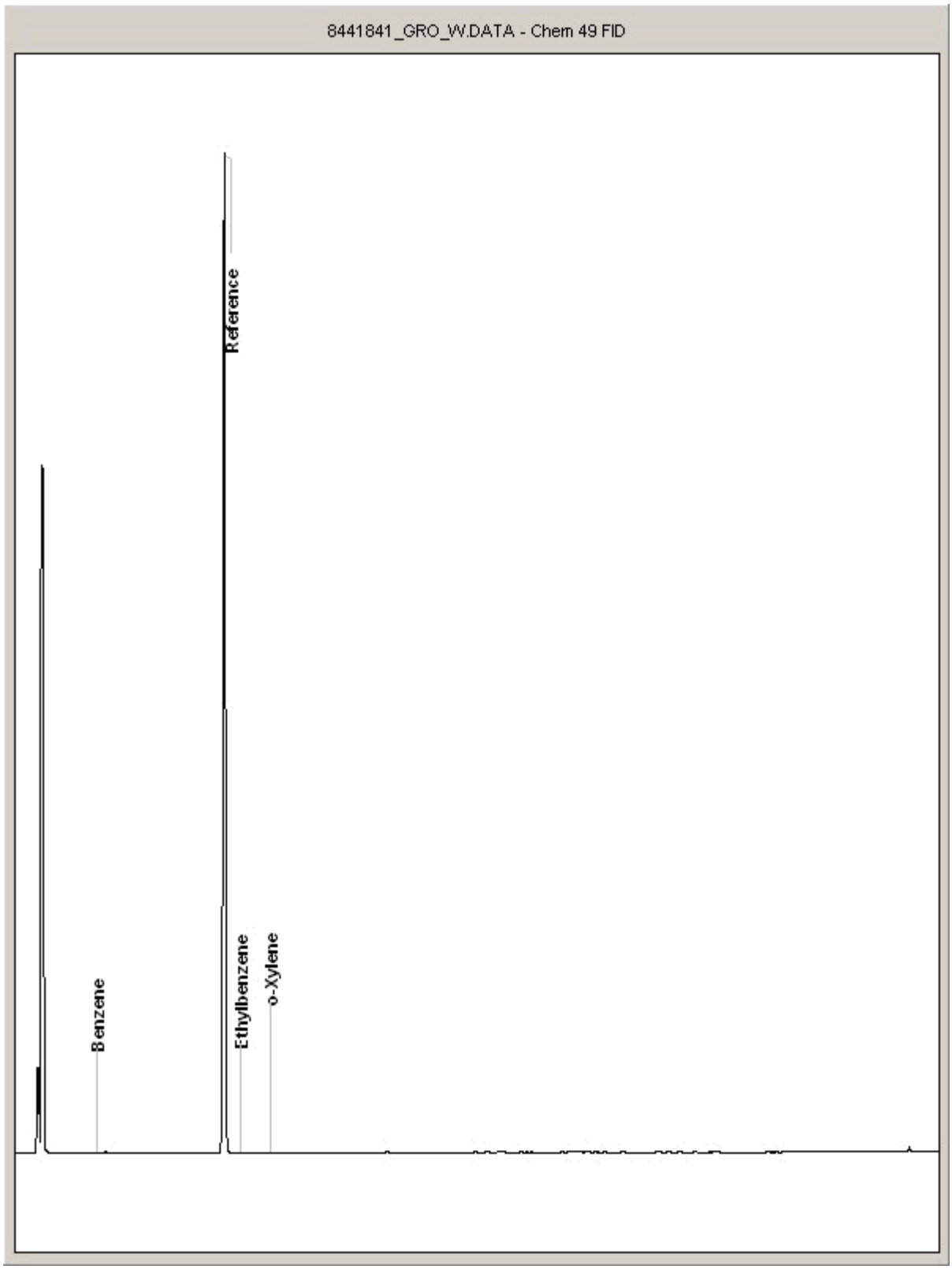
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441841
Sample ID : BH10

Depth : 2.98



CERTIFICATE OF ANALYSIS

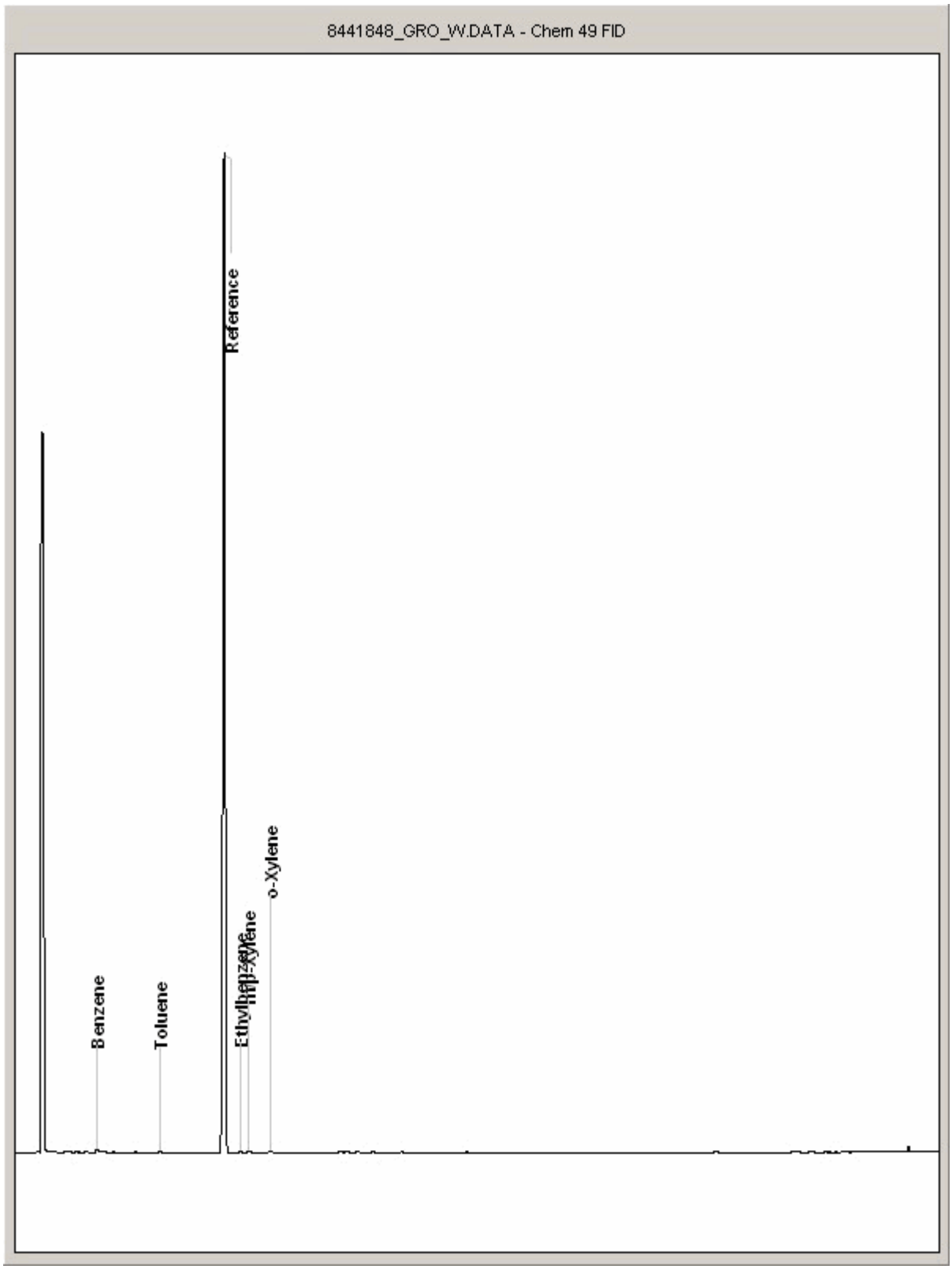
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441848
Sample ID : BH11

Depth : 2.65



CERTIFICATE OF ANALYSIS

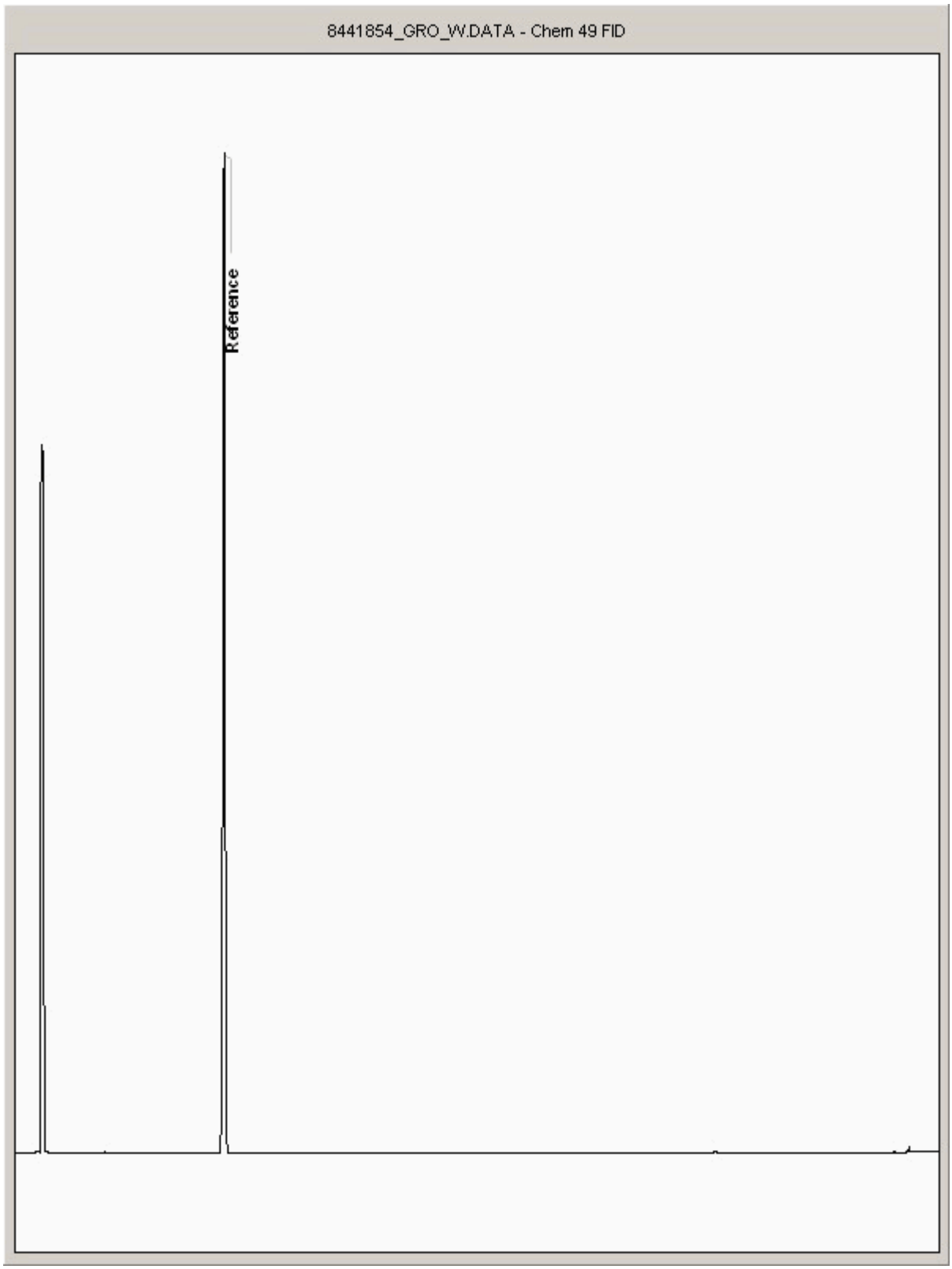
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441854
Sample ID : BH12

Depth : 2.70



CERTIFICATE OF ANALYSIS

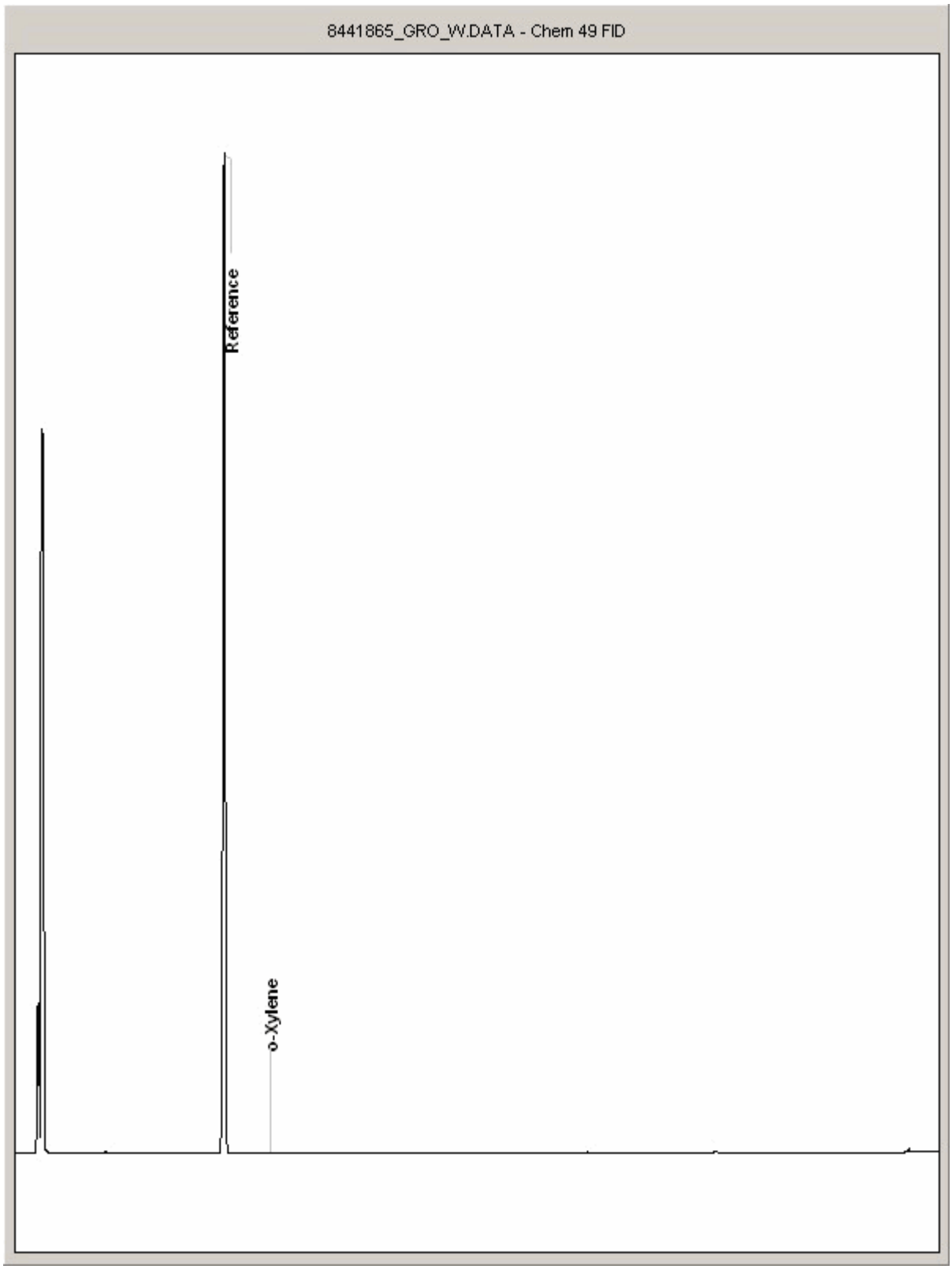
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441865
Sample ID : BH13

Depth : 2.65



CERTIFICATE OF ANALYSIS

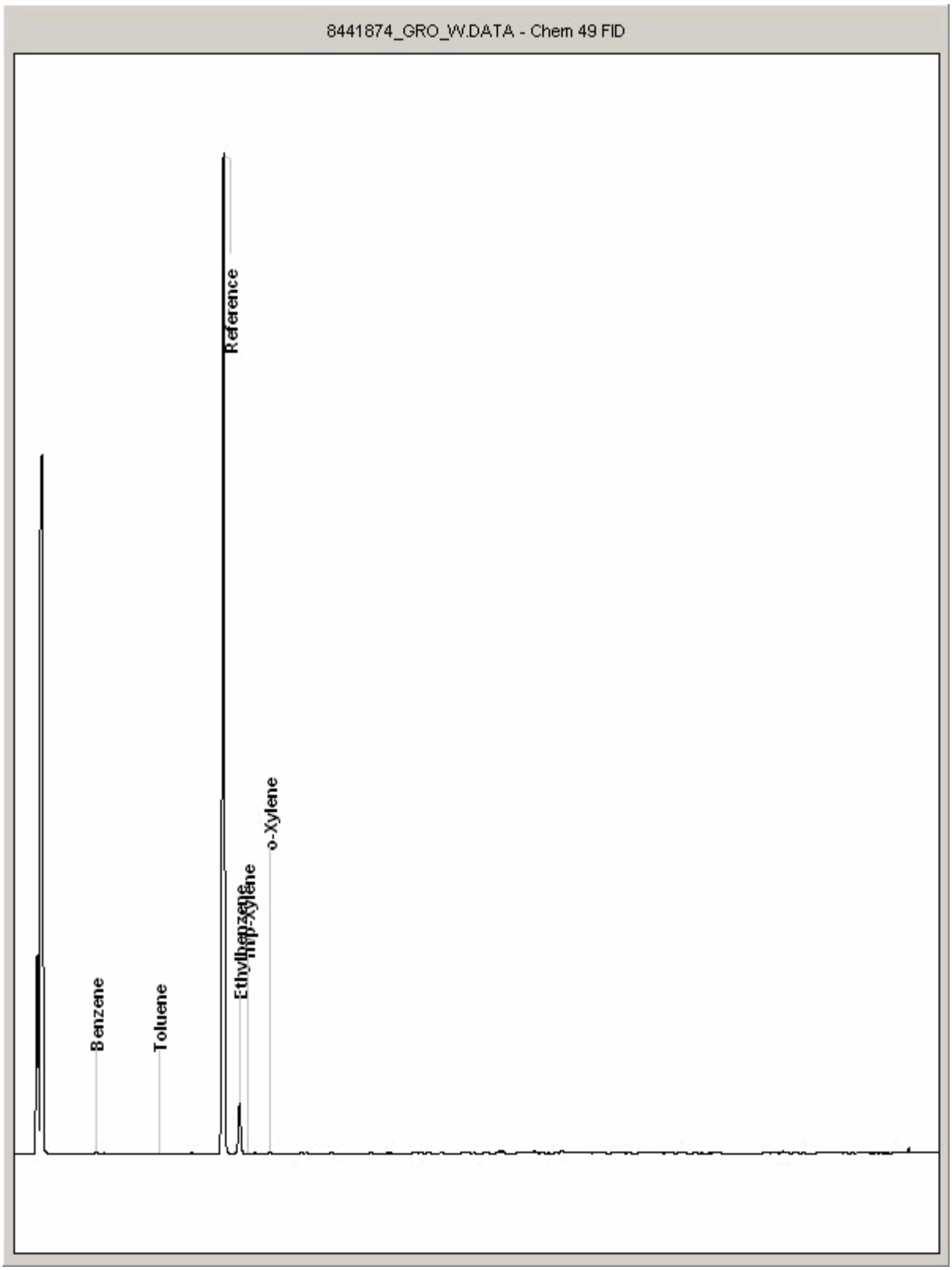
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441874
Sample ID : BH14

Depth : 2.72



CERTIFICATE OF ANALYSIS

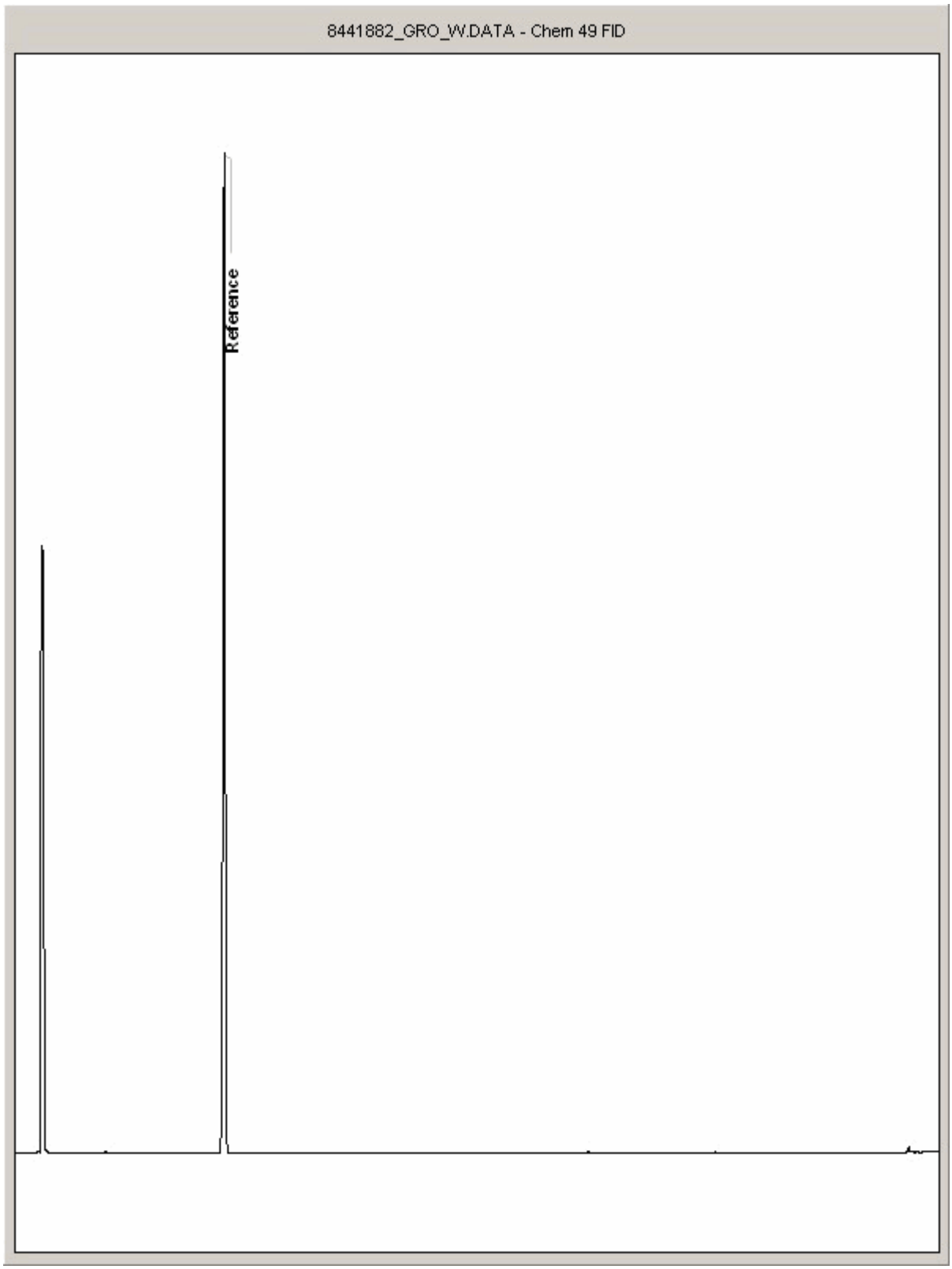
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441882
Sample ID : BH15

Depth : 2.70



CERTIFICATE OF ANALYSIS

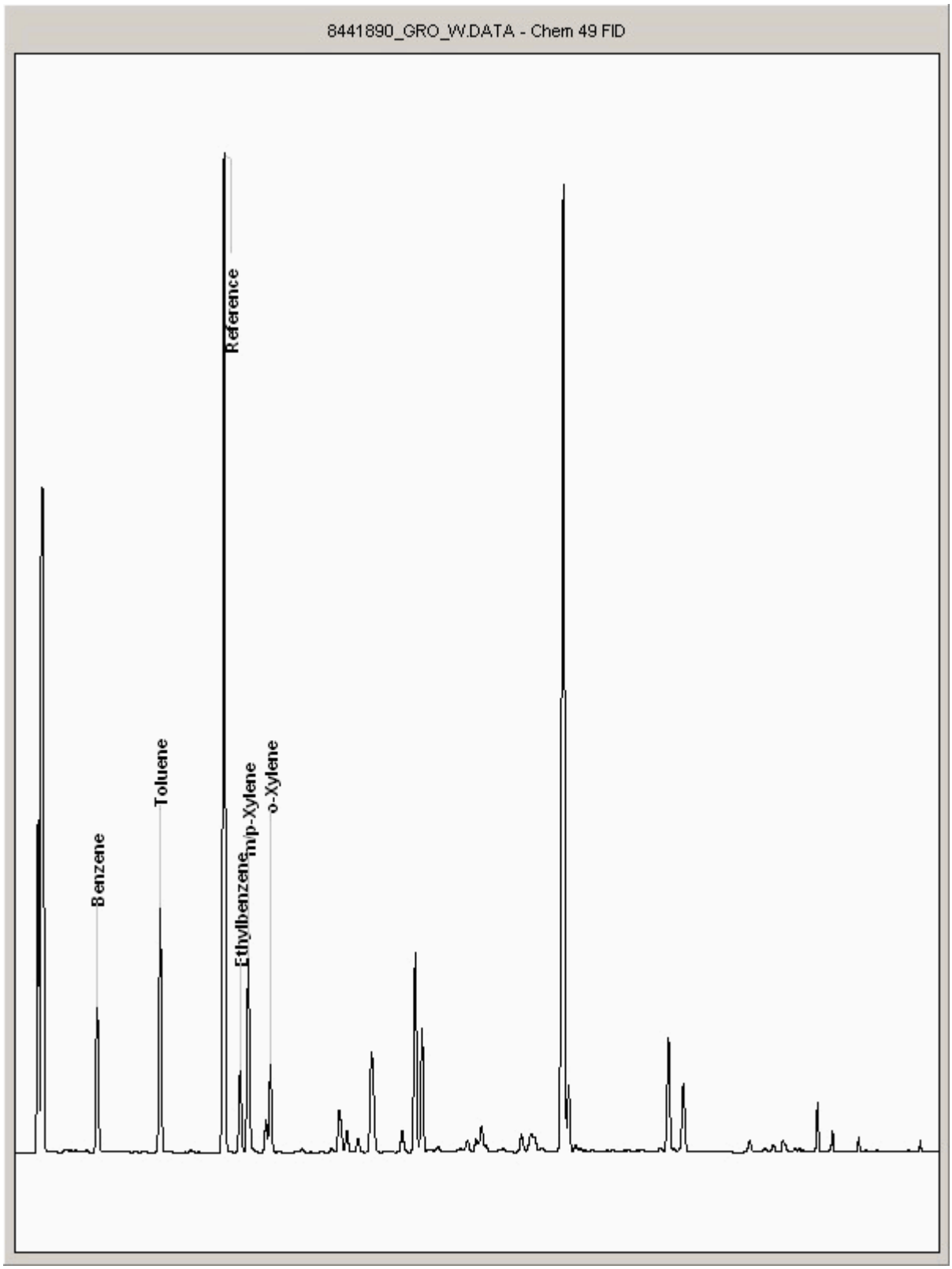
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441890
Sample ID : BH1

Depth : 1.69



CERTIFICATE OF ANALYSIS

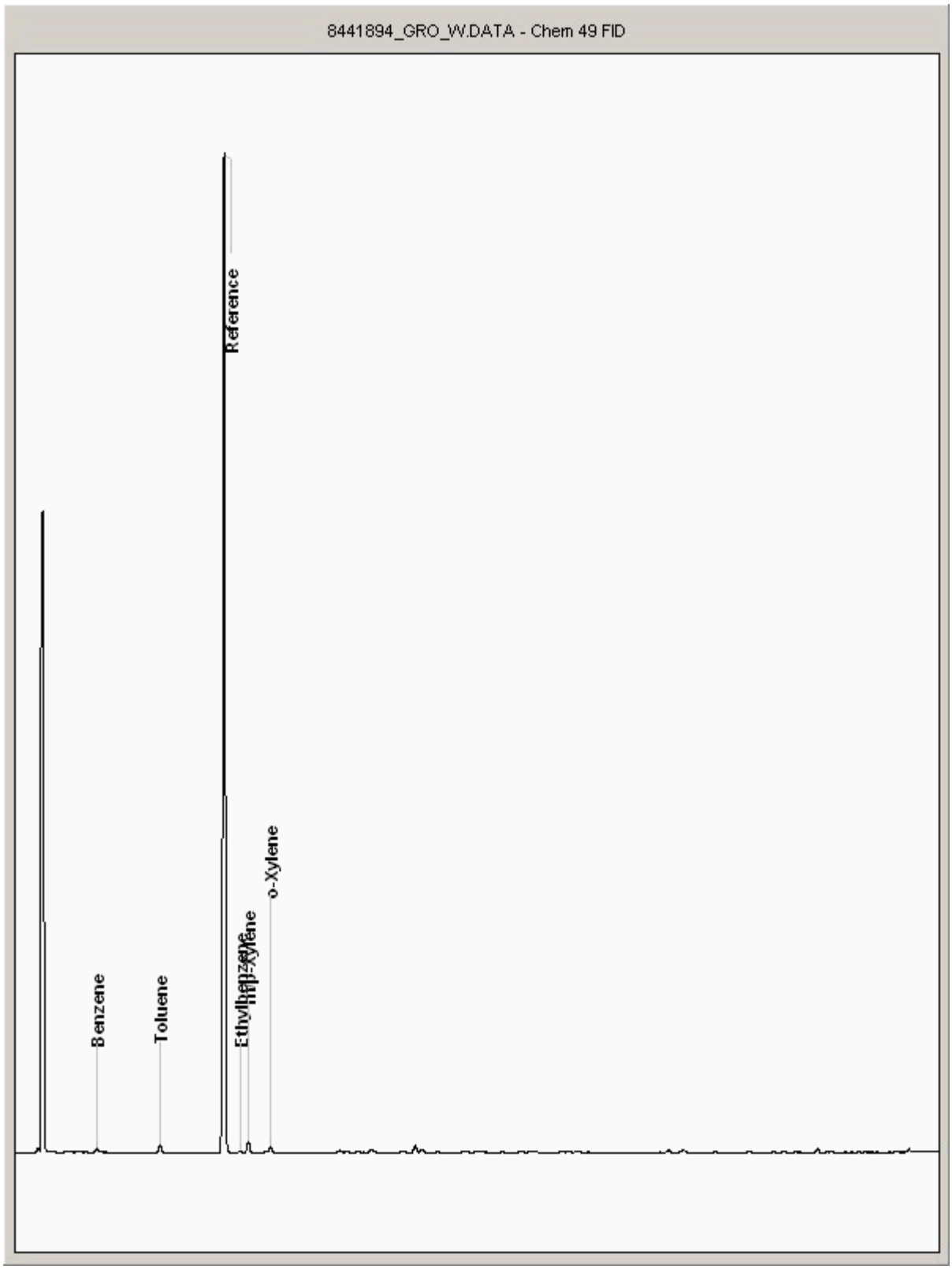
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441894
Sample ID : BH2

Depth : 1.84



CERTIFICATE OF ANALYSIS

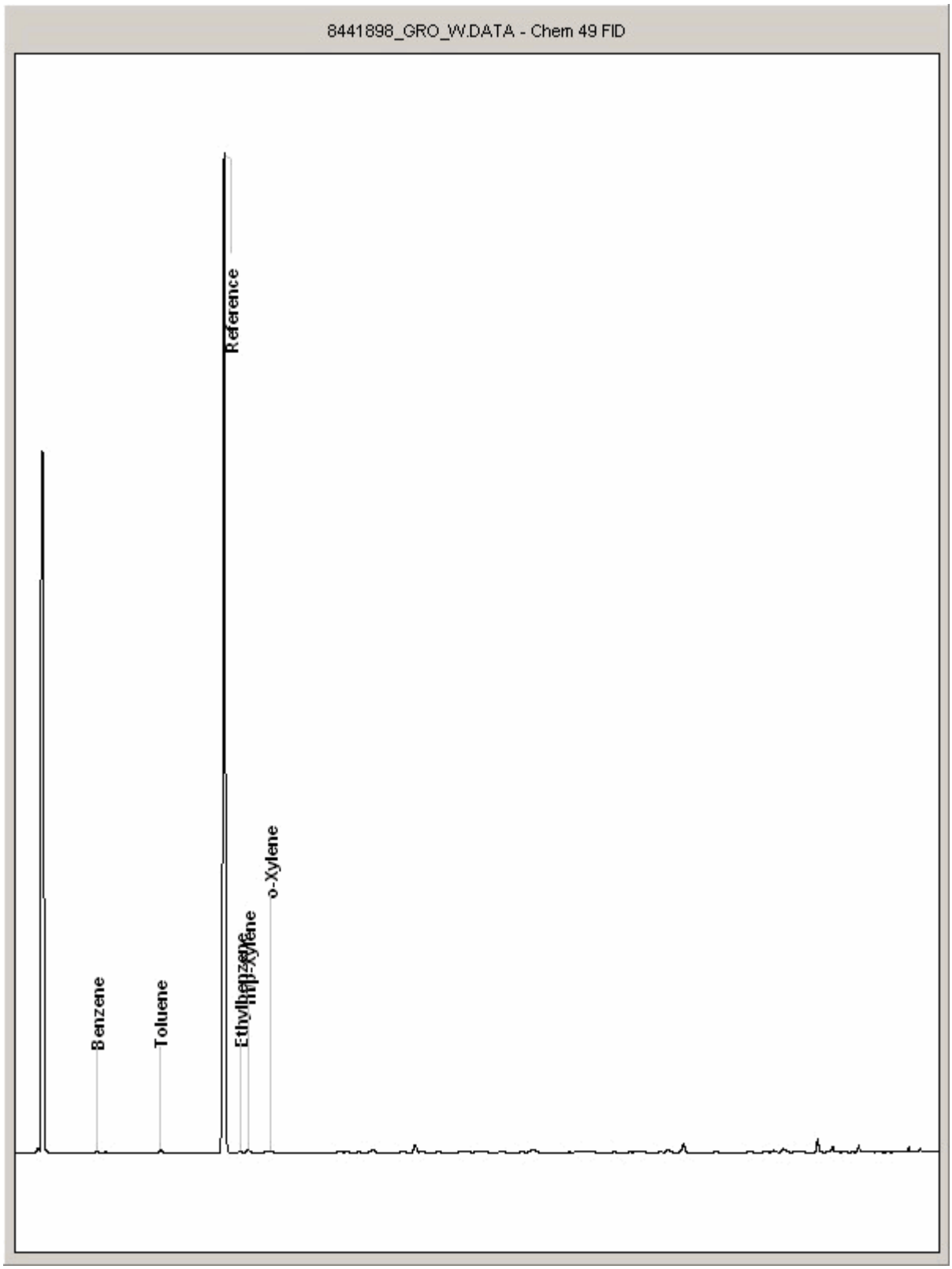
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441898
Sample ID : BH3

Depth : 2.28



CERTIFICATE OF ANALYSIS

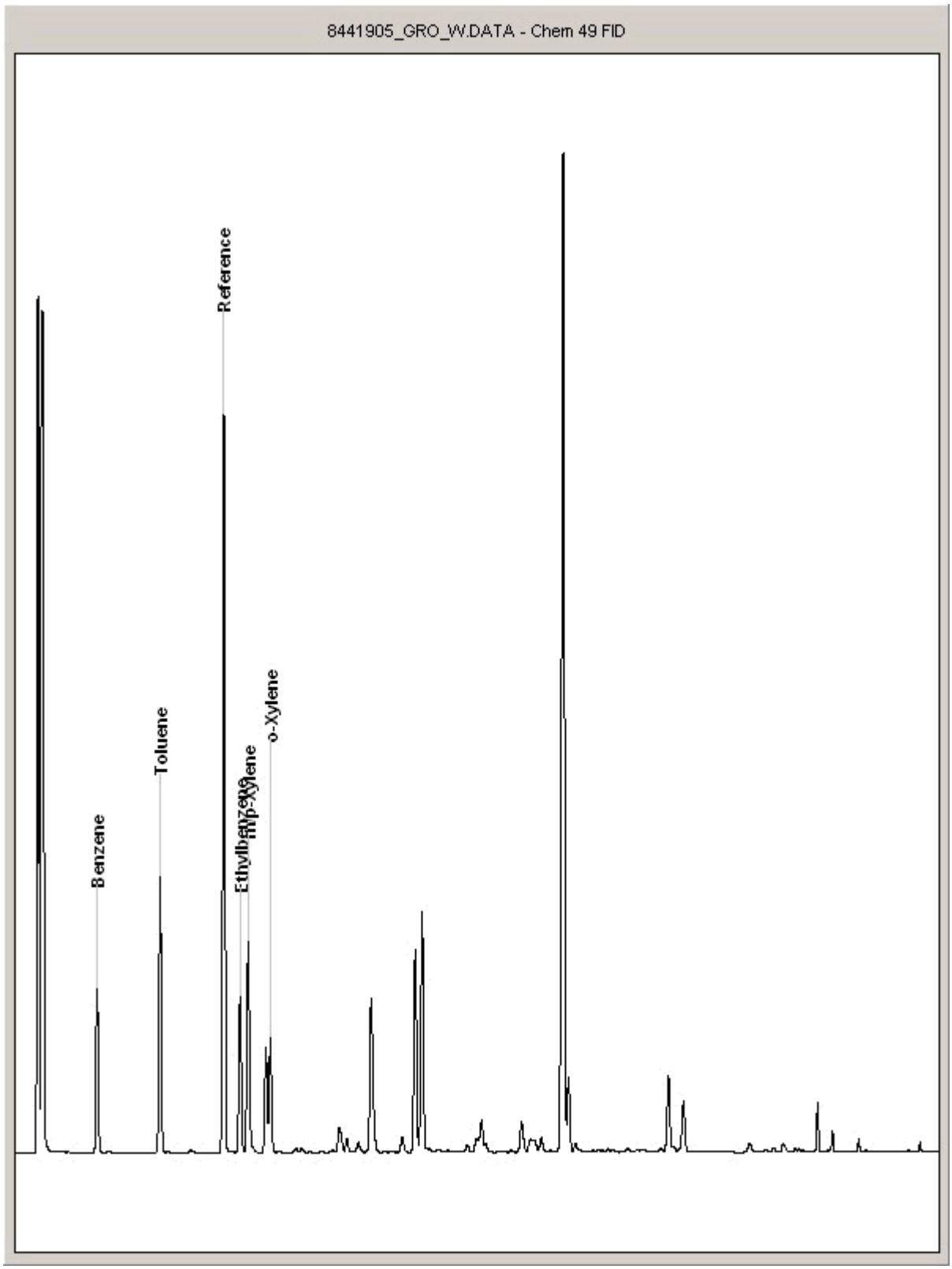
SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8441905
Sample ID : BH4

Depth : 2.16



SDG:	131118-12	**Location:**	Barry Waterfront	**Order Number:**	23820/39784-001/SG
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	250928
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Appendix
General

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. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

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

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

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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

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

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**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.

ALcontrol Laboratories

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email: mkt@alcontrol.com
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WSP Remediation
Fairway House
Paramount Business Park
St Mellons
Cardiff
South Glamorgan
CF3 0LW

Attention: Steve Gronow

CERTIFICATE OF ANALYSIS

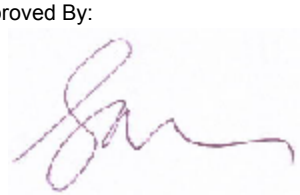
Date:	03 January 2014
Customer:	H_WSP_CDF
Sample Delivery Group (SDG):	131220-67
Your Reference:	39784.001
Location:	Barry Waterfront
Report No:	255906

We received 15 samples on Wednesday December 18, 2013 and 15 of these samples were scheduled for analysis which was completed on Friday January 03, 2014. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

Approved By:



Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
8632057	RW01	EW	0.00	16/12/2013
8632068	RW02	EW	0.00	16/12/2013
8632069	RW03	EW	0.00	16/12/2013
8632070	RW04	EW	0.00	16/12/2013
8632072	RW05	EW	0.00	16/12/2013
8632076	RW06	EW	0.00	16/12/2013
8632077	RW07	EW	0.00	16/12/2013
8632078	RW08	EW	0.00	16/12/2013
8632079	RW09	EW	0.00	16/12/2013
8632059	RW10	EW	0.00	16/12/2013
8632061	RW11	EW	0.00	16/12/2013
8632063	RW12	EW	0.00	16/12/2013
8632064	RW13	EW	0.00	16/12/2013
8632065	RW14	EW	0.00	16/12/2013
8632066	RW15	EW	0.00	16/12/2013

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

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container
			8632057	RW01	EW	0.00	1l Glass bottle (ALE
			8632068	RW02	EW	0.00	H2SO4 (ALE244)
			8632069	RW03	EW	0.00	Vial (ALE297)
			8632070	RW04	EW	0.00	1l Glass bottle (ALE
			8632072	RW05	EW	0.00	H2SO4 (ALE244)
			8632076	RW06	EW	0.00	Vial (ALE297)
			8632077	RW07	EW	0.00	1l Glass bottle (ALE
			8632078	RW08	EW	0.00	H2SO4 (ALE244)
			8632079	RW09	EW	0.00	Vial (ALE297)
			8632059	RW10	EW	0.00	1l Glass bottle (ALE
			8632061	RW11	EW	0.00	H2SO4 (ALE244)
			8632063	RW12	EW	0.00	Vial (ALE297)
			8632064	RW13	EW	0.00	1l Glass bottle (ALE
			8632065	RW14	EW	0.00	H2SO4 (ALE244)
							Vial (ALE297)
							1l Glass bottle (ALE
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X
VOC MS (W)	All	NDPs: 0 Tests: 15	X	X	X	X	X	X	X	X	X	X	X	X	X

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	8632065	8632066
			Customer Sample Reference	RW14	RW15
			AGS Reference	EW	EW
			Depth (m)	0.00	0.00
			Container	H2SO4 (ALE244) / Vial (ALE297)	1l Glass bottle (ALE / H2SO4 (ALE244) / Vial (ALE297)
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15			X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 15			X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 15		X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 15			X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 15		X	X
TPH CWG (W)	All	NDPs: 0 Tests: 15			X
VOC MS (W)	All	NDPs: 0 Tests: 15		X	X

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW01	RW02	RW03	RW04	RW05	RW06
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632057	8632068	8632069	8632070	8632072	8632076
			AGS Reference	EW	EW	EW	EW	EW	EW
Resorcinol	<10 µg/l	TM259		<10	<10	<10	<10	<10	<10
Catechol	<10 µg/l	TM259		<10	<10	<10	<10	<10	<10
Phenol	<2 µg/l	TM259		860 #	10 #	<2 #	680 #	270 #	<2 #
Cresols	<6 µg/l	TM259		2580 #	20 #	<6 #	2900 #	2220 #	<6 #
Xylenols	<8 µg/l	TM259		7390 #	310 #	<8 #	9690 #	4510 #	<8 #
1-Naphthol	<10 µg/l	TM259		280	10	<10	270	30	<10
2,3,5-Trimethylphenol	<3 µg/l	TM259		<3 #	<3 #	<3 #	<3 #	260 #	<3 #
2-Isopropylphenol	<6 µg/l	TM259		1780 #	40 #	<6 #	2250 #	1310 #	<6 #
Phenols, Total Detected monohydric	<16 µg/l	TM259		10800 #	340 #	<16 #	13300 #	7000 #	<16 #
Phenols, Total Detected 8 Speciated	<45 µg/l	TM259		12900	390	<45	15800	8600	<45

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW07	RW08	RW09	RW10	RW11	RW12
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632077	8632078	8632079	8632059	8632061	8632063
			AGS Reference	EW	EW	EW	EW	EW	EW
Resorcinol	<10 µg/l	TM259		<10	<10	<10	<10	<10	<10
Catechol	<10 µg/l	TM259		<10	<10	<10	<10	<10	<10
Phenol	<2 µg/l	TM259		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Cresols	<6 µg/l	TM259		<6 #	<6 #	<6 #	<6 #	<6 #	<6 #
Xylenols	<8 µg/l	TM259		40 #	<8 #	<8 #	<8 #	<8 #	<8 #
1-Naphthol	<10 µg/l	TM259		<10	<10	<10	<10	<10	<10
2,3,5-Trimethylphenol	<3 µg/l	TM259		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
2-Isopropylphenol	<6 µg/l	TM259		10 #	<6 #	<6 #	<6 #	<6 #	<6 #
Phenols, Total Detected monohydric	<16 µg/l	TM259		40 #	<16 #	<16 #	<16 #	<16 #	<16 #
Phenols, Total Detected 8 Speciated	<45 µg/l	TM259		50	<45	<45	<45	<45	<45

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW13	RW14	RW15			
			Depth (m)	0.00	0.00	0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	16/12/2013	16/12/2013	16/12/2013			
			Sampled Time	3	3	3			
			Date Received	18/12/2013	18/12/2013	18/12/2013			
			SDG Ref	131220-67	131220-67	131220-67			
			Lab Sample No.(s)	8632064	8632065	8632066			
			AGS Reference	EW	EW	EW			
Resorcinol	<10 µg/l	TM259		<10	<10	<10			
Catechol	<10 µg/l	TM259		<10	<10	<10			
Phenol	<2 µg/l	TM259		<2 #	<2 #	<2 #			
Cresols	<6 µg/l	TM259		<6 #	<6 #	<6 #			
Xylenols	<8 µg/l	TM259		<8 #	<8 #	<8 #			
1-Naphthol	<10 µg/l	TM259		<10	<10	<10			
2,3,5-Trimethylphenol	<3 µg/l	TM259		<3 #	<3 #	<3 #			
2-Isopropylphenol	<6 µg/l	TM259		<6 #	<6 #	<6 #			
Phenols, Total Detected monohydric	<16 µg/l	TM259		<16 #	<16 #	<16 #			
Phenols, Total Detected 8 Speciated	<45 µg/l	TM259		<45	<45	<45			

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW01	RW02	RW03	RW04	RW05	RW06
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632057	8632068	8632069	8632070	8632072	8632076
			AGS Reference	EW	EW	EW	EW	EW	EW
Naphthalene (aq)	<0.1 µg/l	TM178		<1 & #	0.118 & #	<0.1 & #	<2.5 & #	<5 & #	<0.1 & #
Acenaphthene (aq)	<0.015 µg/l	TM178		205 & #	0.0791 & #	0.0407 & #	430 & #	249 & #	0.0245 & #
Acenaphthylene (aq)	<0.011 µg/l	TM178		3.13 & #	0.0502 & #	0.133 & #	27.2 & #	7.71 & #	0.027 & #
Fluoranthene (aq)	<0.017 µg/l	TM178		36.7 & #	0.676 & #	1.69 & #	26.3 & #	64.3 & #	0.348 & #
Anthracene (aq)	<0.015 µg/l	TM178		8.96 & #	0.729 & #	0.259 & #	14 & #	24.5 & #	0.0951 & #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.427 & #	0.403 & #	0.494 & #	185 & #	2.8 & #	0.217 & #
Fluorene (aq)	<0.014 µg/l	TM178		39.5 & #	0.098 & #	0.0738 & #	168 & #	99.2 & #	0.0349 & #
Chrysene (aq)	<0.013 µg/l	TM178		1.58 & #	0.518 & #	1.06 & #	1.02 & #	4.89 & #	0.274 & #
Pyrene (aq)	<0.015 µg/l	TM178		22.3 & #	0.619 & #	1.32 & #	16.2 & #	41 & #	0.284 & #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		1.56 & #	0.286 & #	0.66 & #	0.719 & #	3.51 & #	0.127 & #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.376 & #	0.371 & #	0.885 & #	<0.575 & #	<1.15 & #	0.203 & #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.414 & #	0.326 & #	0.748 & #	<0.675 & #	<1.35 & #	0.165 & #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.334 & #	0.363 & #	0.893 & #	<0.225 & #	1.12 & #	0.162 & #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.16 & #	0.0472 & #	0.114 & #	<0.4 & #	<0.8 & #	0.0264 & #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		<0.16 & #	0.148 & #	0.322 & #	<0.4 & #	<0.8 & #	0.0906 & #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		<0.14 & #	0.138 & #	0.315 & #	<0.35 & #	<0.7 & #	0.0778 & #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		320 &	4.97 &	9.01 &	870 &	502 &	2.16 &

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW07	RW08	RW09	RW10	RW11	RW12
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632077	8632078	8632079	8632059	8632061	8632063
			AGS Reference	EW	EW	EW	EW	EW	EW
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1 & #	<0.1 & #	<0.1 & #	<0.1 & #	1.25 & #	0.189 & #
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015 & #	<0.015 & #	0.0185 & #	<0.015 & #	0.417 & #	0.0456 & #
Acenaphthylene (aq)	<0.011 µg/l	TM178		<0.011 & #	<0.011 & #	0.0447 & #	0.0221 & #	0.426 & #	0.0862 & #
Fluoranthene (aq)	<0.017 µg/l	TM178		0.154 & #	0.0404 & #	0.126 & #	0.109 & #	3.61 & #	0.742 & #
Anthracene (aq)	<0.015 µg/l	TM178		0.065 & #	0.0189 & #	0.0518 & #	0.0323 & #	0.937 & #	0.246 & #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.0671 & #	0.0448 & #	0.114 & #	0.0914 & #	3.27 & #	0.391 & #
Fluorene (aq)	<0.014 µg/l	TM178		0.0277 & #	<0.014 & #	0.0327 & #	0.02 & #	0.848 & #	0.0797 & #
Chrysene (aq)	<0.013 µg/l	TM178		0.0472 & #	0.0301 & #	0.115 & #	0.0789 & #	2.75 & #	0.517 & #
Pyrene (aq)	<0.015 µg/l	TM178		0.0549 & #	0.0438 & #	0.113 & #	0.0916 & #	2.89 & #	0.576 & #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		<0.017 & #	<0.017 & #	0.0666 & #	0.0477 & #	1.88 & #	0.334 & #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.025 & #	0.0258 & #	0.0878 & #	0.0854 & #	3.45 & #	0.503 & #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		<0.027 & #	<0.027 & #	0.0853 & #	0.0635 & #	2.77 & #	0.408 & #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.0271 & #	0.0243 & #	0.105 & #	0.0756 & #	2.87 & #	0.476 & #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		<0.016 & #	<0.016 & #	0.0195 & #	0.0178 & #	0.667 & #	0.0916 & #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.0186 & #	0.0227 & #	0.0786 & #	0.0695 & #	2.45 & #	0.36 & #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.014 & #	0.0179 & #	0.0637 & #	0.0551 & #	2.13 & #	0.316 & #
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		0.501 &	<0.344 &	1.12 &	0.86 &	32.6 &	5.36 &

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW13	RW14	RW15			
			Depth (m)	0.00	0.00	0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	16/12/2013	16/12/2013	16/12/2013			
			Sampled Time	3	3	3			
			Date Received	18/12/2013	18/12/2013	18/12/2013			
			SDG Ref	131220-67	131220-67	131220-67			
			Lab Sample No.(s)	8632064	8632065	8632066			
			AGS Reference	EW	EW	EW			
Naphthalene (aq)	<0.1 µg/l	TM178		0.121 & #	<0.1 & #	<0.1 & #			
Acenaphthene (aq)	<0.015 µg/l	TM178		0.0181 & #	<0.015 & #	<0.015 & #			
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.0134 & #	0.0206 & #	<0.011 & #			
Fluoranthene (aq)	<0.017 µg/l	TM178		0.287 & #	0.0855 & #	0.0696 & #			
Anthracene (aq)	<0.015 µg/l	TM178		0.0208 & #	0.0287 & #	0.0269 & #			
Phenanthrene (aq)	<0.022 µg/l	TM178		0.213 & #	0.0771 & #	0.0471 & #			
Fluorene (aq)	<0.014 µg/l	TM178		0.0191 & #	0.0263 & #	0.0171 & #			
Chrysene (aq)	<0.013 µg/l	TM178		0.248 & #	0.0746 & #	0.047 & #			
Pyrene (aq)	<0.015 µg/l	TM178		0.228 & #	0.0951 & #	0.0808 & #			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.0944 & #	0.0423 & #	0.0176 & #			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.25 & #	0.0681 & #	0.0357 & #			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.234 & #	0.0633 & #	0.0283 & #			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.197 & #	0.0764 & #	0.0327 & #			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.047 & #	<0.016 & #	<0.016 & #			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.154 & #	0.0655 & #	0.0291 & #			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.135 & #	0.0493 & #	0.0219 & #			
PAH, Total Detected USEPA 16 (aq)	<0.344 µg/l	TM178		2.28 &	0.773 &	0.454 &			

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW01	RW02	RW03	RW04	RW05	RW06
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632057	8632068	8632069	8632070	8632072	8632076
			AGS Reference	EW	EW	EW	EW	EW	EW
GRO Surrogate % recovery**	%	TM245		94	83	90	87	93	120
GRO >C5-C12	<50 µg/l	TM245		11300 #	334 #	<50 #	21000 #	7910 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		14	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		55	11	<10	49	17	<10
Aliphatics >C8-C10	<10 µg/l	TM245		752	31	<10	1470	454	<10
Aliphatics >C10-C12	<10 µg/l	TM245		4580	141	<10	8830	3730	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		566	<10	<10	730	193	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		711	<10	<10	1120	350	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		1600	49	<10	2940	683	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		3050	94	<10	5890	2480	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		1110	<10	<10	2230	2340	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		241	17	17	437	627	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		50	16	15	46	149	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		1400	33	32	2720	3110	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		12700	365	33	23700	11000	<10

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW07	RW08	RW09	RW10	RW11	RW12
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632077	8632078	8632079	8632059	8632061	8632063
			AGS Reference	EW	EW	EW	EW	EW	EW
GRO Surrogate % recovery**	%	TM245		110	91	94	90	95	91
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	25	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	107	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	132	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	10	<10	<10	19	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	19	<10	<10	41	12
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	13	<10	<10	134	10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	42	<10	<10	194	22
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	42	<10	<10	326	22

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW13	RW14	RW15			
			Depth (m)	0.00	0.00	0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	16/12/2013	16/12/2013	16/12/2013			
			Sampled Time	3	3	3			
			Date Received	18/12/2013	18/12/2013	18/12/2013			
			SDG Ref	131220-67	131220-67	131220-67			
			Lab Sample No.(s)	8632064	8632065	8632066			
			AGS Reference	EW	EW	EW			
GRO Surrogate % recovery**	%	TM245		89	90	93			
GRO >C5-C12	<50 µg/l	TM245		<50 #	136 #	85 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C6-C8	<10 µg/l	TM245		<10	12	<10			
Aliphatics >C8-C10	<10 µg/l	TM245		<10	14	13			
Aliphatics >C10-C12	<10 µg/l	TM245		<10	58	30			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	39	20			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	30	<10			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	29	<10			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	85	<10			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	144	<10			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	279	83			

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW01	RW02	RW03	RW04	RW05	RW06
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632057	8632068	8632069	8632070	8632072	8632076
			AGS Reference	EW	EW	EW	EW	EW	EW
Dibromofluoromethane**	%	TM208		105	107	104	103	108	104
Toluene-d8**	%	TM208		96.7	97.8	98	95.8	98.5	97.6
4-Bromofluorobenzene**	%	TM208		93.6	98.5	98.6	89.8	97.1	97.8
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Benzene	<1 µg/l	TM208		634 #	<1 #	<1 #	874 #	209 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		802 #	<1 #	<1 #	1330 #	383 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW01	RW02	RW03	RW04	RW05	RW06
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632057	8632068	8632069	8632070	8632072	8632076
			AGS Reference	EW	EW	EW	EW	EW	EW
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		365 #	1.18 #	<1 #	612 #	81.3 #	<1 #
m,p-Xylene	<1 µg/l	TM208		582 #	14.1 #	<1 #	1070 #	191 #	<1 #
o-Xylene	<1 µg/l	TM208		295 #	14.3 #	<1 #	521 #	93.8 #	<1 #
Styrene	<1 µg/l	TM208		75.5 #	<1 #	<1 #	388 #	91.3 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		11.2 #	<1 #	<1 #	15.9 #	1.6 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		5.43 #	<1 #	<1 #	7.02 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		63.8 #	3.26 #	<1 #	64.5 #	23.6 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		167 #	3.62 #	<1 #	185 #	67.5 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	18 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		5310 #	51.4 #	<1 #	15100 #	4540 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW01	RW02	RW03	RW04	RW05	RW06
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632057	8632068	8632069	8632070	8632072	8632076
			AGS Reference	EW	EW	EW	EW	EW	EW
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Sum of detected Xylenes	<2 µg/l	TM208		877	28.4	<2	1590	285	<2

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW07	RW08	RW09	RW10	RW11	RW12
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632077	8632078	8632079	8632059	8632061	8632063
			AGS Reference	EW	EW	EW	EW	EW	EW
Dibromofluoromethane**	%	TM208		109	104	105	104	104	101
Toluene-d8**	%	TM208		98.4	98.4	98.7	99	100	98.9
4-Bromofluorobenzene**	%	TM208		97.2	101	102	102	102	102
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW07	RW08	RW09	RW10	RW11	RW12
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632077	8632078	8632079	8632059	8632061	8632063
			AGS Reference	EW	EW	EW	EW	EW	EW
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		1.05 #	<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW07	RW08	RW09	RW10	RW11	RW12
			Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013	16/12/2013
			Sampled Time	3	3	3	3	3	3
			Date Received	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013	18/12/2013
			SDG Ref	131220-67	131220-67	131220-67	131220-67	131220-67	131220-67
			Lab Sample No.(s)	8632077	8632078	8632079	8632059	8632061	8632063
			AGS Reference	EW	EW	EW	EW	EW	EW
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1	<1
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2	<2	<2	<2

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW13	RW14	RW15			
			Depth (m)	0.00	0.00	0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	16/12/2013	16/12/2013	16/12/2013			
			Sampled Time	3	3	3			
			Date Received	18/12/2013	18/12/2013	18/12/2013			
			SDG Ref	131220-67	131220-67	131220-67			
			Lab Sample No.(s)	8632064	8632065	8632066			
			AGS Reference	EW	EW	EW			
Dibromofluoromethane**	%	TM208		105	106	99.6			
Toluene-d8**	%	TM208		98.7	98.9	99.2			
4-Bromofluorobenzene**	%	TM208		102	102	102			
Dichlorodifluoromethane	<1 µg/l	TM208		<1	<1	<1			
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #			
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1			
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1	<1			
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW13	RW14	RW15			
			Depth (m)	0.00	0.00	0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	16/12/2013	16/12/2013	16/12/2013			
			Sampled Time	3	3	3			
			Date Received	18/12/2013	18/12/2013	18/12/2013			
			SDG Ref	131220-67	131220-67	131220-67			
			Lab Sample No.(s)	8632064	8632065	8632066			
			AGS Reference	EW	EW	EW			
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1	<1			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1	<1			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #			

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	RW13	RW14	RW15			
			Depth (m)	0.00	0.00	0.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	16/12/2013	16/12/2013	16/12/2013			
			Sampled Time	3	3	3			
			Date Received	18/12/2013	18/12/2013	18/12/2013			
			SDG Ref	131220-67	131220-67	131220-67			
			Lab Sample No.(s)	8632064	8632065	8632066			
			AGS Reference	EW	EW	EW			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1			
Sum of detected Xylenes	<2 µg/l	TM208		<2	<2	<2			

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

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

CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	8632057	8632068	8632069	8632070	8632072	8632076	8632077	8632078	8632079	8632059
Customer Sample Ref.	RW01	RW02	RW03	RW04	RW05	RW06	RW07	RW08	RW09	RW10
AGS Ref.	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW
Depth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
EPH CWG (Aromatic) Aqueous GC (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
GRO by GC-FID (W)	24-Dec-2013	24-Dec-2013	24-Dec-2013	24-Dec-2013	24-Dec-2013	28-Dec-2013	28-Dec-2013	24-Dec-2013	24-Dec-2013	24-Dec-2013
PAH Spec MS - Aqueous (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
Phenols by HPLC (W)	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013
TPH CWG (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
VOC MS (W)	30-Dec-2013	24-Dec-2013	24-Dec-2013	30-Dec-2013	31-Dec-2013	30-Dec-2013	30-Dec-2013	30-Dec-2013	30-Dec-2013	30-Dec-2013

Lab Sample No(s)	8632061	8632063	8632064	8632065	8632066
Customer Sample Ref.	RW11	RW12	RW13	RW14	RW15
AGS Ref.	EW	EW	EW	EW	EW
Depth	0.00	0.00	0.00	0.00	0.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
EPH CWG (Aliphatic) Aqueous GC (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
EPH CWG (Aromatic) Aqueous GC (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
GRO by GC-FID (W)	24-Dec-2013	24-Dec-2013	24-Dec-2013	24-Dec-2013	24-Dec-2013
PAH Spec MS - Aqueous (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
Phenols by HPLC (W)	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013	31-Dec-2013
TPH CWG (W)	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014	03-Jan-2014
VOC MS (W)	30-Dec-2013	30-Dec-2013	30-Dec-2013	30-Dec-2013	30-Dec-2013

CERTIFICATE OF ANALYSIS

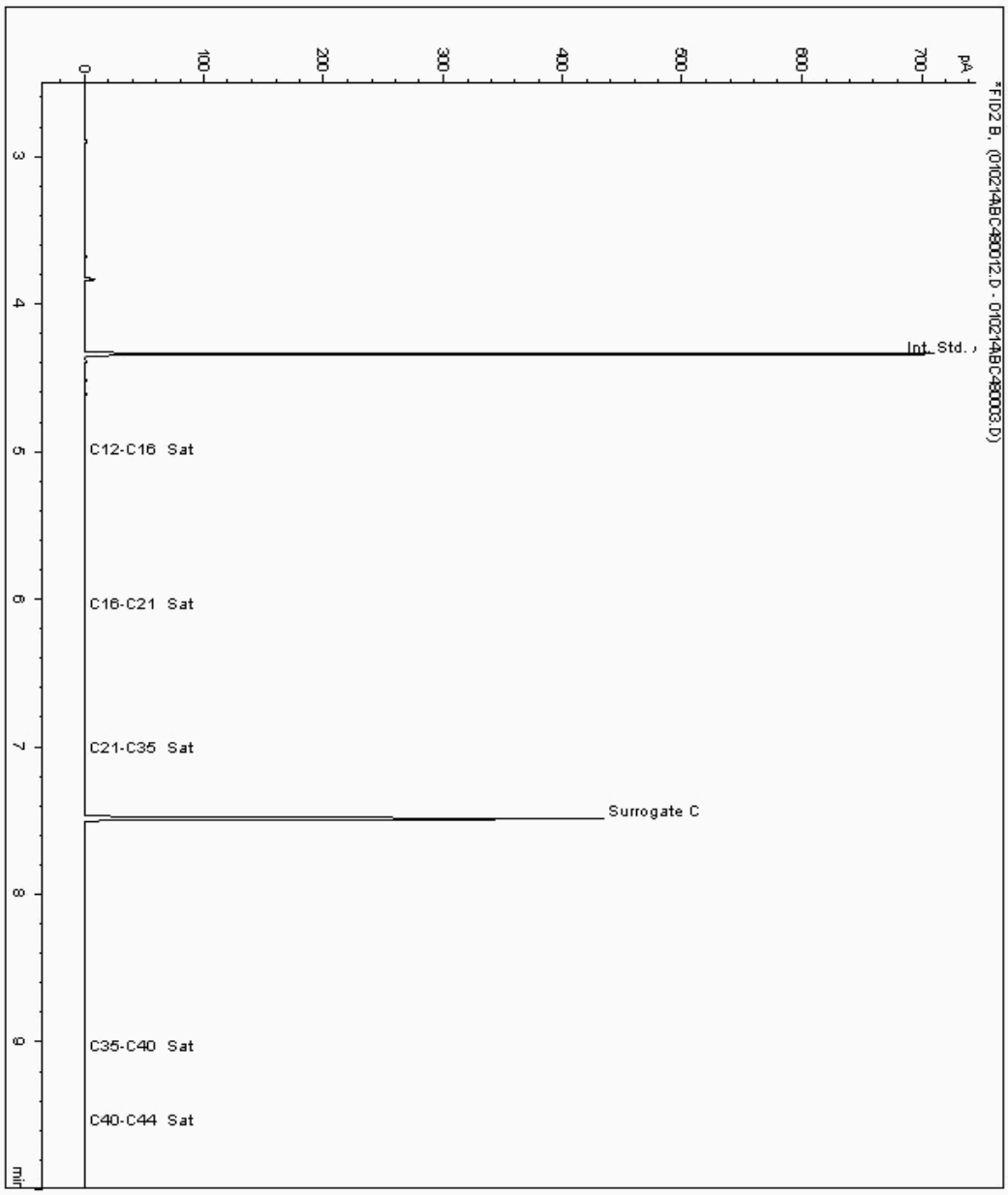
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635952 **Sample ID :** RW04 **Depth :** 0.00

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

Sample Identity: 8226788-8635952
Date Acquired : 02/01/2014 17:07:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

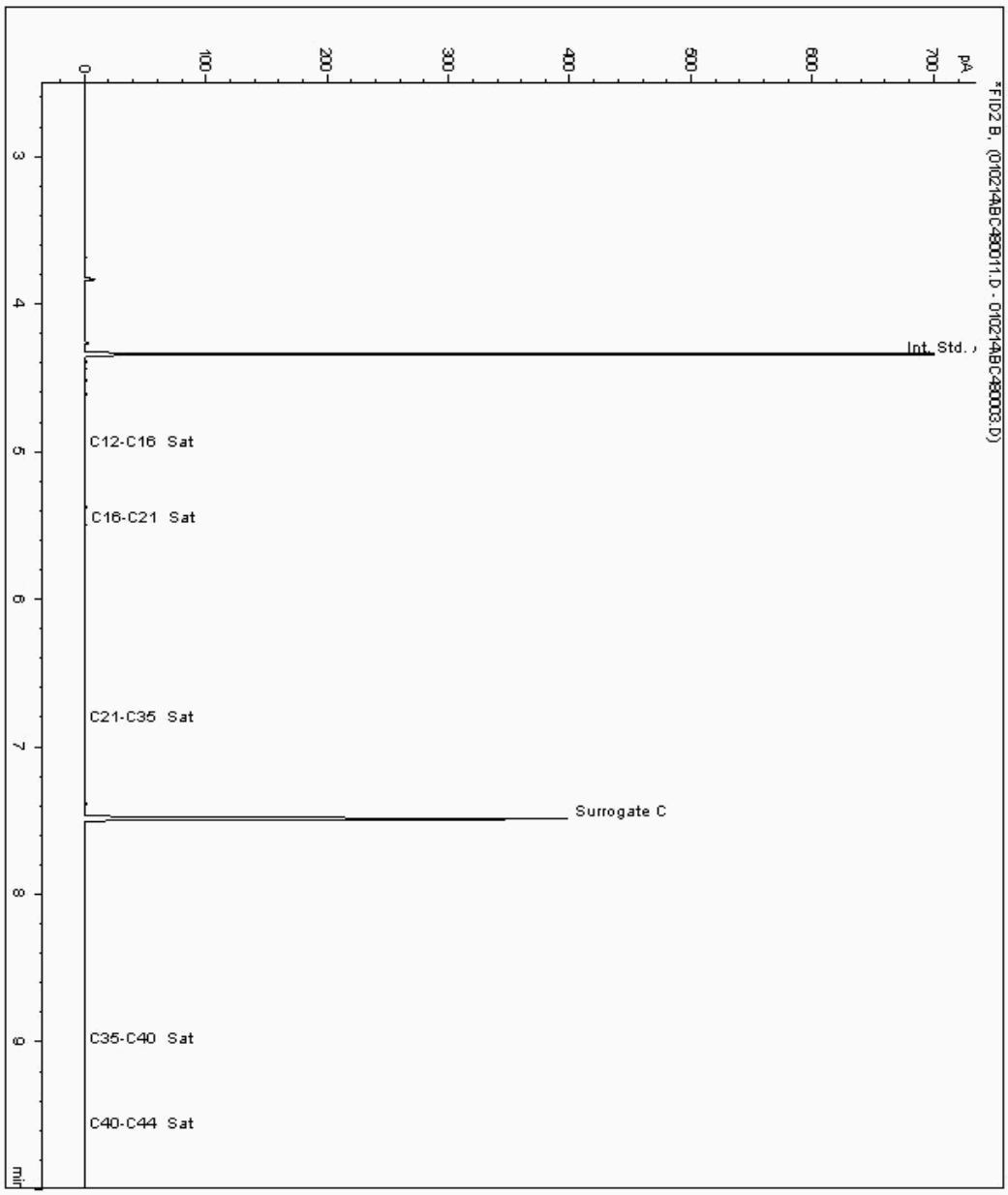
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635956 **Sample ID :** RW03 **Depth :** 0.00

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

Sample Identity: 8226765-8635956
Date Acquired : 02/01/2014 16:48:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

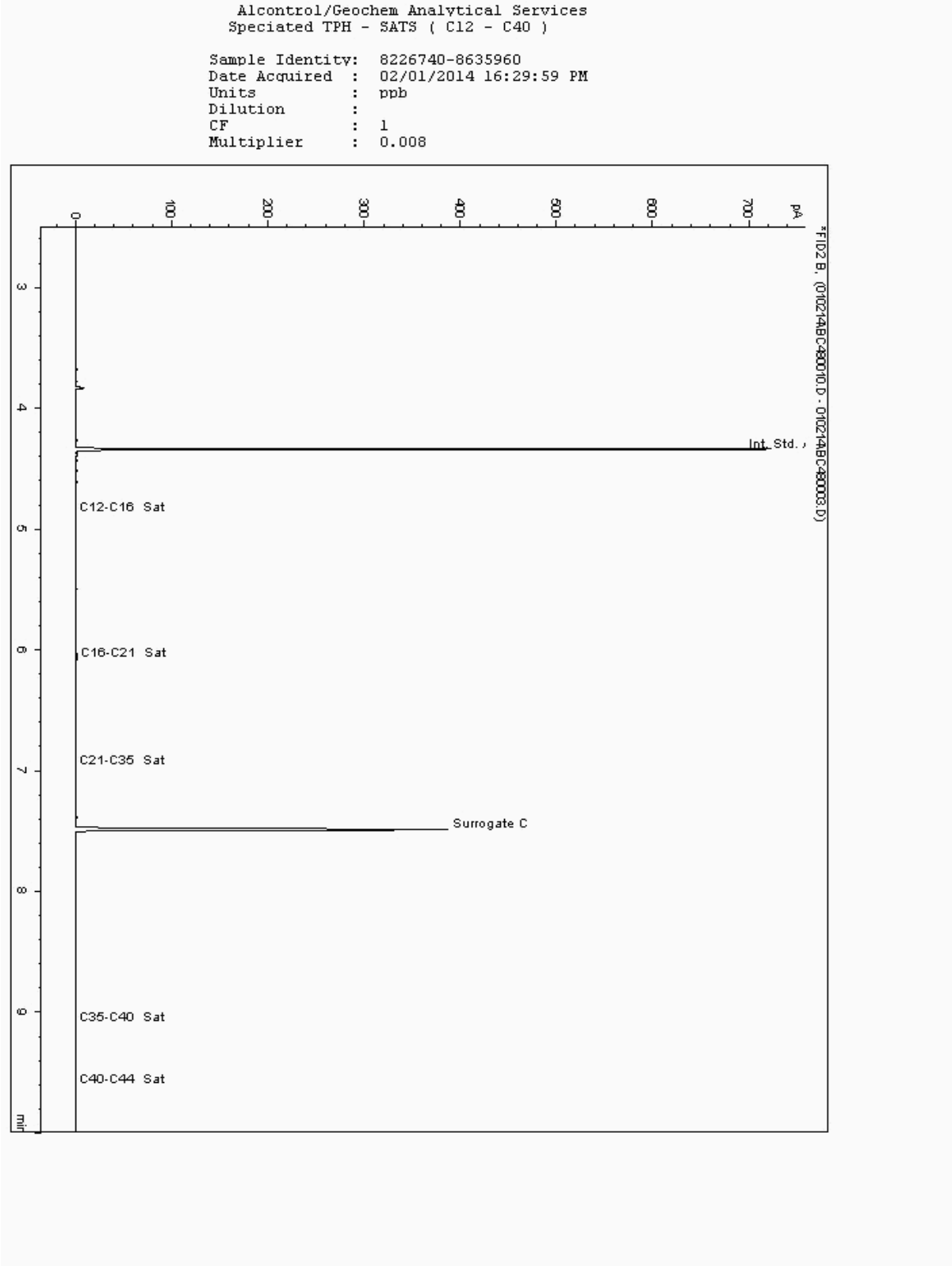


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635960 **Sample ID :** RW02 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

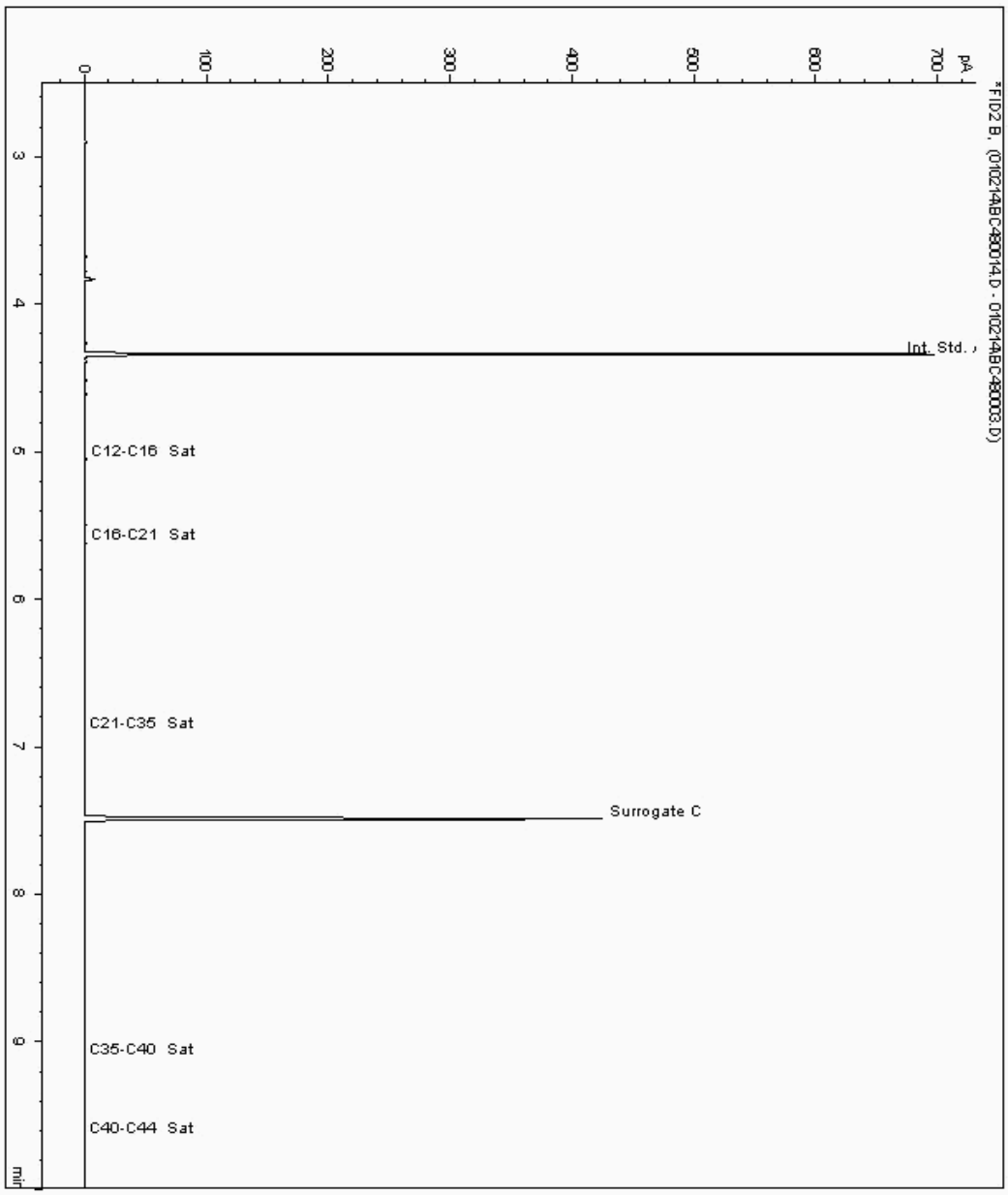
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635971 **Sample ID :** RW01 **Depth :** 0.00

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

Sample Identity: 8226582-8635971
Date Acquired : 02/01/2014 17:44:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

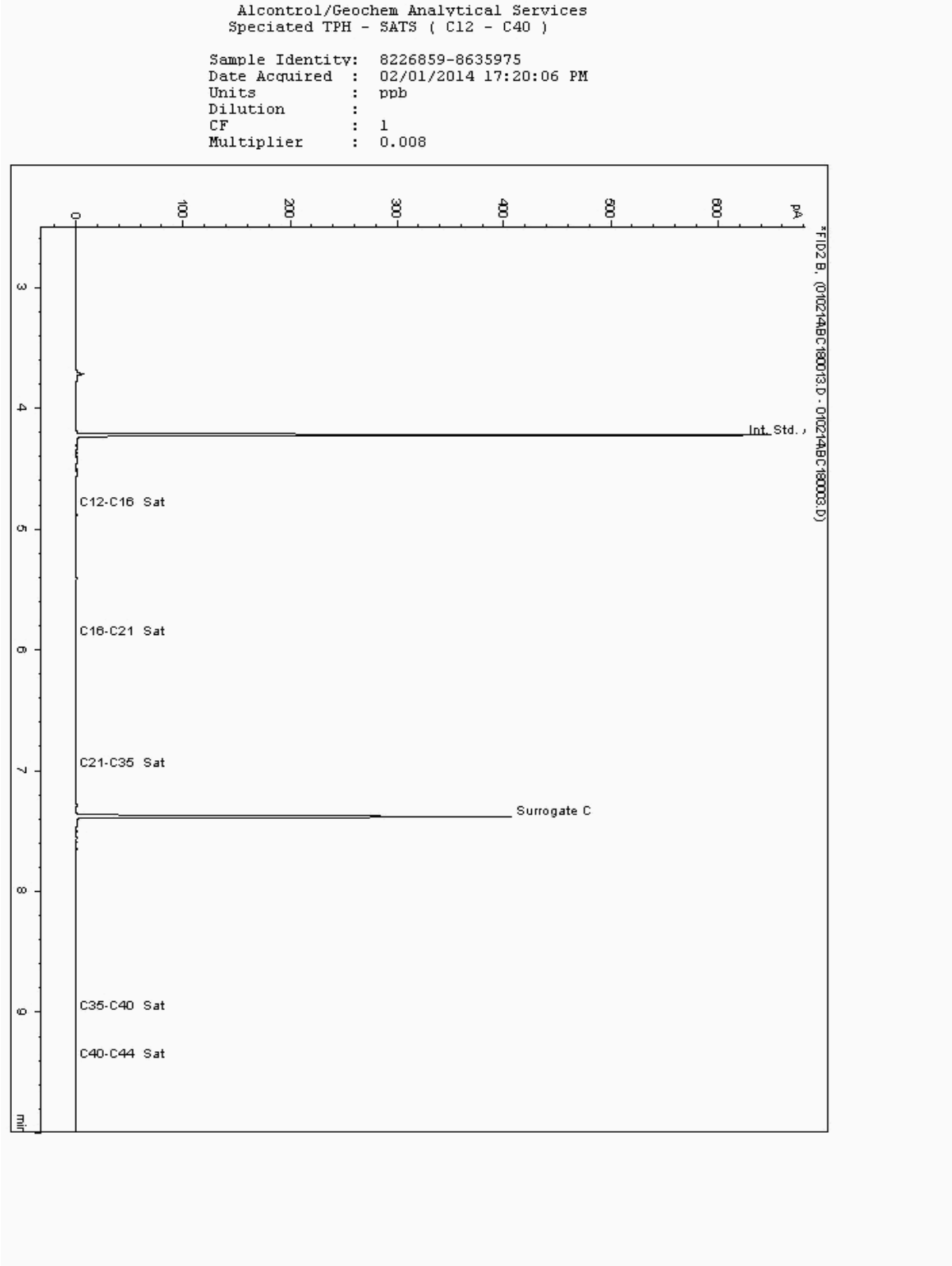


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635975 **Sample ID :** RW08 **Depth :** 0.00

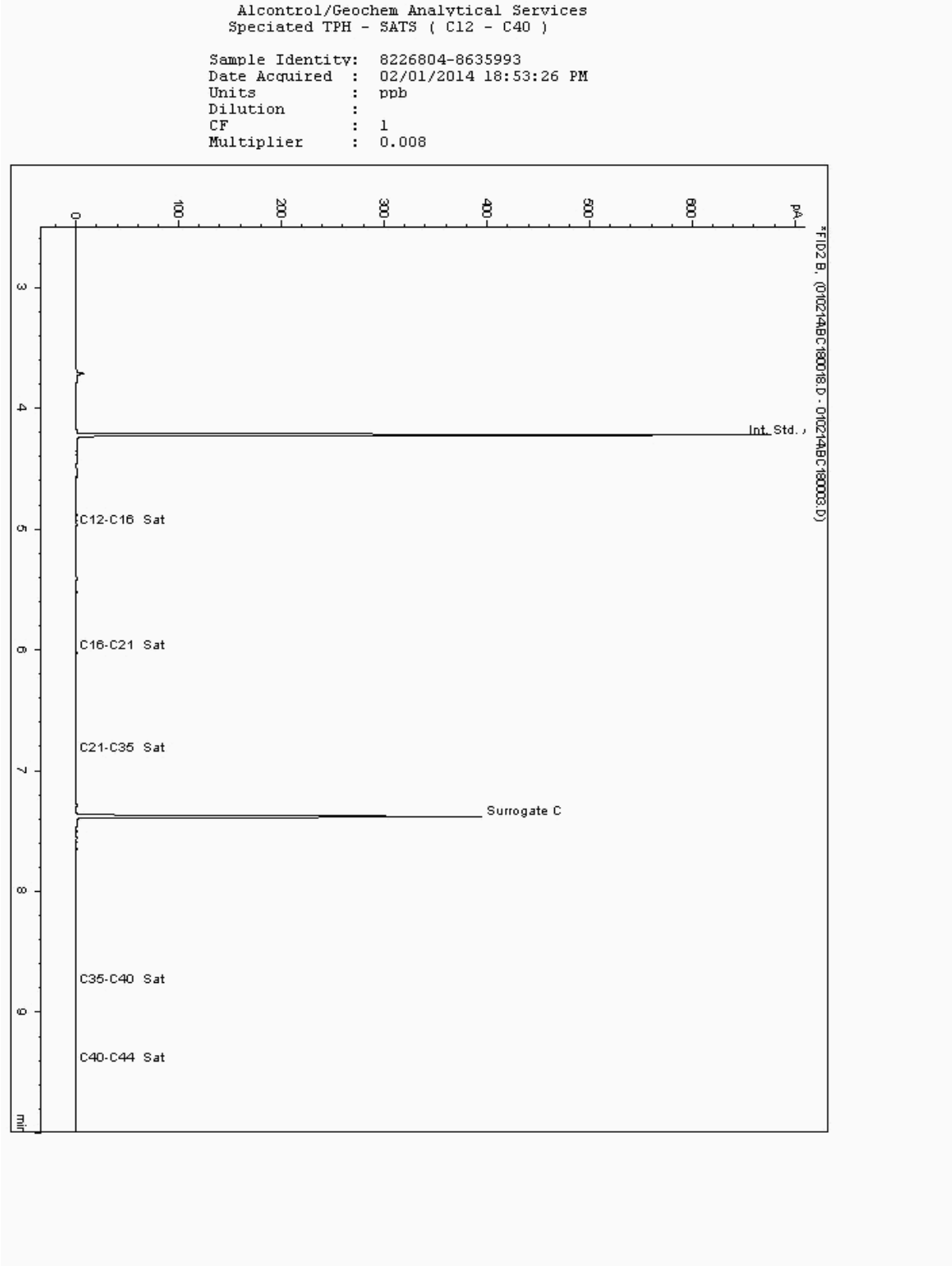


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635993 **Sample ID :** RW05 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

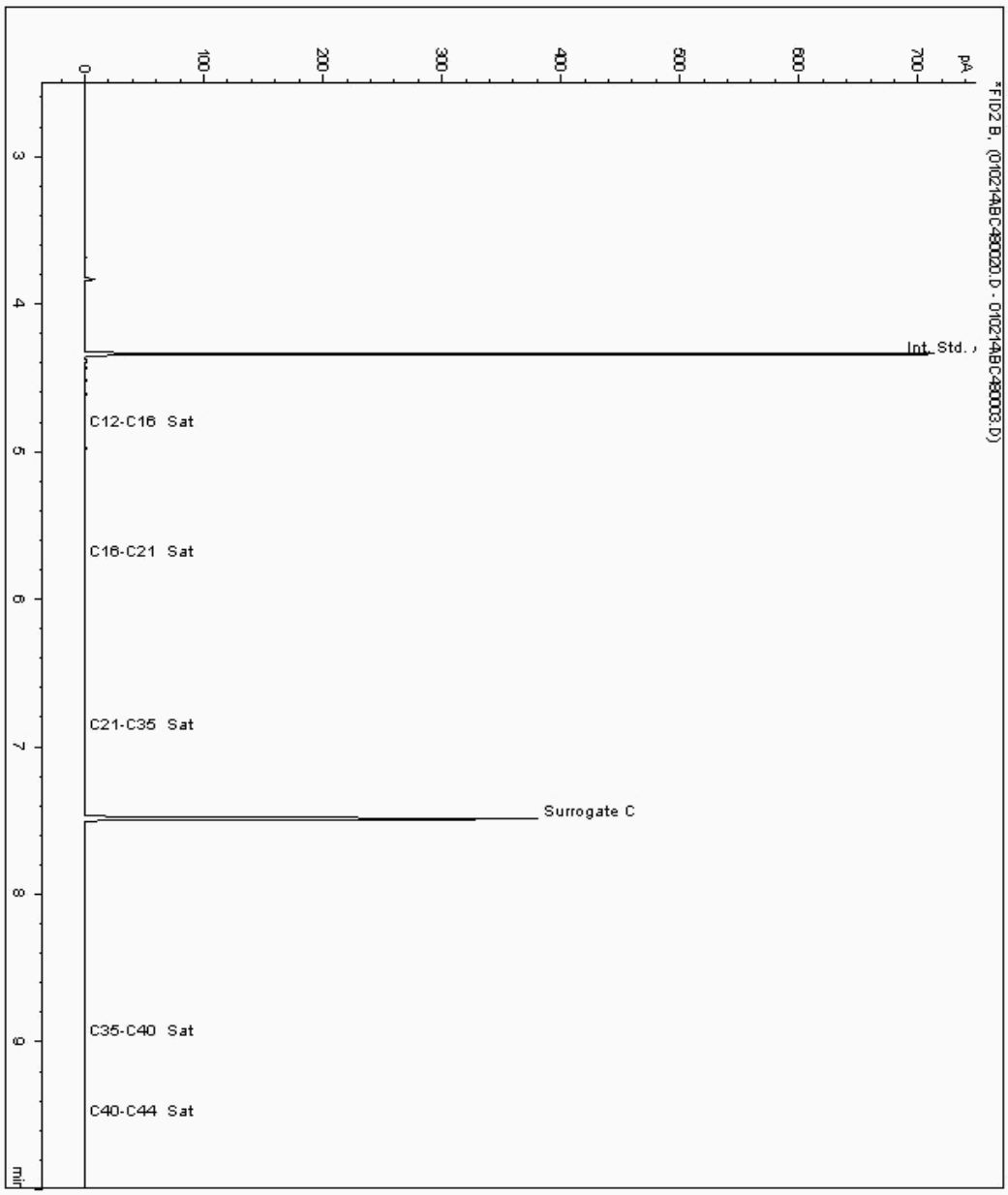
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8635997 **Sample ID :** RW07 **Depth :** 0.00

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

Sample Identity: 8226842-8635997
Date Acquired : 02/01/2014 19:36:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

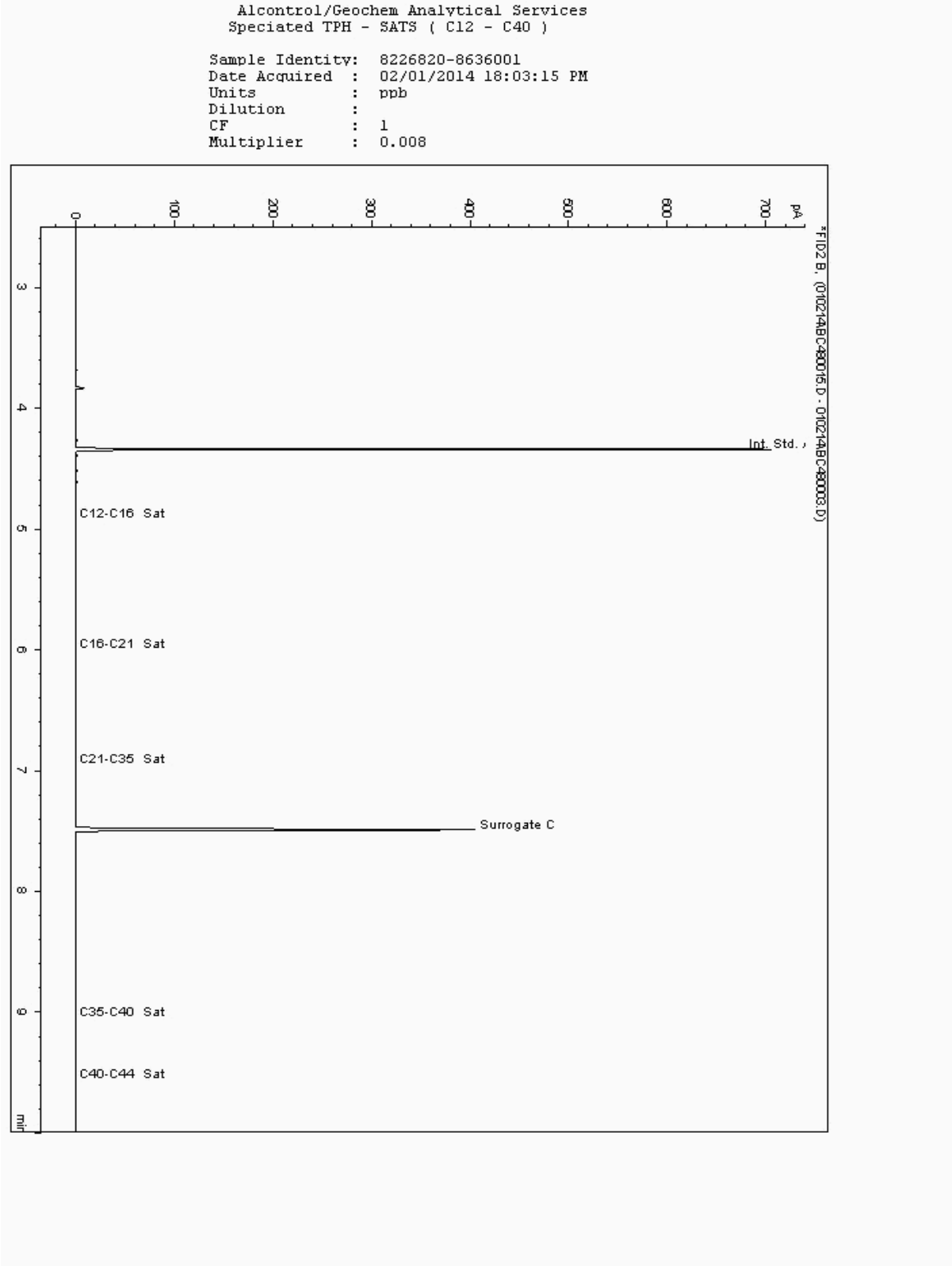


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636001 **Sample ID :** RW06 **Depth :** 0.00

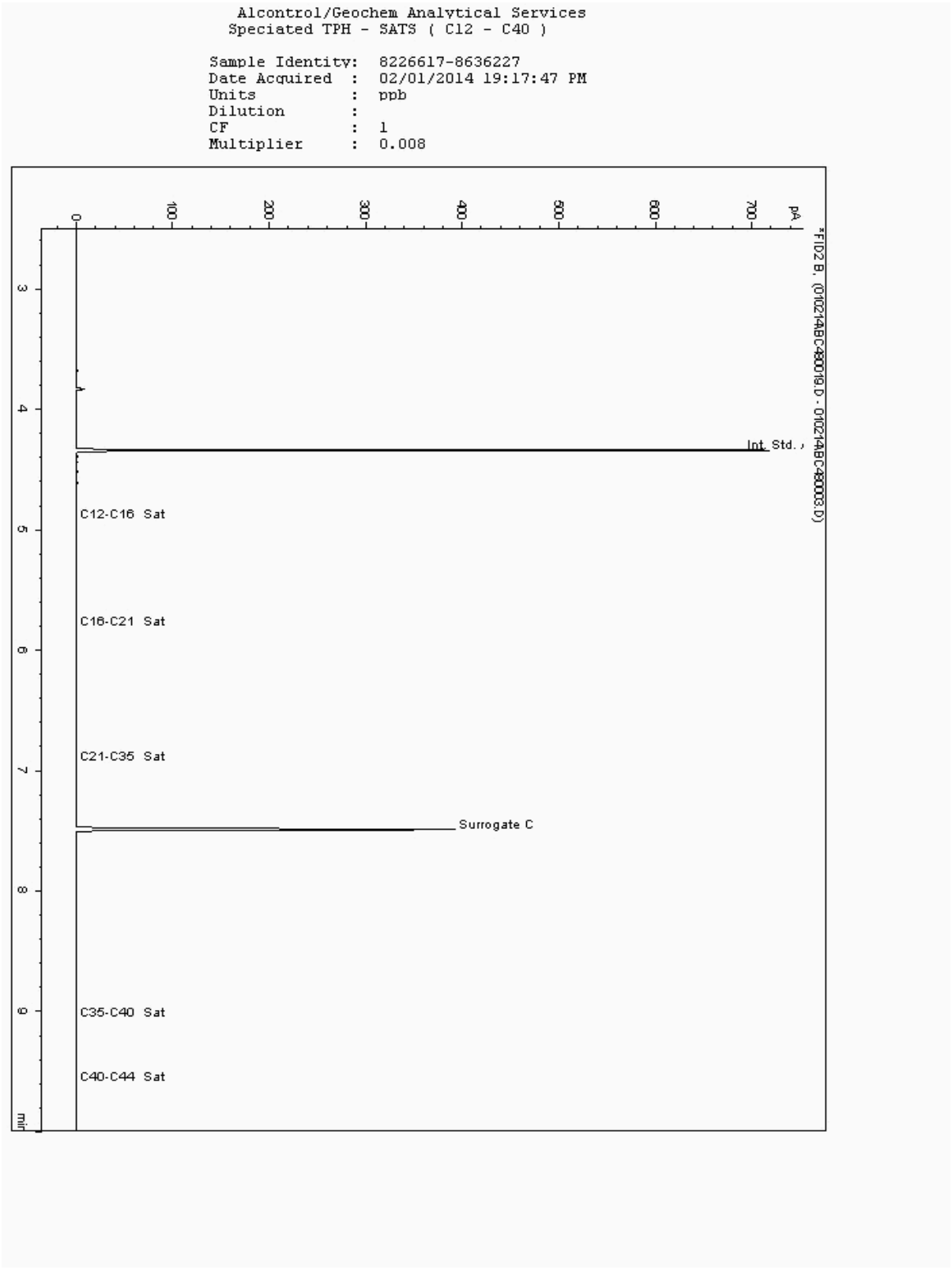


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636227 **Sample ID :** RW10 **Depth :** 0.00

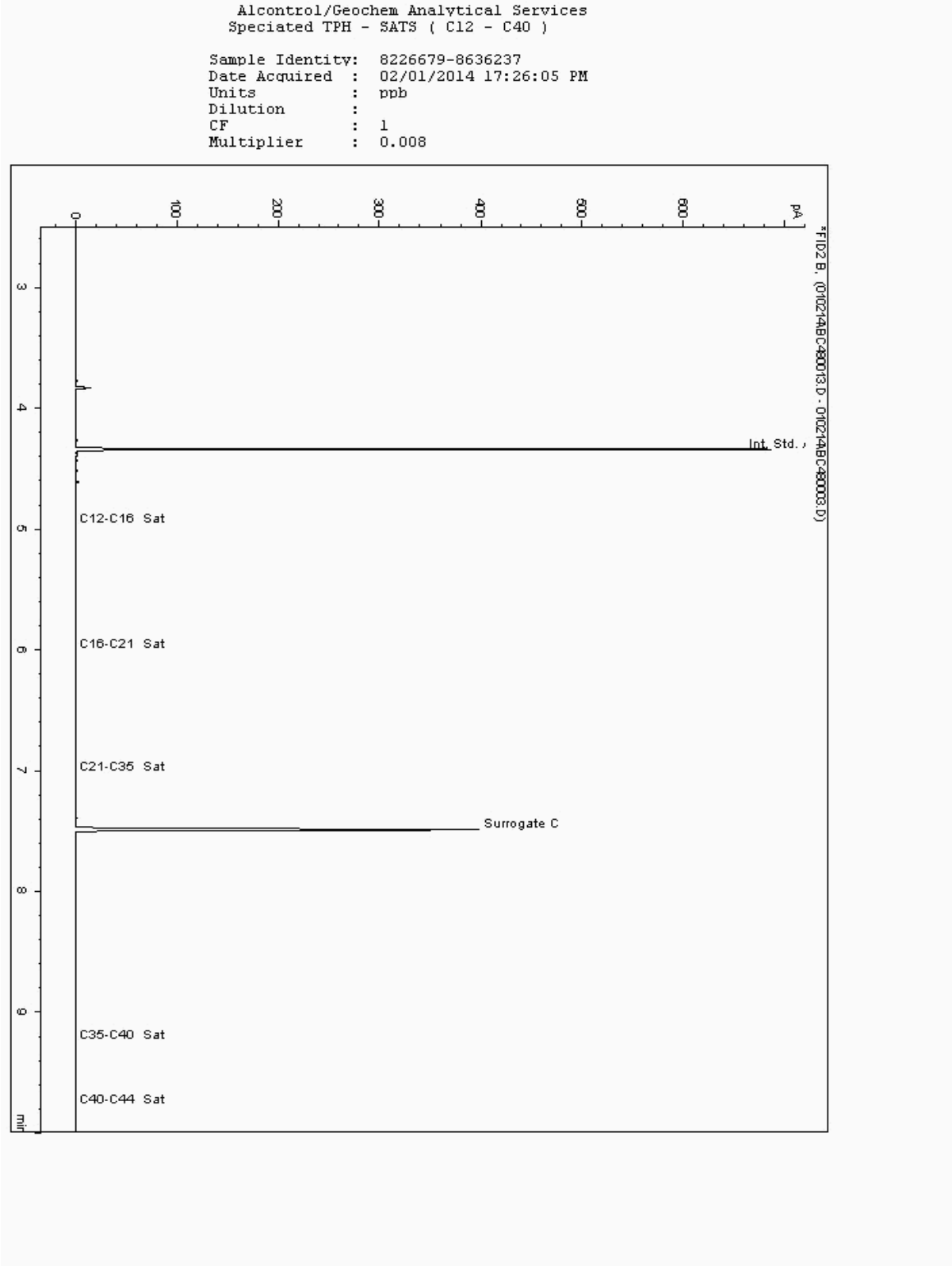


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636237 **Sample ID :** RW13 **Depth :** 0.00

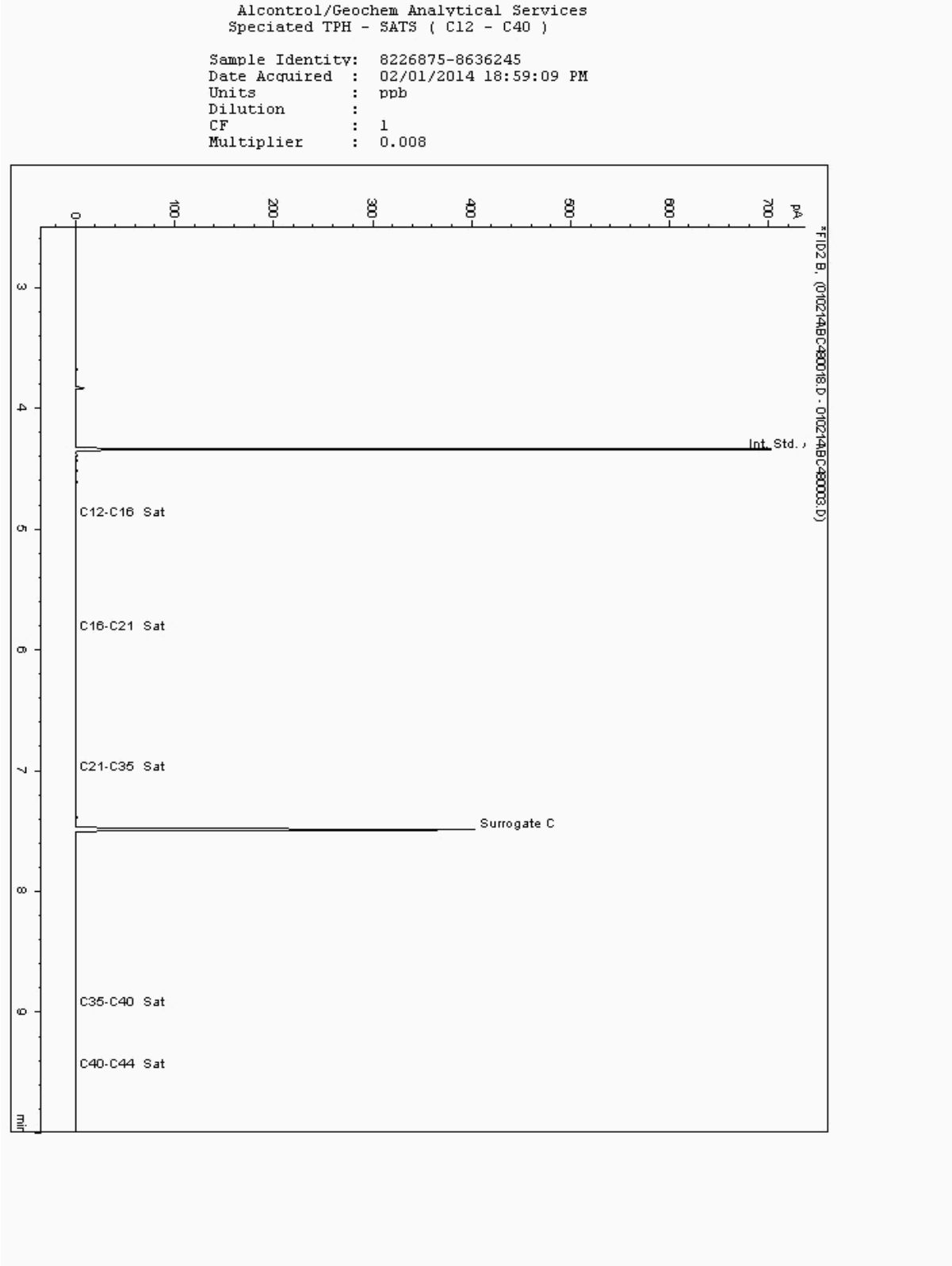


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636245 **Sample ID :** RW09 **Depth :** 0.00

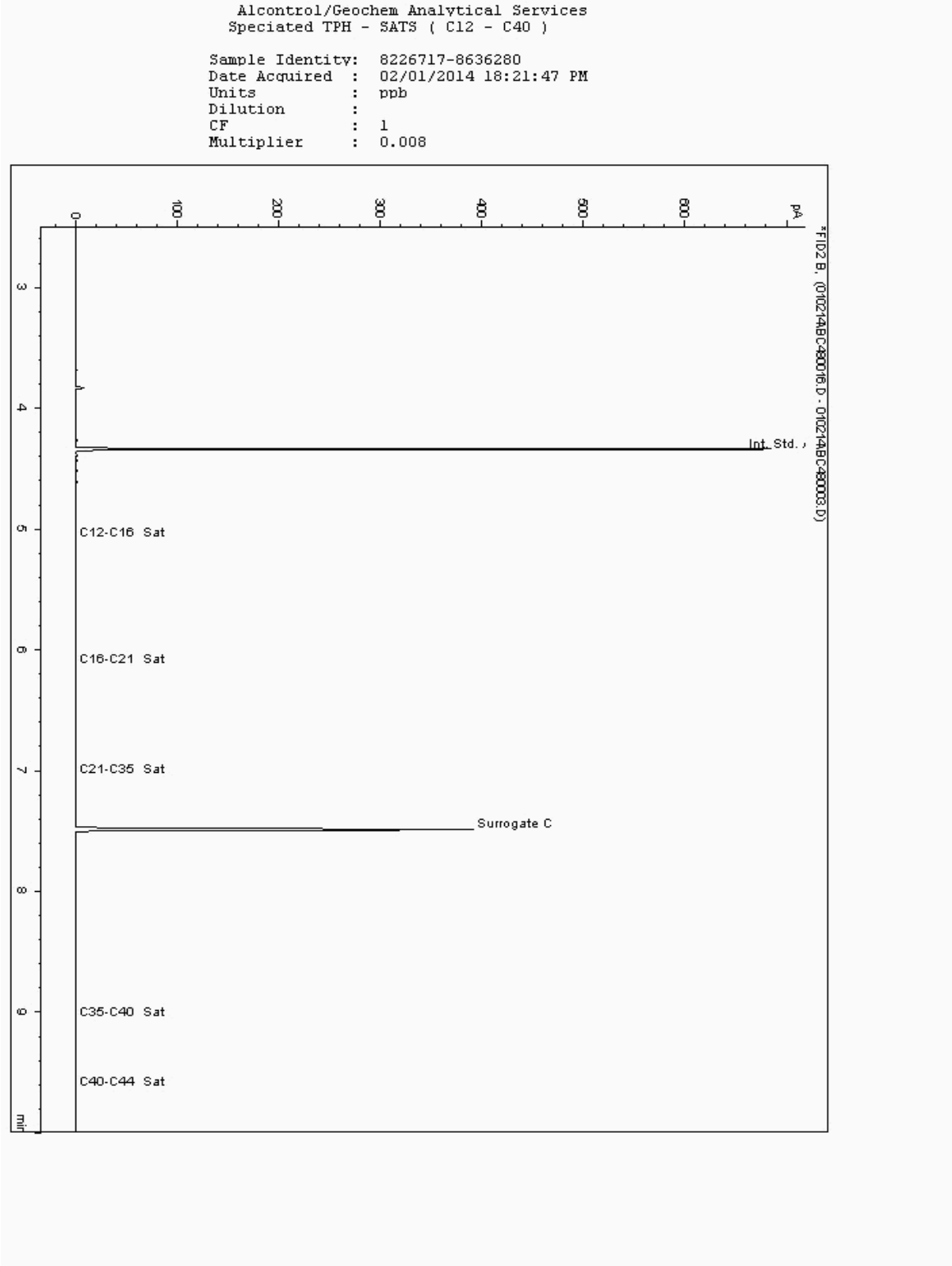


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636280 **Sample ID :** RW15 **Depth :** 0.00

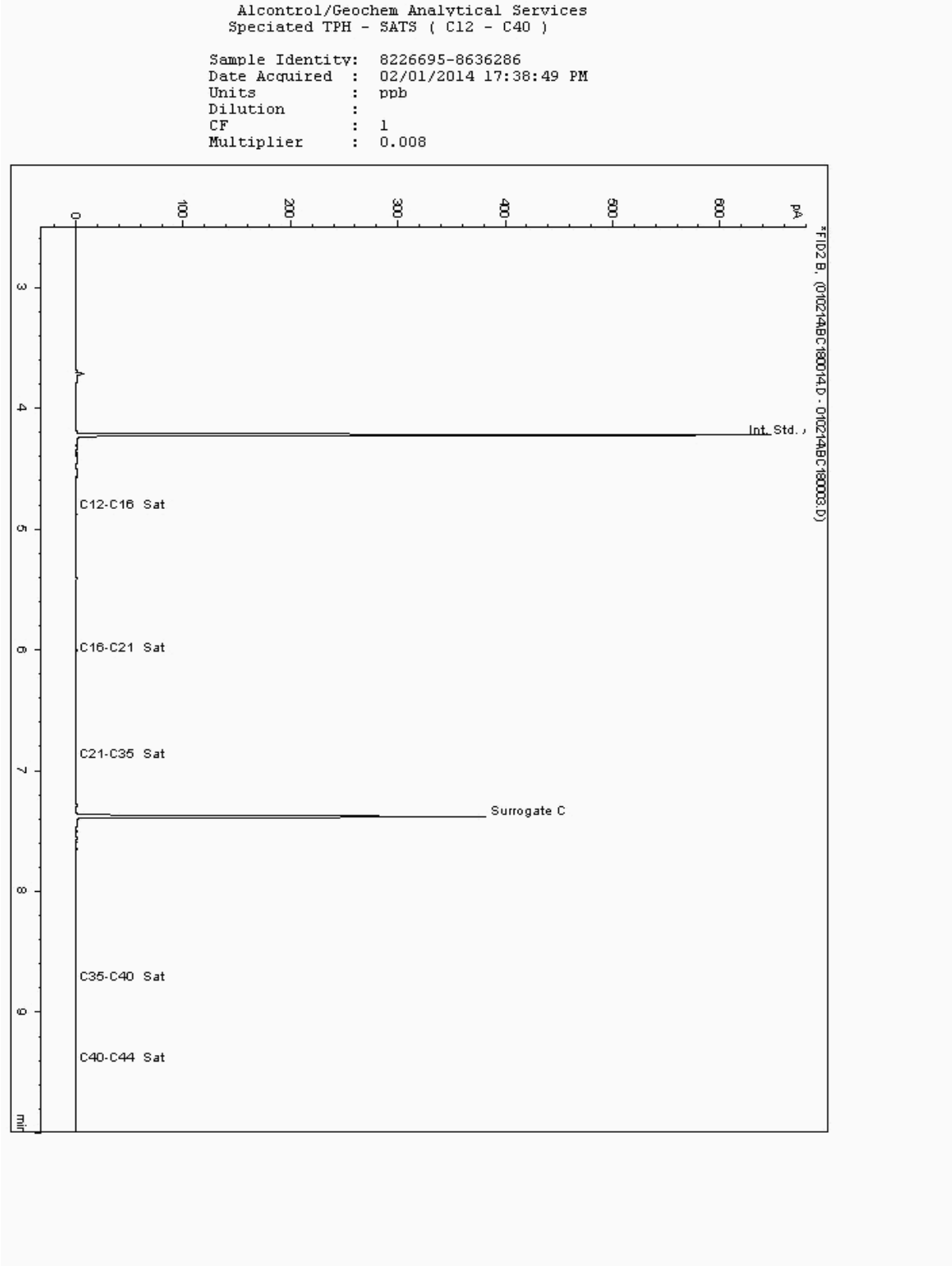


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636286 **Sample ID :** RW14 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

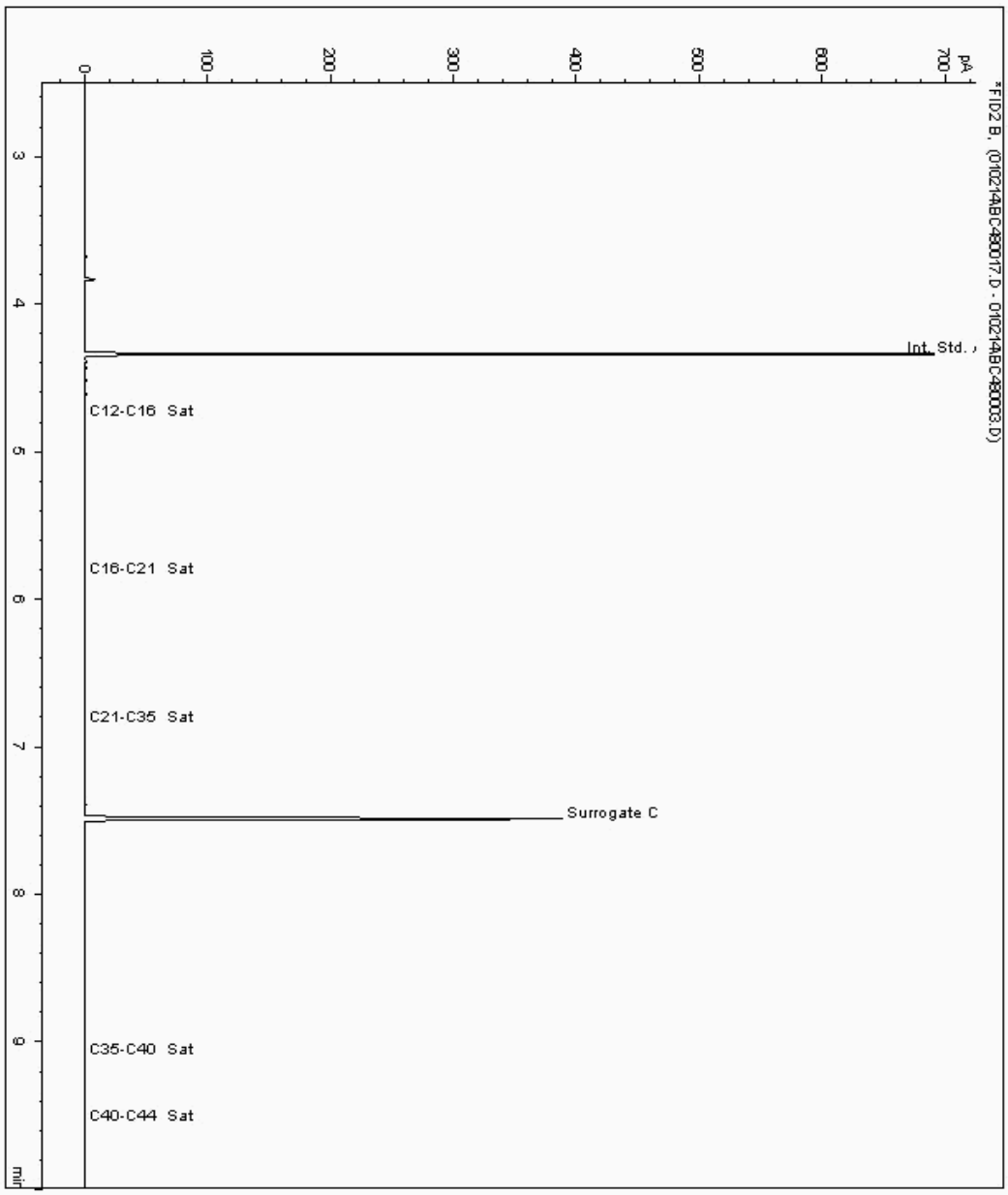
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636293 **Sample ID :** RW12 **Depth :** 0.00

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

Sample Identity: 8226660-8636293
Date Acquired : 02/01/2014 18:40:35 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

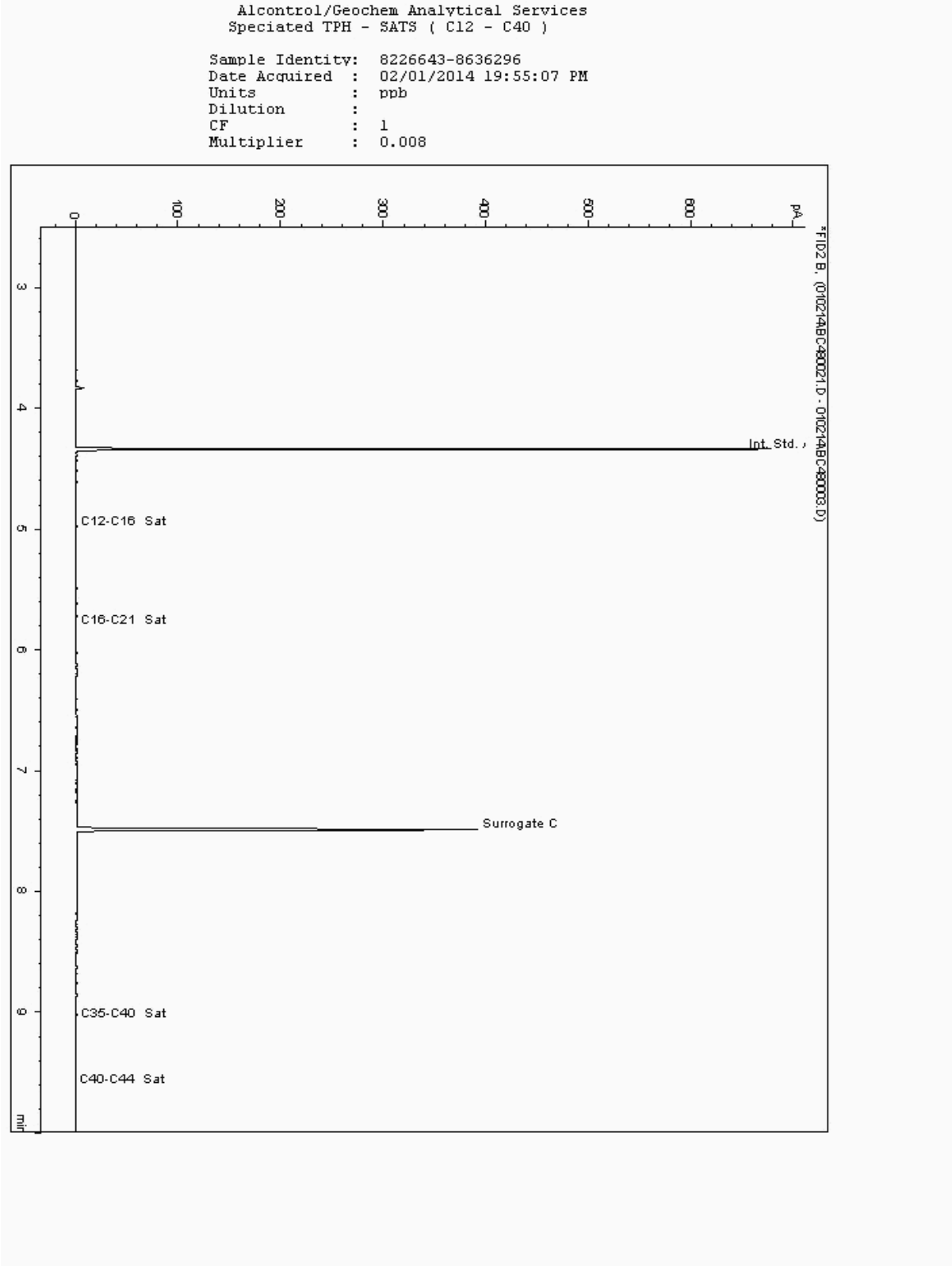


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 8636296 **Sample ID :** RW11 **Depth :** 0.00

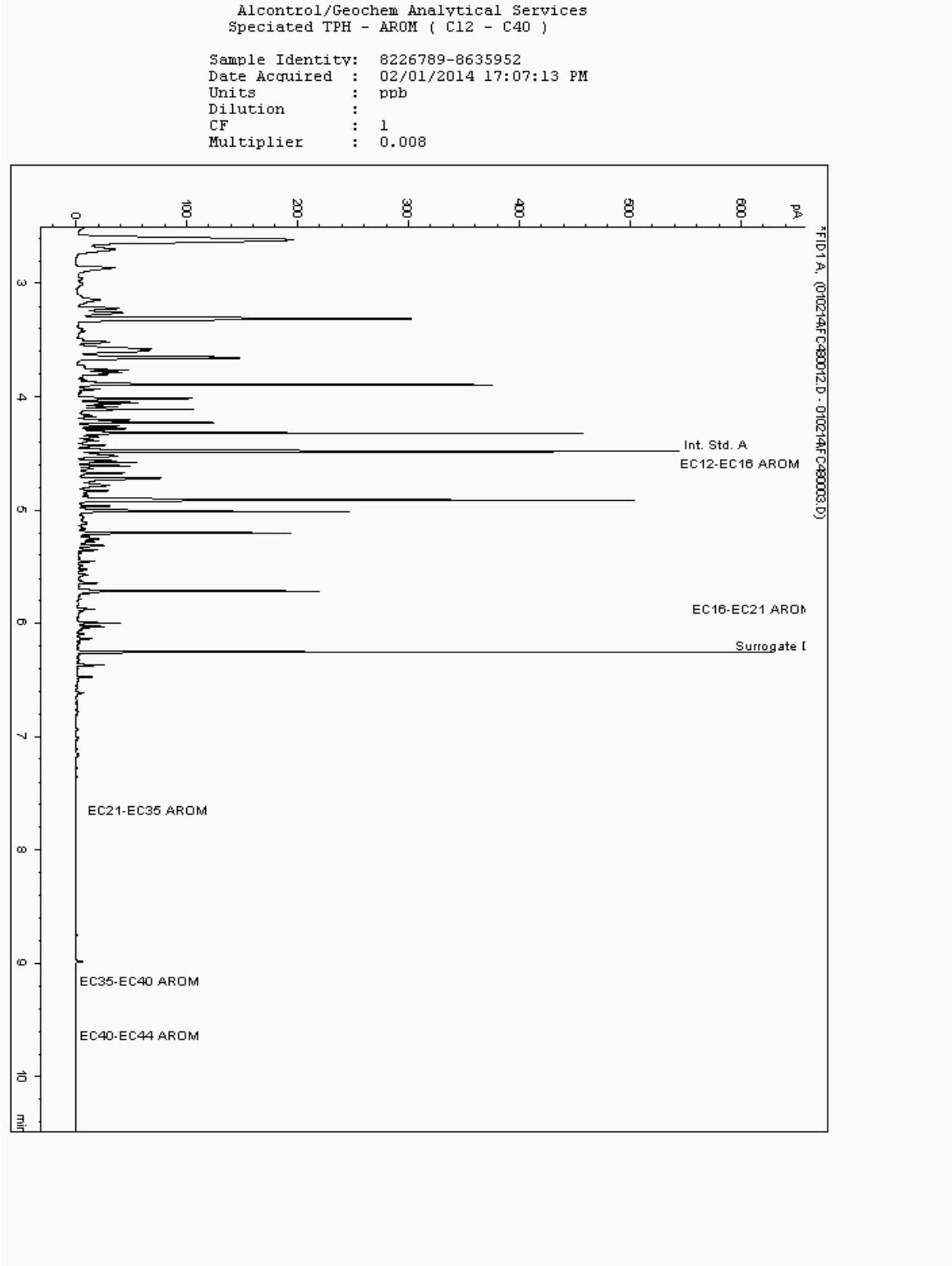


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635952 **Sample ID :** RW04 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

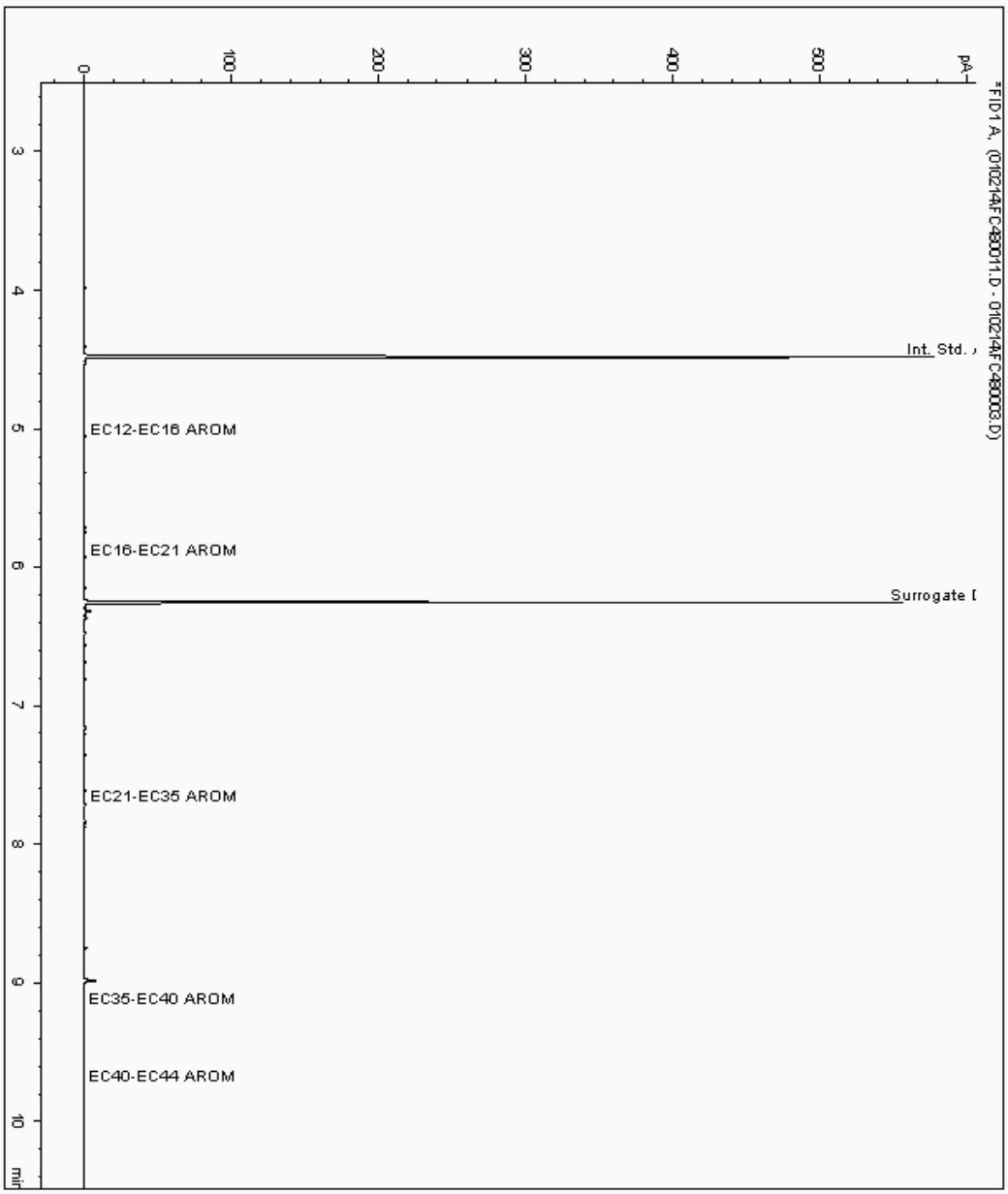
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635956 **Sample ID :** RW03 **Depth :** 0.00

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

Sample Identity: 8226766-8635956
Date Acquired : 02/01/2014 16:48:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

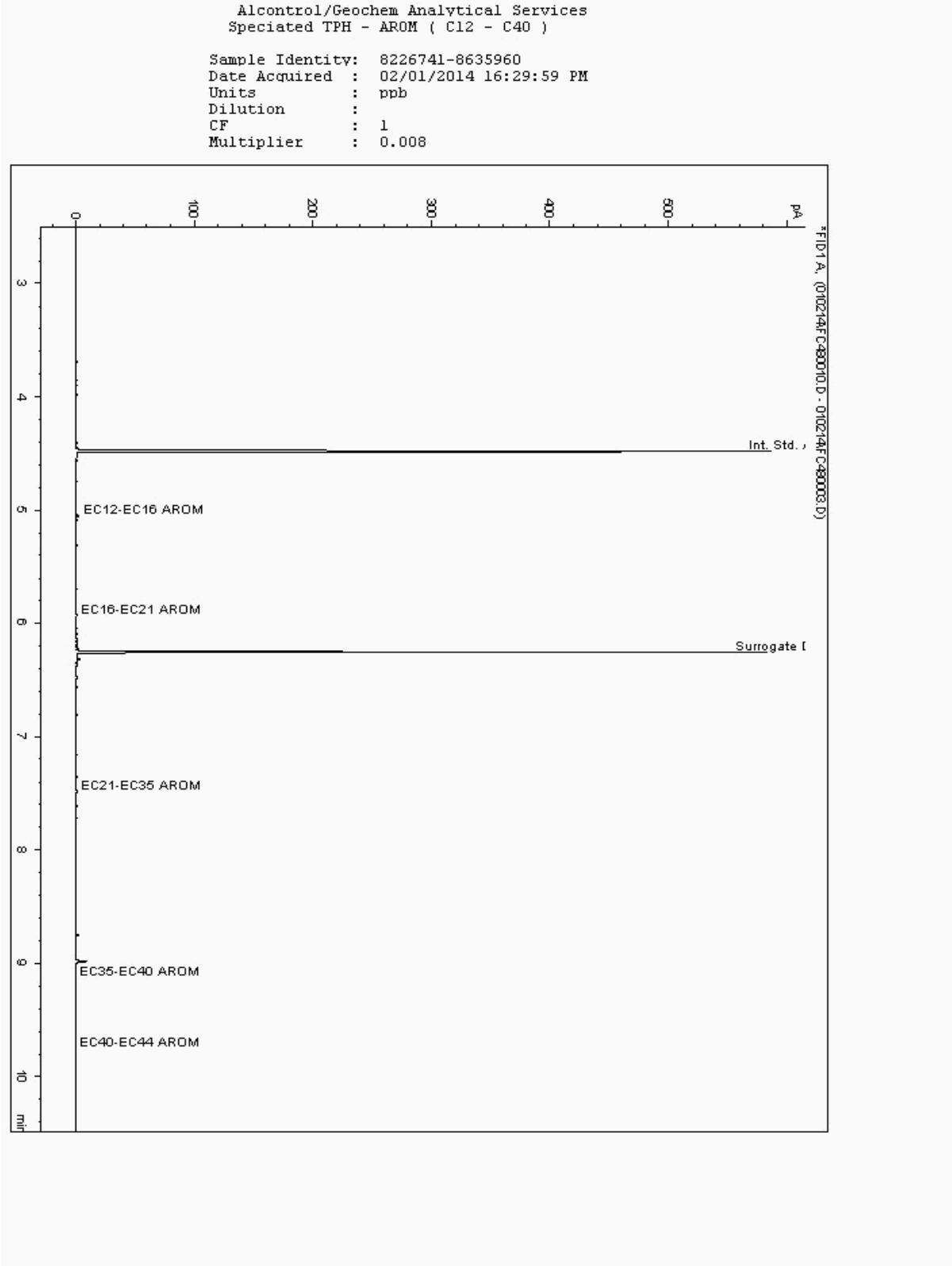


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635960 **Sample ID :** RW02 **Depth :** 0.00

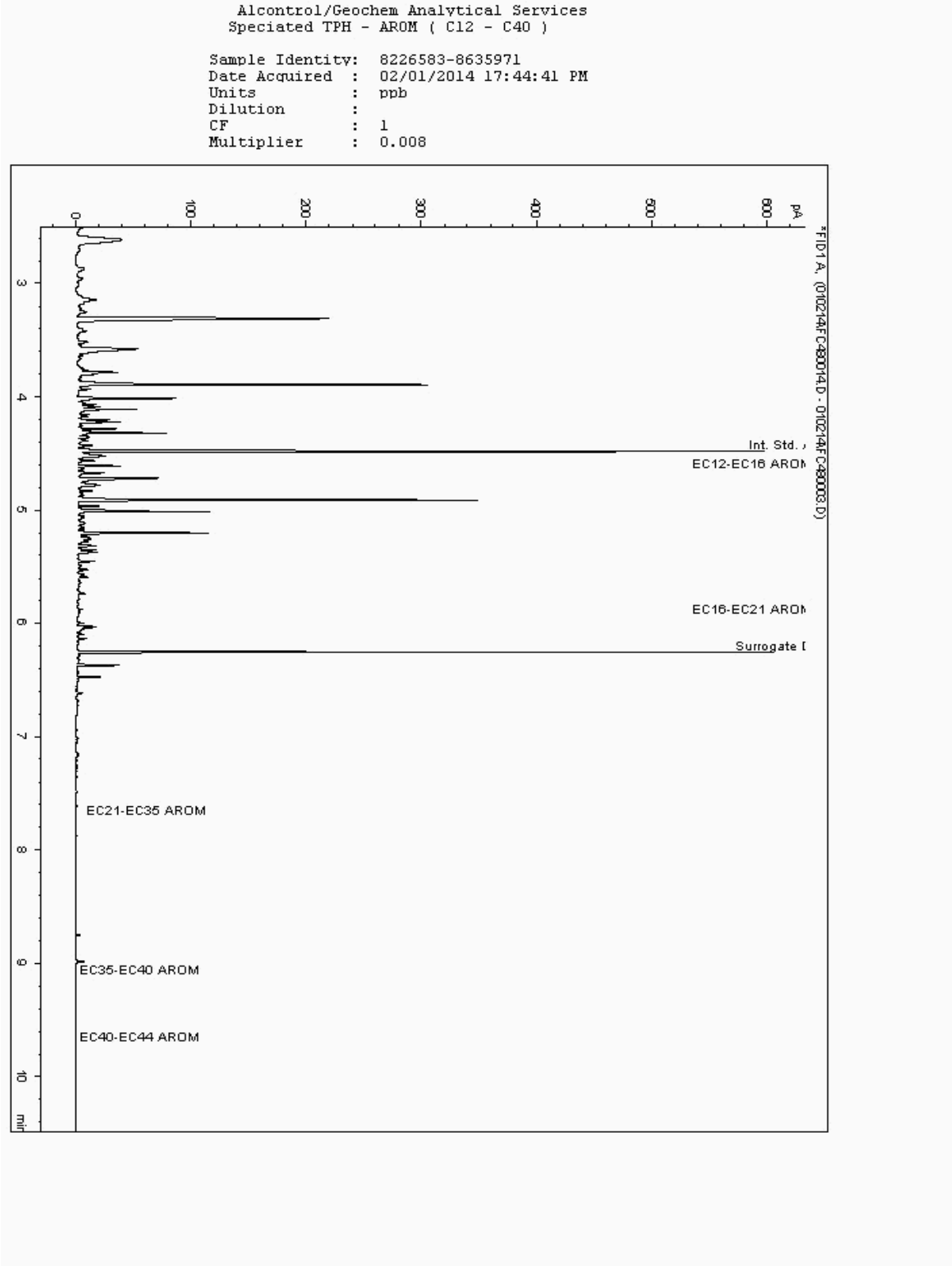


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635971 **Sample ID :** RW01 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

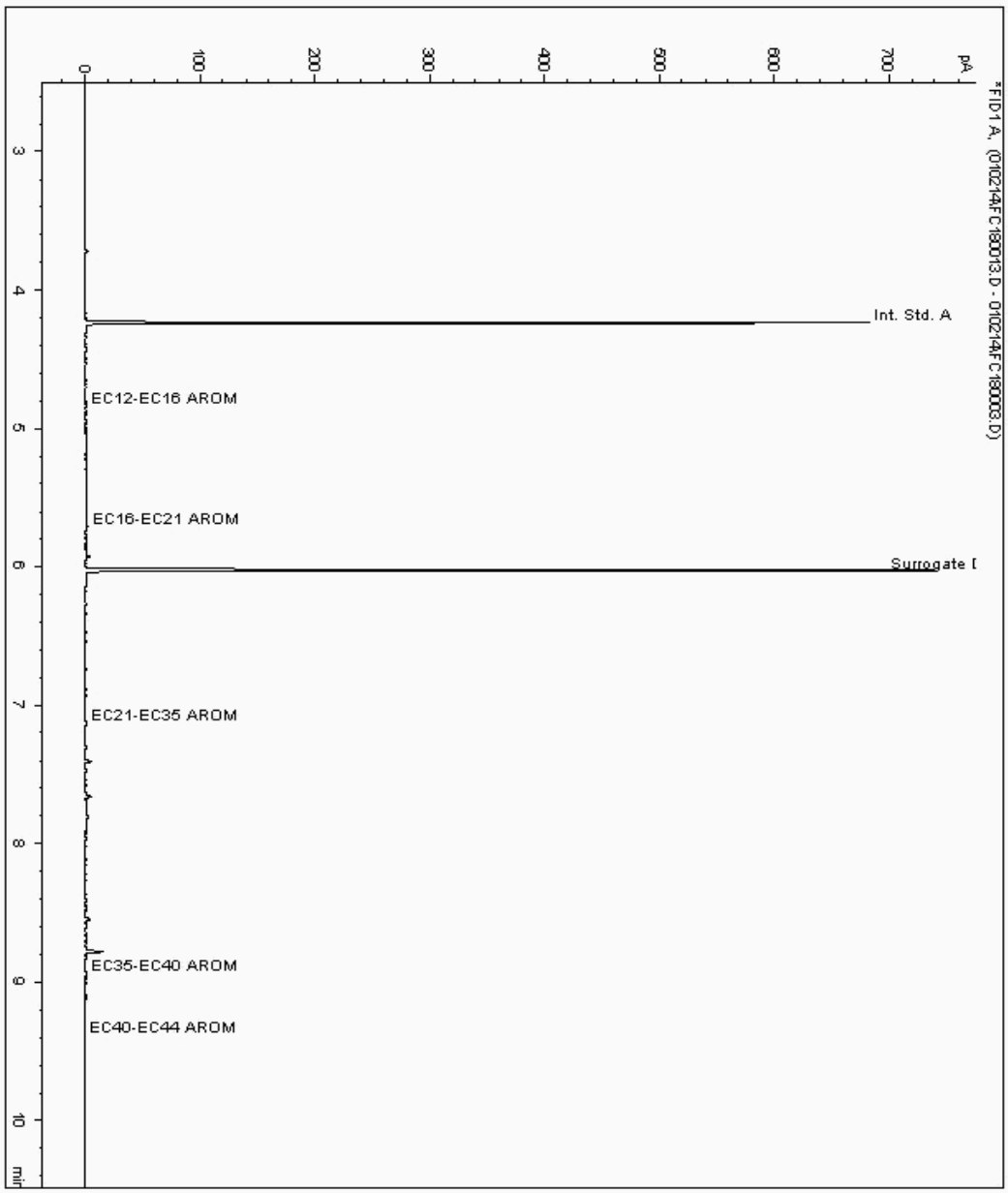
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635975 **Sample ID :** RW08 **Depth :** 0.00

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

Sample Identity: 8226860-8635975
Date Acquired : 02/01/2014 17:20:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

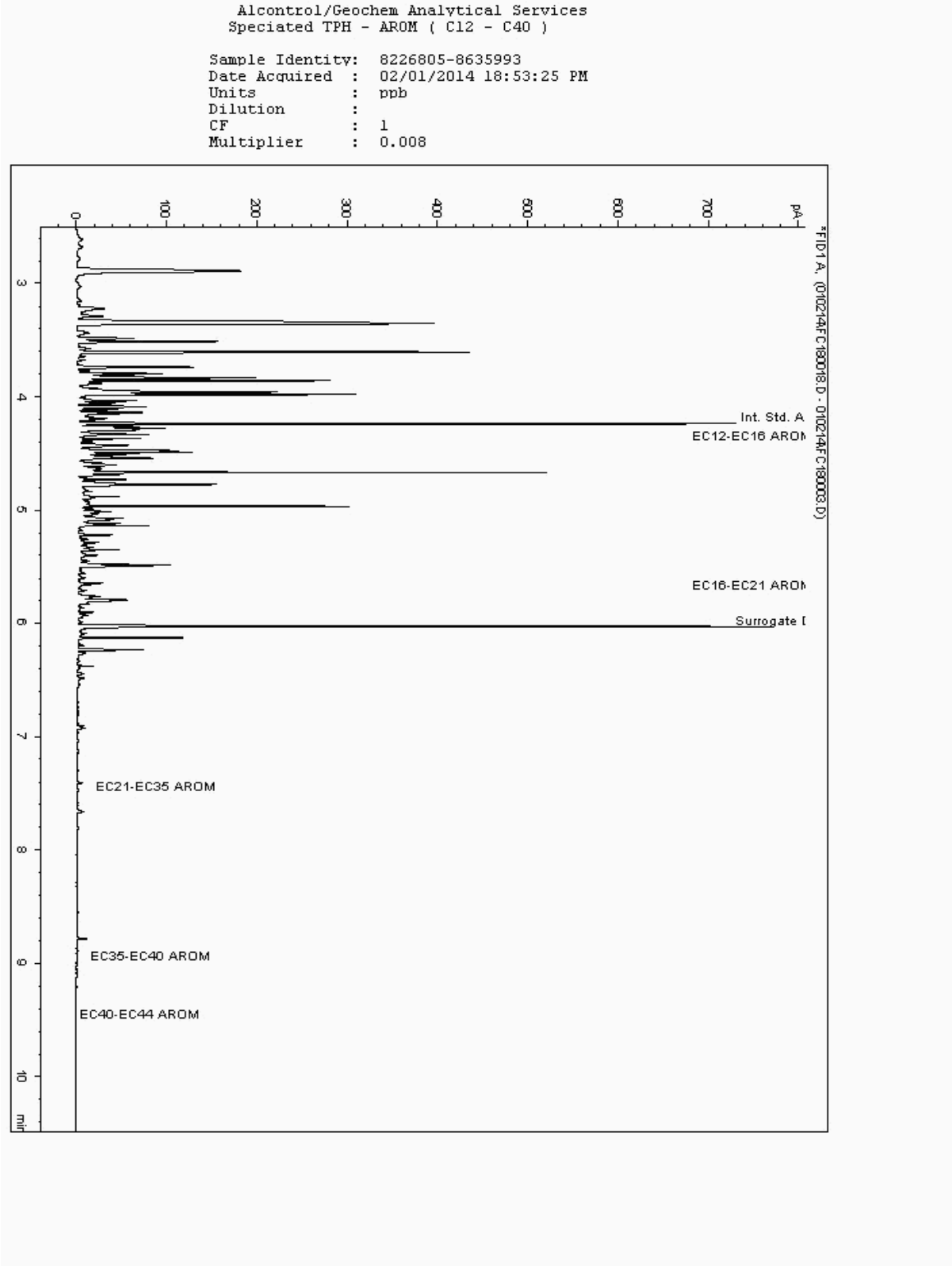


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635993 **Sample ID :** RW05 **Depth :** 0.00

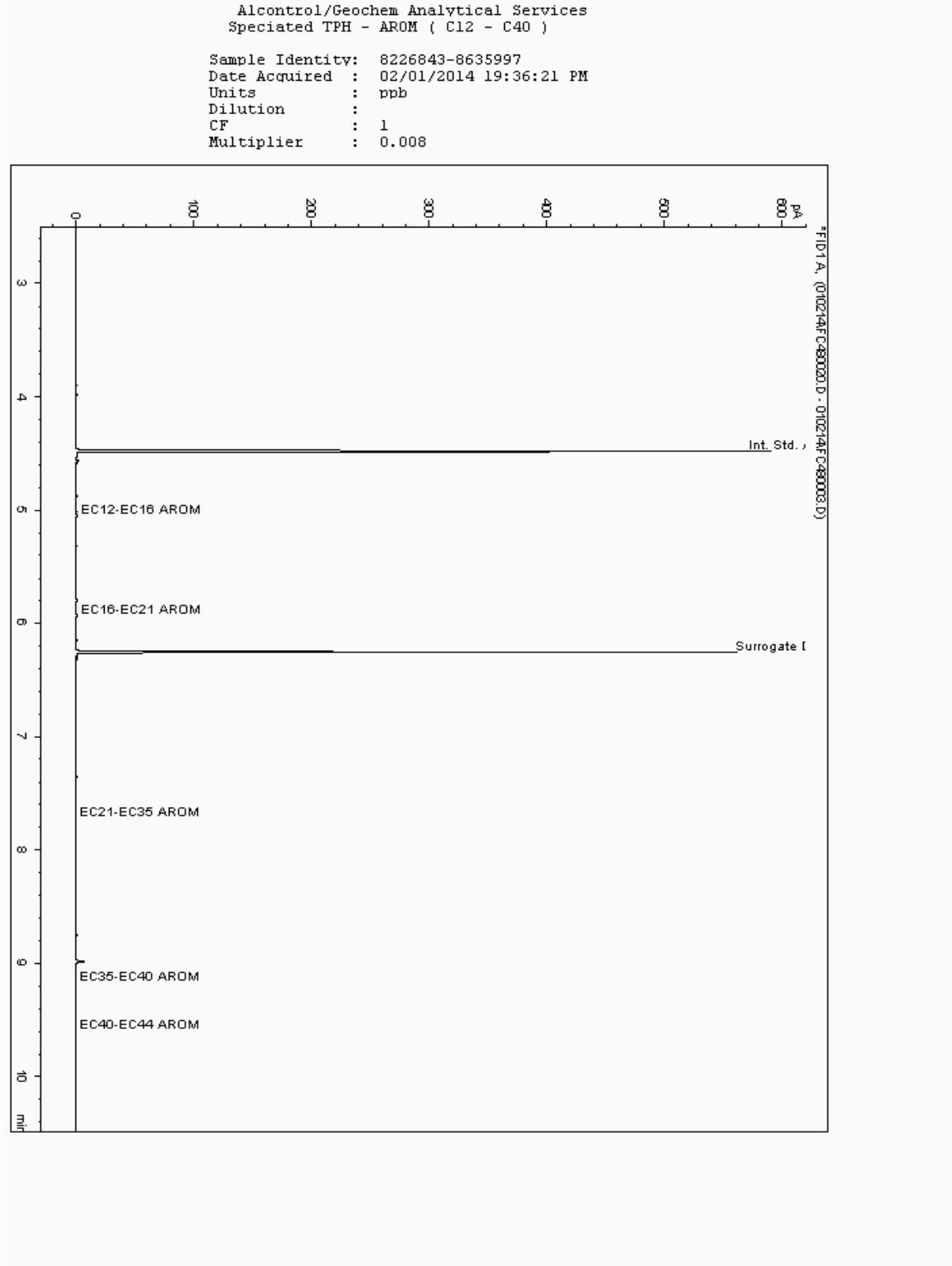


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8635997 **Sample ID :** RW07 **Depth :** 0.00

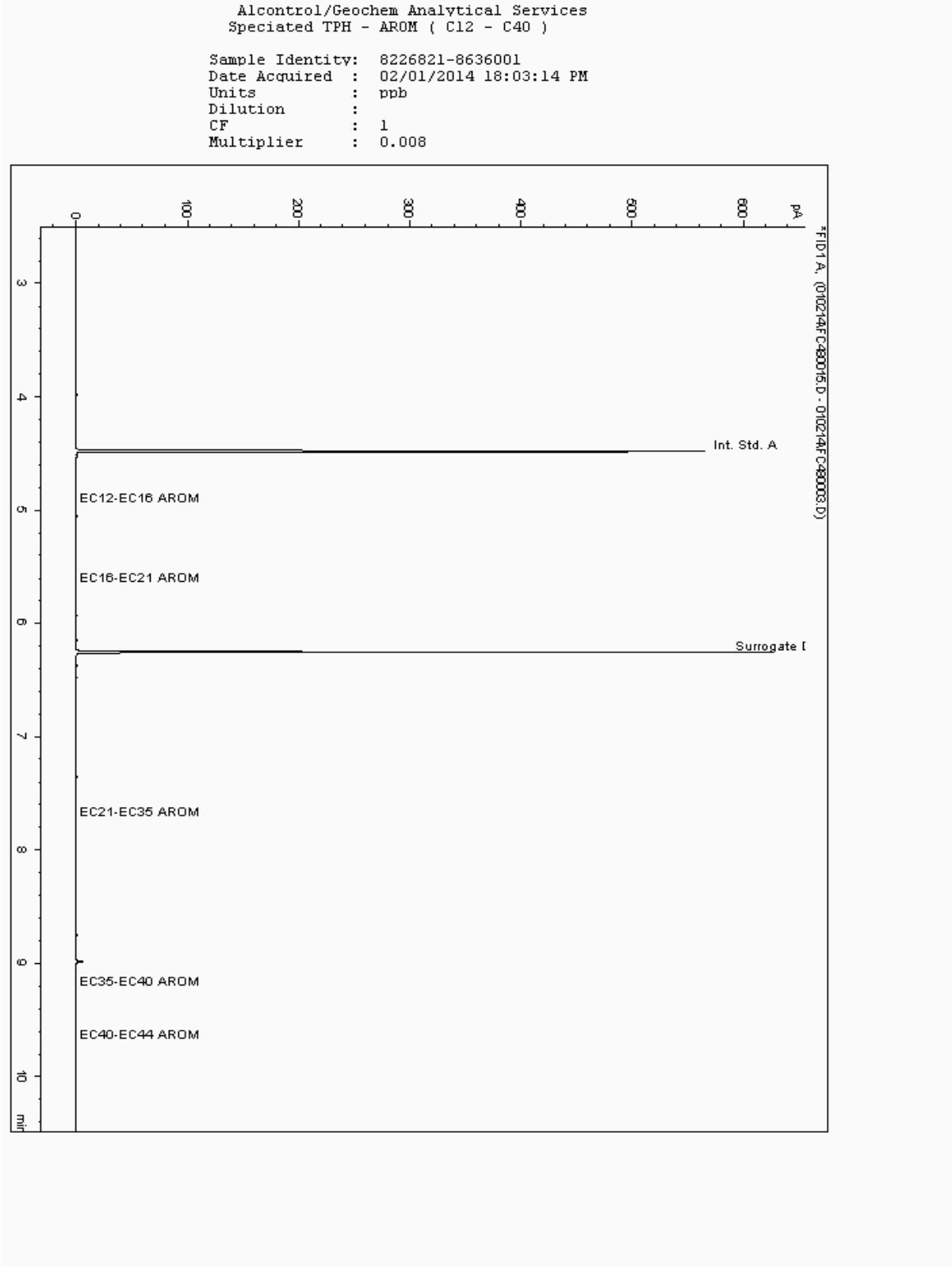


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636001 **Sample ID :** RW06 **Depth :** 0.00

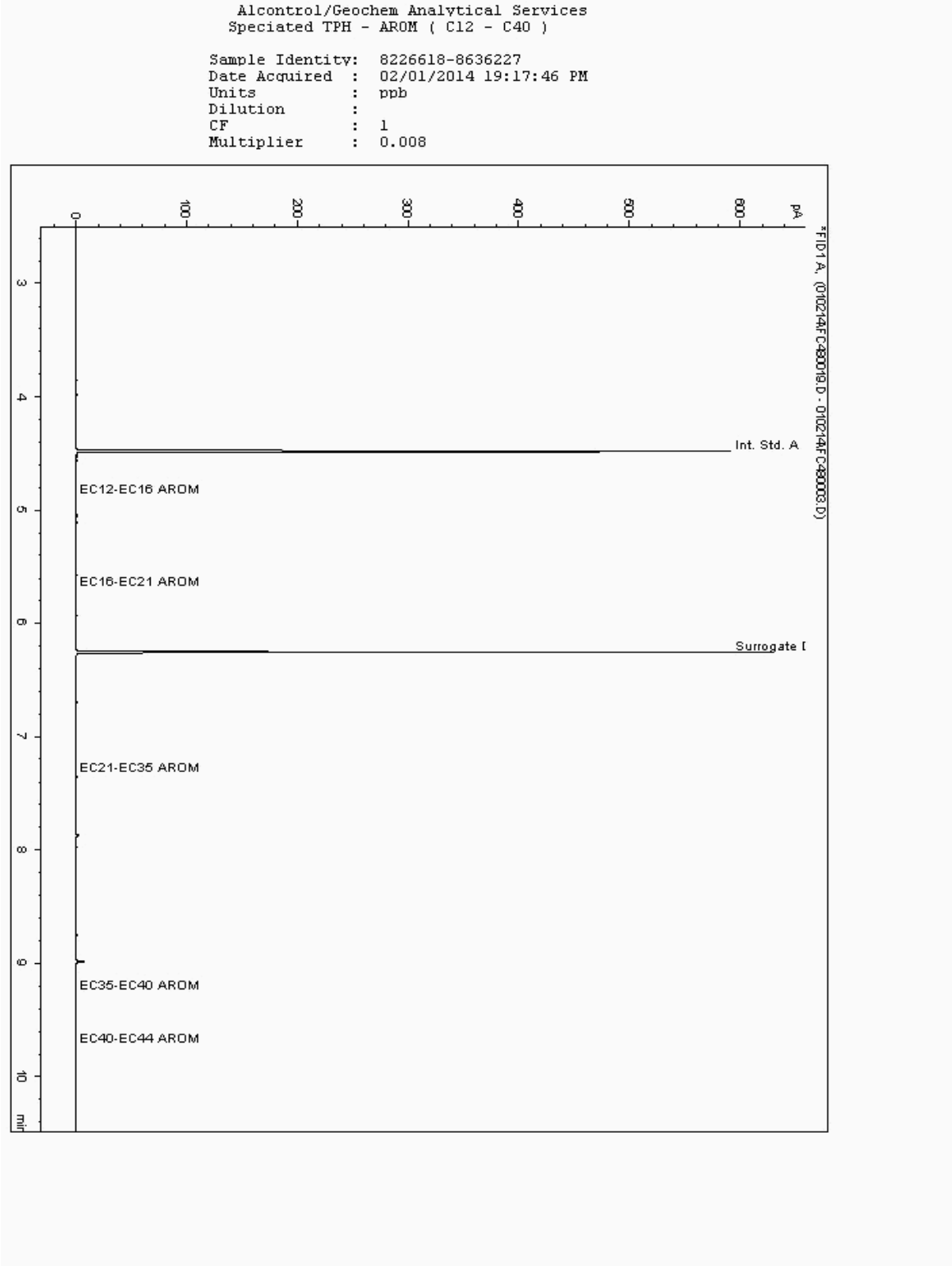


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636227 **Sample ID :** RW10 **Depth :** 0.00

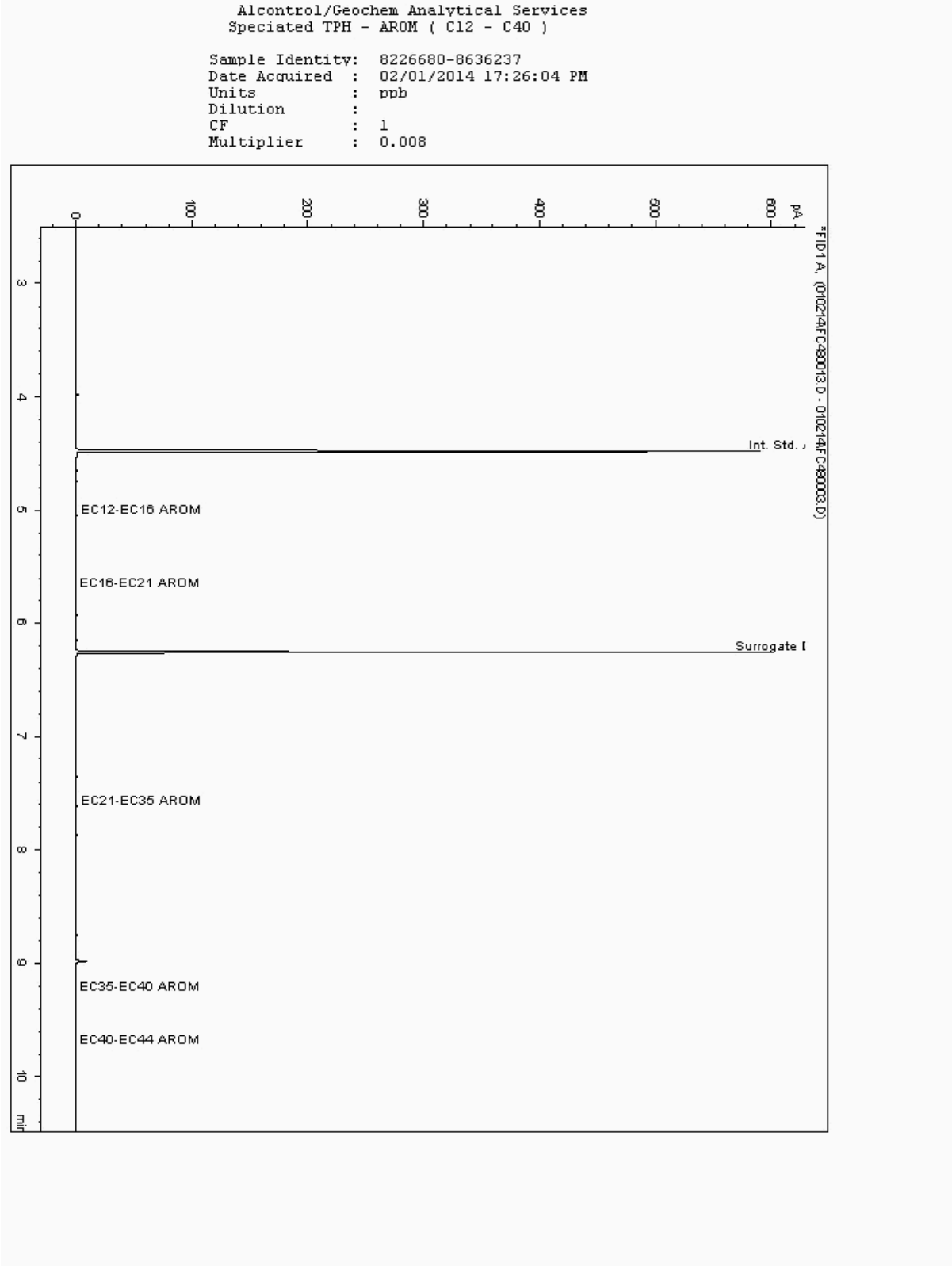


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636237 **Sample ID :** RW13 **Depth :** 0.00

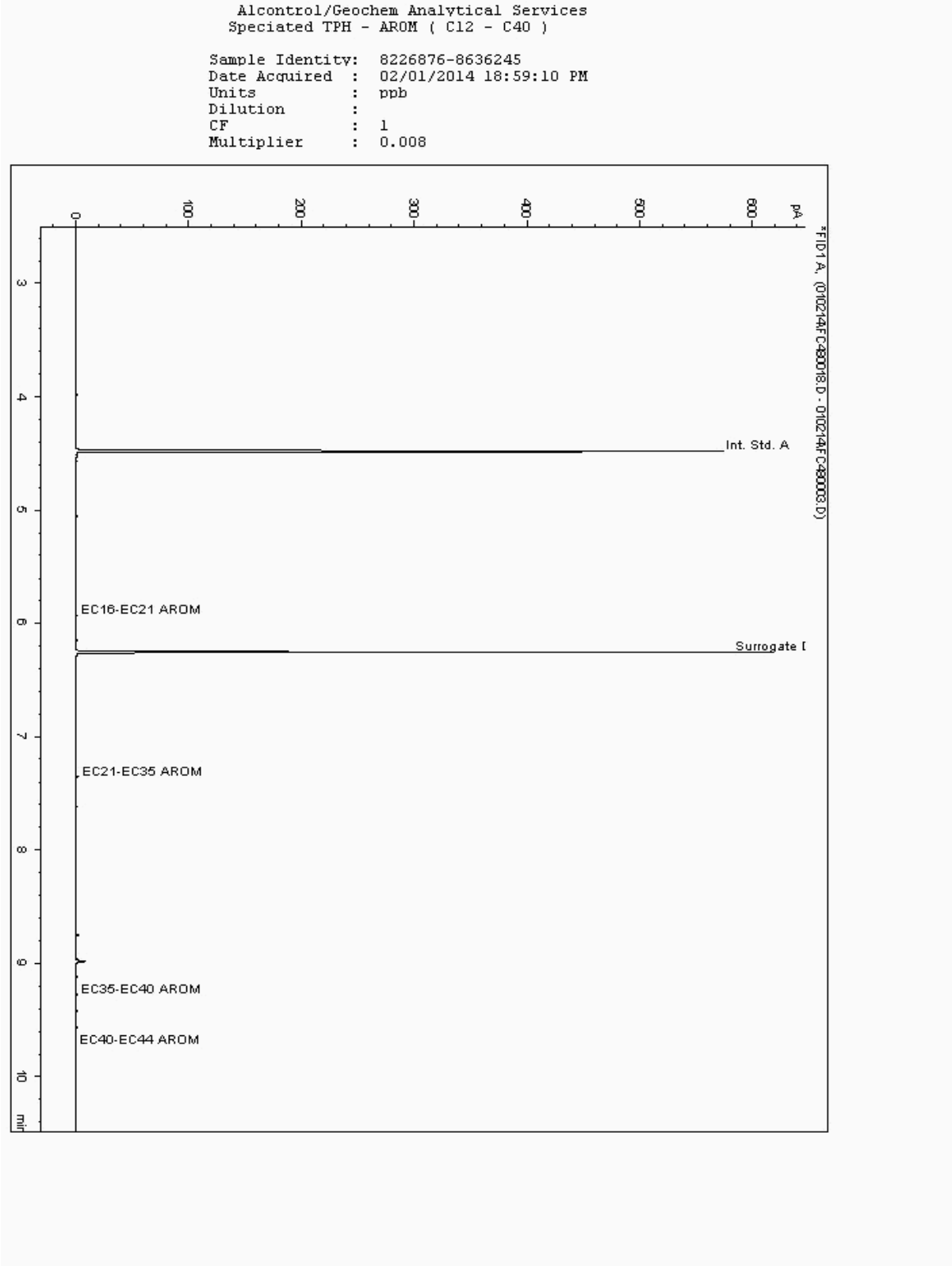


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636245 **Sample ID :** RW09 **Depth :** 0.00

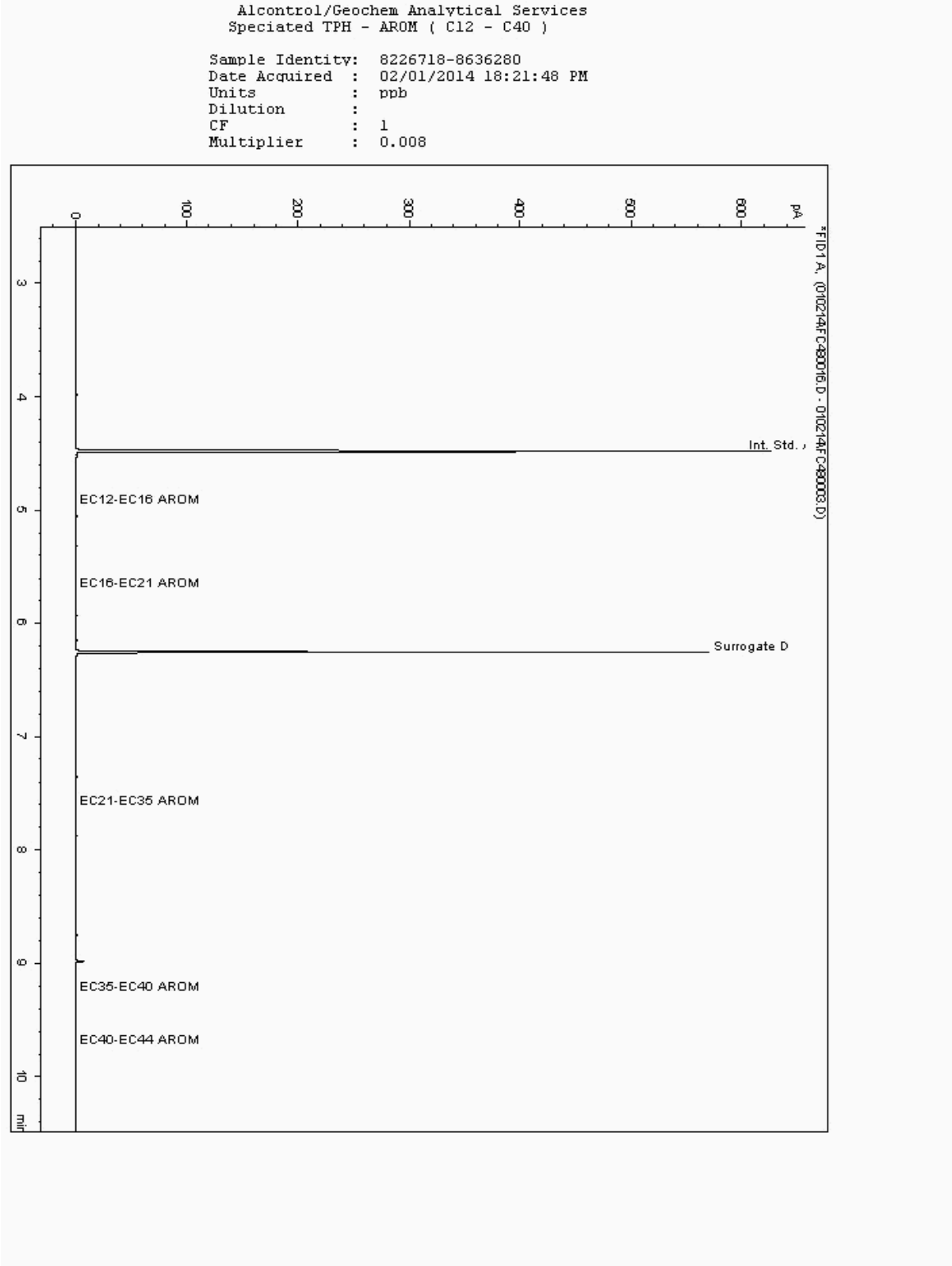


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636280 **Sample ID :** RW15 **Depth :** 0.00

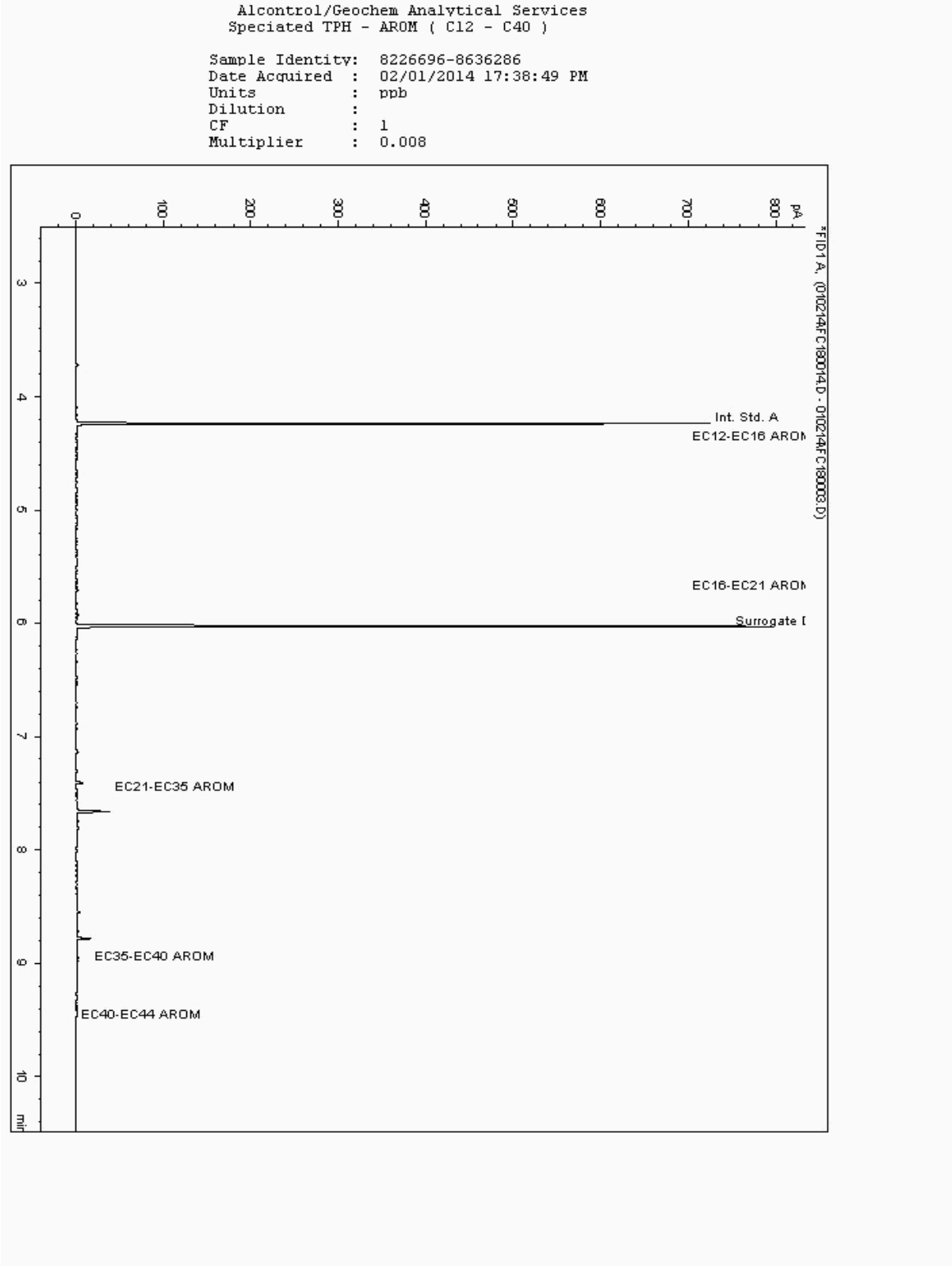


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636286 **Sample ID :** RW14 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

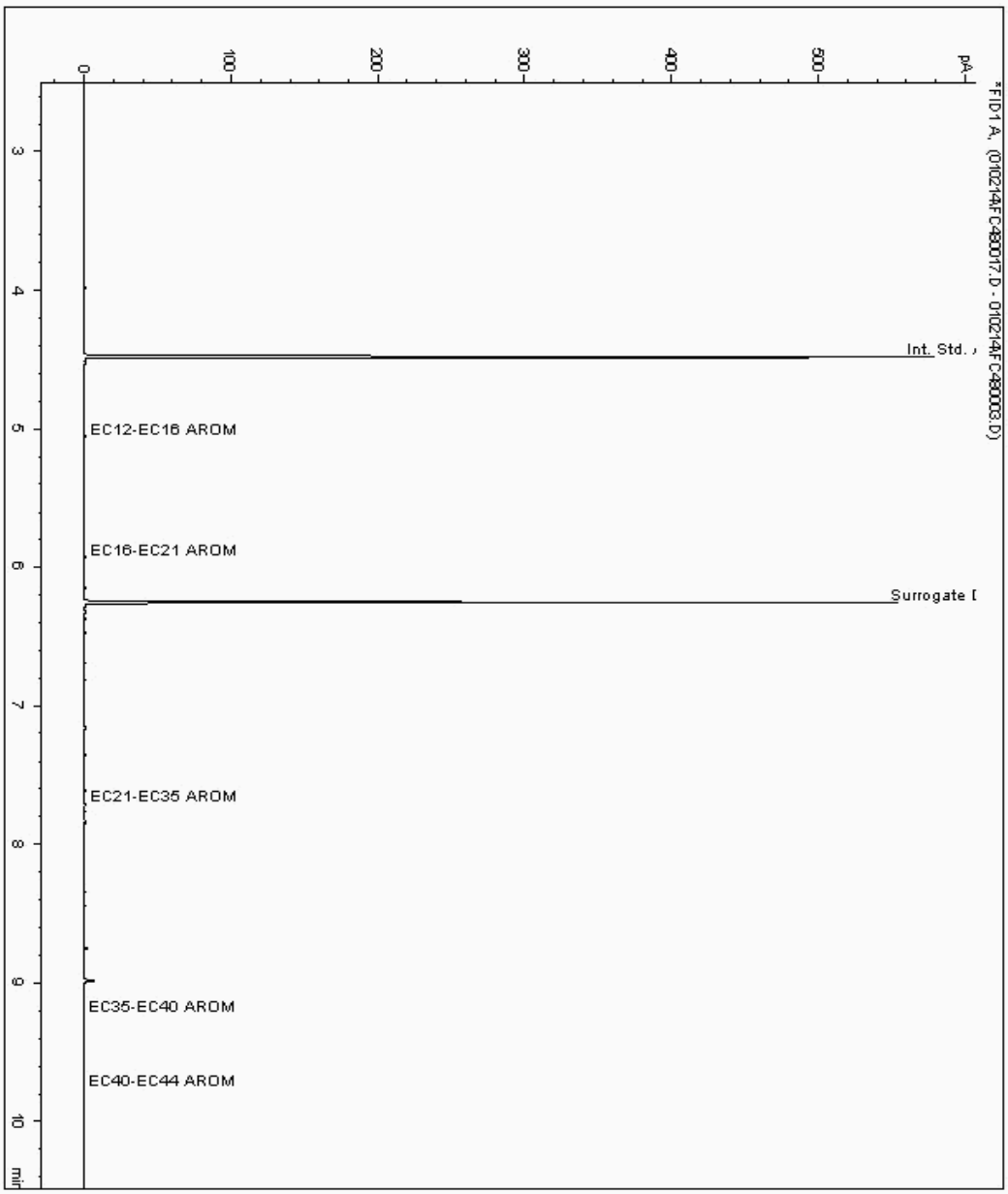
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636293 **Sample ID :** RW12 **Depth :** 0.00

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

Sample Identity: 8226661-8636293
Date Acquired : 02/01/2014 18:40:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

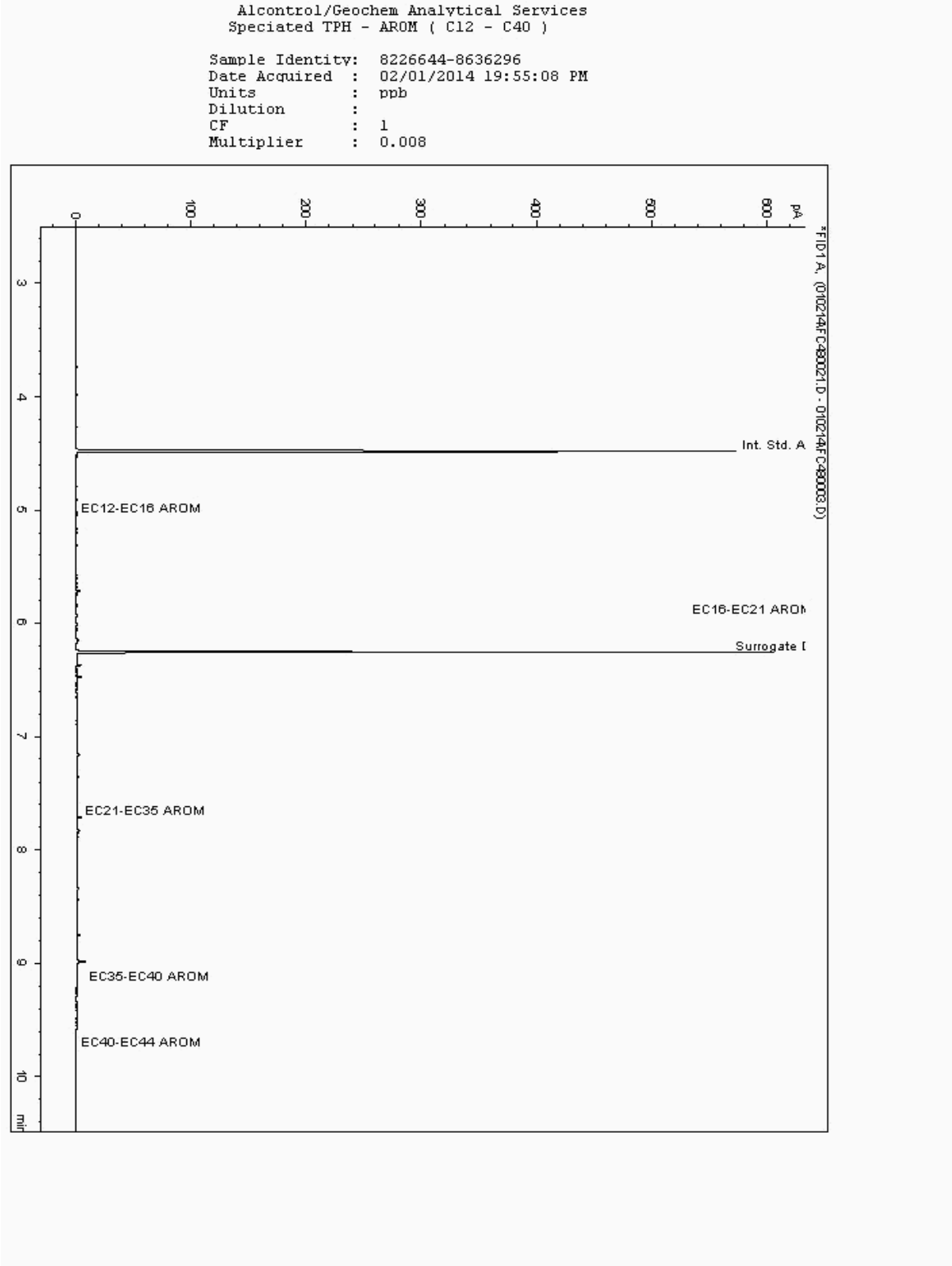


CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 8636296 **Sample ID :** RW11 **Depth :** 0.00



CERTIFICATE OF ANALYSIS

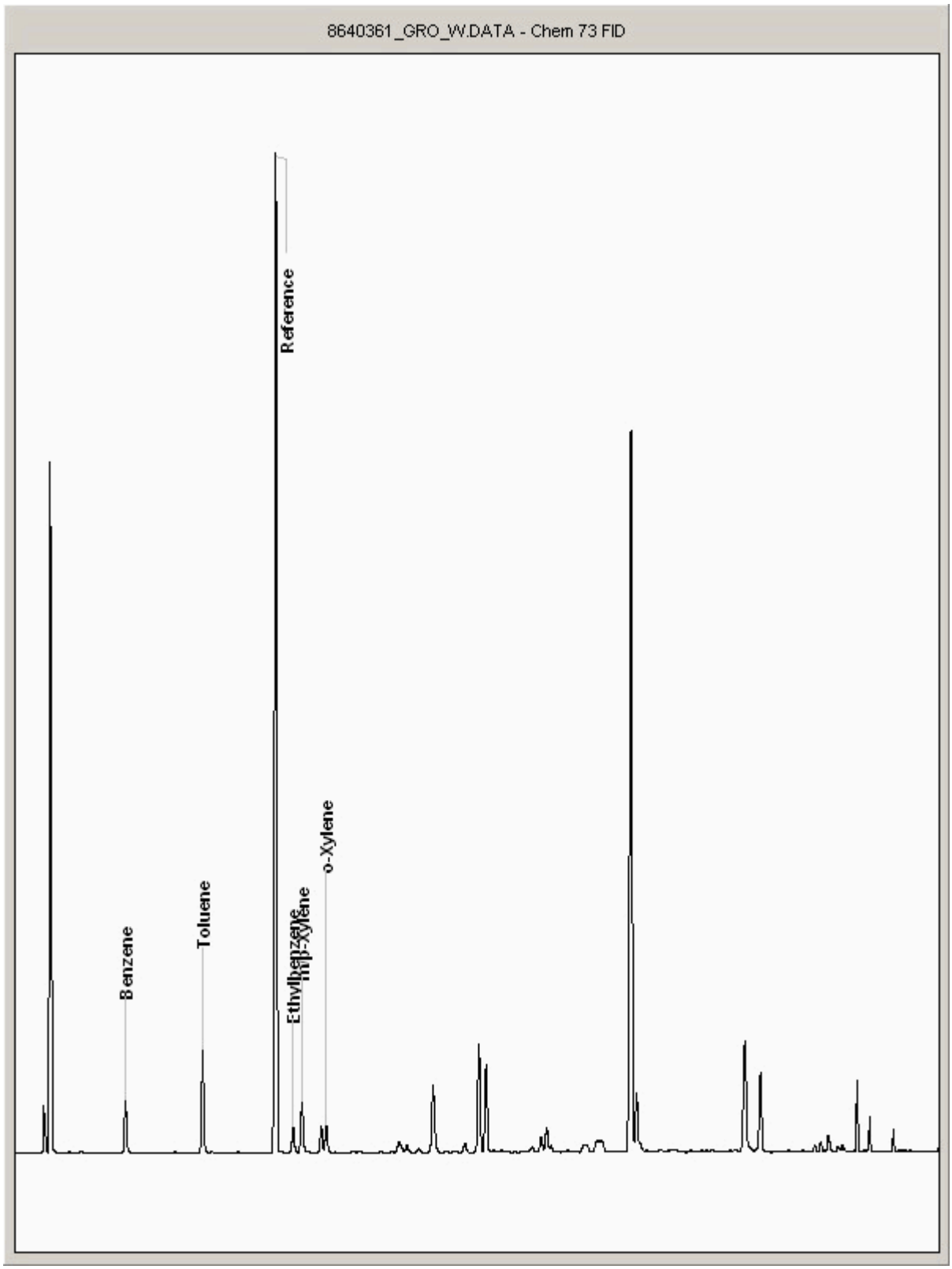
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640361
Sample ID : RW05

Depth : 0.00



CERTIFICATE OF ANALYSIS

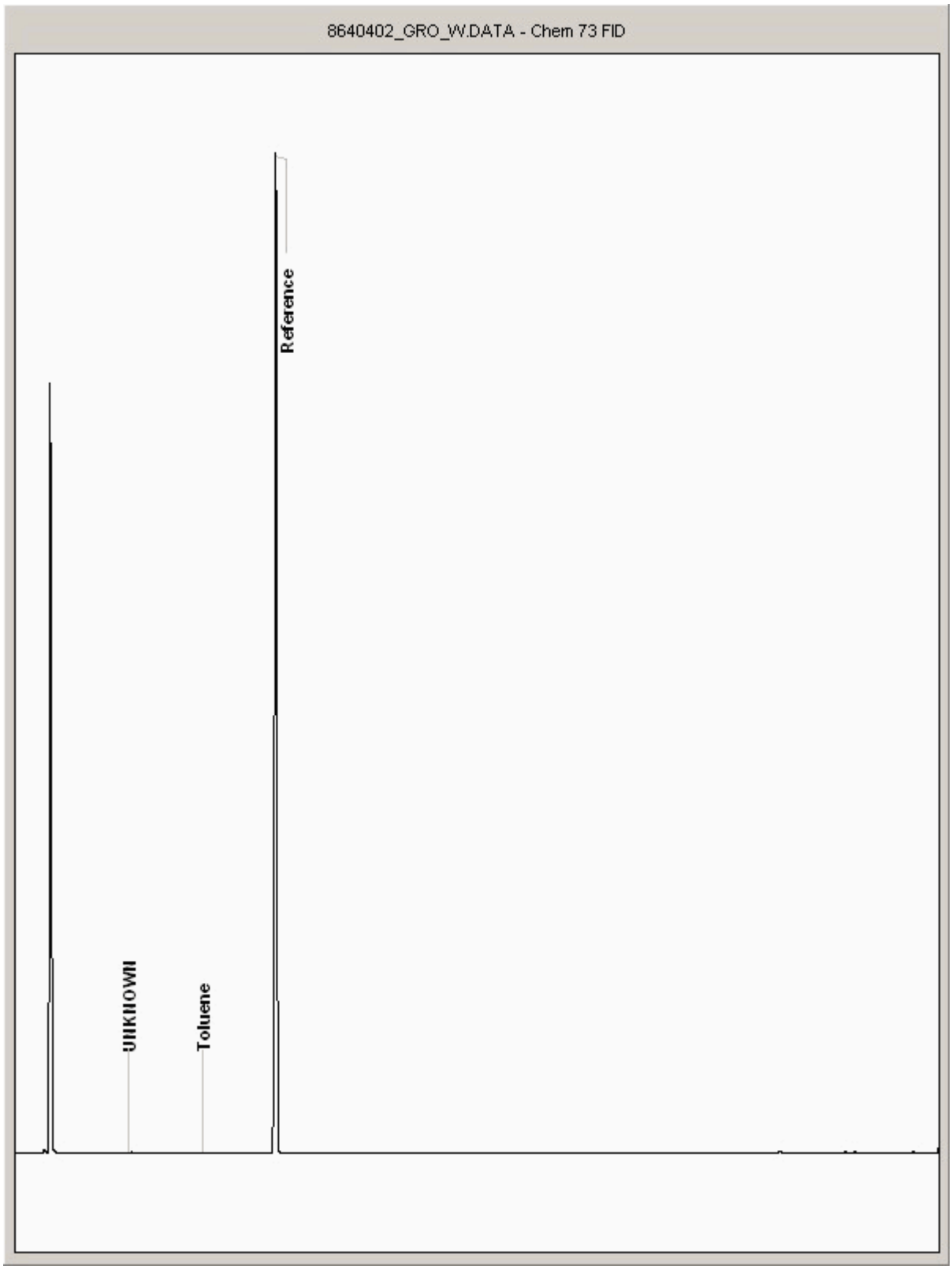
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640402
Sample ID : RW08

Depth : 0.00



CERTIFICATE OF ANALYSIS

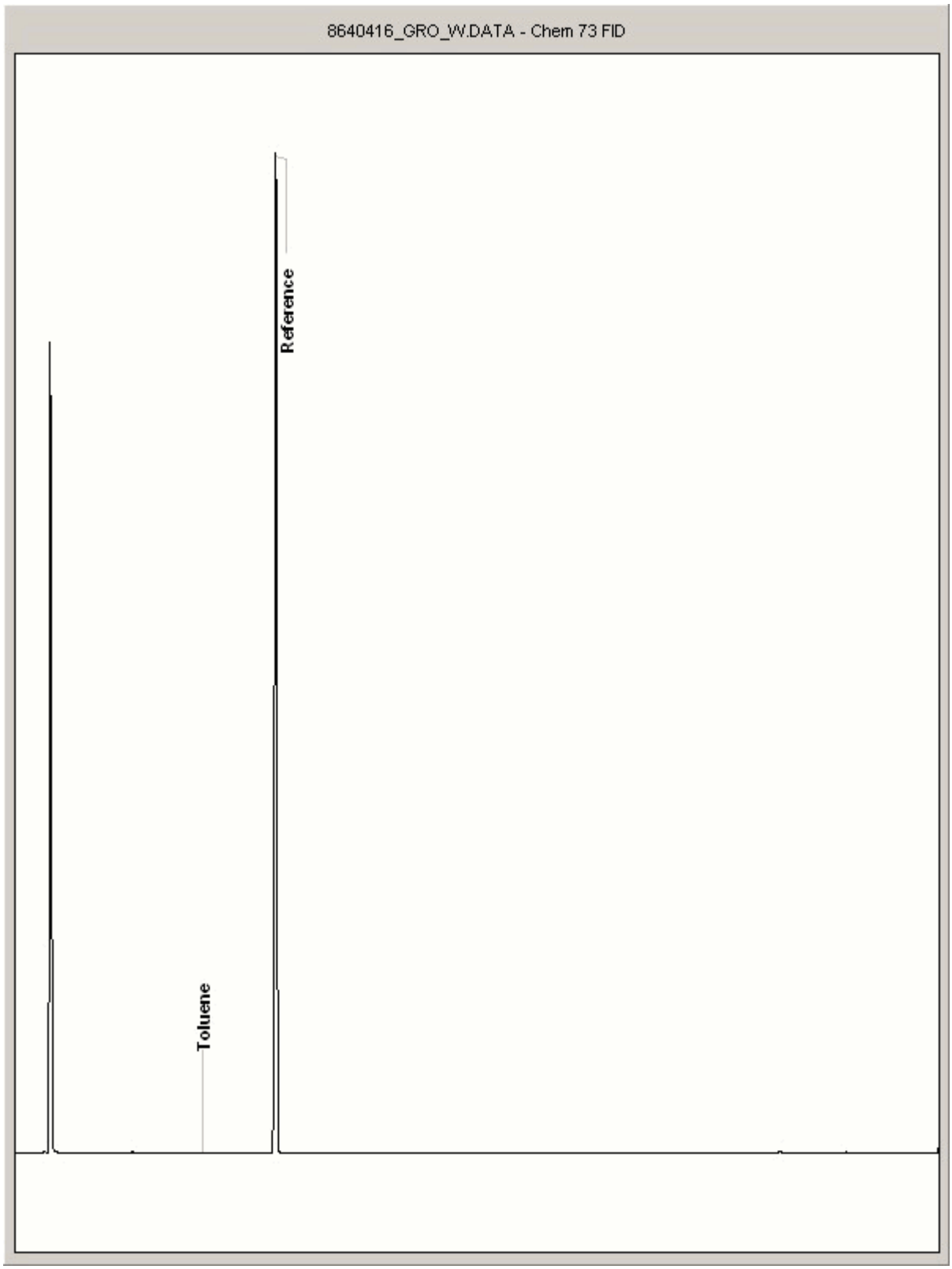
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640416
Sample ID : RW09

Depth : 0.00



CERTIFICATE OF ANALYSIS

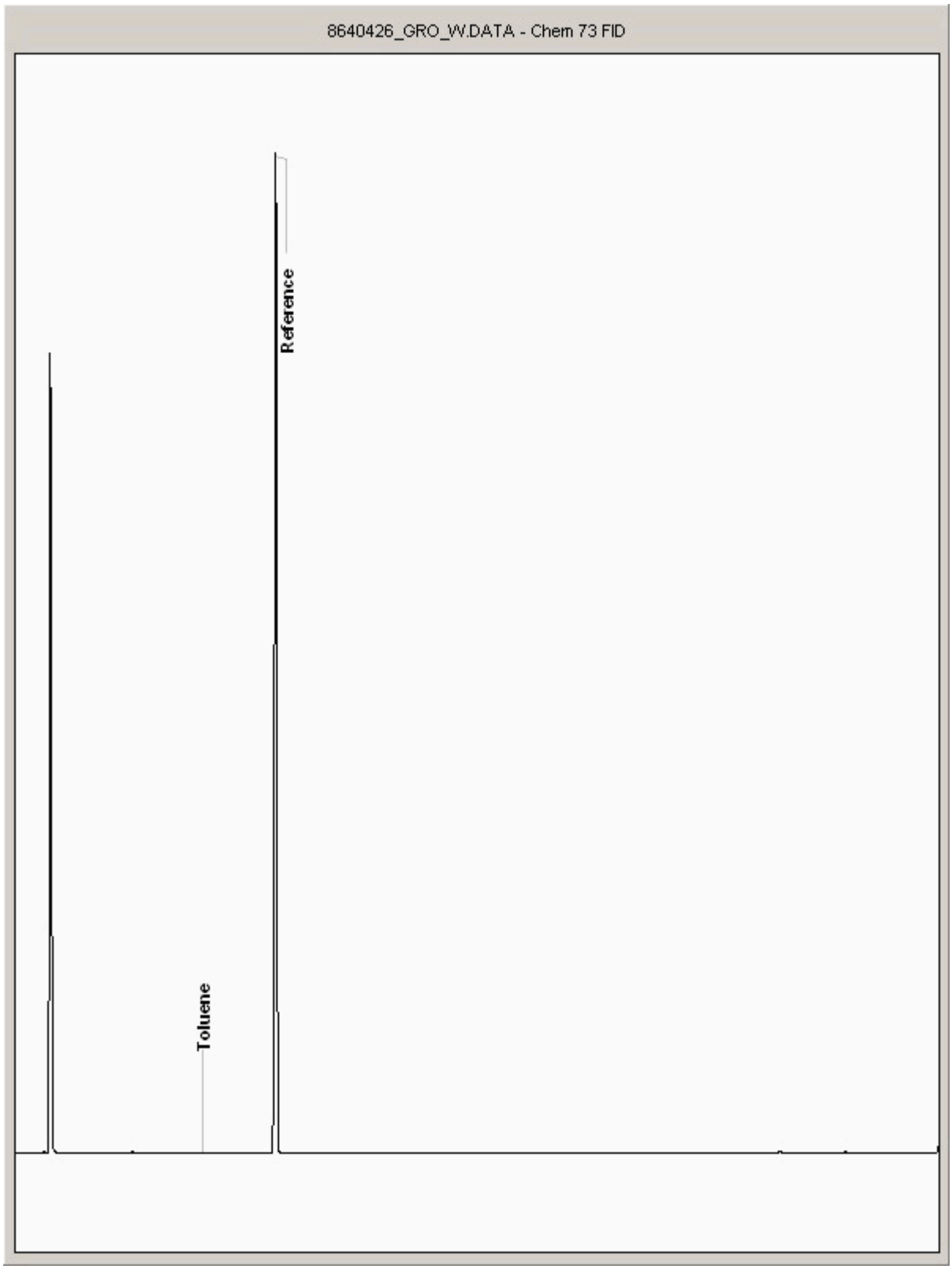
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640426
Sample ID : RW10

Depth : 0.00



CERTIFICATE OF ANALYSIS

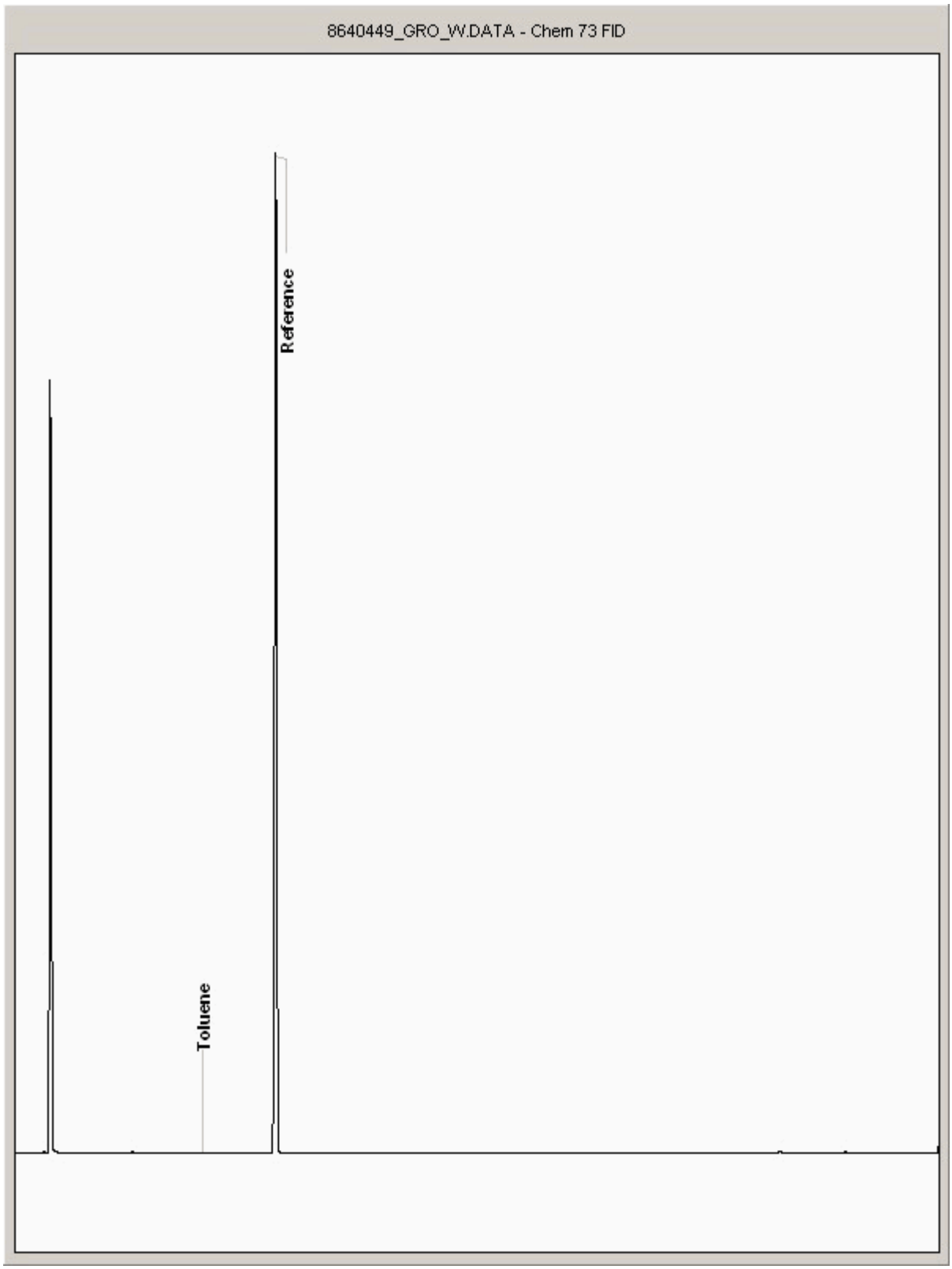
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640449
Sample ID : RW11

Depth : 0.00



CERTIFICATE OF ANALYSIS

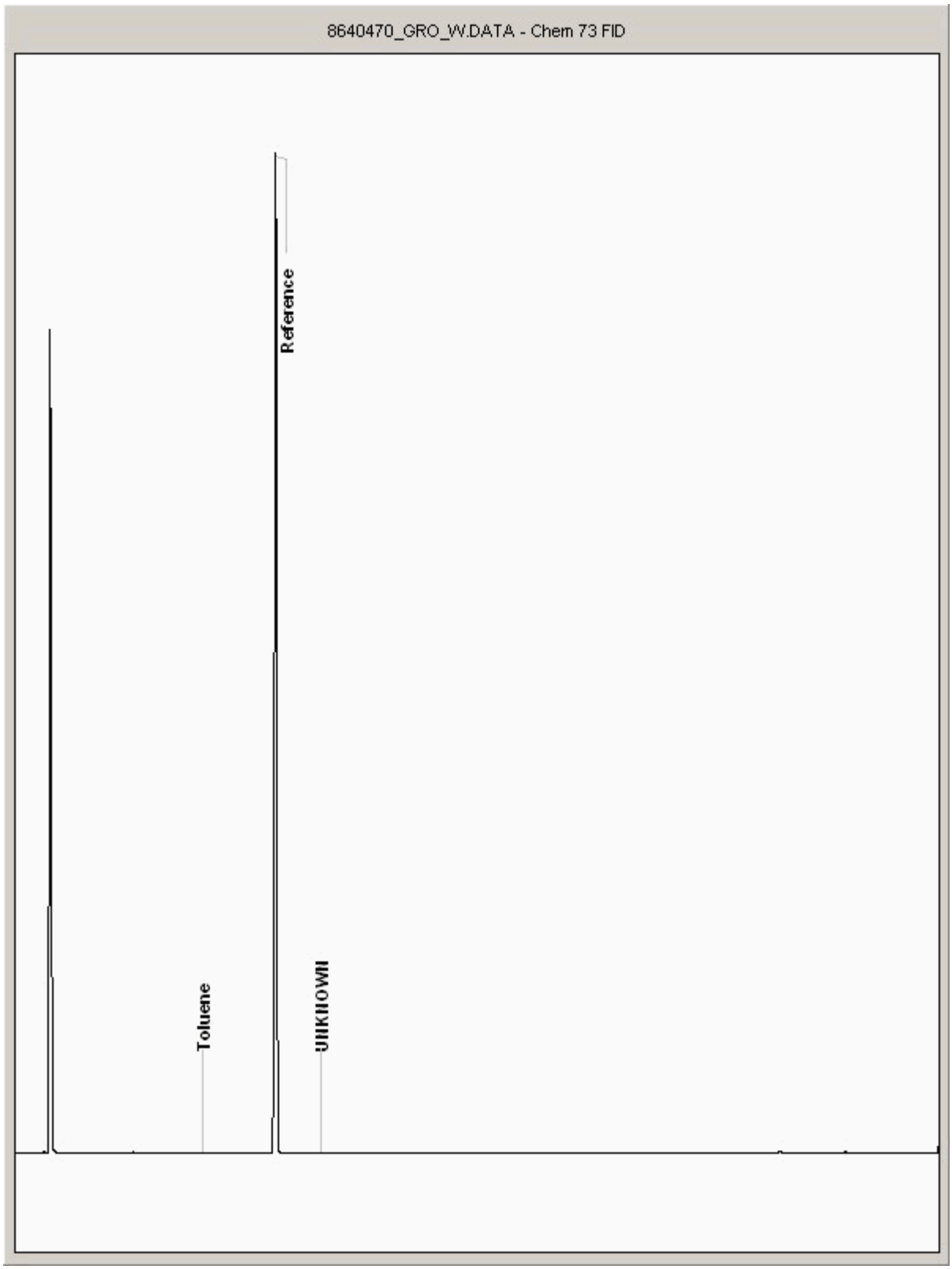
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640470
Sample ID : RW12

Depth : 0.00



CERTIFICATE OF ANALYSIS

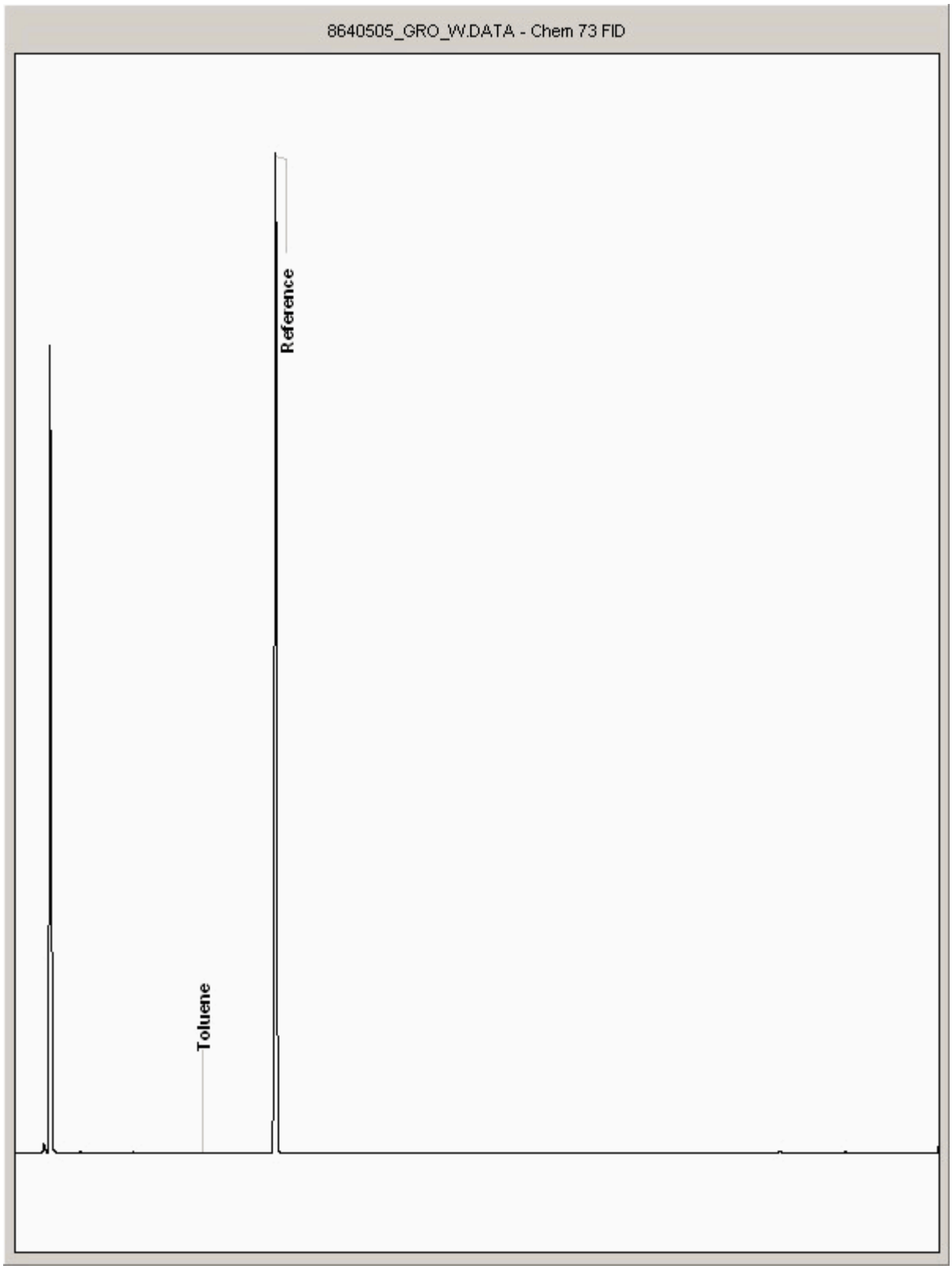
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640505
Sample ID : RW13

Depth : 0.00



CERTIFICATE OF ANALYSIS

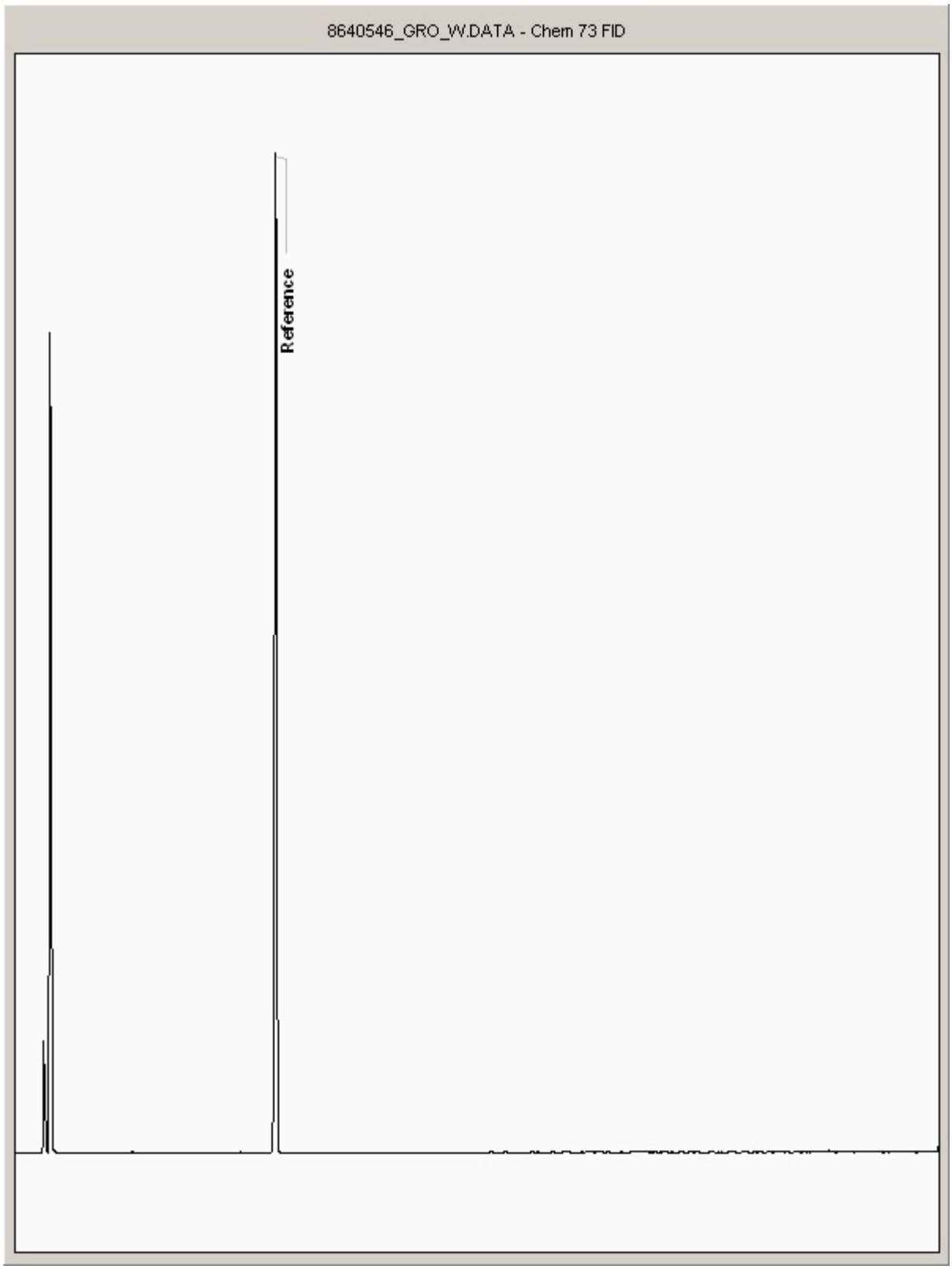
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640546
Sample ID : RW14

Depth : 0.00



CERTIFICATE OF ANALYSIS

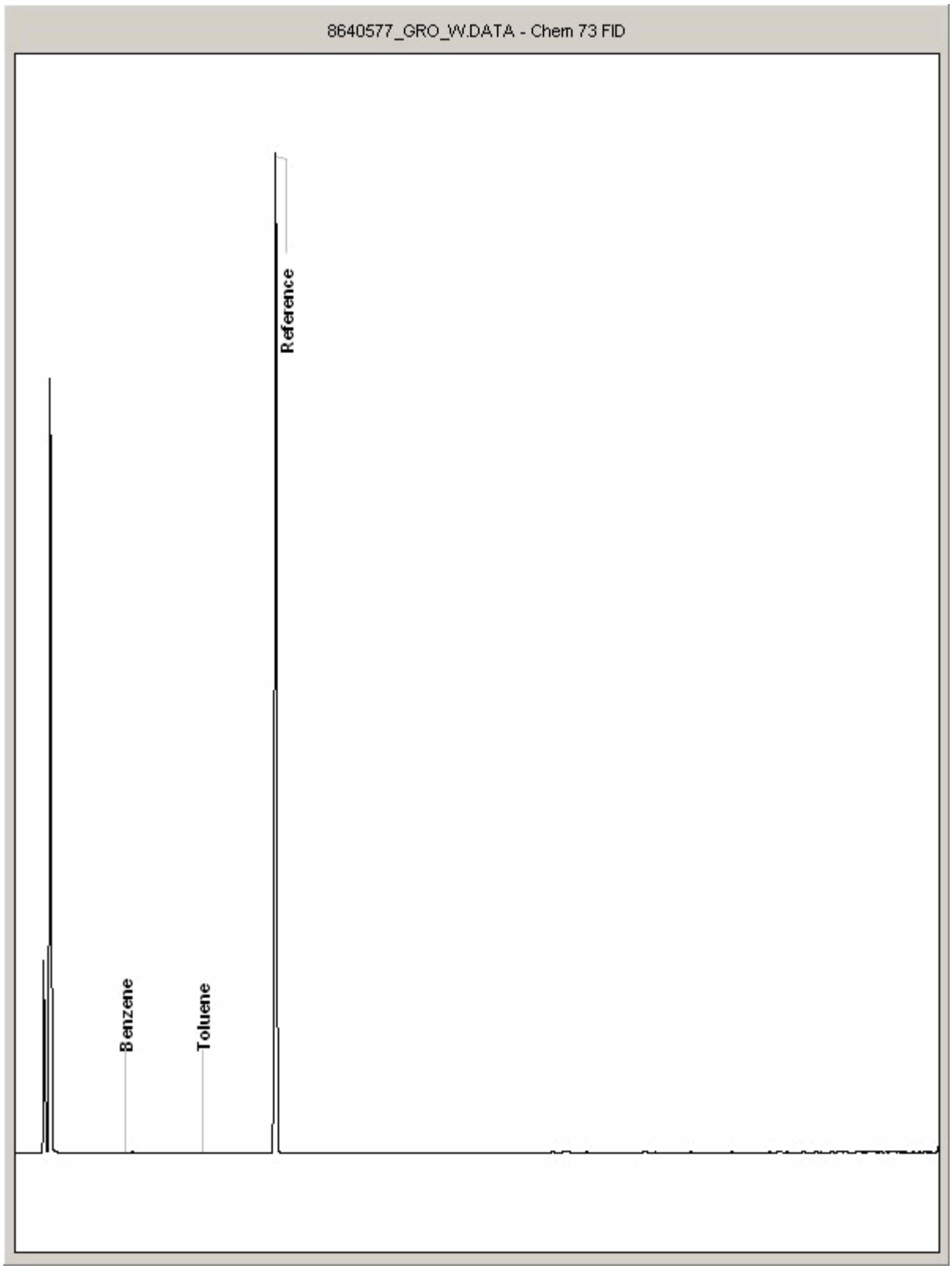
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640577
Sample ID : RW15

Depth : 0.00



CERTIFICATE OF ANALYSIS

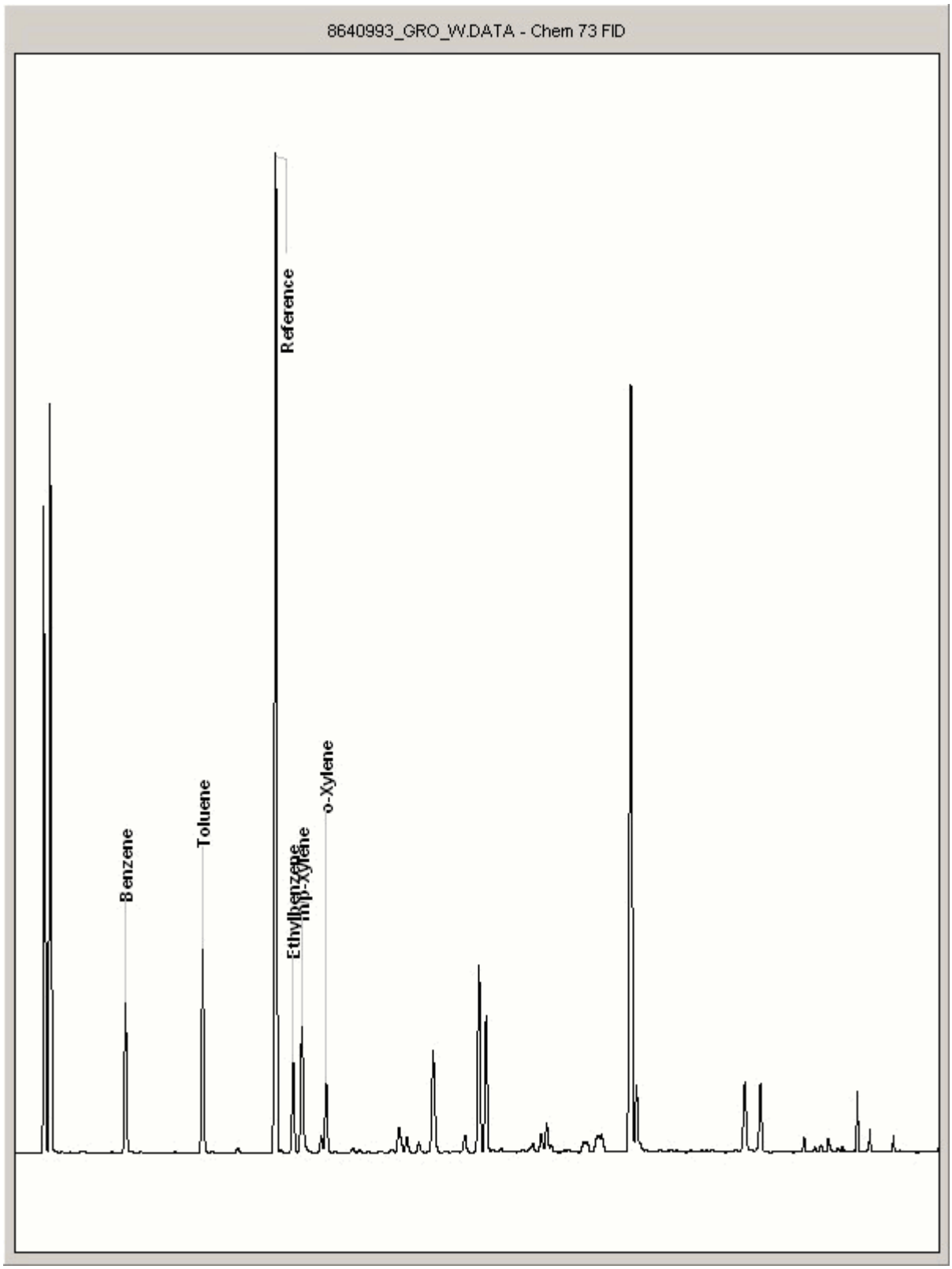
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8640993
Sample ID : RW01

Depth : 0.00



CERTIFICATE OF ANALYSIS

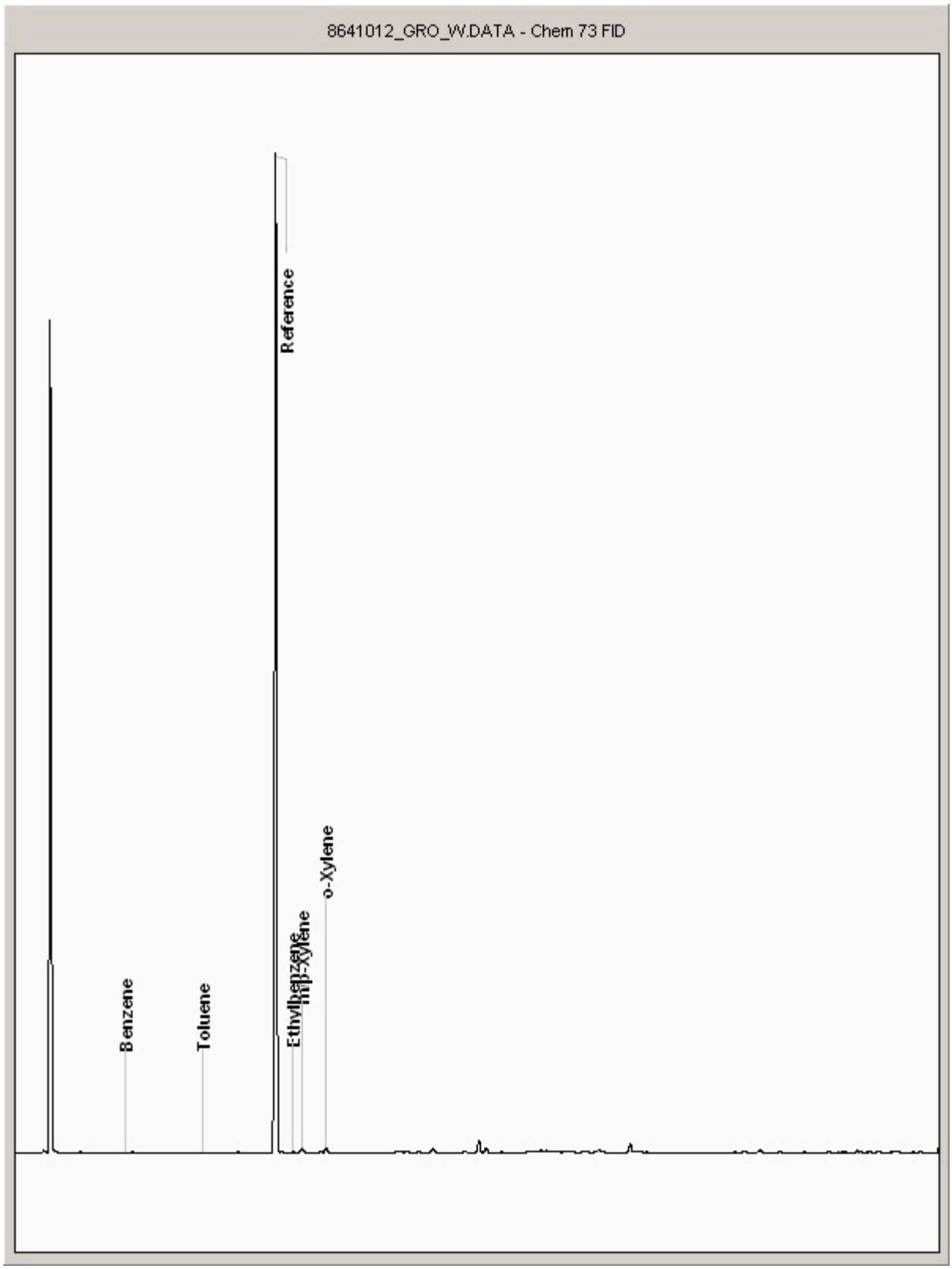
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8641012
Sample ID : RW02

Depth : 0.00



CERTIFICATE OF ANALYSIS

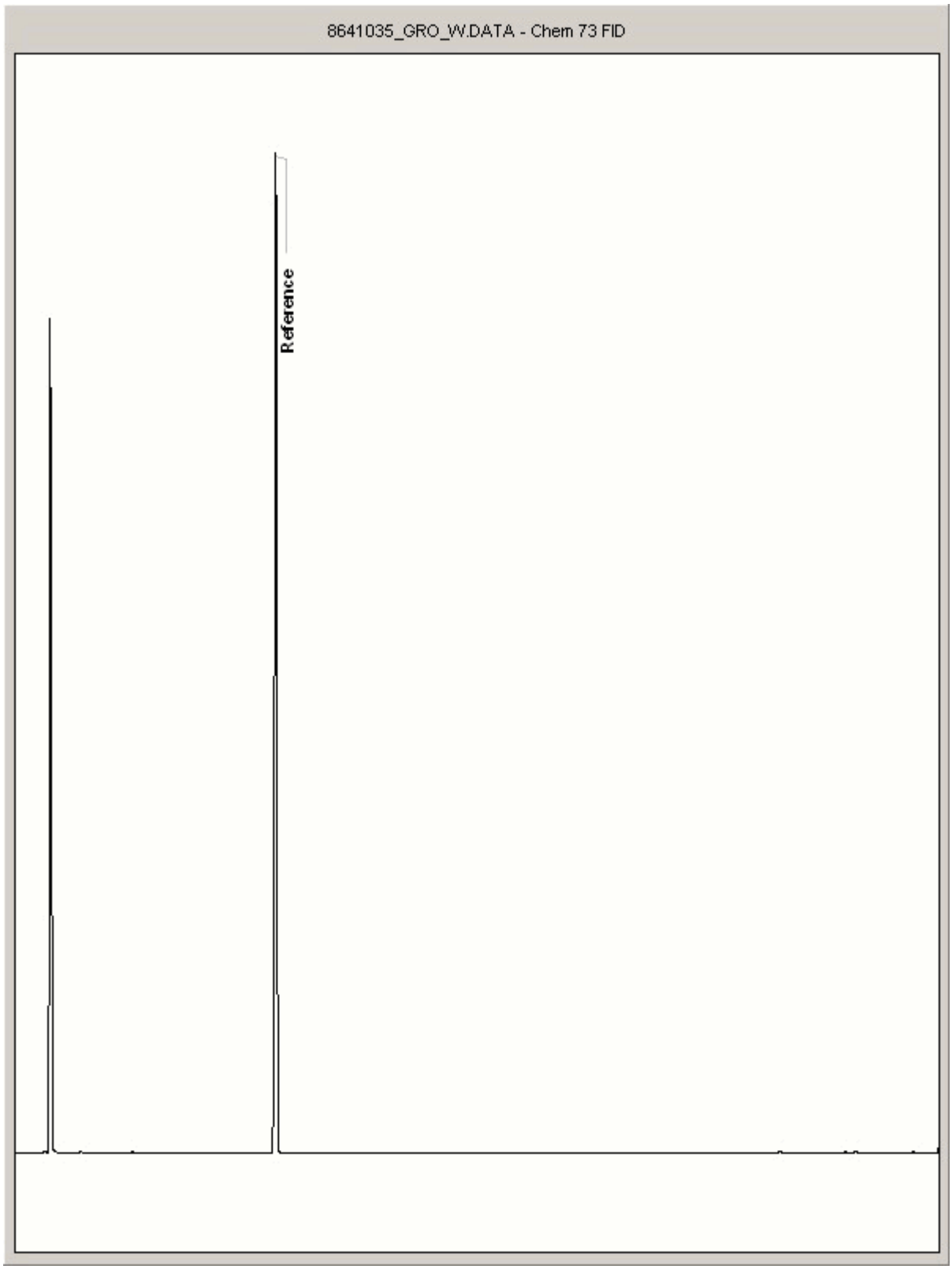
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8641035
Sample ID : RW03

Depth : 0.00



CERTIFICATE OF ANALYSIS

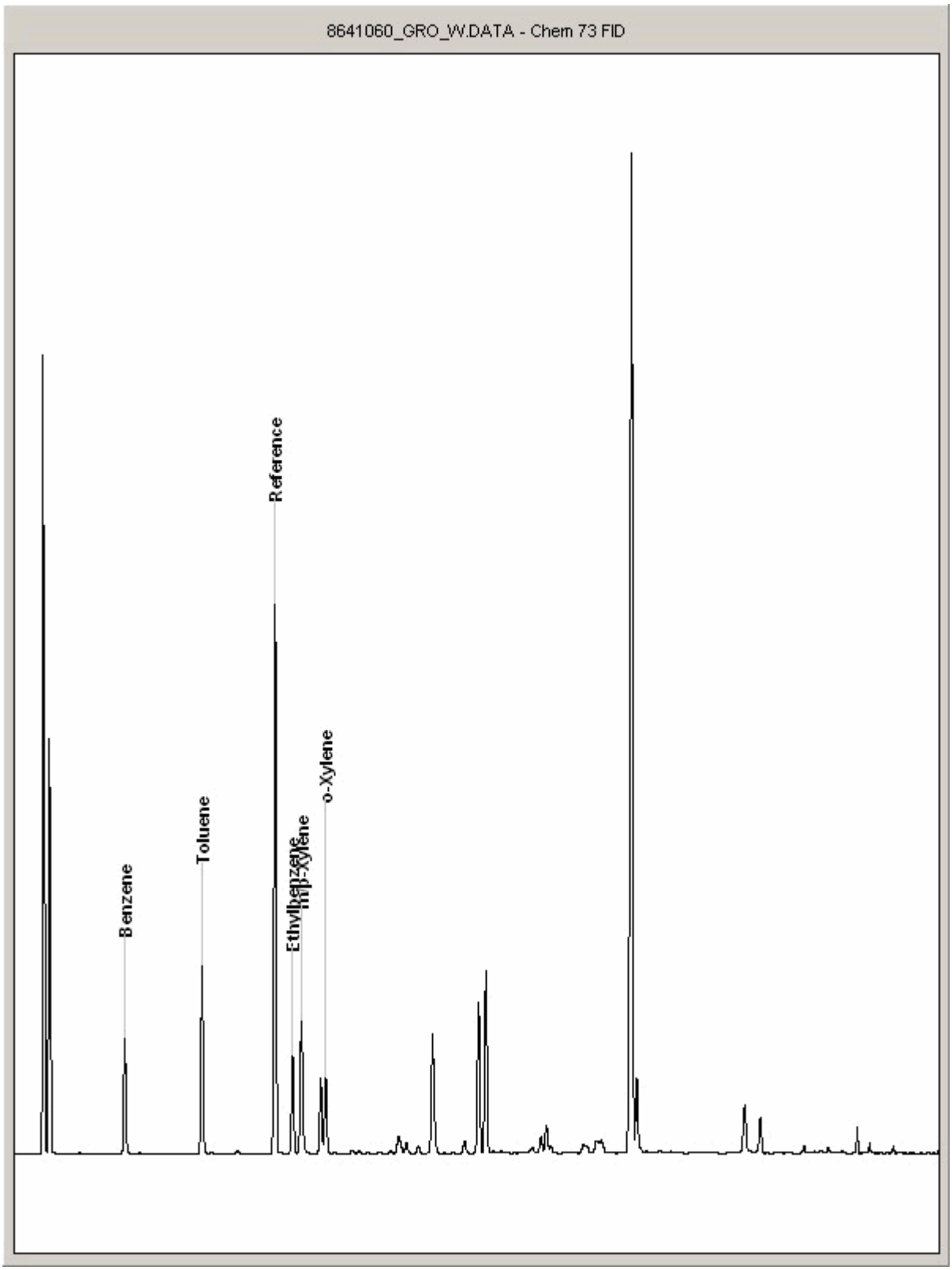
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8641060
Sample ID : RW04

Depth : 0.00



CERTIFICATE OF ANALYSIS

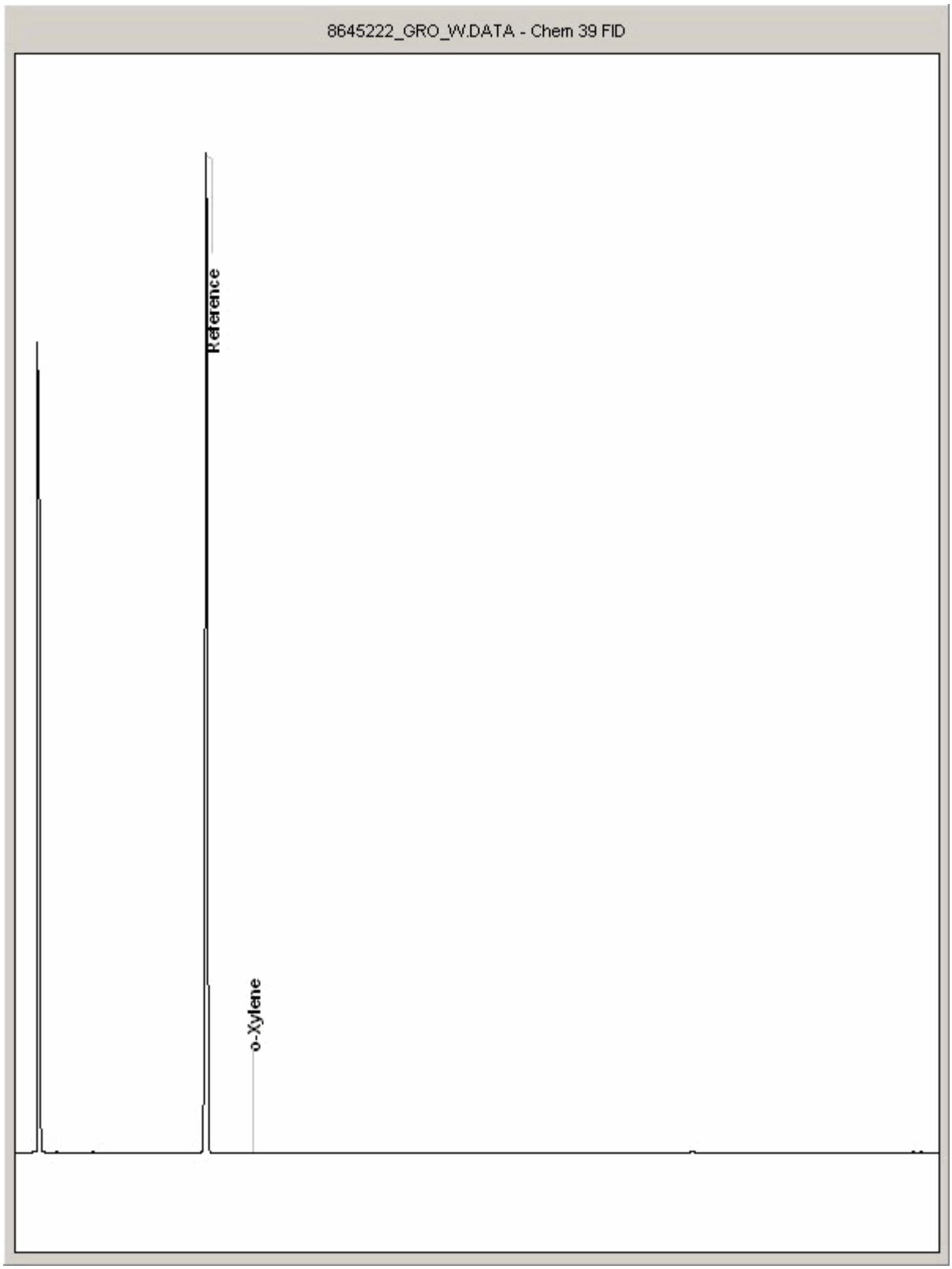
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8645222
Sample ID : RW06

Depth : 0.00



CERTIFICATE OF ANALYSIS

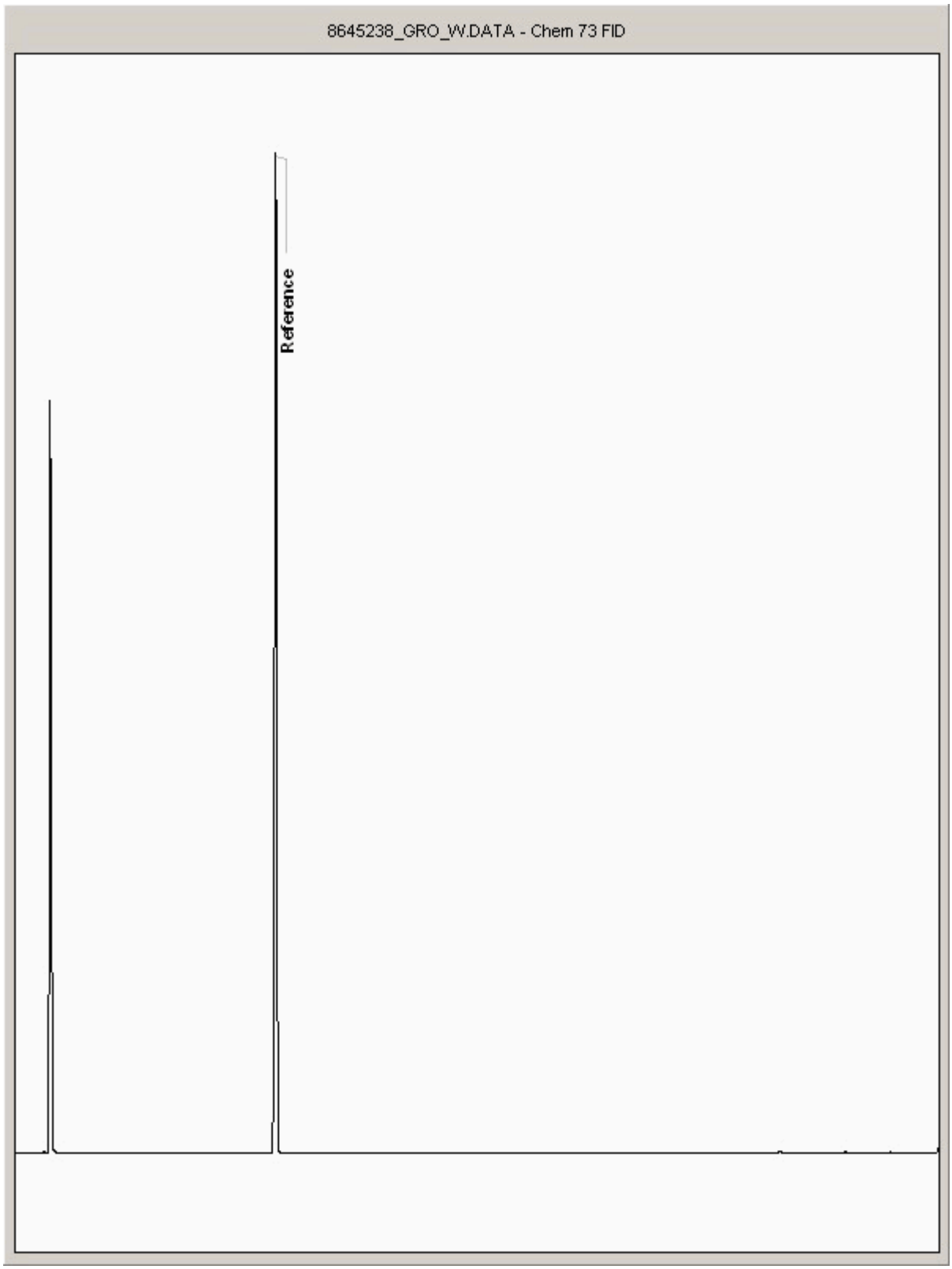
SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 8645238
Sample ID : RW07

Depth : 0.00



CERTIFICATE OF ANALYSIS

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

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

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

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

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

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

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

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

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

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

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

12. Results relate only to the items tested

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

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

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 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 14).

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

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

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

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

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

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

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

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GCMS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE/ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C9C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM/ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH/MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS/MS	DCM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Last Updated : 2010/09/08

SDG:	131220-67	**Location:**	Barry Waterfront	**Order Number:**	23945/39784/tm
Job:	H_WSP_CDF-63	**Customer:**	WSP Remediation	**Report Number:**	255906
Client Reference:	39784.001	**Attention:**	Steve Gronow	**Superseded Report:**	

Appendix
General

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. The quantity of asbestos present is not determined unless specifically requested.

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

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

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

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

11. Results relate only to the items tested.

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

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

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

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 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 all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

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

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

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**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.

Appendix C – Dŵr Cymru Consent to Discharge

Dŵr Cymru
Welsh Water

Steve Gronow
Principal Engineer
WSP Remediation Limited
Regus Cardiff Bay
Falcon Drive
Cardiff Bay
CARDIFF
CF10 4RU

Date 15th October 2013

23 OCT 2013

Dear Mr Gronow,

Ref:- Authorisation for the Temporary Disposal of Wastewater derived from a Groundwater Remediation Project at Barry Waterfront to the Public Foul Sewer

Thank you for your recent enquiry regarding an authorisation to discharge trade effluent to the public foul sewer from the above address.

Based on the information provided, I can confirm that authorisation is given to discharge the trade effluent into the public foul sewer, subject to the following conditions and not otherwise:

1. The premises from which the trade effluent may be discharged is: West Pond, Barry Waterfront Development, Powell Duffryn Way, Barry, Vale of Glamorgan CF62 5QR.

2. The maximum volume of trade effluent that may be discharged shall not exceed 50 cubic metres per day at a flow rate of no more than 0.6 litres/second.

3. The trade effluent to be discharged is derived from groundwater from boreholes within a contaminated brown field site, which has been fully pretreated to remove contaminants.

4. The trade effluent is expected to contain traces of hydrocarbons, phenols and polyaromatic hydrocarbons. The pretreatment plant must remove these contaminants to trace levels in the treated effluent prior to discharge to the public foul sewer.

5. The pretreatment plant is to comprise a containment lagoon to remove coarse solids, particulate filtration, oil/water separation, and finally a granular activated carbon filter. Samples are to be taken and analysed to prove the performance of the pretreatment plant prior to sewer discharge. Samples taken must also be analysed for Settled Chemical Oxygen Demand and Total Suspended Solids in order to provide information for charging purposes according to Dwr Cymru's Scheme of Charges.

6. Please ensure that the discharge is made to foul sewer only and that there is no risk of the contamination of any surface water drainage.

7. Flows must be introduced into the public sewer in such a way that will not affect the free flow of its contents, for example, settlement of suspended solids or surcharging upstream. **Please suspend the discharge of the trade effluent during periods of heavy rainfall, in order to help minimise hydraulic overloading of the sewerage system. Should this cause difficulties in managing the volumes of treated effluent on site, please contact us for advice.**

8. A 3 metre gravity section must be incorporated into the design before connection to the public sewer should the discharge be pumped.

9. A flow meter must be installed after the pretreatment plant, and daily flow meter readings taken and recorded to provide cumulative volumes for charging purposes according to Dwr Cymru's current Scheme of Charges. These records must be submitted to the local Trade Effluent Officer on completion of the project.

10. This permission is given on the understanding that:
    a) it may be reviewed from time to time in accordance with the frequency applying in respect of a trade effluent consent issued under the Water Industry Act 1991, section 124.
    b) Dwr Cymru-Welsh Water may review its Trade Effluent Policy and require a review of this permission subject to the restrictions in a) above.
    c) If the nature of the discharge is changed then Dwr Cymru-Welsh Water must be informed of this and shall be entitled to review the permission.

11. This permission is valid for 1 month from the date of this letter. When an extension is required, please contact the local Trade Effluent Officer on the number/e-mail address given below.

The standard trade effluent consent application fee has already been paid in respect of this application.

In the meantime, if you have any queries or should the operation change in any way so as to affect the nature and volume of wastewater for disposal, please contact Heather Pepper, Trade Effluent Officer on (029) 20 478822 or on e-mail at heather.pepper@dwrcymru.com.

Yours sincerely

Clare L Walters
Head of Waste Science & Business Improvement

Appendix D – Waste Disposal Tickets

Cleansing Service Group Ltd

Waste Disposal Return

This is a return to prove you have disposed of your waste correctly at the Disposal site indicated on the right. You should keep this for your records as you may need to produce this document to indicate safe disposal.

Cleansing Service Group Ltd
Bristol Treatment Plant
Pennywell Road
Easton
Bristol

Avon
BS5 0TQ

Licence Number: AP3336SD
Telephone Number: 0117 9411583

Producer Premises Number oiw607

SIC Code: 45.25

Company Address

WSA Remediation Ltd
Barry Waterfront
The Quays, Clive Rd
Barry

Wales
CF62 5UA

For Waste Disposed Between: 01/01/2014 and 31/03/2014

Date	Consignment Note Number	EWC Code	Quantity Disposed (Litres)	Mode Of Transport	Frequency of Collection	Hazards	Physical Form	Method Of Disposal	Accepted or Rejected
13/1/2014	oiw607/02721	191307	4500	Tanker		H7	Liquid	R03	Accepted

Total Number of Waste Consignments this period 1

Total Quantity Disposed (Litres) 4500

Hazardous Waste Registration Report

Batch Number: I664880
Report Date: 27-11-2013

Details of the company (or individual) providing hazardous waste registration details

WSP REMEDIATION
REGUS CARDIFF BAY
FALCON DRIVE
CARDIFF BAY
CARDIFF
CF10 4RU

Contact Name: Mr Steve Gronow
Telephone: 07971060389
Fax:
Email: steve.gronow@wspgroup.com

Expected Payment: £18.00

Payment Type: CCARD **Payment Made:** £18.00

Total Payments: £18.00

Difference in Expected Payment and Required Payment: £0.00

Number of sites successfully registered: 1
Number of sites failed registration due to processing errors: 0

Sites successfully registered *(Previous Registration Numbers which could not be validated are shown in brackets - you must use the new registration numbers given from the start dates shown)*

Registration Number	Producer Name	Customer Reference	Address from Application	Start Date	Expiry Date
OIW607	WSP REMEDIATION		BARRY WATERFRONT DEVELOPMENT OFF POWELL DUFFRYN WAY BARRY VALE OF GLAMORGAN CF62 5QR	27-11-2013	26-11-2014

GOODS IN / OUT

TICKET No. 85064

Re-entered 1st Weight: 12660 kg

Consec. No.

Code

Date

Time

1st Weight

Consec. No. 10147

Code

Date 04-12-13

Time 10:27

2nd Weight 28180 kg

NET Weight 15520 kg

Driver's Signature

Weighbridge Operator's Signature

NEAL SOIL SUPPLIERS LTD

Atlantic Eco Park
Newton Road
Rumney
Cardiff
CF3 2EJ

Tel: (029) 2079 7835
Fax: (029) 2036 0043
www.neal-soils.co.uk

EA Site Permit: EPR/VP3095FS

Customer / Supplier: WSP REMEDIATION

Haulier: NEAL

Vehicle Reg. No. CN63 ZRC

Ref. No.

Description of Goods: HAZARDOUS

Customer Signature

NEAL SOIL SUPPLIERS LTD

Atlantic Eco Park, Newton Road, Rumney, Cardiff CF3 2EJ
Longships Road, Cardiff Docks, Cardiff CF10 4LU
Tel: 029 2079 7835 Fax: 029 2036 0043

EA Site Permit: EPR/VP3095FS
EA Site Permit: EPR/UP3396EK

Duty of Care - Waste Transfer / Delivery Note

Date 04/12/2013

Job Number: 51966

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Customer Signature

Print Name

Time on Site Time Off Site

HAZARDOUS WASTE

Customer/Waste Producer

WSP REMEDIATION LTD
Cuddy (23882/39784-001/SG),
Cuddy Site Offices, Powell Dyffryn
Way, Barry Waterfront, Barry, CF

SIC Code

Order Details AM HAU

PO 23882/39784-001/SG

Waste Code & EWC
Hazardous Soils & Stones - 17 05 03

Waste Carrier
NEAL SOIL SUPPLIERS LTD

EA Registration Number
CB/TE5355YB

Signed
Vehicle Reg CN63 ZRC

Waste/Product Receiver
NEAL SOIL SUPPLIERS LTD
Atlantic Eco Park, Newton Road,
Rumney, Cardiff, CF3 2EJ

EA Registration Number
EPR/VP3095FS

Signed

Notes

LEGAL LEVEL LOAD ONLY Your Waste Partner PRODUCERS CERTIFICATE (See conditions overleaf)

Description of Waste: Where waste is discovered to be inconsistent with the description by the Customer or their agent,

Form HWCN01v111

The Hazardous Waste Regulations 2005: Consignment Note

Environment Agency

CARRIER'S COPY

PART A Notification details

1 Consignment note code: 01WG07 / WSP01

2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile): WSP Remediation
Barry Waterfront Development
off Powell Duffryn Way, Barry CF62 5QR

3 Premises code (where applicable): 01WG07

4 The waste will be taken to (name, address and postcode):

5 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):
WSP Remediation

PART B Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: Remediation

2 SIC for the process giving rise to the waste: 90.03 /

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are: Component	Concentration (% or mg/kg)	Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
Sand / rock dust	170503	20,000	TPH	2%	SOLID		8 wheel wagon
			PAH	2%			

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are: /

1 Carrier name: Jacer Couriers
On behalf of (name, address, postcode, telephone, e-mail, facsimile):
Atlantic Eco Park, Newton Rd, Cardiff

2 Carrier registration no./reason for exemption:
CNG32RC

3 Vehicle registration no. (or mode of transport, if not road):

Signature J. C

Date 04/12/2013 Time 1025

PART D Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: TOM MILES (WSP)

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
WSP REMEDIATION
REGUS HOUSE
FALCON DRIVE
CARDIFF
CF10 4RH

Signature T. Miles

Date 02/12/2013 Time 1000

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170503	15520	170503	

1 I received this waste at the address given in A4 on: Date 04/12/2013 Time 1114

2 Vehicle registration no. (or mode of transport if not road):

3 Where waste is rejected please provide details:
CNG3 2RC

I certify that waste permit/exempt waste operation number:

authorises the management of the waste described in B at the address given in A4.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Name: MAT LLEWELLYN

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
Neal Soil Supplies Ltd
Ty To Maen Farm,
Cardiff, CF3 8EJ
Permit No. EPR-VP3095FS

Signature

Date 04/12/2013 Time 1114

Emailed 20/01/2014 10:49

Form HWCN01v111

The Hazardous Waste Regulations 2005: Consignment Note

Environment Agency

CARRIERS COPY

PART A Notification details

1 Consignment note code: OIW607/WSP02

2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):

WSP Remediation Barry Waterfront Development, The Quays, Clive Road, Barry, Barry Island CF625UA

3 Premises code (where applicable): OIW607

4 The waste will be taken to (name, address and postcode):

CPL Carbonlink, c/o AMA (Storage & Distribution) Ltd, Rawmarsh Road, Rotherham, South Yorkshire, S60 1RZ

5 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):

If continuation sheet used, tick here ☐

PART B Description of the waste

1 The process giving rise to the waste(s) was: Groundwater Remediation 2 SIC for the process giving rise to the waste: 39.00/

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code) (6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are: Component	Concentration (% or mg/kg)	Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
Spent Activated Carbon	190904	2000	TPH	<5%	Solid		2m³ Vessel

The information given below is to be completed for each EWC identified

EWC code	UN identification number(s)	Proper shipping name(s)	UN class(es)	Packing group(s)	Special handling requirements

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

Where this note comprises part of a multiple collection the round number and collection number are: /

1 Carrier name: CHRIS PRECIOUS TRANSPORT

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

WSP REMEDIATION.

2 Carrier registration no./reason for exemption: CBDP331641

3 Vehicle registration no. (or mode of transport, if not road): R969 DGS

Signature

Date 16/01/2014 Time 1500

PART D Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: T Miles

On behalf of (name, address, postcode, telephone, e-mail, facsimile):

WSP Remediation Ltd, Regus House, Falcon Drive, Cardiff Bay, CF10 4RU

Signature T. Miles

Date 16/01/2014 Time 1500

PART E Consignee's certificate (when more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)

1 I received this waste at the address given in A4 on: Date Time

2 Vehicle registration no. (or mode of transport if not road):

3 Where waste is rejected please provide details:

Name: AMA (Storage & Distribution) LTD.

Address, postcode, telephone, e-mail, facsimile): RAWMARSH ROAD, ROTHERHAM S60 1RZ

I certify that waste permit/exempt waste operation number:

authorises the management of the waste described in B at the address given in A4.

Where the consignment forms part of a multiple collection, as identified in Part C, I certify that the total number of consignments forming the collection are:

Signature S Betts

Date 17/01/2013 Time

Appendix E – Authorisations, Licences and Permits

creu lle gwell
creating a better place

Asiantaeth yr Amgylchedd Cymru
Environment Agency Wales

Mr. Jim Hayward
Q D S Environmental Ltd.
Langton Priory Portsmouth Road
Guildford
Surrey
GU2 4YG

Ein cyf/Our ref: SE/2012/115884/03-L01
Eich cyf/Your ref: 5040/5/3758/JH

Dyddiad/Date: 25 February 2013

Annwyl / Dear Mr. Hayward,

QDS ENVIRONMENTAL LTD. REMEDIAL ACTION PLAN, WEST POND BARRY, BARRY WATERFRONT, BARRY FOR CUDDY GROUP. REF. 504/5/3758/JH. NOVEMBER 2012. LAND AT BARRY WATERFRONT, ADJACENT TO DOCK NO 1, BARRY

Thank you for sending us the Remedial Action Plan (Ref. 5040/5/3758/JH rev1, dated November 2012) for the above development site, which we received on 6th February 2013.

We assume this is for the discharge of condition 40 of planning permission 2009/00946/OUT and in particular Part 4. We can confirm that the information is now sufficient to recommend discharge of this condition.

Yn ddiffuant / Yours sincerely,

Mr. Gwion Thorpe
Planning Liaison Officer / Swyddog Cynllunio

Deialu uniongyrchol/Direct dial 029 20 245046
Ffacs uniongyrchol/Direct fax 02920 362920
E-bost uniongyrchol/Direct e-mail gwion.thorpe@environment-agency.wales.gov.uk

End

Cyfoeth Naturiol Cymru
Natural Resources Wales

Mr Steve Gronow
WPS Remediation
Regus Cardiff Bay
Falcon Drive
Cardiff Bay
Cardiff
CF10 4RU

Our ref: EPR/FP3495FA/Z001

Date: 19 August 2013

Sent via email to steve.gronow@wpsgroup.com

Dear Mr Gronow

Confirming you may begin your deployment

Deployment ref: EPR/FP3495FA/Z001
Permit reference: **EPR/FP3495FA**
Permit holder: **WSP Remediation Ltd**
Location of the deployment: Barry Waterfront Development, Powell Duffryn Way, CF62 5QR

We've assessed your deployment notification and agree that you may start to operate.

Your deployment lasts for one year and expires on **15 August 2014**. If you wish to continue after this date you must complete another deployment notification.

You must comply with your permit and carry out the activities in accordance with the requirements of the agreed deployment application. The term 'deployment application' refers to the deployment form and all of the accompanying information. The accompanying information is that sent in with the deployment form and any additional information received during the assessment.

If you want to change any of the details provided in the deployment form you must seek written permission from us before you change what you're doing.

This approval letter is only to allow the mobile plant deployment in accordance with your environmental permit. As the operator, it's your responsibility to agree other authorisations, for example, planning permission, remedial strategy, abstraction or discharge consents with the relevant regulatory authority.

Ffôn/Tel 0300 065 3000
Ffacs/Fax 0844 892 0845
Ebost/Email ymholidau@cyfoethnaturiolcymru.gov.uk
enquiries@naturalresourceswales.gov.uk
Canolfan Gwasanaethu Cwsmeriaid, Derbyn Trwyddedau, Cyfoeth Naturiol Cymru, Ty Cambria, 29 Heol Casnewydd, Caerdydd. CF24 0TP
Customer Service Centre, Natural Resources Wales, Cambria House, 29 Newport Road, Cardiff. CF24 0TP
Gwefan/Website www.cyfoethnaturiolcymru.gov.uk Croesewir gohebiaeth yn y Gymraeg a'r Saesneg
www.naturalresourceswales.gov.uk Correspondence welcomed in Welsh and English

Please note that operating under your mobile plant permit does not imply that the remediation processes used will be suitable for meeting any remediation objectives specified. These issues must be considered separately by the developer/consultant and our local area Groundwater and Contaminated Land team. These must be defined in the site remedial strategy which sets out the remediation options to reduce or control the risks from pollution linkages associated with the site as a whole. You may need to carry out further remediation if an unacceptable risk to the environment remains at the site.

Please notify me at least seven days prior to starting the remediation activities, at permittingreceiptcentre@naturalresourceswales.gov.uk. I will send your notification to the local area office closest to the deployment site.

If you have any queries about this matter please contact us by telephone on 0300 0653000 or email us at enquiries@naturalresourceswales.gov.uk quoting your deployment application reference.

Yours sincerely

Eirian Macdonald
Wales Permitting Centre (Cardiff)/ Canolfan Trwyddedu Cymru (Caerdydd)

Barry Waterfront Development

WSP-39784-EMP (Emissions Monitoring Plan for B9.1)

Medium	Monitoring Programme	Trigger Level	Location	Frequency	Trigger Level Exceedence Action Plan
Treated groundwater	Measurement of volumes discharged to foul sewer	N/A	Discharge flow meter	Weekly	Site works will manage flow to within discharge consent parameters
Treated groundwater	Analysis of discharge samples	To be confirmed (on basis of consent to discharge)	Discharge point	Monthly	Analysis undertaken to confirm compliance with agreed discharge consent compliance criteria. In the event of an exceedence the plant will be shut down and filters maintained or replaced
Vapours / odours	Photoionisation detector (PID) to monitor VOC's at source areas (downwind of water treatment plant)	1ppm total VOC's	Source areas (downwind of water treatment plant)	Weekly	Site works to cease and method of work reviewed
Dust	No activites likely to give rise to dust emissions	N/A	N/A	N/A	N/A
Noise	No activites likely to give rise to noise emissions	N/A	N/A	N/A	N/A

*All monitoring will be undertaken by experienced WSP site engineers

Technically competent person (WAMITAB accredited) will attend site during start-up of each treatment technology and then on a minimum of one day per month basis.

Ein cyf/Our ref: SE/2014/117154/03-L01
Eich cyf/Your ref: 39784.060214.JW

Development Planning Team
Rivers House
St. Mellons Business Park
Fortran Road
St. Mellons
Cardiff
CF3 0EY

Ebost/Email:
jackie.walters@cyfoethnaturiolcymru.gov.uk
jackie.walters@naturalresourceswales.gov.uk

Ffôn/Phone: 029 20245183

Mr Steve Gronow
Principal Engineer
WSP Remediation
Regus House Falcon Drive
Cardiff
CF10 4RU

4th September 2014

Annwyl Mr Gronow / Dear Mr Gronow

REMEDIATION VERIFCATION REPORT FOR THE WORKS UNDERTAKEN AT WEST POND

Thank you for your email of 15th July 2014, enclosing a copy of the Verification Report, Remedial Works at West Pond, Barry Waterfront Development, prepared by WSP (ref. 39784. Rev 01; dated June 2014).

Our response is as follows;

The report demonstrates that risk to controlled waters has been reduced and shows a declining trend from the post works monitoring from October 2013 to April 2014. We are satisfied that the verification report includes the details given within section 3.6 of the RAP issued by QDS in February 2013.

Should this report be submitted to the local planning authority in order to formally discharge conditions (2009/00946/OUT and 2010/00696/FUL), we would confirm that we find the details acceptable in order to discharge relevant conditions.

We trust our advice is of use and should you have any further queries then please do not hesitate to contact us. Please be aware that any advice and comments which may have been made by Natural Resources Wales within the planning process should only be looked at in the context of that regime within which they fall and should not be construed as having any bearing or binding effect on other regulatory processes.

Yn ddiffuant / Yours sincerely

Mrs Jackie Walters
Senior Development Planning Advisor / Uwch Ymgynghorydd Cynllunio Datblygu
Cyfoeth Naturiol Cymru / Natural Resources Wales

Gwefan / Website: www.cyfoethnaturiolcymru.gov.uk / www.naturalresourceswales.gov.uk

Ein pwrpas yw sicrhau fod adnoddau naturiol Cymru yn cael eu cynnal, gwella a'u defnyddio yn gynaliadwy, yn awr ac i'r dyfodol / Our purpose is to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, now and in the future.

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BS1 4UA
UK
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Fax: +44 117 929 4624
www.wspgroup.co.uk