Environmental Management Services

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Calon Energy Limited

Baglan Bay Power Station
Baglan Bay Energy Park
Port Talbot
SA12 7GE

11th January 2022

FAO: David Wood
Reference: Groundwater Monitoring and Sampling 2021

Dear David,

Please find enclosed the groundwater monitoring and sampling results carried out at the Baglan Bay Power Station on the 21st December 2021.

The works were carried out in accordance with a specified scope of works provided by IGE Energy Services (UK) Ltd which stated the requirement for sampling and monitoring of wells 401S/D (Shallow/Deep), 402S/D, 403S/D, 415S/D and 416S/D.

A groundwater sample could not be collected from BH 415S/D due to an obstruction in the well and samples from BH 414S/D were obtained as an alternative.

Monitoring Results

Each of the accessible boreholes was dipped using an air/oil/water interface probe to determine the presence of any light non-aqueous phase liquids (LNAPLs) and to calculate the volume of water in each well. No measurable levels of LNAPL were detected in any of the boreholes monitored.

Groundwater levels were measured to the top of the monitoring standpipe and are contained in Table 2.

Disposable nitrile gloves were worn during sampling and changed between monitoring wells to eliminate cross contamination. Samples of groundwater were collected using an electronic peristaltic pump with disposable silicone and polyethylene sample tube dedicated to each borehole to prevent cross contamination.

Prior to sampling of the groundwater, the wells were purged of approximately three times the volume of water in the well in order to obtain samples representative of groundwater in the aquifer.

Once collected, water samples were placed into appropriate containers supplied by the laboratory, labelled and dispatched to the laboratory for analysis of a metal suite (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se and Zn), Speciated Total Petroleum Hydrocarbons (Diesel Range Organics) and BTEX. The results of the laboratory analysis are discussed in more detail below and listed in Table 1.

Field parameters comprising: pH, Electrical Conductivity, Dissolved Oxygen and Temperature were measured at the start of the purging, during purging and at the end of purging and the results are displayed in Table 2.

Discussion of Laboratory Analysis

Heavy Metals

Freshwater Environmental Quality Standards (EQS) have been used for comparison with the chemical results as freshwater is generally accepted as being the most relevant for groundwater analysis. A $CaCO_3$ concentration of 100 – 150 mg was used as a middle value between the most and least stringent freshwater values.

No exceedances of the EQS were reported for all determinands throughout the course of this sampling event.

BTEX

Levels of Benzene, Toluene, Ethyl Benzene and Xylenes were reported below laboratory detection limits for all boreholes.

TPH

TPH was only identified within borehole 416 S/D with the results consistent with lighter end carbon chains. This is consistent with previous sampling events with hydrocarbons frequently detected at 416S/D.

It is unlikely that the TPH measured in these boreholes is associated with the spillage incident (December 05) as the boreholes are situated up hydraulic gradient i.e. in the opposite direction to groundwater flow.

I trust this information meets your requirements at this time. If there is anything else you require or wish to discuss in further detail, please do not hesitate to contact us.

Kind regards,

Rhodri Moran B.Sc. (Hons). AIEMA
Environmental Consultant
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E-mail: rhodri.morgan@gptenvironmental.co.uk

Parameter (mg/l)		BGL CCGT Plot Monitoring Wells								
	EQS	**401S**	**401D**	**402S**	**402D**	**403**	**414S**	**414D**	**416S**	**416D**
Arsenic	**0.05**	0.033	0.013	0.012	0.023	0.0011	0.014	0.025	0.026	0.038
Cadmium	**0.005**	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011
Chromium	**0.2**	0.0076	0.01	0.0091	0.002	0.0021	0.0018	0.0012	0.0015	< 0.0005
Copper	**0.01**	0.0033	0.0022	0.0019	0.0020	0.0021	0.0018	0.0012	0.0015	< 0.0005
Lead	**0.01**	0.0016	< 0.0005	< 0.0005	0.00099	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Mercury	**0.001**	0.00012	< 5e-5	< 5e-5	< 5e-5	< 5e-5	< 5e-5	< 5e-5	< 5e-5	< 5e-5
Nickel	**0.15**	0.0018	< 0.0005	< 0.0005	0.0072	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Selenium		< 0.0005	0.0020	0.0028	<0.0066	0.0018	0.0015	< 0.0005	< 0.0005	< 0.0005
Zinc	**0.075**	0.0037	0.0031	0.0050	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Boron	**2**	0.14	0.069	0.087	0.11	0.12	0.090	0.098	0.081	0.068
Benzene	**30 ug/l**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	**50 ug/l**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total-xylene	**30 ug/l**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	**20 ug/l**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Eurofins Chemtest Ltd
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Email: info@chemtest.com

Final Report

Report No.:	21-45636-1
Initial Date of Issue:	07-Jan-2022
Client	Geo Pollution Technologies
Client Address:	2-4 Village Court Village Farm Industrial Estate Pyle Bridgend CF33 6BX
Contact(s):	Rhodri Morgan Tim Williams
Project	Baglan Bay Power Station
Quotation No.:	Q21-26296
Order No.:	7474
No. of Samples:	9
Turnaround (Wkdays):	11
Date Approved:	07-Jan-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	24-Dec-2021
Date Instructed:	24-Dec-2021
Results Due:	11-Jan-2022

Results - Water

Project: Baglan Bay Power Station

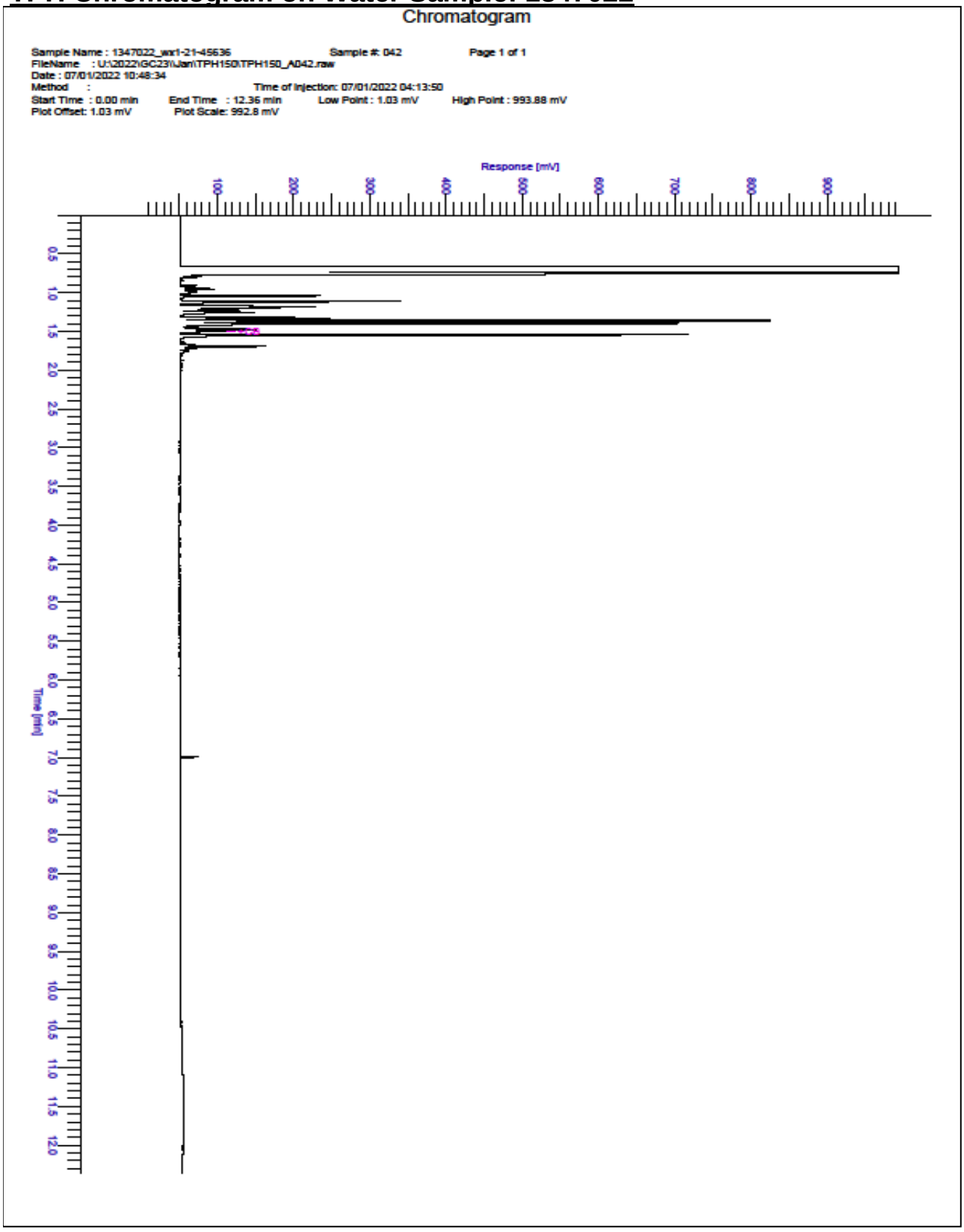
Client: Geo Pollution Technologies				**Chemtest Job No.:**	21-45636	21-45636	21-45636	21-45636	21-45636	21-45636	21-45636	21-45636
Quotation No.: Q21-26296				**Chemtest Sample ID.:**	1347022	1347023	1347024	1347025	1347026	1347027	1347028	1347029
Order No.: 7474				Client Sample Ref.:	Shallow	Deep	Shallow	Deep	Shallow	Shallow	Deep	Shallow
				Sample Location:	401	401	402	402	403	414	414	416
				Sample Type:	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
				Date Sampled:	21-Dec-2021	21-Dec-2021	21-Dec-2021	21-Dec-2021	21-Dec-2021	21-Dec-2021	21-Dec-2021	21-Dec-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Chromatogram (TPH)	N			N/A	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached
Arsenic (Dissolved)	U	1455	µg/l	0.20	33	13	12	23	11	14	25	26
Boron (Dissolved)	U	1455	µg/l	10.0	140	69	87	110	120	90	98	81
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	7.6	10	9.1	9.1	9.3	2.9	3.0	8.4
Copper (Dissolved)	U	1455	µg/l	0.50	3.3	2.2	1.9	2.0	2.1	1.8	1.2	1.5
Mercury (Dissolved)	U	1455	µg/l	0.05	0.12	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	1.8	< 0.50	< 0.50	0.72	< 0.50	< 0.50	< 0.50	< 0.50
Lead (Dissolved)	U	1455	µg/l	0.50	1.6	< 0.50	< 0.50	0.99	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50	2.0	2.8	0.66	1.8	1.5	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	3.7	3.1	5.0	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
TPH >C6-C10	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	4.1
TPH >C10-C12	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	51
TPH >C12-C16	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	45
TPH >C16-C21	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.7
TPH >C21-C40	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	100
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	[C] < 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	[C] < 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	[C] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	[C] < 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	[C] 11

Results - Water

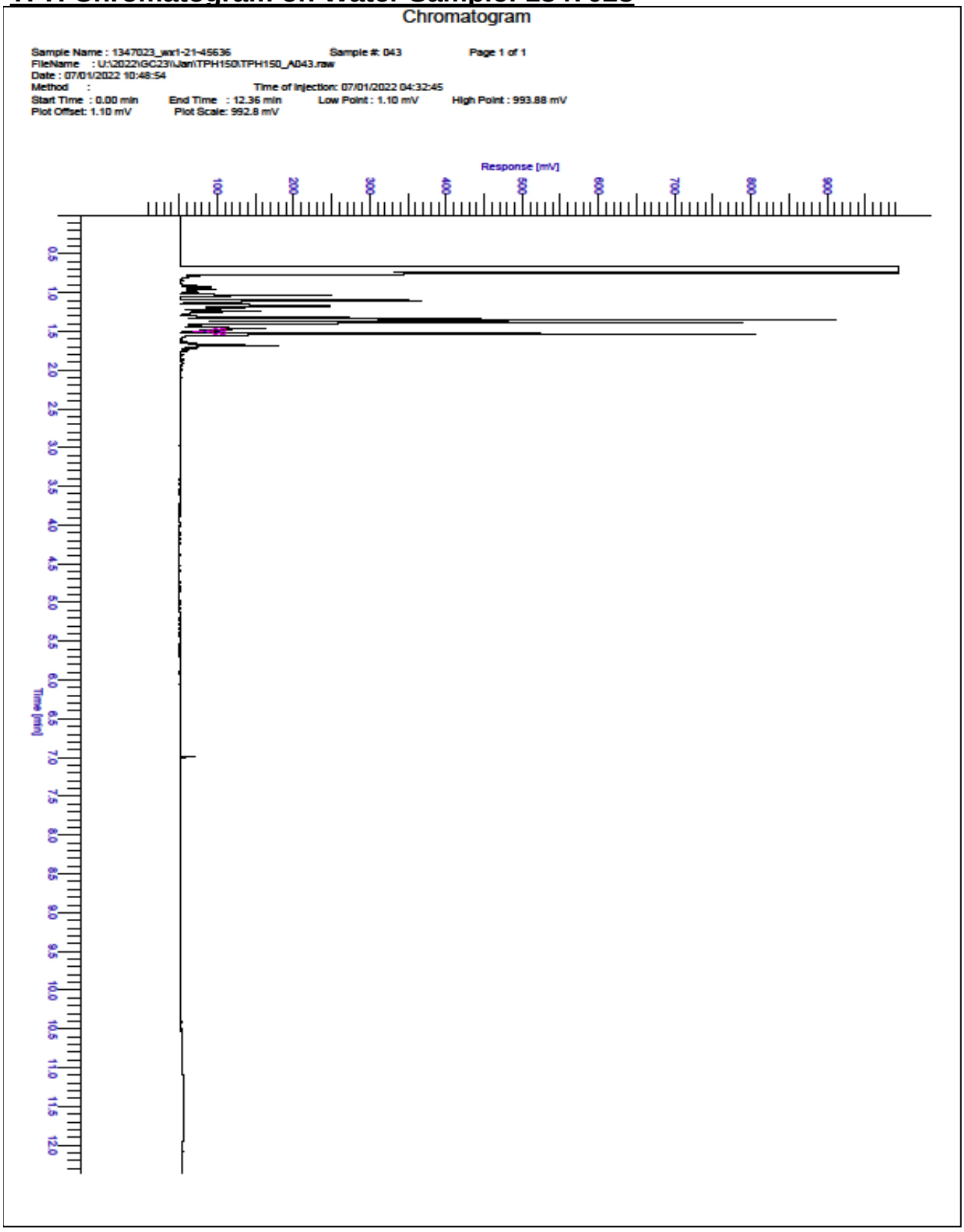
Project: Baglan Bay Power Station

Client: Geo Pollution Technologies			**Chemtest Job No.:**		21-45636
Quotation No.: Q21-26296			**Chemtest Sample ID.:**		1347030
Order No.: 7474			Client Sample Ref.:		Deep
			Sample Location:		416
			Sample Type:		WATER
			Date Sampled:		21-Dec-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Chromatogram (TPH)	N			N/A	See Attached
Arsenic (Dissolved)	U	1455	µg/l	0.20	38
Boron (Dissolved)	U	1455	µg/l	10.0	68
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	< 0.50
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05
Nickel (Dissolved)	U	1455	µg/l	0.50	0.52
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5
TPH >C6-C10	N	1670	µg/l	0.10	20
TPH >C10-C12	N	1670	µg/l	0.10	230
TPH >C12-C16	N	1670	µg/l	0.10	140
TPH >C16-C21	N	1670	µg/l	0.10	12
TPH >C21-C40	N	1670	µg/l	0.10	< 0.10
Total TPH >C6-C40	U	1670	µg/l	10	400
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	18

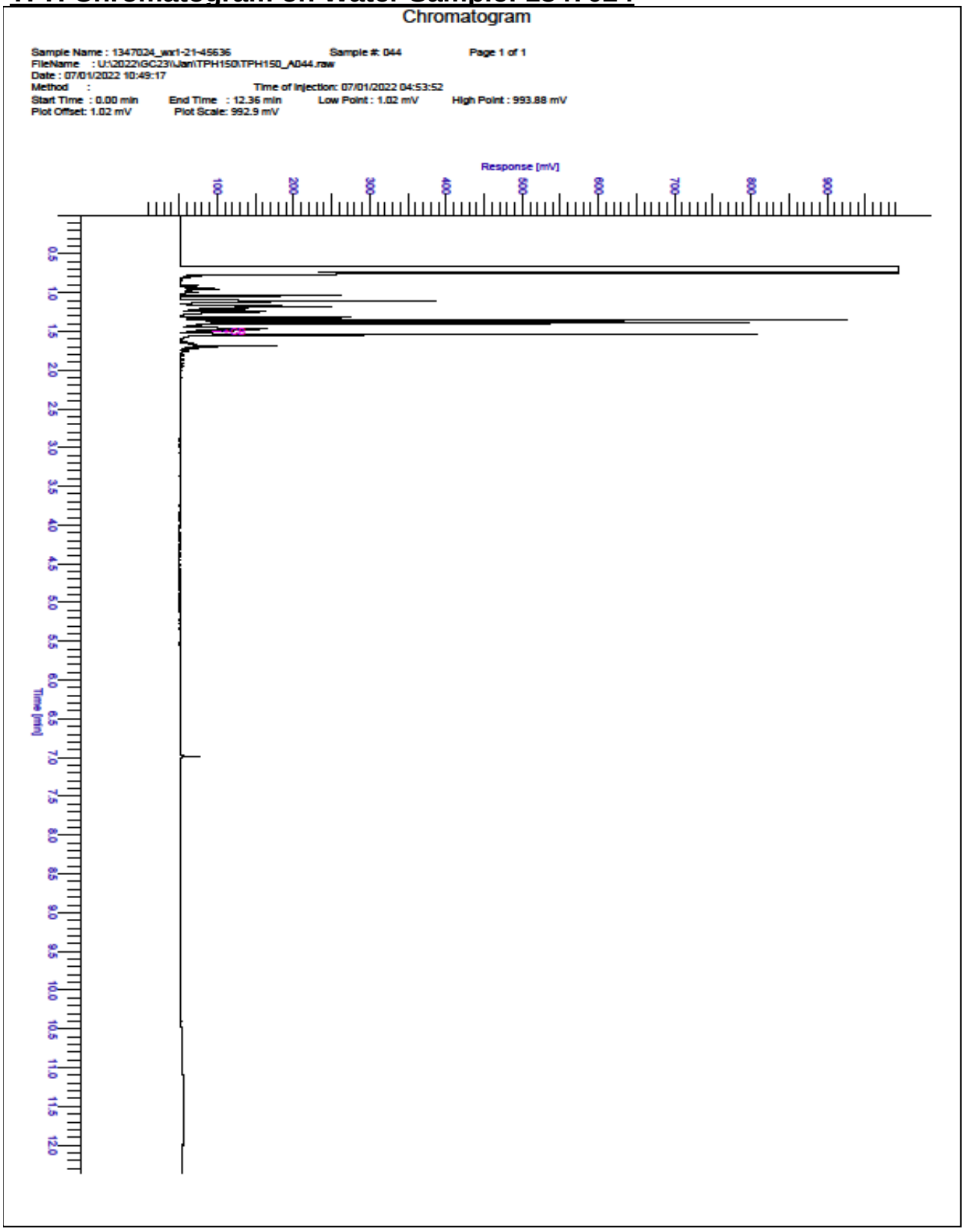
TPH Chromatogram on Water Sample: 1347022



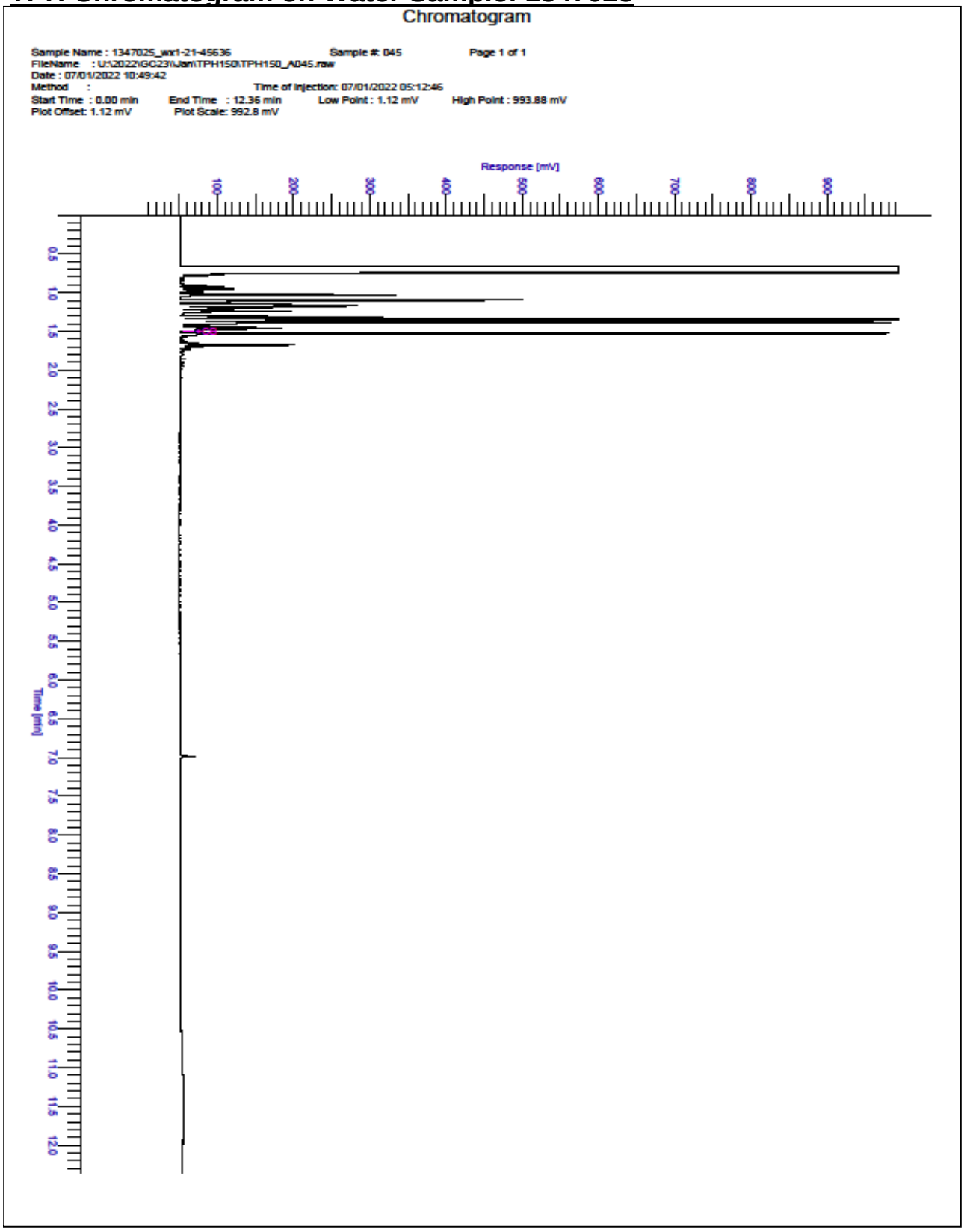
TPH Chromatogram on Water Sample: 1347023



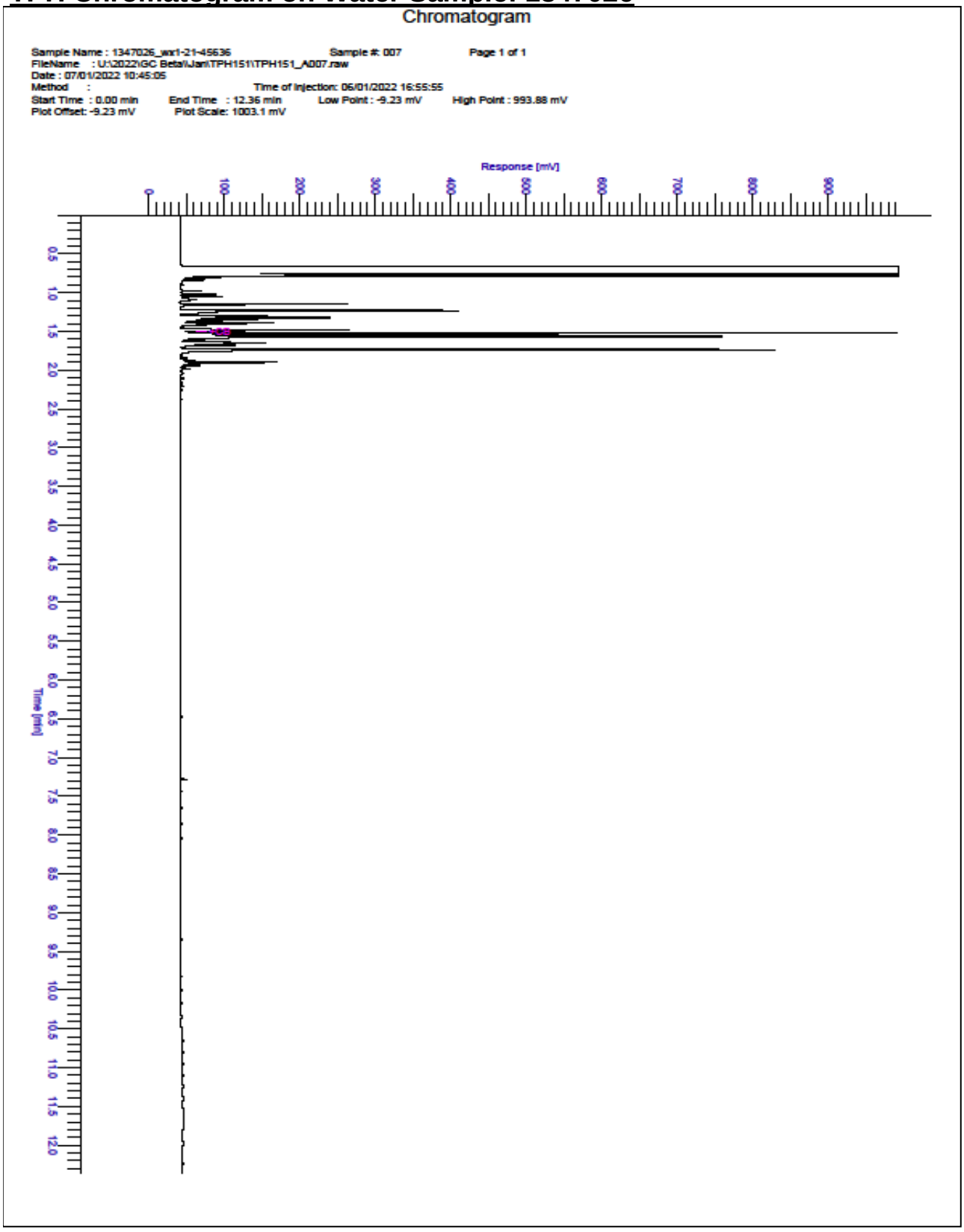
TPH Chromatogram on Water Sample: 1347024



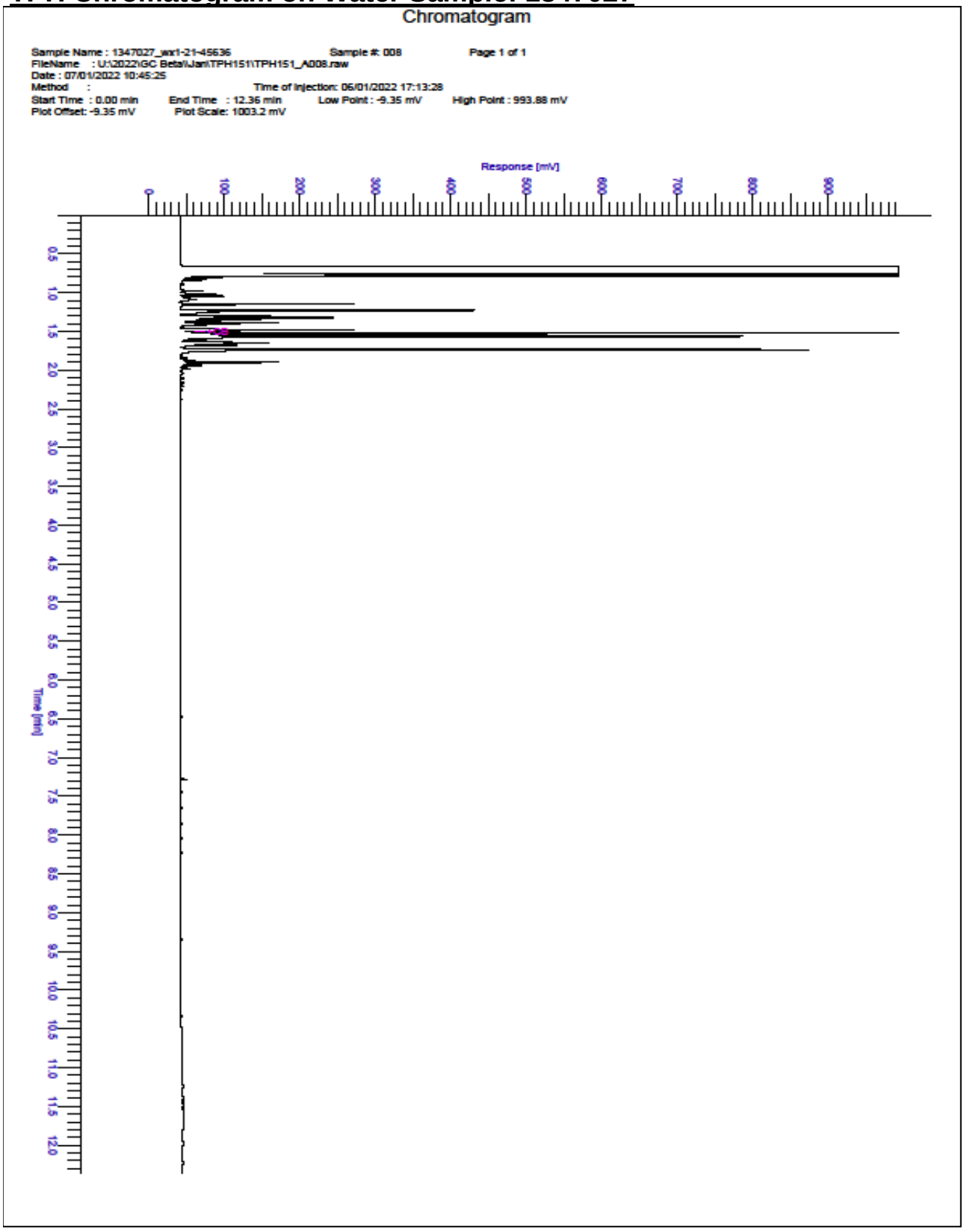
TPH Chromatogram on Water Sample: 1347025



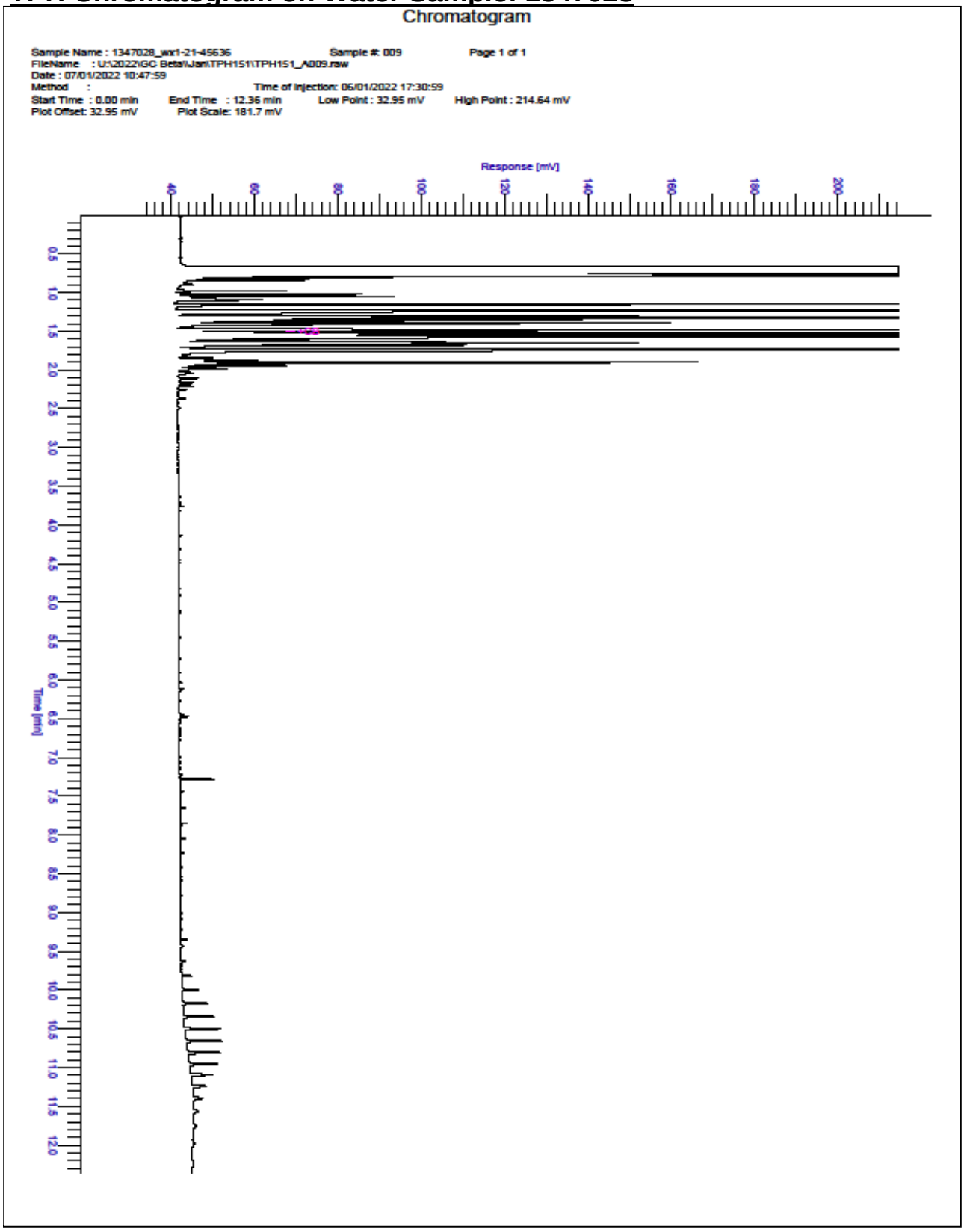
TPH Chromatogram on Water Sample: 1347026



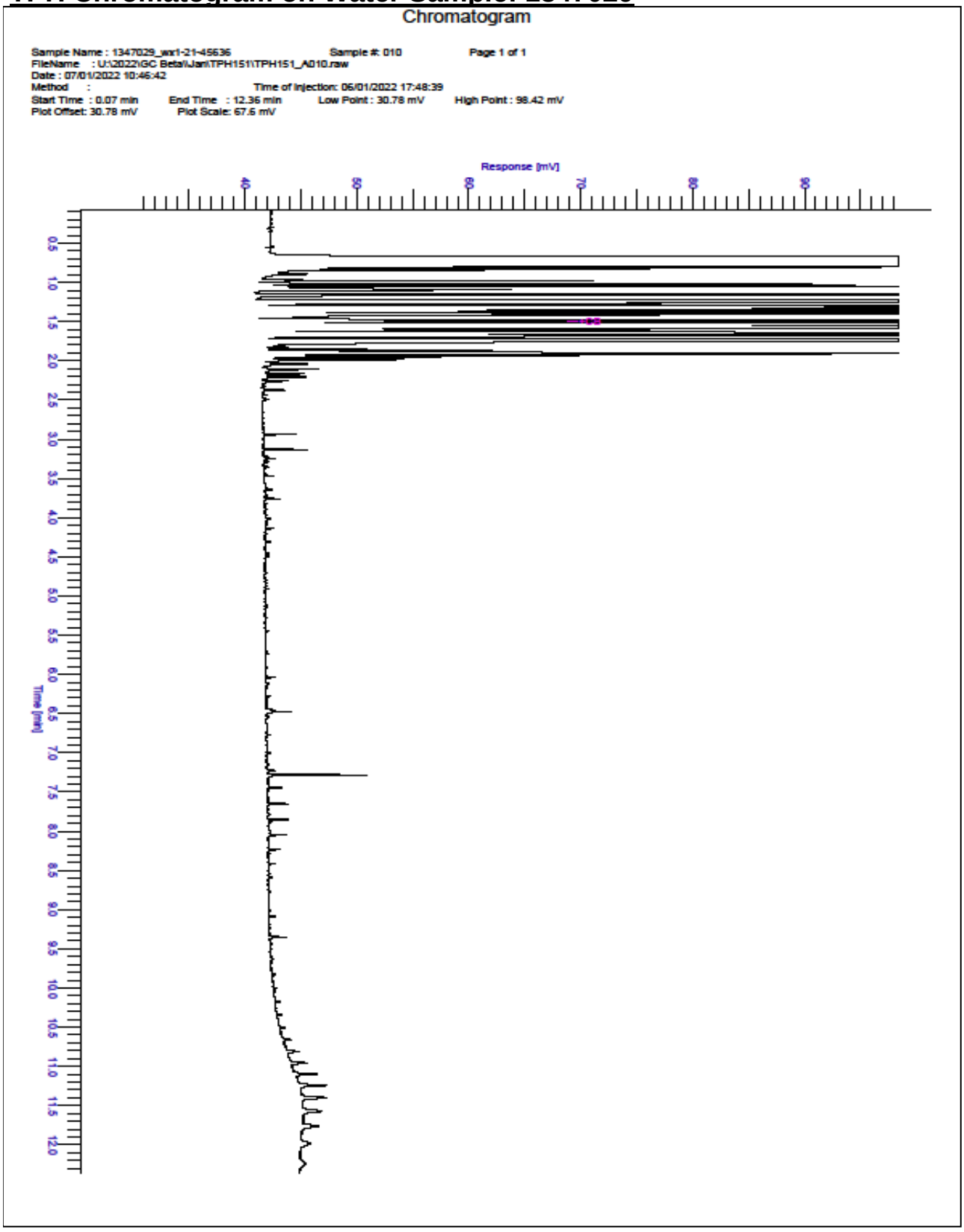
TPH Chromatogram on Water Sample: 1347027



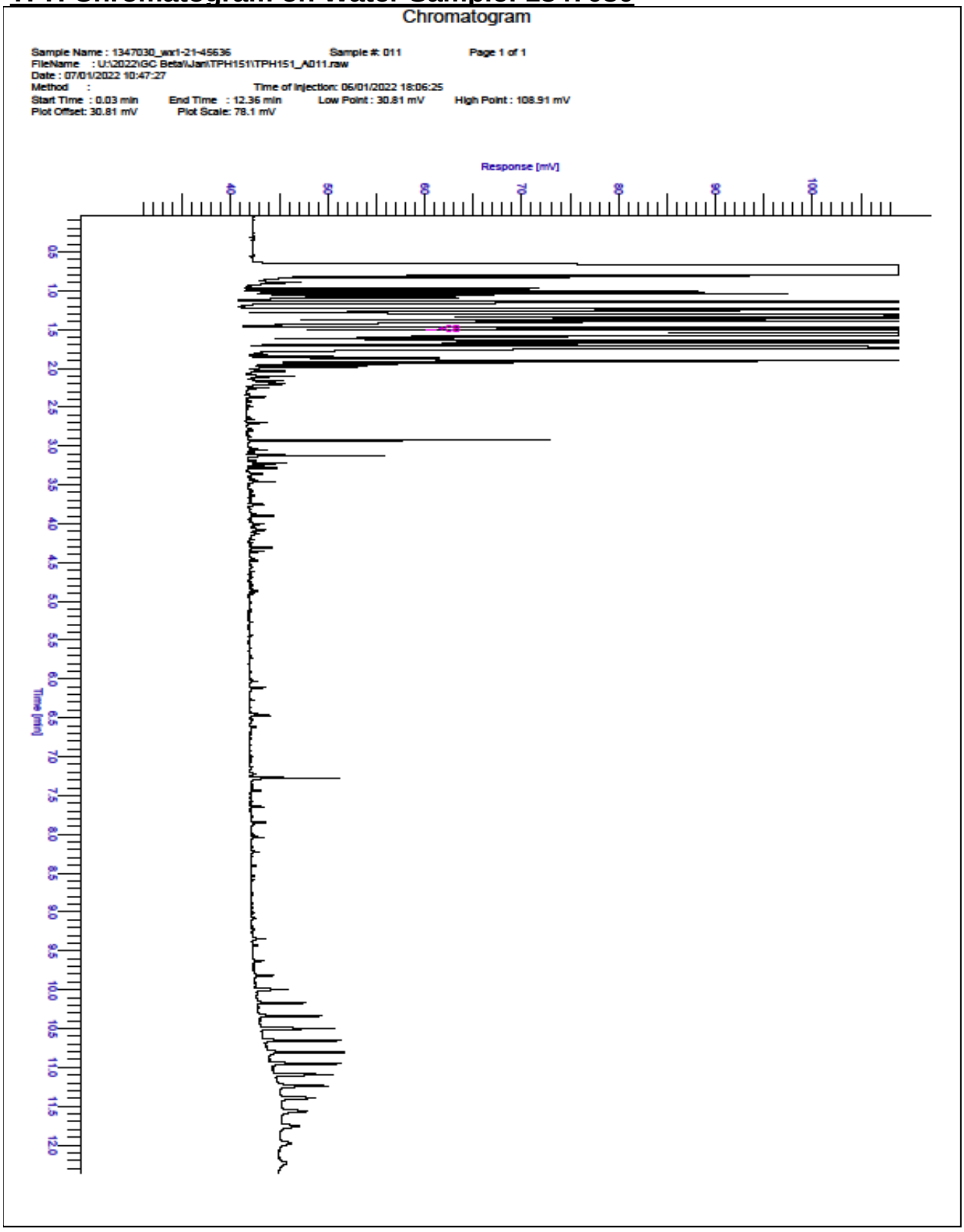
TPH Chromatogram on Water Sample: 1347028



TPH Chromatogram on Water Sample: 1347029



TPH Chromatogram on Water Sample: 1347030



Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1347029	Shallow		416	21-Dec-2021	C	Coloured Winchester 1000ml
1347029	Shallow		416	21-Dec-2021	C	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com